

Ship Financing Practices in Hong Kong: What Changes Has the Financial Tsunami Wrought?

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Abstract

We survey Hong Kong-based shipowners and banks about their ship financing practices before and after the recent financial crisis. Results obtained from the survey of shipowners suggest that bank loan remains the most preferred source of financing for shipping companies in Hong Kong, with the major perceived advantages being low cost, easy access, and relatively flexible terms and conditions as well as non-disclosure of sensitive business information. Results obtained from the survey of banks suggest that they have reduced their exposure to the shipping industry since the financial crisis struck. In addition, banks are now placing greater emphasis on loan quality and security and are less concerned about market share. The changes in financiers' attitudes and in the wider economic environment have important implications both for the industry's long-term survival and for the competitive position of individual shipping companies.

Keywords: shipping finance, banking, financial crisis, capital structure, competition

1. Introduction

Shipping is an extremely capital-intensive industry, with its 30,000 world wide companies needing, by rough estimation, about 80 billion dollars per year for financing new buildings alone (Goulieloms and Psifia, 2006). Thus shipping finance has a significant bearing for the shipping industry that is known for its fluctuating earnings, volatile vessel prices and technical complexity. However, due to the "public-shy" nature of the shipping business (Stokes, 1996), systematic research on how shipowners make their financing choices and the associated governance arrangement is rather limited.

After experiencing drastic fluctuations in the shipping market over the past decades, shipping companies are now putting more emphasis on financial liquidity in the rapidly changing environment while pursuing profit maximization, operational flexibility and managerial efficiency. Correspondingly, ship financing instruments have evolved to meet the varying market demand (Stopford, 1997). Diverse financing approaches and instruments are currently available for fleet expansion and working capital requirements, including shipping funds, IPOs, bonds, leasing schemes, private placements, venture capital and shipbuilding credit (Orfandis, 2004). Among all the available choices, bank loan has remained the primary source of financing for the shipping industry despite the trend for some of the largest companies to resort to the public equity and bond markets in recent years (McConville and Leggate, 1999; Grammenos and Arkoulis, 2003). Recently, due to the financial crisis, the global economy is experiencing a downturn and banks are facing a serious credit squeeze. The shipping market has also experienced heavy fluctuations, with the BDI reaching historical 11067 points in May 2008 before dropping to only 663 points in December.

Against such a macroeconomic and industrial backdrop, in this paper we aim to explore several questions from a practical point of view. Specifically, what are the major factors of consideration for shipping companies in choosing their financing methods? Is bank loan still the most favored financing method for shipping companies after the financial crisis? What are the key differences, if any, in banks' lending practices or credit assessment criteria before and after the financial crisis?

To address these questions, we adopt a survey design that aims to solicit responses from both shipowners and banks with a ship financing operation in Hong Kong. The key findings are summarized as follows. First, bank loan remains the most preferred source of financing for shipping companies in Hong Kong, with the

major perceived advantages being low cost, easy access, and relatively flexible terms and conditions as well as non-disclosure of sensitive business information. However, since the crisis struck banks have substantially reduced their overall exposure to the shipping industry, and are increasingly concerned about loan quality and collateral security and less concerned about market share. Whereas the banks' shift towards greater prudence may be good news for both bank regulators and shareholders (and, to a lesser extent, may help with long-needed industry consolidation), their more stringent lending requirements could mean shipowners will need to incur higher borrowing costs and/or resort to alternative sources of financing. The changes in shipowners' financing costs and options may have important implications for the industry's long-term survival as well as individual companies' competitive position.

The main contribution of this study is to provide a timely assessment of the impacts of the recent financial crisis on ship financing practices in the region, which may also reflect the industry landscape elsewhere. On the academic front, we contribute to the finance literature on determinants of capital structure by uncovering real-life factors that companies and financiers consider in their respective decision-making. Our joint treatment of firms' financing constraints, the interaction between providers and suppliers of finance, and capital structure determination is in contrast with typical finance studies that take firms' financing opportunities as given when examining capital structure choices (e.g. Fama and Miller, 1972), but is in line with the growing stream of research that looks to the field for a better understanding of the theory and practice of corporate finance (e.g. Graham and Harvey, 2001).

The remainder of this paper is structured as follows. Section 2 briefly reviews the literature on capital structure theories and financing choices in general and in the shipping industry. Section 3 discusses the survey design. We present and interpret the empirical results in Section 4 and offer some concluding remarks in the final section.

2. Literature review

Corporations typically have four main means of financing their capital investments: internal or outside equity, private or public debt, leasing, and hybrid securities (Brealey and Myers, 2003). A firm's choice of these financing methods shapes its capital structure (i.e., how its value is sliced up among different providers of funds). Taking as given the available financing options, financial economists have advanced four mainstream theories to explain firms' capital structure choices.

In their seminal paper, Modigliani and Miller (1958) show that in the absence of market imperfections such as taxes and agency cost, the value of a company depends solely on the earning power of its assets and is independent of its capital structure (the renowned MM Proposition I without taxes). A large literature has since developed. Among the major theories advanced to explain firms' capital structure choices, the Trade-off Theory argues that the choice between debt and equity depends on balancing the costs against the benefits of borrowing. The major benefits of borrowing include tax savings, and the major costs include financial distress/bankruptcy costs and agency costs. According to this theory, firms should target an optimal debt-to-equity ratio, which is reached when the marginal benefits of borrowing is equal to the marginal costs. Such a theory, while intuitively appealing, offers companies very little practical guidance (apart from a degree of awareness) since one cannot normally observe or quantify the marginal benefits and marginal costs. The dichotomy between debt and equity as financing instruments is also overly simplistic and does not adequately reflect the real-life complexities faced by companies in practice (for example, the need to consider governance issues simultaneously with the financing choice).

In contrast, the Pecking Order Theory proposed by Myers and Majluf (1984) argues that managers (acting on behalf of shareholders) prefer internal financing when this is available. If it is necessary to use external financing, companies will issue the safest securities first, such as debt and convertible bonds, and will consider outside equity only as a last resort. The key reasons supporting the Pecking Order Theory are mainly behavioral: managers prefer internal financing because it preserves their managerial autonomy and requires the least effort on their part. And by relying on internal financing companies do not need to disclose potentially sensitive business information (which is a more serious concern in flotation of shares), or have restrictive terms and conditions imposed upon them by bondholders (Myers, 1984). By taking into account

asymmetric information and agency costs, the Pecking Order Theory offers a plausible explanation of firms' general preference for internal financing over external financing. However, it cannot explain, for example, why many companies are strongly motivated to float their shares¹. An implication of the Pecking Order Theory is that companies do not have a target debt-to-equity ratio, in sharp contrast with the prediction of the Trade-off Theory, which posits an optimal debt ratio.

