



FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN

# New maritime transport scenarios

## Part II: fluctuations in shipping and new scenarios

### Background

The purpose of this document is to analyse changes in the supply of, and demand for, the international shipping of containers, dry bulk and liquid cargoes (dirty and clean).

### I. Trends in waterborne transport supply

#### A. Container ship supply

Tables 1 to 3 present the number of container ships in operation as of 31 December 2013 and 1 October 2014, as well as projections to 2017, thus allowing for the analysis of supply patterns.

**Table 1**  
**WORLD: OPERATIONAL FLEET, BY VESSEL SIZE RANGE, 31 DECEMBER 2013**  
*(Twenty-foot equivalent units, number of vessels and percentages)*

Vessel size range (TEUs)	Number of vessels	Percentage of total vessels	Capacity (TEUs)	Percentage of total capacity
100-1 999	2 249	45.00	2 410 662	13.95
2 000-2 999	665	13.31	1 691 547	9.79
3 000-3 999	259	5.18	890 673	5.15
4 000-5 099	765	15.31	3 459 576	20.02
5 100-7 499	489	9.78	3 010 924	17.43
7 500-9 999	375	7.50	3 268 085	18.91
10 000-13 300	130	2.60	1 592 697	9.22
13 300-19 000	66	1.32	954 826	5.53
<b>Total</b>	<b>4 998</b>		<b>17 278 990</b>	

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Alphaliner, *Cellular Fleet Forecast*, various issues. Updated October 2014.

This *FAL Bulletin* details the situation of the shipping industry and forms the second and final part of a larger document that begins with Issue No. 338, which puts the current status of maritime trade in context. Both documents fit into a series of bulletins about ports and maritime trade in the region and are, therefore, closely linked to Issue No. 337, which sets out the need for a new port governance in the region to address the new circumstances that have arisen in the maritime market.

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The views expressed in this document are those of the authors and do not necessarily reflect the views of the Organization.

-  I. Trends in waterborne transport supply
-  II. Supply and demand in maritime transport services
-  III. Maritime freight rates
-  IV. The business cycle and its effects on shipping
-  V. Conclusions
-  Bibliography



UNITED NATIONS

ECLAC

**Table 2**  
**WORLD: OPERATIONAL FLEET BY VESSEL SIZE RANGE, 1 OCTOBER 2014**  
(Twenty-foot equivalent units, number of vessels and percentages)

Vessel size range (TEUs)	Number of vessels	Percentage of total vessels	Capacity (TEUs)	Percentage of total capacity
100-1 999	2 220	44.25	1 386 385	15.67
2 000-2 999	653	13.02	1 242 014	14.04
3 000-3 999	254	5.06	516 621	5.84
4 000-5 099	742	14.79	1 768 978	20.00
5 100-7 499	497	9.91	1 452 495	16.42
7 500-9 999	398	7.93	1 376 713	15.57
10 000-13 300	163	3.25	871 426	9.85
13 300-19 000	90	1.79	230 180	2.60
Total	5 017		8 844 812	

Source: Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Alphaliner, *Cellular Fleet Forecast*, various issues. Updated October 2014.

**Table 3**  
**WORLD: PROJECTED OPERATIONAL FLEET, BY VESSEL SIZE RANGE, 2014-2017**  
(Twenty-foot equivalent units and number of vessels)

Vessel size range (TEUs)	31/12/2014		31/12/2015		31/12/2016		31/12/2017	
	Vessels	Capacity (TEUs)	Vessels	Capacity (TEUs)	Vessels	Capacity (TEUs)	Vessels	Capacity (TEUs)
100-1 999	2 240	2 423 340	2 280	2 478 800	2 312	2 525 431	2 314	2 527 471
2 000-2 999	658	1 671 591	688	1 742 042	721	1 821 488	728	1 838 478
3 000-3 999	268	925 246	280	970 680	281	973 780	281	973 780
4 000-5 099	749	3 398 058	754	3 421 421	758	3 441 378	758	3 441 378
5 100-7 499	504	3 105 240	516	3 180 270	516	3 180 270	516	3 180 270
7 500-9 999	414	3 621 845	479	4 208 626	509	4 484 132	511	4 502 932
10 000-13 300	163	1 957 768	173	2 059 288	194	2 285 496	194	2 285 496
13 300-19 000	96	1 423 146	149	2 284 817	173	2 652 015	181	2 764 015
Total	5 092	18 526 234	5 319	20 345 944	5 464	21 363 990	5 483	21 513 820

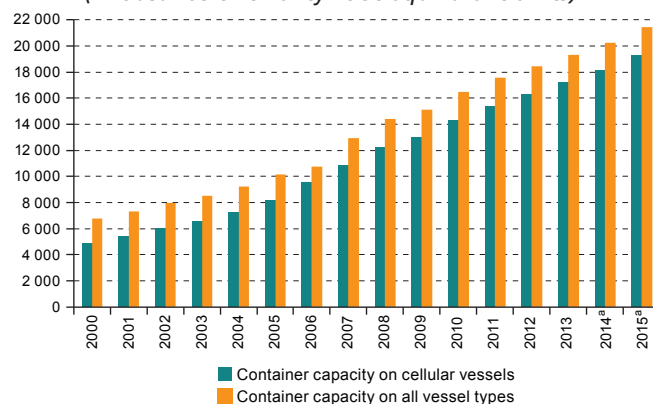
Source: Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Alphaliner, *Cellular Fleet Forecast*, various issues. Updated October 2014.

