

This issue of the FAL Bulletin provides information on trends in current maritime transport and their implications for Latin America and the Caribbean, as well as some consequences for the ports in the region. This article updates some of the information contained in *Recursos naturales e infraestructuras series*, No. 82 (ECLAC):

<http://www.eclac.cl/publicaciones/RecursosNaturales/7/LCL2227PE/lcl2227e.pdf>.

This issue is based on a paper prepared by Ricardo J. Sánchez, Division of Natural Resources and Infrastructure, with the collaboration of Myriam Echeverría, Division of International Trade and Integration.

For more information, please contact Ricardo J. Sánchez, [ricardo.sanchez@cepal.org](mailto:ricardo.sanchez@cepal.org) or [trans@eclac.cl](mailto:trans@eclac.cl).

## THE MARITIME CYCLE

Over the last 10 quarters, the maritime transport industry has been experiencing special conditions of supply and demand which have caused unusual changes in market prices and quantities, especially in the container and dry bulk segments.

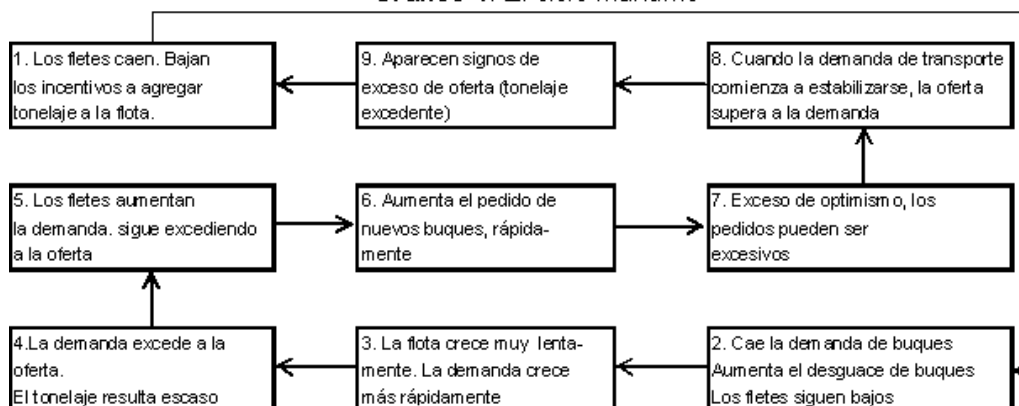
The maritime cycle has played a significant role in these changes, which have had an impact on transporters and on production and distribution chains, and have brought new conditions of service with additional requirements for port equipment and infrastructure, especially in Latin America.

How can we briefly define the maritime cycle? It consists of a certain time sequence of balances and imbalances in supply and demand for services from the maritime markets,<sup>7</sup> which react to price incentives and to the lack of synchronization of ship production to changes in supply, in the context of a very dynamic and exogenous level of demand (reacting to changes in production and trade). The maritime cycle may be represented in a simplified graphic form as follows:

Figure 1

### The maritime cycle simplified

Gráfico 1. El ciclo marítimo



1. Freight rates fall. There are fewer incentives to add tonnage to the fleet.

2. The demand for ships falls. More ships are scrapped. Freight rates remain low.

3. The fleet grows very slowly. Demand grows more rapidly.

4. Demand outstrips supply. Tonnage is scarce.

5. Freight rates rise while demand

continues to exceed supply.

