

# Implications shipping market development on Marine Insurance container shipping

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# The Shipping News

- Largest Container Vessel ever built sails from China

# The Shipping News

- Loss of Worlds largest Container vessel due fire.
- Lloyds syndicate calls on central fund
- Several Insurers unable to meet their claims.
- P&I club make substantial mid term calls.
- Toys R Us misses seasonal deliveries
- Christmas cancelled



# Cargo Handling prior to Containerisation.



# Developments in container vessel size

- SS Ideal X-Malcolm Mclean 1955
- OCL's
- Panamax
- Post Panamax
- Very large (mega) containers



# Liverpool Bay 1972 – 2,961 TEU



# Regina Maersk 1996 6000teu



# Container vessel evolution



# CSCG Globe 2014 - 19,100 teu





# Advantages of Containerisation

- Containerisation has meant less handling damage at docks.
- Less pilferage from ships holds and dock warehouses.
- Warehouse to warehouse rating for insurance.
- High unit values –container v truck load goods.
- Thefts now full container loads.

# MV Ever Lucid

- Built 2013
- 8,508 teu
- Value USD 103M
- Cargo USD80k x 8500=680M,
- Container value usd 2000=17m
- Bunkers 30 x 210 x375 = 2.36M



# What can go wrong-vessels

- Fire DG goods-mis declared, too few crew, no water pressure.
- Structural failure-overweight containers, high tensile steel
- Mechanical failure- engine
- Navigational error-ECDIS, crew inexperience



# Loss of Vessel

Hull Claim

Own Treaty re-instatement costs

Container owner asset and liability

Cargo Claims  
Various insureds  
and various offices

Insurance Company

Share  
International  
Group programme

Charterers and  
Freight liability

Treaty Re-  
insurance other  
companies.

Re-insurance  
of individual  
club

# What can go wrong –Ports

- Cat event – quake, fire, windstorm, flood
- Damage to quay cranes
- Port blockage



# Loss of Port

Unknown cargo  
accumulation –  
container and  
warehouse

Port terminal  
equipment  
insurance

Business  
Interruption- non  
marine

Insurer

Known cargo  
accumulation –  
static  
warehouse/stock

Treaty reinsurance  
other companies

Container owner

# Implications to Insurers

- Insurers capacity –protection any one event
- MOL Comfort-many offices
- Re-insurers capacity
- Cost of wreck removal-Rena, Napoli
- Cost of claims – GA Adjustment, cargo claims, time for adjustment, effect on reserves
- Ability to recover against vessel/builder-limitation of some protections
- Claims against NVOCC's

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- A truly global company, with local operations in 54 countries
- Local Offices in Bahrain, Saudi Arabia, Dubai, Egypt, Tunisia, Pakistan
- The world's fifth largest multiline property and casualty insurer\*
- Market capitalisation of \$37.8 billion\*
- Core operating insurance companies are rated “AA” for financial strength by S&P and “A++” (Superior) by A.M. Best
- Exceptional financial strength, managing risk conservatively in both underwriting and investing
- ACE Limited, the parent company of ACE Group, is listed on the New York Stock Exchange and is a component of the S&P 500 index







## Implications of Shipping Market Developments on the Marine Insurance. –Container Shipping

Good morning.

I have been travelling in various employments now for over 40 years, and this is the first time that I have visited Jordan and the busy port city of Aqaba. I am very pleased to have been invited to speak to such a large and industry representative audience.

In this paper we will investigate how developments in container ship size and their trading patterns are affecting Marine Insurers, Cargo, Hull, P&I and their respective re-insurers.

I give you an example of a potential news headlines.

We are all aware of the weekly news that the world's largest container vessel has just entered service. There appears to be continual one up man ship between the major lines. In April Orient Overseas ordered six 20,000TEU vessels.

However before we explore so the values, and the risks, lets us remind ourselves of the container revolution.

Prior to the adoption of containers by commercial carriers (military had been using them since the Great war of 1914-18) cargo was collected in warehouse's in the ports, loaded and stowed by large gangs of stevedores onto multi decked cargo vessels and discharging was the same. Ships spent weeks in port, cargo pilferage was common, as was cargo damage.