These tables illustrate the growth in container ship capacity and number of vessels, as well as the emergence of a trend between 2013 and 2014 whereby the number of available small ships diminished while the supply of larger ships increased.

The capacity of the cellular fleet rose by 10% annually between 2001 and 2013, while its year-on-year variation remained at 8% on average during the same period. See figure 1.

Shipbuilding orders suggest that the container ship fleet will continue to grow. Despite this steady expansion, total shipbuilding orders in 2014 (until October) were at their lowest level since 2000, according to Alphaliner.

**Figure 1**  
**WORLD: CAPACITY OF THE CONTAINER SHIP FLEET, 2000-2013**  
(Thousands of twenty-foot equivalent units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Clarkson Research Services, various issues.

ª Projected figures.

In 2011, the number of ships projected to be available in 2013 was 6% higher than was actually the case at the end of that year. Furthermore, recent projections for 2014 and 2015 (Alphaliner, 2014)<sup>1</sup> are 2.6% lower than those made in 2011, reflecting the slow growth of the world economy since the recovery of 2010.

In numerical terms, Panamax-sized vessels make up the bulk of the existing fleet but are falling from favour, with a clear trend towards the emergence and growth of a fleet of vessels capable of transporting between 13,300 and 19,000 TEUs. Furthermore, the delivery of 100 neo-Panamax vessels, with 8,500-10,000 TEU capacity, is planned for the next two years to replace the mid-sized fleet of 4,000-7,000 TEU vessels. Shipping companies have also displayed renewed interest in smaller vessels, with ships in the 1,000-1,999 TEU size range enjoying a gradual upturn in demand. However, the smallest category, of 100-499 TEUs saw a downward trend, shrinking by 6.1% between 2013 and 2014, while the number of ships in the 500-999 TEU bracket dropped by 2.3%. Conversely, the category consisting of the largest vessels is expected to increase by 55% between 2014 and 2015.<sup>2</sup>

The total fleet of available container ships is expected to maintain sustained growth in the coming years. However, if this projection were to include the annual scrapping of ships, the available fleet in 2017 would be smaller than in 2016, and the growth in the preceding years would not exceed the highs of 2.3% forecast for 2014 and 2015.

The capacity of the container ship fleet is projected to be 19.1% greater in 2017 than in 2013. This growth is expected to be driven by the largest ships (between 13,300 and 19,000 TEUs) and mid-sized ships (between 5,100 and 7,499 TEUs), offsetting a gradual shrinking process in the total capacity of smaller vessel categories.<sup>3</sup>

The steady increase in overall capacity is likely to lose momentum in 2016 and 2017, and will actually decline once the scrappings are taken into account.<sup>4</sup>

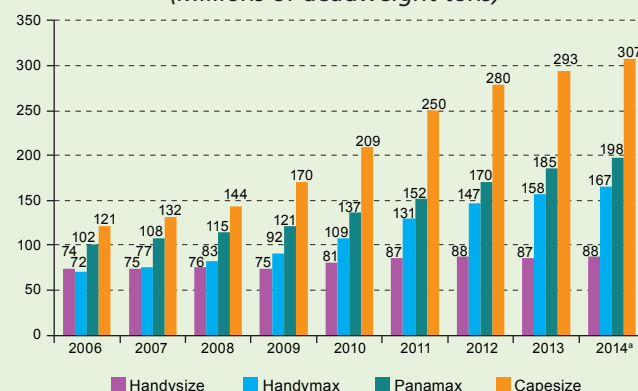
The projected rise in capacity in the large vessel category reflects the efforts of the maritime market to achieve economies of scale through the more efficient use of these vessels, thus rendering maritime transport more cost-effective.

## B. Supply of dry bulk ships

Ships built to transport dry bulk cargo are mirroring the trend in container shipping, with a constant increase in the

supply of the largest ships driving up total available capacity since 2006. This corroborates the above hypothesis, which describes shipping companies' urgent need for economies of scale that make the movements of these ships profitable, lowering transport costs in comparison with the current costs of movements using smaller vessels.

**Figure 2**  
**DRY BULK TRANSPORT CAPACITY, 2006-2014<sup>a</sup>**  
 (Millions of deadweight tons)



**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Clarkson Research Services, *Dry Bulk Trade Outlook*, various issues.

<sup>a</sup> Data for 2014 are projections.

## Supply and demand in maritime transport services

Having examined two segments of interest related to the supply of maritime transport, this section will look at its interaction with demand, thus completing the overview of the current situation of shipping as it seeks a balance between these market forces. The section will also examine the cyclical behaviour of maritime transport.

### A. Supply and demand in regular container shipping

Demand for container transport depends on the requirements laid out by shipping companies, with their regularly scheduled, fixed itineraries.

Table 4 tracks changes in supply and demand for the most important maritime transport routes over the last eight years.

Although demand for transport has been on an upward trajectory, it is rising much more slowly than in the years preceding the 2008 crisis, albeit with a slight upturn in 2012 and 2013 and a gradual increase projected over the coming years. Supply follows a similar trend, completing a general picture in which the two curves come so close together that they almost converge.

Lastly, supply jumped by 34% between 2008 and 2013, while demand grew by only 17.9%, indicating a significant excess of supply.

