

# Asian countries' specialization in different maritime businesses: Challenges and opportunities arising from the process of concentration in shipping

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The opinions do not necessarily coincide with those of the organization.

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## Abstract

Countries are increasingly specializing in different maritime businesses, just as most maritime businesses are increasingly becoming concentrated in fewer companies. Whereas, *in the past*, each “maritime nation” would have its own foreign trade being transported by its own carriers, through national ports, using ships under the national flag, seafarers and vessels constructed in national ship yards etc., *today* we find that a single foreign trade operation can easily involve inputs (such as vessels, labour, fuel, flags, insurance, classification, etc.) from more than a dozen different countries.

In particular many Asian countries have become important players in several maritime businesses. The paper will first look at trends of concentration in different maritime sub-sectors, and thereafter discuss which Asian countries are specializing in which of these sub-sectors.

## Content

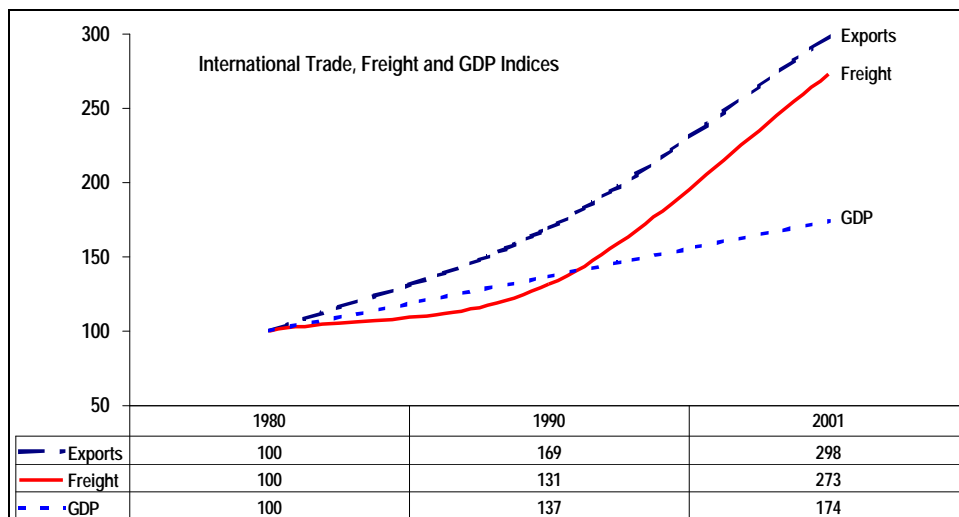
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## Introduction

This paper aims to provide an overview of how the maritime industry’s different sectors are “concentrated” and to what extent different Asian countries are “specializing” in different maritime sectors. Concentration and specialisation are two sides of the same coin. The paper’s main thrust is that there are no longer “maritime nations” (Sletmo 2001, 2002), i.e. nations with a nationally flagged, built, operated and manned fleet, but, instead, countries are maintaining a participation only in certain parts of the industry, depending on their comparative advantages. Asian countries in particular have managed to benefit from this process and become strong players in several maritime niches.

Trade is increasingly important for economic growth, and expenditure on international transport, at least during the last decade, is growing even faster than trade (Figure 1). This does not necessarily mean that transport services have become more expensive (although during the last year they have), but rather, in the longer term, that shippers are prepared to pay more for faster, more frequent and more reliable services as required by global supply chains and JIT.

**Figure 1: World growth of GDP, trade, and expenditure on international transport**



*Source: Author, based on data from WTO and from UNCTAD.*

It is not the Nations that trade most that also provide the transport services. Furthermore, as Audigé (1995) rightly points out, we can no longer say that “trade follows the flag”. National trade is not being transported by nationally owned, or operated, or flagged ships. In fact, the vessel owner, its operator, and its flag are likely to come from three different countries. Even if a country is a strong trader *and* a strong supplier of maritime transport services, it is most likely that the national trade is not being transported by the national shipping company.

## I. Overview of concentration of some maritime sectors

This paper is meant to deal with “specialization” of countries in different maritime sectors. Still, the actual players are not the countries, but companies, who are headquartered in different countries, which is what this first section will look at.

The overview is not initially meant to look at the question of market power or monopolistic abuses, although some of the calculated indices might also be interesting for discussions related to that topic. Readers need to be aware that I am looking at global concentration levels, whereas market power will often need to be examined at the port level, or for single trade routes. For example, although globally no single port operator can be considered dominating, in individual ports the situation may be quite different (Kent and Ashar, 2001).

For each of 12 specific maritime sectors, I am going to present the top four companies, their market share, their combined market share, the Hirschmann-Herfindahl Index (HHI) based on these top four companies. For two additional sectors, I do not have information on the company level and will report some country-level data instead.

As mentioned, these concentration indexes were not calculated with a view to analyze market power. Nevertheless, the HHI is a widely used measure of market concentration. US Federal agencies handling anti-trust issues consider a market having an HHI of 1000 or more is “concentrated” and 1800 or more to be highly concentrated, probably requiring intervention. Given that often information is not available for all market players, and given also that the squared market share decreases exponentially for smaller participants, sometimes the HHI of only the top four players is computed, which is also what I will report in this first approximation.

### 1) Liner shipping companies

2004	Thousand TEU	% share	square
Maersk Sealand	915	12.18	148.33
MSC	537	7.15	51.09
Evergreen	458	6.10	37.16
P&O	419	5.58	31.10
other	5'184	69.00	
Total	7'513	100.00	
% top four			31.0
HHI			268

Source for base data: Dyna Liners, 03, 06 and 07/ 2004

At the beginning of 2004, the top 25 container carriers control 79% of the world’s TEU capacity. Their TEU capacity grew by 12% during 2003. The next largest 26th-50th companies by comparison grew only 9%. The Maersk-Sealand group accounts for 12.2% of operated slots, followed by MSC with 7.15%. Maersk-Sealand belongs to the Danish AP Moller group. MSC is headquartered in Geneva in landlocked Switzerland. Chilean based CSAV is the largest container carrier headquartered in the Americas. American President Lines is based in Singapore, CP (“Canadian Pacific”) Ships is headquartered in London. Maersk-Sealand charters about 41% of its fleet, and MSC an even higher 56%, i.e. MSC owns only 44% of the TEU capacity it operates (calculated on the basis of data from CRS). Neither of the two is dominating the trade of its home country, but rather they generate their income abroad, and their vessels only exceptionally fly the Danish or Swiss flag.

10 of the top 15 liner companies are based in Asia. The largest is Evergreen, followed by Hanjin, APL, NYK, Cosco, China Shipping, K-Line, OOCL, MOL and ZIM.

## 2) Ownership of containerships

2003	Thousand TEU	% share	square
Maersk Sealand	542	7.21	52.04
Evergreen	351	4.67	21.83
NSB Nordelbe	255	3.39	11.52
Cosco	245	3.26	10.63
other	6'120	81.46	
Total	7'513	100.00	
<b>% top four</b>			<b>18.5</b>
<b>HHI</b>			<b>96</b>

Source for base data: Clarkson Container Intelligence Monthly, February 2004

The ownership of containership is less concentrated than its operation. As mentioned above, operators tend to charter a large proportion of their vessels, which tend to be owned by “non-operating” owners, such as NSB Nordelbe (Germany). The latter has a market share of 15% among the top 20 charter-owners.

In Europe, the ownership and operation of vessels tends to be more split into different companies than in Asia, where companies tend own a relatively larger proportion of their fleet than the major European carriers. The largest Asian owner is Evergreen, followed by Cosco, APL, NYK, K-Line, MOL, OOCL, Yangming, and Hanjin.

## 3) Vessel registries

2003	GT	% share	square
Panama	128'847'021	22.07	486.97
Liberia	52'633'013	9.01	81.26
Bahamas	34'898'752	5.98	35.73
Greece	27'719'307	4.75	22.54
other	339'781'866	58.19	
Total	583'879'959	100.00	
<b>% top four</b>			<b>41.8</b>
<b>HHI</b>			<b>626</b>

Source for base data: Lloyds Register Fairplay. Includes ships delivered 1/2003

Taking into account all types of vessels, including fishing, passenger and other specialized ships of 300 GT and above, about two thirds of the world’s tonnage uses a “foreign” flag, i.e. a flag different from the operator’s country of domicile (Hoffmann et al 2004). If we take only containerships of 500 GT and above, 73% of the world’s TEU capacity uses a foreign flag (calculated on the bases of data from LRFairplay). The major open registries have continuously increased their market share over the last decades, although in recent years the introduction of a tonnage tax in some European countries, as well as the surge of a few younger registries such as Marshall Islands or Vanuatu has slowed down this process of concentration (UNCTAD 2003).