6. Orders for new ships increase rapidly.

7. Too much optimism, orders may be excessive.

8. When transport demand begins to stabilize, supply exceeds demand.

9. Signs of excess supply appear (excess tonnage).

**Source** : Prepared by the author.

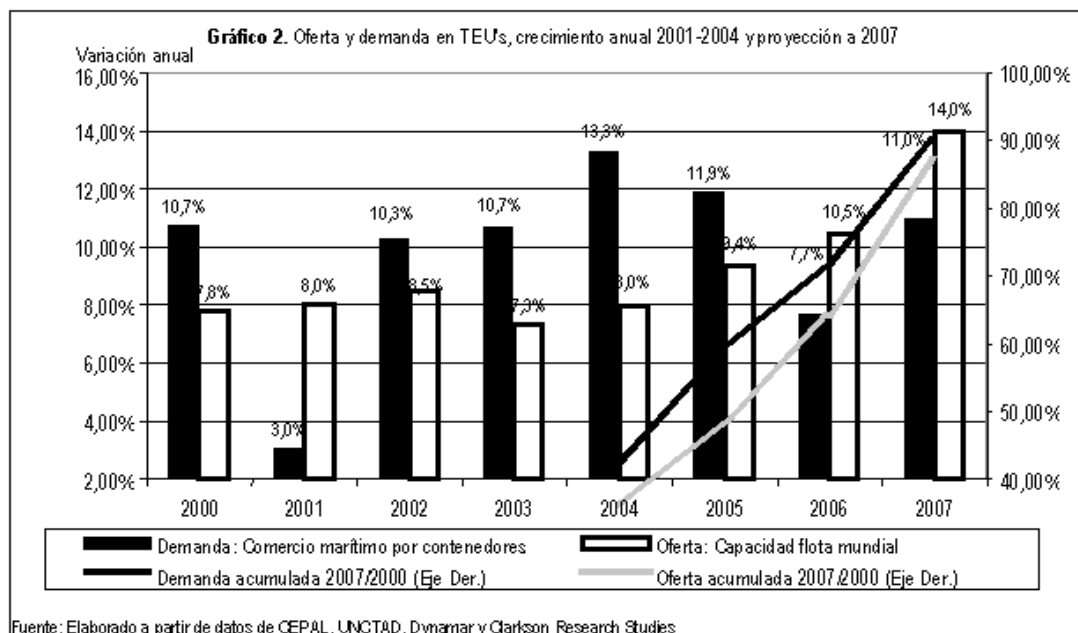
In the *Recursos naturales e infraestructura series*, No. 82 (ECLAC), it is explained that when prices (freight rates) are low, there is less construction in the maritime sector and increasing numbers of ships are scrapped. As demand increases and more transport services are needed, the supply (in terms of the number of ships and/or availability of effective transport capacity) cannot be adjusted rapidly, freight rates rise and construction begins again, which subsequently produces excess supply and a lowering of freight rates.

In figure 1, stage 1 corresponds to the economic depression that occurred at the beginning of the current decade, following a two-year period of trade expansion. As of that point, maritime freight rates began to decline. In fact, as shown below in figure 3, which shows the prices for the main international maritime trade routes, freight rates fell for seven consecutive quarters, and for another three quarters they remained at depressed levels (until the first quarter of 2003).

In figure 2, the cycle is shown in terms of changes in supply and demand. As mentioned earlier, after the depressed level of activity in 2001 and the first part of 2002, which led to a decline in freight rates that lasted until the beginning of 2003, the subsequent development of demand for maritime container transport was dependent on exogenous demand conditions (the main impulse coming from the economic take-off in the Far East and the recovery of the United States economy and some of the emerging economies).

Figure 2

### Supply and demand in TEUs, annual growth 2000-2004 and projection to 2007



Annual variation

Demand: maritime container trade Supply: world fleet capacity

Accumulated variation in demand Accumulated variation in supply in relation in relation to 2000 (Right axis) to 2000 (Right

axis)

**Source** : Prepared by the author on the basis of data from the Economic Commission for Latin America and the Caribbean (ECLAC) , the United Nations Conference on Trade and Development (UNCTAD), and Dynamar and Clarkson Research Studies.

A situation somewhat similar to that of the container carrier fleet also occurred with the dry bulk carrier fleet, as the construction of new ships declined and maritime transport prices fell. Subsequently, demand increased when supply was scarce and the prices increased accordingly.

