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Influence of financial storm on the ship chartering market and the way of risks control

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Influences of Financial Storm on the Ship Chartering Market and the Ways of Risk Control

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of Dissertation: Influences of Financial Storm on the ship chartering market and the ways of risk control

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Abstract：Financial storm has made the ship chartering market into a greatly risky situation and made it have some new business characteristics. In order to survive in the financial storm, almost every industry is taking methods to evade risk as much as possible. Shipping market is also included. But so far, there is not too much study on the risk avoidance of ship chartering market in China. For these reasons, this research paper analyzes the influences of the financial storm on the shipping market and ship chartering market. Particularly the ship chartering market, it focuses on the risk controlling. The aim of this thesis is to effectively reduce the loss which is caused by the financial crisis. Meanwhile, it also sets up a foundation for future research in the similar industries. In the dissertation, the main innovative point is the analysis on new characteristics of the chartering market under the circumstance of financial storm, which can bring some new ideas for the shipping companies who want to manger and control risk better.

KEYWORDS: Risk, Chartering, Avoidance, Shipping market, Financial Storm

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LIST OF ABBREVIATIONS

H/B	Hire Base
CKYH	COSCO, K-line, YangMing, HanJin
BDI	Baltic Dry cargo Index
BFI	Baltic Freight Index
FEFC	Far Eastern Freight conference
AADA	Asia-Australia Discussion Agreement
UBS	United Bank of Switzerland
T/C	Time Charter
FIOT	Free-In-Out-Trimmed
DWT	Dead Weight Tonnage
FFA	Freight Forward Agreement
BIFFEX	Baltic Forward Freight Exchange
TEU	Twenty-Foot Equivalent Units

Chapter One INTRODUCTION

1.1Background of Research

The financial storm ship chartering market has led to great risks to the ship chartering market and brought to new business characteristics. Every profession has taken some methods to evade risk. As much as possible to circumvent the financial storm brought about losing money. Shipping market is no exception. But so far, no domestic study and discuss issues about ship chartering market risk control. For these reasons and I analysis the new characteristics of ship chartering market, as well as seek advice from mentor, this article analysis the financial storm on the shipping market and ship chartering market the ship chartering market, and focus on the issue of risk control put forward my point of view.

1.2 Literature Review

In the shipping industry, ship chartering market is influenced by many factors, but the financial storm is the most influential factor. However, the study on risk control thereof is still less. At present, the methods to analyze such are as follows:

The influence of financial storm on ship chartering market the ship chartering market

1. *Container:*

The hire touched the bottom in 1998. This was caused by reasons in many aspects, such as company's expanding shipbuilding for liner shipping, excessive transport service competition in container shipping, the Southeast Asian financial storm ,etc,. (Zhang Yang, The container ship leases market analyzes and prospect 2000). The current hire situation is very much alike. When the market dropped day by day and

transport cost increased, almost every shipping company realized that it is not a smart choice to defeat their rivals. To set up the alliance, reduce the operation cost and gain the economies of scale are the ways of survival for ship companies (Yu Yin, The global shipping industry face the new challenge 2006) .

For the tramp shipping market, the story was a little bit different. Because of the difficulties in contracting with charterers, a lot of ships were out of use. NOL even planned to lay some ships aside completely. (Saif I. Shah Mohammed and Jeffery G.Williamson, 11 February 2003). Freight rates and productivity gains in British tramp shipping 1869-1950).The trade in the near future will have very low hire and very short term lease.

The aggravation of transport service competition of the container shipping made the container liner companies realize again that the economies of scale of containerized transport is the way to keep the advantages in competition, and thus they devoted to buying container ships for tramp shipping (CHEN Fei-er and ZHANG Ren-yi 2008. A Co-integration Approach to Forecasting Container Carriers'Time Charter Rates, 2008, 13(3), 343-347). Today the best method for ship companies is to form alliances, realize the economies of scale, keep enough confidence to the market, and keep good financial conditions to ensure the cash flow.

2. *Bulk cargo:*

1. In 2008, it was in great demand and tight slightly supply on the bulk cargo market and the market was keeping at high position (Jiang Yanni The international bulk cargo market analyze 2008). However, the present practical thing is opposite. U.S.A.'s subprime mortgage crisis broke out and imported volume of the iron ore was unbalanced, which made the bulk tramp shipping market not as good as forecast. (Zhu Chengpei and Zhang Xiaomin,

10-Nov-2008. Storm hits shipping industry, China Daily.)

2. The data from (Clarkson (Oct.2008)) analyzed these as follows:

①Panamax: The Panamax type ship market reaches the new low point. The Panamax type ship freight rate index in the Baltic Sea ends with 1186 points in October, dropping 843 point compared with the same period of last month, decrease is 41.55%.

②Capsize:The capesize type ship market slumps rarely this week. The Capesize type ship freight rate index in the BDI ends with 1842 points on Thursday, dropping 1706 point compared with the same period of last month, decrease 48.08%.

③Handymax: This week handymax market is aggravated decreasing. On Thursday, it (BSI) ends with 1254 points, drop 590 point compared with the same period of last month, decrease 31.99%.BHSI end with 771 point, drop 202 point compared with the same period of last month, decrease 20.76%.

However,in 07, Nov,2008, the report of Clarkson indicated that :

Panamax market situation became better this week. Panamax freight rate index ends with 831 points on Thursday, rise by 134 points compared with the same period of last month, increasing degree is 19.23% .The reason is that in the area of Pacific Ocean and the Atlantic Ocean, as the trade which coal transport by ship in Newcastle port of the Australia, promotes Panamax market conditions to go up and become main driving force that driving the BDI index to rebound from valley bottom this week .So "The global shipping market is in a panic now," Captain Wei Jiafu (COSCO Group)said "The panic will be over in months. But worries will still be there. We need confidence to recover".

3. *Tanker:*

①VLCC: The low freight rate of the Persian Gulf of VLCC wandered up and down,

and the BITR index ended with 1168 points, dropped by 11% compared with former.

②Suezmax: The deal of suezmax transportation is reducing. Freight rate fluctuate downwards. The hire dropped from 75,000 dollar per day to 67,500 dollar per day.

③Aframax: The deal of aframax transportation is also reducing. The freight rate just drops a little bit. The hire is declining from 37,000 dollars per day falls to 27,000 dollar per day.（Clarkson report）

JIANG CHEN commented the 2008 International dry bulk cargo market as follows (2008) "Although we mentioned above, the oil tramp shipping market probably appears a good opportunity.". He put forward to also the reasons:

a) The demand will increase in Winter.
b) A lot of countries declared that they will strengthen the petroleum strategic reserves, which resulted in expecting demand increases.
c) Some tanker is repacked into bulk ship, and it will reduce the transportation surplus.
d) The single shell tanker will be phased out and withdrawn gradually in 2009, so I estimate that the transportation market supply will become a shortage in short term. At that time, the real chance will appear for the tanker transport.

The oil tramp shipping market will go up steadily in 2009. (KONG YAN. 2008 International oil market.)

In addition:

Tramp shipping provides the flexibility to the ship charterers, increases the market competitiveness of the shipping companies. For example, it is a machnism to hire

ships when needs for transportation come and to narrow fleet's scale when transportation is in dull season (Shu Kaibao Tramp or buy ship, 1996). It is very interesting for this paper. When the financial storm comes, the risk to charter ships is much smaller than to buy ships. When every large ship company canceledнew ship orders, the chance for the tramp shipping market arises. “The shipping company should strengthen with the cooperation in many aspects, such as cargo owners, traders, quays, banks, shipyards ,etc,.. Deal with the crisis together”(Wei Jiafu, President and CEO of COSCO Group). It is extremely important in the present tramp shipping market by cooperation.

Risk control:

Generally world think that the method to evade risk of chartering is BIFFEX at present.(Liu jianlin, Shi Xin Research on co integration in BIFFEX futures market and pricing model 2005. Shen Jianguo BIFFEX risk management research and enlightenment 2006. Nevill Smith Feature: How the Baltic Exchange escaped from the past 2006) .It is a kind of freight charges futures contract. FFA is a kind of long-term freight charges agreement. (Liu Dongrong, risk control of shipping market- The option fixes the price and application. Wu Peijian, Deng Guishi, Tianwei Research on freight risk management based on FFA.)

There are two kinds of methods to evade the risks in shipping market. One kind is the absolute pricing which locks the freight charges, and the other is the future contract that locks the relative price. （Zhao Yang, Shi Peipei,Discussion that FFA evades the risk of chartering ）

Two article these evade the risk with same two method which are FFA and BIFFEX. At present, the article which has (Liu Chao of the same method named the freight

charges hedge). It has proved that there are few methods to evade the risk at present.

Therefore, the existing problems are:

1. The financial storm brought into a lot of negative effects, but the way of risk control is only a little.
2. The financial technology of shipping option pricing is still at primary stage. There is no shaping option pricing analytical method of shipping market.
3. The research is not systematic and deep enough.

1.3Purpose of Research

1.2.1To provide proposals for the reduction of the losses caused by the financial storm, as well as to set up references for the future research.

1.2.2 To analysis the market trend correctly and objectively.

1.2.3 To study the professional knowledge in depth, and to establish the knowledge base for future work.

1.4Methodology

This dissertation uses quantitative analysis and mathematic models, such as the calculation of profit analysis, optimum speed and the correlation between the hire and economy. It analyzes also the conditions of lay-up for ships. Then, it uses case-study methods to explain the operations of FFA and the way of controling risks for shipping companies. In the thesis, the influences of the financial storm to the shipping industry can also be seen by the data provided therewith.

