International developments influencing ports & shipping

Globalisation ⟷ Containerisation

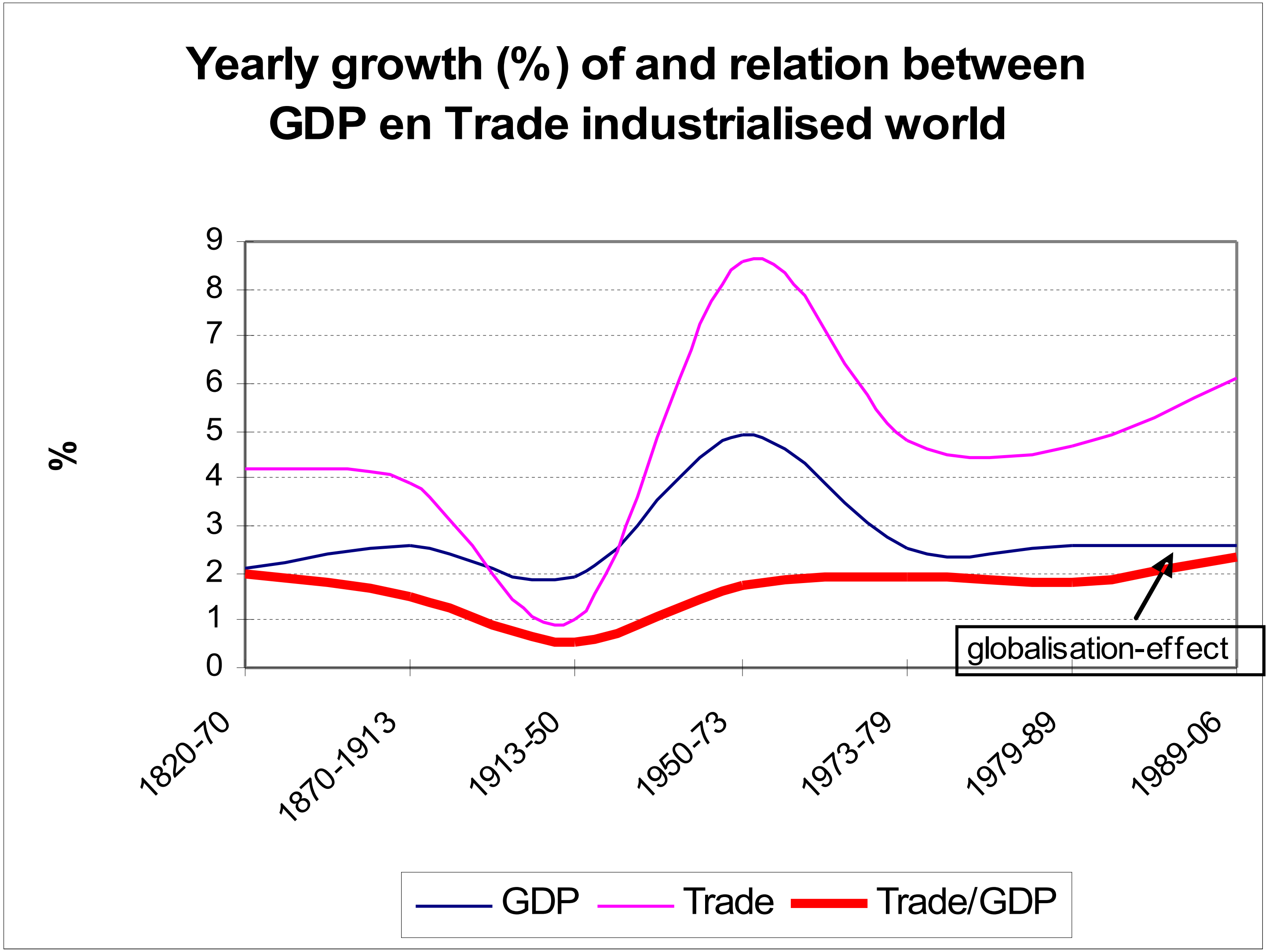
Typical Ocean Freight Costs

Typical Ocean Freight Costs (Asia-US or Asia-Europe)

	Unit	Typical Shelf Price	Shipping Costs
TV Set	1 unit	$700.00	$10.00
DVD/CD Player	1 unit	$200.00	$1.50
Vacuum Cleaner	1 unit	$150.00	$1.00
Scotch Whisky	Bottle	$50.00	$0.15
Coffee	1 kg	$15.00	$0.15
Biscuits	Tin	$3.00	$0.05
Beer	Can	$1.00	$0.01