<sup>1</sup> Analysis based on information submitted to Alphaliner, *Cellular Fleet Forecast*, September 2014.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

**Table 4**  
**GLOBAL SUPPLY AND DEMAND IN CONTAINERS, 2005-2015**  
(Twenty-foot equivalent units and percentages)

Trade/Transport demand (Millions of TEUs)	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average annual variation, 2008-2013 <sup>a</sup> (Percentages)	2014 <sup>b</sup>	2015 <sup>b</sup>
Trans-Pacific route	18.4	20.2	21.1	20.5	18.4	20.3	20.8	20.8	21.7	1.14	22.4	24.0
Far East-Europe	12.2	14.5	16.9	16.8	17.3	19.6	20.4	20.1	21	4.56	22.5	23.5
Trans-Atlantic route	5.9	6.1	6.5	6.3	5.3	5.7	6	6.1	6.2	-0.32	6.6	6.8
North America/Europe/ Far East and Middle East/ Indian subcontinent	9.7	10.5	12.8	14.3	14.6	16.9	18.8	19.5	20.1	7.05	21.4	22.9
North-South routes	17.6	18.7	20.6	22	20.3	23.4	27.2	27.5	28.8	5.53	30.4	32.6
Other routes	41.9	47.5	53.1	56.7	48.7	52.2	56	59.6	63.3	2.23	67.4	72.6
Total	106	118	131	137	125	138	149	154	161	3.35	171	182.0
Year-on-year percentage variation	10.6	11.2	11.4	4.2	-9.0	13.1	7.2	3.0	4.9		6.0	6.7
Capacity/Transport supply (Thousands of TEUs)	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average annual variation, 2008-2013 <sup>a</sup> (Percentages)	2014 <sup>b</sup>	2015 <sup>b</sup>
Container ships	8 126	9 458	10 781	12 203	12 948	14 201	15 319	16 233	17 114	7.00	18 102	19 254.0
Multipurpose	1 036	1 086	1 162	1 231	1 248	1 349	1 417	1 464	1 506	4.12	1 522	1 542.0
RO-RO	380	381	377	378	365	327	309	290	265	-6.86	257	273.0
Other	622	644	632	605	567	580	533	462	438	-6.26	411	390.0
Total	10 163	11 569	12 952	14 416	15 129	16 456	17 578	18 449	19 322	6.03	20 293	21 458.0
Percentage variation	8.0	13.6	11.8	10.8	4.8	8.3	6.8	5.0	4.7		5.0	5.9
Variation on the previous year (Percentages)	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014 <sup>b</sup>	2015 <sup>b</sup>
Volume of trade (demand for transport)	10.6	11.2	11.4	4.2	-9.0	13.1	7.2	3.0	4.9		6.0	0.1
Fleet capacity (supply of transport)	8.0	13.6	11.8	10.8	4.8	8.3	6.8	5.0	4.7		5.0	0.1
Balance	2.6	-2.4	-0.4	-6.6	-13.8	4.8	0.4	-2.0	0.2		1.0	0.8

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Unit, on the basis of data from Clarkson Research Services, several issues, updated October 2014.

<sup>a</sup> Average Annual Variation of the Compound Annual Growth Rate (CAGR).

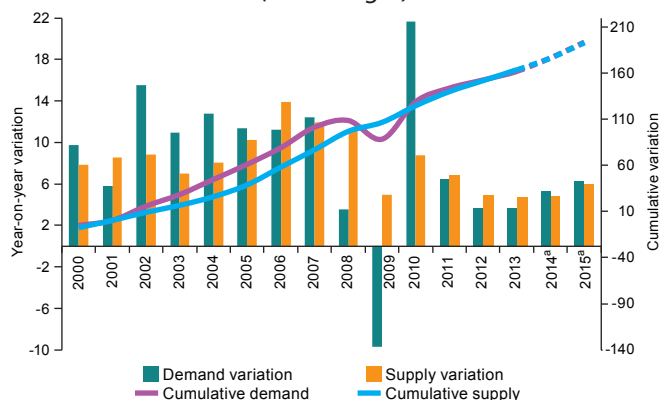
<sup>b</sup> Data for 2014 and 2015 are projections.

Figure 3 shows year-on-year percentage changes in container shipping supply and demand between 2000 and 2013, with projections for 2014 and 2015. It also shows cumulative changes in both variables since 2000.

This figure supports the evidence displayed in table 4: demand outpaced supply during the years of high growth.

By 2008, the two curves had converged, and throughout the crisis supply exceeded cumulative demand. Although the curves converged again in 2010, cumulative supply has again exceeded cumulative demand in recent years, albeit only slightly. Now the trend is for the curves to diverge owing to an oversupply of vessels, which increases competition and lowers prices.

**Figure 3**  
**CONTAINERS: SUPPLY AND DEMAND, 2000-2015**  
(Percentages)



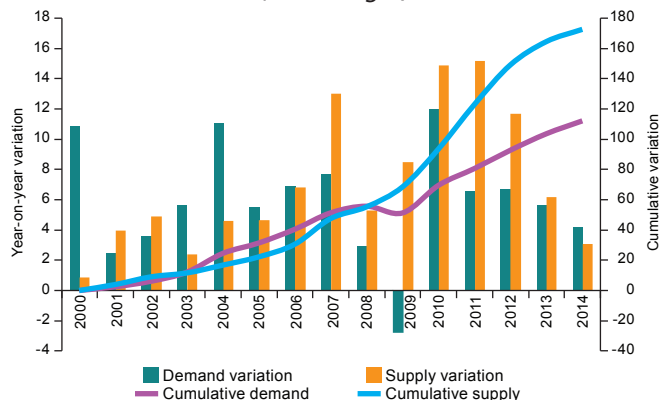
**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Unit, on the basis of data from Clarkson Research Services, several issues.

