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# Smooth Sailing or Rough Seas: The Future of International Liner Shipping

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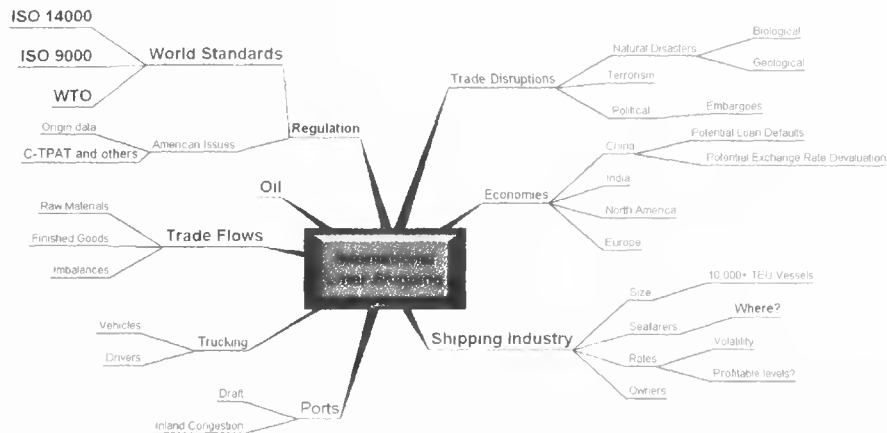
The last 5 years have been exciting for the world of international liner shipping. Mergers, new and larger vessels, charter rates becoming more volatile and demand continuing to increase are just part of this world of liner shipping.

This article is an attempt to highlight some of the issues that will be affecting international shipping in the forthcoming years. At its best, this article will be right on the money. At its worst, readers will look back at this article and wonder how the author could have been so wrong. More likely is that some things will occur as predicted, while others have not even been thought of yet.

## THE ISSUES OF CONCERN

There are many influences that affect the liner shipping industry. It is hard to prioritize these influences as at any point in time one or more might have increased importance or relevance compared to others. Figure 1 depicts a Mindmap of the various issues that will have an effect on international transportation in the near future. Mindmapping is associated with Tony Buzan. The technique of mindmapping allows a more freestyle method of organizing your ideas compared to using traditional lined paper. Initially, the mindmap frees the user from assigning importance of ideas over one another.

**FIGURE 1**  
**MINDMAP OF ISSUES AFFECTING INTERNATIONAL TRANSPORTATION**



For example, at this point, one cannot say whether trade disruptions are more important than changes in regulation in terms of impact for the future. What it does allow is the relationship of the ideas, in this case back to international shipping.

With that caveat, the following issues are offered to be the main ones that will affect international shipping in the next 5-10 years (with more detail in a later section):

The shipping industry includes specific issues such as size of the vessels, the size of the companies (including new mergers and acquisitions), the level of competition, the rates for containers and the rates for chartering vessels, and even the supply of seafarers.

The economies of the world are in flux. Which economies will be the sources of growth, which will be lagging behind? Are there issues with specific countries that need to be taken into account?

Very related to the economies are the trade flows. Where are the goods coming from and to where are they going? Are there imbalances in the imports and exports of various countries? One specific problem is that in many cases, raw materials, which come in bulk form, must be imported on bulk ships which cannot be used to export the finished goods, which tend to use containerized liner shipping services.

Trade disruptions must be taken very seriously now as the last couple of years have seen acts of terrorism, natural disasters such as the Asian Tsunami and Hurricane Katrina, and other political interventions such as embargoes and quotas. Longer supply chains literally mean more chance for disruptions to take place.

Regulation is becoming more encompassing and restrictive. New regulations will certainly add cost, but the cost of non-compliance could be even greater.

The trucking industry will have an effect on the inland delivery of the container to/from the port and along with rail services could have an impact on ocean shipments.

Regulations are continuing to be developed for safety and security reasons. World standards along with U.S. initiatives will need to be satisfied to continue to ply the world's oceans.

Ports have a significant role to play as they are the interface between the ship and shore. An efficient running port is critical to the successful liner shipping firm. The wrong choice of port could make them uncompetitive.

## SHIPPING INDUSTRY

Size is the biggest factor that will affect the liner trades in the next few years. Now that the Emma Maersk is up and running, other lines will be competing to bring their next generation of vessels online. These large ships change the pattern of shipping routes, as they must travel on the largest trade lanes, as their economies of scale are only recognized when they are sailing full of cargo. Another related issue of these large vessels is the cascade effect that takes place (Menachof et al., 2004), whereby the previous vessels on a particular route are shifted to the next largest route, causing a cascade effect, and increasing effective capacity on secondary routes as well.

