

Tomorrow's world

Portek chairman **Larry Lam** and executive director **Ooi Boon Hoe** examine the 'cascade effect' in container shipping and the future implications for regional and feeder ports

Maximum ship sizes have grown steadily from 3,000 teu in 1980 and 4,500 teu in the late 1980s, to the early 1990s when the panamax barrier was breached. Since then, ship sizes have ballooned – to 7,200 teu in 2000 and then in 2006, the first 12,500 teu vessel entered service.

And the trend continues. At the end of 2007, 188 vessels of 10,000 teu and above were on order. At this growth rate, it's estimated that by 2011 more than 50% of all container slots will be filled by post-panamax vessels.

The phenomenon of larger vessels replacing and sidelining smaller vessels is not new. In fact, the size of container ships has been increasing since the 1960s – but what is different now are the quantum leaps in size, the number of slots being added, and how quickly these changes are occurring.

While maximum vessel sizes of the future will ultimately be determined by economic considerations, the fact remains that ever-larger container vessels will profoundly affect our industry. A 'cascade effect' has begun – where larger ships will displace smaller ships in routes and ports worldwide.

An across-the-board chain reaction is underway; where 7,000 teu-12,500 teu vessels are pushing 4,000 teu-6,000 teu ships down one level in the hierarchy; and they in turn are pushing 2,000 teu-4,000 teu vessels down one level. At the lowest levels, the smallest vessels will be squeezed out, as they will no longer be economically viable.

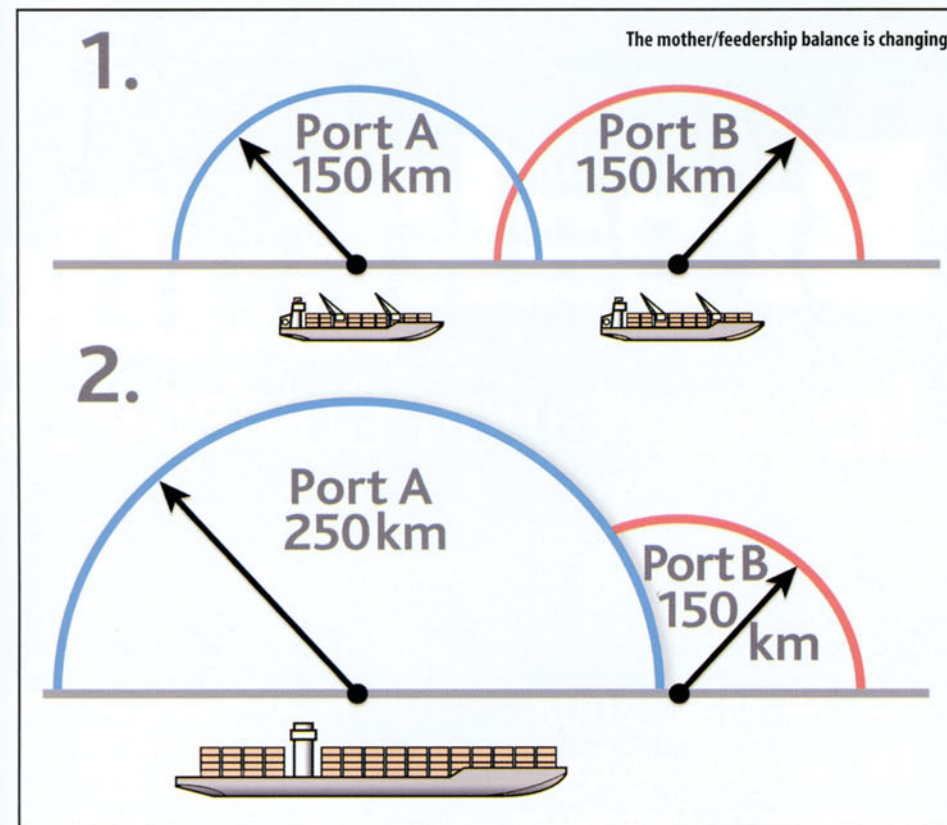
Shipping economics today are driven mainly by the need to fill vessels and in achieving a low-unit-cost per slot.

In regional trade, savings of 25% per slot are now becoming possible simply by utilising 5,000 teu vessels rather than 3,000 teu vessels. Even for feeder routes, the numbers are far more attractive for 2,000 teu ships compared with those of 800 teu.