Chapter Two

Features of Ship Chartering Market and Its Correlation with the Economy

2.1The Reasons of Financial Storm and the Current Situation of Shipping Crisis

Economy always goes ups and downs periodically. Generally speaking, when the"recession" and "inflation" go together, it indicates the approach of financial storm.

Generally speaking, the financial storm arrives owing to the overproduction and insufficient consumptions. A great number of products are in stock. From the relationships between “supply” and “demand”, the overproduction will inevitably lead to insufficient demand. In the case of no profits, the capitalists would throw off the products rather than distributing to the poor. In order to ease the contradiction of products and consumers, the capitalists destry not only products, but also fire the workers, reduce the production scale, and even shut down the factories.

"The global economy is in a difficult period, in which the demand of the developed economies slowed sharply and in the worldwide, especially the emerging and developing economies on both sides of the rising inflation double-team." The IMF issued this in July by (The World Economic Outlook), which was proved by the global market of liner shipping. In the fourth quarter of 2007, due to the sluggish market on Pan-Pacific routes, the liner shipping companies like Maersk, NYK ,

withdraw the packages thereof, removed their fleet capacity one by one, and turned to Asia-Europe routes. But soon they discovered that hte latter is not a "paradise" as expected. Since this year, with the joining of new capacity, especially large container ships, the freight fell down further to a historical low level as $300, and furthermore it still keeps going down.

Maritime specialists predicted that with less and less demand of goods, the Container ships on Europe-Asia routes will be transport no goods. Financial storm is killing precious source of trade, not only the demand of three major global container shipping routes has started to weaken simultaneously the dry bulk demand, such as iron, ore and coal, slowed down, The sea trade growed slowly. In addition, as the global financial and credit crisis are deepening day by day, trade and finance become more difficult. Usually, after the goods were loaded and before the buyer receive the goods, the bank issued credit guarantee to the seller (i.e., the consignor). But now many consignors cancelled the contract of Affreightment because of no letter of credit. Even the shipper has long-term charter contract with the owner temporarily doesn't effect, but those who have a voyage charter of main business owners, has not pull almost business.

The worst situation is that banks began to tie out the funding for the ship companies. The North Bank in Finland revealed that, in 2008 the total global ship funds and loans have been cut down to $1,00 billion, being 2/3 of that of last year. But for the shipping companies, the newly-built ships, including ordered or to be ordered in future 3 ~ 4 years , need at least $300 billion funds and loans globally. German Joint Bank assumed that while banks tighten the funds and loans market, the dry bulk transport will be affected most and many shipping companies may be subject to turnover problem.

2.2Features of chartering market and Its Correlation with economy

It is well-known that the hire and chartering freight rates are decided by the chartering market, and chartering market is decided by the "supply" and "demand" in shipping market. Today when the financial storm comes, the hire is suffered seriously. Meanwhile, with the rise of oil prices worldwide, cost of shipping company increases vastly. meanwhile the dropping of import and export trade leads the shipping industry into the deeper trough. Many shipping companies reduced routes, even went bankrupted, because of the imbalances and suspension. Thus it is necessary to study the method of hire calculation.

2.3 The Relationship between Hire and the Economy

2.3.1Calculation method of chartering cost

Set F' as month hire per ton (yuan), set DW as the ship loads (t), t as the term (d), the entire lease revenue for the ship is:

$$\sum F = F' \bullet DW \bullet \frac{t}{30} \qquad (1)$$

Set K as the fixed cost of each operating ship, the total fixed cost in the lease term is :

$$\sum K = K \bullet t \qquad (2)$$

since the operators in the time charter is only responsible for fixed costs for shipping operations, and other variable costs is to be responsible by the charterer, therefore, in order to make the operator of the ship not lose monty when the ship is chartered, the total income $\sum F$ should be equal to or greater than the total fixed cost $\sum K$:

$$\sum F \geq \sum K \qquad (3)$$

fill up (1), (2) to (3), then:

$$F' \bullet DW \bullet \frac{t}{30} \geq K \bullet t$$

$$F' \geq \frac{K}{DW} \times 30$$

Then:

$$H / B = \frac{K}{DW} \times 30 \qquad (4)$$

H/B is short for Hire Base. Its exact meaning is the fixed costs, referring to the fixed costs for a ship in time chartering in one month on every ton , i.e., the lowest rate of hire every month (yuan/t) when the operator charters the ship. When F'<H/B, then $\sum F \langle \sum K$, the operator of a ship will lose money.

Of course, the operator of a ship is not only to cover but also to profit, so in order to negotiate hire rate, they should certain a profit objective.

Set W for profit objective within the period of ships, in order to achieve this goal, the income $\sum F$ should be equal to or greater than the sum of fixed costs and it, namely:

$$\sum F \geq \sum K_{+\mathrm{W}}$$

$$F' \bullet D \bullet W \frac{t}{30} \geq K \bullet t + \mathrm{W}$$

$$F' \geq \frac{K \times 30}{DW} + \frac{W \times 30}{DW \bullet t} \qquad (5)$$

2.3.2 Summary

Obviously, W is high, hire rate is higher, the chance of the ship to hire is lower. The high-low hire al rates is not wishful thinking, how much would want to set, it will be changed as shipping market changes. Nonetheless, if the operator estimate before chartering, they will get hold of the initiative in the business.

So the determination of the hire plays an important position in the operation of ship chartering market.

Chapter Three

Specific Effects of Financial Storm on Shipping Market and its Performance in the Ship Chartering Market

3.1 Analysis of Container Shipping Market from a macro point of view

3.1.1 Subprime Mortgage Crisis Brought by the Global Financial Storm and Seriously Affects upon the World Container Transportation Demand.

The subprime loan crisis in America has now turned to be an acute financial storm which gradually spreads to substancial economy. In the year of 2009, the risk of global economy proceeding in a descending way has become greater, which cause economies of many countries fell into recessions. The real estate market of U.S has kept deteriorating, credit and loan shrank more and more companies announced being in bankrupcy, and the rate of unemployment kept rising. In October 2008, the index of confidence among consumers has dropped from 61.4 in September to 38, which was the lowest in the history since the creation of such index in 1967. The real estate markets adjustment in some European countries were kept going, and investment for contruction were also not active as well as personal consumptions among these countries. German may show up zero increase in the third quarter. Due to the recession of export, economic increasing cannot be seen optimistically. France gained economy decay in 2008, and 0.1 percent minus increasing in the third and

forth quarters. In Britain, GDP in the third quarter will go down 0.5 percent, which became the first shrinking since 1992. The situation stayed at the same in the fourth quarter, Britain was enter into decay in due form. Japan's economy was right on edge of decay, and exterior requirement was not strong. The deficiency in outputting increasing will cripple extroversion economy basis. In India, new developing economy groups will distend in a particularly slow speed, which cause slowdown in economy developing. Latin American countries are also influenced by currency shrinking situation. Russian will enter into a slow economy increasing as for the inflation and download competition of products except for raw materials.

IMF has predicted that the global economy increasing rate of 2008 will adjust down to 3.9 percent in October, and followed by 3.0 percent in 2009. IMF has also predicted that global products and services trading of 2008 and 2009 will be 4.9 percent and 4.1 percent, far from 7.2 percent in 2007. Affected by this, the container transportation of this year and next year will be swayed. Clarkson's announcement in October has further lower the upper global container trading prediction numbers to 0.138 billion in 2008, equally to 6.8 percent increasing rate, and this number will goes to 0.148 billion in 2009, equally to 7.2 percent increasing rate.

3.1.2Increased Pressure arisen out of the pinnacle of Newly-built Vessel's Delivery

In the year of 2008, the carrying capacity in the market of new building vessel reached 1.66 million TEU, and it is foreseeable that in the end of 2008 the carrying capacity of global container vessels reached 14.63 million TEU, which demonstrates a rise rate of 13.2 percent. In the year of 2009, the carrying capacity of new building vessel will mark a new highest spot in the history, which shows 1.79 million TEU. In the end of 2009 the carrying capacity of global container vessels will reach 16.49

million TEU, with rising rate of 12.7 percent.

Generally speaking, the amplitude of global container turnover in shipping transportation has gone down from double figures in the early years to 7 percent this year and next year. However, the whole carrying capacity has kept a 13 percent high speed rising rate. Even we consider in the 1 to 2 lower percent between the actually and theoretically carrying capacity as a result of more vessels and lower voyage speed, the increasing number of carrying capacity will still be 3 to 4 percent higher than turnover of global container shipping in the year of 2009. Compared with situation during 2002 to 2007, pressure in demanding of trade is increasing sharply.

3.1.3 Cargo Volume Reduced Sharply due to the Decreasing Demand for Import and Export in American Line

loan crisis encumber the economy developing in America. In the year of 2008, requirement of input in America has suffered huge negative effect ion. According to calculation of PIERS that goods transported eastern way on line between Asia and North America during Jan and July in 2008 is 6.91 million TEU, which is 7 percent lower than same number last year. Based on actual company running, during Jan to Sep in the year of 2008, goods transported eastern way on line between Asia and North America has declined 12.5 percent. Under the situation of canceling carrying capacity, rate of using bulk in the peak season is still worse than same of last year.

People have no confidence in carrying capacity in shipping eastern way on line between Asia and North America in the market. In the third quarter, CKYH and New World Alliance have announced their decision of halt line during the dead season. Generally, all of the liner companies have been very cautious of investment into carrying capacity on line between Asia and North America in the first half of next

year, which is good news for ease the sharp supply demand relations. Drew estimate that in the year of 2008, the eastern way on Pacific Line will be 1 percent lower to same last year, and a 5.5 percent number is predictable considering the difference between first quarter of 2009 and fourth quarter of 2008.

