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Shipbroker - Is the future fixed?

the UNIVERSITY of GREENWICH

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"Study the past if you would define the future"

Source: Confucius

Contents Page

1.0 Acknowledgements

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2.0 Preface

As the market is changing rapidly led by the new development of ships, changing commodities and through the introduction of innovative information technologies, the future of ship brokering is converting to a new age. This profound transformation in the shipping industry requires us to consider the dimensions, origins and nature of the risks to the World economy. The rate of the transformation constitutes to imbalances in the market and creates a major reason for concern.

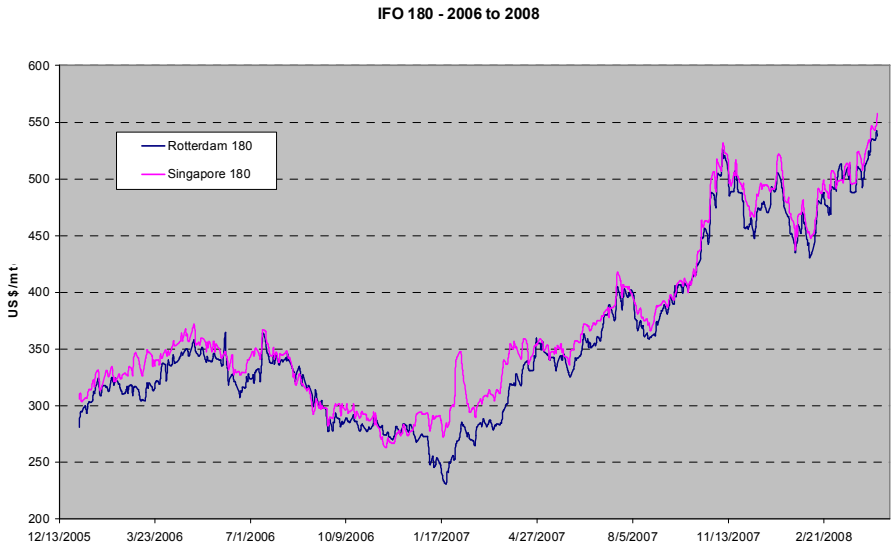
The current energy sources such as oil and gas might have reached the turning point. These changing commodities have a great direct and indirect impact on our way of life. The transformation of the energy supply affects the marine industry directly as a commodity and as a necessity. However the marine industry is also adjusting to subsequent changes that occur in other areas of the market.

The author of this study has conducted extensive analytical survey of research on all issues and current risks towards the Global economy. The principle aim of this research is to support investigate the marine industry to define possible outcomes in respect to the current changes affecting the market. This includes an extensive look into regions such as Brazil, China, Europe and the US. Further Chapters focus on companies in the marine industry. To evaluate these different research areas for possible future prospects, a comparison is drawn with past events such as the Oil Crisis in ‘73 and the Great Depression.

3.0 Shipbrokers

The marine industry is only actual global market in the World. This is due to the global trade encountering international legislations. The immense market of the marine industry is consists of several different segments including; Ship development and research, Ship manufacturing, Fleet management and International Trade. These various segments exist between the buyer and seller. This is where the shipbrokers connect into the market and assist to locate a suitable supplier depending on the situation.

The marine market is an industry heavily depended on the current fuel based system. Most importantly the international trade is being affected in two ways, meaning the cargo as well as the energy source for propulsion. The importance of fuel for a voyage has increased as it now make up for 47% of the voyage cost. (Marine Economist, by Martin Stopford, published 1997).



Source: Chris Cottrell, Cockett Marine Oil Limited

To evaluate the marine market cargo merchants require an educated perspective of the market to ensure the most possible outcome of the project, which can be easily provided by a well established shipbroker. The size of shipbroking companies vary from very small companies with only one employee to large corporations that have offices in every region in the World. While smaller shipbrokers are a concentrating on one particular sector, large companies cover large sections of the shipbroking market.

4.0 Marine Industry

The diverse market sections of the marine industry react independently towards the market change. Therefore it is imperative to examine each marine segment individually and view it in respect of the transformation pace. However, the new order activity of vessels eased in 2008, though compared to the standard levels of the last decade, it remains high.

The marine transport market is required to slowdown as the global economy reduces in speed to reduce the possible downturn. However, each marine transport system reacts differently towards the change in the global economy.

4.1 Container

As levels remain high in the overall marine industry, initial recession impact can be found in a number of marine sectors such as the container market. The most obvious sign of the market declining is the postponed planned 1st April rate increase by the Container lines for the Asian-Europe routes, as market conditions soften.

America-Asia container routes have suffered severely due to the US economy slowdown, which has forced ship owners to rearrange ships from the Pacific to the Atlantic routes. The absorbing of newbuilds and tonnage displacement in the Asia-Europe trades is possible as a result of reducing of speed that leads to saving fuel and minimising expenses.

Clarksons Research Department has recently estimated that one TEU on the eastbound transpacific trade generated roughly 7,200 TEU miles last year, while the average westbound Asia-Europe equivalent was nearer to 10,000 TEU miles. This suggests that the Asia Europe trade requires a higher number of vessels to serve a given volume of trade than on the Pacific. "*Given the increasing risks to US imports, Europe is increasingly critical to propping up containership demand, and market watchers should pay increasing attention to the health of European imports,"* (Clarksons Shipbrokers).

While the overall container market is suffering as a result of the current financial market, few segments of the industry are continuing with large growth prospects, one of which is the Vietnam container terminal market section. APM Terminals is currently developing a new container terminal in Haiphong, Vietnam. The facility will consist of two berths with 24 hectares, which will be completed by 2010. *"The development of the facility in Dinh Vu will*

help meet the demand for a modern, efficient port and intermodal facilities for the growing and increasingly important role of Vietnam in the global economy," (Martin Gaard Christiansen, APM Terminals vice president for Asia, Lloyds conference in Hanoi, 2008). This recent move from APM is a further step to become a more significant independent company away from Maersk.

4.2 RoRo / Ferry / Cruise Ship

The Ro-Ro market has been under pressure prior to the current downturn, as it is the marine sector that has the strongest link with the shore based economy due to its commodity. However, the complications have been intensified more recently as the market is slowing down. DFDS Seaways is now closing the Newcastle to Norway Route. *"The results in 2007 fell well short of expectations and the current financial development has fallen below the level required to continue operating the service*," (DFDS UK Managing Director, John Crummie, Lloyds List, 2008).

Most recently Grandi Navi Veloci, a major Italian RoRo operator is suffering under the impact of the surging fuel prices. The Genoa based company is reconsidering its involvement in a new ro-pax terminal now under development in Marseilles. In an interview on the 27th May 2008 GNV Managing Director Ariodate Valeri pointed out that the company hoped to develop the facility as a hub for a planned expansion of services to North Africa. However, he admitted that the company was now facing a difficult situation. *"We have to decide whether Marseilles is going to be in the budget for 2009 or not,"* this he added *"the real problem is the cost of oil. We have done a lot of good work; Improving efficiency, paying attention to our costs and making savings by using silicon paint on the hulls. We have also been attentive to the departure times of our ships and we are looking at cutting some sailings, maybe nine, which are operating below breakeven. But it is not sufficient. We estimate today that we will take a €10m hit this year from higher oil prices."*

The impact of this historically high fuel prices could go much further than anticipated. The current market consolidation is inevitable and it is possible that most companies will adjust sooner rather than later.