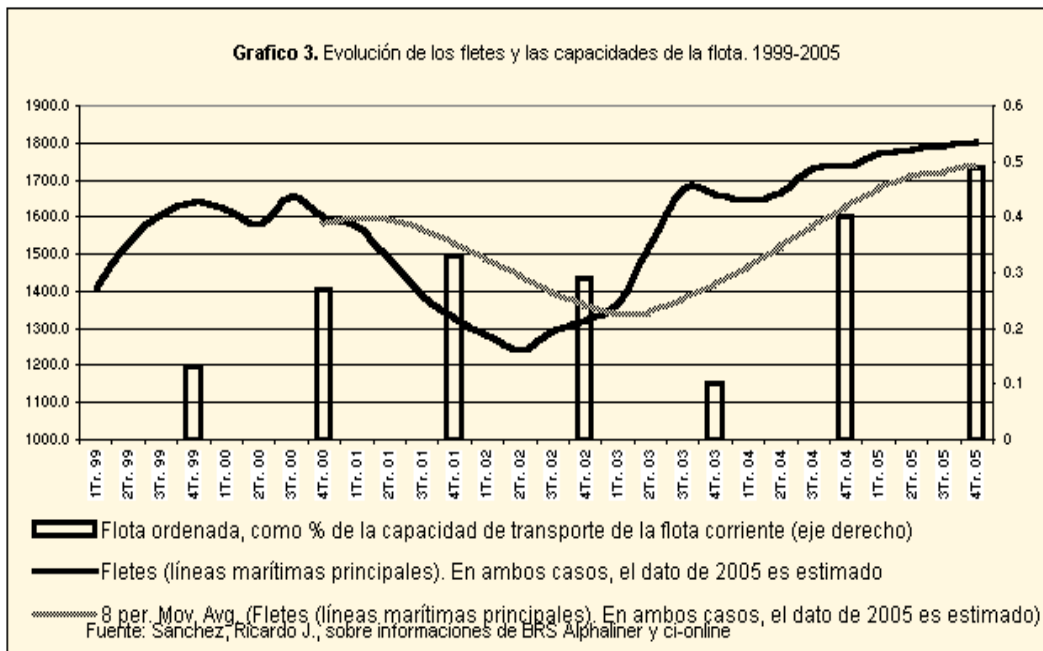
Stage 2 of figure 1 is illustrated in figure 2 for the container segment: the lower freight rates led to a reduction in ship orders and so the transport supply grew more slowly than demand, and in fact diminished in 2002 and 2003. Subsequently, demand continued to grow, year after year, more rapidly than the supply. If we take the year 2000 as a starting point, with the values observed until 2004, including those expected until 2007, the accumulated demand is higher than the accumulated supply, and they will converge approximately at the end of 2007.

The imbalance between supply and demand had repercussions on transport prices (stage 3 of the cycle, figure 1), on the composition of the world merchant fleet (stages 4 and 5), and on the maritime transport services that were actually provided (see figure 7). This explains, as can be seen from figure 3, that while prices were falling, the fleet capacity ordered represented, at the end of 2001, 34% of total world transport capacity, a figure which was reduced to 29% at the end of 2002 and to 10% at the end of 2003.

The changes in freight rates (prices for ocean transport services) are shown in figure 3 below. Transport prices remained low for almost 10 consecutive quarters.

Figure 3

**Freight rates and fleet capacities, 1999-2005**



Fleet capacity ordered, as % of current fleet transport capacity (right axis)

Freight rates (main ocean lines). The figure for 2005 is an estimate.

8 per. Mov. Avg. (Freight rates (main ocean lines). The figure for 2005 is an estimate.)

**Source** : Prepared by the author on the basis of data provided by BRS Alphaliner and Containerisation International—Online ( ci-online).

Nevertheless, as the demand for maritime transport is dependent on production and trade, the boost given to the world economy by the activity in the United States and the Far East brought an explosive demand for transport as of the beginning of the second term of 2003, leading to the sequence of stages 3, 4, and 5 in the maritime cycle. This caused an unprecedented explosion in maritime freight rates, and an increase of 550 points in the index as shown in figure 3. It may also be seen how stage 7 of figure 1 is reached, as at the end of 2004 the transport capacity ordered was 40% of the current total capacity, and the predicted value for the end of 2005 was almost 50%.

In the situation described above, with growth rates for demand much higher than those for supply of transport capacity (see figure 2), changes were made in the capacity assigned to each of the international maritime trade routes. Figure 7 shows that the transport capacity of the main routes has grown, although for some of the Latin American routes it has stagnated or even declined, especially prior to 2004. This phase coincides with the period of the most rapid increase in maritime freight rates.