Colligate different systems' prediction and the acute situation of the shipping market, goods transported eastern way on line between China and North America in the whole year of 2008 will decline 9 percent, and that same number might be 5 in the coming 2009. In contrast, benefited from weaken American dollar and some grain transportation form changing from bulk to container, output of America may reach a 9 percent increasing in the year of 2008. However American dollar has rising recently, and main economy group increasing has postpone among far east at the same time, which all lead to input demanding of America decline. In the mean time, Index of BDI has decline acute after the third quarter of 2008, leading to some part of chaging transportation way grain come back to America. As for all above, the outgoing product from America to Far East may decline 4 percent or so compare to this year.

3.1.4 Reduced Quantity of Goods on lines between European and Mediterranean Sea, and the Declined Freight

At the background of increasing of related economy groups and postpone of input and output products, quantity of goods on line between European and Mediterranean Sea shows a same postpone situation in 2008. According to company members of FEFC, goods transported western way on line between European and Mediterranean in the first three quarters of 2008 is 7.075 million TEU, which equals to 2.1 percent increasing of same season last year. During this whole year, container quantity western way on line between Asia and European demonstrates a clearly down

amplitude each season, especially the third season which comes out minus increasing as well as a 2.4 percent decline in container quantity. After July of this year, exchanging rate of European dollar has goes down acutely, which will leads to demanding decline of Europe? It is foreseeable that goods output from Far East to European will decline sharply next year.

From the aspect of carrying capacity, the Asia European line has absorbed most new building vessels. It predicts that the carrying capacity of 2008 will rise about 12 to 13 percent. In order to solve the weaken problem of market recent time, liner companies such as CMA CGM、EVERGREEN、Maersk、The Union has canceled some line in this part one after another, and that will ease the supply demand relationship. However, compared to increase in demanding, the situation of supply over demanding has prick up from last half year, and will continue until 2009, bringing huge pressure to significantly reduced goods quantity Asia-Europe route. Freight of Med-Euro route has showed current of huge decline. Our company's single container earning has come though a 21.8 percent decline in west and north Europe, a 22.9 percent decline in western way from Mediterranean in September. In September, single container earning of western way from west and north European of our company is USD1675, while it maintain a same 60 thousand TEU quantity of containers, we suffered a USD466 less than 2007. And total income of freight has decline acutely 28 million dollars comparing to 2007. We've under big running pressure.

Considering all the predictions of different systems and a sharp situation of market, the goods transported western way on Asia-Euro route will come to a 5 percent decline in 2009.

3.1.5 Continuous and steady rising of the Cargo transported on Asia-Pacific lines, however the pressure of supply and demand being unavoidable

Under the situation that price of global resource products have kept rising, demanding for consumer products in South America, Africa, Middle East and Australia will rising further. In that case, it will bring goods on relevant line to meet a steadily rising. Take China as an example, goods imported from China of those places have been stayed at around 30 to 50 percent in recent years.

Although the price of global resource products has come out return in the second half of the year, it is still higher than years ago. It is prognosticated that in the year of 2009, resourceful countries such as South America, Africa, Middle East and Australia will still earn big money, and such leads to great increase of its import.

According to data of IRA, goods transported western in the market of Far East and the Persian Gulf Area is at a 10.86 percent rising rate from Jan to Sep in the year of 2008. And according to data of AADA, goods transported southern in the market of Far East and Australia is at a 13.17 percent rising rate from Jan to Aug in the year of 2008. They are both very fast. It is prognosticated that goods on western Far East and Middle East line, southern Far East and South Africa line and southern Far East and Australia will keep rising on a steadily rate of 10 percent.

However, dragged by weaken demand from Euro and America line, a part of carrying capacity which was originally designed to serve on main line might switch to sub line to add pressure to voyage operation. Take Persian Gulf Area as an example, rising rate of western from Jan to Sep in the year of 2008 has reached a high 24.98 percent, and it is prognosticated to maintain at the high position of 20 percent in 2009. The big difference between demand and supply will result in dropping freight

in a while. Ocean freight from Shanghai to Dubai was at an all in USD1100/2000 20'/40' price at the beginning of this year, but USD650/1100 nowadays, far below the reaching no margin freight of USD900/1700.

3.1.6 The acute dropping of the container shipping market, leading to big differences between demands and supplies

At the background of above, the market of global container shipping has dropping acutely. Many institutions have prognosticated that the rising rate of global container shipping will be very limited in 2009. Clarkson has further adjusted its prognosticated figure to a lower 2.2 percent in March, and UBS prognosticated a merely 1.2 percent, and DRERWY prognosticated 2.8 percent rising rate of 2009 in the end of last year, now it has announced new report that the quantity of container will drop another 5 to 5.7 percent in 2009.

However, all the institutions have prognosticated that the rising rate of container carrying capacity will exceed 12 percent in 2009. According to Clarkson's data, the quantity of new building vessel will reach a new mark in 2009, which is 1.78 million TEU, while the ship breaking capacity is only 160 thousand TEU, can do no restrict to growing of carrying capacity. In the end of 2009, the whole carrying capacity of global container vessel will reach 16.1 million TEU. Some of the new building vessel order may be postpone to year after 2010 as for the had situation of shipping, but supplying for shipping will still be higher than supplying in the year of 2009. The big gap between supplying and demanding will enhance the antinomy of supply and demand, and make it hard for bulk using rate as well as the turning up of freight.

Actually, since the fourth quarter of 2008, the bulk using rates of some main market have been already showing an acute dropping. Let's see average Euro-Mediterranean

Sea line and the Pacific line, the bulk using rate has been around 90 to 100 percent in the first half of year. While the figure dropped to 50 to 60 percent on Far East-Euro Med line till Nov. And the Far East-Pacific line has dropped to 60-70 percent. After two weeks of the traditional Chinese New Year, the using rate of Pacific line has dropped to 30 to 40 percent of original, which is really a disaster. According to Piers, goods transported eastern on Far East-America line has dropped 8 percent same season in 2008 in the main line service, and it will be kept dropping 6 percent. Compared with 2008, goods transported western on Asia-Euro line will drop a 8 percent rate in 2009.

3.1.7 Sharply dropping down of Hire of container vessels, and the lowest level of retained number of new orders of the vessels

The vessel building market has been a mirror of shipping market, especially lacking of confidence. Be forced of operation difficulties and financial pressures, some owners have canceled their orders of container vessel. From the beginning of the fourth quarter of 2008, there is merely no new order of container vessel or any second hand vessel purchase. According to data of Clarkson, the maintained number of global order of container vessel has reached 5.80 million TEU till first of March, 2009. That is totally 1121 vessels and also a new low mark in the last 17 months.

Since the beginning of the second quarter of 2008, hire of container vessel has dropped a lot, especially in the last half of the year, it has been dropping like fall. Howe Robinson Chartering Index has been dropped from 1370 in the middle of March in 2008 to 387 in the middle of March of 2009. The dropping breadth is 72%. There are more and more dispute cause because of stop chartering before the death of contract.

Data calculated by Drewry can directly showed us the effect ion brought by financial storm on rate of hire of container vessel:

Table 1 TIME CHARTER RATES (Containerships $/day)

	500 teu gearless	1000 teu geared	1500 teu geared	2500 teu geared	3500 teu gearless
2005	9175	15825	25275	29825	30350
2006	6871	11429	16492	20496	24233
2007	7451	11292	15775	21336	25850
2008.3	8000	12335	17500	25850	31500
2008.4	7853	12043	16850	26470	31500
2008.5	7767	12071	17500	29125	30600
2008.6	7338	11764	16605	22692	30600
2008.7	7800	11776	16309	20205	30600
2008.8	7500	11200	13250	19250	26000
2008.9	7132	10090	13033	19750	25000
2008.10	6991	9725	11625	16375	25000
2008.11	6233	8559	8760	14081	25000
2008.12	4952	6193	6850	8875	25000
2009.1	4952	5336	6438	8150	25000

This table has demonstrates the variety of hire of container vessel in size of 500teu, 1000teu, 1500teu, 2500teu, 3500teu between the year of 2005 and 2009. We can easily find out that from Aug to Sep in 2005, the hire level has been stayed at a high position, while dropping like a straight line since Sep of 2008, and it has once dropped to a rate of USD4000 a day. All caused by financial storm, this price is a

new low mark of time charter rate in shipping market in history.

3.2 Dry Bulk Market Analysis from a Macro Point of View

3.2.1 International dry bulk market expected to bottom out

Since the breaking out of financial storm in Oct of last year, the International dry bulk cargo on demand market comes out a panic dropping situation. The BDI index has declined from 3000 at the beginning of Oct last year to 663 on the 5th of Dec. And then it kept adjusting under the number of 1000. It has returned to 1000 on 27th of Jan this year and a series of accelerating bouncing up during the first 10 days of Feb. It has broke through 2000 on 11th of Feb and announced 2055 in the end. The BDI index has turned back to 1989 on 12th of Feb which we believe is reasonable adjustment of acute dropping a while ago. Of course it is directly related with rising quantity of iron ore during Jan.

As China has taken a series of measure one after another to inspire economy in facing the financial storm, the iron factory has returned to operation, which forced the rising of import of iron ore trade. According to statistics, China has imported over 40 million ton iron ore though port during Jan, and which is 4.8 percent higher than same time last year, at a 40.2 percent chain relative ratio.

Secondly, a huge amount of vessels have to be delivered and that brought large number of carrying capacity which makes it harder for maintaining of shipping freight. Although the number of order for new building vessel has becoming lower and lower every month since Aug of 2008, it is still on a high position in history. Order during Feb of 2009 is 1.6 times of that at the beginning of 2005. Clarkson has calculated that there will still be over 1.80 million TEU to be delivered in 2009. That

is about 15 percent of carrying capacity now.