In 1955 Maclom Mclean modified the tanker SS Ideal X to carry box trailers on deck. The first purpose built container vessel, Clifford J. Rodgers, carried 600 teu trading in British Colombia in the same year.

Increase in size followed as new trades opened up, OOCL Bay class from Europe to Australia, 2,961 TEU in 1972, the Regina Maersk at 6,000 teu in 1996, through to Maersk triple E's, CMA CGM Marco Polo and CSCL Globe and others, all around 19,000 teus.

Containerisation has meant cargo can be moved from inland warehouse to inland warehouse, without physically touching the cargo in the container. Shipping lines have established regular, reliable schedules, allowing for Just in Time manufacturing and Globalisation of the supply chain, including expansion of China as a workshop of the world. Damages to cargo have substantially reduced, once the industry learnt how to pack a container for the various seagoing forces, pilferage has reduced, but thefts of entire containers has pushed up claim values, cost of shipping has reduced. Fewer ships, fewer crew, fewer dock workers.

Firstly we will look at the accumulated values on a vessel and what can cause a loss.

Next we will examine accumulations in a port, and again incidents that can produce a large loss



We will investigate how this affects insurers and re-insurers and finally cost of claims.

For this exercise instead of looking at the mega containerships, we will use the MV Ever Lucid a 2013 built container ship, 8,508 TEU's which does call at the Port of Aqaba.

Hull value USD 103M when new.

Value of cargo, assuming USD80K per container and that vessel is full when leaving Asia, cargo value of approx. USD680M. Container content values can vary from nil if empty or carrying waste paper and plastic back to China, to several million if carrying I pads, vaccines or other high value cargo.

The containers themselves could be worth in total USD 17 m, taking an average value of USD 2,000 each. Older containers less, reefer containers much more.

This vessel burns 210 tonnes of bunker fuel a day, for a 30 day voyage with heavy oil at USD375 equates to USD 2.36M on sailing.

Since shipping companies have invested so much money in these mega ships, to promote efficiency, they have to fill them. We now see the 2M service, Maersk and MSC sharing vessels. The sharing of slots on vessels in some alliance has long been common. These vessels need to sail full to make them pay. The use of mega vessels on Asia Europe has resulted in the employment of large displaced tonnage into Middle East, Pacific, Indian trades, and the size of feeder vessels increasing. MV Ever Lucid being a case in point.

So what can go wrong with a large container vessel? Shippers and Brokers will always tell Underwriters that the cargo is safe, it's in a container.

Firstly, Fire. 10% of all cargo shipped in containers is classed as Dangerous Goods. Between June 2011 and sept 2013, 28% of cargo claims reported via the Cargo Incident Notification System, related to Dangerous Goods that had been mis-declared. Such containers should be stowed on deck and away from accommodation, and a premium is charged by shipping lines to handle them. Temptation not to declare correctly, and save money, can be great.

We have experienced many incidents in last few years of fires from Dangerous Goods in holds – Flammina (hull loss \$40M, cargo loss\$50M), Hanjin Pennsylvania (combined loss \$235M-fireworks), Hyundai Fortune, (blamed on calcium hypochlorite).

Although many ships have CO2 systems fitted to the container holds, once integrity of hatch is compromised due to excessive heat, they are useless. There are too few crew to effectively fight any fire once it takes hold, maybe 20, and with the size of the vessels, very large pumps are required to lift water and provide any decent pressure to the fire main.

On the latest large CGM CMA vessels, GL-DNV class have now given approval or dangerous goods below deck.

Structural failure. The length and breadth of these vessel means that there are excessive stresses on the hull form, both longitudinally and torsional. Although positioning of containers is carefully planned by shipping line, they rely upon shipper declaring correct weights. When containers were



landed in UK from the stricken MSC Napoli, 600 were weighed, and 137 found to have mis declared weights, some by 20 tonnes. The difference in that vessels displacement found by draft survey on sailing and that calculated was 1250 tonnes. She broke in the region of a previous repair. At the time she was only carrying 2395 container out of a capacity of 4734. In 1991 when launched she was the world's largest container ship.

