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## The research on function and application of financial leasing for small and medium size shipping enterprise: decision making on ship financing in M Company

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**WORLD MARITIME UNIVERSITY**

Shanghai, China

**THE RESEARCH ON FUNCTION AND  
APPLICATION OF FINANCIAL LEASING FOR  
SMALL AND MEDIUM SIZE SHIPPING  
ENTERPRISES**

**(With a case – decision making on ship financing in M company)**

By

**MIAO YU**

**China**

A research paper submitted to the World Maritime University in partial  
Fulfillment of the requirements for the award of the degree of

**MASTER OF SCIENCE**

**INTERNATIONAL TRANSPORT AND LOGISTICS**

2009

## DECLARATION

I certify that all the material in this research paper 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.

(Signature): \_\_\_\_\_

(Date): \_\_\_\_\_

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Last but not least, I wish to express my indebtedness to my beloved parents, who have offered me full support and encouragement. I am fortunate to have their measureless love as I go forward in my life and career.

## **ABSTRACT**

Title of research paper: **The Research on Function and Application of Financial Leasing for Small and Medium Size Shipping Enterprises (With a Case – Decision Making on Ship Financing in M Company)**

Degree: **MSc**

Financial leasing, as a new means of financing, since the 1950s originated in the United States, within the last few decades in the rapid development of the world, has played an important role especially in the large-scale equipments, high-tech products and other fields. In the shipping industry, such a capital-intensive industry, shipping companies have paid increasing attention to the investment of ships by financial leasing.

This article consulted a number of research results of financial leasing by lots of experts and scholars, and discussed the development and advantages of ship financial leasing which was a new means of financing for the small and medium size shipping enterprises. Moreover, it pointed out the status and existing problems in ship financial leasing. This paper found a viable method of ship financing by introducing the ship investment and analyzing its characteristics. It also analyzed the features of financial leasing and introduced the ship financial leasing specifically. Furthermore, in comparison of ship financial leasing policies in the other countries, it summed up several issues about ship financial leasing. On this basis, contrasting the ship financial leasing with loan, it compared the cost caused by different financing

methods and analyzed which financing method should be taken. Finally, in the conclusion part, the author may give a number of recommendations at the situation of global financial crisis.

**KEYWORD:** Financial Leasing, Ship Investment, Present Value

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## **LIST OF ABBREVIATIONS**

<b>CDs</b>	<b>Certificates of Deposit</b>	<b>16</b>
<b>IPO</b>	<b>Initial Public Offering</b>	<b>17</b>
<b>KG</b>	<b>Kommanditgesellschaft</b>	<b>27</b>
<b>LIBOR</b>	<b>London Inter bank Offered Rate</b>	<b>14</b>
<b>PV</b>	<b>Present Value</b>	<b>7</b>
<b>S&amp;P</b>	<b>Sale and Purchase</b>	<b>10</b>
<b>VLCC</b>	<b>Very Large Crude Oil Carrier</b>	<b>10</b>

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# CHAPTER 1 INTRODUCTION

## 1.1 The background of the topic

Financial leasing, which can be called equipment leasing or capital leasing as well, was a new trade form born in the USA in 1950s. Financial leasing is a type of lease - the other being an operating lease. A financial leasing effectively allows a firm to finance the purchase of an asset, even if, strictly speaking, the firm never acquires the asset. Typically, a financial leasing will give the lessee control over an asset for a large proportion of the asset's useful life, providing them the benefits and risks of ownership. Now, it has become one of the main financing means for companies to renew the equipment. Financial leasing has become the mainstream finance tool only after the bank credit in the west developed countries now. In addition, as it is said that nearly 1/3 of investment in the world is finished by financial leasing, which has become one of top five pillars, taking the same important position in finance as bank, insurance, trust and security.

Financial leasing industry has 27 years' history in China and China develops fast in these years. The growth of Chinese economy ranks the world top level. But with regards to factors that push economy forward, China leasing industry contributes very little to Chinese economy development, far less than the developed countries to be exactly. Therefore China leasing industry still has a long way to go. Although

bottleneck such as credit, concept, policy and environment challenges domestic leasing industry, some organizations forecasts that the industry will develop fast with the rapid growth of economic.

The shipping industry is a business with dense capitals, high risks and huge amount of investments. The huge funds which spending in building or purchasing vessels are one of the most troublesome problems that distress the ship owner and ship building enterprises. Therefore whether they can find suitable financing channels or methods for companies' future development is the most remarkable issue for expanding the fleet and enhancing their competitiveness. Generally speaking, the small and medium size shipowners preferred the flexible financing methods such as financial leasing. In another words, the big shipping enterprises primarily utilized the loan from finance institution like commercial bank.

In the recent decades, the shipping investment was increasingly risky. Generally speaking, the level of ship prices raised a lot and the investment of ships expanded gradually. In the international capital market, it's frequent for the interest rates and exchange rates to change. In the passing 5 years, since the shipping market was booming, a lot of funds were poured into the shipping industry, whereas the maritime industry is an obviously cyclical industry. Thus it represents that fleet tonnage will maintain the status of excess after the peak time which has been indicated in the second half of last year. As a consequence of fierce competition among shipping companies, freight and hire level varied dramatically which was caused by the changes of supply and demand in the market. In addition, the fuel price which was used to measure the voyage cost fluctuated irregularly with the change of the crude oil supply. It's extremely necessary to analyze the different ship investment projects because of the uncertainty and volatility of the ship investment environment.

Facing to the current global financial crisis, there are several advantages which the ship financial leasing shows. Firstly, the bank declined the number and the sum of loan because of the financial crisis. As a consequence, the difficulty of the shipping enterprises financing by credit method is increasing dramatically. So maybe more shipping companies prefer to finance the ships by ship financial leasing instead of loan from the commercial bank. Secondly, the shipyards can attract more attentions from the ship owners through the financing pattern of ship financial leasing. Due to the collapse of the shipping market in recent months, some ship owners chose to delay the time of ship delivery, or even worse, canceled the shipbuilding contracts. Hence the shipbuilding industry was affected by the shrinking of the shipping market a lot. So on one hand, the shipyards themselves can play the roles as the lessor of the ships to lease them to the ship operators. This behavior may stimulate the shipbuilding market by providing more favorable conditions to the shipping companies just like lower price and interest. On the other hand, the banks are willing to cooperate with the financial leasing companies which have the background of shipyard. Because this sort of financial leasing companies are able to supply the bank more dependable guarantee about the credit, the banks can take the opportunity to enhance the capacity of risk control.

## **1.2 Literature review**

Syriopoulos (2007) indicated that nowadays in such a highly volatile and dynamic business environment, ship financing has become highly sophisticated, complex and innovative. Cariou (2008) concluded there are three main sources of shipping finance which are debt finance, equity finance and mezzanine finance. As he mentioned, becoming the major channel, debt finance occupied 70 to 75 percent of

maritime finance, which included the commercial and mortgage bank loan, operation and finance lease, shipbuilding credit schemes, shipyard financing, private placement and public debt issues. Turn to the equity finance, there are four main types of financial structure to raise equity: internal or owner equity, public offering equity, partnership structures and ship fund. The final one is the mezzanine finance including subordinated debt, preferences shares and hybrids warrants and convertibles.