Source: www.marisec.org

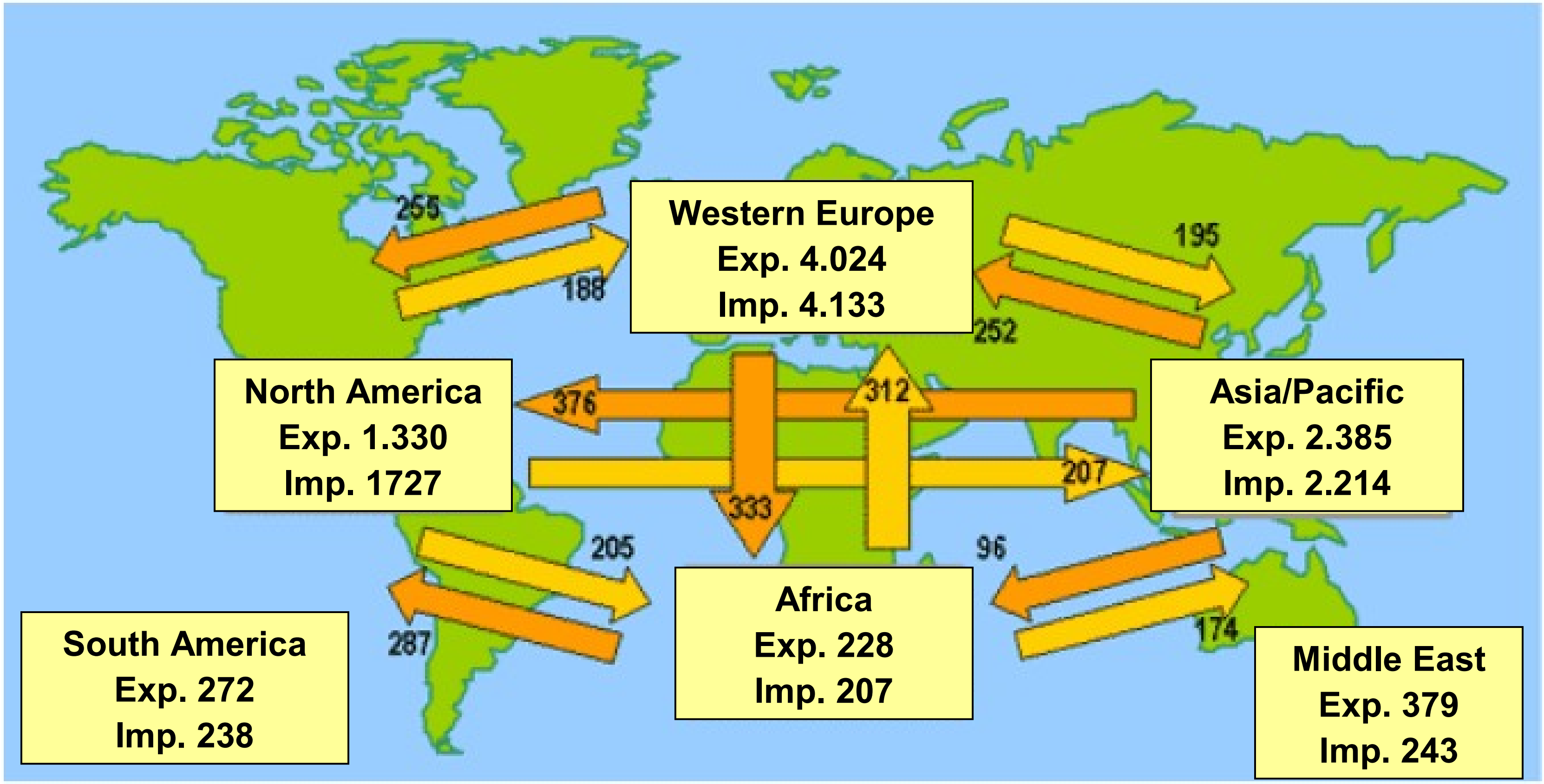
The globalisation-effect on international trade



1. WORLD TRADE

Factors Influencing the Container business

Figure 1: World trade flows, 2004 (billion $US)2004



Source: based on data World Trade Organisation

Containerised trade by trade area

Trade area	2002 (mio TEU)	2004 (mio TEU)	Growth %
Far East	116.5	154.2	15.5 %
North America	28.9	34.7	9.1 %
North Europe	26.4	32.3	12.3 %
Mediterranean	15.3	18.3	8.4 %
Middle East	8.8	14.0	24.7 %
Latin America	7.1	8.7	10.6 %
Indian Subcontinent	3.7	4.6	9.5 %
Australasia	2.5	3.0	5.6 %
Africa	2.1	2.7	13.3 %
Total	**211.3**	**272.4**	**13.8 %**
Source: Dyna liners, May 2005			

