

# Supply Side Economics of the Pacific Liner Trades

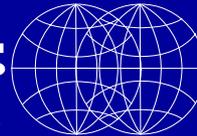
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***MERGE*GLOBAL**

*Freight Transport  
Economics & Strategy*



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**Carriers will have to revamp network structures in order to maximize profitability – in the transpacific lanes and around the world.**

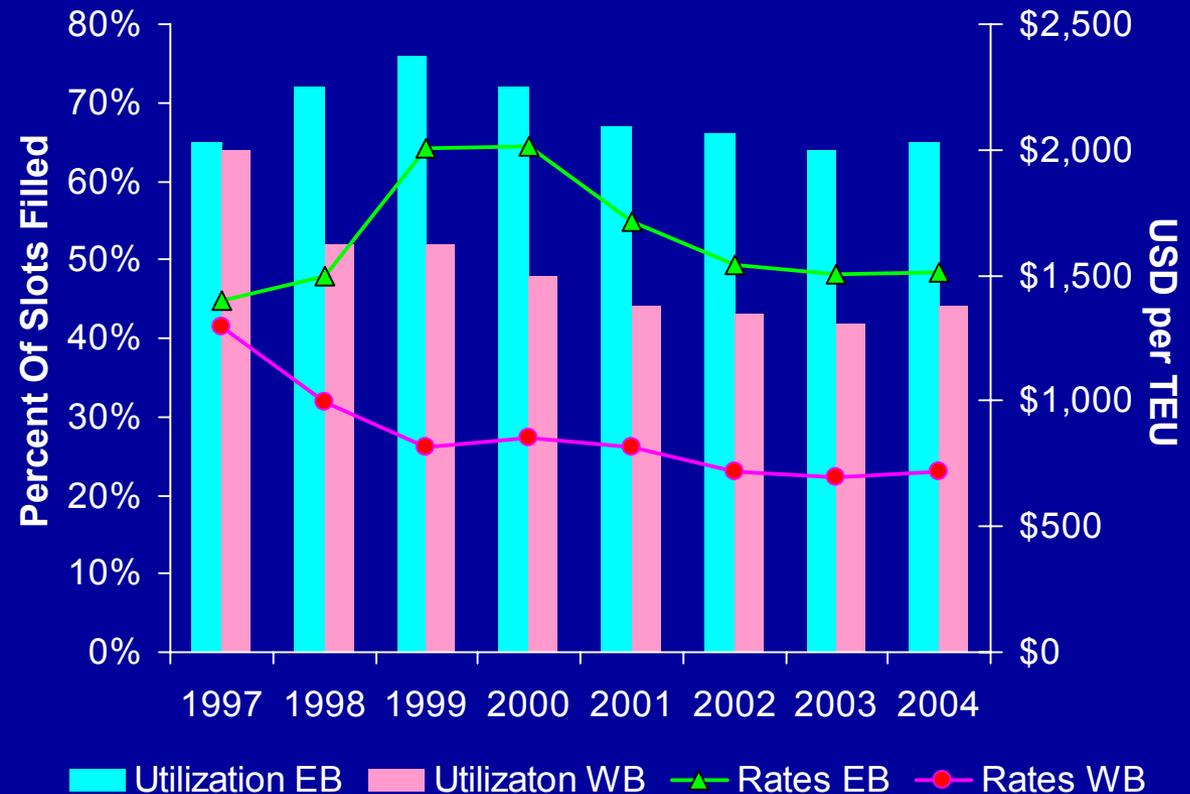
## **Key Points**

- **Despite demand growth, carrier profits have suffered due to overcapacity and low yields.**
- **It is clear that larger ships drive down unit cost – and that big ships are efficient only when full!**
- **To strike the best balance between trip cost and unit cost, carriers will have to revamp network structures.**