Hou Huawei (2006) concluded that finance leasing has four main features. Firstly, the lessor purchased the equipment from the suppliers in accordance with the requirements of the lessee. And then, the lessor rented the equipment to lessee. The lessee had to pay back the rent on time to compensate lessor the paid cost, interest and other cost of equipment. Secondly, the ownership and usufruct of the equipment were separated which meant the ownership of equipment belonged to the lessor and the right to use belonged to the lessee. The lessee was only in possession of the equipment during the lease. Thirdly, the lessor is not responsible for the performance, aging risk and maintenance of the equipment which totally is the lessee's responsibility. Finally, at the end of the lease, the lessee had three options generally: purchase, renew and return the equipment. The lessee may choose any of these three to stipulate in the contract, or negotiate with the lessor at the expiry of the lease. It seems that the financial leasing and installment financing are very similar. However, there is a substantive difference between them. In financial leasing, the relationship between the demand and supply parties is a lease. Turn to the installment, the relationship between these two sides is a debt.

There are several benefits that the financial leasing brings to the enterprises. Meng Lei (2006) believed that the ship financial leasing has some advantage compared

with the mortgage loan and credit. She considered it's difficult to acquire the loan from bank. It may increase the ratio of liabilities to assets and financial risk as well. Under this situation, the ship financial leasing can solve the financial problems which are caused by the expansion of fleet. She also mentioned that in contrast to the operating lease, such as time or voyage charter, ship financial leasing has its own strong points. Through the ship financial leasing, the leaser can pay less than the operating lease, operate the ships more stably and own the ship finally. Liu Xiaodong (2007) pointed out that the ship financial leasing can expand the financing channels, release the pressure of repayment, benefit from the related policies and increase the shipping companies' core competitiveness. Li Mingliang and Liu Wenge (2007) deemed that financial leasing shows the hardcore of the modern logistics conception which is the integration. The large-scale shipping enterprises can adjust the structure of assets by ship financial leasing. They can lease the non-core assets such as old ships thereby supporting the development of modern logistics service. Lei Hai (2007) found that the ship operator can obtain the usufruct of ship at the beginning of leasing period. Therefore, he described the ship financial leasing as "borrow a hen to lay eggs, sell eggs to buy the hen". That means the leaser can develop his own business by ship financial leasing. During this period, the leaser has to pay back the rental and has the rights to acquire the ownership of the ship. Due to the global financial crisis, Qu Yankai (2008) thought it's a good opportunity for Chinese enterprise to expand their financial leasing business. In recent months, it's increasingly difficult to get loan from the banks. Instead, financial leasing companies will cooperate with the bank to increase the bank's capacity of risk control.

Although there are several benefits the ship financial leasing can bring to us, all the parties of the financial leasing contract will take the risk. Facing to these risks, some scholars pointed out a lot of solutions. Tian Xin (2002) concluded there are four main

sorts of risk: operational risk, financial risk, political risk and natural calamities risk. Thus, she put forward a number of proposals in order to decrease the risks which are caused by the complexity of ship financial leasing. Yang Rongbo and Du Lifu (2004) considered that it's significant to prevent the risk from the aspect of interest and exchange rate, the benefit of lessor and lessee respectively and the credit of each party of the lease.

In the ship financial leasing area, some countries developed better than others. Wang Jifeng (2006) introduced the ship financial leasing modes in South Korea, Japan, Germany and Singapore. König (2005) emphasized on the German KG financing which is the leading and most famous mode in the world. He used a number of data and figures to illustrate how the KG financing developed in Germany. Comparing with the German KG mode and Singapore CEXIM shipping finance, Qin Ping (2008) believed that the ship financial leasing will expand the business well in China with the banks involved in the business. Elena (2002) did some research on the Russian-Norwegian project of ship financial leasing. In her summary, she considered that financial leasing has become the main type of vessel purchase from abroad in Russia under the economic situation of that time.

In recent years, there are many cases that Chinese companies used ship financial leasing to invest in ships. Wang Shunjuan (2007) suggested that the Chinese steel enterprises should build up themselves owned shipping companies which expanded the fleet by ship financial leasing. Chen Meng (2009) reported that China Changjiang National Shipping (Group) Corporation developed its own ship financial leasing business in order to relieve the negative effects which are caused by financial crisis. Turn to the current global financial crisis, Shi Yanping (2008) thought that it's significant for China to reestablish the status of financial leasing in the financial

system. Zhang Jianxi (2006) introduced the NPV model to compare the different financing projects and pointed out that it's more convenient for the shipping companies which lacked capital to invest in ships by financial leasing than equity.

McGroarty (2006) predicted that shipping companies gradually will express more interests to leasing. That may be caused by ship owners realize that it's more significant to control the vessels and have flexibility in fleet deployment than actually owning the vessels. He critical the financial leasing as that "This trend is anticipated to strengthen further, as innovative financial structures can provide competitive financing, improved balance sheets and, in some cases, participation along with the lessors in future increased value of the fleet."

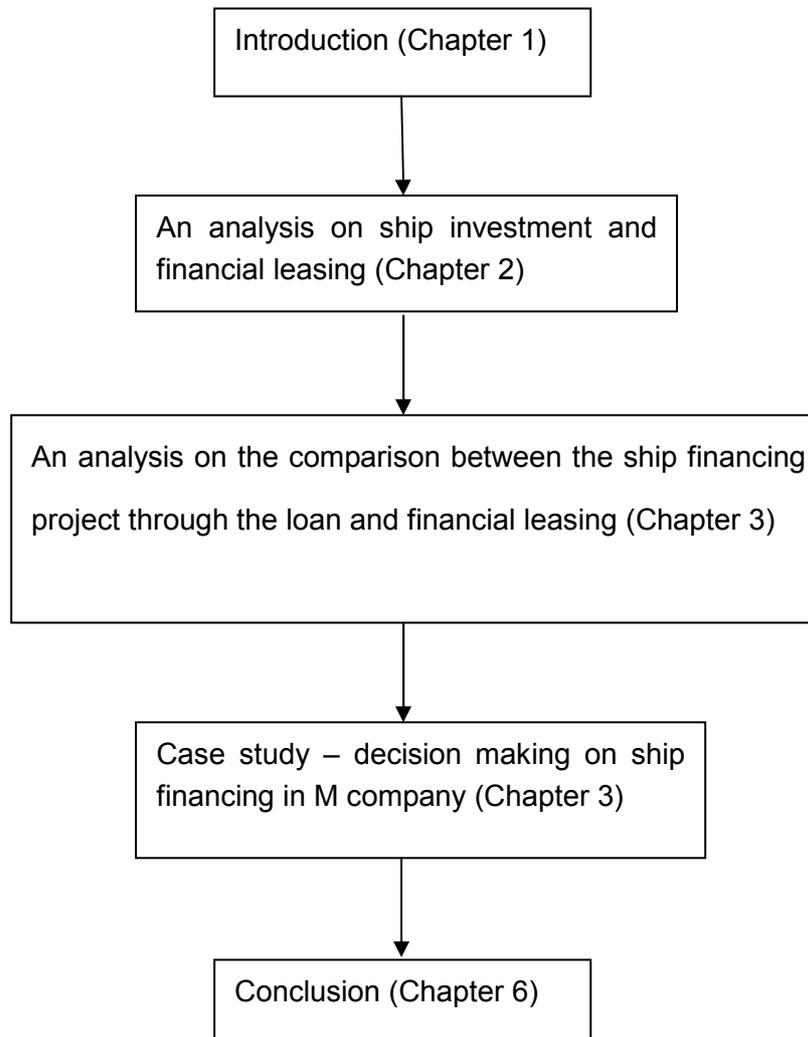
### **1.3 Methodology**

Because in this dissertation, there's a contrast between the two financing patterns: loan and financial leasing, the author will use the PV (Present Value) model as a benchmark to compare the financing cost of the same project and find out the critical point finally. The present value of an investment is the sum of all financing cost discounted using a specified discount rate, usually the cost of capital. It is improper to use the cash flow solo to measure the whole project. The net cash flows arising over time cannot be summed to calculate the return an investment will earn. This is because money has a time value. A sum of money held now usually worth more than an equal and certain sum to be paid in the future date because there is an opportunity to invest the money and obtain a return at the same time. Thus we have to consider the time value of the investment in the process of calculating the final result. In respect that the financing pattern will not affect the income level, so these two projects should be the same and we don't consider the income of both projects.