Thirdly, those stopped carrying capacity is a potential menace to recovering of shipping market. According to French shipping institution AXS-Alphaliner's latest report, there is 303 idle container vessels all over the world till 2nd of Feb, which is about 800 thousand TEU as well as 6.5 percent of global container carrying capacity. This number is more than twice of that same depression time in 2002. When the supply and demand relationship has been approved, this kind of potential carrying capacity will be devoted into market to make it worse.

Lastly, fierce competition between liner companies makes no day for cost to be a bottom line of freight. Effected by bank credit squeeze, a number of companies who had brought huge number of money to build vessel had been affected. In order to keep the cash chain in good condition, a number of liner companies decline their freight ahead without any consideration of cost. This kind of competition situation makes freight down to below cost level, and it is probable to becoming even lower.

3.2.2 Market of alongshore bulk carrying sways at a low lever

Since Oct of 2008, China's market of alongshore bulk carrying have been dropping always. The freight of coal has been declining too. Index of goods transported alongshore has been dropped from 1609 on 1st the Oct to 10th the Dec, which is about 30 percent drop. Compared with peak index of 2887 on 4th the June, 2008, the drop pro is 60 percent. Before the traditional Chinese New Year, the electricity generating station in south China need more coal, so number of cargo order in demanding of coal have rise. The freight of coal has been rising a little, which brought the alongshore Index to a series bounce up at a low lever. However, the situation turned to severe after the spring festival and many factories could not run fully, which

resulted in huge number of coal stored and coal trade depression. Index of alongshore comes out a new little drop. On 18th the Feb the Index of alongshore has coming to the lowest in recent 5 year, which is 1097.03. Till now, freight of coal of main liner companies have been under cost, so it is harder for that freight to become lower. In a long term after the freight will be swayed at a bottom place. With the affection of politic measure in discharging of expanding domestic demand and inspiring economy growing, the alongshore bulk shipping market is expected to return to a better situation in the next half of the year.

Firstly, recovering of coal shipping alongshore still need a while. According to "national prospect report of electronic demand and supply and economy situation" announced by Chinese electronic company union, it is the hardest time for electronic growing during the first quarter, even the second. It may turn out a negative growth in the first half year. All places especially alongshore may come out a positive growth during the third quarter. And that will inspire the west and middle place of China a growth during the forth quarter. Statistics shows that in Nov of 2008, the national electric energy production has decline 9.6 percent. And 7.9 in Dec. Further affected by financial storm, factories specially in manufacturing and outputting in south China have been affected a lot after spring festival. Some of these have been closed. In that case these factories will consume apparently less electron icy than last year. It is anticipated that things will stay same during the first and second quarter. In Jan, quantity of coal shipment in the main ports in north China has dropped 8.2 percent, and that is 3 months negative growing.

Secondly, demanding for iron ore has been the first to recover. The 0.4 billion RMB inspiring domestic demanding plan instructed by Chinese government is in need of raw material resources like iron, cement, iron ore etc. This to a certain degree pulls up the domestic demand for bulk shipping alongshore. Government policy has

stimulated the steel market continues to pick up, which boost confidence in the industry. However, we should see that at present, domestic steel production complex has been turned to operation one after another, but its not totally turning to great situation. Domestic main consumer area of real estate market, car market etc have showed no apparent recovery sight. It still needs a while to turn to situation before the financial storm.

Thirdly, it will be the opportunity to bounce up for the alongshore bulk shipping market in the middle of the year “peak summer time”. Based on research about liner companies, coal demand dominate is not very high. The electricity stations still have large quantity of coal in store, which leads to coal trade market in declining. There are many vessels waiting at the loading port. According to information we get now, the electricity stations in south China have an over average 20 day’s store of coal, some even higher than 30 days. There are much more coal stored than needed, and that needs less shipping service then. The freight of coal is declining now, and it is near the line of bottom line. Most of the liner companies are running with debt. Liner companies all think that the coal transporting situation won’t turn better in the first half of the year. We expect that the market of bulk coal transporting alongshore during next half of the year “peak summer time” will recovery to a better condition.

Drewry’s statistics about hire of dry bulk shipping market:

Table 2 TIME CHARTER RATES (bulk carrier $ / day)

	Handysize 37,000 dwt	Supramax 55,000 dwt	Panamax 75,000 dwt	Capesize 170,000 dwt
2005	16690	23040	27855	49355

2006	15860	21800	22475	45645
2007	27210	43950	52230	120875
2008.3	40000	64000	76000	160000
2008.4	38750	61750	75000	153000
2008.5	43000	68500	82000	168000
2008.6	42500	66000	78500	171500
2008.7	41400	64500	76500	167800
2008.8	34950	53600	67500	145000
2008.9	29500	45100	45000	80000
2008.10	15700	21100	21800	35600
2008.11	8750	12600	13500	18500
2008.12	8600	10300	10700	19600
2009.1	8500	10500	12000	22000

We can tell from the above table that, although the dry bulk shipping market is better than container shipping market, it is still being influenced. Before Sep of 2008, the bulk shipping market is running very well, followed by straight falling of hire after that, and it is almost lower than cost as well.

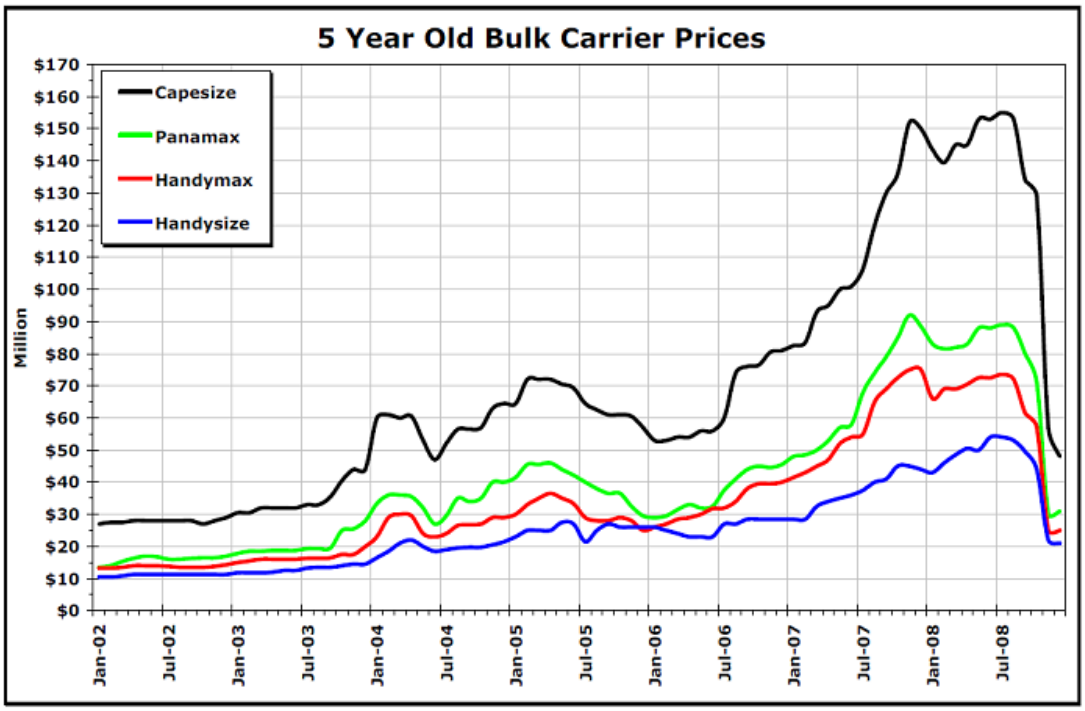

Figure 1. 5 year old bulk carrier prices

(source: Derwry report)

This figure is the last 5 years the bulk carrier prices curve. It is very easy to find the prices dropped like a waterfall after 2008. It can clearly to see the financial storm on the bulk market.

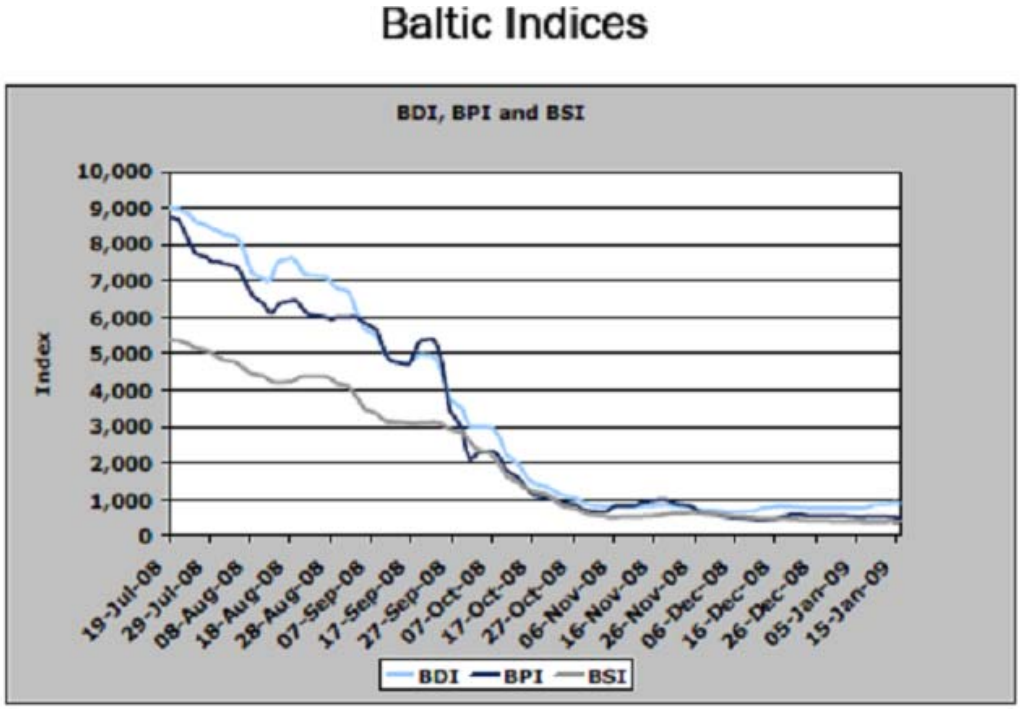

Figure 2 . Baltic Indices From 08 Jul to 09 Jan(source: Derwry report)

Through these three data can be very obvious to see that from July 2008 to January 2009 the great change. This also explains the financial storm hit the shipping is very serious.

