APPENDIX I-16: TREND ANALYSIS – VESSEL SIZE AND IMPACT ON PORTS

Trend Statement

Ocean carriers are responding to cost pressures by ordering larger, more efficient vessels and coordinating with competitors in vessel sharing agreements and alliances. The trend toward larger vessels, up to the 18,000 twenty-foot equivalent (TEU) class, will have dramatic implications for ports that compete to service them as well as for the land side warehouse, trucking and rail operations that must accommodate an increase in volumes. Those increased volumes will likely be flowing through a fewer number of larger trade gateways such as those in Southern California.

In addition to 18,000 TEU ships to be deployed in the near term, there are also plans for 19,000 TEU ships. The China Shipping Group and their subsidiary Cosco Shipping Container Line (CSCL) have agreed to take delivery of five of these 19,000 TEU ships which will be phased in by 2015. Also being contemplated are 22,000 to 24,000 TEU ships which Maersk is developing for its future operations, currently they have no plans to order these ships.

Background

Ocean carriers have responded to competitive pressures, particularly in the wake of the economic downturn, by seeking to reduce operational costs. One solution has been to run larger, more efficient ships on major trade lanes. Larger vessels allow for economies of scale (reducing the price per container to ship them) on the oceanic voyage. In addition, new ship designs allow for more fuel efficient operations. The largest of the new vessels are referred to as the Triple E class, which stands for energy, efficiency, and environmental improvements and will carry up to 18,000 TEUs. The ships reach up to 1,300 feet long and 200 feet wide. The Triple E's also have a top speed that is less than earlier generations of ships, reinforcing a recent trend in the industry toward "slow steaming." With slow steaming, carriers reduce vessel speed in order to burn less fuel, thereby reducing emissions, and reducing operating costs. It also allows carriers to manage capacity better when capacity exceeds demand.

Even though the largest vessels have received the greatest attention, ships that carry more than 10,000 TEUs are still large, and have limited options with regard to trade lanes (they are too large for example to transit the Panama Canal) and to ports that can accommodate them. Fifteen percent of the world's container capacity moved on post-Panamax vessels in 2000 and increased to 44 percent by 2011.

The largest container ships serving North America were in the 10,000 TEU range up until 2012 when vessels carrying 12,500 TEUs began calling at the San Pedro Bay ports. In September 2012, the Mediterranean Shipping Company Beatrice arrived at the Port of Long Beach. With a capacity of 13,800 TEUs (1200 feet long, 167 feet wide), it became the largest vessel to call at a North American port.

Freight System Implications

Maersk, one of the world's largest shipping companies, will be taking delivery of ten Triple E vessels by 2015. Most of these will be deployed on Asia-Europe trade lanes[1]. These larger ships are anticipated to cause a "cascade effect with big ships displacing small ships across all ships sizes[2]." Their impacts on the global freight system are widespread; however, the most direct impact is on the port facilities that have to accommodate them:

- Because the large vessels include an extra row of containers and are stacked higher, they demand more specialized cranes to load and unload them.
- The additional loads that the cranes handle place additional pressure on the dockside infrastructure.
- Berths have to be able to handle the impact of the larger vessels.
- The increase in container volume will require more on-dock labor during peak periods when ships call and are unloaded. This creates a similar pressure on supply chain partners - including the trucking and warehousing sectors - that move and process the cargo once it leaves the ports.

For shippers who rely upon a predictable discharge schedule for vessels (and for truckers, warehouses, railroads and others who help shippers move the cargo), larger vessels and slow steaming have injected some uncertainty into the process of moving goods:

- Shipping more containers on fewer, larger vessels will likely have an impact on the redeployment of smaller vessels in trade lanes where the largest ships are not in service. Similarly, the timing and frequency of calls at smaller ports will also be affected.
- Slow steaming means longer sailing schedules. Larger vessels mean potentially longer unloading times at ports. Both are concerns to importers operating on a just-in-time basis.
- The loading and unloading of larger vessels can create peak period demands for equipment use (like chassis or yard equipment), resulting in possible shortages. It also creates peak period demands for labor that inject a certain level of unpredictability into the hiring and scheduling process.
- Shippers will need to manage their supply chain to avoid being caught short on inventory.

Beneficial cargo owners may want to consider risk management whether to ship large volume of containers on a single ship or use additional carriers (or additional ports) to spread out the risk. However, larger vessels do provide an opportunity for ocean carriers to share excess capacity. In 2011, carriers Hapag-Lloyd, APL and Hyundai established the G6 alliance for the Asia to Europe trade lane. In 2014, pending European and American regulatory approval, the world's three largest carriers – Maersk, MSC and CMA CGM – attempted to launch a P3 alliance. Chinese regulators blocked the proposal for a three-way alliance. The alliance would have resulted in vessel sharing agreements covering 15 percent of the world's global containerized fleet, 255 ships with a capacity of 2.6 million TEUs. MSC and Maersk (2M), the world's top two container lines, did agree on a 10-year pact which is for the Asia-Europe, Transatlantic and Transpacific routes and will cover 185 ships. The alliance should help with over capacity and help to stabilize freight rates. The investment of the 2M carriers in larger, more efficient vessels may force competitors to do the same, or at least deploy smaller but newer and more efficient ships that are competitive from an operating cost perspective. It is expected that, post 2M, all of the

[1] King, M. (2013) "Triple E's Domino Effect." *Journal of Commerce.* March 4, 2013, pp. 26-32.
[2] "Big Ships, Big Challenges: The Impact of Mega Container Vessels on U.S. Port Authorities." Dr. Noel Hacegaba, Port of Long Beach, June 30, 2014.

ships being deployed in the trans-Pacific trade lanes, servicing the west coast of the US will be larger than 9,000 TEU vessels. [3]

Planning Considerations

California, particularly the Southern California trade gateway, is in a position to draw traffic from larger (and alliance-run) vessels because of existing capacity. Long Beach's main channel is 76 feet deep and is the longest in North America. This will place pressure on ports and terminal operators to upgrade facilities and develop new terminals designed for the largest vessels. The new alliances are also creating financial uncertainty for port authorities and pitting ports against one another for more favorable rates and other incentives.

This may require new kinds of operations to eliminate peak period congestion when ships are loaded and unloaded and when containers leave the port by either truck or rail. Ports will have to make certain that there are ample containers, equipment, chassis and labor for these surges in operation. Larger ships will take up more time at the port and berth windows will become more limited. For local officials and communities, increasing volumes will create new demand for infrastructure improvements outside of the gate as well.

Resources

King, M. (2013) "Triple E's Domino Effect." Journal of Commerce, March 4, 2013, pp. 26-32.

Leach, P. (2013) "Networking to the Max." Journal of Commerce, June 24, 2013, pp. 36-38.

P3 Network: http://www.maerskline.com/en-us/shipping-services/p3-network

Triple E Class Vessels: http://www.worldslargestship.com/

LA-LB terminals should expect 18,000-TEU ships, expert says, Journal of Commerce, October 1, 2014, Bill Mongelluzzo, http://www.joc.com/port-news/us-ports/port-los-angeles/la-lb-terminals-should-expect-18000-teu-ships-expert-says_20141001.html

New ships, winter to pressure carriers in Asia-Europe trade, Journal of Commerce, October 13, 2014, Bruce Barnard, http://www.joc.com/maritime-news/trade-lanes/asia-europe/new-ships-winter-pressure-carriers-asia-europe-trade_20141013.html

[3] Leach, P. (2013) "Networking to the Max." *Journal of Commerce* June 24, 2013, pp. 36-38.