Feasibility Research On Ship's Finance

Bachelor's Thesis

Maran Atlas's Case Study
A financial credit analysis and the commonest used fund method.

Merchant Marine Academy of Macedonia
Deck Department

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ΑΚΑΔΗΜΙΑ ΕΜΠΟΡΙΚΟΥ ΝΑΥΤΙΚΟΥ
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Με ατομική μου ευθύνη δηλώνω υπεύθυνα και έχοντας επίγνωση των συνεπειών του νόμου στην περίπτωση που ψεύδομαι, ότι η παρούσα πτυχιακή εργασία είναι εξ' ολοκλήρου δικό μου έργο και κανένα μέρος της δεν είναι αντιγραμμένο από έντυπες ή ηλεκτρονικές πηγές, μετάφραση από ξενόγλωσσες πηγές ή αναπαραγωγή από εργασίες άλλων ερευνητών ή φοιτητών, δίχως να αναφέρεται η εκάστοτε παραπομπή. Όπου έχω βασιστεί σε ιδέες ή κείμενα άλλων, έχω δώσει τη δέουσα προσοχή με όλες μου τις δυνάμεις να το προσδιορίσω σαφώς μέσα από τη σωστή χρήση παραπομπών και βιβλιογραφικών αναφορών ακολουθώντας πάντα την ακαδημαϊκή δεοντολογία.

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Merchant Marine Academy of Macedonia
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My uncle John Pitsimakis for the original art of this thesis’s cover.

A Corporate Underwriter (Shipping Division) of a Greek Bank[1].

M/V Navios Herakles
M/V Wanda A
M/V Paris Jr
M/V Milos
I am delightful I met all those officers, and crew of the above mentioned vessels, and I had the chance to be toured in those vessels.

Closing up, I have to express my thankfulness to my family which supported me financially, and even more morally as well as for their understanding, and interest throughout my attempt which began on April 2015.

Konstantinos
Konstantinidis

[1] The name of the Corporate Underwriter as well as the name of the Greek Bank cannot be published due to confidentiality.

To my beloved mother,
Zacharo Zaloumi

Abstract

This thesis deals with the momentous issue of ship finance. In a country like Greece with the biggest shipping industry worldwide in terms of deadweight, the shipping finance plays a key role in the construction and the future of a ship. More specifically the shipping finance is being elaborated in terms of debt in the form of a mortgaged loan as well as a syndicated loan from commercial banks. Reader is able to understand better what is important and what are the requirements for a bank with the purpose of lending a ship owner, through the description of the procedure followed by banks for the control of ship owners' creditability through a credit analysis. Another key point of this paper refers to the procedure followed in order to finance the investment plan as a "project finance". Optimal strategies of borrowers accompanied by banks' practices constitute a war between them in a dance combination where both seeking supremacy. In light of global trade and its growth, everyone is trying to become a winner. In order to increase their profits, it is often for both of them to do what they know best, cooperate. Cooperate in the light not only of a loan, but also in many other and complex relationships. At the acme of this cooperative behavior is the synapsis of a loan and eventually finance the case study's vessel M/T Case Study which is a patchwork of existing M/T Maran Atlas and my necessary assumptions for the simplistic description of how an aframax managed to be constructed and eventually worked through the years of financial crisis with the help of a time chartering.

Keywords: Feasibility Research/ Study, Ship Finance, Case Study, Credit Analysis, Aframax