The primary beneficiaries of the arrival of mega-ships will be the top-tier hubs such as Singapore, Yantian, Yangshan, and Hong Kong. For them, each new mega-ship brings an abundance of containers – and revenues.

However, regional ports and feeder ports must address a fundamental issue: are they willing to do what's necessary to accommodate the larger ships that have been pushed downward in the hierarchy?

To remain viable, regional ports presently serving 2,500 teu ships may now find it necessary to accommodate ships of 5,000 teu. Regional ports that



succeed in attracting larger vessels will in time emerge as key regional hubs and gain more transshipment traffic.

Similarly, feeder ports accustomed to serving 600 teu-1,200 teu ships may now need to gear up to receive ships of up to 2,500 teu. Those unable to service larger ships will be marginalised, visited only by smaller vessels, or perhaps even dropped as a port of call.

To ensure success as a regional and/or feeder port, every port must have sufficient volumes of cargo for ships to justify port calls. To increase its volume, a port should seize every opportunity to become the gateway port in its country and for neighbouring countries. For this, a complete study should be done to determine the size of the opportunities that exist. From this, pricing and incentives can then be

calculated to attract new shippers, consignees, and shipping lines.

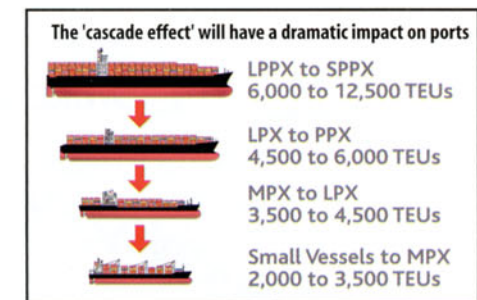
Then, a port's physical infrastructure must be suitable. For example, larger vessels will require sufficient draft (13 metres-15 metres for regional ports and 10 metres-12 metres for feeder ports), manoeuvring room for the larger turning radius, and berth length (300 metres-330 metres for regional ports, and 200 metres-250 metres for feeder ports). The overall layout of the terminal should be reviewed, and revamped if necessary. Simulation software can be used to evaluate and compare various operations scenarios. Yard space is a frequent constraint. Exchanging 2,000 to 3,000 boxes per ship call requires a significant amount of yard space. In today's world, terminals need to achieve throughputs of up to 50,000 teu/hectare per year with rubber-tyred gantry (RTG) crane operation. Achieving this requires active dwell time management with incentives and disincentives in place.

In terms of equipment, many regional and feeder ports feature a mix of panamax and post-panamax quay cranes. These may need to be replaced or upgraded. Panamax quay cranes are often limited by their lift height – but it's generally possible to increase from 26 metres to 30 metres or even 32 metres. Next, panamax



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LARRY LAM



Containership cascade

- MPX (mid panamax) – 2,000 teu-3,500 teu
- LPX (large panamax) – 3,500 teu-4,500 teu
- PPX (post panamax) – 4,500 teu-6,000 teu
- LPPX (large post panamax) – 6,000 teu-8,000 teu
- SPPX (super post panamax) megaships – 8,000 teu-12,500 teu



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OOI BOON HOE

cranes that can reach 12 or 13 rows can generally be extended to 14 or 15 rows. In addition, crane operating speeds can be increased by replacing drives.

With yard space at a premium, it makes sense to modify the height of smaller 1-over-4 and 1-over-3 RTGs to 1-over-5 and in some cases to 1-over-6 to handle the greater number of moves per ship call. Straddle carriers of 1-over-2 configuration are being phased out in favour of 1-over-3.

Next, a port's IT and communication systems should be capable of handling a flow of 3,000 teu-4,000 teu within a 24-hour period. The Container Terminal Management System and supporting IT hardware and software must be sufficiently robust to handle the increased volume. Additional useful IT infrastructure would include radio data terminals for accurate, real-time information on containers in the yard; optical character recognition systems; and position determination systems to reduce costly collisions.

In conclusion, we believe that the 'cascade effect' will provide the opportunity for both regional and feeder ports to climb a step higher in the hierarchy by attracting the large ships that have been pushed downward. But, as always when marketplaces undergo significant changes, as new businesses appear, others disappear. Ports that modernise and transform themselves will be ideally positioned for success; while those unable to do so may, literally, 'miss the boat'. **PS**

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