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UPV EHU

- **CARRIERS’ REAL PERFORMANCE AND POWER IN THE LINER SHIPPING MARKET: IS INCREASED CONCENTRATION OF SLOT CAPACITY REDUCING CONTESTABILITY?**

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INTRODUCTION

- LINER SHIPPING: A long history of legal survelliance.
- 1870 UK-CALCUTTA CONFERENCE SET UP: The kick-off
- 1879 Criticism to CHINA CONFERENCE: already in fight
- 1909 Report of THE BRITISH ROYAL COMMISSION on SHIPPING RINGS: **OK**
- 1950/60 THE CONFERENCE SYSTEM Boosted
- 1960/70 THE UNCTAD CODE : Parcial limitation to their activities
- 1984 U.S. MERCHANT SHIPPING ACT: Anti-Trust laws not applicable, but some new regulations in force(Individually negotiated Service Contracts)
- 1986 E.U. Regulation 4056/86 saves the trade from application of Arts. 81&82 of the Treaty /The Block Exemption: **Relief**
- 1999 OSRA Ocean Shipping Reform Act: A further step towards tough regulations
- 2006 (20 years later …) EU Regs. 4056/86 REPEALED , so The Block Exemption vanished.

- AIMS OF THIS PAPER

  - To bring two other points of view to the issue of collusion and contestability:
    - A.- Actual performance as FREIGHTED CARRYINGS are concerned
    - B.- Financial outcomes of major liner companies
  - To compare fleet volumes (container and ships) and production capability with both, financial accounts and earnings.
  - To see whether contestability is decreasing as power market in terms of fleets grows up.
  - To rise further questions on this subject.
  - To suggest new paths for further investigation.

- # MARKET CONCENTRATION
- As Container and Vessel Fleets are concerned:

First 10 operators' container and vessel fleets shares (2007)

Operator	*TEU*	*%*	*Ships*	*%*
MAERSK	1,86	16,99	524	11,37
MSC	1,18	10,83	361	7,83
CMA CGM	0,85	7,79	360	7,81
Evergreen Line	0,611	5,58	173	3,75
Hapag-Lloyd	0,49	4,52	142	3,08
CSCL	0,42	3,92	141	3,06
COSCO	0,42	3,85	140	3,04
APL	0,39	3,64	122	2,65
NYK	0,36	3,33	123	2,67
OOCL	0,34	3,13	81	1,76

TEU in million units & Ships in units.

MONOPOLISTIC PECULIARITY OF LINER SHIPPING MARKET

- This market is distinguished by :
  - High concentration on PRODUCTION CAPABILITY
  - HUGE fixed costs
  - DISCRETE (poor?) revenues
  - VOLATILITY in demand / Rigidness in offer
  - MEDIUM-LOW utilization rate
  - Great amount of REGULATIONS
- Would these factors lead to higher degree of monopoly ?. If not, which would?

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DATA AND METHODOLOGY

- TOOLS:
  - Concentration Indices
  - Correlation Factor
  - Multiple Regression

  Empirical Tools
- DATA:
  - Fleet of SHIPS
  - Fleet of CONTAINERS
  - EARNING (or LOSSES)
  - Carryings (FREIGTHED units transported)

  Empirical but not fully accurate
- METHODOLOGY:
  - Compare potential with actual carryings
  - Carryings with financial performance
  - Carryings with

  New perspective for discussion

CONCENTRATION INDICES

- **Theil Entropy Index** is the sum of the firms' particular market shares multiplied by their logarithms and shows disorder / scattering.
- **Concentration Ratio** is a mere summing up of the market shares of n firms in a given market.
- **Herfindahl-Hirschman Index**, by summing up the square industrial allotments of the firms; all participants included. small HHI means contestability, whilst Index equal to 10.000, or otherwise stated, market absolutely monopolistic.
- **Dominance Index** shows the power of the biggest company in the market; if there is only one, monopoly situation is labelled with 1 whilst perfect competition is 1/n index where n is the total number of operators.
- **Gini Coefficient** shows inequality among participants in a group through the deviation of a variable from the mean value in a distribution.
- **Lorenz Curve** is the graphical exposition of the Gini Coefficient.