# Despite demand growth, carrier profits have suffered, due to over-capacity and low yields.

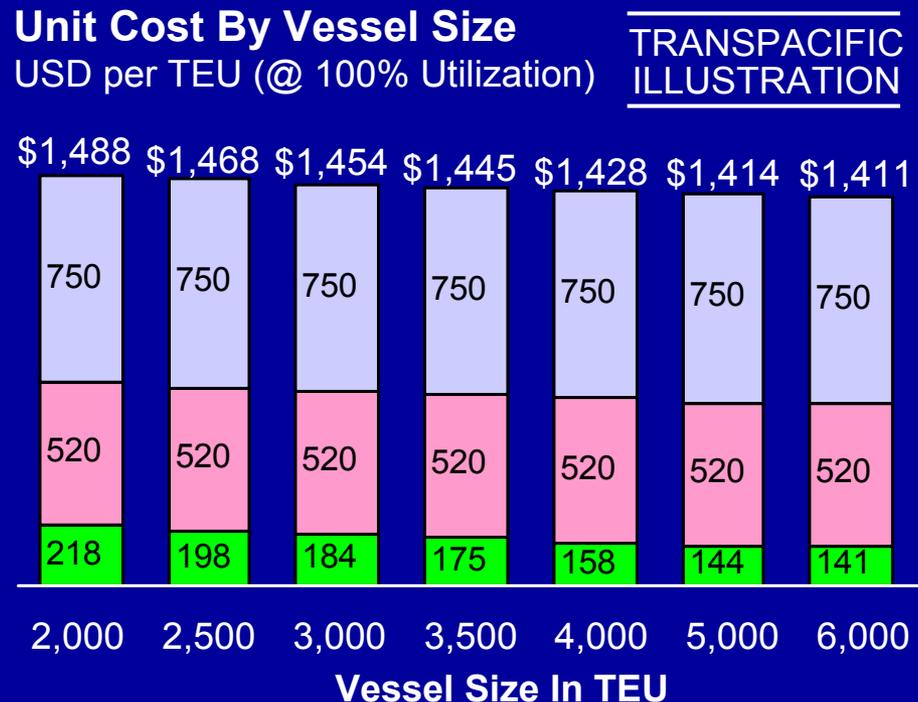
- The classic cycle has repeated: ships ordered during good times arrive in bad times.
- Growth in capacity – accelerated by ever-larger containerships – has outstripped growth in demand, resulting in falling rates.
- Utilization, yield and carrier profitability have suffered as a result.

Transpacific Utilization V. Rates



# It is clear that larger ships drive down unit cost...

- Large vessels deliver significant reductions in port-to-port costs.
- However, port-to-port costs are a small fraction of total door-to-door cost. Terminal handling and inland costs are largely insensitive to vessel size.
- The chart at right illustrates unit costs for a typical transpacific market.



Ship Size	Unit Cost	
	P-T-P	D-T-D
2,000 TEU	\$218	\$1,488
6,000 TEU	\$141	\$1,411
<b>Savings</b>	<b>35%</b>	<b>5%</b>

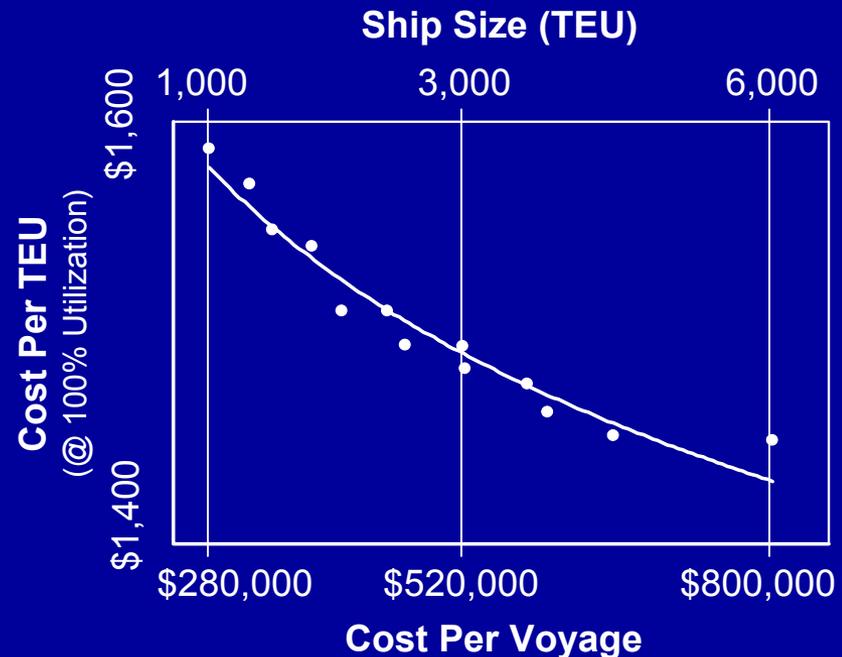
Source: MergeGlobal, Inc. estimates.