Forecast container traffic 1998 - 2010

	1998		2010		
	Mln. TEU	**%**	**Mln. TEU**	**%**	**Growth**
Africa	3,7	2,0 %	9,5	2,3 %	
Australia	4,1	2,2 %	7,2	1,8 %	
South America	5,2	2,8 %	13,9	3,4 %	
Central America / Caribbean	9,1	4,8 %	20,9	5,1 %	
North America	26,8	14,3 %	51,0	12,4 %	+ 90 %
South-east asia	27,6	14,7 %	82,0	20,0 %	+ 197 %
China	31,6	16,8 %	68,2	16,6 %	+ 116 %
North-east Asia	19,9	10,6 %	39,9	9,7 %	+ 100 %
Indian Subcontinent	4,7	2,5 %	10,9	2,7 %	
Middle East	7,2	3,8 %	17,9	4,4 %	+ 248 %
Mediterranean	18,7	10,0 %	37,4	9,1 %	
North and Western Europe	29,4	15,6 %	51,4	12,5 %	+ 74,8 %
TOTAL	**187,9**		**410,2**		

Transpacific v.s. Far East-Europe

Transpacific	2004	2003	2002
WB Far East/US	10.317.000	8.902.000	8.111.000
EB US/Far East	3.890.000	3.680.000	3.309.000
Grand Total	14.207.000	12.582.000	11.420.000
Growth	13%	10%	16%
Imbalance TEU	6.427.000	5.221.000	4.802.000
Imbalance %	62%	59%	59%
Europe/Med-Far East	2004	2003	2002
EB Europe/Med-Far East*	2.850.000	2.450.000	2.314.000
WB Far East-Med/Europe	5.204.000	4.470.000	3.693.000
Total	8.054.000	6.920.000	6.008.000
Growth	16%	15%	8%
Imbalance TEU	2.354.000	2.020.000	1.378.000
Imbalance %	45%	45%	37%

Evacuating the imbalance

Transpacific:

6,426,000 TEU empties a year =

15x 8,200 TEU vessels a week!

Europe/Mediterranean-Far East:

2,354,000 TEU empties a year =

6x 7,500 TEU vessels a week!

2. SHIPS

Worldranking of container shipping lines 01/06/2006

Shipping Line	TEU Capacity	Number of ships
Maersk	2.041.073	572
MSC	1.057.328	318
CMA/GGM	766.125	217
COSCO	536.579	151
Evergreen	369.149	125
CSCL	460.871	114
APL	420.829	132
Hanjin	394.974	91
NYK	419.030	111
MOL	386.331	103
HLCL	329.663	74
OOCL	121.868	89
ZIM	272.751	80

PostPanamax development

Year	Actual PP ships	TEU	Dwt	Draft	Length	Beam	Wide	Knots
1996	Regina Maersk "K"	7.048	82.135	14,0	318	42,8	17	24,5
1997	Sovereign Maersk "S"	7.960	104.696	14,5	347	42,8	17	24,0
1999	P&O Nedlloyd Tasman	5.468	67.515	14,0	278	43,4	17	25,5
2001	MSC Flaminia	6.732	84.920	14,5	304	40,0	16	25,5
2001	P&O Nedlloyd Houtman	6.802	88.700	13,5	299	42,8	17	25,0
2001	Hamburg Express	7.506	100.006	14,5	320	42,8	17	25,0
2002	Long Beach Bridge	5.570	69.000	14,0	278	40,0	16	25,0
2003	OOCL Shenzhen	8.063	99.518	14,5	323	42,8	17	25,2
2003	Axel Maersk "A" (SIII)	8.500	109.000	15,0	352	42,8	17	24,0
2004	CSCL Asia	8.468	101.612	14,5	334	42,8	17	25,0
2004	P&O Nedlloyd Mondriaan	8.478	98.100	14,5	334	43,0	17	24,5
2006	Emma Maersk	14.280	158.200	16,0	397	56,4	22	25,0

New ULCC: dimensions

LOA 397 M
Draught 16 m
14.500 TEU (22 wide)
700 Reeferconnections
Speed 25,34 Kn (46,9 km/h)
In operation since 2006