In terms of TEU, only four Asian flags are among the world’s top 20 registries. The largest is Singapore, followed by Cyprus, Hong Kong (China, SAR) and China (calculated with data from LRFairplay for January 2004).

#### 4) Container ship building

2003	Thousand TEU on order	% share	square
Hyundai	670	32.76	1'073.40
Samsung	332	16.23	263.57
Hanjin	167	8.17	66.69
IHI	96	4.69	22.04
other	780	38.14	
Total	2'045	100.00	
<b>% top four</b>			<b>61.9</b>
<b>HHI</b>			<b>1'426</b>

Source for base data: Clarkson Container Intelligence Monthly, February 2004

Three Korean and one Japanese company are the world's four biggest containership builders, in terms of TEU, based on the order book in November 2003. Put together, all Korean shipyards account for 62% of orders, and all Asian shipyards together have 86% of the market. The latter includes China, which has overtaken Germany as the third biggest containership building country. European yards together have a 13% market share, and North and South American yards together less than 1%.

#### 5) Classification societies

2003	GT	% share	square
Nippon Kaiji	125'384'652	18.87	356.26
American Bureau of Shipping	115'104'668	17.33	300.24
Lloyds Register	100'304'867	15.10	227.99
Det Norske Veritas	96'859'220	14.58	212.60
other	226'639'591	34.12	
Total	664'292'998	100.00	
<b>% top four</b>			<b>65.9</b>
<b>HHI</b>			<b>1'097</b>

Source for base data: Lloyds Register Fairplay. Includes ships delivered and on order 1/2003

The four largest classification societies are based in Japan, United States, United Kingdom, and Norway. The ten largest classification societies are also the ten members of the "International Association of Classification Societies" (IACS). Together, these have a market share of 85%. They include the above-mentioned top-four, plus Germanischer Lloyd (Germany), Bureau Veritas (France), China Class Society, Russian Register, South Korean Register, and Registro Italiano.

There exists a certain correlation between the country of the vessel operator and the classification society's country of domicile, i.e. US operated vessels are more likely to be classed by ABS, German owned vessels more likely by Germanischer Lloyd etc. (Hoffmann et al, 2004).

## 6) P&I Clubs

2002	Million GT	% share	square
United Kingdom	104	17.34	300.70
Britannia	78	13.03	169.74
Gard	68	11.22	125.79
Standard	63	10.39	107.86
other	289	48.03	
Total	602	100.00	
<b>% top four</b>			<b>52.0</b>
<b>HHI</b>			<b>704</b>

Source for base data: Bow Wave, March 2004

Most of the major Protection and Indemnity (P&I) clubs are based in the United Kingdom; some others in Scandinavia, Japan and the United States.

## 7) Container manufacturing

2001, needs updating	Thousand TEU	% share	square
CIMC	673	53.84	2'898.75
SINGAMAS Shunde	337	26.92	724.69
n/n		-	-
other	241	19.24	
Total	1'250	100.00	
<b>% top two</b>			<b>80.8</b>
<b>HHI (2)</b>			<b>3'623</b>

Preliminary, based on info from Lloyds List and Kellie Spurgeon et al (2003)

Approximately 82% of all containers are being built in China (2001 data), the two leading companies being CIMC and Singamas.

## 8) Container leasing

2001	Thousand TEU	% share	square
Transamerica	1'075	14.57	212.18
GESeaCo	1'065	14.43	208.25
Textainer	965	13.08	170.98
Triton Cont	910	12.33	152.04
other	3'365	45.60	
Total	7'380	100.00	
<b>% top four</b>			<b>54.4</b>
<b>HHI</b>			<b>743</b>

Source for base data: Kellie Spurgeon et al, "The Secret Life of a Container", TRB 2003

Container leasing is perhaps the only maritime subsector where concentration has decreased in recent years. Transamerica and GESeaCo used to control about 50% of the market in the 1990s. Transamerica, Textainer and Triton Containers are administratively headquartered in the United States, although Textainer and Triton have "corporate" Headquarters in Bermuda. GESeaCo is headquartered in London.

Container carriers own about 50% of the container fleet, leasing companies about 45%, and the remainder is owned by trucking and other companies.

## 9) Ship-to-shore crane manufacturing

2004	Cranes on order	% share	square
ZPMC	137	55.92	3'126.86
Reggiane	33	13.47	181.42
Liebherr	15	6.12	37.48
Kalmar	11	4.49	20.16
other	49	20.00	
Total	245	100.00	
% top four			80.0
HHI			3'366

Source for base data: Cargo Systems, February 2004

At the beginning of 2004, there were around 250 cranes on order globally. The by far biggest supplier is ZPMC, based in Shanghai, with a market share of 55%, up from 32% one year ago. The other three main producers are Europe-based, although production often takes places in Asia.

## 10) Container ports

2003	Thousand TEU	% share	square
Hong Kong	20'000	7.27	52.89
Singapore	18'300	6.65	44.28
Shanghai	11'280	4.10	16.82
Shenzhen	10'800	3.93	15.42
other	214'620	78.04	
Total	275'000	100.00	
% top four			22.0
HHI			129

Source for base data: Dyna Liners, 2004

Chinese ports, including Hong Kong, make up three of the top five ports, measured in TEU throughput. In 2003, Shanghai and Shenzhen have overtaken Busan, which now ranks 5th in the world. Six of the top ten, and 20 of the top 30 container ports are located in Asia.

## 11) Container port operators

2002	Thousand TEU	% share	square
Hutchison	36'700	13.35	178.10
PSA Corp	26'200	9.53	90.77
APM Terminals	17'200	6.25	39.12
P&O Ports	12'800	4.65	21.66
other	182'100	66.22	
Total	275'000	100.00	
% top four			33.8
HHI			330

Source: Dyna Liners, 2003, quoting Drewry Shipping Consultants

Half of the top 10 port operating companies are linked to shipping lines; APM, for example, belongs to the same grouping as Maersk-Sealand. Others originate from a major container port; Hutchison, for example, started in Hong Kong, PSA in Singapore, and Eurogate (ranked number five) in Hamburg. The market share of these global port operators has been growing in recent years mainly due to concessions of previously state run facilities.

## 12) Ship agencies

2003	Thousand port calls	% share	square
Inchcape	40	4.44	19.75
GAC	25	2.78	7.72
Barwil	30	3.33	11.11
n/n	5	0.56	0.31
other	800	88.89	
Total	900	100.00	
% top four			11.1
HHI			39

Source for base data: *Lloyd's Shipping Economist, September 2003*

Globally, 95% of ship agency companies are still locally based and operate in only one country. However, there is a growing trend towards single agency contracts. It is estimated that around 25 agency companies have contracts with ship operators covering more than one country. The largest three companies appear to have a combined market share of 10%. The largest, Inchcape, is headquartered in London, GAC in Dubai, and Barwil in Oslo.

## 13) Ship scrapping

About 95% of world ship scrapping takes place in Asia. The largest market share is that of India, followed by Bangladesh, Pakistan and China (preliminary data from different press articles and the ILO web site).

## 14) Seafaring

About 56% of seafarers come from Asian countries (2000 data), the largest providers being the Philippines, followed by Indonesia, China, Turkey and India. Together, the top 4 countries have a "market share" of 37%, and the HHI (4) is 468.

**Table 1: Top 20 Asian suppliers of seafaring personnel**

Country	Population (million)	Officers	Ratings	Sum all Seafarers	Rating / Officers	Seafarers per 1000 inhabitants
Philippines	77	50'000	180'000	230'000	3.60	2.98
Indonesia	214	15'500	68'000	83'500	4.39	0.39
China	1'263	34'197	47'820	82'017	1.40	0.06
Turkey	69	14'303	48'144	62'447	3.37	0.90
India	1'033	11'700	43'000	54'700	3.68	0.05
Japan	127	18'813	12'200	31'013	0.65	0.24
Myanmar	48	6'000	23'000	29'000	3.83	0.60
Korea, Republic of	47	9'506	6'982	16'488	0.73	0.35
Malaysia	23	4'224	8'447	12'671	2.00	0.54
Pakistan	146	2'841	9'327	12'168	3.28	0.08
Sri Lanka	19	623	9'977	10'600	16.01	0.57
Bangladesh	141	4'268	5'055	9'323	1.18	0.07
Iran, Islamic Republic of	67	2'649	6'260	8'909	2.36	0.13
Thailand	62	3'000	5'000	8'000	1.67	0.13
China, Taiwan Province of	22	4'333	2'713	7'046	0.63	0.31
Viet Nam	79	2'520	4'147	6'667	1.65	0.08
Georgia	5	1'378	4'125	5'503	2.99	1.05
Korea, Dem. People's Republic of	22	1'120	2'583	3'703	2.31	0.17
Syrian Arab Republic	17	1'185	1'663	2'848	1.40	0.17
Lebanon	4	1'130	1'395	2'525	1.23	0.71

Source: Author, based on data from UNCTAD AND ISF/BIMCO 2000 Manpower update

**Concentration trends**

Of the 14 maritime sectors described above, all except “container ports” and “container leasing” have seen increasing levels of concentration over the last decade. Today’s situation is summarized in Table 2 (the sectors of ship scrapping and seafaring are not included in the table because the available data is not on the company level).