Table 1 shows the 10 largest container vessels currently sailing. The trend is to continue with more vessels breaking the 10,000 TEU barrier, while Table 2 shows the construction trend.

The size of the vessels has already exceeded the Panamax limit, and are closely reaching Suexmax proportions, with a beam of 57 meters considered close to the limit. According to predictions, new vessels could be reaching Malaccamax size in the next 10 years. The size and draft of these vessels will cause problems for ports around the world as well and will be discussed in the port section of the paper.

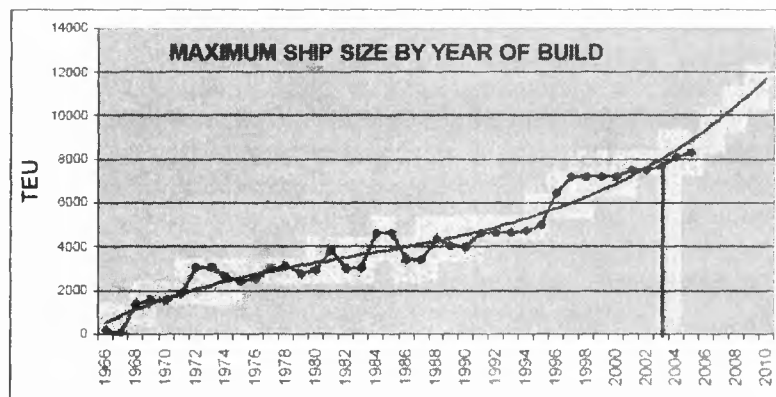
Closely related to the size of the individual vessel is the size of the total container fleet. Table 2 shows that the number of TEU's able to be carried has increased by over 400% since 1992 and by 2009 by an additional 50% to over 12,000,000 TEU's.

**TABLE 1  
BIGGEST SHIPS IN THE WORLD, LISTED BY TEU CAPACITY**

Built	Name	Length o.a.	Beam	TEU	Gross Tons	Owners/Flag
2006	Emma Mærsk	393.0 m	56.4 m	14,500 (maximum TEU)	151,687	Maersk Line/Denmark
2006	Georg Mærsk	367.28 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2006	Gerd Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Gjertrud Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Grete Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Gudrun Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2005	Gunvor Mærsk	367.3 m	42.8 m	10,150	97,933	Maersk Line/Denmark
2006	Xin Los Angeles	336.7 m	45.6 m	9,580	107,200	China Shipping Container Lines (CSCL)/Hong Kong
2006	Cosco Beijing	350.0 m	42.8 m	9,469	99,833	Costamare Shipping/Greece
2006	Cosco Hellas	350.0 m	42.8 m	9,469	99,833	Costamare Shipping/Greece

Source: Wikipedia

**FIGURE 2  
PREDICTED GROWTH IN CONTAINER SHIPS**



Source: Solentwaters.co.uk

TABLE 2

EVOLUTION OF THE CELLULAR FLEET 1988-2009			
Year	Number	Teu	Progr.
1988	1,164	1,496,067	
1989	1,197	1,601,973	7.1%
1990	1,247	1,708,014	6.6%
1991	1,319	1,846,004	8.1%
1992	1,406	2,003,753	8.5%
1993	1,497	2,199,359	9.8%
1994	1,595	2,377,482	8.1%
1995	1,742	2,643,976	11.2%
1996	1,917	2,973,081	12.4%
1997	2,112	3,351,367	12.7%
1998	2,342	3,857,889	15.1%
1999	2,523	4,279,300	10.9%
2000	2,622	4,508,708	5.4%
2001	2,746	4,919,526	9.1%
2002	2,904	5,523,456	12.3%
2003	3,045	6,109,473	10.6%
2004	3,186	6,651,624	8.9%
2005	3,359	7,301,982	9.8%
2006	3,618	8,240,755	12.9%
2007	4,011	9,560,000	16.0%
2008	4,454	10,970,000	14.7%
2009	4,769	12,320,000	12.3%

Figures are given at 1<sup>st</sup> January of each year

Figures for 2007 to 2009 are derived from the orderbook

Source: BRS-Alphaliner

Like the trucking industry trying to find drivers, the shipping industry is going to have more trouble finding seafarers. There are two major issues that will come into play. Western countries are finding it increasingly difficult to recruit nationals to go to sea. According to

Marisec, the Philippines and India are continuing to supply significant numbers of non-officers, but as yet, do not have the quality desired by the fleet owners to move to the officer levels in great numbers. The other issue is the increased paperwork required for security

clearances to get personnel onboard vessels in the first place. Many ships may become short staffed while awaiting replacement crew to be cleared for service.