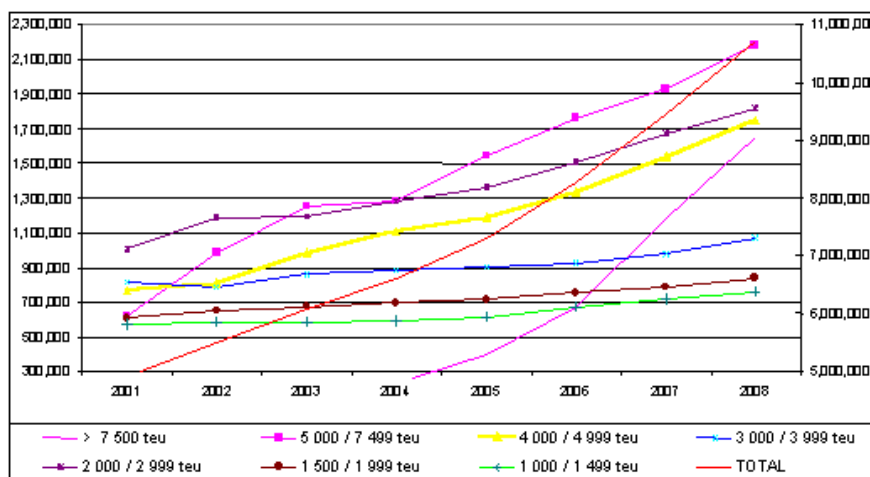
### FREIGHT RATE INCREASES

In fact, figure 5 shows the behaviour of freight rates for the three main international maritime trade routes, as demand rose, with the increase in exports from South America. In all cases, the main price rises occurred early in 2003, although for transpacific and transatlantic routes the increases are more moderate as of the first half of 2004.

The highest increases were on the Asia-Europe route and on the three South American coasts. The same process also affected the rest of Latin America, the steepest hikes occurring on the west coast of South America.

Figure 4

World fleet of container carriers, transport capacity 2001-2008

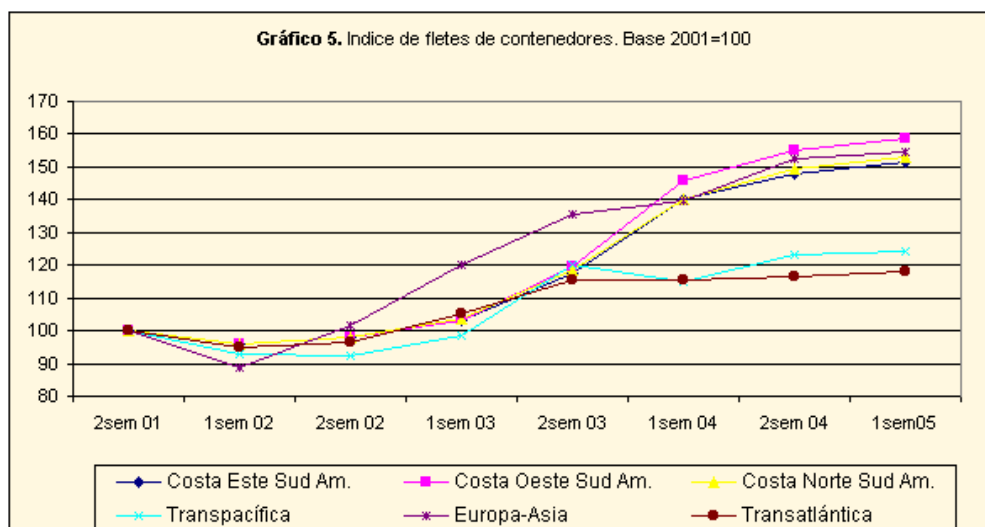


Source : Prepared by the author on the basis of data provided by BRS Alphaliner.

The maritime cycle for the bulk segment behaved in a similar way to that of containers. Figure 6 shows the index of freight rates constructed by Baltic Exchange and which reflects prices for container transport. For more information on this index and a description of the components, see *Recursos naturales e infraestructuras*, No. 82.