The MOL Comfort sank due to structural failure, we are waiting for final report.

Mechanical failure of main engine can result in loss of power, and in some cases loss of electricity on board. This may result in salvage operation, and a large General Average, but also loss of any reefer cargo.

Navigational error resulting in grounding or collision. Call them improvements but most new vessels are fitted with ECDIS – electronic chart display information systems. These integrate position information from GPS, information from radar, AIS and other systems and give the officer of the watch a visual display of the world around him. There are many different systems all of which are very complex and lack of training has been reported as a cause of collisions and groundings. Grounding of the chemical tanker Ovit was attributed to lack of knowledge in the use of this system.

Lack of crew experience was attributed to grounding of the Rena off New Zealand.

Punching into weather to meet a port schedule can cause container and hull damage. On average 546 containers were lost overboard every year between 2008-2013 (World Shipping council). Onboard computers analysing the sea state and direction and its effect on the loaded vessel are available. Lack of training in their use led to the loss of 500 containers from MV Maersk Svenborg in the Bay of Biscay

Now lets us look at accumulations in ports.

In some of the larger ports, a vessel will discharge up to 2000 containers and may back load a similar amount, depending upon her port rotation. A port may have several large vessels in at one time.

Aqaba has a container storage area of 500,000 sqmtrs., and by the model that we use, have 10,000 containers in the port at any one time. Problem is that at any one time nobody knows the cargo value in these containers. Remember, the actual container itself also has a value, whether full or empty.

In addition to containers, Aqaba has 7 ship to shore gantry cranes, each could be worth in excess \$15M, plus rail mounted gantry cranes, straddle carriers, forklifts, and all other infrastructure to service a port.

What disasters can fall a port.

Fire in a container, same issues as on a vessel, non declaration of dangerous goods, but at least firefighting should be easier.

Extreme weather – Hurricane Katrina, Super storm Sandy, Kobe earthquake, Japanese Tsunami, Chilean earthquake and Tsunami, all resulted in cargo losses. Although not affecting containers,



there have been recent heavy hail storms in Dubai, Ghent, cyclones in Oman, resulting in damages to cars for export, and warehouses. Places were extreme weather previously not recorded.

The high freeboard and area of windage with all stacks of containers, make the large vessels difficult to handle in high winds. Damages to container cranes and berths are not uncommon, when a vessel loses manoeuvrability with both repair costs and business interruption costs.

Port blockage due to a vessel either grounding or sinking in entrance is a big issue. Recently the Emma Maersk (at one time largest container ship in world) flooded her engine room following a failure of watertight doors on the shaft tunnel. Only expertship handling prevented a closure of the Suez Canal.

So what are the implications for Insurers? Firstly let us look at Hull.

Insurance for Hull, War, and Increased value is frequently placed between the main markets of London (Lloyds), Paris, Oslo and Hamburg. An underwriter will select a line size that his company has capacity for and he is comfortable with.

Cargo. With so many containers on board, there will be many shippers, with many insurance companies behind them. However a shipper may have an accumulation of a large number of containers, either loaded in several different ports, sent from different factories, or intentionally to meet their customers' requirements. One of our Insured's in Asia had 17 containers of high value electronics which missed the sailing of the MOL Comfort. Another had 15 containers of high value sports fashion ware which did not.

In addition an insurance company can have an accumulation of different insured's either insured from one country or across a network. On the MOL Comfort loss, ACE had insured cargo through 17 different offices. Such accumulations could burst through treaty limits. Even if not, re-instatement costs of a treaty can be very expensive.

Whilst we have been talking mainly about marine insurance, a number of manufacturers and retailers may have business interruption insurance as an extension of their property insurance. The loss of the MSC Napoli affected BMW production in South Africa is but one example.