Neither the Pecking Order Theory nor the Trade-off Theory is able to explain why capital structure tends to vary systematically across industries or across different types of companies. Williamson (1996) approaches firm's capital structure choice from a transaction cost economics (TCE) perspective. He contends that the financing method employed by companies is determined by minimizing overall transaction costs. The TCE approach is featured by 3 characteristics: (1) the specific transaction (as opposed to the whole company) is the basic unit of analysis and costs are determined by transaction frequency, specificity, uncertainty, limited rationality, and opportunistic behavior; (2) the contractual or governance arrangements are emphasized and treated simultaneously with the financing choice such that the capability of different financing methods matches the specific transaction's attributes in a transaction-cost-minimizing manner; (3) the TCE approach explicitly recognizes the interaction of the wider economic environment, transactional attributes of specific industries and status of the transaction entities with the choice of financing and governance mechanisms. In transaction cost economics theory, as the asset specificity increases in one transaction, the terms and conditions of rule-based financing (e.g. debt) become more stringent for the debtor (i.e. increase transaction costs), so that at some point the company may turn to discretion-based financing (e.g. equity). TCE predicts that rule-based financing should be used for redeployable assets or assets with low specificity, while discretion-based financing is suitable for non-redeployable assets or transactions with high asset specificity. It is worth emphasizing that in the TCE approach, firms make the financing and governance choices *simultaneously* on a transaction-by-transaction basis, and thus there is no target capital structure for the whole firm.

It is now generally accepted that capital structure is affected by a number of factors such as asymmetric information, taxes, agency cost considerations, and industry or firm-specific characteristics such as growth opportunities and volatility of cash flows (see Brealey and Myers, 2003). It is also accepted that there is no optimal capital structure that applies to all firms under all circumstances. Gong, Firth and Cullinane (2005) propose that the choice of the financing and governance mechanism the transport industry should be viewed in the light of various economic, institutional and industrial as well as firm-specific factors, and should take into consideration the interaction of the supply side and the demand side. We next discuss the evolution of financing and governance mechanisms in the shipping industry. This provides the basis for designing our survey instrument and subsequently interpreting the results.

Before the Second World War, retained earnings were the primary source of ship financing. As the vessels grew bigger and prices soared, internal funds were not sufficient to support fleet acquisition, and shipping companies have since relied predominantly on commercial bank loans for their funding needs. Nowadays, although there are various alternative forms of financing (e.g. public equity, corporate bonds, and tax-based leasing), bank loan still remains the most favored form of financing in the shipping industry (McConville and Leggate, 1999; Grammenos, 2002; Grammenos and Arkoulis, 2003; Syriopoulos, 2007). Table 1 describes the five phases of ship financing evolution.

Table 1: Five phases of ship financing evolution

Phase	Period	Characteristics
Cash-based	1950's	The main source of financing new investments is retained earnings. The practice was prevalent among European shipowners with abundant capital reserves.
Charter-bac	1960's	Internal financing could no longer meet the growing capital needs due to the

¹ In China, for example, it is observed that many companies (not limited to shipping companies) prefer a public listing to other forms of financing. While this has to do with the institutional environment (e.g. the quota system in China for initial public offerings), it suggests that firms' financing decisions must be examined in the broader context of the evolution of the financial system because this affects firms' financing opportunity set, itself a key determinant of the observed capital structure (see Gong, Firth and Cullinane, 2005 for a similar point).

ked		soaring ship tonnages and ship prices. Thus shipowners turned to bank term loan, using charters and mortgage of ships as security.
Bubble	1970's	To take advantage of the market boom, shipowners started "asset play" disregarding the availability of time charters. Meanwhile, banks accepted ship mortgages as sufficient collateral, which led to an oversupply of capacity.
Distress	1980's	The consequence of unlimited expansion revealed itself. During 1983 to 1987 borrowers defaulted on \$10 billion worth of shipping loans, and banks had to write off books with a value between \$3 and \$4 billion. Some banks quitted the shipping finance market.
Convalescence	1990's--	Financing tools become sophisticated and diversified, including both debt and equity from the public markets, tax-driven lease finance and so on. Shipping finance now attracts various financial institutions.

Source: Stopford (1997) and Grammenos and Xilas (1996)

Many factors have contributed to the dominance of bank loan in ship financing, including the capital intensive nature of the industry, the erosion of shipping companies' capital reserves due to shipping cycles, reluctance of shipowners to dilute company control and disclose sensitive information, and the general unattractiveness of shipping stocks to public investors (Stokes, 1996, 1997; Grammenos, 2002;). Stopford (1997) notes that the evolution of financing methods for shipping companies is in line with the industry's own characteristics, such as the industry's volatility and cyclicity, changes in the financial community's perception of risk-return in shipping, as well as other developments in the wider financial environment (e.g. capital adequacy requirements). Nevertheless, to date there is very limited empirical research into how the providers of funds and the shipping companies interact to shape the capital structure. Specifically, little is known about what shipping companies perceive are the advantages and disadvantages of different financing methods, how banks make their financing decisions, and what changes might have occurred since the recent financial crisis broke out. This paper aims to inquire into the financing decision-making processes of both shipping companies and banks in Hong Kong, and provide a timely assessment of the impacts of the financial crisis on the shipping industry. Being both an international maritime center and an international financial center, Hong Kong is considered to be representative or indicative of the situation in other parts of the world.

3. Methodology

In view of the specific factors influencing financing choices in the shipping industry, and to achieve the stated research objectives, we adopt a survey methodology to probe into the major factors shipowners and banks consider in their financial decision-making. Given the exploratory nature of this qualitative study, such a research design is deemed to be appropriate. In designing the survey questionnaire, we attach particular importance to the following dimensions.

(1) Industry background

Shipping is a capital intensive industry characterized by high volatility and cyclicity. Thus the survey instrument should explore how shipping market cycle, company history and business strategy influence the financing and governance mechanisms chosen.

(2) Development of the financial system

The stage of development in the financial market, financial institutions' risk attitude toward shipping, and the capital adequacy rules as well as other regulatory limitations directly affect the financing options available to shipowners, and the relative costs and benefits of such options.

(3) Transaction-specific features

Due to its secretive nature and technical complexity, financing practices in the shipping industry may be unique compared with those in other industries. Thus transaction-specific characteristics (pertaining to

shipping and navigation) and the effects on company's earning capability are considered.

(4) A holistic view of both the demand and supply sides

Following Williamson's (1985, 1996) argument that the supply of a good or service and its governance need to be examined simultaneously, the survey covers both shipping companies and capital providers. Moreover, since the financing opportunities/constraints and governance mechanisms may change in response to changing conditions (e.g. during a financial crisis), the survey explores the respondents' perceptions and practices both before and after the recent financial crisis².

The survey of the shipowners aims to solicit answers to the following key problems. What is the primary financing method actually used by Hong Kong shipowners? What would be the most favored financing method, if there were no constraints? What are the perceived advantages and disadvantages of the various financing methods? The questionnaire of shipowners consists of two main parts, each of which is briefly described below³.

■ Part A. Companies' preference on financing instruments

Section 1- Company information

This part intends to collect some basic information about the respondent company, including its business area, history, fleet size, average age of fleet, acquisition activities in the past 5 years and whether the company is publicly listed.