Even though the industry is short on well trained staff the cruise ship operators are suffering from the recession in the United States significantly. The Royal Caribbean has announced to continue the reduction of its staff even further than the 25% initially anticipated in July. Chief Executive Richard Fain stated that *"this is a difficult period for virtually all businesses, but we are determined to improve our operating results through*

tight cost controls". This means that a total of 400 shoreside positions will be cut to save a total of US$ 125 million a year to face of the escalating fuel costs.

4.3 Bulkcarrier

The bulk market continues to stay strong especially in the long term period rates. However, financial institutions only support bulk newbuild projects if they are of little risk as a reaction to the credit crisis in other industries. This strengthens the capesize bulk developments and hinders the smaller Handy and Handymax newbuild projects as the return on the larger ships is generally lager than for smaller vessels.

This change impacts on shipyards around the World, as they continue to receive mainly orders for large vessels. For example, in June 2008 China's Jiangsu New Yangzi Shipbuilding Co. publicized a new order for two postpanmax bulkcarrieres. Each of these will have the capacity of 92.500 dwt, with a construction cost of more than US$ 60 million each.

The Hong Kong listed handy specialist, Pacific Basin Shipping, is forecasting another robust year for the dry bulk sector. The standard market freight rates have increased by 23% in only two month, while the fleet of the hanymax bulkcarrieres have increased by approximately 10%. Therefore, it seems that the downturn in the financial market since the end of 2007 has not had any noticeable effect the dry bulk sector.

4.4 Tanker

At present tanker owners are expecting the highest ever freight rates, especially the VLCC Tanker Segment is very well positioned. According to London-based broker Gibson, VLCC owners make a profit of US$ 160,000 per day, per ship. Theses kind of profitability has not been seen in the last 25 years. Mr Christy, head of research at Gibson expects the market to continue to grow until the end of 2008, this off course reflects on the order book of new build VLCC Tankers. However, the single hull VLCC's are being reduced to comply with international standards.

Mr Amir expects the tanker boom to end within a year, *"I think we have been pleasantly surprised by what has happened in the first six months of the year and it is our hope some of that will flow through,"* (Mr Amir Hamzah Azizan, CEO of AET, Lloyd List, 2008). AET is the second largest Afranmax Tanker and is one of the most important VLCC operators in

the World. This downturn he expects to enter the market by summer/autumn 2009. This view is not shared by everyone. *"What often happened in the past is that the dry market goes down and the wet market / tanker market is going to be strong" (*Gavin Smith, Shipbroker for V.Ships, Interview, 2008). However, the new variable is the decline of the fuel oil, which is already affecting the marine transport market.

The VLCC gas carrier market rates are expected to last longer than crude oil tankers rates as a result of the oil commodity declining more rapidly. However, Shell has estimated that both commodities will be replace by approximately 50% in 2050 by renewable energy sources.

5.0 Past Recessions

The technical definition of a recession is two or more consecutive quarters of a year in which the Gross Domestic Product (GDP) indicates a decline. However, some recessions can be so severe that one quarter of decline already qualifies them as a recession. The GDP represents the value of all production within national borders, regardless of whether the labour and property value accounted for in the total is domestic or foreign-owned.

GDP = Goods + Services + Products

Source: How to Survive the Recession and the Recovery by Anna Farago

The Great Depression is perceived as the largest economic depression in the past. The worldwide economic downturn of the Great Depression erupted in 1929 due to several factors. Between the 1920 – 1950, the American Population increased by 30%. However, the total number of housing increased by 51%, which lead to a GNP increase from US$ 100 million in 1940 to US$ 200 million in 1950. Further recession followed in 1949 but it did not turn into another depression. This was because the New Deal had changed the value of money not to be based on Gold. The value of money was more abstracted and less corporeal, which encouraged investors to support the market.

At the time of the Great Depression the international marine industry was at very small. However it has grown since and a depression would have a immense impact on the overall marine system.

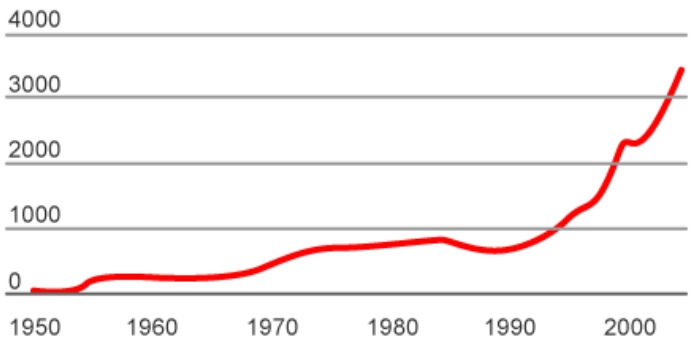
6.0 Oil Crisis '73 '79 '90

The first oil crisis developed on the 17th October 1973 when the Organization of Arab Petroleum Exporting Countries, OAPEC announced that as a consequence of the Yom Kippur War it would no longer supply Israel and its allies with oil. Furthermore, the members of OPEC (Organization of the Petroleum Exporting Countries) agreed to raise the World oil price to stabilise the market and further strengthen their position in the market. However, initiatives from the industrial countries were put into place to weaken the dependency on oil.

The second oil crisis occurred in 1979 in coherence with the Iranian Revolution. After the invasion of Iran by Iraq, almost all oil production in Iran stopped. Additionally, the Iran-Iraq war hindered all production and transportation in the Persian Gulf. In response to the strong decline of fuel other exporters such as Mexico, Nigeria and Venezuela expanded their market share.

The third oil crisis was less of significance due to the short six month impact on the market. The reason for its occurrence was the first Gulf War. The falling production of oil in Kuwait was stabilized by the OAPEC as prices where rising to US$ 50.50 per barrel during this six month period. During this time the size of Crude Oil Tankers grew to huge proportions, with ships such as the Knock Nevis, 458m LOA and 564.650 DWT. The market was too well equipped that when the oil crisis hit the market a large proportion of tankers were unemployed. Some tankers had not a single voyage such as the two Crude Oil Tankers build by John T. Essberger. However, other companies such as Hamburg Süd sold their tanker fleet prior to the oil crisis and invested in other emerging sectors such as the container trade. Hamburg Süd is now the biggest private German Shipowner.

Trading ships in use



Source: Marine Economics

This change in the market has a significant impact on the amount of vessels in use and being build. The oil Crisis in the seventies suffocated the market for a decade as illustrated in the graph above.

6.1 Oil History

Oil has been found before it was possible to use it, meaning that production has to mirror discovery after a time lag. The dependency of oil can be traced back to the end of the 19th century. Petroleum was first pumped in large numbers from the wells across America. Diesel and other oil based fuels made it possible to intensify farming, expand roads and develop infrastructure. The discovery of oil enabled the population of cities to grow, strengthen the shipping industry and eventually made air and space travel possible.

"*Oil has shaped our civilisation. Without crude oil we would have no cars, no ships, no planes,"* (Gideon Samid, Head of the Innovation Appraisal Group (IAG) at Cas Western Reserve University in Ohio).

In the 1970's, radical changes began to be felt in many ways, which lead to a new age, which C. J. Campbell calls it the 'Transition Epoch' before the 'Decline Epoch'. It set in during the early years of the 21st Century. The time of the 'Transition' is often referred to as the 1st Oil Crisis. In this period the fall in demand was brought about by a combination of factors. They included improvements in engine efficiency as well as the saturation in the industrial countries, meaning that it was only possible to drive one car at a time.