... but also that larger ships cost more to move than smaller ships.

- Economies of scale derive from lower capital and operating costs per TEU on large vessels.
  - Operating costs do not decline as rapidly as capital costs due to fuel expense.
- Additionally, larger vessels incorporate new technology that delivers both capital and operating cost savings.

### Unit Cost v. Trip Cost

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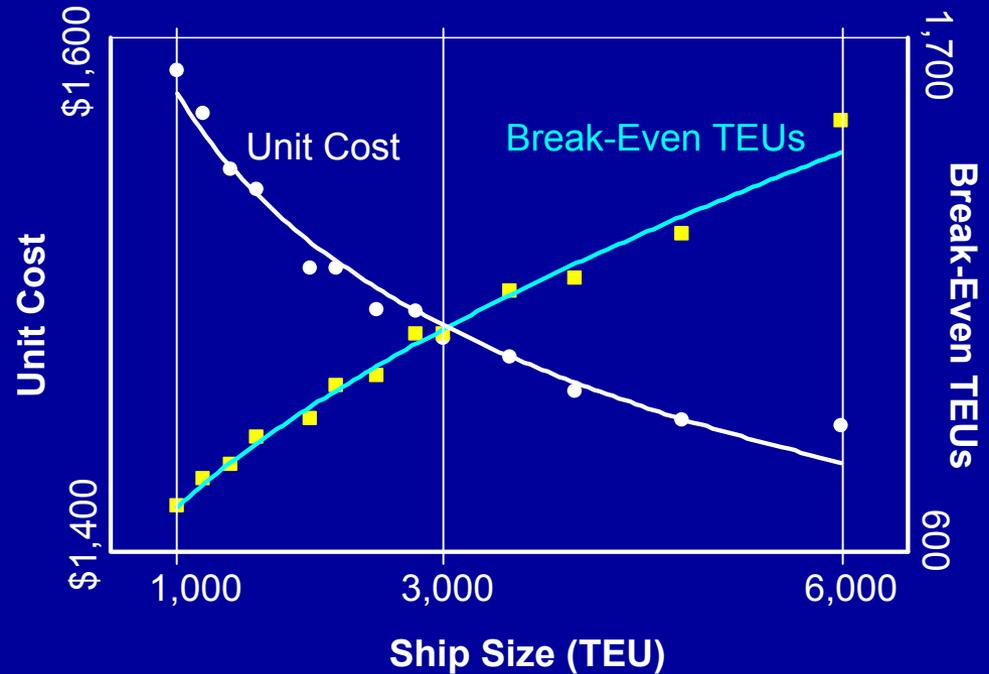


# Big ships offer efficiencies only when full: carriers must manage the trade-off between unit cost and trip cost.

- The fundamental challenge for carriers is how to generate enough demand to cover the higher per-trip cost of larger ships.
- Part of the answer lies in network design: the use of hub-and-spoke systems to spread capacity over multiple lanes. However, hub-and-spoke incurs double-handling costs that can far exceed savings in port-to-port cost.