Section 2- Preference over various financing methods

Respondents are required to indicate the primary financing approach that they rely on in vessel acquisition. Moreover, this part intends to find out the most preferred method for companies if there were no constraints on the available choices, as well as the factors that affect their choices.

■ Part B. Perception of financing instruments

Based on a careful review of the exiting literature, characteristics of various financing methods such as bank loan, public equity, bond issuance and leasing are listed in this part. The respondents are required to indicate the extent to which they agree with the statements. Through use of a scale in which number 9 represents "strongly agree" while number 1 stands for "strongly disagree", Hong Kong shipping companies' concrete perceptions of the specific methods are revealed. Moreover, it provides complementary explanations for their primary and most preferred choice in part A.

The draft questionnaires were distributed to a few industry practitioners for pre-testing. Valuable feedback and suggestions about the level of clarity, objectivity of questions, the accuracy or applicability of the answer options, and the amount of time spent on the questionnaire were collected. Some changes are made in the wording, scale and format, aiming to minimize ambiguity while maximizing the response rate. The respondents are also assured that all the data collected will be kept in strict confidentiality and the responses will be reported only in aggregate form.

The membership directory of shipowners, ship managers and ship operators in the Hong Kong Shipowners Association is used as the main source of the sampling frame, but other shipping companies with a presence in Hong Kong are also considered. A total of 32 ship-owning companies are selected as target. The questionnaire was delivered to a top manager by email and by post simultaneously. To encourage a higher response rate, the companies were assured that a copy of the final report would be provided to interested parties. Each questionnaire is accompanied by a stamp-addressed envelope which the respondent can use to return the completed questionnaire.

² Our pre- versus post-crisis comparison focuses on the banks rather than the shipowners, as the impacts of the crisis are thought to be stronger and more relevant for the banks.

³ The full questionnaires are available from the authors upon request.

The survey was conducted in late 2008 – early 2009. The response rate for shipowners is 47% and that for the banks is 42%. Given the relatively small population, these response rates are deemed to be reasonable and representative of shipowners and ship finance banks in Hong Kong.

One potential concern with survey research is the validity and reliability of the survey instrument. Reliability is defined as the extent to which the results are consistent over time and are an accurate representation of the total population under study (Golafshani, 2003). Internal consistency is one type of reliability measuring the extent to which the procedures assess the same characteristics. Cronbach's Alpha is usually used to assess internal consistency when the research instrument is uni-dimensional. In practical applications, a Cronbach's Alpha of around 0.5 is taken to suggest that the results obtained from the survey are highly correlated and that the instrument is stable (Nunnally, 1978). In this study, 30 statements are designed to measure shipowners' perceptions of 4 financing methods. The Cronbach's Alpha for each method is listed in Table 2. Overall, the results of the survey are correlated, indicating an acceptable level of reliability of the questionnaire, especially in the section of bank loan and leasing (Cronbach's Alpha exceeding 0.5), while the figures for public equity and bond are close to 0.5.

Table 2: Reliability test

Method	Bank loan	Public equity	Leasing	Bond	Total
Cronbach's Alpha	0.636	0.440	0.585	0.470	0.569

While reliability is concerned with the accuracy of the actual measuring instrument, validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. Criteria-related validity is one type of validity which assesses whether the items designed are representative of the research idea. In terms of contents of the questionnaire, the statements included in the questionnaire are all based on a thorough review of the literature and thus reflect specific characteristics of each financing method. Moreover, the correlation coefficients (Spearman's rho) between the score of each statement and the total score of each method are calculated to test whether the questions reveal shipowners' preference for a specific method. The results are shown in Table 3. Overall, there is a high correlation between the statements and the shipowners' preference for a specific method, especially for the items with correlations significant at the 1% level and 5% level. Thus the survey questionnaires are deemed to have good reliability and validity.

Table 3: Validity test of questionnaire for shipowners

Panel A. Correlations of statements of bank loan with shipowners' preference for bank loan

Spearman's rho	Bank loan
Relationship	0.423
Bank cost	0.600*
Terms	0.722**
Repayment	0.725**
Information	0.555*
Project	0.789**
Interest	0.415
Support	0.669**
Financial turmoil	0.020

Panel B. Correlations of statements of equity with shipowners' preference for equity

Spearman's rho	Equity
Quick funding	0.484
Equity cost	0.256
Attractiveness	0.271
Balance sheet	-0.038

Opportunity	0.309
Requirement	-0.026
Procedure	0.424
Control	0.653**
Disclose information	0.753**
Susceptible	0.335
Financial turmoil	0.544*

Panel C. Correlations of statements of leasing with shipowners' preference for leasing

Spearman's rho	Leasing
Leasing cost	0.366
Off balance	0.329
Exposure	0.549*
Residual	0.698**
Financial turmoil	0.754**

Panel D. Correlations of statements of bond with shipowners' preference for bond

Spearman's rho	Bond
Bond cost	0.431
Balloon	0.439
Tolerance	0.660**
Financial turmoil	0.713**

** , * : Correlation is significant at the 1% level and 5% level (2-tailed), respectively

4. Empirical results

4.1. Survey of shipowners

Respondents' information

The respondents' company profile is summarized in Figure 1 to Figure 6. Figure 1 suggests that the majority of the respondent companies are well established with a relatively long history. Figure 2 shows that the majority of the companies focus on the dry bulk and tanker sectors, accounting for 80% and 47%, respectively (companies may operate in more than one sector).

Figure 1: Company history

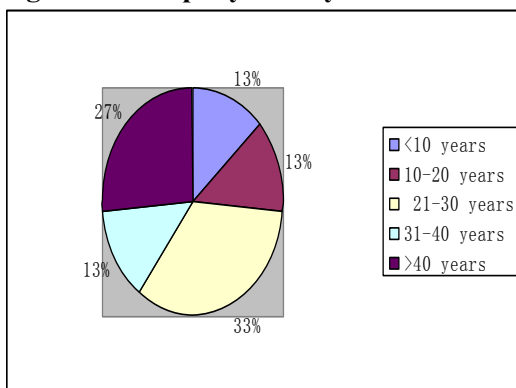


Figure 2: Business coverage

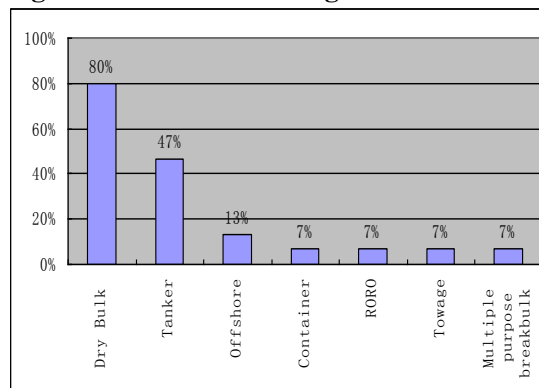


Figure 3 indicates that the majority of the companies (73%) possess fewer than 20 vessels. 13% of the companies have 31-40 vessels while 13% have more than 40 vessels. According to Figure 4, 47% of the companies have fleets with an average age of 3-10 years. For 20% of the respondent companies, the average fleet age is between 11 and 15 years. Another 20% of the companies have fleets with an average age between

16 and 20 years. Moreover, 13% of the companies have relatively young fleets, with an average age below 3 years.