<sup>a</sup> Data for 2014 and 2015 are projections. Supply and demand variations are cumulative since 2000. In year one, the values for cumulative supply and cumulative demand are equal. However, this does not mean that there is equilibrium that year, but simply that that year was chosen as the baseline for the index in order to show changes in the gap between the two variables. Under no circumstances does the gap represent absolute values.

### B. Non-regular transport of dry bulk cargo

Dry bulk cargo accounts for 55% of shipping movements. Again, in this segment the supply of Capesize vessels is expanding at the expense of smaller vessels.<sup>5</sup> It is interesting to examine the convergence between supply and demand in dry bulk cargo shipping. Figure 4 presents year-on-year variations in supply and demand, as well as the cumulative growth in supply and demand with 2000 as the base year.

**Figure 4**  
**SUPPLY AND DEMAND IN DRY BULK TRANSPORT, 2000-2014<sup>a</sup>**  
(Percentages)



**Source:** *The Drewry Monthly* and Clarkson Research Services, *Dry Bulk Trade Outlook*.

<sup>a</sup> Cumulative supply and demand are calculated based on 2000 figures.

<sup>b</sup> Data for 2014 are projections.

<sup>5</sup> See definition in the next footnote (number 6).

This figure shows that the cumulative supply of dry bulk transport comfortably outpaced cumulative demand in the past few years. At the same time, variations in supply were much more pronounced than variations in demand, resulting in a much steeper gradient in its curve.

As in the container transport sector, demand outstripped supply in the early 2000s, maintaining a balance that was upset by the 2008 economic crisis. Despite the recovery of subsequent years, the curves tended to diverge as supply was incapable of meeting demand.

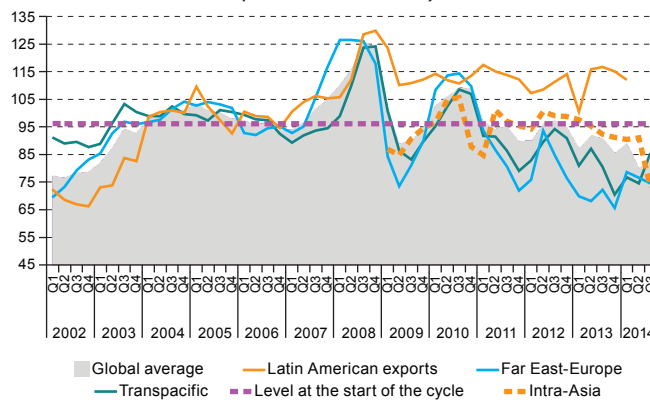
## III. Maritime freight rates

This section analyses fluctuations in freight prices for the three main types of cargo: containers, dry bulks and liquid bulks.

### A. Regular container shipping

Figure 5 shows changes in container freight rates from 2002 to 2014. Prices followed an upward trend in the pre-crisis period (particularly from 2003 onward), which went into reverse after the crisis.

**Figure 5**  
**CONTAINER SHIPPING FREIGHT RATES FOR MAIN ROUTES AND EXPORTS FROM LATIN AMERICA AND THE CARIBBEAN, 2002-2014<sup>a</sup>**  
(Index: 2004=100)



**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Containerisation International, Container Trades Statistics, China Containerized Freight Index (CCFI), Shanghai Containerized Freight Index (SCFI) and Alphaliner, *Weekly Newsletter*, several issues.

<sup>a</sup> Figures until 2009 are based on data from Containerisation International, with other sources also used from 2009 onward. Data for Trans-Pacific and Far East-Europe routes, from the fourth quarter of 2013, refer only to outward shipments. Latin American exports includes only data for the East Coast, directly collected from the shipping companies by ECLAC.

In general, maritime container freights rose steadily between 2003 and 2008. However, the crisis brought a sharp downturn from which prices have struggled to recover. Freight rates have not seen stable growth since 2010 and have been highly volatile in recent years. In the third quarter of 2014, average prices were at a level



similar to that of mid-2003, amid much worse conditions than in the years of expansion. The level of the global freight index at the beginning of the cycle's upturn is also included in figure 5, which reveals the positive and negative periods, with a long negative period during most of 2009 and a return to this trend from mid-2011.

Rising prices in international seaborne transport were driven by significant growth in trade, amply accommodated by a fleet with the spare capacity to absorb this growth. However, the encouraging signs that marked the end of the crisis and the recovery of trade may have created overly optimistic expectations, ultimately causing an overshoot. Such outcomes are apparent from 2011 onward, when maritime transport prices fell again, before recovering in 2013 to sit at levels similar to 2002.

### B. Non-regular dry bulk transport

Table 5 presents information on changes in the bulk ship fleet between 2005 and 2014, the cargo volumes transported and variations in the fleet.