Scale increase in vessel size

TEU	TEU capacity 1/01/1991	%	TEU capacity 1/01/2006	Shares in carrying capacity
> 5,000 TEU	0	0.0 %	2,355,033	30.0 %
4,000-5,000	140,032	7.5 %	1,399,978	17.1 %
3,000-4,000	325,906	17.6 %	892,463	11.4 %
2,000-3,000	538,766	29.0 %	1,391,216	17.7 %
1,500-2,000	238,495	12.8 %	719,631	9.2 %
1,000-1,500	329,578	17.7 %	596,047	7.6 %
500-1000	191,733	10.3 %	438,249	5.6 %
100-500	92,417	5.0 %	114,976	1.5 %
TOTAL	1,856,927	100.0 %	7,847,593	100,0 %

Source : BRS Alpalines Fleet Report

Orderbook per size category (February 2007)

	Existing fleet		Order Book		1st Jan 2011	
	ships	teu	ships	teu	ships	teu
> 7 500 teu	147	1.249.907	162	1.513.019	*309*	*2.762.926*
5 000 / 7 499 teu	357	2.070.395	185	1.098.336	*542*	*3.168.731*
4 000 / 4 999 teu	346	1.528.448	188	821.599	*534*	*2.350.047*
3 000 / 3 999 teu	282	956.165	87	297.990	*369*	*1.254.155*
2 000 / 2 999 teu	648	1.630.887	159	417.610	*807*	*2.048.497*
1 500 / 1 999 teu	466	786.591	159	277.512	*625*	*1.064.103*
1 000 / 1 499 teu	594	703.034	187	228.740	*781*	*931.774*
500 / 999 teu	722	525.664	196	158.030	*918*	*683.694*
100 / 499 teu	387	122.944	0	0	*387*	*122.944*
TOTAL	3.949	9.574.035	1.323	4.812.836	5.272	14.386.871

Operators 17-wide Ships
(over 6,000 TEU)

Operators	TEU	Ships	Eur/FE	Med/FE	Pacif
China Shipping	8.500	5	5	0	0
CMA CGM	8.200	3	0	0	3
Coscon	7.500	5	0	0	5
Evergreen (Hatsu)	6.300	5	0	0	5
Hapag-Lloyd (GA)	7.500	4	4	0	0
Maersk Sealand	7,000/8,200	42	19	12	11
MSC	8.200	1	0	0	1
OOCL (GA)	8.100	6	3	0	3
P&O Nedlloyd (GA)	6,700/8,500	9	7	0	2
Total ships		**80**	**38**	**12**	**30**

Carriers 18-wide Ships on order

Carriers	Ø TEU	Ships	Total TEU	First	Last
China Shipping	9.200	8	74.000	06 08	07 08
Coscon	10.000	4	40.000	08 01	08 07
"K" Line	8.120	4	32.000	06 07	07 02
MSC	9.200	13	120.000	05 04	07 12
NYK	9.100	8	73.000	07 01	08 02
All	**9.200**	**37**	**339.000**	**05 04**	**08 07**

East-West Carriers without 7,500+ TEU 17-wide Ships on order

Operator	Rank
APL	6
CSAV/Norasia	14
PIL	21
Wan Hai	22

3. PORTS

Ports can’t keep pace

“ ... ships are developing at a faster pace than the port infrastructure that handles them ...”

APEC Antwerp PORT CONSULTANCY NV

Container throughput in world container ports (mln TEU) top 20

Port	1985	1990	2000	2004	2005,00
Hong Kong	2.29	5.10	18.10	21.98	22.42
Singarpore	1.70	5.09	17.04	20.60	22.28
Shangai	0.20	0.46	5.61	14.56	18.08
Shenzhen	0.00	0.03	3.99	13.65	16.19
Busan	1.16	2.35	7.54	11.43	11.84
Koahsiung	1.90	3.49	7.43	9.70	9.47
Rotterdam	2.65	3.67	6.27	8.28	9.30
Hamburg	1.16	1.97	4.25	7.00	8.08
Dubai Ports	n.a.	0.92	3.06	6.43	7.61
Los Angeles	1.10	2.12	4.88	7.32	7.48
Long Beach	1.14	1.60	4.60	5.78	6.70
Antwerpen	1.24	1.55	4.08	6.06	6.48
Qingdao	0.00	0.14	2.12	5.14	6.30
Port Klang	n.a.	0.47	3.21	5.24	5.54
Ningbo	n.a.	n.a.	n.a.	n.a.	5.20
Tianjin	n.a.	n.a.	n.a.	n.a.	4,80
New York	2.37	1.87	3.05	4.48	4.79
Guangahan	n.a.	n.a.	n.a.	n.a.	4.68
Tanjung Pelepas	n.a.	0.64	2.77	3.25	4.17
Laem Chabang	n.a.	n.a.	n.a.	n.a.	3.77