Figure 3: Number of vessels

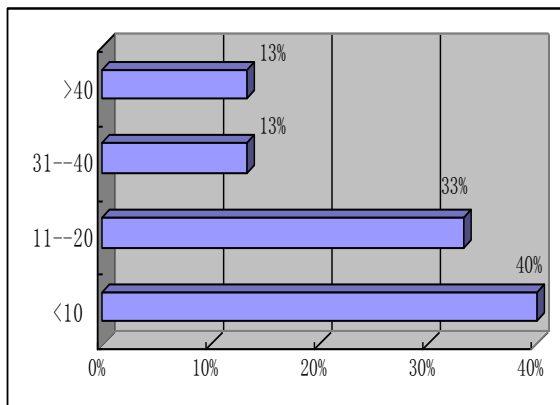
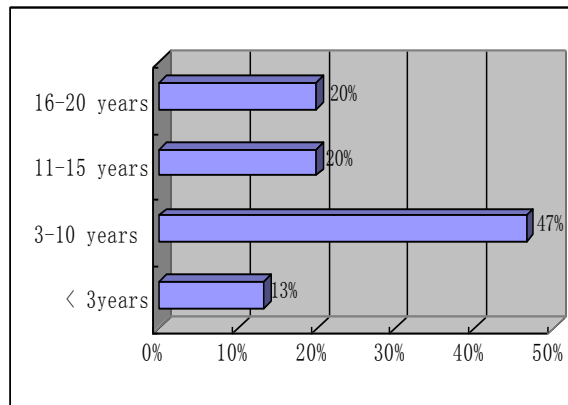


Figure 4: Average vessel age



The number of vessels acquired in the past five years is an indication of the extent of a company’s participation in fleet expansion, which also drives the demand for financing instruments. Figure 5 indicates that most companies (40%) acquired fewer than 5 ships, suggesting a lack of active fleet expansion. 20% of the companies acquired 5-10 ships, and 40% of the companies purchased more than 10 vessels. As shown in Figure 6, 27% of the companies are public-listed while another 27% of them indicate a definite intention to go public.

Figure 5: No. of vessels acquired in the past 5 years

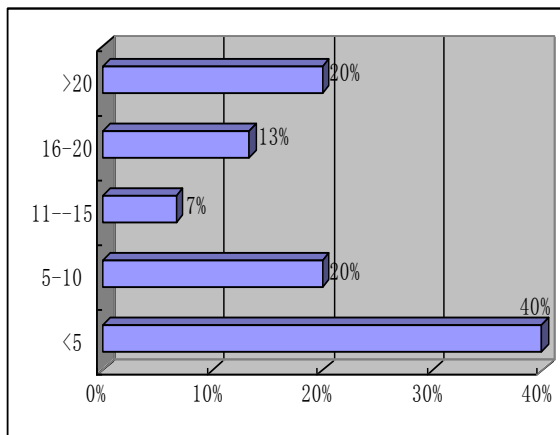
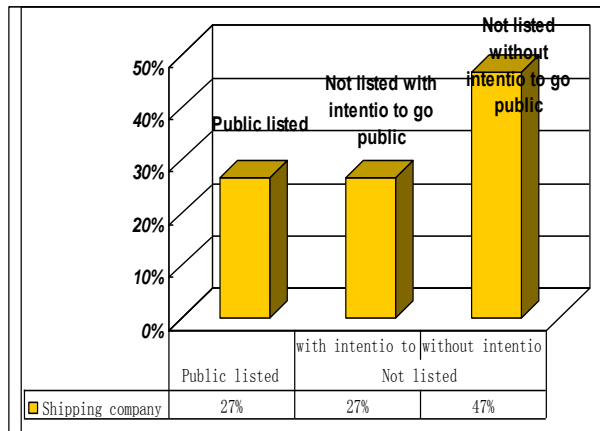


Figure 6: Companies’ listing status



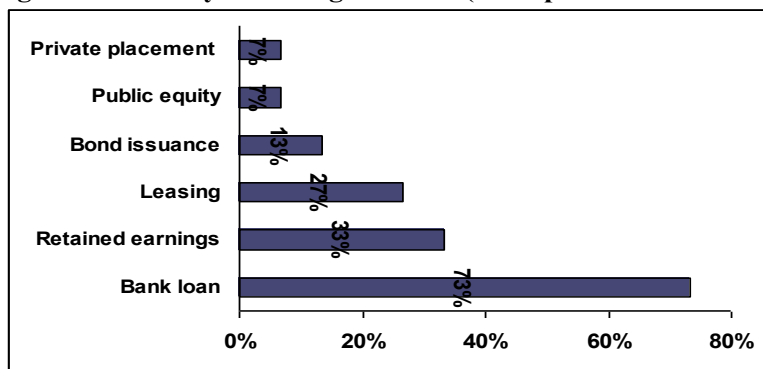
Shipowners’ financing choices: what do they use, and why?

To facilitate an analysis of the perceptions of, and preference for, different financing methods and the characteristics of the respondent companies, the following definitions are adopted. Companies possessing more than 20 vessels are defined as large companies, while those with fewer than 20 vessels are defined as small companies. Meanwhile, companies with a history longer than 20 years and an average fleet age above 10 years are referred to as “long history” and “old fleet”, respectively. Moreover, the companies which acquired more than 10 vessels in the past 5 years are deemed to be active in fleet expansion.

The respondents are required to indicate the primary financing methods which they rely on. The results are summarized in Figure 7. The majority of the respondents (73%) report using bank loan as the primary financing method. Next are retained earnings and leasing, which are the primary financing method for 33% and 27% of the companies, respectively. Bond issuance, equity and private placement are relatively less popular. There are four listed companies; interestingly, only one of them reports relying on equity issuance as

its primary financing method.

Figure 7: Primary financing methods (Multiple choices allowed)



The preferences for various financing methods are further studied in terms of the companies' characteristics. The results are listed from Figure 8 to Figure 11.