At the moment, the liner trades are generally profitable, which is part of the reason for the increased investment in the sector. However, like their bulk counterparts, they are increasingly seeing volatility in charter rates for containerships. This volatility in the bulk trades has resulted in boom and bust years, and this should be expected to happen more in the liner trades as well. Figure 3 shows that rates were relatively stable until 2002. Expect this volatility to continue as economic cycles and more tonnage create a fertile space for sale and purchase investors to enter the market.

One should expect to see more mergers in the next couple of years. Figure 4 shows the top 25 global liner shipping operators. Maersk continues to be the world's largest operator after absorbing Sealand and more recently P&O/Nedlloyd.

## ECONOMIES OF THE WORLD

The world economy plays a central role for liner shipping. One of the key realizations is that demand for transportation is derived from the demand for the goods themselves. 2003 world merchandise trade grew by 4.5 percent with the most dynamic trading regions being Asia and transition economies. However, U.S. merchandise imports went up by 5.7 percent and EU merchandise imports went up by 2 percent. At the same time, Latin America's exports rose by 4.5 percent, and global trade expanded by 8.5 percent the following year, according to WTO reports. The lag in world reporting means 2005 data is not yet ready, but indications for 2005 and 2006 are positive and growth is expected to continue, but not at the same pace as before. The largest growth in the world is taking place in China, with imports up some 40 percent in 2004. China does have some issues to face and if they do not, there could be an economic bubble bursting. Mandel (2004) reports that a bubble of

unprofitable investments and excess capacity is building up in China within the next 5 years. If this happens, imports and exports will be hit. At the same time, the Yuan is considered by many to be undervalued relative to the dollar and any attempts to correct this balance could be 'catastrophic' according to a Chinese central bank advisor, according to Forbes (2006). The result would be an immediate decline in the sale of Chinese manufactured goods, and this decrease would hit the liner industry hard as much of the tonnage currently on order is based on a growing Chinese economy.

In the meantime, we have seen the Indian economy come to life as a production economy. No longer just the place to outsource your telephone call centers and computer programming, manufacturing is quietly growing. If the Chinese economy falters, India will be ready to take its place.

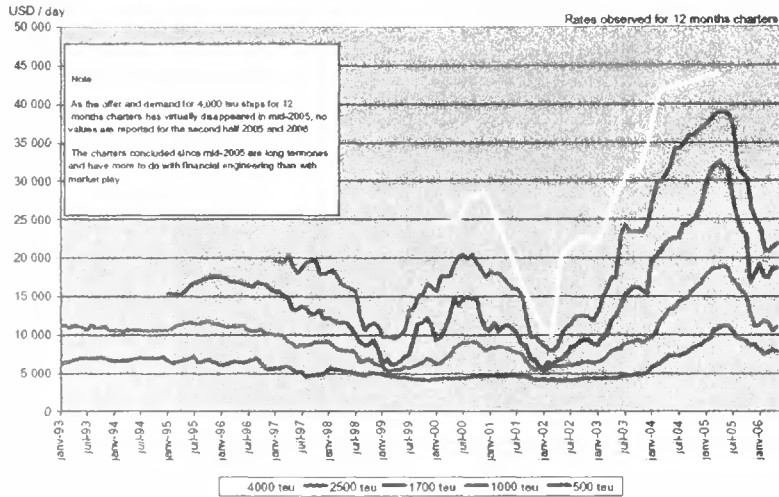
## TRADE FLOWS

Closely related to the economies of the world are their effects on the trade flows. The Chinese economy seems to have the most positive trade balance, but is now buying raw materials on the world market and becoming one of the largest importers in the world, as well as the world's largest exporter.