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### Unit Cost V. Break-Even TEUs

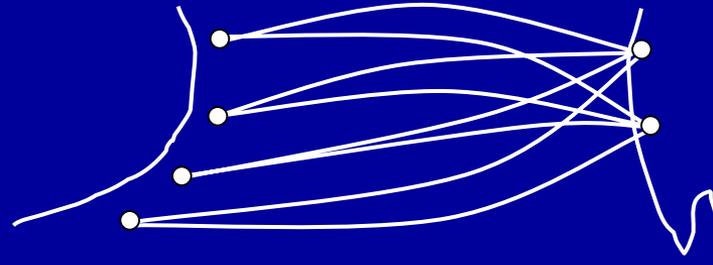


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# Operators seek network designs that best balance demand, yield, and cost. Three broad options exist:

## Point-to-Point

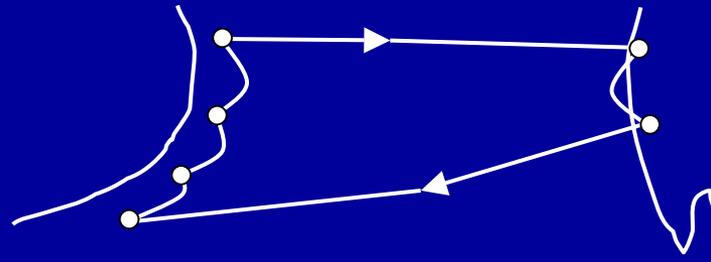
- Minimizes unit costs
- Needs sufficient utilization for trip revenue to cover trip cost



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## String

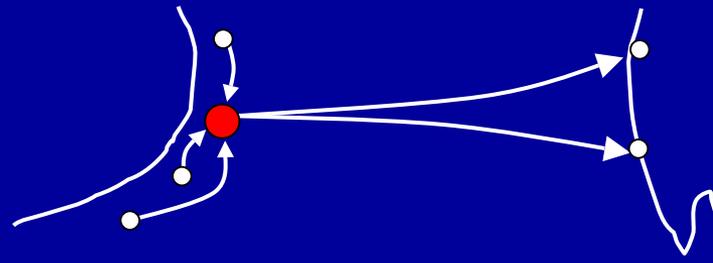
- Avoids double handling costs incurred by transshipping
- Splits ship capacity among multiple segments



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## Hub-and-Spoke

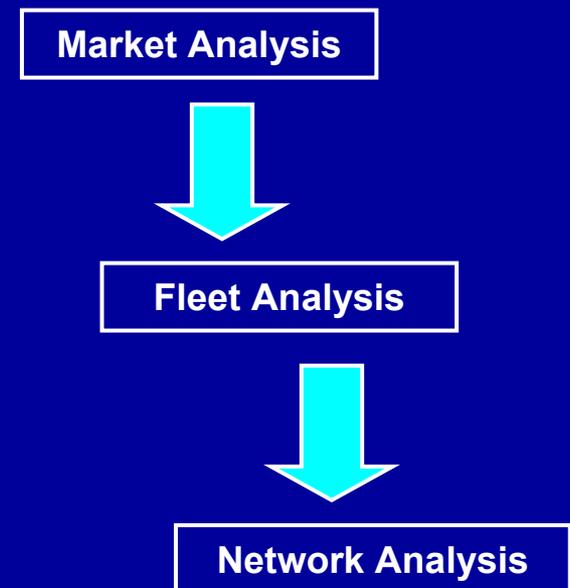
- Allows capacity to be better matched to demand in each lane
- Incurs double-handling costs



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## Careful analysis is required to determine optimal network configuration. Optimal networks evolve in response to constantly changing supply and demand conditions.