Figure 8: Financing methods (history)

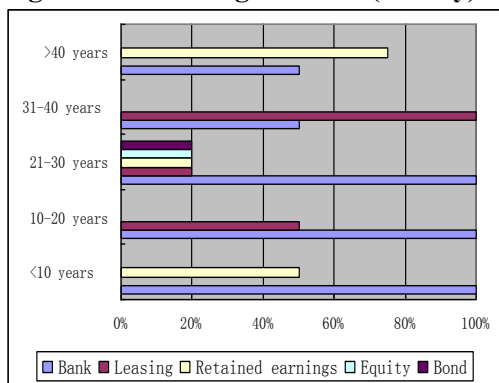


Figure 9: Financing methods (fleet size)

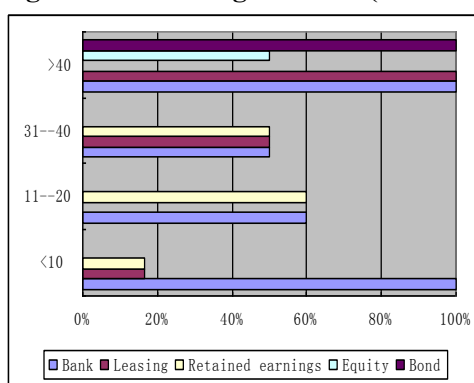


Figure 10: Financing methods (fleet age)

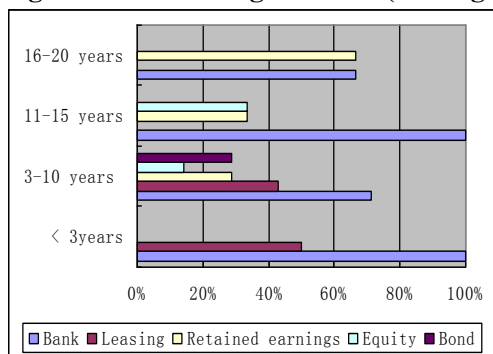
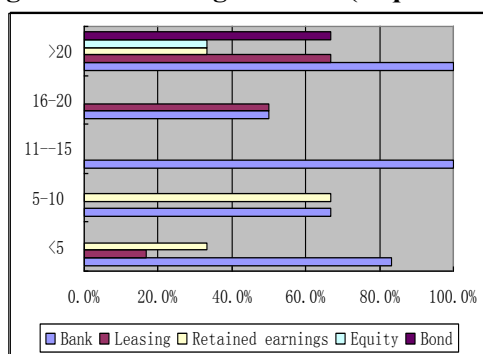


Figure 11: Financing methods (acquisition)



To explore the reasons behind shipowners' financing choices, the survey also asks the respondents to indicate the extent to which they agree or disagree with statements about the advantages and disadvantages of various financing methods. The results, summarized in Table 4, provide direct explanations for their reported financing choices.

Table 4: Comparison of shipowners' perceptions of different financing methods

Overall cost	Bank loan	✓ 43% of the respondents agree that the overall cost of bank loan is lower than that of the other methods.
	Equity	✓ Only 7% agree that the overall cost of equity is lower than that of the other methods.

	Bond	✓ Only 7% agree that the cost of bond issuance is lower than that of other financing methods.
	Leasing	✓ 20% of the respondents agree that the overall cost of leasing is lower than that of the other methods.
Access	Bank loan	✓ 93% of the companies agree that they have an existing relationship with banks.
	Equity	✓ 87% consider listing requirements as demanding. ✓ 80% consider the procedures for public offering as complicated.
Terms & Conditions	Bank loan	✓ 47% agree that terms & conditions are not rigid, especially for those companies that are not listed, those using bank loans as a primary method, and those with active acquisition. ✓ 53% of the respondents agree that repayment period is long. ✓ 27% agree that banks provide consistent support in periods of downturn, especially among companies using bank loans as a primary method and those with active acquisitions.
	Equity	✓ 93% agree that a listed company is susceptible to stock market conditions. ✓ Only 13% agree that shipping stocks are attractive to investors, indicating general disagreement.
	Bond	✓ 93% of the respondents show agreement with the statement “bond holders have low tolerance for default”.
Impact on financial condition & management	Bank loan	✓ 67% of companies agree that information is not disclosed to outsiders. ✓ 53% agree that bank lending is project based with limited impact on group’s financial condition.
	Equity	✓ The majority (60%) agree that disclosure of sensitive information in equity negatively affects the company, especially those with older fleets. ✓ 40% agree that equity dilutes company control and affects managerial efficiency, especially among those that are not listed, those with smaller sizes and older fleets.
Negative effect by the financial turmoil	Bank loan	✓ 60% agree preference for bank loan is negatively affected by financial turmoil, especially those with smaller and older fleets.
	Equity	✓ 67% agree that preference for equity is negatively affected by the financial turmoil, especially those with an intention to go public.
	Leasing	✓ Attitude toward leasing is slightly above neutral, with 53% agreeing that preference for leasing is negatively affected.
	Bond	✓ 60% agree that preference for bond is negatively affected by financial turmoil. There is no significant difference across groups.

The results suggest that bank loan is the main source of financing by shipping companies in Hong Kong, especially for the companies with shorter history (Figure 8), large-size fleets (Figure 9) and younger ships (Figure 10). Shipowners’ reliance on bank loan is well known. Unlike equity financiers who require high rates of return (usually at around 15%-20% per annum) reflecting the industry’s perceived high risk⁴, shipowners can usually obtain a bank loan at around 1%-2% spread above LIBOR (Stokes, 1997). Flexibility is another advantage. As banks can expect to make a profit by lending to a credit-worthy borrower against sufficient security, the loan agreement is usually structured to give both the lender and the borrower the ability to adapt quickly to market changes. Such ex post cooperation and flexibility are of vital importance, especially when the market is in a downturn and borrowers are in need of consistent support. Moreover, as pointed out by Gong, Firth and Cullinane (2005), by using debt, shipping companies in effect obtain a valuable call option from the lender such that they have much to gain in a market boom but can limit their risk exposure in a market downturn⁵.

⁴ Contrary to conventional wisdom, however, recent research has found that shipping stocks have only about market average systematic risk. See Kavussanos and Marcoulis (2001) and Gong, Cullinane and Firth (2006).

⁵ In effect, limited liability allows the borrower to default on the debt obligation. For this reason, the market value of debt is almost always lower (in some cases, substantially lower) than the face value (see Brealey and Myers, 2003). The problem is exacerbated

The above arguments are supported by shipowners' responses with respect to their perceived advantages and disadvantages of various financing methods, as summarized in Table 5. The shipowners report several advantages for a bank loan relative to other financing methods. First, the overall cost of bank loan is lower than that of the other methods, and access to bank loan is also easier. In contrast, the requirements and procedures for a public listing are deemed to be demanding while shipping stocks are not attractive to investors. Moreover, a public offering is thought to dilute company control and negatively affect managerial efficiency, especially for those companies with smaller sizes and older fleets. Second, unlike equity, sensitive information is not disclosed to outsiders in bank loan. Third, the terms and conditions in a bank loan are generally not considered rigid for the majority of the shipowners. In contrast, listed companies are susceptible to stock market conditions whereas bond holders have low tolerance for default. Overall, these results are consistent with the conventional wisdom, our above analysis and previous studies (e.g. Stokes, 1996, 1997; Grammenos & Arkoulis, 2003).

The survey also reveals some factors that may impede the use of a bank loan. First, the majority of the shipowners surveyed are of the view that the recent financial turmoil will negatively affect their access to bank loans, especially for companies with older vessels and small-size fleets. Second, for listed companies and those with small-size fleets, the terms and conditions of a bank loan are considered rigid. Third, the companies with small-size fleets are also of the view that banks do not provide consistent support in periods of downturn. While the first two pieces of feedback from shipowners inevitably reflect market reality, perhaps the last opinion expressed may be food for thought for service-oriented financiers, especially those looking for a long-term relationship.