**Table 2: Concentration indicators for maritime sectors, summary**

Sector	market share top 4	HHI top 4
Container manufacturing	81	3'623
Ship to shore crane manufacturing	80	3'366
Container ship building	62	1'426
Classification societies	66	1'097
Container leasing	54	743
P&I Clubs	52	704
Vessel registration	42	626
Port operation	34	330
Liner shipping companies	31	268
Container ports	22	129
Container ship owning	19	96
Ship agencies	11	39

The “building” sectors (cranes, containers, vessels) are the most concentrated maritime industries. They require abundant and relatively inexpensive and skilled labour. China is dominating crane and container manufacturing. China is also right now building the world’s largest shipyard and it is expected to increasingly compete with Korea and Japan for market share in container ship building. Several European and American ship yards have closed down in recent years.

The countries that historically used to be strongest in terms of nationally built, flagged, manned and operated fleet are the major OECD economies. These countries are still hosting the main classifications societies and the P&I Clubs. They also continue to be relatively strong in liner shipping and container vessel owning, although in these two sectors the newly industrialized Asian economies have become very strong, too. The United States is no longer a major player in container ship owning or operation.

Container leasing is concentrated in the United States and United Kingdom, both are countries that also export other capital and leasing services.

Vessel registration is a business with little relation to other maritime sectors, and most countries whose flags are being used by the owner/operators are relatively small open economies. Most do not have much else of a “maritime” sector, although some, such as Cyprus and Panama have managed to attract other maritime service providers in the areas of crewing, arbitration, or ship financing.

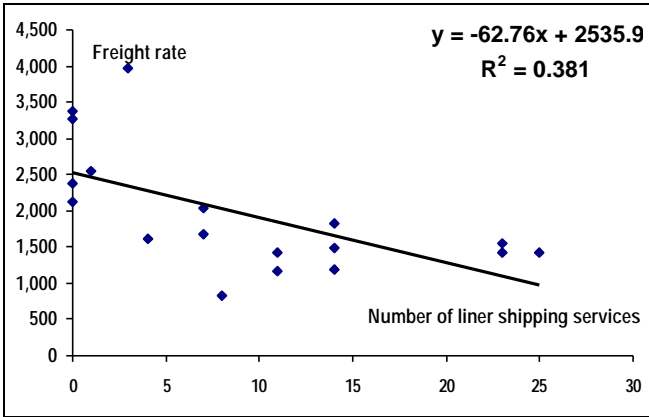
Port related activities are the least concentrated on a global scale. However, here, too, we observe a trend of the beginning of concentration, where major port operating companies are linked to those countries with large ports, increasingly from Asia, and agency services are provided by companies from countries with a large service sector.

**A footnote concerning market power**

Ship owners, builders and crane manufacturers compete globally, and the HHI may actually provide some indicator about market concentration from the perspective of a global regulator who might want to detect potential oligopolies. For other sectors, such as liner shipping, agencies or port operations, competition is not completely global, but rather dependent on a given port or trade route – although global shippers do of course also engage in global contracts with carriers.

By way of example, in the Intra-Caribbean trades, it is found that freight rates are correlated to the number of direct liner shipping services between pairs of ports. This is surely partly due to economies of scale, yet at the same time some collusion between carriers cannot be excluded. Interestingly, in the example, it appears that freight rates soar especially if the number of direct options is reduced to 4 or less. Although this is just anecdotal evidence, it corroborates the concept of regulators who base their interventions on market share indicators derived from the top 4 suppliers.

**Figure 2: Freight rates and its correlation with the number of direct liner services in the Caribbean**



Source: Author, based on data supplied by Panalpina and [www.ci-online.co.uk](http://www.ci-online.co.uk). Each dot represents a trade route between ports in the wider Caribbean. For more information about these routes, see Harding and Hoffmann (2002). For more information about Intra-Latin American transport costs see United Nations ECLAC (2001)

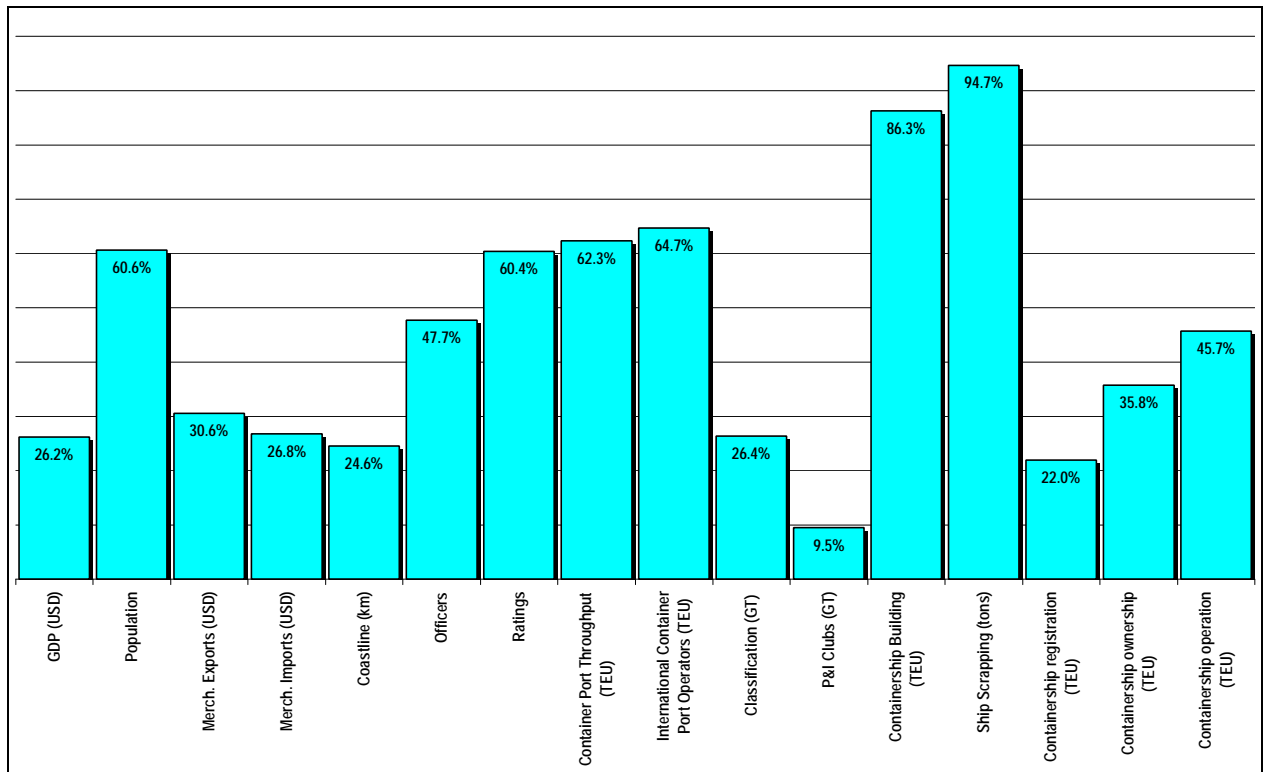
Liner shipping, in particular, has seen a strong process of concentration in recent years – globally. Still, it is a relatively un-concentrated industry – again, globally. It is far more concentrated on individual routes. On most individual routes, however, we have not actually observed a *process* of concentration. As larger carriers expand their networks, and new options become available to shippers thanks to increased transshipment, most ports or routes today are being served by a larger number of carriers than one or two decades ago; i.e., in spite of global concentration in liner shipping, competition on individual routes is increasing (Hoffmann 1998a, 1998b).

## II. Maritime sectors in Asia

### Clustering of countries

Which maritime sectors are concentrated in which countries? Or, if we look at the other side of the same coin, which countries specialize in which maritime sectors? Overall, Asian countries have a greater participation in many maritime sectors than Asia's GDP or international trade would suggest (Figure 3).