As a result, the less PV is, the less financing cost is and the better the project should be.

#### **1.4 The framework and content of dissertation**

The aim of this dissertation is to utilize the PV model to evaluate and compare the different shipping investment projects for small and medium size shipping companies. There are three chapters in the main body of the dissertation. In chapter 2, there are four main subtopics: shipping investment, financial leasing, ship financial leasing and ship financial leasing in the world respectively. The author will analyze the ship financial leasing from several aspects. In chapter 3, there's a contrast between the loan and financial leasing by PV analysis. The author will use several formulas to calculate the PV which the tax and depreciation deduction has been considered of these two projects respectively. In chapter 4, the author will use the formulas which have been calculated in the last chapter to solve a real problem in company M. Company M will make a decision to expand their fleet. There are two investment methods they can choose: loan and financial leasing. By building two Excel Sheets, the final data will be compared to make a conclusion that which financing project is better. Therefore through the above study, the readers should have a clear understanding of the evaluation methods and benefits which ship financial leasing brings to all the parties in shipping industry.



**Figure 1.1 The Structure of Dissertation**

Source: Drawn on my own

## **Chapter 2 AN ANALYSIS ON SHIP INVESTMENT AND FINANCIAL LEASING**

### **2.1 Ship investment**

#### 2.1.1 The overview of ship investment

Ship investment is a behavior which the shipping enterprises or ship-owner purchase or order the new ship or ships in order to acquire the profit from this investment. The shipping enterprises obtain the proprietorship and usufruct of the ships through the ship investment.

Since shipping industry is a capital-intensive and high-risk business, ship investment is a strategic activity which is involved with the operation and fleet structure of shipping enterprises. As a result, ship investment and financing became one of the most significant links in the chain of international shipping business. Furthermore, the ship investment is the initial part of the whole operating process. Thus whether it is proper to make the decision of investment and financing will affect the profit of the shipping company afterwards.

#### 2.1.2 The feature of ship investment

Because the ship investment is a sort of acquisition of fixed asset, the effect on the benefit will extend to a long period. As a particular project investment, the feature of ship investment shows as follows:

#### 2.1.2.1 The huge amount of fund

It is obvious of the trend of larger ships due to the economy of scale. In addition, there is a breakthrough on the technology of the steel and equipments which are used in the ship-building. As a consequence, the price of newbuildings is extraordinarily high and the shipowners have to even invest a huge amount of money in a single vessel. In recent years, the newbuilding price increased dramatically except the last several months. According to the Drewry insight February 09, the price of a new bulk carrier fluctuated from 31.5 million dollars to 97.3 million dollars. Turn to the tanker newbuildings, the price of a new VLCC (Very Large Crude oil Carrier) exceeded 100 million dollars from 2007 to now.

#### 2.1.2.2 The long period of capital pay-off

Normally, because of the huge amount capital of ship investment, the capital pay-off period is relatively long. It needs at least 5 years from investing in newbuildings to being paid back all the investment, which this number could be extended to 10 years or even more. In fact, some notable shipping companies paid back the investment in 7 to 8 years.

#### 2.1.2.3 The easiness of liquidating

Because of the existing second-hand vessel S&P (sale and purchase) market, the

investor can liquidate his owned ships conveniently according to the circumstance of the ship operation and referred ship price in the market. There are a lot of reasons about the liquidating ships. One is to prevent the loss which may occur if the shipowners continue to operate the ships. Another is to adjust the fleet structure, including eliminating the old and low-technology ships. Another is to mitigate the risks and invest in other industries. It's more complex to invest in shipping industry though this kind of liquidating will lead some loss to the investment under most circumstances.

#### 2.1.2.4 The diversification of investment source

In the recent market, there are few shipping enterprises or shipowners using the profit to invest in the ships. They almost choose equity capital, governmental loan, bank loan and other finance methods. Because of the advantages and disadvantages of these methods, the decision makers of shipping companies always consider the conditions of those methods.

#### 2.1.2.5 The fast pace of the shipping market fluctuation and the difficulty of seize the investing opportunity

The shipping market, which fluctuated a lot, was affected by the international economy and trade, political affairs and the variety of regional industrial structure. Being the correlative market of the freight market which is the fundamental market, the change of the freight or hire rate will influence the alteration of the newbuildings' price. However, there's a delay between the freight market and S&P market. Therefore, it is difficult to predict the future trend of the market and make a choice to invest in the shipping industry.

#### 2.1.2.6 The diversification of the investment currency

The ship investment is different from other kinds of investment. Because the vessels were built and financed in the worldwide, there are several sorts of currencies which can be chose, including US dollar, Euro, Japanese Yen and British pound. Under regular circumstance, the shipowners preferred the US dollar. There are three main reasons. One is that the currency of the shipping companies' revenue almost is US dollar. Another is that the period of ship investment is quite long, including the long ship building time. Furthermore, it's normal to invest in ships by using US dollar in order to elude the risk of exchange rate changing.

#### 2.1.2.7 The high degree of risk

The ship investment was not only affected by the newbuilding market, but also influenced by the international freight, trade and finance market. It appears several items as follows:

Firstly, because the shipping market has an obvious feature of periodicity, it's difficult for the shipowners or investors to pick the time to purchase the ships. At the low point of market, investing in newbuildings will expand the fleet capacity dramatically; however, perhaps bring the investors major investment venture. When the market hits the peak, just like the market in 2007 and the first half of 2008, the shipping enterprises were anxious to order a number of newbuildings. They can solve the problem of fleet shortage, nevertheless, it raise another serious problem that how to handle these excrescent capacity.

Secondly, the traffic amount of international shipping which is the derivation of international trade is affected by the development of international economics and trade. Thus some emergencies, including the economic, political and war factors, will lead the imbalance of the international trade supply and demand in aspect of region and time. As a result, the unstable shipping market increases the risk of ship investment.

Finally, because the currency exchange rate changed rapidly and ship investment related to several sorts of currencies, it's uncertain for the yield of the ship investment. In addition, due to the long period of capital pay-off, there are a lot of risks which may appear in more than 10 years.

### 2.1.3 The capital source of ship investment

Because of the above features of ship investment, there are an extreme number of financing methods, including the internal and external financing, which are used in international shipping industry. The external financing occupied the major of the total amount of financing capital (about 70%) which contains the commercial loan, government loan, equity and financial leasing.