Abstract in Greek

Η παρούσα πτυχιακή εργασία πραγματεύεται το βαρυσήμαντο θέμα της ναυτιλιακής χρηματοδότησης. Σε μια χώρα όπως η Ελλάδα με τη μεγαλύτερη ναυτιλία παγκοσμίως, η ναυτιλιακή χρηματοδότηση παίζει βασικό ρόλο για την κατασκευή αλλά και ύπαρξη ενός πλοίου. Πιο συγκεκριμένα, αναπτύσσεται διεξοδικότερα η ναυτιλιακή χρηματοδότηση υπό όρους χρέους με τη μορφή των ενυπόθηκων καθώς και αυτών, των κοινοπρακτικών δανείων από εμπορικές τράπεζες. Δίνεται η δυνατότητα στον αναγνώστη να καταλάβει καλύτερα το τι είναι σημαντικό και υποχρεωτικό για μία τράπεζα με σκοπό της την δανειοδότηση ενός πλοιοκτήτη μέσω της περιγραφής της ακολουθούμενης διαδικασίας για τον έλεγχο από την τράπεζα της πιστοληπτικής ικανότητας του εκάστοτε πλοιοκτήτη. Ένα άλλο βασικό σημείο της παρούσας εργασίας αναφέρεται και στη διαδικασία που ακολουθείται με τελικό σκοπό την χρηματοδότηση του επενδυτικού πλάνου. Οι βέλτιστες στρατηγικές των δανειοληπτών μαζί με τις πρακτικές των τραπεζών συνθέτουν τον πόλεμο των δύο σε ένα συνδυασμό χορού όπου και οι δύο αναζητούν τα πρωτεία. Υπό το φως της παγκόσμιου εμπορίου καθώς και της ανάπτυξής του, προσπαθεί ο καθένας να βγει κερδισμένος, και συχνά για να βγουν σημαντικότερα κερδισμένοι και οι δυο κάνουν αυτό που ξέρουν καλύτερα, συνεργάζονται. Συνεργάζονται υπό το πρίσμα όχι μόνο ενός δανείου αλλά πολλών και περίπλοκων σχέσεων μεταξύ τους. Στο απόγειο της συνεργατικής αυτής συμπεριφοράς τους βρίσκεται η σύναψη ενός δανείου και η χρηματοδότηση τελικά του πλοίου της μελέτης περίπτωσης M/T Case Study το οποίο αποτελεί ένα συνονθύλευμα του υπάρχοντος M/T Maran Atlas και των αναγκαίων παραδοχών μου με σκοπό την απλοϊκή περιγραφή του πως ένα aframax κατάφερε να κατασκευασθεί και τελικά ανταπεξήλθε τα χρόνια της οικονομικής κρίσης με τη βοήθεια μίας χρονοναύλωσης.

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Chapter 2: Thesis's method

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Disclaimer: Hereunto thesis was devised only for educational purposes and the relating data might not be fully accurate. They should not be used for other purposes but educational.
Interviews are not presented as appendix in this paper because of confidentiality.
Ideas illustrated in this thesis represents author’s perspectives at the time which this paper published for the first time.

Abbreviations

APA: American Psychological Association
AUTh: Aristotle University of Thessaloniki
DWT: Deadweight Tonnage
EURIBOR: Euro Interbank Offered Rate
GT: Gross Tonnage
HELPE: Hellenic Petroleum Company
HHI: Hyundai Heavy Industries
IACS: International Association of Classification Societies
ISM: International Safety Management
ISPS (Code): International Ship & Port Facility Security (Code)
LIBOR: London Interbank Offered Rate
LOA: Length Over-All
MTC: Maritime Training Center
MTM: Maran Tankers Management Inc.
NTUA: National Technical University of Athens
OALD: Oxford Advanced Learner's Dictionary
P&I: Protection and Indemnity
PoT: Port of Thessaloniki
TELOS: Technical Feasibility, Economic Feasibility, Legal Feasibility, Operational Feasibility, Schedule Feasibility
ThPA: Thessaloniki Port Authority
UNCTAD: United Nations Conference on Trade and Development
UoM: University of Macedonia
USD: United States Dollar

Glossary[2]

1. **Aframax.** Tanker carrying around 0.5 million barrels of oil, but usually applied to any tanker of 80,000-120,000 dwt (name derived from old AFRA chartering range).

2. **Auxiliary engines.** Small diesel engines on the ship mainly used to drive alternators providing electrical power. They generally use diesel oil. Ships generally have between three and five, depending on electricity requirements.