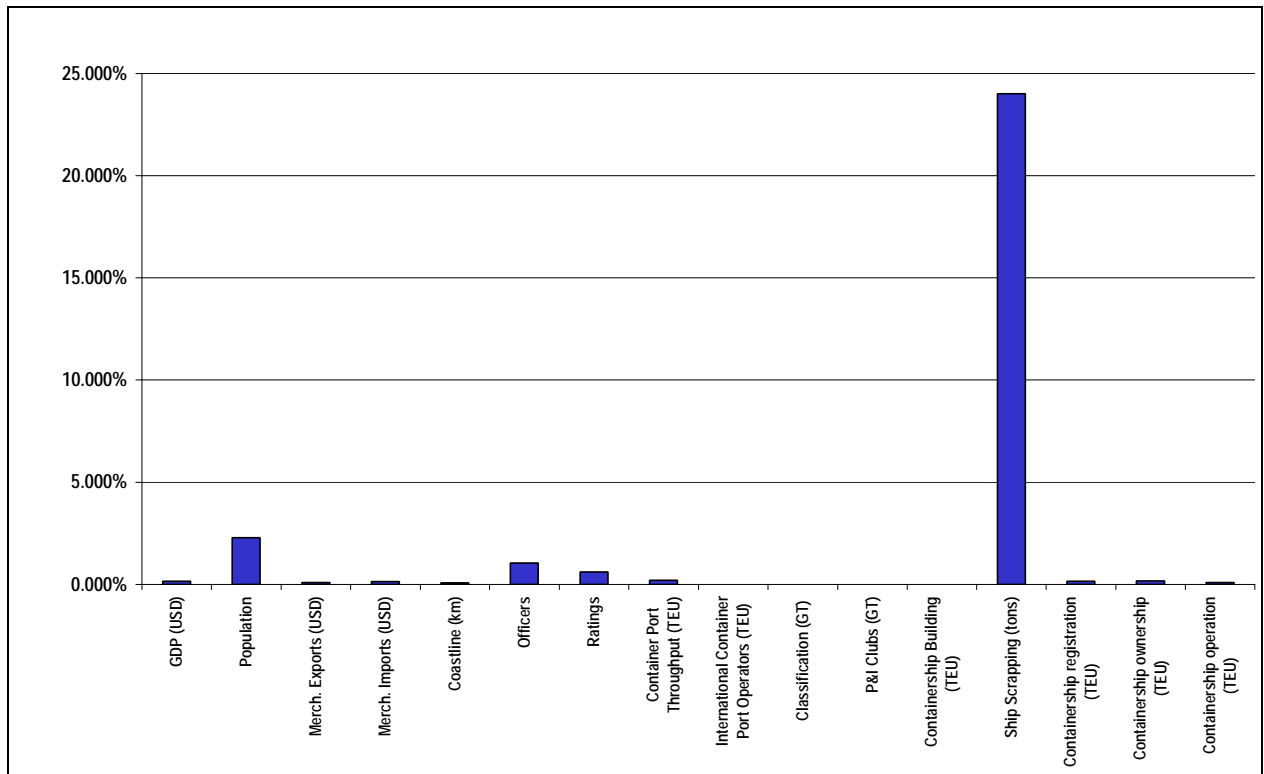
**Figure 3: Asian Maritime Profile**  
Asia's participation as percent of world total



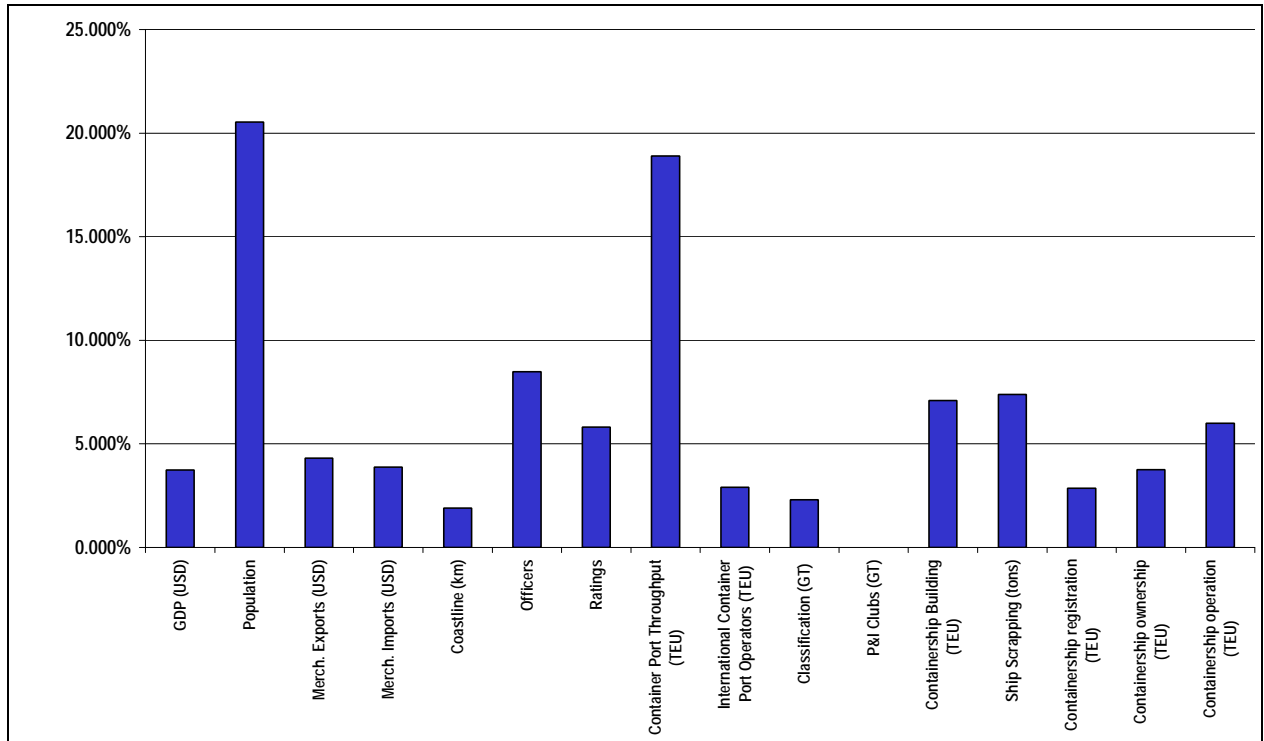
Source: Author, based on data from different sources. Date for data is beginning of 2004 or latest available (see "sources" at the end)

A look at different maritime profiles of selected Asian economies shows that different Asian economies are specializing in different sectors (Figures 4-13). The Y-axis shows each economy's market share in the world.

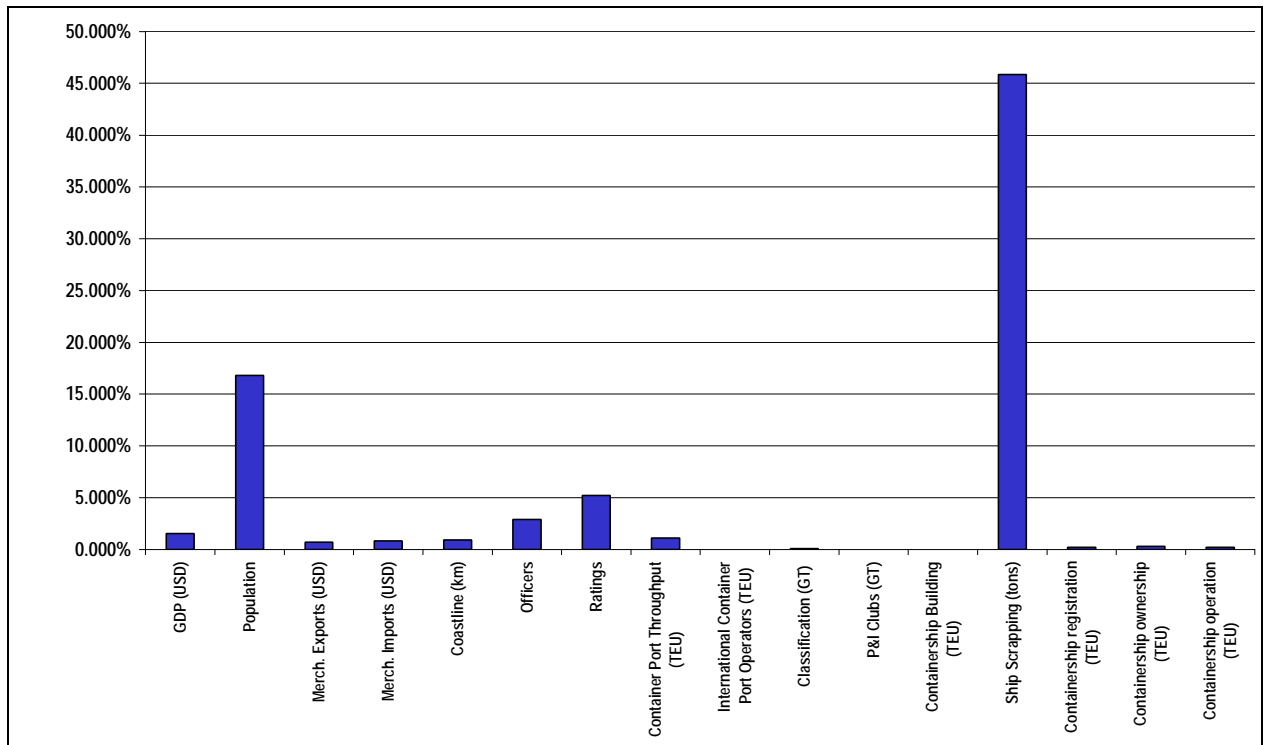
**Figure 4: Maritime profile of Bangladesh**