In the 1980's there were 15 oilfields able to supply 1 million barrels a day. Now there are only four oilfields left. The largest is the Ghawar field in Saudi Arabia. Currently more than 50% of the World's oil comes from seven countries, the leading supplier being Saudi Arabia. Other important suppliers are Russia, US, Iran, China, Mexico and Canada.

6.2 Past and current wars for natural resources

It is not always a blessing for a country to possess large amounts of natural resources often it is a curse, since most wars have developed as a result of resources. The 1st World War was developed as consequence after the killing of the crown prince of Austria according to our school books. This might have ignited the war but it was the lack of natural resource that gave rise to the war in Europe. During the late years of the 19th Century, Germany was overtaking Britain as an industrial power. Germany found itself

seriously disadvantaged because of the insignificant German currency in the World trade compared with Sterling.

Prior to the World Wars, England was the unchallenged World leader, which changed due to the increasing independence of the various parts of the Empire. The new emerging powers after the 2nd World War were USA and CCCP. Both countries gained control over the World resources, which ignited the Cold War.

One of the last remedies of the Cold War is the struggle in Iraq and Afghan. These leftovers of the past became part of the next Grand Plan. When Dick Cheney former CEO of Halliburton Energy Services became Vice-President of the United Stated of American, his first action was to strengthen and expand the US military bases around the World. Most of which are close to natural resources including the Persian Gulf, which was a former bases since the Cold War. Additionally, new key US bases were located around the Caspian Sea and on islands close to oil rich Nigeria and Angola. The movement into these Countries was easy for the US as they exchanged loans, military assistance and training for oil. Additionally, more recent US military base are now located in Kosovo, Chad and Cameroon because of oil pipelines.

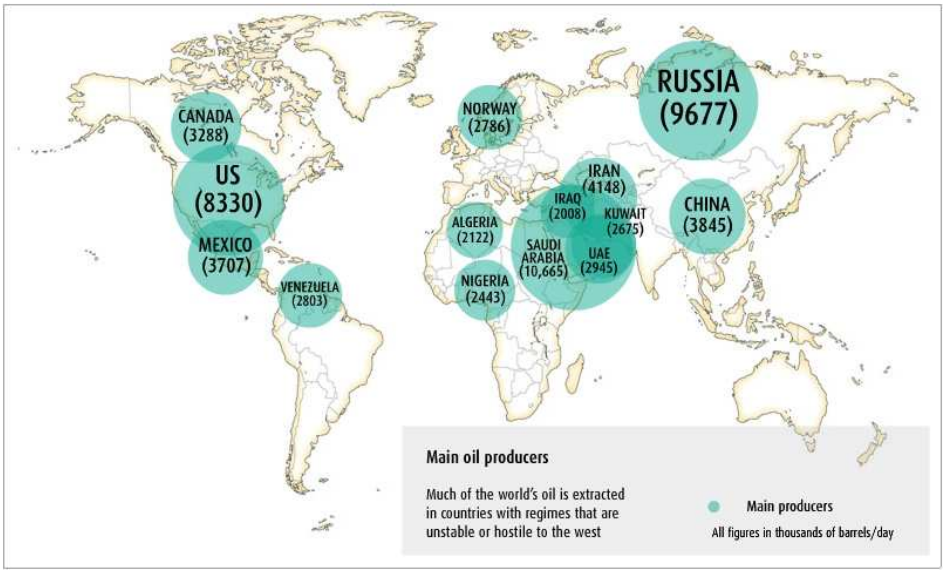
Dick Cheney did what he had to do in order to protect his former company investments. Halliburton's main business segment is the Energy Services Group (ESG), which provides technical products and services for oil and gas exploration and production. With an estimated US$ 15.3 billion revenue in 2007, Halliburton is one of the leading companies in the World. This off course has and needs to have major influence in the proceeding of foreign affairs of its Country to sustain its superiority in the market.

6.3 Current Energy Crisis

George Soros a financial speculator predicts that rising oil prices could send the US economy further into the recession and it is expected that the recession will grow and continue over a longer period.

Due to the strong dependency of the economy on fossil fuels such as oil and the increasing prices a recessions is more than possible to initiate. *"Most geologists now accept we have reached, or will imminently reach peak oil" (*NewScientist, Oil Shock, June 2008). By reaching the peak suggests that there is no spare capacity. Until now, it was possible to solve any distribution problem of the World oil flow by pumping more oil. This

spare capacity has now vanished. *"There is absolutely no slack in the system any more,"* Says Gal Luft, Executive Director of the Institute for the Analysis of Global Security.



Source: New Scientist, Oil Shock, June 2008

In the past oil producers had some leeway and it was possible to improvise for a disruption somewhere in the system by increasing the production by around 3 million barrels a day. That crucial reserve capacity has now fallen below the daily output of some producers, meaning that if the pumps would stop in any of the oil producing nations, such as Angola, Nigeria, Iran or Iraq the impact would be felt immediately.

The oil production in the UK has been in a decline since production peaked at 2.8mm bpd in 1999. Although the current output is just above 2.1mm bpd, which is in coherence with the average demand of the past 20 years, it has been predicted by several institutions that the production could run dry within the next decade. According to the UK Offshore Operators Association, the Country has stopped to be self-sufficient in 2007; production will drop to 1mm bpd by 2010 and virtually end by the year 2025. Furthermore, the situation of natural gas production is far severe. The UK is changing from being a net exporter to a net importer. It is expected that by the year 2010 around 50% of its gas will have to be imported. By 2020, the dependency is expected to rise to 70% equal to the rest of the EU.

As the BP profits in the second quarter of 2008 rose by 6% to US$ 6.9bn consumers find it hard to accept the rising fuel prices, which are apparently due to the lack of fuel reserves in the World. However, we have to understand that companies such as BP are

trying to build a security to cover themselves against the most likely downturn of fuel.

The point in time when the market changes would have to be calculated to identify the markets position. The 'tipping point' as the ration of gross liabilities to gross assets results in negative net asset returns.

$$r(a)A - r(l)L < 0$$

Source: Gourinchas and Ray

Therefore the 'tipping point' is the ratio of L/A, A is the gross assets, L is the gross liabilities, r(a) is the nominal return on assets and r(l) nominal return on liabilities. This has increased continuously over the years: 0.3 in 1952, 0.73 in 1973, 1.09 in 1991 and 1.34 in 2004. It is possible that the US Dollar will be substantial depreciated as a result of the rise in rates and yields, which could develop into a global recession.

7.0 Current Downturn

The current financial collapse is due to banks lending money in excess of what they have on deposit. The interest rates that are charged represent the new money that is going to exist. This enables the spiral to turn further and create additional depth. This is the reason why the bank of each Country is cutting interest rates to ensure the rates reflecting the speed of the economic growth in the Country. Countries around the World are differently positioned against the recession and it therefore important to view the most vitiating strategies that currently shape the market.

Nigeria's population in the 1900 was about 16 million. This has significantly changed due to the discovery of oil to a total of 125 million inhabitants, which is an increase of 800%. As the oil production declines the population will have to adjust accordingly. This decline will convey large difficulties to Nigeria in order to sustain its strength. Oil rich countries might not have been as blesses as you might expect as the higher you climb the further it is to fall.

The United States has oil reserves are diminishing. It has also exported most of its manufacturing businesses and changed from the 'bread-basket' of the World to a net importer of food. The marine industry in the states is very limited due to the poor regulations for the 1940s. Acknowledging these factors the major problem is that there is little to invest in the US. However, Deborah Lynn Bleviss acknowledges in her book 'The New Oil Crisis and Fuel Economy Technologies' that the United States will retain its lead

in the oil consumption in the World. This distinction offers both a burden and an opportunity. The burden is the vulnerability from possible economic disruption on its automotive industry, where 70% of the oil is being used for. The opportunity is the responsibility of the leading role as Americas actions will be an example for other Countries to follow.