4.2. Survey of banks

In order to gain a more comprehensive understanding of ship financing practices from both the demand side and the supply side, a survey targeting banks is conducted. A review of the literature (e.g. Grammenos and Xilas, 1996) suggests that in deciding whether or not to grant a loan, banks are primarily concerned with three main factors of consideration: security, marketing and quality.

■ Security

A bank focusing on security seeks to minimize credit risk and maximize assurance. For example, banks seeking security are more concerned about the collaterals, such as a first preferred mortgage, assignment of insurance, and personal or corporate guarantees. In addition, a security-oriented bank focuses on shipowners' equity participation, shipping companies' debt-asset ratio, shipping market conditions as well as charter parties secured. We use 7 criteria in the questionnaire to gauge the importance banks place on security.

■ Marketing

Marketing refers to a bank's appetite in fighting for market share. The marketing-oriented banks are more likely to devote a higher proportion of their loan portfolio to shipping, provide more competitive pricing, and participate in as many loans as possible (via syndicated loans). We use 5 criteria in the survey to gauge the importance banks place on marketing.

■ Quality

As the shipping market often fluctuates sharply and the floor price of a vessel could be easily breached, banks may care more about the earnings potential and the quality of projects, that is, whether cash flows from the prospective investment can sufficiently meet the financing expenses⁶. Thus when assessing a specific

when the borrower is a one-ship company. Recognizing this, lenders must conduct a very careful credit analysis and they often require various collateral securities from the borrower as well as guarantees from the parent company (see Grammenos, 2002). Nevertheless, a cost of borrowing at around 100 basis points above LIBOR is low, and some commentators have blamed "cheap finance" as fuelling industry over-supply (see, for example, Stokes, 1997).

⁶ Note that quality as defined here is essentially equivalent to "cash flows" emphasized in Grammenos and Xilas (1996). They consider cash flows from the financed project as the "first way out" and security collaterals provided as the "second way out".

shipping transaction, the banks that focus on the quality of project will pay more attention to features such as profitability record, accident record, vessel type, age of vessel, flag of vessel, cash flow projection as well as pricing (margin & fees). We use 7 criteria in the questionnaire to gauge the importance banks attach to quality.

The three basic dimensions discussed above cannot be attained simultaneously, as pursuit of one goal will inevitably result in deviation from another. For instance, banks that care about the quality of a project sometimes may, to some extent, move away from the pursuit of market share, while banks that stress market penetration may sometimes sacrifice security. Thus in reality, one bank may place greater emphasis on one particular aspect over another.

In our survey of banks, we ask the respondents to indicate the extent to which they agree or disagree with statements related to one of these three dimensions. The results will add up to a total score for each bank, which allows us to identify to which dimension a bank attaches greater importance in its assessment of shipping loan applications. Moreover, in this survey, first-hand information about banks' attitudes before and after the financial turmoil is collected and compared. The aim is to examine whether there are differences (post- versus pre-financial crisis) in banks' lending practices, for example, with respect to loan-to-value ratio, tenor, repayment schedule, competitive factors as well as other major factors of consideration. The key findings are summarized below.

Financing products and service

As shown in Figure 12, all of the banks provide ship financing before the financial turmoil; however, one respondent bank quitted the ship financing market after the financial turmoil. Moreover, the number of banks that provide corporate loans and working capital line has also dropped after the financial turmoil.

Loan portfolio in Asia allocated to shipping

According to the survey, the number of banks that allocate more than 30% and 11-20% of their loan portfolio to shipping has significantly decreased after the financial turmoil while the number of banks in the 6-10% bracket has increased (see Figure 13).

Figure 12: Financial products/services provided by banks

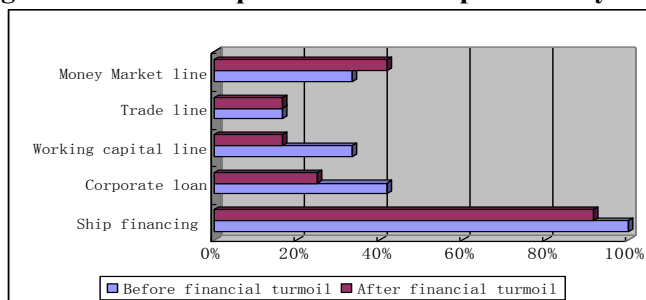
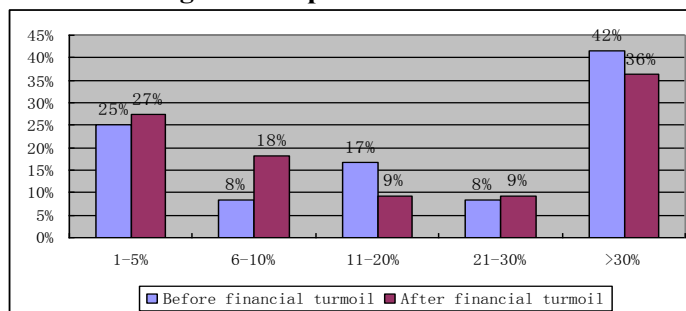


Figure 13: Percentage of loan portfolio in Asia allocated to shipping



Maximum ratio of the loan amount to vessel price

According to Figure 14 and Figure 15, 33% of the respondents indicate that before the financial turmoil, they allow the maximum ratio of loan amount to vessel price (LTV) to be above 80% for a new building; 58% of the banks have maximum LTVs between 70% and 80%. In contrast, after the financial turmoil, only 36% of the banks maintain maximum TLVs above 60%; for the majority of banks (64%) the maximum LTV has dropped to 50%-60%.

Figure 14: Max LTV (before financial turmoil)

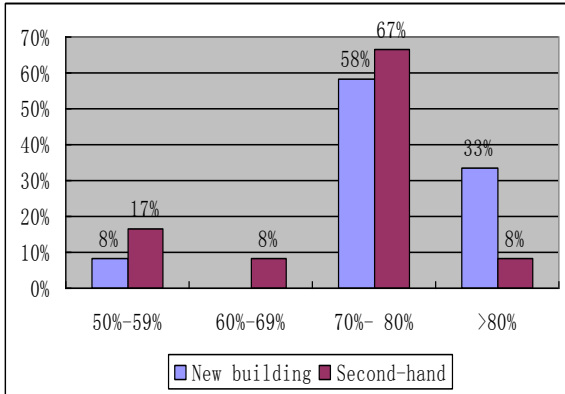
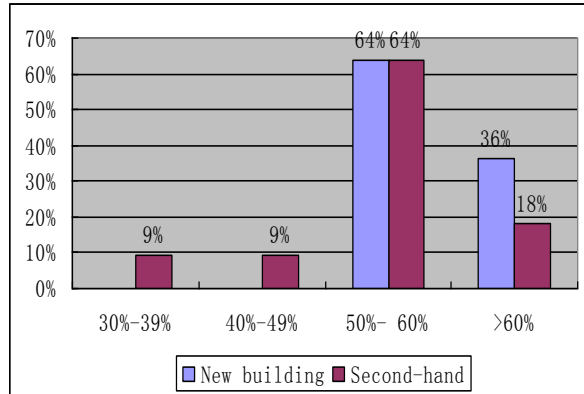


Figure 15: Max LTV (after financial turmoil)



Maximum loan tenor

Figure 16 and Figure 17 indicate that, before the financial turmoil, 58% of the banks indicate that the maximum tenor for a new building is between 10-15 years, and the maximum tenor for other vessel types is between 5-10 years. After the financial turmoil, none of the respondents lends money for more than 10 years. 45% of them have a maximum tenor between 8-10 years while another 45% have the maximum tenor falling between 5 and 7 years.