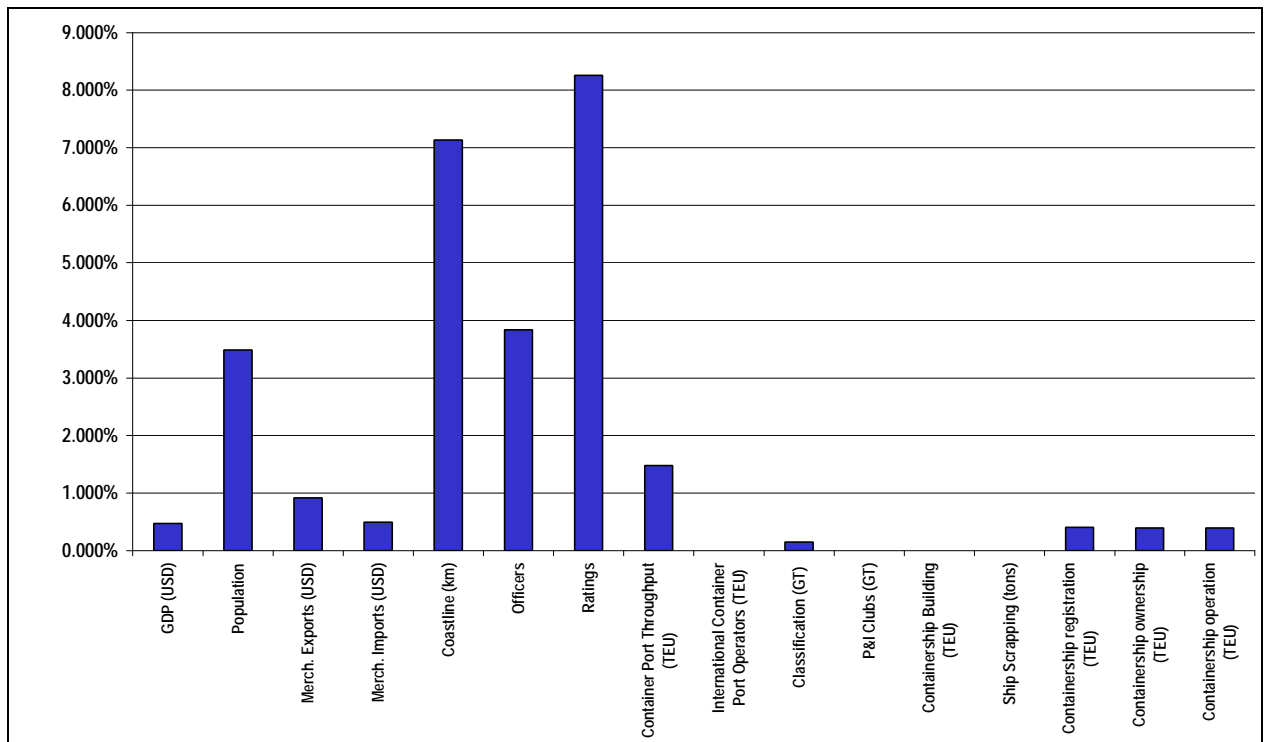
**Figure 5: Maritime Profile of China**



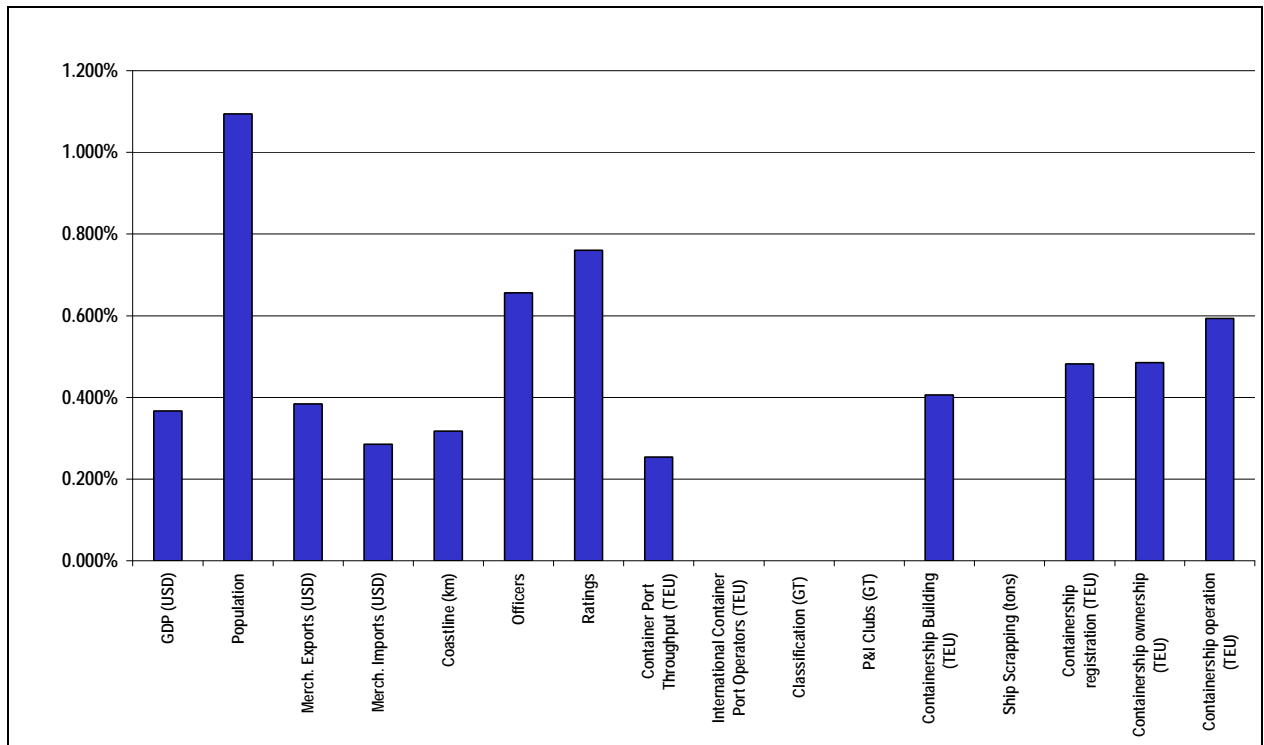
**Figure 6: Maritime Profile of India**



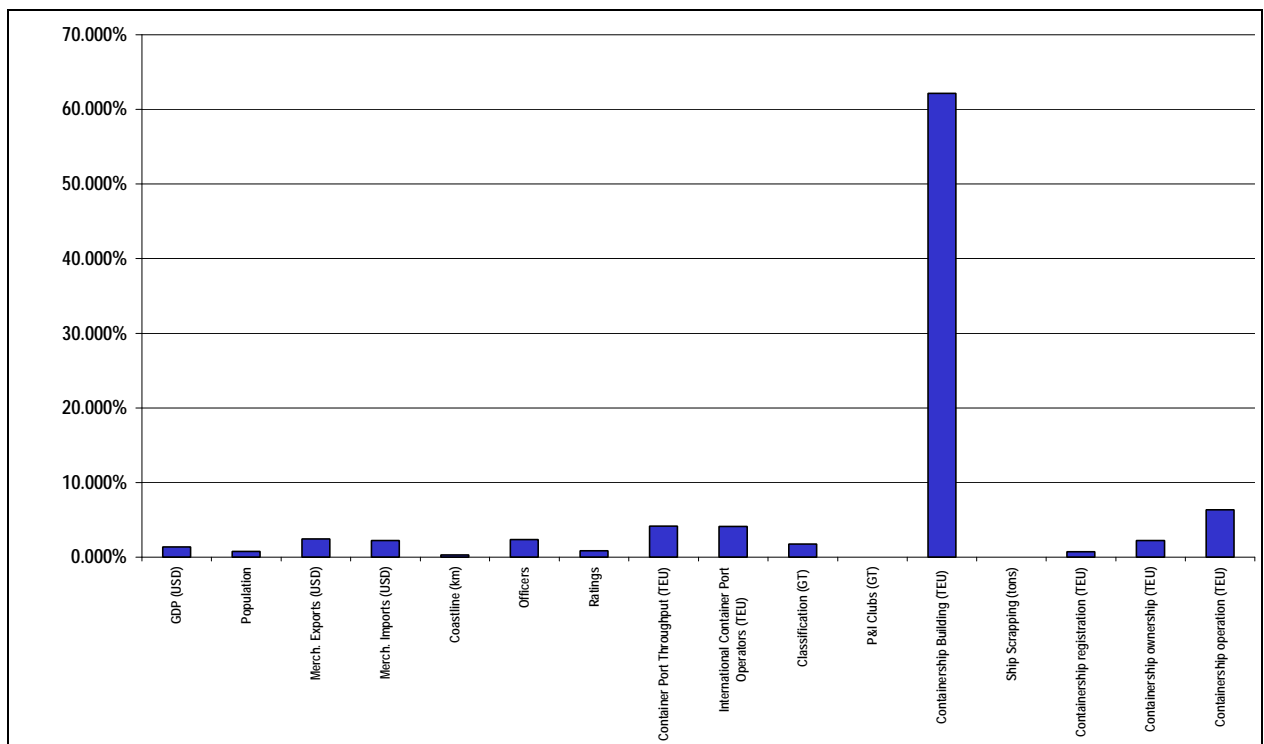
**Figure 7: Maritime Profile of Indonesia**