Source: http://www.bea.gov/bea/di/home/bop.html

Europe is already adjusting to the change in the market by expanding its economic influence by incorporating other Countries into the current system. This will help to continue a strong manufacturing base and stable food production for its inhabitants. Britain with its close banking ties to the US is most probably the most vulnerable Country in Europe.

Norway with its large oil reserves might find itself in less problematic situation. With only 4 million inhabitants controls the most of Europe's remaining oil reserves. However, these oil reserves might not be an advantage as previously described example of situation that Nigeria will have to face.

Looking at the current system and the possibilities available, one might be under the impression that the collapse of the World economy might have already begun.

8.0 The next Recession

The events described previously may cause the discontinuity of historic proportions but a discontinuity it is. However, it might seem progressive to forecast the future on the past, which in this case might not be possible as the World economy lost such a vital commodity. The decline of oil is imminent. This real threat is unavoidable and the only problem is to find the replacement for the energy source oil. However, the current decline of oil is only at 3% and therefore it could be possible to adjust this reduction with superior planning. Unfortunately, it is not just the 3% that the market has to adjust to, *"the problem is that the decline of this essential energy supply undermines the very foundations of the Financial-Industrial System" (*Oli Crisis' by J. C. Campell). Our global financial system is based on this continues growth. If the World Economy will stop to expand then the collapse of the World we know is imminent.

The required balance is a function of the difference between the real interest rate, r, and the growth rate of the marine economy, g, times the debt/GDP ration, d. The higher the

difference between the real rate of the interest and growth rate of the marine economy and the higher the debt level, the required balance increases. Should the real rate of interest exceed the growth rate of the economy, a trade surplus can stabilize the debt/ GDP ration.

$$(r-g)d = (-0.025 – 0.03) \times 24.1\% = 1.33\%$$

Source: Roubini and Setser for the United States in 2003

If more fuel is required, economists would most likely suggest drill more wells. It will be very possible that this oil decline will spark another oil exploration boom. According to C. J. Campell a former oil explorer, this will not be successful as the geological structure of our Earth can not make the oil fields as accessible as before. However, there are new oil rigs designs that have been adjusted to the new requirements. These new oil rigs are being build mainly in Asia, one of which is the Singaporian Shipyard Jurong. This yard has received a new contract to develop a semi-submersible drilling rig. The project is worth US$ 640 million and will be completed by 2011.

9.0 New Emerging Markets

The market is transforming due to the change in commodities that develop or extinguish. While researching the global economy two countries show a significant potential. China and Brazil are both fast growing economies but differently structured. This makes them competitors as well as partners in developing into becoming a leading country in the World.

9.1 China

China is one of the fastest growing economies with 11.4% GDP growth. This high GDP growth has developed through a continued strong export, which is more than US$ 300 billion above the import. Furthermore, China is for the first time the World leader in exporting after decades of German domination, with a total of US$ 1.221 billion. This high rate of economic growth has driven the rapid expansion in the marine industry and port infrastructure. Shanghai, for example has been the busiest port in the World for the past three years, though it remains number two in the World ranking of container traffic. China continues to invest heavily in its port infrastructure as in the previous years China has had a GDP of more than 20%. The significant cut in the GDP is a reaction to the recession affecting the market and China has to be careful not to over spend it self in this declining

market. This confirms that Chinas marine industry may slow, but remains strong in this competitive market.

9.1.1 Shipowner

China is entering into the economic recession. This is not only visible through the reduction in growth of GDP but also in the new strategies of the container lines. COSCO; part of the CKYH alliance, has agreed to reduce ships speed and eliminate duplicate port calls. This will reduce the consumption of record high fuel but will loose market shares as well.

The Pacific trade is in poor shape at present, CKYH has decided to reduce its presents in this market. Whether to use smaller ships or reduce the current 14 loops that now operates between Asia and the US is not changing the situation that Chinese shipowners are suffering under the weak US economy.

9.1.2 Shipyard

The price for newbuilding has risen from 30% to 75% in the last 5 years due to the strong demand of steel. According to Gibson Shipbrokers the hike in steel prices has placed an unspecified number of shipyards in China and South Korea in difficulties. It is expected that 150 capesizes ships on order will not be delivered. Furthermore, Gibson's state in a recent article in Lloyd's List that the steel price in South Korea is expected to rise from $1,150 to $1,800 by 2009.

"Profitability looks under pressure for the best yards and disastrous for the less well financed or newer yards," Gibson said in its weekly sale and purchase report on Friday 11th July 08. Wall Street analysts confirm the current situation and expect that up to 15% of bulk carrier order book could be cancelled or delayed.

POSCO, South Korea's largest steel mill announced on Monday the 7th July 2008 that its second-quarter operating profit soared by 51.2% to $1.89bn, which is expected to be used for larger stake in the Daewoo Shipbuilding and Marine Engineering Group. However, analysts are apprehensive that POSCO will continue its expansion plan on long-term basis as their projects in Vietnam and India have been severely delayed.

The continues strong growth in the Chinese shipbuilding industry has attracted many S&P

and newbuilding brokers from around the Globe, with many of them opening offices especially in Shanghai. This is to establish good connections with local ship yards. China is only 3rd strongest economy in terms of newbuilds after Japan and Korea. It is predicted by The Baltic Exchange and Clarksons Research Department that China will outstrip Japan in 2009, with 16.2 million cgt (compensated gross tons).

9.1.3 Cargo

According to Oxford Analytica the recent record of coal and ore prices have developed through a series of events in February after a 'low' in November '07.

- Recent quotes in northern Europe were quoted above USD 150.00 per metric tonne (mt).
- Some Australian ports archived similar price levels for free-on-board bases.

The main reason for this increase in freight for bulk cargo in China's power deficit is estimated to have reached 733 gigawatt (GW) capacity, which is 10% of the total amount required. Furthermore, coal stocks in January reportedly had fallen as low as on week's supply.

In order to comply with the rising demand, China responded to ensure coal reaches its own power plans. The main response was the announcement of the extinction of the ban on coal export until March, which was supported by a significant value reduction of the exported coal.

Lloyd's List announced in spring 2008 that exports from China might see major decline. While the foreign direct investment continues, exports are going down. In the first quarter of 2008, steel exports were down almost 20%, which has an impact on the import of iron ore. Furthermore, as the Dollar and Euro pull in different directions, China is required to adjust the exchange rate mechanism later this year.

China is not only consumer but also producer of materials such as coal, iron ore and steel. It is now the largest iron ore importer in the World and produces one third of the World's steel. Therefore, the development in the dry bulk trade has been very impressive. Simon Young, deputy director of the research and development centre at China Ocean Shipping Group concurred with K Line's research that iron ore is now driving the dry bulk trade after the seasonality of crops. It appears that coal will be the next commodity to

drive the market thereafter. In this respect the US recession has a modest impact on Chinese export as it seems to appear. With new trade routes opening up between China and Indian/Russia that have increased respectively 50% to 80%, the Chinese economy continues to grow.

The rising coal prices reflect the strong demand and supply disruptions in the major exporting countries. The main supply disruptions have occurred due to strong monsoon rain in Indonesia, the World's largest coal exporter. Furthermore, the bottleneck Newcastle in Australia has been hit hard by severe flooding in June 2007, which set back the expected reduction in waiting times. Mid October the Queue was 43 vessels long. However, coal producer are expected to face an allocation cut of 2.2 million tonnes in Newcastle in the fourth quarter as a means of managing the queues. Ancient rail way wagons in Russia, storms in South Africa and other supply chain problems connected with strong demand by emerging markets such as India and Vietnam, continue the price to increase.