- **FLEET ANALYSIS:** on TEUs
  - HHI and Dominance Indices

Summary of 2005 / 06 and 07

2005		2006		2007	
IHH	ID	IHH	ID	IHH	ID
637,82	3562,46	647,76	2832,96	638,24	2535,35

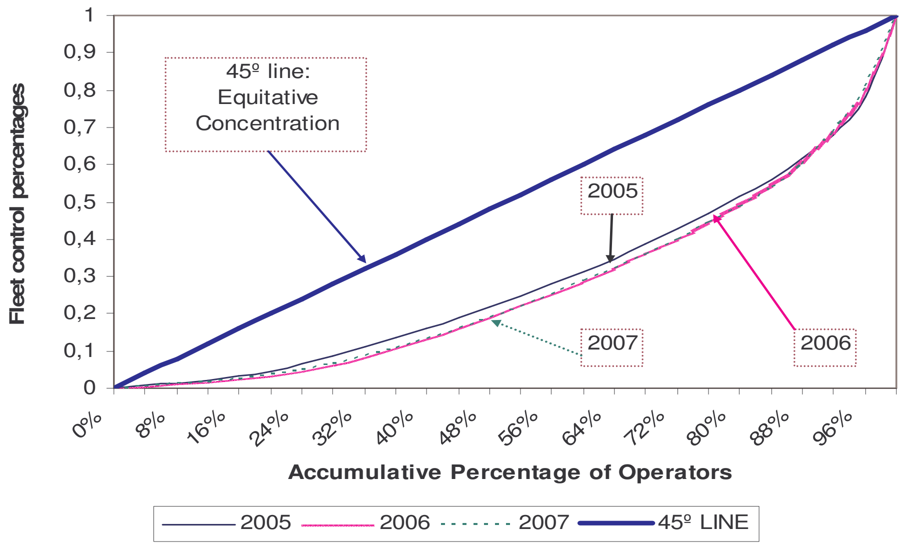
- DI declines year after year / HHI with no relevant change but always under 1000 (As per US Administration Reports, no monopoly.

- **FLEET ANALYSIS**: on TEUs
  - Concentration Index (limited value for proportional distribution of N firms not showed)

Concentration Indices						
	2005		2006		2007	
	TEU	CR25	TEU	CR25	TEU	CR25
TTL 25	7229932		8748448		9766896	
TTL	8762901	82.51	10437608	83.82	11536803	84.66
TTL 100	8279804	87.32	9864488	88.69	10959963	89.11

- 62% controlled by the first 10 operators in 2007. Only 4 years earlier they enjoyed 50%. Big growth showed in Concentration Indices.

- **FLEET ANALYSIS:** on TEUs
  - Ginni Coefficient and Lorenz Curve



  - Very slight variations from 2005 to 2007. Maersk and Hapag Lloyd acquisitions in 2005 registered somehow as curve comes down a little bit. The already concentrated market becomes smaller.

- **ANALYSIS ON FREIGHTED CARRYINGS**

- Definition:

  - Those loaded containers that contributed with freight. Therefore, empty positioning is excluded although some of them can be paid by customers (special equipments).

- **ANALYSIS ON FREIGHTED CARRYINGS**
- HHI and Dominance Index
  - The first one came down from 2004 to 2005; thereafter, it came to rise slightly. DI diminished through the period.

HHI & Dominance Indices on Carryings

	2004	**2005**	**2006**
HHI	548,18	421,77	432,45
DI	0,23	0,1828	0,154

- **ANALYSIS ON FREIGHTED CARRYINGS**
- THEIL Index

	2006	2005	2004
THEIL Index	1,15320	1,13300	1,20670

- Table presents figures for Theil's Entropy based on liftings performed by first 25 carriers in years 2004, 2005 and 2006. Values are relatively closed to log(25) which is 1,3979, thus showing a growing tendency to higher concentration year after year, as liftings are concerned.

ANALYSIS ON FREIGHTED CARRYINGS

- CONCENTRATION Index
  - Noticeable : 1.- the slight variation of the 4 operators group through the 3 considered years and, 2.- the almost identical behaviour of the first 25 carriers.

CONCENTRATION indices on first 4 and 25 operators groups.