#### 2.1.3.1 Internal financing

Since less shipping enterprises can invest in newbuildings by themselves, it appears several sorts of financing methods in shipping market. Generally speaking, 30% of the capital is supplied by the shipping enterprises including the parent company, other subsidiary companies and the own subsidiary company. The parent company always related to many industries, such as the parent company of the notable liner

company – Maersk Line, A.P. Moller – Maersk Group. On one hand, it invested in the main shipping subsidiaries by the distribution of its own capital and internal loan. On the other hand, the subsidiaries often obtain their internal capital through some earned benefits and the fund from the sale of second-hand ships and scrapping. Besides, the shipping enterprises can also financing from other subsidiaries.

### 2.1.3.2 External financing

#### (1) Commercial loan

Commercial loan includes the commercial bank loans and loans from financial institutions except bank.

##### ① Commercial bank loan

Commercial bank loan is a kind of loan which the borrower obtains the loan in the international finance market from the commercial bank in order to construct a project or for other purposes. That's the most common financing method in the world. The commercial banks always regulate the interest rates according to the London Inter bank Offered Rate (LIBOR) and supply the short or medium term loan to shipowners, including the credit loan, mortgage loan and guarantee loan. At this situation, it has to be analyzed more about mortgage loan. The shipping mortgage means the commercial bank makes the hull of newbuilding and benefit of the shipping enterprises as the guarantee. When the bank faces to the breach of faith or insolvency of the ship company, the mortgage gives the right for the mortgager to take possession of the vessel.

The main advantage of commercial bank loan shows as the extraordinary flexibility.

There's no restriction of this loan in principle which can be used in any states and for any purposes. In addition, the procedure of the commercial bank loan is not as complex as the international finance organizations and government loan. Turn to the disadvantage of commercial bank loan, it needs a strict guarantee from the shipping enterprises as well as the interest rate is the floating interest rate which burdens more cost of loan when it faces to the risk of interest rate fluctuation.

## ② The loans from financial institutions except bank

The loans from financial institutions except bank include means the financial institutions loan to the borrower who invests in some certain projects by fund raising. This sort of financing method always involves less amount of capital than commercial bank loan. Because the procedure to achieve this loan is flexible and simple, this means fits to the newbuildings of small tonnage for the establishing of the young shipping enterprises. In recent years, there's a trend of diversification, regionalization and specialization relating to this loan, including the financing between the individuals, enterprises, and the individual and the enterprise. Take some Chinese small-scale shipping companies as example. Due to the constraint of financing qualification, these companies can hardly acquire the loan from the bank. Therefore the loans from financial institutions are popular for these growing companies. With the increase of the partner number and raised fund, the fleet can be expanded dramatically. This financing method is easy to be achieved under the circumstance of developed economic environment and it leads the small-scale shipowners develop themselves fast.

## (2) Government loan and subsidy

Government loan means the government uses the way of interest rate subsidy to provide the loan which has the lower interest rate than the market through the banks controlled by the government. Due to the huge amount of capital concerned in shipping industry and the national safety, it's normal for the governments to supply several sorts of loans to the shipowners in their own countries. In fact, the government loan and subsidy aim to prop up the ship building industry in its own country. There are a number of ways for the governments which are developing their shipping and ship building industries to provide the loans and subsidies to the shipping enterprises, including the direct subsidy, interest subsidization, tax preferences, write-off and postponement of debt compensation. The period of the government loan and subsidy is relatively long and the interest rate is much lower than the commercial bank loan. In addition, the national credit insurance organization offers the warranty which indicates the government burdens the risk. Because the government loans are used in certain purpose, the function of this loan is only to build and purchase the ships in the country which offers the loan.

### (3) Bond and stock

In finance, a bond is a debt security, in which the authorized issuer owes the holders a debt and, depending on the terms of the bond, is obliged to pay interest (the coupon) and/or to repay the principal at a later date, termed maturity. Borrower issues bonds via a dealer who repays the holder a specified sum of money on a prescribed maturity date e.g. in 10 years. Interest is payable by redeeming coupons attached to the bonds and reflects the credit rating of the issuers. It is a formal contract to repay borrowed money with interest at fixed intervals. Thus a bond is like a loan: the issuer is the borrower, the bond holder is the lender, and the coupon is the interest. Bonds provide the borrower with external funds to finance long-term

investments, or, in the case of government bonds, to finance current expenditure. Certificates of deposit (CDs) or commercial paper are considered to be money market instruments and not bonds.

IPO (Initial Public Offering) can be taken on the stock exchanges market around the world (New York, Oslo, Hong Kong, Singapore, and Stockholm). A prospectus is drawn up offering shares in the shipping company. Once the issue is made and trading starts, the price is determined by market supply and demand. Public stocks issues are handled by investment banks that prepare the prospectus, submit it to the stock exchange authorities, gain approval for the issue and place the share for investors. The whole process takes 10-15 weeks and cost about 5% of the funds raised. Nevertheless, a number of investors considered that it's risky for the small-scale shipping companies to finance in the stock market because of the risk of investment in shipping industry.

#### (4) Ship financial leasing

In a ship financial leasing scheme, the financing institution (legal owner of the vessel) provides full financing for the user (shipowner) over an extended period in return for much narrower security than it would insist on as an ordinary security lender. Actually, ship financial leasing has been practised by a lot of notable shipping enterprises. The detail of the ship financial leasing will be expatiated more lately.

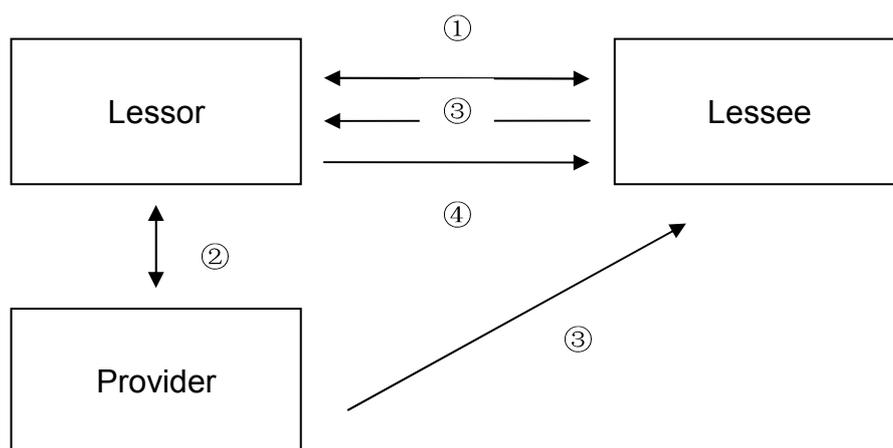
## **2.2 Financial leasing**

Financial leasing means according to the lessee's demand, the lessor purchases the leased thing from the provider and provides it to the lessee with the lessee pays for

the rent. In the financial leasing transaction, the lessees always purchase the leased things at the end of the lease. There are three parties (lessee, lessor, and provider) and two contracts (contract of financial leasing and contract of purchase) in a financial leasing process which is a kind of comprehensive business. On one hand, the buyer of the purchase contract is the lessor. On the other hand, the lessee becomes the decision maker of the purchase contract. The provider delivers to the lessee based on the contract of purchase.