Indonesia and Russia both have large-scale plans to increase domestic coal productions and maintain or increase exports, but this will depend on a function of the relative success and timing of plans to expand coal production capacity, and coal-fired generating capacity. Furthermore, Indian and Chinese imports of coal will continue to grow fast, with other Asian countries such as Vietnam adding to the strong demand in the Pacific Basin.

The report from the Oxford Analytica in December 2007 state that the demand for coal is likely to continue to outpace supply, leaving the market vulnerable to logistical disruptions ahead of the completion of major coal terminal expansions. In the medium term, the demand-supply balance will depend on the relative success of planned expansions in coal production and coal power generation.

9.2 Brazil

Brazil is Latin America's strongest market and the World's tenth largest economy in 2007. In 2006 Brazil along with Germany and India to become a permanent member of the NATO, which is still pending but it is a statement in it self. The domestic financial condition keeps the market stable but the tax system remains complex for the marine industry.

The economy of Brazil is forecasted to grow by an annual average of 4.1% in 2008 according the Economist. This growth is slightly below the average 4.4% that Brazil had

from 2004 until 2007. It is expected that investments will increase and therefore support the growth of the financial market. Furthermore, the trade surplus will diminish due to the growing domestic demands.

9.2.1 Shipowner

Luiz Inacio Lula da Silva, Brazilians president has announced on the 26th May 2008 the new maritime ambition for his country. The new plan includes a large scale expiation of Petrobras fleet to 230 vessels. *"This is more than an act of the consolidation of the shipbuilding industry, we want more shipyards in Rio de Janeiro, in Pernambuco, in Bahia because if we don't build more yards when Petrobras needs more ships it will have to go abroad,"* (Mr da Selva, 26th May 2008).

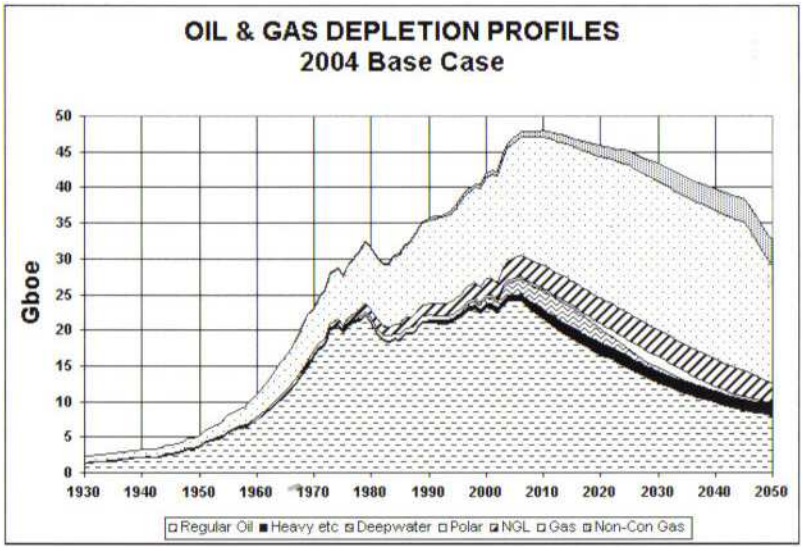
The main aim of Mr da Silva's strategy is to export the large oil, gas, ore and iron deposits. New shipyards will be developed and to build the 26 new Tankers, 24 Offshore supply vessels, 40 drill ships and another 122 offshore supply vessels until 2017. Altogether Petrobras newbuild plan is expected to cost the state owned company as much as US$ 40bn in total. Overall, it is a well planned strategy to keep most of the supply chain in Brazil and therefore develop the industries and infrastructure in Brazil.

9.2.2 Shipyard

EISA - Estaleiro Ilha S.A. which belongs to the Synergy Group has recently signed a memorandum of understanding with the state government of Maranhão to develop a R$350m ($218.1m) facility close to the port of Itaqui. The 60ha makes it the second largest yard in Brazil and will focus on suezmax vessels. This is one of many developments currently being perused by the Brazilian government to develop its marine industry.

9.2.3 Cargo

The current strategy of most countries on earth is to export their oil, gas, and coal deposits. However, there is a fast growing commodity that is going to influence the trading market over the next decades.



Source: Oil Crisis by C. J. Campbell

The depletion of natural resources is being projected to have reached its point of no return. It is expected that as the Oil reserves diminish the market transforms and gives rise to a new replacement cargoes. Ethanol is Brazil new emerging cargo.

Brazil is mainly exporting Ethanol to America and has plans to expand its customer base to Europe and Asia. Furthermore, the domestic market in Brazil has already adjusted to the new commodity. Approximately, 90% of new cars have flex-fuel engines that can run on any mixture of petrol and ethanol.

Ethanol producers keep the price 30% below the petrol to ensure a fast growth in Brazil and therefore invest in expanding capacity as they hope for a strong growth in the export market. Analysts have estimated that Brazil will export up to 3 billion litres of ethanol to the United States alone. This export depends of food prices being high which is why the Ethanol Industry is being attacked. However, each new system finds its advantages and disadvantages and it is the demand the will make the last decision on how the market is going to develop in the future.

10.0 Main Companies in the Market

The global marine market is an interlocked system with many separations. The shipping industry as the only real Worldwide market has to be intertwined in order to exist. However, large marine companies often spread over various segmentations in order to cover the market horizontally and vertically.

In the following chapters two market leaders of the marine industry are being presented to show when companies operate well both vertically and horizontally. ICAP HYDE being one major shipbroker, which has expanded in the brokering market vertically into different shipbroking sectors. MAERSK being one of the largest ship owning companies in the World, has expanded vertically as well horizontally from ship owning into shipbroking as well as terminal management.

10.1 ICAP HYDE

ICAP HYDE is a fast growing shipbroking company, which has expanded into numerous sectors of the shipbroking market. Dry cargo chartering, sale & purchase, research and FFA broking services are some of the many services that ICAP HYDE provides for its Global network of clients. The headquarters is positioned in London, UK with offices in Copenhagen, Shanghai, Singapore, Gibraltar and Connecticut to connect with companies around the World in their time zone.

The increased volatility in the dry freight market with daily freight movements currently calculated in thousands of dollars has given owners, charterers and freight forwarders a greater exposure than ever before. This heightened level of both financial risk and opportunity has meant that the company's clients pay greater attention to the extensive level of service Shipbrokers provide. In order to provide up to date information ICAP HYDE has developed an online information system as real time market information is vital to the management of freight risk. The system provides the customers with market reports and indices, S&P valuations and an FFA trading platform.

Information has become the most vital part in the supply chain which is why many systems are being developed by different shipbrokers in order to serve the rising demand of owners, charterers and freight forwarders. However, shipowners are also developing shipbroking systems in order to converse with the market vertically.

10.2 MAERSK

The total of 50 million dwt, which is equal to seven per cent of the entire World fleet, makes MAERSK the leading ship operator in the Globe. However, MAERSK is not just a ship operator but has extended horizontally and vertically into various segments of the marine industry. Various institutions form part of the AP MAERSK Group, which include container, energy, shipping, retail and education. The vertically positioned operations of Maersk react differently towards the changes in the market.