3.3 Analysis Influence from a Micro Point of View.

3.3.1 The Formula of Analysis Profit

Voyage Gross Income=Expected Freight Rates *freight volume + demurrage+dead freight

Voyage Net Income= Voyage Gross Income- Commission

Voyage Gross Yield= Voyage Net Income- Voyage Costs

Gross Yield Per Day= Voyage Gross Yield/ Voyage Time

Net Earnings Per Day= Gross Yield Per Day- Costs Per Day

Profits Per Day= Voyage Profits/ Voyage Time

$$\text{Time charter rates}=\frac{(\text{Voyage Net Income}-\text{Voyage Costs})*30}{\text{Summer Total dwt}*\text{voyage days}}$$

3.3.2 Case Study-1

Calculated by an example of a cargo ship of 30,000 tons After the financial storm in a company：

a cargo ship of 30,000 tons deadweight, with an average speed of 15 knots, navigating 30 tons of fuel consumption / day and 1.5 tons of diesel oil consumption, two tons of diesel oil consumption / day when mooring; Fuel oil 250 $ / ton, diesel 500 $ / ton; operating costs 5000 $ / day. After the ship unloaded the cargo in port A, sailing to part B measured a total of 1,000 tons of fuel remaining on board, set weight 500 tons of the ship. The voyage loaded grain on ship, from part B to part c, freight 20 $ / ton, FIOT, including 2.5% commission, all routes belonging summer sea area. Navigation Time: A B: 5 days, B C: 15 days. Mooring time: part B 7 days, part C eight days. costs in harbor: B 40000$,C 30000$.

For: Net Earnings per Day and Time charter rates

Solution：

Expected Freight Volume: 30000 -1000 -500 = 28500 ton

Gross Income: 28500 * 20 = 570000$

Net Income: 570000 * （1-0.025）= 555750 $

Fuel Fee: 20 * 30 * 250 = 150000$

Diesel Oil Fee: (1.5 * 20 + 2 * 15) * 500 = 30000 $

Voyage Fuel Fee:150000 + 30000 = 180000 $

Voyage Costs: 40000 +30000 +180 000 = 250000 $

Voyage Gross Yield :555 750 -250000 = 305750 $

Gross Yield Per Day :305 750 / 35 = 8736 $

Net Earnings Per Day :8736 -5000 = 3736$

T/C Rate = $\frac{(570000 - 250000) * 30}{30000 * 35}$ = 9.14($/ton. DWT)

3.3.3 Case Study-2

a vessel with the same situation Before the financial storm ：

a cargo ship of 30,000 tons deadweight, with an average speed of 15 knots, navigating 30 tons of fuel consumption / day and 1.5 tons of diesel oil consumption, two tons of diesel oil consumption / day when mooring; fuel oil 580 $ / ton , diesel 1000$/ ton; operating costs 5000 $ / day. After the ship unloaded the cargo in port A, sailing to part B measured a total of 1,000 tons of fuel remaining on board, set weight 500 tons of the ship. The voyage loaded grain on ship, from part B to part c, freight 80 $ / ton, FIOT, including 2.5% commission, all routes belonging summer sea area. Navigation Time: A B: 5 days, B C: 15 days. Mooring time: part B 7 days, part C 8 days. Costs in port: B 40000$,C 30000$.

For: Net Earnings Per Day and Time charter rates

Solution：

Expected Freight Volume:30000 -1000 -500 = 28500（吨）

Gross Income: 28500 * 80 = 2280000$

Net Income: 2280000 * （1-0.025）= 2223000 $

Fuel Fee: 80* 30 * 580 = 1392000$

Diesel Oil Fee: (1.5 * 20 + 2 * 15) * 1000 = 60000 $

Voyage Fuel Fee: 1392000 + 60000 = 1452000 $

Voyage Costs: 40000 +30000 +1452000 = 1522000 $

Voyage Gross Yield : 2223000 -1522000 = 701000 $

Gross Yield Per Day : 701000 / 35 = 200289 $

Net Earnings Per Day : 200289 -5000 = 15029$

T/C Rate= $\frac{(2280000-1522000)*30}{30000*35}$ = 22 ($/mon. DWT)

It is Obvious that the financial storm brought tremendous impact on shipping through above analysis; I ignored the calculation of fixed costs, because this part is not affected by the financial storm. just change the price of the fuel, diesel, and freight, but the result is different , time charter rate shows a lot of difference. And emerging data above is not the situation of the lowest valley, we can infer the a great difficulty financial storm brought.

Chapter Four Research on Risk Control

The financial storm has broken out in all round ways and gradually influenced the real economy. As an economic barometer of the shipping industry, the loss is inevitable. In this case, we should not be too frustrated and lose the confidence. The risk and opportunities are coexisting everywhere so we should be optimistic and confident about the market.

4.1 Optimal Speed

Deceleration means the longer navigation time, more sales charges, rental fees, taxes and fees, but fuel costs and the overall operating costs were reduced, so it is can be considered as a good way. the great pioneers is the International Shipping Alliance composed by Hapag-Lloyd, Orient Overseas, Nippon Yusen KK and Malaysia. Later the CMA, the Mediterranean, COSCO, Maersk have also begun to implement changing 8 to 9 in Asia-Europe routes. of course Nippon Yusen KK is not far behind, has requested 10% slowdown of its fleet, saying that this will save the company more than 25% of the fuel costs. The slowdown in the navigation when the industry situation is on the bottom can save the energy consumption,at the same time absorb the excess capacity to alleviate the heavy pressure on the operation of the enterprises.

4.1.1 Settlement of Best Speed Mathematical Model

COST

Cost is divided into fixed cost and variable cost, the fixed costs means that the crew wages, labor cost, management staff wages, business expenses, taxes, port facilities

expenses, repairs, materials accessories fees, loan interests, depreciation fee ,etc,.., some parameters are also variable with the ship voyages and the operating income, but the relatively small changes in value is now positioned as the "fixed" cost easy for the calculation.

Variable cost mainly refers to the cost of fuel cost

Symbols are set as some parameters as follows:

S Voyage (including the air-way)

T Laytime

N1 calibration power of main engine

g1 consumption rate of fuel

N2 power of auxiliary fuel at parking state

g2 consumption rate of fuel

V。Design speed

V The actual speed

P1 the price of fuel

Oil consumption rate:1.2 grams / horsepower-hour

P2 Oil price (cylinder oil: average oil prices of cylinder oil and the machine oil)

M fixed monthly cost

P voyage value

The Cost And Profit Function

fixed daily expenditure (2) F1 (V) = M/30

(2) fuel-burning oil costs

$$F2(V) = S/V\left(U/V_0\right)^3 N1(g1P1\times 10^{-3} - 1.2P2\times 10^{-6} + 24TN2g2/(S/24V+T)$$

$$=[24SN1(g1P1 - 1.2P2\times 10^{-3})(10^{-3}/V_0^3V^3 + 24^2TN2g2V]/(S+24TV)$$

Assume $24SN1(g1P1-1.2P2\times10^{-3})10^{-3}/V_0^3=K_124^2N2g2=K_2$

They are constant for the designated ship

Simplify the above:

$$F2(V)=(K_1V^3+K_2TV)/(S+24TV)$$

(3)daily operating revenue

$$F3(V)=P/(S/24V+T)=24PV/(5+24TV)$$

⑷daily profit

F(V)=F3(V)-F2(V)-F1(V)

$$F(V)=[(24P-K_2T)V-K_1V^3]/(S+24TV)-M/30 \quad \text{.....(1)}$$

This is the profit function with the change of speed

Solving the great value of function (1)

the first derivative of type (1):

$$F'(V)=[-48TK_1V^3-3K_1V^2+24(24P-K_2T)S]/(S+TV)^2$$

Assume F'(V)=0 solve V

$$16TK_1V^3+K_1SV^2-S(8P+K_2T/3)=0 \quad \text{.....(2)}$$

Solving the above equation is rather complicated, but a more accurate V can be achieved by successive approximation algorithm and mapping, maximum speed of the function (1) which is the best speed

Case study

The average financial statistics： monthly fixed expenditure M=217 thousand（stuff wages 60 thousand、port facilities fees 12 thousand、management fees 20 thousand、repairs 25 thousand、profit taxes 50 thousand、depreciation 50 thousand）

Round Voyage: Dalian-ShanghaiS=1120 miles, freight 140 thousand

N1=2200 horse power g1≈0.145KG/ horse power hour N2≈30 horse power g2≈0.17KG/ horse power hour V。≈13 knots, P1≈2150 yuan/tun, P2=3700 yuan/tun

Put K1≈8272 K2≈2938 in function（1）、（2）

$$F(V) = (3346310V - 8272V^3)/(1120 + 120V) - M/30$$

Solution：F'(V)=0 so

$$6617V^3 + 92646V^2 - 124892 \times 10^{-3} = 0$$

：V≈9.04 knots, （voyage speed is about 9knots）,

Put in（1）: daily profit F（9.049）=3715.4 Yuan/day

If the speed increased to 9.5, then F (9.5) = 3696 RMB / Day

If the speed dropped to 8.5, then F (8.5) = 3684.3 yuan / day less than the profit at the time of 9.