### 2.2.1 The framework and procedure of financial leasing

Before the start of financial leasing, there are two fundamental conditions to be satisfied for both lessee and lessor. One is the lessor has to examine and approve the lessee's credit situations, including the characteristics of the industry, status of business, circumstance of the project and the repaying ability. Another is the lessor needs to know and understand the feature and practical process of financial leasing. The financial leasing has been always operated as follows.



**Figure 2.1 The Procedure of Financial Leasing**

Source: Drawn on my own

In this figure:

- ① On the base of freewill, the lessee and lessor sign the financial leasing contract as well as make sure the leased item, leasing period, interest rate, mode of payment and so on.
- ② According to lessee's willing, the lessor signs the purchase contract with the item provider and pays for it. The lessee also signs the contract of purchase subsidiarily to ensure the content such as the leased item and the import contract.
- ③ In accordance with the purchase contract, the provider delivers the leased item to the lessee who pays for the rental, including the principal and interest, to the lessor in conventional period by stages. After the process of all payment, the financial leasing ends finally.
- ④ When the lessee defrays the residual value of the leased item, the ownership of the leased item has been transferred to the lessee from the lessor.

## 2.2.2. The transaction forms of financial leasing

### 2.2.2.1 Direct leasing

Referring to direct leasing, the lessor finances from the international money market straight. There are three parties (lessee, lessor, and provider) and at least two contracts (contract of financial leasing and contract of purchase) in order to complete the transaction. It's the most ordinary term of financial leasing.

#### 2.2.2.2 Joint venture leasing

Joint venture leasing is a sort of special direct leasing. If the sum of the leased item is large, the first lessor will approve the partial financing after evaluating the financing capacity of himself in order to spreading the risk. The second lessor will audit the first lessor's financing item and express the confidence which is willing to finance the remains. Eventually, both the first and second lessors sign the joint venture leasing contract and become the lessors together. In joint venture leasing the number of lessors may be two or more. Nevertheless, the lessee only makes a deal with the first lessor during the whole financial leasing. Besides that, every lessor has the same rights and shares the rental as well as the responsibility on the basis of contributions percentage.

#### 2.2.2.3 Sub-leasing

In accordance with the lessee's demand, the lessor A, who plays a role of lessee, leases in the requested item from lessor B. Afterwards the lessor A sub-leases it to the real lessee. Generally speaking, the lessor B always is the leasing company abroad. Because of the disadvantages such as weak financing capacity, the domestic lessor A cannot be involved in this project as the lessor directly. Furthermore, the foreign lessor B can only get into the financial leasing market in another country through the lessor A who plays the role of credit intermediary.

#### 2.2.2.4 Leaseback

The original owner of the leased item sells it to the lessor who is going to pay for it.

Whereafter the lessor leases out the appointed item to the original owner who plays as a lessee. According to the financial leasing contract, the lessee will pay the rent by stages in a certain period until he acquires the ownership of the item again. Out of question, this method of financial leasing can provide the financing convenience to the original owner of leased item and solve the short-term problems just like insufficiency of circulating fund.

#### 2.2.2.5 Leveraged lease

A leveraged lease is a lease in which the lessor puts up some of the money required to purchase the asset and borrows the rest from a lender. The lender is given a senior secured interest on the asset and an assignment of the lease and lease payments. The lessee makes payments to the lessor, who makes payments to the lender. The term may also refer to a lease agreement wherein the lessor, by borrowing funds from a lending institution, finances the purchase of the asset being leased. The lessor pays the lending institution back by way of the lease payments received from the lessee. Under the loan agreement, the lender has rights to the asset and the lease payments if the lessor defaults. In this type of lease, the lessor provides an equity portion (often 20% to 50%) of the equipment cost and lenders provide the balance on a nonrecourse debt basis. In practice, leveraged lease is the main form of ship financial leasing.

### **2.3 Ship financial leasing**

#### 2.3.1 The overview of ship financial leasing

Ship financial leasing is defined as follows: after the lessee chooses the vessel and

ship seller or makes a choice of shipyard, the lessor (leasing company) signs the contract of financial leasing and purchase with lessee and ship seller or shipyard respectively. The lessor leases out the ship to the lessee who pays for the rent. In the lease period, the ownership of the vessel belongs to the lessor. At the end of the lease period, the lessee has the rights to choose whether he is willing to get the ownership of the vessel after he pays the rent and comes to time according to the financial leasing contract. By this way, the lessee can satisfy the operating needs by using few funds. At the same time, the lessor can obtain a profitable return and has a dependable guarantee of creditor's rights.

As a brand new financing method, since the 1950s originated in the United States, has developed rapidly in the world wide during the recent decades. In 1972, there's a new financing means defined in the US Ship Financing Act, which is financial leasing and brings the investor risk hardly. For the lessee, the financial leasing can meet the needs of ship operation by spending a minor amount of capital. Reversely, for the lessor, the proprietorship is clear and the return of the investment is generous and guaranteed. In the shipping industry which is a capital intensive Industry obviously, shipping enterprises have attached importance to the ship financial leasing, especially some small and medium shipping enterprises. Because of the small scale and weak financing capability of these companies, normally they chartered in ships to operate. Compared with the chartering, financial leasing can decrease their risk as far as possible and bring them more benefit at the same time.

### 2.3.2 The advantage of ship financial leasing

The advantage of ship financial leasing shows on the financing cost mainly. There are more details as follows:

2.3.2.1 Ship financial leasing can decrease the capital amount of investment somehow

Due to the possibility of gaining benefit from government policy, financial leasing can decline the amount of investment under certain circumstance. For encouraging the investors to invest in shipping industry, the government makes the policies of tax preferences such as accelerated depreciation. Sometimes in the ship financial leasing contract, the lessor will transfer these benefits to the lessee by reducing the rent.

2.3.2.2 Ship financial leasing can release the shipping enterprises' stress of repayment

Comparing with the loan or purchasing the second-hand ships, although the financing period is much longer, financial leasing is able to release the financial stress which may occur in the beginning of the lease. Besides that, the business circumstances of shipping enterprises will be affected by the market changing. The financial leasing is more flexible than the commercial loan on the repayment aspect, which means there's no need to repay the certain borrowing and certain interest at the certain time. From this point of view, it's not difficult to notice that financial leasing is more suitable for the capital intensive industry just like shipping industry.

2.3.2.3 Ship financial leasing can broaden the financing channels for the shipping enterprises.

The conventional financing channels cannot totally satisfy the development of

shipping enterprises any more, especially for the small and medium shipping companies. Owing to the small operation scales and low credit levels of these companies, it's hard for them to get the loan from government and bank. Furthermore, they don't have the competency to issue the shares or bonds like big shipping enterprises, therefore, the financial leasing plays a significant role for these small and medium companies to survive and develop.

#### 2.3.2.4 Ship financial leasing can bring the shipping enterprises low financing risk.

On one hand, because the lessee pays the rent on the foundation of annuity which has the same amount in different years and don't change with the interest rate change. Therefore the lessee's can calculate and evaluate the cost and profit exactly in advance. On the other hand, the big shipping corporations usually own some old ships whose high residual value will bring huge pressures to the companies. They can adopt the financial leasing that leasing these sorts of ships to the small and medium shipping companies in order to solve the financing problems.

#### 2.3.3 The details of ship financial leasing procedure

Generally speaking, there are three main financial leasing methods in the market. One is through the bank and other general financial leasing institutions. Another is through the shipyard. Another is building its own one ship company which can utilize leaseback and sublease, such as UK Tax Lease.