PostPanamax ports of call

North Europe

Aarhus	Rotterdam
Antwerp	Southampton
Bremerhaven	Thamesport
Dunkirk	Zeebrugge
Felixstowe	
Gothenburg	
Hamburg	
Le Havre	

Mediterranean

Algeciras	Marseilles
Barcelona	Naples
Genoa	Valencia
Gioia Tauro	Damietta
Istanbul	Piraeus
La Spezia	Port Said
Malaga	Taranto
Malta	

PostPanamax spare capacity

North West Europe

Aarhus	Rotterdam
Amsterdam	Tilbury
Antwerp	Vigo
Bilbao	
Bristol	
Hamburg	
Lisbon	

Mediterranean

Algeciras	Izmir
Ashdod	Leghorn
Cagliari	Mersin
Constanta	Ravenna
Genoa	Salerno
Haifa	Thessaloniki
Istanbul	Trieste

Throughput versus Capacity

• 2004 North European postPanamax ports:	
• Throughput:	36.8 million TEU
• Capacity:	42.6 million TEU
• Margin:	16%
• Required margin:	minimum 20% (30%)

Throughput versus Capacity

Capacity (efficiency) improvements existing postPanamax terminals

- manpower
- Equipment

New postPanamax terminal capacity (projects)

Improving terminal capacity by implementing new technology

- Straddle carrier-operation type:
  - 1995: 10 à 13.000 teu/ha
  - 2000: 15.000 à 17.500 teu/ha

- RMG/RTG-operation:
  - 17.500 - 35.000 teu/ha

- Other:
  - AGV-terminal with RMG/RTG-operation
  - Reach stacker

Planned investments in container capacity in Western Europe

Antwerp:	Finalisation Deurganckdok	(2008)	3-4 million TEU
	Building new capacity	(2013)	6-8 million TEU
Hamburg:	Renovation Burchardkai	(2015)	2,6 million TEU
	Tollerwert		1 million TEU
	Container Terminal Hamburg	(2010)	2 million TEU
	Steinwerder Terminal		3 million TEU
	Moorburg	(na 2015)	???
Rotterdam:	Euromax	(2008)	2,3 million TEU
	Tweede Maasvlakte	(2013)	16 million TEU

Performance requirements for a ULCV terminal functioning as a global or regional hub

Performance requirements

•Sustainable ship output	• 5000 moves per 24h
•Sustainable STS gantry crane output	• 40 moves per gross hour
•Ratio working time tot time at berth	• 90%
•Avg # gantries operating	• 7 to 8 per main line vessel
•Annual throughput per berth (moves)	• 1.000.000 moves per annum
•Annual throughput per berth (TEU)	• 1.500.000 TEU per annum
•Average berth occupancy	• 50-55%

4. Mergers & Acquisitions

Threat or opportunity

Mergers and acquisitions in liner shipping

	1/1980 carriers	Slot cap.	1/2000 carriers	Slot cap.	9/2005 carriers	Slot cap.
1	Sea land	70,000	Maers-Sealand	620,324	Maersk-PONL	1,982,203
2	Hapag-Lloyd	41,000	Evergreen	317,292	MSC	1,002,902
3	Maersk	25,600	Hanjin/DSR Senator	244,636	CMA-CGM	657,105
4	OCL	31,400	P&O Nedlloyd	280,794	Evergreen	605,994
5	NYK Line	24,000	MSC	224,620	Hapag Lloyd/CP	497,178
6	Evergreen	23,600	NOL/APL	207,992	China Shipping	462,989
7	Zim	21,100	NYK Line	166,206	COSCO	446,075
8	US Line	20,900	CP ships/Americana	141,419	NYK Line	374,639
9	OOCL	22,800	COSCO	198,841	Hanjin/DSR Senator	353,804
10	APL	20,000	Zim	136,075	APL/NOL	314,475
11	APL	20,000	Zim	136,075	OOCL	313,283
12	Mitsui OSK Lines	19,800	Mitsui OSK Lines	132,618	CSAV	312,625