At present, the average speed of the ship speed is 11.5, excluding the impact of climatic conditions, calculated as the ship speed is 10.5; the profit per day is 3506.4 yuan ocompared with the best speed the difference is 5660 yuan.

4.1.2 Summary

Changes in the shipping industry are complex, but there are certain laws to be found. The formula in this case has a certain significance for the actual operation and management.

Why in the downturn market, some private enterprises can produce a certain profit in the lower speed of ship navigation with the old ship host or host with small power.

And some big enterprises are often at a loss. the low-speed result in a substantial decline of cost in a blessing in disguise. Some enterprises do not make efforts and neglect the economic speed of the ship thus raising the costs.

Rewrite the derivation of the formula (2), we can get the best speed V and the remaining time T, and make graph of the function of the best speed V and freight P. we can quickly get the optimum search speed in the numerical map. The above example, T for 4 days, V for 9.4; T for 3 days, V for 9.78, P for the 160,000 freight, T for 3 days, V for 10.36.

In the actual operation and management, some factors are changing all the time, which requires operators have the scientific management skills to carry out follow-up observation, access to information flow at any time, make random adjustment, such as lay time at port and take shelter from the wind, a combination of supply, and full load and return in dynamic market, to make timely adjustments to the speed of navigation are day-to-day management business.

4.2 Laying up

As a result of the instability of Shipping market, there is also an imbalance between the actual delivery and the demand for transportation capacity from time to time, when the capacity is greater than demand, it will produce a surplus of tonnage of the ship when it is necessary to consider whether stop operating or not. Although the decision-making of layup vessels greater depends on the operator of the ship on foreseeable future of the market and the licensing of national policy factors, but there is a problem of the basic economic data of the measurement.

To consider the issue of lay up, first of all, because of operating losses occurred. However, the loss is not equal to the closing, because no operating costs, but still needs some maintenance costs, such as remaining staff salaries, the regular fuel consumption of machine operation, and the cost of rented parking anchorage, which means there is a storage cost. There is no financial difference between whether to continue to operate or to stop if the loss of operation is smaller, to the cost of the layup ship, but taking the social benefits and the impact into account, continue to operation is usually more beneficial only when the ship's operating loss is greater than the amount of storage cost of the ship, it should stop operating.

In practice, comparison between the loss and a cost of storage can be converted into a comparison between the rates. Specific calculations are as follows:

The total cost for a ship voyage is K, the freight for the voyage is Q, the freight rate is f, parking fee for the maintenance is K ' during the ship-day, voyage time for t times, then the loss is equal to the amount of freight rate costs, the calculation are as follows:

$$K - fQ = tK'$$

$$f = \frac{K - t \bullet K'}{Q}$$

When freight rates equal to f an economic threshold referred to as the "stop point"; when the freight rate is greater than f, the operation of the ship is beneficial; when the freight is less than f, it should consider whether to take the issue of parking. For example, can open up new routes, or take appropriate technology on vessels adapted to other types of cargo shipment, or hire the boat temporarily to other forms of rental

or owner of the goods or shipping companies. The last thing is to stop the ships. There is also a critical point of the existence in the similar rental rates.

To set up a ship load of DW, the lease period of t, F 'for one month rental of a rental income dwt ship (rental rates), K for fixed costs of the operating days, then the rental rates at the stop point The calculation process is as follows:

$$K \bullet t - F' \bullet DW \bullet \frac{t}{30} = t \bullet K'$$

$$F' = \frac{(K - K) \times 30}{DW}$$

If the hire is greater than the rate of F ', you can hire, or else should suspend.

4.3 Hedging by Using BIFFEX

The reason why the owner avoid risks is to ensure that their own economic interests. We can achieve this by fixing the absolute price and the relative prices. The so-called absolute freight prices mean the received or paid costs of transportation of goods. The lock of the relative prices means that the anticipated profits or returns are safe through the control of the cost when the fluctuations of the absolute price occur.

In the real social life, the social exchange market products can be divided into two types: one is the spot market, which we are familiar with day-to-day to deliver the commodity have paid their dues in the market: the other is the futures market, that is engaged in buying and selling commodities or foreign exchange, securities and other future contracts market. The similar changes of the two market prices provide a viable means for us to achieve our desire to lock the prices.

4.3.1 Hedging to secure the absolute freight price

The futures market price to avoid the risk and lock the prices can be achieved by hedge or hedging. (Hedging) in the so-called hedging, that is, traders in accordance with its status of the spot market transaction take the opposite direction with the same number of futures contracts in the futures market with the purpose to transfer the risk of the losses caused by the prices changes to the speculative traders. Put it in simple language, that is, in fact, hedging is equivalent to gambling on the objects being thrown from a single or double, meaning hedge. Hedge, while the number of loss equals to the other side of the win, the absolute price is locked. hedge can be achieved through several different ways to achieve, but most typical way is BFI (the Baltic freight index), the index is calculated based on strict and clear, well-known and more objective requirements, reflect the general price level in world's dry bulk shipping market with a high authority and representation. BFI is an index of price points to the corresponding provisions of 10 U.S. dollars. A standard BFI contract price is 10 U.S. dollars multiplied by the BFI index day. It is also BFI transaction is a "digital" rather than material, it provides delivery period of freight futures. The delivery of transactions must be carried out before the end of the contract in the reverse direction (i.e., hedge), or a mandatory hedging checkout by the Exchange. There are two current international freight futures markets, one is Baltic forward freight Exchange and the other is the International Futures Exchange.

4.3.2 BFI Transaction Case

In mid-March 1999, a 90,000 tons bulk carrier, freight rates for $ 6.90 / t, B. 1 582 points for the FI. In May, the vessel will lift a lease; the owner is busy looking for new charterer. FFA index in July in the Baltic Exchange is 1 523 points lower than the spot BFI. So the owner predicts the price fell in May, so he decided to hedge.

According to the price level in March, revenue of shipping 90,000 tons of ore freight is $ 6.90 × 90000 = $ 621000, the owner would like to made this level of freight revenue when there is a drop in price in May, first sell 40 of the July futures freight contract to, income is10 × 1 523 × 40 = $ 609200, almost flat with the freight revenue in March and By early May, BFI dropped to 1391, the price fell to $ 6,35 / t, the owner of the ship lease out the ship at this price, freight revenue $ 6.35 × 90000 = $ 571500, less than the income in March:$ 49,500 . BFI then fell to 1400 points in July, then the owner buy 40 contracts paying $ 1Ox1400x40 = $ 560000, and sell freight futures in March net income profit $ 609200 - $ 560,000 = $ 49,200. Futures profit and loss is offset by the hire, the owner of a net loss is very little: $ 300. In other words, because the owner has done a hedge against inflation, even if it is a ship chartering market in the fall or the price for the equivalent of $ 6.897 / t of the price [($ 621000 - $ 300) ÷ 90000], and delivery in March income is almost the same price. For this example, if the long-term freight rates are on the rise, the negative for the owner, so it could adopt a similar approach to futures hedging to avoid losses.

4.3.3 The relative price is locked by the futures contract

Fundamentally speaking, the price is determined by transportation costs. Transportation costs can be broadly divided into capital costs, operating costs and voyage costs .voyage cost which is mostly influenced by the outside factors, is the most important factor in price fluctuations. the port fees , handling charge are stable in a considerable period which is the main part of the voyage cost, the fuel cost accounting a big part of the voyage cost due to the oil price fluctuations so the stability is hard to maintain. In order to reduce the oil prices changes, shipping companies and oil companies can sign a contract to circumvent the risk of futures contracts to ensure profits. Take the following transactions and swap contracts THECAP as an example, the analysis of the specific methods of operation:

(1) Swap transactions

The main contents of the contract is a contract between the two sides through consultations to determine a time in the future at a fixed oil price to complete a certain amount of the transaction. The essence of this contract is that both sides of the oil in the next period of time are expected to reach an agreement and make compensation until the contract expires after this period of time based on the average oil price.

We assume that: a ship and an oil supplier signed a swap contract. Fuel prices $ 80 / t, trading volume 10000t, trading period a quarter. If oil prices rise after a quarter makes the actual purchase of the shipping companies fuel prices for the $ 85A, higher than the contract price of $ 5 / t. this shipping company get for compensation: (85 - 80) × 1 0000 = $ 50000.

If oil prices fall after one quarter, Shipping companies purchase fuel during this period of the actual average price of $ 78 / t, lower than the contract price. owner pay to the supplier: (80 - 78) x 10000 = $ 20000.

（2） THECAP contract

In the shipping industry, THE CAP contract is to restrict its high oil receipts as the result of higher oil prices. The most important feature of this contract is the buyer's pre-paid to the seller that is the shipping companies pay a certain amount of margin to the oil suppliers in advance to .This feature suppress the extreme high profits and ensured the income level of oil suppliers.

We assume that: a shipping company expected oil prices will rise more sharply in the next month. In order to reduce the cost of rising fuel costs, oil suppliers and the

shipping company make the decision to sign a contract of THE CAP. The terms of the contract in a month to $ 80 / t price of 1 0000t oil trading and shipping company pay $ 4 / t bond prices in advance. If the contract expires, oil prices rise as shipping companies expected this month. During this month the average price of oil reached $ 90 / t to do the actual burden on shipping companies are the oil prices as follows:[90x10000+ 4×10000-(90-80)×10000] / 10000=$84/t If the contract expires, oil price did not rise as expected, but fell. The average price of fuel is only $ 70 / t. Shipping company when the actual price paid as follows: (70×10000+4×10000) / 10000= $74/t。

From the above described two types of contracts, the owner can control fluctuations in the cost of fuel in the acceptable limits through futures contracts, that is to say to a fixed level of profits in a range of smaller ups and downs. And thus the relative price of a lock. I believe that the locked price to a large extent can reduce ship chartering market the ship chartering market losses in shipping enterprises.