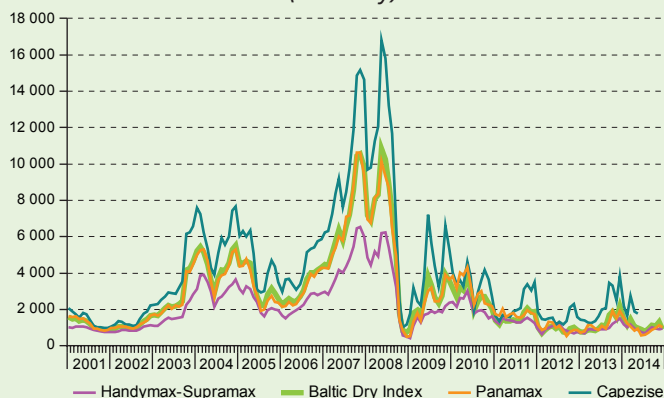
**Table 5**  
**GLOBAL BULK FLEET, 2005-2014**  
(mDWT and percentages of supply)

Supply (end of period)		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Fleet	mDWT	331.5	354.1	400.1	421.2	457	525	604.8	675.6	717.3	739.2
Inactive fleet	mDWT	1.5	1.9	2.2	4.5	4.8	3.8	5.8	5.3	1.6	1.4
Combis	mDWT	6.3	5.9	7.1	6.2	6.6	8.1	5	4.3	4.8	4.8
Portfolio	mDWT	64.5	80.1	216.5	294.9	278	278.7	212.7	140.5	142.2	161.6
Portfolio	Percentage of supply	18.6	21.8	55.2	70.4	60.8	53.1	35.2	20.8	19.8	21.9
<b>Cargo volumes (total)</b>											
Voyage	mDWT	92 495	87 623	73 876	108 892	171 482	142 545	182 069	179 613	199 660	130 001
Trip	mDWT	271 935	315 557	281 118	279 479	303 945	295 343	278 488	204 034	233 841	113 177
Period	mDWT	53 881	113 778	146 782	88 757	73 067	86 474	58 975	38 257	49 422	24 416
<b>Transactions (total)</b>											
Shipments					24 375	44 553	73 197	98 284	98 222	51 945	18 768
New orders	tDWT	8 349	35 156	134 614	78 964	26 076	74 278	48 513	20 044	62 047	30 039
Second-hand sale price	tDWT	23 232	37 429	50 266	24 050	38 366	35 307	25 504	33 683	37 801	21 004
Scrapping	tDWT	723	1 690	374	4 046	9 460	5 374	22 297	29 199	18 949	7 036

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from *The Drewry Monthly*, several issues.  
<sup>a</sup> Data for 2014 are up to July.

Dry bulks are mainly transported under lease contracts known as “voyage charter” and “time charter”. Four major indices produced by The Baltic Exchange have been used to track freight rates in this market. Figure 6 shows changes in these indices from 2001 to September 2014.

**Figure 6**  
**DRY BULK FREIGHT RATE INDEX, 2001-2014**  
(Monthly)



**Source:** Economic Commission for Latin America and the Caribbean (ECLAC) Natural Resources and Infrastructure Division, on the basis of data from The Baltic Exchange via Bloomberg, an international financial data portal ([www.bloomberg.com](http://www.bloomberg.com)).

This analysis uses the most internationally recognized indices: the Baltic Dry Index (BDI), which is constructed with data from tramp fleet freight rate contracts for bulk cargo ships classified as Capesize, Panamax and Handysize.<sup>6</sup> The process consists in calculating an index for each of the three types of ships, using a weighted average of freight rates for each major route; these indices are then combined to determine the BDI. As a result, the BDI is regarded as a satisfactory representation of international bulk cargo transport prices, especially in relation to the maritime trade of non-oil bulk cargo from Latin America.

The index of Capesize freight rates is calculated with up-to-date information from ten different global routes, using a typical ship size of 172,000 deadweight tons (DWT). Three of the routes used in the construction of this index originate in Latin America; they make up 30% of the total. The Panamax index is currently based on seven international routes for 74,000 DWT vessels. Handysize ships average about 40,000 DWT; 37.5% of their routes include Latin America.

Figure 6 shows that the most significant upswings were in 2003, late 2004, pre-crisis 2007, mid-2009 and late 2013.

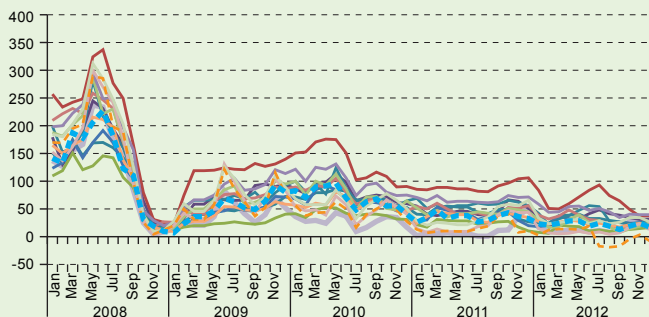
<sup>6</sup> Capesize: these ships, which are used mainly for the transport of minerals, cannot pass through the Panama Canal or the Suez Canal due to their size, and must instead transit via Cape Horn, the Cape of Good Hope, or other routes. Some Capesize ships are used for bulk cargo, but to a lesser extent. Panamax: currently, these are the largest ships that can pass through the Panama Canal. The ships are approximately 275 meters long; their displacement exceeds 70,000 tons. Handysize: these are the group's smallest ships, with displacements of 25,000 to 50,000 tons; they are normally used for the transport of grains and grain products.