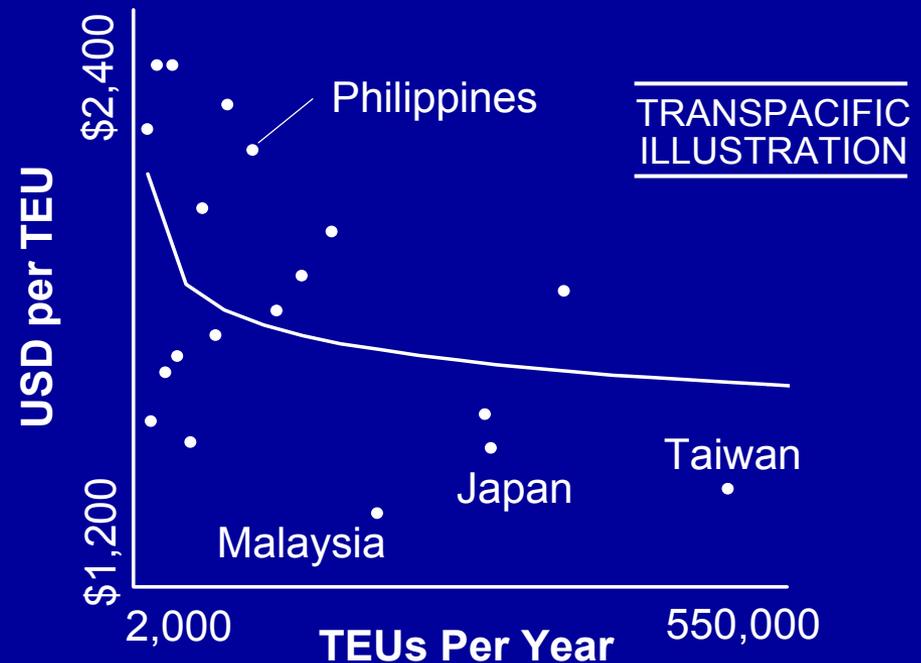
- **First, the market characteristics must be determined. These include:**
  - Market size – O-D demand in TEU
  - Market yield – the rate shippers are willing to pay
  - Market frequency – the frequency with which a market must be served
- **Next, the fleet available to serve the market must be assessed. Primary elements include:**
  - Size and speed of the assigned vessels
  - Cost to operate the vessels in the market
- **Finally, the total cost to serve the market must be assessed by alternative network.**
  - Different networks will have different cost structures for the same market



# Transport prices (yields) tend to be inversely related to market size.

- Market elements that must be determined include:
  - Size
    - TEU demand by O-D pair
  - Prevailing Rates
  - Demand Patterns
    - Day of Week
    - Week of Year

Transpacific O-D Markets\*: 2002



\* China not displayed

# The preferred network for each market size will depend on the operating characteristics of the vessels employed.

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- Point-to-point routings are the most profitable way to serve large markets, and hub-and-spoke routings are the best way to serve small markets.
- The reality, of course, is a blend of routings. Many strings are integrated into hub-and-spoke networks.

## Preferred Network by Market Size

Index of Profit - Notional Markets, 6000 TEU Vessel

<i>TEU / Week</i>	<i>PTP</i>	<i>String</i>	<i>Hub</i>
6000	1.00	-	-
5400	1.00	-	0.99
4800	0.97	0.98	0.96
4200	0.92	0.94	0.92
3600	0.84	0.88	0.85
3000	0.73	0.80	0.76
1800	0.41	0.50	0.48
1200	0.24	0.35	0.34
600	0.05	0.17	0.18
300	(0.06)	0.07	0.09
150	(0.11)	0.01	0.04

Note: A dash ("-") indicates the network behaves the same as the PTP network.

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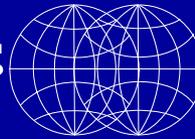
## Conclusions

- **Demand will grow, but this does not assure profitability.**
  - More diverse markets require rigorous analysis to maximize profits, identify opportunities, and avoid pitfalls.
- **Beware the siren song of low unit costs.**
  - Big ships must be full to operate efficiently – and the cost of mistakes is getting higher.
- **Think about networks not ships.**
  - The network is the plan – without it, even the most efficient vessel will not enable profit.

# ***Thank You!***

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