##### 2.3.3.1 The banks (or the investment firms) or the financial leasing institutions fund.

This is a simple means of ship financial leasing. The shipping companies and

shipowners issue the ship financial leasing contract with the bank, investment firms or professional financial leasing institutions in order to decrease the lump sum. Furthermore, these financial institutions table a proposal to the shipyards or ship sellers about the ship building or purchasing and sign a purchase contract.

#### 2.3.3.2 The shipyards fund.

Actually the shipyard credit is not a new fangle any more. As I mentioned before, the shipyards expect to expand the market and enhance the competitiveness by supplying the financial leasing projects. This could attract more small-scale shipowners and the customers in developing countries. Comparing with the mode which shipyards collaborates with leasing companies; the shipyards can provide more efficient services to the customers.

#### 2.3.3.3 Sublease and leaseback

In shipping industry, there are a lot of factors affecting the shipping enterprises development just like poor liquidity and massive fluctuations in the market. As a result, it's important to find a method to accelerate the cash flow and decline the cost. As a relatively new mode of financing, UK Tax Lease is popular among the shipping companies because of its advantages. The advantage of UK Tax Lease is the low cost and integrality of financing as well as the leasing period is relatively long, which could be more than 10 years. The core part of UK Tax Lease reflects in the exemption regulation of UK tax law whose purpose is to reduce the financing cost. Take the follows as an example.

A shipping company A wanted to order a vessel in a shipyard, and chose to finance

this ship by UK Tax Lease mode. Firstly, company A searched for a suitable bank of leasing institution to sell this ship to it in order to gain the revenue. Secondly, company A registered a single ship company B in a convenient flag country. Company B who became a charterer, chartered in this ship as a bareboat as well as paid the rent every three months. Finally, the company A registered a company C in UK. Company C chartered in the ship from company B and signed a managing contract with company A who operated this ship actually. Company C paid the hire which was gained from the operating benefit to company B every three months. In fact, the final ultimate purpose and objective is obtaining the tax reduction and exemption from the UK government for company C.

#### 2.3.4 The development of ship financial leasing

Thanks to the decrease of lessees' tax pressures, the ship financial leasing was appreciated by the small and medium shipowners who lacked fund in the shipping market. Nonetheless, there is a restrictive transaction for the ship financial leasing so that it's not suitable for the shipowners who expect to gain benefits from short-term appreciation in asset value. These sorts of shipowners need to catch the information from market quickly and response to the market fluctuation in time. Financial leasing doesn't have such flexibility; hence it's applicable for the shipowners who invest in ships for stable incomes.

The US and UK tax law regulate the investment tax credit, which stimulates that the enterprises and financial institutions who have a number of profit are willing to become the lessor. Those minor shipowners who cannot get benefit from the investment tax credit will also decline their cost caused by the lessors reduce the rent for ships because of the investment tax credit. Thereby, the development of ship

financial leasing is based on the relevant governmental fiscal and tax policy.

## **2.4 Ship financial leasing in the world**

There is a trend for shipbuilding industry that this industry is moving to Asia in recent decades. Instead of some traditional European countries, Japan Korea and China have become the leaders in shipbuilding industry all over the world. To promote the development of shipbuilding and shipping industry, several states, such as Germany and Korea, had their own ship financial leasing policies. In fact, no matter Germany or Korea, the aim of ship financial leasing is that the government administers the tax privileges which can encourage the small and medium investors to invest in shipping industry.

### **2.4.1 German KG market**

A Kommanditgesellschaft (abbreviated "KG") is the German name for a limited partnership business entity. Over the past few years, the strong container shipping markets have benefited the German KG sector, where shipowning companies have been able to invest in new tonnage, pay down debt ahead of schedule, and pay better than expected dividends. The KG's, limited liability companies funded by a "general partner" and by individual German investors (who are considered "limited partners"), became a force in ship finance during the mid 1990's- when equity in excess of €1 Billion was raised annually for shipping projects. Carriers gain control of fleet capacity (without burdens of ownership), while the traditional owners have an opportunity to gain 100 percent finance.

The companies, with their requisite German locus typically being the ship management function, own vessels (generally newbuildings) that are chartered out

on multi-year deals ranging from five years out to 12 years, or longer. Originally, the investors would see their returns through the actual operating cash flows coupled with a big tax shield as new tonnage was depreciated. At present, the depreciation tax shield is combined with an application of the increasingly prevalent tonnage tax—where taxes are at lowered flat rate, tied to the tonnage of the vessels, rather than their actual profitability. Beginning in 2007, those KG's that choose to be taxed based on tonnage must apply this treatment from the inception of actual trading.

#### 2.4.2 Ship investment companies in Korea

A relatively new investment vehicle - the ship investment company – has been introduced to facilitate ship financing by the enactment of the Ship Investment Company Act in May 2002. Tax law was amended at the end of year 2002 to provide certain tax benefits to ship investment companies, such as deduction of dividend payment. A ship investment company obtains funding by: issuing equity to equity investors, issuing corporate bonds to bond investors, or borrowing from lenders. It invests its funds to ships, including newbuildings and second hand ships, and returns the profits from these investments to its shareholders, in addition to payments under the corporate bonds and the loans. It leases ships to shipping enterprises and its revenue is generated from the lease payment due from the shipping companies and, if applicable, by selling the ships.

The ship investment management company is an agent for the ship investment company and will, for the account of the ship investment company, design the funding structure, negotiate the terms and conditions of the funding agreements, the shipbuilding contract or ship purchase contract, the ship leasing contract and if applicable, the ship sale contract. A shipping company operates the ship investment

company's ship and the assets of a ship investment company are entrusted to a custodian for custody and administration. Each ship investment company may purchase only one ship and that ship may not be replaced with another ship during the lifetime of the ship investment company. To be a valid ship investment company under the Ship Investment Company Act, the approval of the ministry of Maritime Affairs and Fisheries needs to be obtained. Ship investment management companies also need to meet certain conditions, including registration with the Ministry. A ship investment company must make distributions of its income to investors. One or more income distributions may be made to its shareholders each year in accordance with its articles of incorporation.

## **CHAPTER 3 AN ANALYSIS ON THE COMPARISON BETWEEN THE SHIP FINANCING PROJECT THROUGH THE LOAN AND FINANCIAL LEASING.**

Owing to the long period and huge capital amount of ship financial leasing, as well as the financial leasing contract is irrevocable, the impact to the shipping enterprises is far greater than other means such as operating lease. It involves a lot of factors and has to be considered broader. In this chapter, it includes an analysis of the factors which may affect the cost of financial leasing from the lessee's point of view.

For one certain ship, whether the shipowner acquires the usufruct by loans or financial lease, the benefits of usage in the same period are the same as well as the income which the shipping company makes. Therefore generally speaking, there are two options to choose from, one is to buy through a bank loan to build a ship, and the other is through the finance lease to acquire the ship. There's a comprehensive comparative analysis about the cost of two financing options.