Downturns occurred in mid-2004, mid-2005, 2008, 2009 and mid-2013; 2007 was the year with the sharpest fluctuation in these indices. Average rates began to decline in 2011 and 2012, yet the standard deviation remained fairly high, indicating the strong fluctuations experienced during those years. After peaking in 2008, freight rates entered a period of gradual decline, until the last three years, when the indices returned to a pattern similar to the early 2000s.<sup>7</sup>

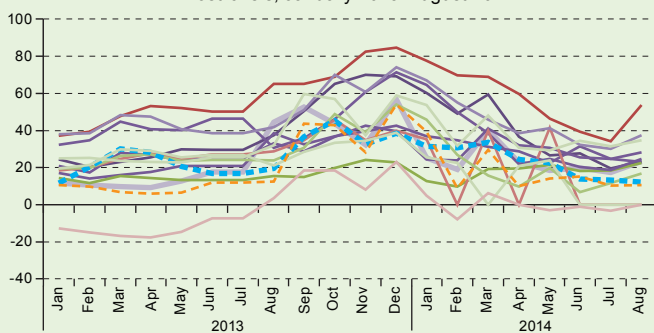
Figures 7 and 8 show freight rates for the major global routes, with each illustrating a distinct phase of world trade; during and post-macroeconomic crisis (2008 to 2012) and the past two years (2013-2014). These figures show that prices fell sharply and fluctuated more intensely after the 2008 collapse, indicating instability.

**Figure 7**  
**INDEX OF REPRESENTATIVE DAILY BULK CHARTER PRICES**  
(Index: January 2007=100)

A. During and post-crisis, January 2008–November 2012



B. Post-crisis, January 2013–August 2014



Legend for Figure 7:

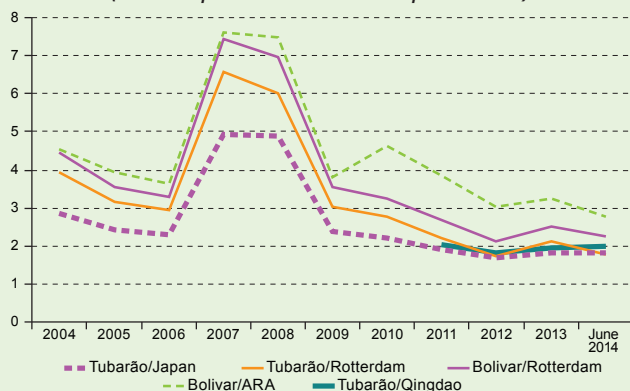
- Europe/Transatlantic rv Handysize
- Far East/Australia rv Handysize
- US Gulf/Europe Handymax
- India/Far East Panamax
- Far East/US North Pacific rv Panamax
- Europe/Transatlantic rv Capesize
- Far East/Europe Capesize
- Europe/USG/SingJap Panamax
- SingJap/Australia rv Capesize
- Far East/Australia rv Handysize
- US Gulf/Europe Handymax
- Europe/East Coast
- South America rv Panamax
- Europe/Far East Capesize
- Europe/-/Far East Handymax
- Far East/E. Australia rv Panamax
- Far East/-/Europe Handymax

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Drewry, *Shipping Insight*, various issues.

<sup>7</sup> Analysis carried out on the basis of data from The Baltic Exchange via Bloomberg, an international financial data portal ([www.bloomberg.com](http://www.bloomberg.com)), 2014.

Figure 8 shows freight rates for the transport of mineral bulk cargoes (iron and coal) in Latin America from 2004 to June 2014.

**Figure 8**  
**COSTS OF MINERAL BULKS TRANSPORT FROM LATIN AMERICA (IRON AND COAL), 2004-2014**  
*(Dollars per thousand tons per metre)*



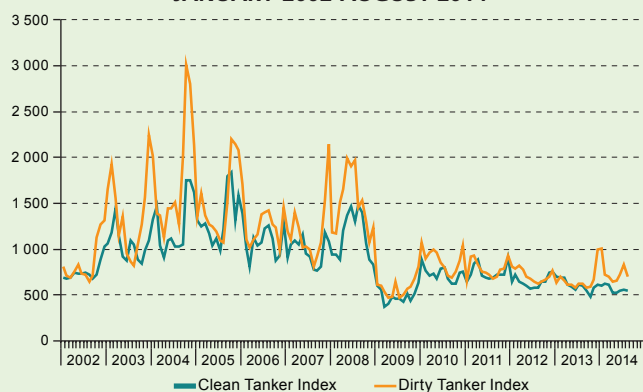
Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of data from Clarkson Research Services, several issues.

This figure demonstrates that the trend seen in the previous figures is replicated in Latin America. In other words, prices fell after the 2008 crisis and remain below pre-crisis levels.

### C. Non-regular transport of liquid cargo

The liquid bulk market is an important sector in maritime transport as it includes the shipping of oil and petroleum products. As with dry bulks, liquid bulk transport operates mainly under lease contracts. Price fluctuations in liquid bulk freight rates are analysed below in figure 9, using the Dirty Tanker Index (oil shipments) and the Clean Tanker Index (shipments of petroleum products) produced by The Baltic Exchange.