Figure 16: Maximum loan tenors for new building

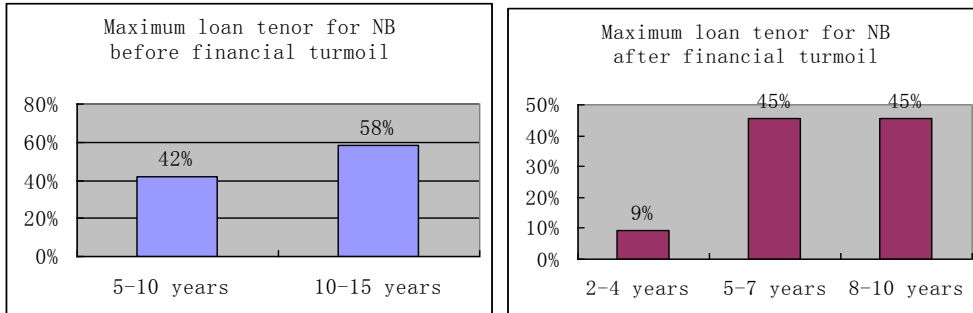
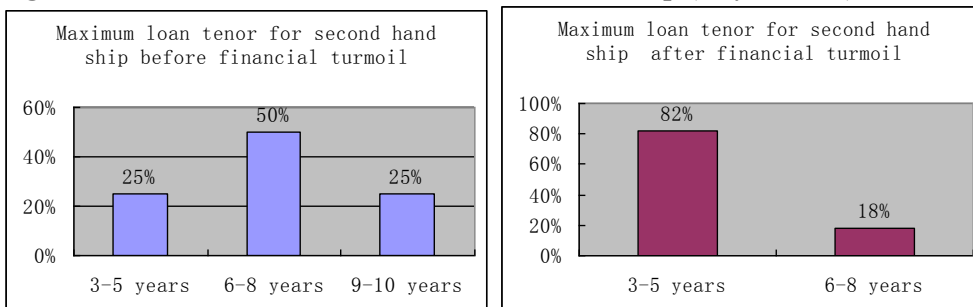


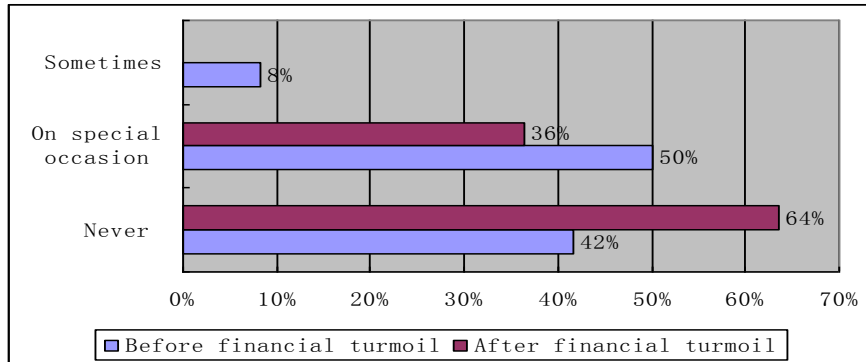
Figure 17: Maximum loan tenors for second hand ship (10 years old)



Participation in syndicated loans

Figure 18 shows that compared to the pre-crisis period, the percentage of banks that have never participated or do not intend to participate in syndicated loans has increased from 42% to 64%. This indicates that some banks have withdrawn from syndicated loans due to the credit squeeze.

Figure 18: Participation in syndicated loan



Thus, as an interim summary, the results of the survey clearly indicate that the financial turmoil has significantly affected banks' lending practices in shipping. The loan portfolio allocated to shipping has significantly shrunk. Moreover, there has also been a contraction in the extent of financing provided, as revealed by more conservative LTVs, shorter loan tenor, and fewer activities in syndicated loans. To a large extent, the retreat from shipping is an inevitable result of, and rational reaction to, the serious credit crunch faced by all financial institutions after the financial crisis. Future research is warranted that empirically examines the effects of banks' withdrawal from shipping on individual companies. Conceivably, larger shipowners, those with a long-term relationship with banks, and those with a stronger balance sheet (e.g. lower debt ratios), may be less severely affected. They may even gain a competitive advantage over other weaker competitors who are more seriously affected during the financial crisis. These, however, remain speculations until the empirical evidence comes in.

Ranking of three basic dimensions of bank lending before and after the financial crisis

To further examine the relative importance attached to different factors in banks' loan granting decisions, the Analytical Hierarchy Process (AHP) is used in the subsequent analysis. AHP, as put forward by Satty (1980, 1986) and others, is a multiple-criteria decision-making method designed to compare the alternatives evaluated with respect to several criteria. Briefly, AHP is based on hierarchies and relative comparisons of the attributes of the alternatives. The structure of hierarchies permits the decomposition of decision goals to criteria, which help the human mind to cope with the complexity of multiple goals. Once the hierarchy of a problem is set the decision maker is concerned with weighting the criteria and alternatives. Thus one must first establish priorities for the criteria with their relative importance and then proceed with the alternatives.

Based on the aforesaid three dimensions (security, marketing and quality) and the concrete criteria representing them, the analysis of the relative importance of these dimensions can be approached as a problem in multiple-criteria decision-making. By using the feedback from the 12 banks that completed and returned the questionnaires, an attempt is made to identify which dimension has been given high priority. Take the dimension "security" as an example; it is decomposed into 7 criteria in designing the questionnaire. These criteria receive ratings by the respondents. By applying AHP, the final score for security can be obtained. Moreover, by comparing the scores of the three dimensions, their relative importance can be determined. Applications of the AHP method in shipping and transportation studies have been growing in recent years (see, for example, Wong, Yan and Bamford, 2008; Song and Yeo, 2006). For brevity we report only the summary scores below but details are available from the authors upon request.

As reported in Table 5, before the financial crisis, the score for quality is the highest with a mean of 0.704, with 58% of the banks placing a priority on quality. The dimension accorded the second greatest emphasis is

marketing with a mean of 0.578. 42% of the banks are most concerned most about marketing. Security received the least importance, with a mean score of 0.53. After the financial crisis, one bank quitted from ship financing. Among the remaining 11 banks, 91% give obvious precedence to quality, with the mean score increasing from 0.704 to 0.836. Security has received more attention, now taking the second place with the mean score increasing from 0.53 to 0.67. However, banks are now attaching less importance to marketing, with the mean score decreasing from 0.578 to 0.45.