P&I Insurance will cover wreck removal and eventually cargo loss. Most large container vessels will be insured with members of the International Group of P&I Clubs. Each club has a retention, then the group buys excess protection in various layers. Salvage costs of the Rena are well within the upper layers of that programme. The International Group protection is one, if not the, largest program in London market with most Insurers having a share at some level. However many of the individual clubs will also re-insure some of their retention with the commercial market.

Also to consider are Insurances for freight and charterers liability, container lessors assets and liability including that of NVOCC's. A recent trend has been for cargo interests to pursue claims against NVOCC's especially if P&I liability has been capped, such as happens in the Japanese market.



In respect of a port loss, an Insurer could be liable for losses from warehouses and static stock, where values are known and declared, from cargo in port during transit, where values are unknown, damages to port equipment and facilities and various port operators' liabilities.

As you are aware, an insurer will have a treaty re-insurance usually layered with different re-insurance markets participating at each layer. Unfortunately with such accumulations of risk, cargo, hull etc, it could be possible for an insurer to break through the upper layers, if insufficient protection was purchased. This has occurred recently in the London market.

A company may also act as a re-insurer, re-insuring treaties of other companies which can add to their own accumulation for a single event.

On the MOL Comfort, many of the Japanese marine companies had treaties written in London.

The large re-insurers participate on most of the major Insurer Treaty programmes, so they will experience even greater accumulations and as such may have to limit their capacity offered in future.

For the re-insurer this is now proving to be a head ache. Recent questions have been asked:

Do you know accumulation on a vessel?

Do you know accumulation in a port?

How do we measure accumulation on a vessel or in a port. Firstly although a shipping line will have a manifest of each container and shipper, they do not know values, nor who insures which cargo. In many cases a large shipper will not know of an accumulation on a vessel or in a port, especially if several different factories are exporting through a port or adjacent ports where a vessel will collect cargo. His freight forwarder may be able to assess this, but it is difficult and possibly beyond most of their systems. A lot of cargo policies are based upon turnover, and information supplied often does not allow for different rating between regions, and certainly not by throughput at a particular port.

In practice accumulations are only known after an event, when the claims come in.

For the last ten years there have been attempts made to develop port accumulation models. These are based either upon very specific data, such as customs data through a port, or are very subjective, estimates of value of cargo in a port, then either estimates of that insurance companies share of the market in that port, or share of commodity code in its portfolio and which parts of a port will be affected by an incident. The main CAT modelling companies have still to develop any type of model which can run these estimated values.

One result of modelling accumulations in a port, is that a company's exposure to a CAT event could be very high. This may affect the amount of re-insurance that they purchase, especially upper limits, and can have an effect on the cost of capital that they need to underwrite marine insurance.

Before I conclude, I would like to briefly discuss one other aspect of a large loss, the cost of claims.



The loss of the MOL Comfort was easy, total loss of vessel, total loss of cargo, fortunately no loss of life. No General Average Adjustment, no discussions about which cargo damaged or not, no surveys.

However on a large container vessel that declares General Average, bonds and guarantees have to be posted by insurers on behalf of their insured's. There are inspections of all containers landed in port, which requires co-ordination of surveyors from cargo, liability, port and salvage interests. The actual General Average adjustment can take years. The Hanjin Pennsylvania took about five. It has been estimated that the adjustment of a GA on a mega container ship could take seven working years, which not only has a cost to insurers, but also means that claim reserves can sit on the books for a number of years.

So what are the conclusions around these mega ships

Insured values at risk from a single event either on a vessel or in a port are increasing.

We do not know what the possible accumulations are and their impact on an insurers book.

Risk of accident on a vessel are increasing with size, construction, mis declared containers, lack of training,

An Insurance company's management has to carefully manage exposures and potential accumulations from their different lines of business, and purchase suitable, affordable re-insurance, whilst also considering the cost of capital.

Re-insurance companies need to manage their accumulated exposures to the market.

Will these container vessels continue to grow in size, similar to the history of oil tankers from VLCC to ULCC, or will world trade and other economic conditions change, making smaller vessels attractive again, as happened to oil tankers. Time will tell.

Thank you for your attention.