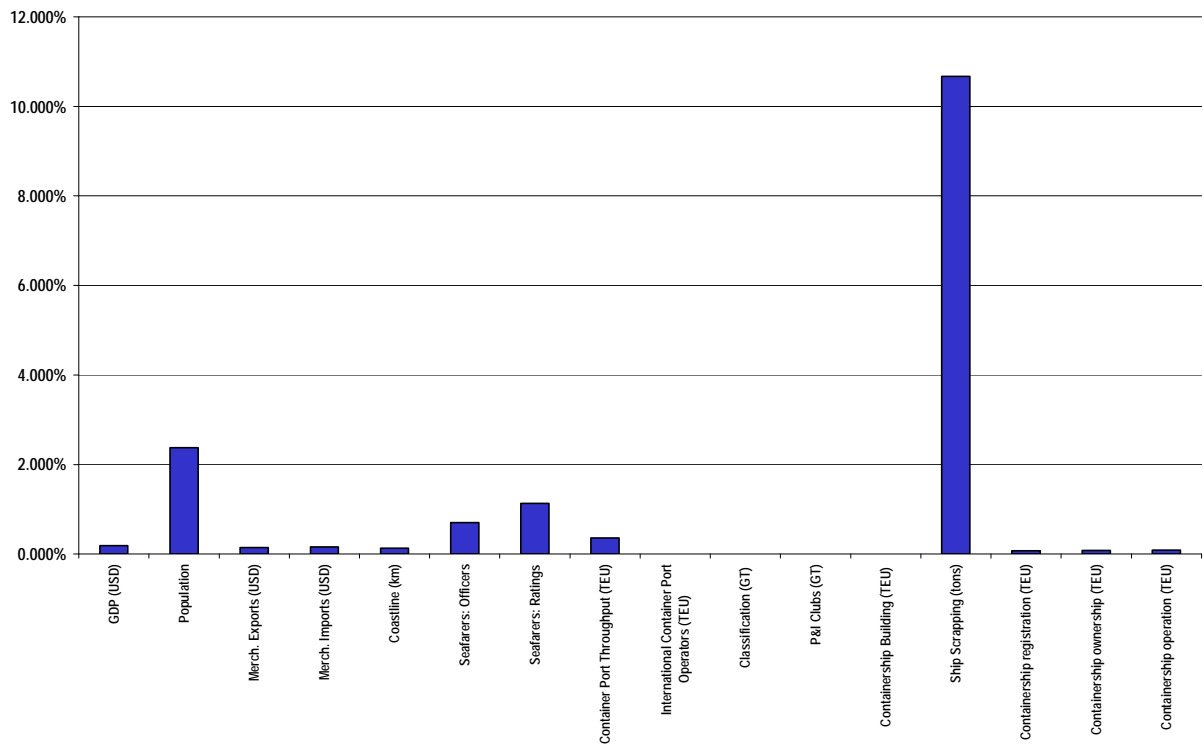
**Figure 8: Maritime Profile of Iran, Islamic Republic of**



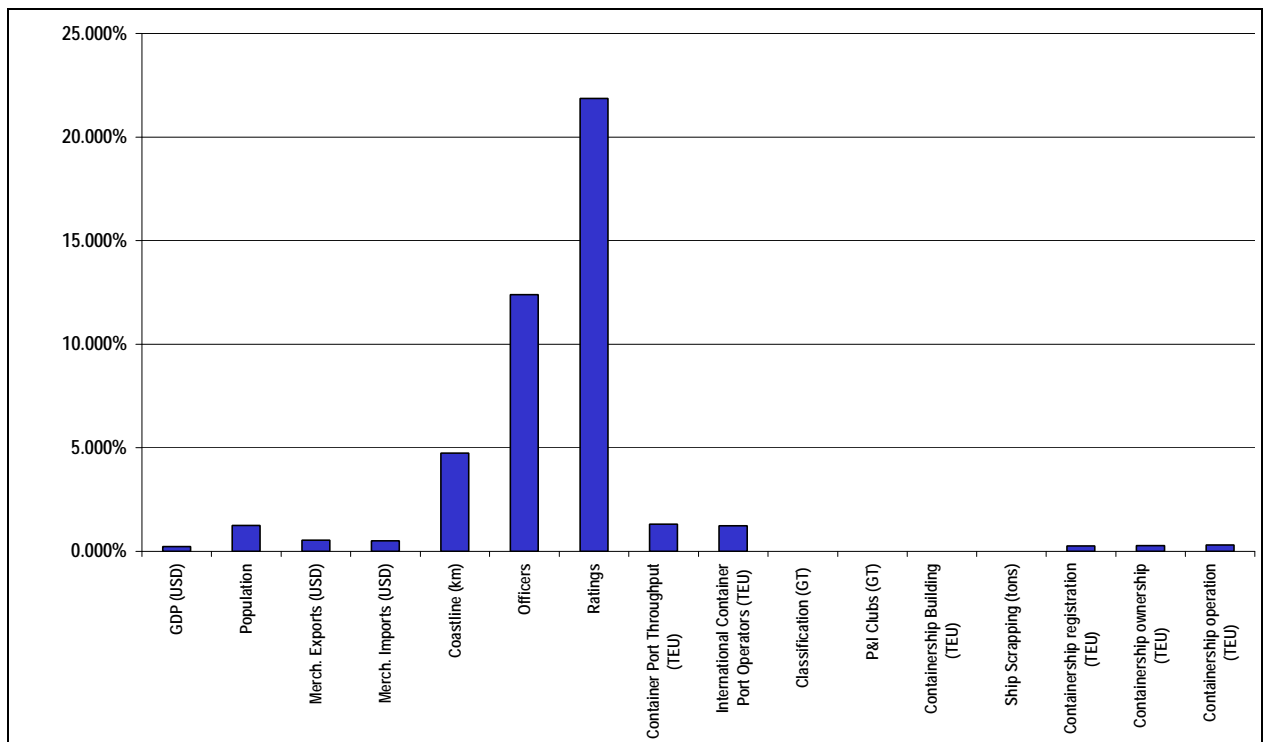
**Figure 9: Maritime Profile of Korea, Republic of**