4.4 Hedging with by Using FFA

4.4.1 Evaluation of the FFA and the specific methods of operation

Despite the very different interpretation, but popular term of FFA (Forward Freight Agreements) is both buyers and sellers reach a long-term freight agreements which provides for specific routes, price, quantity, etc., and the two sides agreed received or paid in accordance with the official Baltic freight index prices and freight rates with the difference between the agreed price to a point in the future. It can be said that now freight has become variable and can be traded with a good liquidity in a market. The great volatility of the FFA in The international dry bulk shipping market

promotes the development of the market, the FFA can effectively circumvent the hedging market risks. In recent years, FFA has been on the rapid development, trading volume in 2005 is expected to be 7000 alone, traded tonnage is estimated to reach 2.5 billion tons, close to the spot volume in maritime trade, and will certainly be more than the spot trading volume. FFA market also showed a strong correlation with spot market. The development of FFA over the past few years has attracted a large number of international attentions of professional investment companies, like Deutsche Bank, Morgan Stanley and many other banks and investment companies have all set foot in this area.

4.4.2 FFA hedging and arbitrage

Hedging is the driving force behind the futures market. The agricultural futures market, metals, energy futures markets, which are derived from the production and operation facing intense spot price fluctuations brought about by the spontaneous formation of risk in long-term trading contracts.

The principle is that the spot price and futures prices are determined by supply and demand, changes in the direction of the two is always the same, with a high degree of relevance and convergence, and the closer futures delivery time, spot prices and futures prices will be similar.

Its basic approach is to buy or sell the cash market and a considerable number of transactions, but the status of the opposite transaction in commodity futures contracts, with a view to the adoption of a certain time in the future to sell or buy the same futures contracts, hedge positions settled Futures Trading surplus or deficit arising as to compensate for or offset the cash market price changes brought about by the actual price risk or interest, so that the economic benefits traders a certain level of stability.

4.4.3 FFA application in VC

FFA (paper trade) is usually based on the BFI routes from one or more routes. As a normative agreement, both parties are free to provide their request to each other as much detail as possible on the basis of equality and mutual benefit. However, the more the standards, the more complex the changes are. In the actual operation, only a handful of routes under the terms of generally acceptable in today are on a wide range of operation. Similarly, the time charter routes can also be in a similar way in the transaction. From the hedge in voyage charter of the buyers, sellers and the owners analyze its operation as follows.

Sellers hedging equation:

First of all, the owner estimate there is a non-optimistic of a certain period of time for the shipping situation. Despite the short-term time charter is a very simple solution, however, it is very difficult for he owner to find someone willing to operate the ships during this recession period. Therefore, the owners choose to use FFA:

(1) the owner require their FFA broker to express information: selling a particular BFI constitute routes, dead weight, as well as the future settlement price at a certain time. If the route does not belong to BFI routes in the basic contract, the parties can find similar routes with BFI constitute routes, and to identify difference between fixed routes. For example, the owner sold the United States Bay / China route, which has the correlation with the eastern

the United States and Gulf / Japan route in BFI

(2) Market of broker's analysis proposed the freight prices from the perspective of a potential buyer. This price is lower than the prices given by the owner.

(3) brokers coordinate an intermediate freight prices through the negotiations of both

sides between the ship owners and buyers in their opening prices.

(4) In the third stage, the identity of buyers and sellers gradually are known if the two sides are satisfied with the quote and the credibility, then the contract could be reached. Routes should be specified in the contract, the volume of the agreement price, settlement price (BFI corresponding service). General agent commission is the l% of the cash settlement.

4.4.4 Case of FFA Operation by Ship Owner

At end of January 1996, freight is 27 U.S. dollars in the U.S. Gulf / Japan route grain. PANAMAX owner estimated that he will have a free ship in June, but he was pessimistic about the prospects for the summer market, decided to avoid this risk as much as possible. Owners choose to use hedging FFA.

Methods of operation:

1) the owner require FFA broker to express the following information: the price. Of the first two constitute a BFI route (52 000 t of grain re-Mei Wan / Japan) sold in May.

2) the broker analysis the market and believes the highest initial bid for the 25.5 U.S. dollars / t from a potential buyer's point of view.

3) After negotiations, the seller and the buyer accept the terms of contract and agreed at 25.75 U.S. dollars / t then made traded status public.

format of Contract as following:

Route 2: the U.S. Gulf / Japan

Volume: 52 000t

Price: 25.75 U.S. dollars / t

Clearing Price: the final average price of the five trading day in May 1996

(the corresponding routes BFI related)

Commission: buyers and sellers each pay 50%

Results: The owner' s forecasts proved to be correct that the market down. Owner got his trading profits in FFA

BFI route 2 settlement Price: 24.25 U.S. dollars / t

Agreement Price: 25.75 U.S. dollars / t

Difference: l.50 USD / t

Buyer to pay the seller (owner): USD 1.50 × 52 000 = USD 78 000

Owner from the paper trade (FFA) obtain a profit in the market suffered actual losses, the paper trade (FFA) beam can be used to make up for the profits of the actual market losses. Balance between the two, the owner can make or partially hedge against inflation.

Through this case, we found that from the perspective of the owner, when he could not grasp the future market and wants to obtain a certain income, FFA can lock their income. Of course, selling in FFA is risky, can earn a loss (when the price of agreement higher than that of the settlement, you are on the surplus, when the price is lower than the clearing price agreement, you are on the deficit), but the profit and loss are basically locked in a certain scope and the hedge is against the actual market.

4.5Comparing FFA with BIFFEX

4.5.1 Flexibility of Freight Index Forwards Contracts

The transactions of Freight index forwards contracts can be freely traded and repeated. The status of forwards can be increased, decreased according to the needs of the transaction at any time, forwards hedge is very flexible. FFA is stable

4.5.2 The Security of Freight Index Forwards Contracts

It is guaranteed by the international commodity liquidation ICCH (International Commodity Clearing House), as part of the liquidation of the British clearing banks, buyers and sellers do not have financial responsibility for each other, they will not have to worry about breach of contract. FFA contract is between the two sides, once the terms of the agreement is established, the identity of both parties will be public, if one party is not satisfied with the credibility of the business of the other party, the contract can be withdrawn over a period of time.

4.5.3 Different Cost

Full broker commission with FFA manner is 1% of the total amount of the contract, buyers and sellers usually pay half of it and do not use to pay a deposit or bond. Price index forwards contract need a certain amount of deposit in order to fix the forward BFI, the hedging need 500 U.S. to insure 1 month dollar freight. Actual fee is equivalent to the cost of broker commission (usually 0.3%) plus interest on cash margin.

4.5.4 Summary of FFA and BIFFEX

Forward freight agreements and forward freight index agreements is free from the boundaries of administrative regions, has become an effective measure in managing and controlling risk in international shipping, the right way may generate considerable revenue.

However, there are still a number of shortcomings in forward freight agreements, such as the use of index forwards to hedge price, a certain number of contracts trading are needed, on the premise of buyers and sellers have the same amount of

contracts under the same price in the market conditions. If the forwards prices changes as a result of all market participants know about news at the same time (extreme example: Suez or the Panama Canal are closed), then all participants will conduct the same activities at the same time (whether to buy or sell), seriously obey the price hedging significance and impact the normal hedging. Additionally, recent transactions (typically within 1 year) on Forwards market contracts are very active, but the poor performance of the liquidity and smaller scale in the medium-term forwards, which means that people may not be able to hedge transactions with each other, especially in the later month, it is clearly impact the success of hedging. Of course, the long-term FFA transport Contract has the same problem: one can not find the other party to make the transaction, which should be noted in the use or design of hedging

4.6 Cancellation of Orders for New Vessels

On the one hand cancellation of orders for new vessels can reduce capital investment, put the new boat into the water do any help to business on the current market conditions but only increase the cost of inputs. On the other hand, as far as possible to ensure a stable cash flow, cash flow is the basic foundation of the enterprise; sufficient funds are needed to grasp greater opportunities for hunters when the inflection point occurs.

4.7 Take the Initiative to Adjust the Capacity of Shipping Transportation to Implement Suspending Off-season

Facing the grim situation of the international shipping market; the shipping companies take a variety of measures to control the increase in capacity. Including the surrender of tenancy or lease some capacity, as well as the suspending of ships

off-season, the reorganization of routes and other measures of cooperation to reduce the capacity.

At present, shipping companies have gradually implement weekly classes to bi-weekly classes, withdrawal line or other measures in five-Pacific route, 7 Far East/ north-west European routes and 9 Far East / Mediterranean routes to continue to contract capacity in the market.

The latest statistics from French maritime consulting firm alphaliner: as of January 5, 2009, a total of 550,000 TEU idle in the global 210 container ships, idle capacity in this part of the world's container fleet occupy about the 4.5% of total capacity, of which 125 boats are for the hire al business can only be standby in the absence of the lease.

4.8 To Capture the Opportunities in Regional Routes and Domestic Market

At present, intra-Asian, especially Northeast Asia and Southeast Asian countries are speeding up the free trade agreement negotiations, and promote intra-Asian trade and investment. Therefore, when the market demand in Europe and the United States dropped, the market of the Asian region is still full of vitality.

World-renowned Shipping consulting firm Drewry predict that container trade volume in the Asian region is at an average annual increase of about 10% in the next 3-5 years. There is the downturn in recent Europe and America Route market, the Asian routes market performs actively.