**Figure 9**  
**INDEX OF LIQUID BULK FREIGHT RATES, JANUARY 2002-AUGUST 2014**



Source: Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from The Baltic Exchange via Bloomberg, an international financial data portal ([www.bloomberg.com](http://www.bloomberg.com)).

Freight rate patterns in this sector differ from those examined elsewhere in this study, in that much higher volatility prevents the identification of upswings and downturns. However, it may be noted that volatility was much greater before the 2008 crisis. Prices tumbled in 2009 before recovering slightly, and have remained quite stable since then, albeit with a clear downward trend.

## IV. The business cycle and its effects on shipping

The data examined above lead us to analyse the convergence between the business cycle and the maritime cycle. Fluctuations in countries' economies cause variations in their foreign trade, which in turn affect the demand for maritime transport. The maritime cycle is a major factor in the supply of vessels, and is thus where supply and demand interact, determining the functioning of maritime markets.

### A. The business cycle

The business cycle is defined by fluctuations that affect the different components of the economy, such as price levels, aggregate output, sectoral output, interest rates, monetary aggregates, business profit margins, and the interactions between these factors. Expansions, slowdowns, contractions and recoveries manifest themselves cyclically, but not necessarily periodically (Sánchez and Bart Boon, 2006).<sup>8</sup>

### B. The maritime cycle

The maritime cycle is understood as the interaction between supply and demand in the maritime transport sector. Supply will lag behind when faced with extremely dynamic exogenous demand, since, in order for supply to adapt to changes in demand the available shipping fleets must expand or contract. When there is low cumulative demand, shipbuilding slows and the number of vessels under detention or marked for scrap rises; when cumulative demand increases—which can be caused by many factors, related mainly to changes in the world economy—supply is unable to quickly match it, freight rates go up and shipbuilding resumes, ultimately causing an oversupply which then pushes rates back down.

Fluctuations in the shipping cycle are closely linked to those of the business cycle, where decreases or shrinkage in aggregate demand will mean lower demand for transport services, forcing shipping companies to build fewer ships and scrap some of those that are not in use. Conversely, when aggregate demand increases during a cycle of economic expansion, it cannot be met immediately

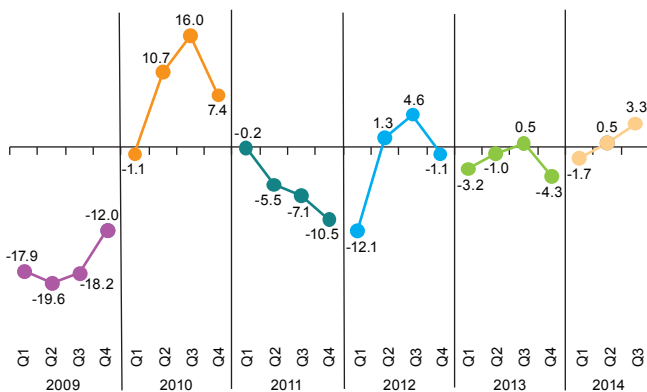
<sup>8</sup> For more information, see Sánchez, Ricardo J. and Bart Boon (2006) and Roberta Scarsi (2007).



because the shipping companies are already managing existing demand. This phenomenon is reflected in the rise of freight prices, which in turn restarts the shipbuilding process in order to meet demand.<sup>9</sup>

The side effects arising from processes linked to crises and peaks in the business cycle are tightly connected to the decisions made by economic agents, particularly in response to crisis periods. Stakeholders in the maritime sector are affected by economic recessions, since as aggregate demand weakens, so too does demand for goods transport, resulting in consequences for companies' profits. Along with this, the decisions made in the optimistic phase of the cycle can cause imbalances in companies' results. Figure 10 shows the quarterly financial results of maritime transport companies between 2009 and 2013.<sup>10</sup>

**Figure 10**  
**AVERAGE OPERATING MARGINS OF MAIN CONTAINER CARRIERS,<sup>a</sup> BY QUARTER, 2009-2014**  
(Percentages)



Source: Alphaliner, *Weekly Newsletter*, Issue 47, 2014.

<sup>a</sup> Data refer to the average of the following companies: APL, CMA CGM, CCNI, CSAV, CSCCL, EMC, Hanjin, HMM, Hapag-Lloyd, K Line, Maersk, MOL, NYK, RCL, Wan Hai, Yang Ming, Zim. Income is not weighted.

This figure shows that after the economic recovery in 2010, shipping companies' operating margins declined throughout 2011 before rising again, with small fluctuations from one quarter to the next, though overall results have remained poor. Companies' fluctuating financial performance correlates exactly to changes in global trade in goods and the wider economy, and specifically to the overcapacity described in detail in *FAL Bulletin* No. 338. This situation is clearly illustrated by low freight rates (figures 5 and 6) and the rise in operating costs, especially of fuel.