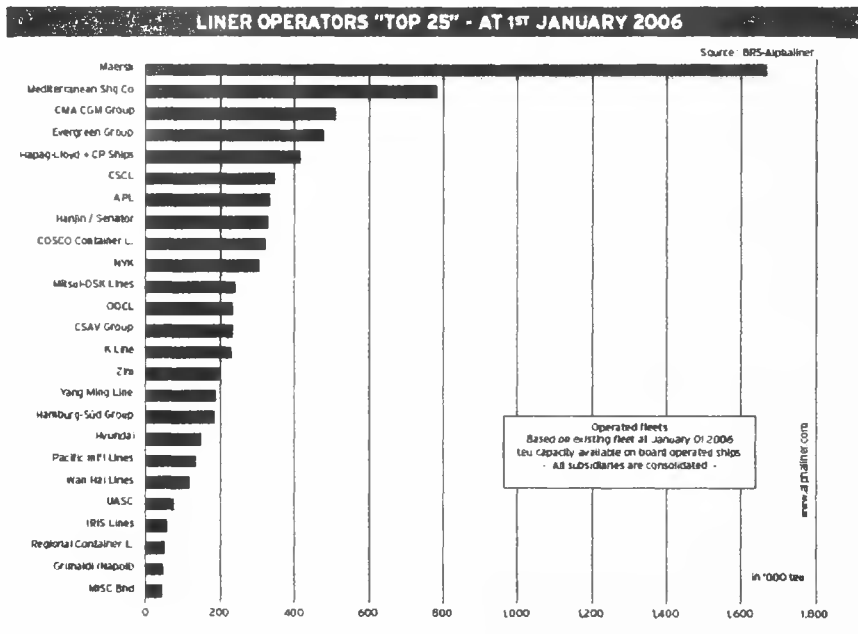
The trade imbalance with the United States is quite startling to look at in currency value, but focusing on the container trade, the Transpacific trade lane had an eastbound/west-bound ratio of 2:1 in 2001. This meant that twice as many containers were coming to the U.S. than were going back to China. This ratio has worsened to 3:1 by the beginning of 2006 (see Figure 5). Liner companies have to ship containers empty just to stop them piling up in the U.S. With oil prices as high as they are, it might not be cost effective to return the containers empty as the cost to produce them is becoming so inexpensive in China. The U.S. is not the only country with a trade imbalance. According to the Department of Trade and Industry, Britain exported just over £2.8bn of goods to China last year but imported

**FIGURE 3**

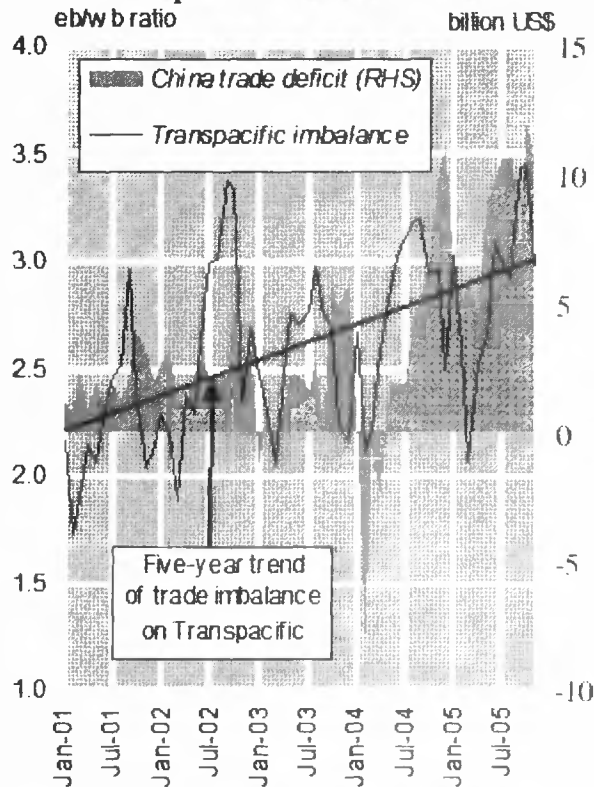
Evolution of charter rates - 1993-2006  
Source : BRS-Alphaliner



**FIGURE 4**



**FIGURE 5**  
**Transpacific Ebbs and Flows**



Source : Clarkson Research Services

nearly £16bn—a 30-fold increase on 1980 (Guardian, 2006).

### TRADE DISRUPTIONS

Trade Disruptions have generally taken three major forms: Natural Disasters; Terrorism; and Political.

Recent natural disasters have been Geological, such as the Asian Tsunami, Hurricane Katrina, and the Pakistani Earthquake. Milder disasters have seen major snow storms and flooding hit regions around the world. These are basically unpredictable in their exact location, but more will occur. Other types of natural disasters are

Biological. The most recent scare has been the Avian Bird Flu, where according to the World Health Organization, models predicted global deaths in the range 2 million to 7.4 million with a mild form of the disease, but many more with a more virulent form (WHO, 2005). If the response from governments and the population is similar to the SARS outbreak, there could be a decrease in shipments from places affected, as the workforce is kept home. Shipping lines may skip port calls in affected areas.

Terrorism is the main perceived threat to trade in the U.S. 9/11, 7/7 in London, and the Madrid bombings all caused major damage and loss of life. In addition, the response of public



authorities to prevent any further incidents had, as a consequence, delays to the supply chains of firms around the world. To be mentioned in the next section, U.S. regulation has been designed to stop potential threats, such as a dirty bomb being shipped in an ocean container and delivered to the shores of the U.S. In today's marketplace, firms must be seen to be doing everything they can to secure their supply chains against infiltration by terrorists.