The sister company is Maersk Brokers was established by Mr. A.P. Møller as an independent company in 1914 only 10 years after he established his first ship-owning company. Maersk Broker is today one of the largest shipbroking organisations in the World as a result of to its good connection with the other Maersk companies.

The main operation of Maersk is the container fleet, which grew by 6.3% in the first four months of 2008, which is the first positive news after several years of struggling with the integration of P&O Nedlloyd. This period MSC and CMA CGM took advantage of Maersk's predicament to greatly increase their market shares.

AXS-Alphaliner attribute Maersk's recovery to a change in the management strategy combined with a large number of newbuilds. "*Maersk Line now seems to have a well-balanced fleet in terms of vessel size, compatible with the particular pattern for its hub and spoke network" (*SX-Alphaliner). However, Lloyd's List presented in an article that even though cargo volumes and freight rates were higher in the first quarter of 2008, Maersk Line continued its losses. This loss occurred due to a stream lining program that is aimed at reducing cost and improving long-term performance. It seems that there are too many managerial changes that endanger the profitability. AP Moeller-Maersk chief executive Nils Smedegaard Andersen announced once again to the Financial Times on the 27th May 2008, that every part of the Maersk Group must to be profitable.

Maersk continues to implement new strategies in every part of the corporation, one part being the shipyard Lindø. At present the AP Moller Maersk's Odense-Lindø Shipyard in Denmark has a reasonably good order book filled until 2010, delivering six smaller container ships and has a number of capesize bulk carriers for the Garras Hellas Company from Greece. However, the strategy for the shipyard is to include redundancies as the fraction is operating at a massive loss and feels the pressure of the competition from Asia in combination with the weak US Dollar.

Additionally, the APM Terminals are being adjusted to be less reliant on its mother

company Maersk Line and eventually establishing Maersk fraction as an independent terminal operator. Lloyd's List disclosed in June that the APM Terminal will be handling the Korean Evergreen ship operator. *"The contract, signed earlier this month, allows for one Evergreen service, the North Asia/US east coast/Europe weekly pendulum, to be relocated from VIT's Portsmouth Marine Terminal"* (Janet Porter at Lloyd's List).

Staggering fuel prices continue to force big companies such as Maersk to reduce their trade routes. Maersk Line was forced to stop one of its Asia-Europe loops, shortly before the peak season. Latest FEFC figures show that west bound volumes was up by 10.3% with a total just over 4 million TEU in the first five month of 2008, while capacity is increasing at a faster rate. In addition, AXSLiner statistics illustrate a total containership order book at 1,418 ship with a total of 7 million TEU, equivalent to 60% of the existing fleet.

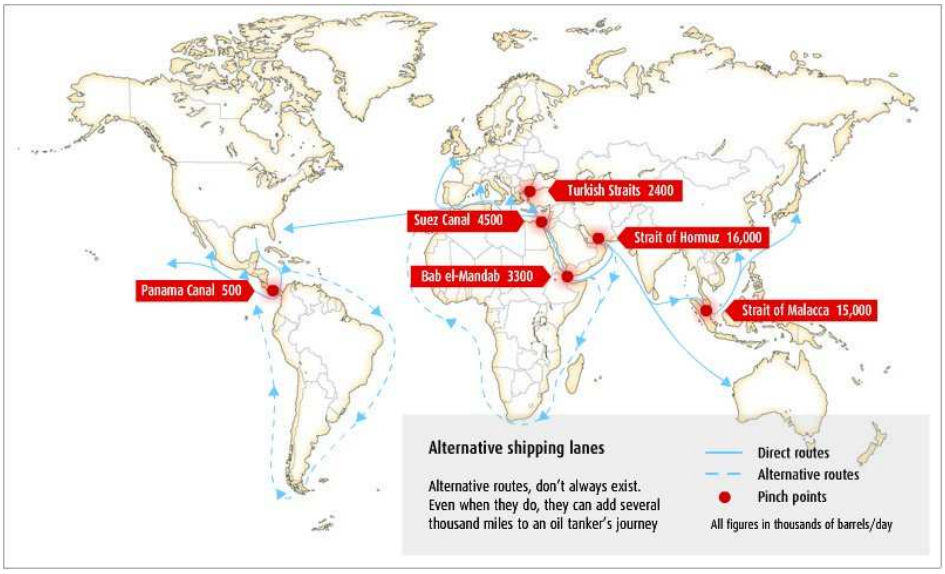
As the marine industry is facing the recession with a face-lag, companies have time to adjust towards the changes in the market. Looking at Maersk it is possible to examine that the large vertical company structure is separating. Additionally, smaller improvements are being implemented to reduce waste. It is therefore possible to draw the conclusion that a smaller more horizontal orientated companies are more responsive in a recession, which does not mean that smaller companies are prepared for the next possible oil crises.

11.0 Trade Routes

Approximately half of the World's oil is distributed by tankers distributing the different grades of crude, gas and other chemicals across the oceans on about six key routes. The remaining is being delivered by an extensive network of pipelines.

Fuel transport systems are often perceived as vulnerable to accidents, acts of God and to terrorist's attacks. While the actual weakness lies in the bottlenecks in the system. The current Global fleet of more than 4000 tankers is serving on six main routes, delivering approximately 43 million barrels of oil every day. Many of these routes pass through bottlenecks, should any of these become temporarily impassable, the amplified effect on the end user would be dramatic.

Currently, a minimum of 16 million barrels of oil a day are transported through the Strait of Hormuz, which is located between Iran, Oman and the UAE. At the narrowest point, the strait is only 33 km wide. During the Iraq-Iran War, both countries attacked ships passing this narrow passage.



Source: New Scientist, Oil Shock, June 2008

The 33 km of the Strait of Hormuz is large in comparison to the Suez or Panama Channel. The Suez and Panama Channel are one of the biggest bottlenecks in the World. Together they connect the 3 Oceans and shorten voyage times considerably. However, the Panama Channel being the smaller of the two is currently undergoing development plans to extend the current capacity as the queues before lengthen. In June 2008 more than 130 vessels were waiting several days to pass the narrow passage of the 80km long Panama Channel.

Should any of these bottlenecks close a sudden shortage of commodities will occur as vessels will be required to plan their journey around the capes. This will not only lengthen the voyage but also increase cost as a consequence of fuel usages for the ship. This additional cost for the longer voyage will then reflect in the price for the end user.

12.0 Shipbroking Centres

Shipbroking centres are cities in the World that are related to the marine industry. However, as the market is evolving and some former important harbours such as Amsterdam or Venezia are decaying, while other such as Singapore or Shanghai are expanding rapidly. The current shipbroking centres around the World are Aberdeen, Hamburg, Hong Kong, Houston, New York, London, Oslo, Piraeus, Shanghai, Singapore and Tokyo.

The location for any shipping company is vital as it supports the aim to develop more sophisticated connections with other companies in the marine market. Furthermore, it is imperative for companies in a global market to cover different time zones to be more accessible for clients.

12.1 London

London however has not been a major port but because of being England's Capital, London has been a centre of the marine industry due to the strong influence of the former British Empire in the World. The declining Empire had little influence on the importance of London as the maritime centre. The decline was amplified by the IRA attack of the Baltic Exchange and the expanding Asian market. Today London is still perceived as a important maritime centre and contributes around GBP 1 billion each year to British economy.

Most international shipping organisation have their headquarters in London, including the International Maritime Organisation (IMO), the Institute of Chartered Shipbrokers (ICS) and the Baltic Exchange.