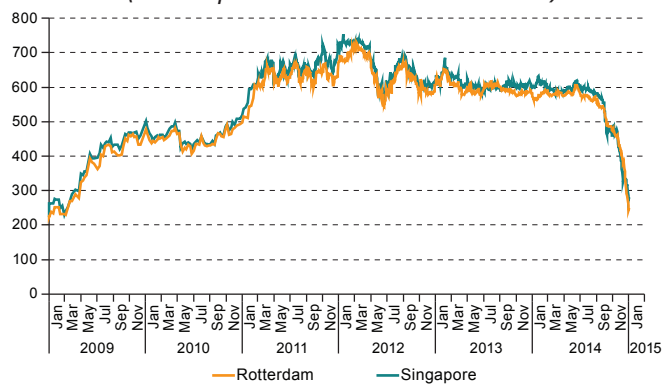
Slower annual growth in trade compared with pre-crisis rates, combined with crude oil prices that are constantly increasing (notwithstanding the recent slide), are causing

<sup>9</sup> For more information, see Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, *Maritime Bulletin* 51, 2012.

<sup>10</sup> Ibid.

further concern for shipping companies and encouraging the introduction of economies of scale to optimize vessel usage and reduce fuel expenditure. Figure 11 shows the variation in bunker fuel prices, reflecting the steep rise in the price of crude oil that started in 2010 and peaked in 2012. Despite dropping somewhat after the first quarter of 2012, crude oil prices remained high until the steep fall of 2014.

**Figure 11**  
**VARIATIONS IN BUNKER FUEL PRICES, 2009-2014**  
(Dollars per ton of 380 centistoke fuel)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis data from The Bunker World via Bloomberg, an international economic portal ([www.bloomberg.com](http://www.bloomberg.com)).

One consequence of poor financial results—only Wan Hai, OOCL, K Line, Hanjin, CMA CGM and Maersk Line returned positive operating margins (Alphaliner, 2014)—along with high fuel prices and weak demand for freight caused by the sluggish economy, is that shipping companies have sought new strategies to tackle the crisis, thereby reducing operating costs. These strategies fall into three categories, as outlined in diagram 1.

**Diagram 1**  
**STRATEGIES TO REDUCE OPERATING COSTS OF SHIPPING**

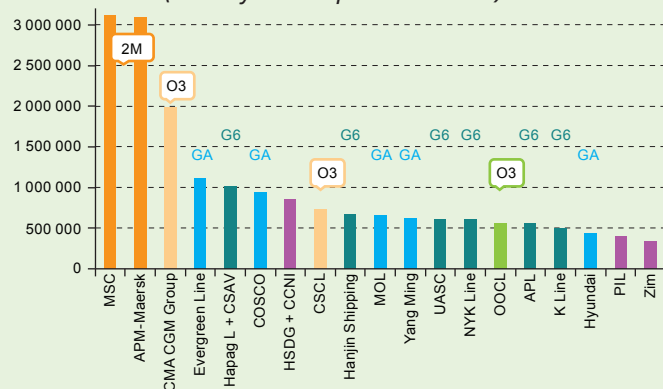
Changes in effective supply	Commercial strategies	Restructuring of financial commitment
<ul style="list-style-type: none"> <li>• Suspension of new orders</li> <li>• Reduction in capacity offered by routes</li> <li>• Scrapping</li> <li>• Ships laid up</li> <li>• Slow steaming</li> <li>• Super slow steaming</li> </ul>	<ul style="list-style-type: none"> <li>• Operational and commercial reengineering of routes</li> <li>• Reconfiguration of routes and schedules</li> <li>• Business strategies for capturing more profitable market niches</li> </ul>	<ul style="list-style-type: none"> <li>• Cancellation of shipbuilding contracts, where suitable under termination clauses</li> <li>• Rescheduling of agreed delivery dates</li> <li>• Refinancing of liabilities</li> <li>• Lease contracts signed in recent years</li> </ul>

Source: Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, *Maritime Bulletin* 51, 2012.

Lastly, as a final strategy, shipping companies have forged alliances to provide better coverage of the market. According to *Dynamar (Dynamar Weekly)*, larger

operational alliances will be agreed between carriers in the coming years than exist at present, as shipping companies seek to avoid the deep losses that they have incurred since 2009. Figure 12 shows the current distribution of shipping companies in major alliances.

**Figure 12**  
**SHIPPING COMPANY PARTNERSHIPS IN 2014, BY PROJECTED FLEET CAPACITY IN JUNE 2016**  
(Twenty-foot equivalent units)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), Natural Resources and Infrastructure Division, on the basis of data from Alphaliner, 2014.

From this figure it may be observed that Maersk Line and MSC together hold the largest market share, while the other 17 leading companies are aligned in three alliances, so that there are not really 19 companies, but four conglomerates negotiating with ports, importers and exporters to transport cargoes. One outcome of this concentrated market is that ports are under pressure to alter prices, increase capacity and improve efficiency to be able to receive calls, which are increasingly concentrated in large-capacity ports. As a result, the balance of power between ports and shipping companies is shifting, since the companies can exert influence on ports to provide the facilities that they require.

## V. Conclusions

10

The analysis of maritime trade throughout this document yielded the finding that the maritime cycle is in a period of overcapacity and, therefore, oversupply of ships as a direct consequence of falling demand and the sluggish growth in foreign trade (see *FAL Bulletin* No. 338). These patterns have weighed principally on the financial results of shipping companies, which have decided to enter into agreements and partnerships.

The observations included in this study aim to provide a broad overview of the new context and trends in maritime trade, in which shipping industries are becoming stronger and more powerful with regard to docking negotiations

in the region's ports. This *FAL Bulletin* therefore complements Issue No. 337, which discusses the need to rethink governance of the region's ports in response to the new scenario.

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