Although in 2009 China's economic growth has been weakened by outside forces, but the frequent positive policies, fiscal policies and appropriate monetary policy in Beijing, ministries commission and governments to stimulate the economy. Therefore, the market is expected to keep around 10% of rapid growth in 2009 domestic routes in China.

4.9 To Increase the Capacity of Enterprise Risk Prevent and Control

In the international financial storm, the sharp decrease in consumer demand results relative excess capacity. Period of market downturn, liner companies take active measures to strengthen enterprise risk management, take effective measures to prevent and control the main risk factors to influence the enterprise business and prevent the risk of transforming into a reality and bring the loss to businesses.

Under the pressure of expected significant drop in revenue, the liner company's cash flow will undergo a severe test. Liner companies therefore should strengthen in particular the use of funds of enterprises and monitor the financial situation, guard against all kinds of financial risks and the potential risks of financial management.

Chapter Five Case study

China Shipping Group: Cooperate with big clients always

In the "Cold", a modern word of industry is uniting. This has profound understanding of china shipping group -strengthen the cooperation with large customers, also is very skillful: in Feb. 21, it signed a joint venture shipping company frame agreement with Bao-steel Group(on November 12, open the treasure shipping company imported iron) and the long-term transport package transport contract ". After it the similar move emerge in endless, in March 11 sign with China Electric Power Investment Group, June 4 sign with Hong Group, July 11 sign with Tai-cang Port, July 23 sign with Coal Energy Group, December 7th with An-gang Group, Dec. 15 with Tianjing Port Group, etc. Throughout the year, it highlights the strategic cooperation with large customer group to the end. To establish strategic partnership with important customers , it has laid a solid foundation for China Shipping Group to resist the impact of the tsunami of international financial and seek a long-term stable development.

MAERSK: Shipping sharing protocol (VSA)

In early March 2008, container shipping industry leader-- Maersk, sign agreement on sharing ships with Mediterranean Sea shipping and Fly Shipping, which removes 4 ships, set up 3 new ships across the ocean to replace 8000TEU ship for 4200TEU boat. In the circumstance of the box down, freight volume has actually fallen in some other liner companies, properly cut the boats or replace the ships, including the act is not for others to dare "boss". In the harsh environment of big slot shipped

dissatisfaction, high price rise and freight fall down , Maersk put the ship into VSA, which devices the color of innovation.

COSCO Group: In bank credit.

In the situation of global credit tighten, financing difficult, on December 4, COSCO signed a strategic cooperation agreement with Bank of China in Beijing, from which COSCO won the amount of the credit support, which shall not exceed 745 million yuan (about $108 billion) . But earlier, COSCO has transferred deposit in foreign bank as far as possible to Chinese Banks and also cancelled the orders or plans, such as subordinate companies to build large ship , so as to withdraw large amount of money. For the shipping industry for heavy assets, the most ideal state is that not only the enterprise itself has sufficient cash flow, but also it can obtain bank credit support . In the financial turmoil sweeping the globe, shipping, downward cycle, the later maybe more important.

NYK: Sealing ship/Shrinkage fleet scale

Scant demand, lower freight, sealing ship, shrinkage scale became the most common fleet of litigation. NYK, which on March 2008 announced that it would invest $1.4 trillion yen to purchase 218 new ships, assume that the company will slow the speed of enlarge the scale of ships, before 2011 it would only increase around 940 ship, which reduces 60 as to the original plan. At the same time, it also prepare for 25-35 years of rolling ships under NYK. The similar act in 2008 is not unusual for the first time -- MOL firstly sealed large ships in 20 years, Maersk also announce the message of sealing ships.

Change for different situations, for big shipping companies, it should emphasis more. After all, "physical" big, market reactions may lag.

COSCO, NYK: Instead new energy for fuel

For saving cost, the able persons over the parties measures in the new energy: In January 15 the first ship of the global using kites sailed from Hamburg, German, across the Atlantic, to Houston; On December 21, the solar large cargo ship, the first driven by solar energy in the world, to assume the responsibility of exporting Toyota automobile cars, which is joint developed by NYK and Japan oil company. At home, COSCO is testing, include using nuclear, solar and wind power in the new energy instead of Marine power.

The new energy vessel large-scale use in commercial need quite a long time, the pre-use on the preliminary research will occupy shipping enterprise precious capital, also take greater risks, but in the long run, is the vision.

CONCLUSION

From the analysis above, we can see that the effect of financial tsunami for chartering markets is very serious. The whole shipping industry is getting into a huge crisis. Whether unite heating, adjustment capacity, or cancel the orders, the shipping enterprise losses are inevitable. In this situation, the shipping company should understand chartering markets, survive in the crisis, and look for opportunities in the existence of surviving. I don't think the market has no chance at all. The opportunity and the crisis are always coexistence, so we should know some factors:

The policy of Chinese expanding domestic demand will pull the economic development rapidly, and also will largely drive trade amount to increase. After WenChuan earthquake, it needs to be reconstructed work, so for the dry bulk market that is a big opportunity. Governments around the world have combined to respond to financial storm actively. The demand of Chinese iron and steel will be another chance to stimulate the market. Because of the financial storm, the shipping companies have justified the capacity and delay of new vessels into the water and cancel orders for new vessels. This is one way to reduce the capacity of the market.

After recognizing the situation, we will have confidence. In the financial storm we should do the aversion work. The methods of controlling risk talked in this paper are through the actual operation of summary and are effective methods. Success hedging risks in risk is to keep cash flow which is the lifeblood of enterprise's survival. With plenty of cash flow, you can wait until chance visits you. Anyway, cash is the king, so if we have correct effective evade methods, chartering market can break the ice to "go" from winter into spring.

REFERENCE

Ceng Xi. (2008). Analysis of the causes and influence of the financial storm in the United States and. *Scientific and Technological Innovation, 9*, 84-89.

Clarkson (Oct.2008)

Clarkson reporting, (07-Nov-2008), 24-Oct-2008.

Clarkson (April 2004). Tramp shipping market

Chen Fei-er and Zhang Ren-yi.(2008). A Co-integration Approach to Forecasting Container Carriers'Time Charter Rates. *J. Shanghm Jiaotong Uni 13*(3), 343-347.

Jin Jian. (2009). Chinese shipping company's strategy to deal with financial storm. *World Shipping, 1*, 34-35.

Hou Yan. (2008). How to use freight to avoid the risk of FFA. *China port, 5*, 93-94.

Lv Haishi and Wang Libo. (2008). Shipping enterprise risk management. *Shipping Management, 30* (7), 6-7.

Liu Chao. (2005). Shipping market risk control. *Scientific and Technological Innovation, 7,* 68-69.

Greenspan.Alan. (2004). The Evolving U. S. Payments Imbalance and Its Impact on Europe and the Rest of the World. *Cato Journal 24*, 1—11.

Kavussanos G.M. and Nomikos K.N, (2000). Constant vs. Ti me-varying Hedge Ratiosand Hedging Efficiency in the BIFFEX Market. *Transportation Research, 36*, 229-248.

Veenstm, Franses. (1997). A co-integration approach to forecasting freight rates in the dry bulk shipping sector. *Transportation Research A, 31*(6), 447-458.

Yu Yin. (2006). The global shipping industry faces the new challenge. *Ship Economy*

Trade, 6, 3-4.

Krugman Paul. (2008). *The International Finance Multiplier*. Retrieved April 3, 2009 from the World Wide Web: http://www.princeton.edu/~pkrugman/finmult.pdf.

Jostein Tvedt. (2003). A new Perspective on Price dynamics of the dry bulk market. *Maritime Policy & Management, 30* (3), 221-230.

Saif I. Shah Mohammed and Jeffery G.Williamson. (2003). *Freight rates and productivity gains in British tramp shipping 1869-1950.* Retrieved March 4, 2009 from the World Wide Web: http://ideas.repec.org/p/nbr/nberwo/9531.html.

Jiang Yanni (2008). The international bulk cargo market analyze. *Maritime China ,4,* 5-7.

Zhu Chengpei and Zhang Xiaomin, (10-Nov-2008). Storm hits shipping industry, *China Daily.*

Jiang Chen. (2008) International dry bulk cargo market.

Kong Yan. (2008) International oil market.

Shu Kaibao (1996). Tramp or buy ship -Talk about the development prospect of financing tramp shipping.

Liu Jianlin, Shi Xin (2005). Research on co integration in BIFFEX futures market and pricing model.

Liu Dongrong, risk control of shipping market- The option fixes the price and application

Liu Chao, risk control of shipping market -the freight charges hedge

Wu Peijian, Deng Guishi, Tianwei(2003) Research on freight risk management based on FFA.

Wen Changwei. (1999). The quantitative analysis of ship optimal speed. *Marine energy saving, 4*, 19-20.

Zhao Yang, Shi Peipei(1999) Discussion that FFA evades the risk of chartering

Zhuang Yan(2003) Tramp is better than buying.

Zhao Yang, and Shi Peipei. (2008). FFA to business of voyage charter risk control *China Ports, 5*, 105-110.

Zhao Gang. international shipping management

Zhang Qingnian, Li Yaru, Sun Kechao. (2008). The impact of U.S. sub-loan crisis on Chinese listed shipping companies. *Transportation Business Management，8*，15-16.

Zhao Zehua. (2008). Sub-loan crisis on the global shipping market. *Ship Economy Trade, 5*, 36-37.

http://www.moc.gov.cn/zizhan/zhishujigou/zhuhangju/guanlipindao/gongzuodongtai/200811/t20081110_534996.html

http://active.zgjrw.com/News/2008118/ChinaFinaceNet/026561049700.html