**Figure 10: Maritime Profile of Pakistan<sup>1</sup>**

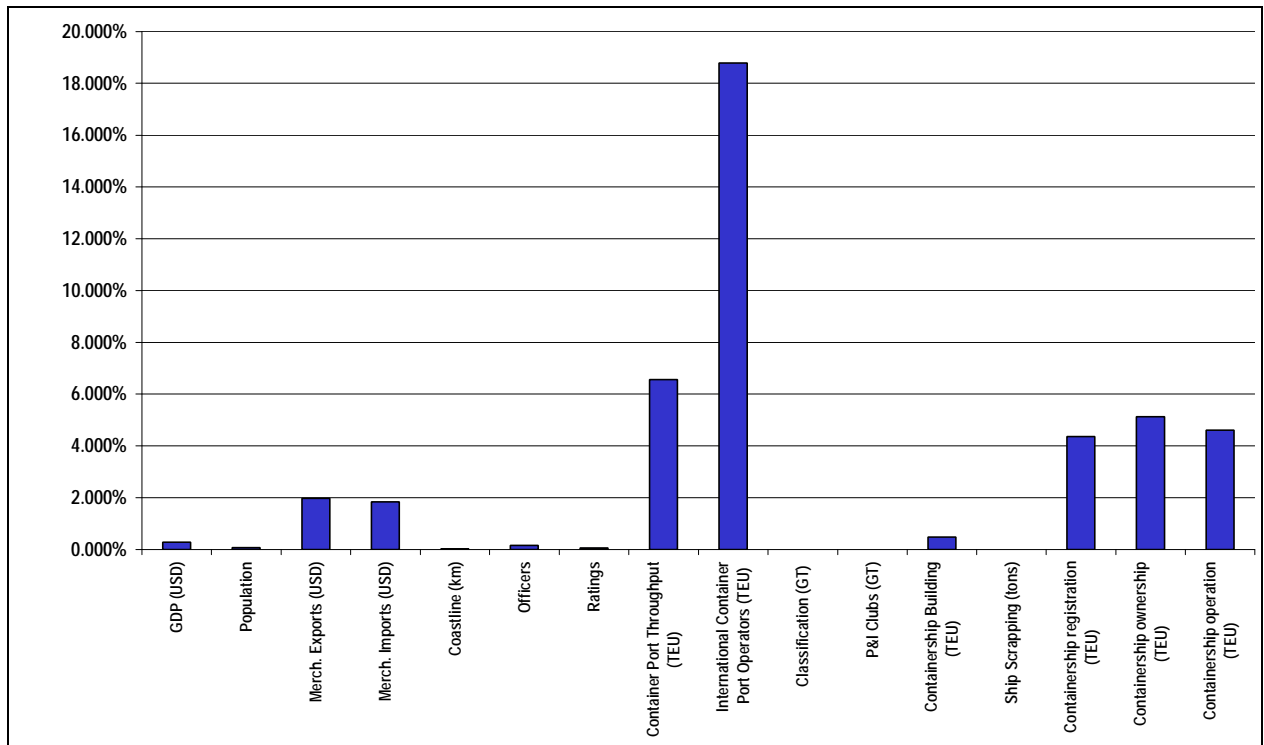


**Figure 11: Maritime Profile of Philippines**

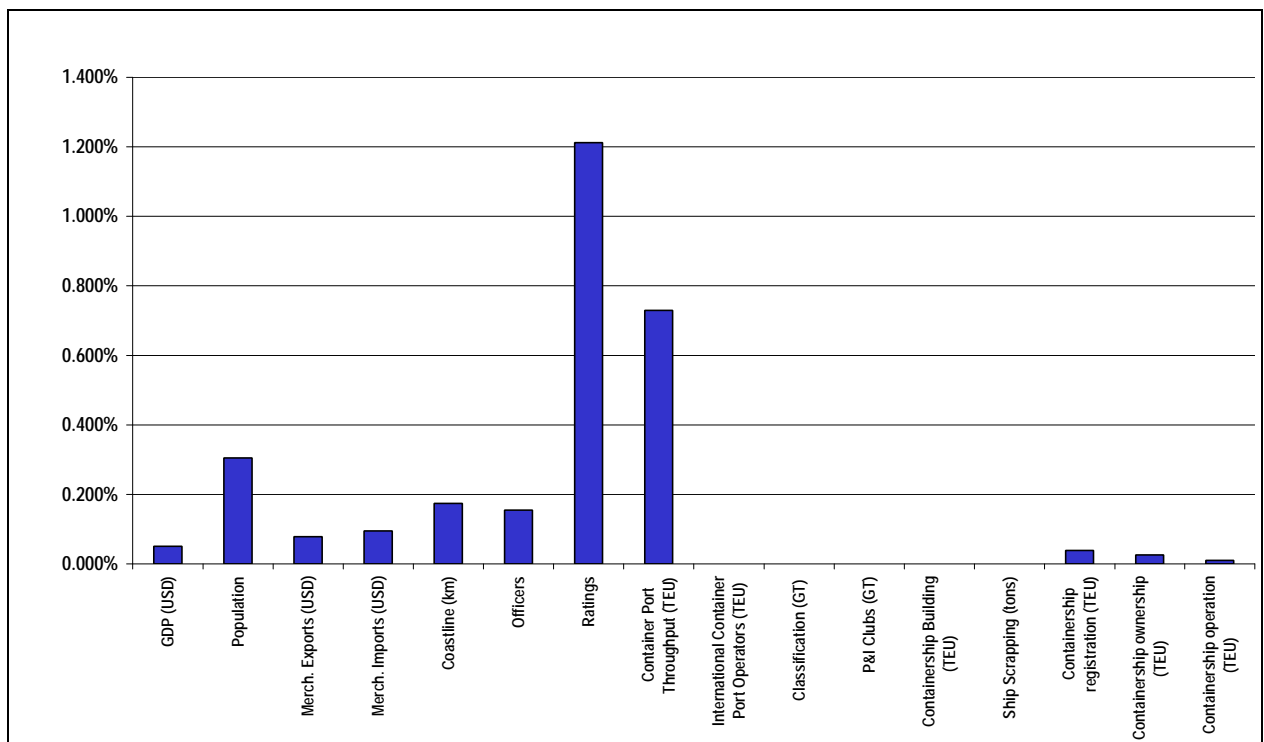


<sup>1</sup> The profile of Pakistan in this version of the paper is updated with data received during the presentation in May 2004 in Karachi.

**Figure 12: Maritime Profile of Singapore**



**Figure 13: Maritime Profile of Sri Lanka**



## Clustering of maritime sectors

Although the main thrust of this paper is to underline the specialization of countries, and the trend that different maritime sectors are hosted in different countries, there obviously also still exist strong synergies between some maritime sectors. The correlation between the location of different maritime sectors in different countries may be diminishing, but it is still positive in most cases.

**Table 3: Partial correlation between different maritime sectors, per capita indicators**

	Exports	Imports	Coast	Officers	Ratings	Port through	Port oper.	Class	P&I	Building	Scrapping	Register	Owner	Operation
Imports	<b>0.94</b>													
Coast	0.14	0.07												
Officers	0.08	0.16	0.24											
Ratings	<b>-0.10</b>	-0.03	<b>0.77</b>	<b>0.52</b>										
Port through	<b>0.88</b>	<b>0.94</b>	0.02	0.15	-0.04									
Port oper.	<b>0.85</b>	<b>0.93</b>	-0.04	0.16	-0.05	<b>0.97</b>								
Class	0.00	0.01	0.00	0.13	-0.04	-0.02	-0.03							
P&I	0.00	0.00	0.02	0.09	-0.03	-0.03	-0.03	<b>0.97</b>						
Building	0.06	0.07	-0.06	0.19	-0.03	0.07	0.05	0.29	0.05					
Scrapping	<b>-0.11</b>	<b>-0.10</b>	<b>-0.11</b>	-0.09	-0.06	-0.08	-0.05	-0.04	-0.03	-0.04				
Register	0.14	0.24	0.25	0.02	0.30	0.21	0.16	-0.04	-0.03	-0.02	-0.05			
Owner	0.27	0.39	0.21	0.06	0.27	0.36	0.32	-0.03	-0.02	0.01	-0.06	<b>0.98</b>		
Operation	<b>0.49</b>	<b>0.61</b>	0.14	0.13	0.19	<b>0.59</b>	<b>0.56</b>	0.00	-0.01	0.09	-0.08	<b>0.85</b>	<b>0.93</b>	
Average	0.32	0.35	0.13	0.14	0.11	0.33	0.31	0.12	0.10	0.06	-0.07	0.23	0.28	0.35
Overall average	0.21													

*Note: The correlation coefficients are calculated between per capita indicators for 51 Asian economies. To compute the per capita indicators, for each country, its market share in each sector was divided by its share of the world population.*