In order to compare the financing cost effectively, the time value of cash flow must be considered. The net cash flows arising over time cannot be summed to calculate the return an investment will earn. This is because money has a time value. A sum of money held now usually worth more than an equal and certain sum to be paid in the future date because there is an opportunity to invest the money and obtain a return at

the same time. As a consequence, net present value method is generally used to evaluate the present value of a program's cost. Any present value of a program's cost is based on the cost of the investment. Besides that, the effect on tax saving of these two projects must be considered after calculating the discounted cash flows. One motive of the financial leasing is to benefit from the tax abatement. The investors always evaluate an investment from the point of income after taxes. In the financial leasing circumstances, the companies obtain the benefits by reducing the amount of taxable income which includes the depreciation deductions and financial procedure fee primarily. In the case of loans, the enterprises primarily reduce taxable income through depreciation and interest deductions. In this model, the income level of these two programs can be assumed the same which means it will not affect the final NPV comparison. By comparing the present value of the ship which is financed by ship financial leasing and loans respectively, that is, calculating the present value of after-tax financing costs, the program which has the lower results will be the optimal.

### 3.1 The present value of a newbuilding project by loan

There are four parts for the cost of a newbuilding project by loan: the principal which should be paid in each period, the interest in every period, depreciation deduction and saving tax.

#### 3.1.1 The principal which should be paid in each period

In order to be convenient for calculation, it's assumed that the amount of money repaid to bank during each period is the same. The beginning of the calculation is at the time when the ship is completely built and delivered.

$$C_p = \frac{C_o}{M} \quad (3.1)$$

$C_p$  : The amount of loan which needs to pay in each period.

$C_o$  : The total amount of loan.

$M$ : The entire time for repayment.

### 3.1.2 The remaining loan

$$L_i = L_{i-1} - C_p \quad (3.2)$$

$L_i$  : The remaining loan after repaying the principal in period  $i$ .  $i = (1, 2 \dots N)$

### 3.1.3 The interest

$$I_i = L_{i-1} \times r \quad (3.3)$$

$I_i$  : The interest in the period  $i$ .  $i = (1, 2 \dots N)$

$r$ : The annual interest rate.

### 3.1.4 The depreciation

In order to simplify the calculation, straight-line depreciation method is chose here to compute the depreciation.

$$F = \frac{D \times (1 - f)}{N} \quad (3.4)$$

**F**: The depreciation in each year.

**D**: The whole price of newbuilding.

**f**: The depreciation rate.

**N**: The depreciable life of ship.

It's noteworthy that the N in this formula is not the same as M in formula 4.1. M is the entire time for repayment whereas N is the depreciable life of ship. The depreciable life of ship is equal to the ship's service life approximately which means the M is much smaller than N.

### 3.1.5 Tax saving

Normally the expense of interest and depreciation will lead a tax saving to the enterprises as the income.

$$S_i = (I_i + F) \times \alpha \quad (3.5)$$

**S<sub>i</sub>** : The tax saving in the period of i. i= (1, 2 ...N)

**α** : The rate of income tax, normally it's equal to 33%.

### 3.1.6 The financing cost after tax

$$P_t = (C_P + I_i) - S_i \quad (3.6)$$

$P_t$  : The financing cost after tax in the period of  $i$ .  $i = (1, 2 \dots N)$

### 3.1.7 The present value

To simplify the calculation, the financing cost after tax in each period will be converted into the present value. Adding all the present value of each period, the total present value can be calculated.

$$PV = \sum_{i=1}^N \frac{P_t}{(1+t)^{i-1}} - \frac{D \times f}{(1+t)^{N+1}} \quad (3.7)$$

## 3.2 The present value of a newbuilding project by ship financial leasing.

### 3.2.1 The principal of leasing

The principal of leasing means the total sum of money which is used in newbuilding has to be amortized in each period. Because of the time value of fund, the refunds in each period are different which is related to the discount rate closely. The formula is as follows:

$$A + A(1+t) + A(1+t)^2 + \dots + A(1+t)^{q-1} = D \quad (3.8)$$

By this formula, it shows that:

$$A_{j+1} = A_j \times (1 + t) \quad (3.9)$$

And

$$A = \frac{D \times t}{(1 + t)^q - 1} \quad (3.10)$$

**A**: The amortization of lease principal in the first period.

**D**: The total sum of money which is used to build a ship.

**Q**: The leasehold.

**t** : The discount rate.

**A<sub>j</sub>** : The amortization of lease principal in the j period.

### 3.2.2 The remaining sum of principal

$$D_j = D_{j-1} - A_j \quad (3.11)$$

**D<sub>j</sub>** : The remaining sum of principal in the j period. j = (1, 2...q)

### 3.2.3 The interest

$$R_j = D_{j-1} \times r \quad (3.12)$$

$R_j$  : The interest in j period. j = (1, 2...q)

$r$  : The annual interest rate.

### 3.2.4 The principal and interest of lease

$$E_j = A_j + R_j \quad (3.13)$$

$E_j$  : The total amount of principal and interest of lease in j period. j = (1, 2...q)

### 3.2.5 The commission charge

$$e = D \times \frac{g}{q} \quad (3.14)$$

$e$ : The fixed annual commission charge.

$g$ : The proportion of commission charge which occupies the total price of the ship.

### 3.2.6 The tax saving

$$S_j = (E_j + e) \times \alpha \quad (3.15)$$

$S_j$  : The tax saving in j period. j = (1, 2...q)

$\alpha$  : The rate of income tax, normally it's equal to 33%.

### 3.2.7 The financing cost after tax

$$S_{jt} = (E_j + e) - S_j = (E_j + e) \times (1 - \alpha) \quad (3.16)$$

$S_{jt}$  : The financing cost after tax in j period.

### 3.2.8 The present value

$$PV = \sum_{j=1}^q S_{tj} (1 + t)^j \quad (3.17)$$

## **CHAPTER 4 CASE STUDY - DECISION MAKING ON SHIP FINANCING IN M COMPANY.**

There is some information from a company which is called M in 2008. M company is a medium size shipping company who is a bulk cargo carrier. The CEO of M company was very bullish about the prospects of capesize shipping market. Therefore he and his partners decided to invest in capesize vessels. They prepared to order a 170000 dwt ship, whose price was 137,000,000 dollars, in a Korean shipyard who would deliver in April 2010. The CEO of company M was willing to compare the loan with financial leasing in order to choose the optimal financing method.

In the loan scenario, the company adopted the OECD shipbuilding clause. The loan was 80% of the total price of newbuilding; the annual interest rate was 8%; the payback period was 8.5 years; the annual discount rate is 10%; the income tax rate is 33%; the period of depreciation is 10 years; the residual value is 5% of the original ship value and the straight-line method of depreciation will be utilized. The bank offered the loan 6 times in 3 years which means every 6 months the loan can be issued. The principal and interest of loan would be repaid annually. The original time of calculation is when the ship is delivered.

In the financial leasing scenario, the lease is 12 years; the interest rate is 12% and

the commission charge is 1.5% of the original ship investment. The lessee will repay the rent every 6 months. For simplifying the calculation, the interest rate and discount rate of half a year are assumed as the half of the annual interest rate and discount rate.

