

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.

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. While 15 percent of the world's container capacity moved on post-Panamax vessels in 2000, which number increased to 44 percent by 2011.

The largest container ships serving North America were in the 10,000 TEU range and up until 2012 when vessels carrying 12,500 TEUs began calling at the San Pedro Bay ports. In September 2012, the MSC 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 to vessel to call at a North American port.

Freight System Implications

Maersk, the world's largest ocean carrier, will be taking delivery of ten Triple E vessels by 2015. Most of these will be deployed on Asia-Europe trade lanes¹. Their impacts on the global freight system are widespread however.

¹ King, M. (2013) "Triple E's Domino Effect." *Journal of Commerce*. March 4, 2013, pp. 26-32.

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.
- 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 the 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

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, Mediterranean Shipping Company and CMA CGM – will launch the Public-Private Partnership (P3) alliance. The alliance will result in vessel sharing agreements covering 15 percent of the world's global containerized fleet, 255 ships with a capacity of 2.6 million TEUs. The investment of the P3 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 P3, all of the ships being deployed in the trans-Pacific trade lanes, servicing the west coast of the United States will be larger than 9,000 TEU vessels.²

² Leach, P. (2013) "Networking to the Max." *Journal of Commerce* June 24, 2013, pp. 36-38.

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.

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. 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>