Table 5: Summary scores for three key dimensions of bank lending

	Security	Marketing	Quality
Before crisis	0.532648307	0.5785536	0.7039023
After crisis	0.676550709	0.45378463	0.8357697

In summary, therefore, the AHP analysis reveals several interesting findings. First, quality is the most important consideration for banks. This is true both before and after the financial crisis. However, banks are placing even greater emphasis on quality after the financial turmoil. Overall, this indicates that banks are concerned about the earnings potential of specific transactions. Second, security is the least important aspect of the three dimensions before the financial turmoil. This suggests that before crisis struck, banks were not satisfied by the mere provision of guarantees, nor were they happy with the prospect of becoming shipowners in case of default. However, there is evidence that after the financial turmoil, more attention is being paid to security. Third, marketing was rated the second most important consideration before the financial turmoil. This indicates that there was fierce competition in the ship financing market and many banks were more concerned about market share. However, after the financial turmoil, banks are increasingly turning to security and lowering their appetite for risk.

5. Concluding remarks

This study provides direct evidence on the perceptions of, and rationales for, preferring different financing methods from the perspectives of Hong Kong shipowners. Results obtained from the survey of shipowners suggest that bank loan remains the main source of financing by shipping companies in Hong Kong, with the main perceived advantages being lower cost, easier access, relatively flexible terms and conditions as well as non-disclosure of sensitive information. Results obtained from the survey of banks suggest that the loan portfolio allocated to shipping and participation in syndicated loans have significantly shrunk since the financial crisis. As for the major factors of consideration in their credit assessment, banks used to focus on quality, followed by marketing and security. After the financial turmoil, the concern for quality has increased even more, but security has been attached greater importance, whereas marketing has received less emphasis.

Overall, the evidence indicates a lower appetite for risk-taking and higher requirements for collaterals and guarantees. For both bank regulators and shareholders, the apparent shift towards prudence may be good news, but for borrowers, this means that they will have to present banks with strong corporate fundamentals and incur higher borrowing costs, or they will have to turn elsewhere for their funding needs. While large shipowners with a close banking relationship and proven track record may be better able to weather the storms in the short turn, in the longer run it behooves all shipowners to more actively explore alternative sources of financing, perhaps by embracing modern concepts of corporate governance and making themselves more visible/transparent to the general public. Unless traditional shipowners adapt themselves to the continuously changing environment, their fortunes may rise and fall in the turbulent sea of changes. Some may not survive the next financial tsunami, especially if it coincides with a shipping downturn.

Acknowledgements

The research described in this paper is made possible by a research grant of the Hong Kong Polytechnic University (G-YG75). We are grateful to the shipping companies and banks which participated in the survey.

References

- Brealey, R.A and Myers, S.C. (2003). *Principles of Corporate Finance*, 6th edition, New York: McGraw-Hill.
- Fama, E.F. and Miller, M.H. (1972). *The Theory of Finance*, Hinsdale, Ill.: Dryden Press.
- Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research, *The Qualitative Report*, Vol.8, No.4, 579-607.
- Gong, S.X.H., Firth, M. and Cullinane, K. (2005) Choice of Financing and Governance Structures in the Transport Industry: Theory and Practice. In: Lee, TW and Cullinane, K. (Eds.) *World Shipping and Port Development*, Hampshire, UK: Palgrave Macmillan, pp. 50-75.
- Gong, S.X.H, Cullinane, K. and Firth, M. (2006) Beta Estimation and Beta Stability in the U.S.-listed International Transportation Industry. *Review of Pacific Basin Financial Markets and Policies*, Vol. 9, 463-490.
- Goulielmos, A.M., Psifia, M. (2006). Shipping Finance: Time to Follow a New Track, *Maritime Policy and Management*, Vol. 33, 301-320.
- Graham, J.R. and Harvey, C.R. (2001). The Theory and Practice of Corporate Finance: Evidence from the Field, *Journal of Financial Economics*, vol. 60, 187-243.
- Grammenos, C. (2002). Credit Risk, Analysis and Policy in Bank Shipping Finance. In: Grammenos, C. (Ed.) *The Handbook of Maritime Economics and Business*, London: LLP Publications.
- Grammenos, C. and Xilas, E.M. (1996). *Shipping Investment and Finance*, Course manual, Department of Shipping, Trade and Finance, City University Business School, London.
- Grammenos, C. and Arkoulis, A. (2003). A Cross-Section Analysis of Stock Returns: The Case of Shipping Firms, *Maritime Policy & Management*, Vol. 23, 67-80.
- Kavussanos, M. G. and Marcoulis, S.N. (2001). *Risk and Return in Transportation and Other US and Global Industries*, Dordrecht, Netherlands: Kluwer Academic Publishers.
- McConville, J. and Leggate, H.K. (1999) *Bond Finance for the Maritime Industry*, paper presented at the International Association of Maritime Economists Annual Conference, Halifax, Canada, 13-14 September.
- Modigliani, F. and Miller, M.H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment, *American Economic Review*, Vol. 48, 261-97.
- Myers, S.C. and Majluf, N.S. (1984) Corporate Financing and Investment Decisions When Firms Have Information Investors do not Have, *Journal of Financial Economics*, Vol. 13, 187-222.
- Myers, S.C. (1984). The Capital Structure Puzzle, *Journal of Finance*, Vol. 39, 575-92.
- Nunnally, J. C. (1978). *Psychometric theory*, 2nd edition, New York: McGraw-Hill.
- Orfandis, A. (2004). Shipping Finance: Approach to the Hellenic Market. Dissertation, National Technical University of Athens.
- Saaty, T.L. (1980). *The Analytic Hierarchy Process*, New York: McGraw-Hill

- Saaty, T.L. (1986). Axiomatic Foundation of the Analytic Hierarchy Process, *Management Science*, Vol. 32, No.7, 841-855
- Stokes, P. (1996). Problems Faced by the Shipping Industry in Raising Capital in the Securities Markets, *Maritime Policy & Management*, Vol. 23, 397-405.
- Stokes, P. (1997). *Ship Finance: Credit Expansion and the Boom-Bust Cycle*, London: Lloyd's of London Press.
- Stopford, M. (1997). *Maritime Economics*, New York: Routledge.
- Song, D. W. and Yeo, K. T. (2004). A competitive analysis of Chinese container ports using the analytic hierarchy process, *Maritime Economics & Logistics*, vol. 6, 34-52.
- Syriopoulos, T. (2007). Financing Greek Shipping: Modern Instruments, Methods and Markets, *Research in Transportation Economics*, Vol.21, 171-219
- Wong, P.C., Yan, H. and Bamford, C. (2008). Evaluation of Factors for Carrier Selection in the China Pearl River Delta, *Maritime Policy & Management*, Vol. 35, 27-52.
- Williamson, O. (1985). *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, New York: Free Press.
- Williamson, O. (1996) Corporate Finance and Corporate Governance, *Journal of Finance*, Vol. 43, 567-591.