Figure 5

Container freight rate index (base: 2001=100)



2 nd half 01 1 st half 02 2 nd half 02 1 st half 03 2 nd half 03 1 st half 04 2 nd half 04 1 st half 05

S.American - East Coast S. American - West Coast South American - North Coast South American

Transpacific Europe-Asia Transatlantic

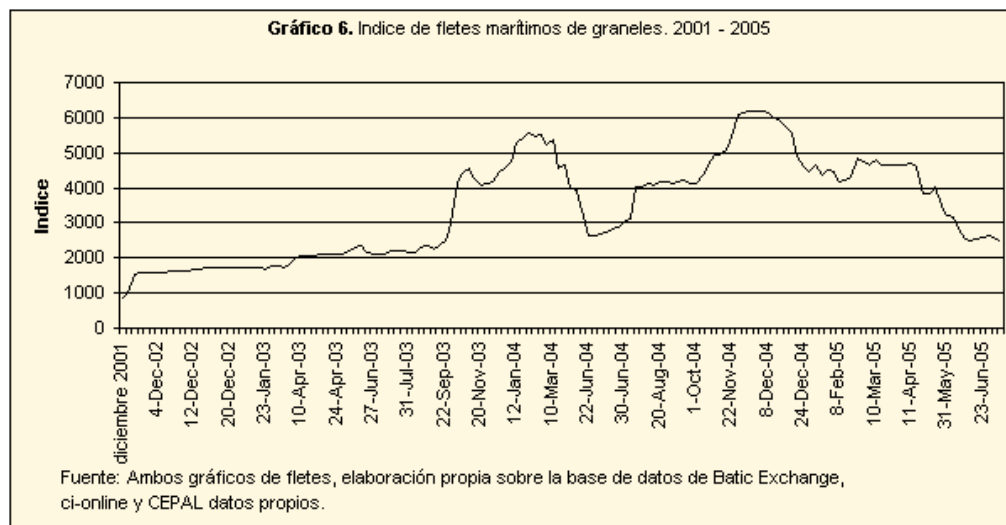
**Source** : Prepared by the author on the basis of data provided by Batic Exchange, Containerisation International–Online ( ci-online) and the Economic Commission for Latin America and the Caribbean (ECLAC).

The price index for bulk transport is particularly important for Latin America, as the region's main exports by volume are agricultural, agroindustrial and mineral commodities.

As was seen previously, the distorted sequence of the supply and demand ratio also affected this market segment, which is reflected in the prices. Note that at the beginning of 2003 the index shoots upward until the beginning of 2004. For cyclical reasons relating to the products, there is then a sharp decline until the middle of the same year, when it begins to rise again, exceeding 6,000 points between the end of 2004 and the beginning of 2005, until it starts falling again abruptly towards the middle of 2005.

Figure 6

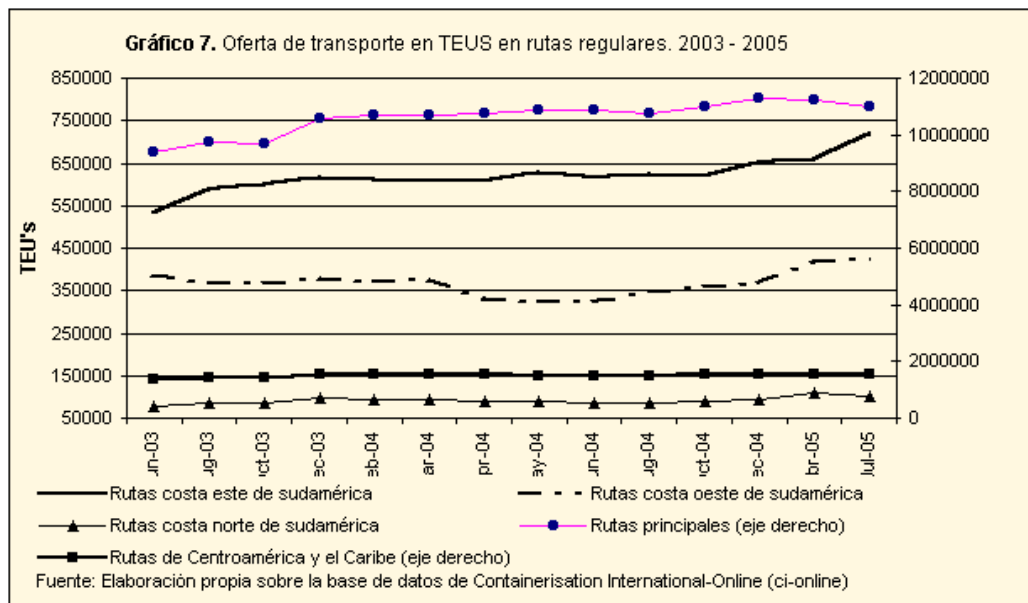
### Bulk ocean freight rate index, 2001-2005 Index