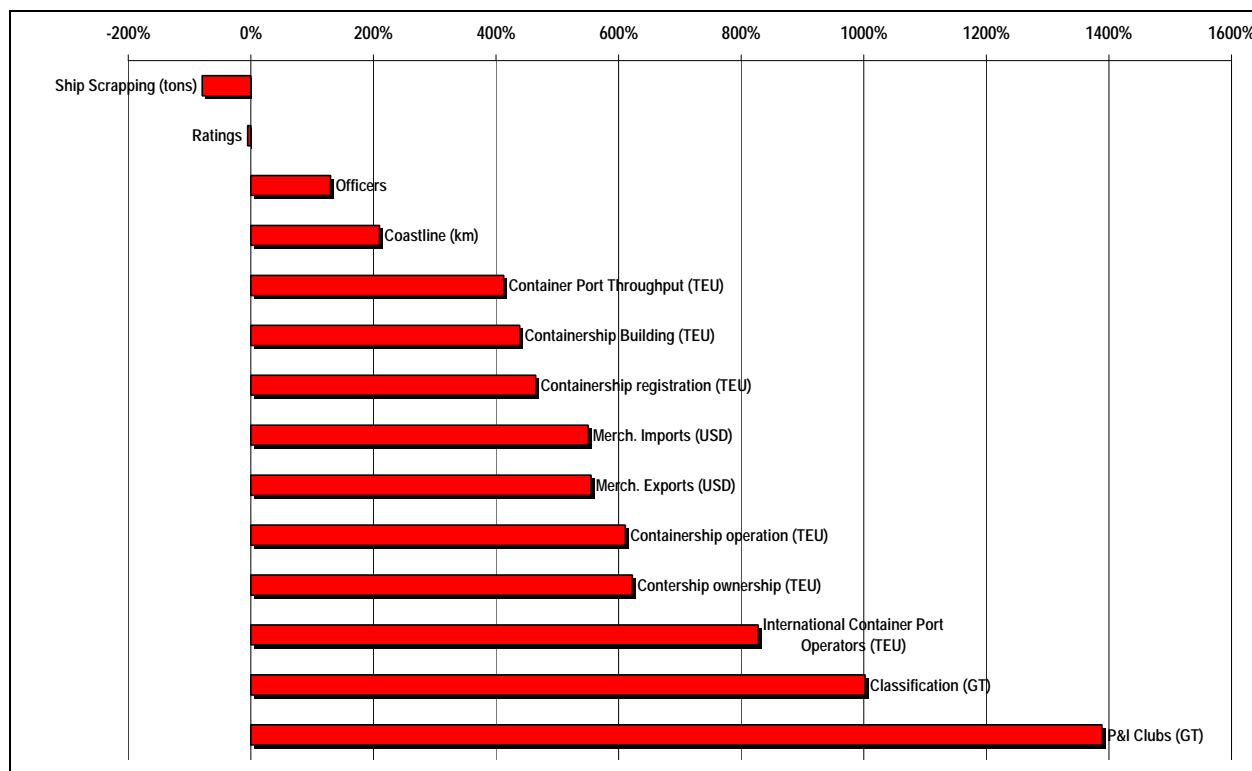
The generally high and positive correlation should certainly not be confused with a direct causality. The data base includes many small and landlocked countries that have zero participation in most sectors.

As could be expected, port throughput and operation is closely correlated with foreign trade. Ship operation, ownership and registration are also relatively strongly correlated, as are the participation in P&I Clubs and Classification. Seafarers, especially ratings, tend to come from countries with a long coastline, which may be due to a seafaring tradition, which cannot be found in landlocked regions or countries. Ship scrapping takes place in countries that have relatively little participation in other maritime sectors, and thus the correlation coefficients get close to zero or even negative.

What maritime sectors are located in what (type of) countries? As a first preliminary exercise, I have computed the weighted average GDP per capita<sup>2</sup> of the countries that are host to different maritime sectors. The results appear quite clear and should not be surprising (Figure 14).

<sup>2</sup> Meaning that each country's GDP per capita is multiplied with its share in the respective maritime sector. The sum of all shares is obviously 100%. Indonesia, for example, has a higher share in seafarers than in ship building, so its national GDP per capita also has a higher weight in the weighted average GDP per capita for seafarers than for ship building.

**Figure 14: The GDP per capita in relation to different maritime sectors in Asia**



*The 0% line indicates the average GDP per capita for 51 Asian countries, which is strongly influenced by the GDP per capita of its two most populous countries, China and India. The global average GDP per capita is 131% above the Asian average.*

Almost all sectors are more commonly found in countries with a GDP per capita above the Asian average and also above the world average. Only ship scrapping and seafarers (especially ratings) are supplied by countries with a relatively low GDP per capita. Officers are more likely to come from countries with a higher GDP per capita than ratings. The service sectors of classification and insurance are those located in the Asian countries with the highest GDP per capita.

Most port and ship related business activities are based in countries whose weighted average GDP per capita is 5 to 9 times above the Asian average. There probably exist mutual causalities: A country needs a certain level of income and development to be able to become a strong player in certain industries. At the same time, being able to maintain a high market share in different shipping sectors also contributes to a higher GDP per capita.

Understandably, most countries policy makers would wish their country's "maritime" market shares to grow. At the same time, the trend of concentration and specialization in the maritime industry leads to new challenges and opportunities. As the world can no longer be divided into maritime and non-maritime nations, policy makers (and interested researchers and international organizations) should attempt to find out which countries are nowadays more likely to specialize in which maritime sectors, and why.

## References

- Audigé, Michel (1995)  
*Maritime Transport Serving West and Central African Countries: Trends and Issues*,  
The World Bank, SSATP Working Paper No. 16
- Fink, C, Mattoo, A and Neagu IC (2000)  
*Trade in International Maritime Services: How much does Policy Matter?.* Mimeo.  
World Bank; Washington DC.
- Harding and Hoffmann (2002)  
*Trade between the CARICOM and CACM countries: The role to play for ports and  
shipping services*, United Nations ECLAC, Santiago de Chile  
[http://www.eclac.cl/transporte/perfil/LCL1899\\_P.zip](http://www.eclac.cl/transporte/perfil/LCL1899_P.zip)
- Hoffmann, Jan (1998a)  
*Concentration in Liner Shipping: Its Causes and Impacts for Ports and Shipping  
Services in Developing Regions*, United Nations ECLAC, LC/G.2027  
[http://www.eclac.cl/publicaciones/Transporte/7/LCG2027/LC\\_G.2027.pdf](http://www.eclac.cl/publicaciones/Transporte/7/LCG2027/LC_G.2027.pdf)
- Hoffmann, Jan (1998b)  
Concentration in Liner Shipping: Causes and Impacts, *World Sea Trade Service Review*,  
DRI-McGraw-Hill, Third Quarter  
<http://www.eclac.cl/transporte/perfil/HoffmannConcentration.pdf>
- Hoffmann, Jan, Ricardo Sanchez and Wayne Talley (2004)  
Vessel Flag Choices, *Research in Transportation Economics*, Vol. VII: Shipping  
Economics, London, forthcoming  
[Jan.Hoffmann@UNCTAD.org](mailto:Jan.Hoffmann@UNCTAD.org)
- Kent, Paul and Asaf Ashar (2001)  
Port Competition Regulation: A Tool for Monitoring for Anti-Competitive Behaviour,  
*International Journal of Maritime Economics*, **3**, 27-51
- Kumar, Sashi and Hoffmann, Jan (2002)  
*Globalization, the Maritime Nexus*. Handbook of Maritime Economics. LLP, London,  
October.  
<http://bell.mma.edu/~skumar/IAMEBook.pdf>
- Sletmo, Gunnar K. (2001)  
The End of National Shipping Policy? A Historical Perspective on Shipping Policy in a  
Global Economy: *International Journal of Maritime Economics* **4.3**, pp. 333-350
- Sletmo, Gunnar K. (2002)  
*National Shipping Policy and Global Markets: A Retrospective for the Future*. IAME  
Panama 2002 introductory speech, Panama, November.
- Spurgeon, Kellie, Jolanda Prozzi and Robert Harrison (2003)  
*The Secret Life of the Container: Evidence from Texas*, TRB 2003 Annual Meeting CD-  
ROM.
- United Nations ECLAC (2002)  
*The cost of international transport*, FAL Bulletin 191, Santiago de Chile  
<http://www.eclac.cl/Transporte/noticias/bolfall/2/11072/FAL191e.htm>
- UNCTAD (2003)  
*Review of Maritime Transport*, United Nations, Geneva  
[http://www.unctad.org/en/docs/rmt2003&c1\\_en.pdf](http://www.unctad.org/en/docs/rmt2003&c1_en.pdf)

## **Sources of data**

The data for the calculation of the industry concentration indexes in Part I of this paper are mentioned under each table.

For the calculation of the maritime profiles, the following sources were used:

Classification: LRFairplay. Data is for January 2003.

Coastline: [http://www.geographyiq.com/ranking/ranking\\_Coastline\\_aall.htm](http://www.geographyiq.com/ranking/ranking_Coastline_aall.htm). Data is for 2004.

Container port throughput: UNCTAD RMT, CI Yearbook, and port web sites. Data is for 2001.

Containership building: CRS. Data is for November 2003.

Containership operation: LRFairplay. Data is for January 2004.

Containership ownership: LRFairplay. Data is for January 2004.

Containership registration: LRFairplay. Data is for January 2004.

GDP, Trade, and population: UNCTAD. Data is for 2001.

International port operators: Dynaliners, quoting Drewry. Data is for 2001.

Seafarers: ISD/BIMCO manpower update 2000. Data is for 2000.

Ship scrapping: Lloyds List press articles and ILO web site. Data is estimated for 2001.