		2006			2005			2004
CI 4		30,6			29.67			33.98
CI 25		83.91			81.89			90.62

ANALYSIS ON FREIGHTED CARRYINGS

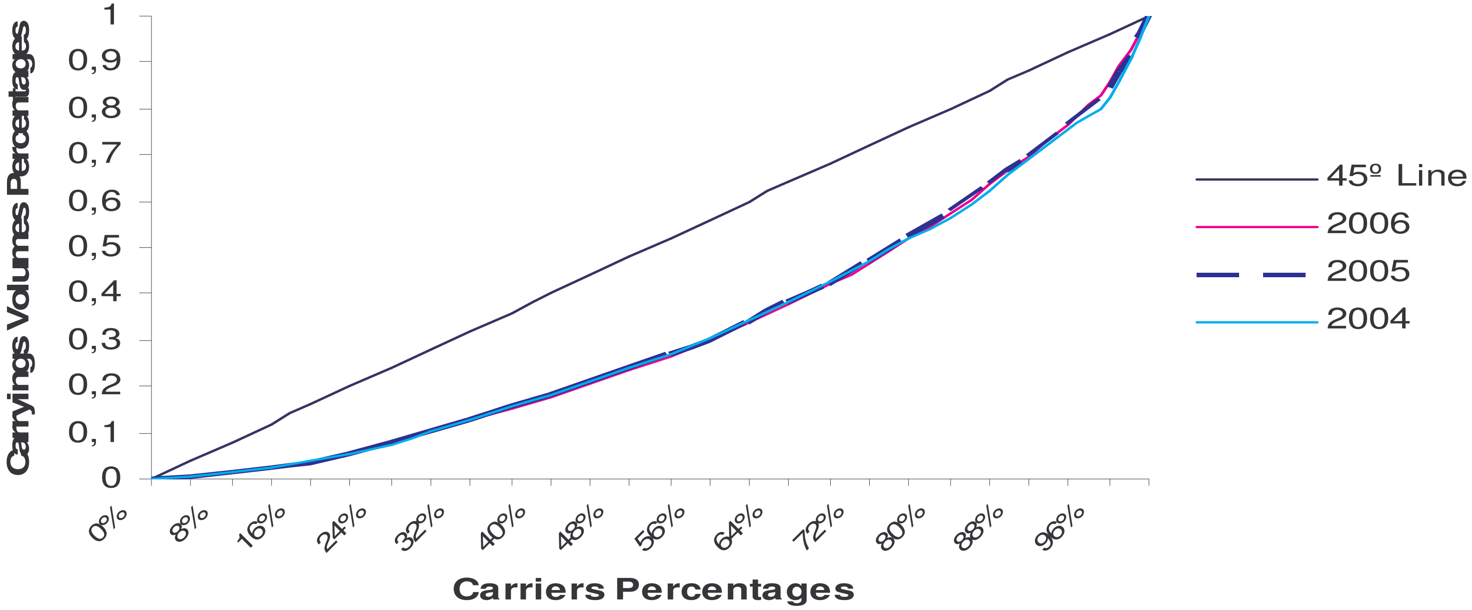
East-West Trade Lanes

- Dominance of the first operators: NOTORIOUS , almost a 98% of the total cargo.
- The first 4: Maersk, MSC, Evergreen and Hanjin → 40,20% of the total.
- First 10 and 15 carriers respectively achieved 71,4% and 90,90% of the total flow.
- Very interesting, differences in individual percentages in different trades.
- Why these differences between similar carriers?: geographical port distribution, economies involved, maturity of the trade, existing alliances and agreements, hub-and-spoke and related feeder systems structures, number of carriers plying the services and, finally, regulation frame.

Concentration on carryings through the main E-W Trade Lanes.

	TOTAL (E/W)		Transpacific		Transatlantic		Europe/Far East	
	TEUs	*%*	*TEUs*	*%*	*TEUs*	*%*	*TEUs*	*%*
25 P	37.096	97,4	16.698	96,6	3.872	90,8	16.525	100
Others	987	2,6	593	3,4	394	9,2	n.a.	n.a.
Total	38.084	100	17.292	100	4.267	100	16.525	100
CI 4		40.20						
CI 10		71.40						
CI 15		90.90						

- **ANALYSIS ON FREIGHTED CARRYINGS**
- Ginni Coefficient and Lorenz Curve
- Lorenz curves mimetically coincident so Concentration or dominance not changed at all during these years, if carryings are considered. Gianni Coefficient marginally varies but denotes a pretty high concentration.



- **ANALYSIS ON FLEET PRODUCTIVITY**
- Actual Freight movements vs. Transport capacity

Contributing movements per fleet TEU unit (Years 06 and 07).