**Source** : Prepared by the author on the basis of data provided by Batic Exchange, Containerisation International–Online ( ci-online) and the Economic Commission for Latin America and the Caribbean (ECLAC).

Figure 7

### Transport offer in TEUs on the main routes, 2003-2005



S. American East Coast routes S. American West Coast routes

S. American North Coast routes Main routes (right axis)

Central American and Caribbean routes (right axis)

Source : Prepared by the author on the basis of data provided by Containerisation International—Online ( ci-online).

In short, the maritime cycle described in figure 1 has clearly been functioning since the beginning of the current decade. It has been seen how stages 1 to 7 have occurred thus far. Although it is not the purpose of this article to make future predictions, the cycle will surely continue to operate and all the stages of the cycle will be completed.

The critical costs of shipping activity were one factor which contributed to strengthening the effect of the cycle in relation to prices. In fact, the main prices of inputs also show pro-cyclical behaviour. As presented and explained in *Recursos naturales e infraestructuras*, No. 82, this trend continued over the last few months in relation to the following components: prices of ships, both bulk and container carriers, for lease or purchase; insurance; fuel; safety measures; and so on. For example:

- Between December 2003 and May 2005, the prices for new container carriers increased by from 46% to 72%, depending on the capacity. The prices for the same ships, used, increased over the same period by between 70% and 109%. For leases, similar values are obtained.
- Prices for bulk carriers, between December 2003 and May 2005, increased by between 39% and 68%, depending on capacity. Leases increased by between 66% and 126% over the same period.
- Prices for IFO-380 marine fuel increased in South America by around 60% from January 2004 to the end of June 2005.
- All of the safety rules came into force, bringing additional costs.

### NEW REQUIREMENTS FOR THE PORTS

As was seen in figure 4, one of the implications of the maritime cycle described here is significant growth in the orders for new ships. In this context, the world fleet expected for the end of 2008 is over 60% larger than the fleet at the end of 2004.

The average size of the ships that make up the fleet, however, is also growing rapidly. In the same figure 4, note that the curve for larger ships is steeper than that of smaller ones.

In addition, according to studies by the main authorities in international maritime affairs, Latin America is one of the regions expecting the highest growth in port activity, with accumulated growth of 63% between 2004 and 2009. South America will probably be the subregion with the highest growth in the world over the same period, with an accumulated 83.7%.