Finally, political events have caused trade disruptions both from a governmental level and at a trade union level. Governments have placed embargoes or quotas on other countries goods for various reasons. The recent 'Bra Wars' in the EU-China trade caused hardship for many European retailers as textiles were impounded in EU ports when quotas were filled months before they were expected to.

Trade unions have gone on strike causing major disruptions. The West Coast USA Port Strike was estimated to reduce U.S. earnings by \$4.7 Billion (Anderson, 2002).

## REGULATION

The International Maritime Organization (IMO) passed the International Ship and Port Facility Security Code (ISPS) in December 2002 which requires detailed security plans from shippers, shipowners and ports. "Under the terms of the Code, shipping companies are required to designate a Company Security Officer for the Company and a Ship Security Officer for each of its ships" (IMO). Additional features for the code are still being developed, but each iteration places additional burdens on all parties involved.

On the American front, there are many new developments. They include

- Cargo Security Risk Assessment—"24 hour rule"—24 hours notice required before loading in foreign port, or no arrival in U.S.
- CSI—Container Security Initiative—Tamper-proof seals, Intelligent RFID tags
- C-TPAT—Customs-Trade Partnership Against Terrorism—via voluntary, non-regulatory agreements
- Sarbanes-Oxley Requirements—Section 404

Much of the recent U.S. legislation is based on an assumption that there is vulnerability in the supply chain, and vulnerability has to be minimized. C-TPAT is of special interest to shippers because it is voluntary (at the moment) but the benefits of membership are great (see Table 3). Shippers who do not become C-TPAT members could see delays at U.S. borders and face additional customs inspections.

In addition to safety and security regulation, the EU is considering a proposal to repeal Council Regulation 4056/86, the block exemption of liner shipping conferences from the EC Treaty competition rules' ban on restrictive business practices. Shipping lines will no longer be able to use conferences to fix prices and capacity on shipping lanes to or from the EU if the exemption is repealed. The effects may create a price war to/from the EU as liner companies try to fill their larger and larger fleets. This would create a clear benefit to shippers in the short term as rates are reduced, but if smaller players are pushed out of the trade, the long term could actually see higher rates with less competition.

**TABLE 3**  
**BENEFITS FOR C-TPAT MEMBERS**

<b>Benefit</b>	<b>Reduces amount of scrutiny provided for members?</b>
A reduced number of inspections and reduced border wait times	Yes
Reduced selection rate for trade-related compliance examinations	Yes
Self-policing and self-monitoring of security activities	Yes
Access to the expedited cargo processing at designated FAST lanes (for certified highway carriers and certified importers along the Canadian and Mexican borders, as well as for certified Mexican manufacturers)	Yes
Eligible for the Importer Self-Assessment Program and has priority access to participate in other selected customs programs (for certified importers only)	Yes
A C-TPAT supply chain specialist to serve as the CBP liaison for validations	No
Access to the C-TPAT members list	No
Eligible to attend CBP-sponsored antiterrorism training seminars	No

Source: R, Stana Testimony on CBP's C-TPAT Strategic Plan, November 2005.

### OIL

No discussion of transportation could be complete without a look at oil. Oil hit record highs of over \$75 per barrel only to see prices fall to below \$60 in October 2006. At a recent presentation at CSCMP's annual conference, Chuck Taylor, Principal of Awake Consulting, discussed the concept of Peak Oil and said that, "we might have already reached the point of maximum annual production, and if not, it is within the next 10 years." If this is the case, and energy use policy worldwide is not changed, oil prices are expected to remain high and should be expected to increase in the following years. Shipowners will have no choice but to pass on this cost to shippers. Shippers will have to decide if price increases are a sustained

trend and if so, at what price level would a change in supply chain sourcing take place.

### CONCLUSIONS

The conclusions that one can read from all of these influences on the liner shipping industry is anything but smooth sailing ahead. There will be winners and losers, of course, but all of the firms in the industry and their shippers will continue to see changes to their services.

Shippers should begin to do scenario planning based on plausible events occurring. For example, what would happen to your supply chain if the Suez Canal is closed for an extended period of time? Contingency planning for short-term and long-term effects should be carefully thought out.

There will be trade disruptions. That can be predicted, but where and when is the unknown quantity. The key is preparation and risk management. Firms that take positive steps will

have contingencies in place to make quick adjustments and maintain their supply chains functionality.

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