As a result of some unpopular tax on non-domiciled foreign companies, attitudes towards London as a major maritime centre are changing. These tax changes have triggered change in the shipping industry in London as prominent Greek shipowners are leaving London.

12.2 Piraeus

The harbour of Athens where most shipowners live per square meter is one of the most important centres for the marine industry. This high concentration of shipowners attracts numerous marine segments such as the shipbroking sector to settle in Piraeus.

Piraeus is still growing even in recent years companies continue to shifting their HQ to Greece. Recently the Goulandris family has moved its companies, worth GBP 1.1bn ($2.2bn) to Piraeus. Furthermore, studies last year have estimated that 30% of the bulk carrier charters were made from London, while an estimated 70% were made in Piraeus. *"The question is, where will shipping be in five years' time"?* (Mr Penn, Baltic Exchange, 2008).

12.3 Singapore

Singapore is currently the World's busiest port in terms of total shipping tonnage. Furthermore, it handles a quarter of the World's shipping containers, half of the World's annual supply of crude oil, and is therefore the most significant hub port on the Globe. There are more than 600 various trade routes to 123 countries. *"Tax breaks and a central location makes Singapore the prime location." (*The Baltic, June 08).

Singapore lacks the hinterland and is therefore focusing refining products to generate revenue i.e. oil refining or water fabrication. This strong concentration of independent businesses in combination with the superior concentration to the global economy generates Singapore to be the hotspot for establishing an office in East Asia, if not in the World.

13.0 Paper Broker

The news from reputable information sources informing the Shipping World about the level of freight rates are not always true. The market is changing, however out of the ordinary rates should be discarded. Markets are driven by news and significant changes are worth reporting such as the highest and lowest rates.

Additionally, one has to note that a fixture can easily fail on subs, which terms that one party has to prove in a curtain timeframe e.g. vessel must be permitted to enter a specific port. The failure of a fixture could occur on the following day after the rate has been reported.
Variations can also occur through the calculation of the Worldscale. The Worldscale is an international system of establishing freight rates for cargoes such as crude oil. The freight for a given ship and voyage is normally expressed in a percentage of the published rate, and is supposed to reflect the freight market demand at the time of fixing.

The rates for large vessels exceed those with lesser size and therefore drive the market. Early 2008 the high capesize rates are forcing the dry bulk market upwards and large carriers can be hired for US$ 300,000 per day. These phenomenal capesize rates are being paid for front haul voyages from Brazil to China. This is then reflected in the Handy and Handymax rates as Owners try to stay competitive.

China's unprecedented demand for iron ore and coal, fuelled by rising oil prices is driving the dry bulk market higher. However, as the US demand declines other parts of the supply

chain are adjusting accordingly to reduce large inventory costs.

The effect of the paper broker does impact on the market but can be used by both carrier and merchant and therefore counter measure each other if knowledgeable of the situation. This is why it is essential to used highly skill shipbrokers to support in finding a suitable rate.

14.0 Shipping Information and Communication Technologies

The fast developing information and communications technologies are revolutionary systems support companies to their development to gain more market share. However, as corporation implement new system, the working structure has to adjust accordingly.

Information as well as communication is being conducted at different stages of the supply chain. One differentiates between the Operational System, the Planning System and the Strategic System (These three systems are presented in the **APPENDIX E).**

15.0 Education

The marine industry is currently suffering from short supply of personal. *"Officers could ask for and get two or three wage increases per year." (*Nigel Lowery, Lloyd's List, 2008). The leading Philippine based manning and training executives have warned that the marine industry has to wake up to the fact that it is at war with other sectors for human resources.

Ms Ho voiced concern that many new buildings on order are being build without thinking of how is going to manage them on shore and off shore. It is also frightening to know that most ships have limited to no space to educate new personal.
The problem is not in the amount of recruits applying every year to join the industry but in the University bottleneck. While the Universities try to expand, funding is lacking to support the initiative. Prof. Capt. Peter Irminger, Vice Dean of the Bremen University of Applied Sciences and head of the Nautical Science Department says *"in Bremen our goal is to raise the capacity for nautical science form 100 to 120 student places."* This increase will not cover the widening gap of insufficient personal in the global marine industry but fill the already overcrowded University in Bremen even further, in spite of the fact that the Marine University of Hamburg has been closed. Therefore, it is essential to find a system, which will increase the amount of recruits in the Marine Industry.

In the UK the Institute of Chartered Shipbrokers (ICS) has developed a new system, which educates shipbrokers in a contemporary approach. The ICS has created various education courses based on a distance learning programme. However, the ICS is the only internationally recognised professional body for shipbrokers in the World. The 23 branches in key shipping areas enable recruits to enter the shipping industry. Circa 3,500 individuals and 120 companies have an ICS membership and are committed to maintain the highest professional standards across the shipping industry.

The latest innovation by the ICS is 'Coracle', the first pure online course for the marine industry. This pioneering online system of the ICS enables students to learn online, complete the multiple-choice section of the courses and receive feedback via email from tutors.

The recent transformations in the Marine industry have been received with a time lag and the educational system and it is expected that this delay will cause wages to increase and most probably open the marine industry to untrained personal.

15.0 Marine Market

The membership organisation Baltic Exchange is the heart of the global maritime marketplace. It provides aside from the daily independent shipping news, detailed information on current fixtures and fright rates. The bulk freight market depends upon the co-operation of the members, which include shipbrokers, shipowners and charterers to provide recent information on current fixtures, their status and disputes. Furthermore, the Baltic Exchange hosts educational shipping courses around the Globe. The 'practical series' are several courses held in London are run in conjunction with the Cambridge Academy of Transport. The 'practical series' focus on vessel chartering and freight derivative trading.

When a company is part of the Baltic Exchange Shipbrokers they are obliged to act by a code of business conduct based on the motto, *"Our Word Our Bond and those who breach the code are disciplined or expelled from the Baltic Exchange"* (Baltic Exchange Slogan). The membership is not limited to shipbrokers charterers and shipowners only but also to financial institutions, law firms, insurance companies and other marine related associations. At present there are 550 companies and about 2000 individuals, members to the Baltic Exchange.

On Monday, 14th July 2008 the Baltic ended years of tradition when it began to list charter rates in dollar-per-day, alongside the traditional Worldscale rate. This change was made

to provide shipbrokers with more transparency to the complex Worldscale system. Unfortunately, Imarex, which is also providing similar information to its members, is presenting different dollar amounts to the Baltic Exchange. Jeremy Penn the chairman of the Baltic Exchange agrees that Imarex and Baltic should have similar rates and he noted, *"At the end of the day, a lot of brokers put out benchmarks and rates to support their customers and that's fine, but hopefully the rates which the market can use for settling FFA transactions will be the Baltic rates."* This could be the reason why the rates vary between the different institutions. However, it shows that organisations are trying to eliminate the problem in the previously chapter 'Paper Broker'.

This change will certainly interest new FFA players that are not privy to the workings of Worldscale but understand a simpler dollar-per-day system. *"I don't think this is going to be a complete revolution, especially overnight"* said Mr Goggin about the new Baltic move, but he acknowledges that the marine market is slowly opening up to other financial sectors.

16.0 Pollution & Fuel

The IMO (International Maritime Organization) current issues are the air pollution. Marpol Anex VI already sets limits on SOx (Sulphur) and NOx (Nitrous) for vessels around the Globe. To improve the existing structure the IMO is undertaking a comprehensive review of it implementation, as well as identifying improvements in engine and fuel technology. Furthermore, the IMO is researching new possibilities to effectively reduce all greenhouse gases, including CO2. The industry is working towards a holistic solution with an eventual goal of delivering near zero air pollutions for vessels. The reduction of air pollution is coexistent with the fuel consumption, which is why many new ship designs are focusing on fuel efficiency.