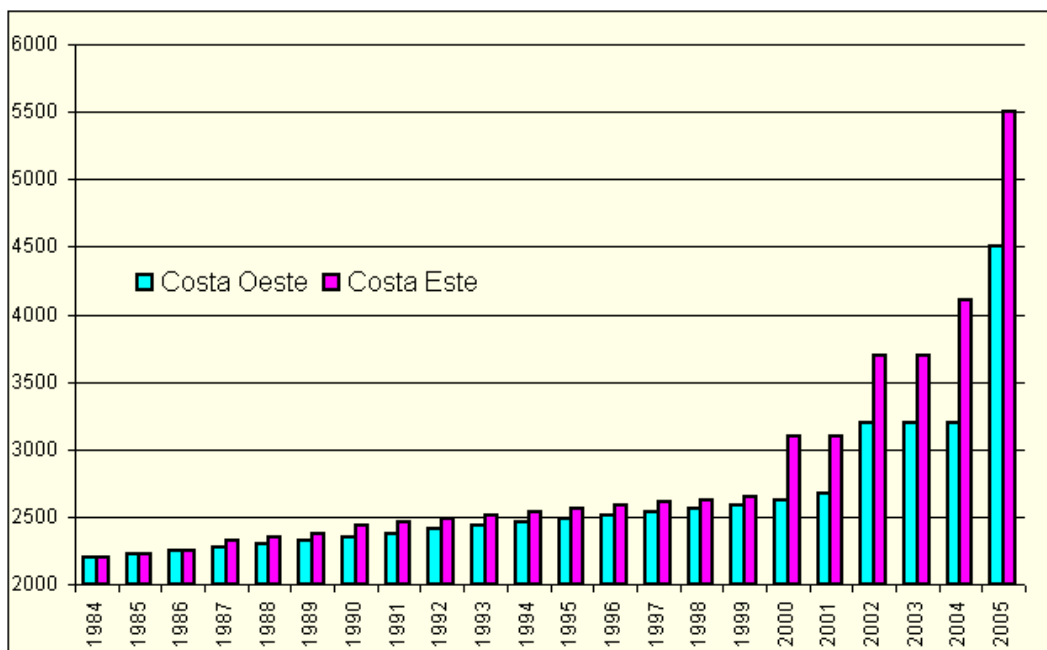
A rapid review of the situation therefore indicates that such increases in the fleet, in the average ship size and in levels of activity pose a very important challenge for the ports of Latin America.

Figure 8 shows the size of the ships arriving in the region at each coast. Over the 21-year period considered there was minimal growth observed until 2000, and then sizes increase as of 2002 at a very high rate. This shows why ships with a

capacity of 5.500 TEUS have already appeared in South America, although it was unthinkable a few years ago. A review of the draughts of 51 ports in 17 countries in the region shows that there are 36 which continue to follow the previous model (typical for Panamax ships), while the other 15 exceed 39 feet, although many of the ports, in view of their natural conditions, are not in the main hinterlands.

Figure 8

**Maximum size of ships on each coast**



**West Coast East Coast**

**Source :** Prepared by the author, with the kind cooperation of Octavio Doerr and Víctor H. Tarántola

Such increases in ship capacity make additional demands on port infrastructure and superstructure, requiring new operating conditions to maintain or increase the efficiency of port operation, and make a positive contribution to the productivity and competitiveness of the economy.

The new situation of maritime transport, and also its concentration, the new requirements for the port sector and the expansion of trade and port movements, and other factors, imply that attention should be given to the immediate future of the ports.

It is important to keep up with the changes and to anticipate the challenges mentioned. The authorities and the rest of the port community must become leaders of change, and new ways must be found for establishing partnerships between the public and private sectors, workers and clients. It is essential to extend the mechanisms to ensure clear, streamlined and sound regulation, to promote a strong negotiating atmosphere that is not incompatible with efficiency and equity. New forms of financing investments should also be considered.

Latin America needs to improve its transport infrastructure and services, and ports play a central role in this process. This is why the challenges set out for the ports that are considered in this document, as well as the improvement of transport operating systems and the solving of problems of physical access and infrastructural bottlenecks must be dealt with and agreed on in the context of the current regional integration initiatives.

For more details see : Ricardo J. Sánchez, “ Puertos y transporte marítimo en América Latina y el Caribe: un análisis de su desempeño reciente”, *R ecurtos naturales e infraestructura series* , No. 82 ( LC/L.2227-P/E) , Santiago, Chile, Economic Commission for Latin America and the Caribbean (ECLAC), December 2004 , page 29 onward . The economic concept of a cobweb is applied: price and product display cyclical behaviour: in a particular period, the price is above the equilibrium level, which means that the quantity offered in the following period will be above that level. As the quantity rises above equilibrium level, the price will fall below equilibrium level, and so it continues.

The fleet of cellular containerhips will have a total transport capacity of about 10.8 million TEUs at the beginning of 2008. Of these ships, 41% will have a capacity greater than 4.800 TEUs.

Data from Drewry Co.