	2007			2006		
	Lifting	Fleet	**Lift/TEU**	Lifting	Fleet	**Lift/TEU**
Maersk	13,6	1,85	7,34	13,3	1,77	7,53
CMA CGM	7,68	0,84	9,10	5,97	0,69	8,68
K Line	2,94	0,30	9,85	2,65	0,28	9,61
MOL	2,85	0,33	8,74	2,35	0,28	8,42
OOIL	**4,6**	**0,34**	**13,62**	**3,89**	**0,28**	**13,84**
APL	**4,72**	**0,37**	**12,62**	**4,18**	**0,33**	**12,50**
Hapag Lloyd	5,45	0,49	**11,22**	5	0,46	**10,91**
NYK	3,44	0,36	**9,51**	3,26	0,33	**9,90**
CSCL	**7,3**	**0,44**	**16,42**	**5,66**	**0,40**	**14,16**

- **ANALYSIS ON FLEET PRODUCTIVITY**
- Hypothetical net profit per freighted and fleet units

	2006		2007	
	$/c.TEU(*)	$/f.TEU(**)	$/c.TEU(*)	$/f.TEU(**)
Maersk	-42,71	-320,90	15,96	117,30
CMA CGM	102,35	885,51	125,78	1150,00
K Line	129,81	1228,57	135,03	1323,33
MOL	13,19	110,71	23,86	206,06
OOCL	110,03	1528,57	120,43	1629,41
APL	82,30	1042,42	112,92	1440,54
Hapag Lloyd	-31,80	-345,65	55,05	612,24
NYK	28,22	278,79	18,90	180,56
CSCL	24,73	350,00	64,38	1068,18

(*) c.TEU: contributing or freighted container movement in TEU terms.
(**) f. TEU: fleet unit (TEU) movement.

- **ANALYSIS ON FLEET PRODUCTIVITY**
- Actual Freight movements vs. Transport capacity

  Outcomes (2007):

  - Best percentages of utilization: CSCL, OOIL and APL in both, 2006 and 2007.
  - Poorest rates of utilization: Maersk and MOL in 2006 and 2007 too.
  - Bigger fleets IS NOT EQUAL to better utilization of capacity.
  - Best financial results DO NOT AUTOMATICALLY match with best utilization rate (See CMA-CGM).

- **ANALYSIS ON FLEET PRODUCTIVITY**
- Hypothetical net profit per freighted and fleet units
  - Outcomes (2007):
    - Rank as per freighted movements: K LINE, CMA-CGM and OOCL.
    - Rank as per fleet units: OOCL, APL and K LINE.
    - Utmost efficiency NOT in biggest fleets, highest amount of cargo, biggest ships,….
    - Variety, significant differences, multiple factors (mergers and acquisitions burdens, up and downs of sea freights, upward bunker prices, heavy investments)
    - Multifactorial approach requested to clarify.

- **ANALYSIS ON FLEETS, PRODUCTIVITY AND PROFITS (Years 2006 & 2007)**
- Hypothesis: financial results are function of 4 variable:
  - Average ship size in fleet
  - Size of container fleet
  - Size of vessel fleet
  - Carryings performed
- Data: average ships size, container and vessel fleets, carryings and financial outcomes (years 2006&2007).
- Method: minimum square method

- **ANALYSIS ON FLEETS, PRODUCTIVITY AND PROFITS (Years 2006 & 2007)**
- Outcomes:

Multiple Regression Values - 2006 & 2007 Data

Factors	Values	
	2006	**2007**
Multiple correlation factor	0,923	0,9227
R^2 Multiple determination factor	0,852	0,8515
Proportion of explained variance	85,20%	85,15%

- **ANALYSIS ON FLEETS, PRODUCTIVITY AND PROFITS (Years 2006 & 2007)**
- Outcomes:
  - Quite firm relationship among fleet sizes, lifting and profits.
  - Perfect correlation: Very unlikely
  - First three variables: Empirical
  - Fourth one: non-quantitative aspects like distribution network, firm's presence in key routes (North Atlantic or Pacific trades, for instance), the logistic system, capacity to avoid empty repositioning on a world wide basis.

CONCLUSIONS

- **CONCENTRATION** is increasing in terms of volumes (container and vessels).
- Such power NOT automatically **CONVERTED** to real earnings.
- Obtained benefits from economies of scale strategies **DO NOT SEEM** to contribute.
- Fleet volumes, carryings and ships' average size altogether **EXPLAIN** in some extent the economical results of main operators.

CONCLUSIONS

- Fleets size growth responds more to **STOCK CAPACITY** strategies than to policies to achieve bigger market shares (monopoly).
- Contestability should be tested **trade by trade** as fragmentation in market shares is very common.
- Smaller fleets **do not mean** worse results neither more contestability.

CONCLUSIONS

- FURTHER research should come to investigate:
  - Multifactorial approach:
    - To quantify the paper of logistics within the whole offer
    - To ascertain whether economies of scale are workable in other parts of the whole transportation chain

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CARRIERS' PERFORMANCES, CONCENTRATION AND CONTESTABILITY

Thank You