**Table 4.1 The Present Value of Ship Financing Cost after Tax by Loan Method (in million dollars)**

Period (half a year)	Own fund and depreciation deduction	Loan from bank	Loan repayment	Remaining loan	Interest	Depreciation	Tax saving	Financing cost after tax
-6	27.4	—		—	—	—	—	—
-5	—	18.267		18.267	—	—	—	—
-4	—	18.267		36.534	0.73068	—	0.241124	0.489556
-3	—	18.267		54.801	1.46136	—	0.482249	0.979111
-2	—	18.267		73.068	2.19204	—	0.723373	1.468667
-1	—	18.267		91.335	2.92272	—	0.964498	1.958222
0	—	18.267		109.602	3.6534	—	1.205622	2.447778
1	—		6.447059	103.1549	4.38408	6.5075	3.594221	7.297359
2	—		6.447059	96.70788	4.126198	6.5075	3.50912	7.124577
3	—		6.447059	90.26082	3.868315	6.5075	3.424019	6.951796
4	—		6.447059	83.81376	3.610433	6.5075	3.338918	6.779015
5	—		6.447059	77.36671	3.352551	6.5075	3.253817	6.606234
6	—		6.447059	70.91965	3.094668	6.5075	3.168716	6.433453
7	—		6.447059	64.47259	2.836786	6.5075	3.083614	6.260672
8	—		6.447059	58.02553	2.578904	6.5075	2.998513	6.08789
9	—		6.447059	51.57847	2.321021	6.5075	2.913412	5.915109
10	—		6.447059	45.13141	2.063139	6.5075	2.828311	5.742328
11	—		6.447059	38.68435	1.805256	6.5075	2.74321	5.569547
12	—		6.447059	32.23729	1.547374	6.5075	2.658108	5.396766
13	—		6.447059	25.79024	1.289492	6.5075	2.573007	5.223984
14	—		6.447059	19.34318	1.031609	6.5075	2.487906	5.051203
15	—		6.447059	12.89612	0.773727	6.5075	2.402805	4.878422

16	—		6.447059	6.449059	0.515845	6.5075	2.317704	4.705641
17	—		6.447059	—	0.257962	6.5075	2.232603	4.53286
18	—	—		—	—	6.5075	2.147475	4.360025
19	—	—		—	—	6.5075	2.147475	4.360025
20	—	—		—	—	6.5075	2.147475	4.360025
21	6.85	—		—	—	—	—	—
22	—	109.6	109.6	—	—	—	—	—

Source: calculated from Excel program

According to the upper Excel spreadsheet, the final value of PV is 110.84 million dollars.

**Table 4.2 The Present Value of Ship Financing Cost after Tax by Financial Leasing Method**

Period ( half a year)	Remaining sum of principal	Amortization of principal	Interest	Sum of principal and interest	Commission charge	Total paid rent	Tax saving	Financing cost after tax
Ship delivery	137	—	—	—	—	—	—	—
1	133.9215	3.078513	8.22	11.29851	0.085625	11.38414	3.756766	7.627373
2	130.689	3.232439	8.035289	11.26773	0.085625	11.35335	3.746607	7.606747
3	127.295	3.394061	7.841343	11.2354	0.085625	11.32103	3.73594	7.585089
4	123.7312	3.563764	7.637699	11.20146	0.085625	11.28709	3.724739	7.562349
5	119.9893	3.741952	7.423873	11.16583	0.085625	11.25145	3.712979	7.538472
6	116.0602	3.92905	7.199356	11.12841	0.085625	11.21403	3.70063	7.513401
7	111.9347	4.125502	6.963613	11.08912	0.085625	11.17474	3.687664	7.487076
8	107.6029	4.331778	6.716083	11.04786	0.085625	11.13349	3.67405	7.459435
9	103.0546	4.548366	6.456176	11.00454	0.085625	11.09017	3.659755	7.430412
10	98.27879	4.775785	6.183274	10.95906	0.085625	11.04468	3.644746	7.399938
11	93.26422	5.014574	5.896727	10.9113	0.085625	10.99693	3.628986	7.367941
12	87.99891	5.265303	5.595853	10.86116	0.085625	10.94678	3.612438	7.334343
13	82.47034	5.528568	5.279935	10.8085	0.085625	10.89413	3.595062	7.299065
14	76.66535	5.804996	4.948221	10.75322	0.085625	10.83884	3.576818	7.262024
15	70.5701	6.095246	4.599921	10.69517	0.085625	10.78079	3.557661	7.223131
16	64.17009	6.400008	4.234206	10.63421	0.085625	10.71984	3.537547	7.182292
17	57.45009	6.720009	3.850206	10.57021	0.085625	10.65584	3.516427	7.139412
18	50.39408	7.056009	3.447005	10.50301	0.085625	10.58864	3.494251	7.094388
19	42.98527	7.40881	3.023645	10.43245	0.085625	10.51808	3.470966	7.047113
20	35.20602	7.77925	2.579116	10.35837	0.085625	10.44399	3.446517	6.997474
21	27.0378	8.168213	2.112361	10.28057	0.085625	10.3662	3.420846	6.945353

22	18.46118	8.576623	1.622268	10.19889	0.085625	10.28452	3.39389	6.890626
23	9.455727	9.005454	1.107671	10.11313	0.085625	10.19875	3.365588	6.833163
24	0	9.455727	0.567344	10.02307	0.085625	10.1087	3.33587	6.772826
total	—	137	121.5412	258.5412	2.055	260.5962	85.99674	174.5994

Source: calculated from Excel program

According to the upper Excel spreadsheet, the final value of PV is 105.51 million dollars.

After the comparison of these two projects, the PV of financing cost after tax by financial leasing (\$105.51m) is smaller than the loan one(\$110.84m). Therefore, through this analysis, the CEO of M company made a decision that M company will invest in this vessel by financial leasing method.

## CHAPTER 5 CONCLUSION

To put into a nutshell, thanks to the small and medium size shipping enterprises, shipping industry was booming in recent decades. Nevertheless, in such a capital intensive industry, the small and medium shipowners didn't have superiority in ship investment which showed that it's difficult for them to expand their business by conventional means. It's attractive for those shipping companies to finance the ship by financial leasing under the circumstances that they lacked capital support. As a consequence, although the some Chinese shipowners didn't attach the importance to ship financial leasing, due to its big advantage, it would expand a lot in China in the future. To becoming a major financing method, there are still problems which are necessary to be solved in China.

1. The market participants don't know financial leasing well, especially in China. The financial leasing developed in China quite late which led that market participants are not familiar with this financing means. There are a number of Chinese shipowners who even don't distinguish the differences of installment and financial leasing. To solve this problem, the shipping enterprises have to alter their operating conception, including increasing the efficiency of capital utilization. The government should publicize the financial leasing more and encourage the shipping companies to expand their business in the market.
2. The Chinese financial leasing institutions are not as professional as the organizations in developed countries. In some Chinese financial leasing institutions, there is a lack of professionals who are accomplished in leasing and operating ships. To some extent, the financial leasing institutions barely collaborated with the specialized shipping organizations such as shipbroker houses and classification societies. Thus when the organizations evaluated the credit, they can only follow the normal formulas of loan instead of aiming at the

feature of shipping and shipbuilding industries. Therefore, in order to overcome the shortcoming, the ship financial leasing institution should invite professionals to involve in, including the people in business of ship brokering, shipbuilding and finance. At the same time, the lessee part should establish and consummate a evaluation system which can appraise the comprehensive competitiveness of shipping companies

3. The financial leasing companies in China lacked the stable sources of funds. The domestic financial leasing institutions always only have a few financing scenarios and narrow channels of capital sources. However, the period of ship financial leasing is relatively long which means that it needs a steady funds supply. Therefore there are several leasing companies who have good reputations and efficient management raising money from the capital market by issuing stock and debenture. Facing to some certain financial leasing, the trusted plan can be issued in order to solve the problems of long-period capital source.

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