Source : Containerisation Internationaal

Concentration in Container Liner Shipping

	January 1980		September 1995		January 2000		October 2004	
	Carrier	slot cap.	Carrier	slot cap.	Carrier	slot cap.	Carrier	slot cap.
1	Sea-Land	70.000	Sea-Land	196.708	Maersk-Sealand	620.324	AP Moller Group	900.509
2	Hapag-Lloyd	41.000	Maersk	186.040	Evergreen	317.292	MSC	618.025
3	OCL	31.400	Evergreen	181.982	P&O Nedlloyd	280.794	Evergreen Group	437.618
4	Maersk	25.600	COSCO	169.795	Hanjin/DSR Senator	244.636	P&O Nedlloyd	426.996
5	NYK Line	24.000	NYK Line	137.018	MSC	224.620	CMA CGM	373.191
6	Evergreen	23.600	Nedlloyd	119.599	NOL/APL	207.992	APL	295.321
7	OOCL	22.800	Mitsui OSK Line	118.208	COSCO	198.841	Hanjin/DSR Senator	284.710
8	Zim	21.100	P&OCL	98.893	NYK Line	166.206	NYK	265.192
9	US Line	20.900	Hanjin Shipping	92.332	CP Ships/Americana	141.419	COSCO	253.007
10	APL	20.000	MSC	88.955	Zim	136.075	CSCL	236.079
11	Mitsui OSK Lines	19.800	APL	81.547	Mitsui OSK Lines	132.618	OOCL	216.527
12	Farrell Lines	16.400	Zim	79.738	CMA CGM	122.848	MOL	213.195
13	NOL	14.800	K Line	75.528	K Line	112.884	Zim	16.420
14	Trans Freight Line	13.900	DSR-Senator	75.497	Hapag-Lloyd	102.769	CP Ships	196.317
15	CGM	12.700	Hapag-Lloyd	71.688	Hyundai	102.314	K Line	195.750
16	Yang Ming	12.700	NOL	63.469	OOCL	101.044	CSAV group	190.143
17	Nedlloyd	11.700	Yang Ming	60.034	Yang Ming	93.348	Hapag-Lloyd	186.610
18	Columbas Line	11.200	Hyundai	59.195	China Shipping	86.335	Yang Ming	168.006
19	Safmarine	11.100	OOCL	55.811	UASC	74.989	HMM	139.243
20	Ben Line	10.300	CMA	46.026	Wan Hai	70.755	Hamburg Sud	131.713
Slot capacity top 20		435.000		2.058.063		3.538.103		5.744.572
share top 5 in top 20		44,1%		42,3%		47,7%		48,0%
share top 10 in top 20		69,1%		67,5%		71,7%		71,2%

Source: Containerisation International

Global Operators throughput 2003-2004

	Operator	2004 Million TEU	% share	2003 Million TEU	% share
1	HPH	47,8	13,3 %	41,5	13,1 %
2	PSA	33,1	9,2 %	28,7	9,1 %
3	APM Terminals	31,9	8,9 %	21,4	6,8 %
4	P&O Ports	21,9	6,1 %	16,0	5,1 %
5	COSCO	13,3	3,7 %	7,4	2,3 %
6	Eurogate	11,5	3,2 %	10,8	3,4 %
7	DPI (DPA)	8,1	2,3 %	6,5	2,0 %
8	DPI (CSXWT)	3,3	0,9 %	3,1	1,0 %
9	Evergreen	8,1	2,3 %	6,7	2,1 %
10	SSA Marine	6,7	1,9 %	5,4	1,7 %

Source Drewry Shipping Consultants Ltd. Sept. 2005

Concentration in Container Terminal Operations

	1991		1995		2001		2003	
	Container Terminal Operator	Throughput	Container Terminal Operator	Throughput	Container Terminal Operator	Throughput	Container Terminal Operator	Throughput
1	PSA	6,4	PSA	12,9	HPH	29,3	HPH	41,5
2	HPH	3,8	HPH	11,2	PSA	19,5	PSA	28,7
3	APM	3,2	APM	5,5	APM	13,5	APM	21,4
4	Eurogate	2,4	Eurogate	3,6	P&O Ports	10	P&O Ports	16
5	P&O Ports	1,5	P&O Ports	2,9	Eurogate	8,6	Eurogate	10,8
	Total all operators	96,3	Total all operators	157,1	Total all operators	247	Total all operators	318
	Share top 5 in total	18,0%	Share top 5 in total	23,0%	Share top 5 in total	32,8%	Share top 5 in total	37,2%