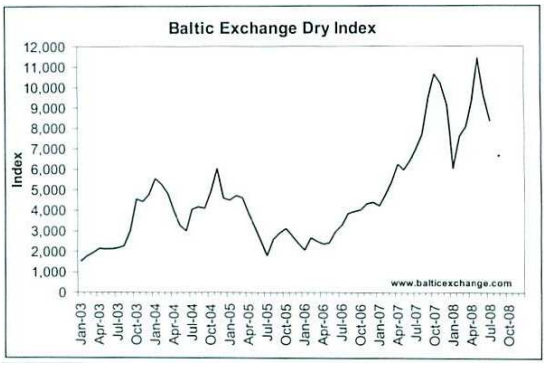
Source: Pablo Päster, MBA Sustainability Engineer, Triplepundit

The graph above shows the difference between the various forms of transport and their CO2 emissions tonne-km. Following this the sea transport is well positioned, however the output is still high as a result of the amount of cargo being transported.

17.0 Present - Future

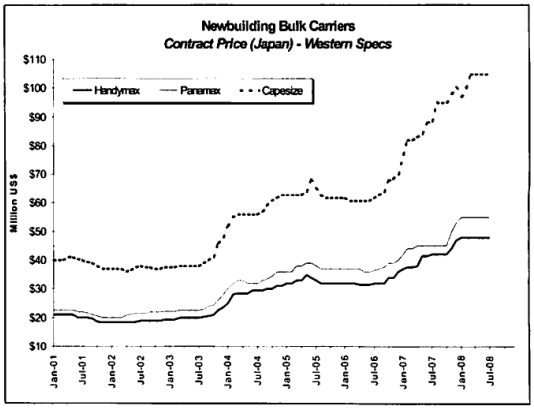
Looking at how the marked has developed over the last 40 years it is possible to predict the future to some degree. However, it is not possible to say exactly how the marine market will be positioned at a particular point in time.

Starting at the present we have a falling market. Clarkson Research Services announced that the value of new orders in the first quarter of 2008 is at $5.3bn, which is 60% down on the corresponding rate for 2007. This concurs with an AXS-Aplphaliner study, which notes the following, *"Credit tightening and a bearish economic outlook presently weigh on the ordering process".* This continues to pressure the market and in combination with the high fuel prices the freight rates increase to adjust for the imbalance in the industry. *"Up until 2003 the shipping market and shipbroking activities was actually dominated and driven by what the commodity houses. They had complete control of the cargo. The grain houses, mineral houses... they would click their finders and the market would go up or down. This would be in relation to seasonality or emigration to crop yields. That has now changed and what drives the market is actually what the owners want. That is a huge change…"* (Gavin Smith, Shipbroker at V.Ships)



Source: SSY, Monthly Shipping Review 15th August 2008

The increase in commodities is impacting on the shipbuilding industry and boosts the price for newbuilds and the existing fleet. As a result of light ordering in the first quarter, the containership orderbook has fallen back slightly to 58% of the current fleet (Clarksons Shipbroker).



Source: SSY, Monthly Shipping Review 15th August 2008

More investment is needed as ships become more expensive, which again raises the freight rates to support the new fleet. This is the natural spiral of our economy. However, the economy is facing a difficult challenge with the declining fuel production, which could suggest there are tow different timelines that could occur.

1. Sudden Change

If one of the major oil suppliers in the World would stop its production, due to a terrorist attack or an act of God the effect would be felt immediately. In the first instance prices would increase. This would be followed by a war determining the control of the remaining oil reserves. Furthermore, the missing fuel would cancel transports around the World. Ship services will reduce to the absolute minimum. With no supplies, some countries would be required to introduce systems to sustain the sudden loss of 90% - 100% of foreign commodities.

2. Slow Change

The slow phased crisis will to be perceived as a time span of approximately 50 – 100 years. This transformation will trigger increasing oil prices. This will cause further recessions and escalating inflations. This will be followed by a brief economic recovery before the oil system shut-down. The speed of this transformation will be determined by the amount of new technologies replacing the fuel based system. This could lead to an extension of the oil reserves, when less fuel will be consumed and new reserves replenish the system. When the World economy adjusts, oil supporting system rather than an oil replacement will develop.

As the tasks to drill new oil wells becomes more complex, technology advances and new areas of exploration enfold. In July 2008 a new Deep Drilling Rig has been contracted by SembCorp Marine Shipyard for US$ 1 billion. The new design will be delivered in mid 2010. Additionally Ice-Class A1 and A2 are underdevelopment to extract possible oil well in the pole regions.

The energy that we require can be produced with various systems such as Solar Power, Wind Power and Wave/Tidal Power. The EIC announced in their monthly news that Renewable Energy Corp (REC) is building the Tuas Solar Power Plant in Singapore for USD 6.3 billion. It produces 1.5 GW, which is more than Palo Verde 2, Arizona Nuclear Power Plant with 1.3 GW per year. The new car carrier ES Orcelle from Wallenius Wihelmsen, which is independent of any energy as it uses solar, wind and wave energy to sail at a speed of up to 20kn. WW envisages a service date of 2025 of the first 100% environmentally friendly car carrier.

The transformation of the marine industry has already begun as the fuel prices increase and the market reacts. The more expensive ship transport continues to pressure shipowners and cargo merchant, who will try to reduce costs. This decrease will tighten the market as shipowners and cargo merchant will try trading directly, which will impact freight forwarders, shipbrokers and agents. However, the demands for each project vary and the middleman will always be necessary to find a suitable vessel or cargo.

Commodity trade routes will also adjust as Francis Crouch, Ship Operator for Furness Withy (Chartering) Ltd., Hamburg Süd explains. As fuel prices change long routes are highly affected by the cost increase, which will lead to strengthen shorter routes such as concrete from Greece to Africa instead of China Africa.

18.0 Mile stones for the future marine industry

There are two strategies that need to be implemented to ensure a stable World economy. The demand of energy will need to reduce for production, transport and end-user. Secondly, other sources of energy have to be further incorporated into the economy. With these two strategies combined the fading oil based system will stabilise again. However, this means that the vessel engines need to be re-engineered and the cargo space adjusted according to the new needs of the future energy commodities. This implies that more crude oil tankers will be substituted by product- and chemical-tankers.

To support this transformation, countries would need to control the CAD through several

systems. The most popular proposal combines depreciation of the currency and therefore extended its importance in other countries. The reduction of relative rates of growth of demand and the output will increase in the relative rates of growth of demand and output abroad. This will slow the pace of transformation and allow a full expenditure switch. Another system would be to focus on reducing of the fiscal deficit in the country together with flexibility of other currencies.

19.0 Conclusion

There is significant uncertainty on the issue of global imbalances. The risks of a global recession are sufficiently high to motivate the increase of researching new systems and international discussions. It is to be expected that the adjustment will occur by financial decisions of the private sector well before the lagged effects of coordinated action.

The gradual decay of the fuel based system has begun to transform the market, which is affecting the Supply Chain throughout. The marine industry has a slight time lag due to the conservative business methods conducted in the market. It provides the industry with an awareness of the possible impact that may occur.

Through advanced planning based upon quality research, companies in the Supply Chain can develop successful strategies for the impact and improve customer service, reduce inventories and dangerous backlogs. Furthermore, through the use of superior Supply Chain Management market shares can be strengthened and expanded.

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