3. **Ballast.** Sea water pumped into carefully located ballast tanks, or cargo spaces, when the ship is not carrying cargo, to lower the ship in the water so that the propeller is sufficiently submerged to perform efficiently.

4. **Bulk carrier.** Single-deck ship which carries dry cargoes such as ore, coal, sugar or cereals. Smaller vessels may have their own cranes, whilst larger sizes rely on shore based equipment.

5. **Bare-boat charter.** Similar to a lease. The vessel is chartered to a third party, who to all intents and purposes owns it for the period of the charter, provides the crew, pays operating costs (including maintenance) and voyage costs (bunkers, port dues, canal transits dues, etc.) and directs its operations.

6. **Bunkers.** Fuel oil used by ship's main engine (auxiliaries use diesel).

7. **Charterer.** Person or company who hires a ship from a ship owner for a period of time (time charter) or who reserves the entire cargo space for a single voyage (voyage charter).

8. **Classification society.** Organization, such as Lloyd's Register, which sets standards for ship construction; supervises standards during construction; inspects the hull and machinery of a ship classed with the society at regular intervals, awarding the 'class certificate' required to obtain hull insurance. A ship with a current certificate is 'in class'.

9. **Container.** Standard box of length of 20 or 40 ft., width 8 ft. and height 8 ft. 6 in. High cube containers are 9 ft. 6 in. high and container-ships are usually designed to carry some of these.

10. **Container-ship.** Ship designed to carry containers, with cell guides in the holds, where the containers are lowered. Containers carried on deck are lashed and secured.

11. **Deadweight.** The weight a ship can carry when loaded to its' marks, including cargo, fuel, fresh water, stores and crew.

[2] Stopford, M. (2009). *Maritime economics*. 3rd Edition (London: Routledge) p. xxi

12. **Freight rate.** Amount of money paid to a ship owner or shipping line for the carriage of each unit of cargo (lone, cubic meter, or container load) between named ports.

13. **LIBOR.** London Inter-Bank Offered Rate, the interest rate at which banks raise funds on the Eurodollar market.

14. **Operating Costs (OPEX).** Expenses involved in the day-to-day running of the ship and incurred whatever trade the ship is engaged in. These include crew wages and expenses, victualing, stores, spares, repairs, and maintenance, lubricants and insurance.

15. **P& I club.** Mutual society which provides third party insurance to ship owner members.

16. **Reefer.** Insulated cargo ship for carrying refrigerated food, either frozen or chilled.

17. **Spot rate.** Negotiated rate per unit (tone, cubic meter, etc.) of cargo paid to the ship owner to carry specific cargo between two ports, say US Gulf to Japan. Voyage costs are paid by the ship owner.

18. **Tanker.** Ship designed for the carriage of liquid in bulk with cargo space consisting of several tanks. Tankers carry a wide variety of products, including crude oil, refined products, liquid gas and wine. Parcel tankers have a separate pump and cargo lining for each tank so that many cargo parcels can be carried separately in the ship.

19. **Time charter.** A transportation contract under which the charterer has the use of the vessel for a specific period. A fixed daily or monthly payment is made for the hire of the vessel, for example $20,000 per day. Under this arrangement, the owner manages the day-to-day running of the ships, and pays the operating and capital costs. The charterer pays fuel, port charges, loading/discharging fees and other cargo-related costs and directs the ship operations.

20. **Tone.** Metric ton, equivalent to 1,000 kilograms or 2,240 lbs.

21. **Voyage costs.** The cost of fuel, port expenses and canal costs which are specific to the voyage. On a voyage charter where the ports are specified they are generally included in the negotiated spot rate and paid by the ship owner. On a time charter where the ports are not known in advance they are paid by the charterer.

Theoretical Part

Part One
The Lighthouse

1 The Lighthouse

"The study of error is not only in the highest degree prophylactic, but it serves as a stimulating introduction to the study of truth."

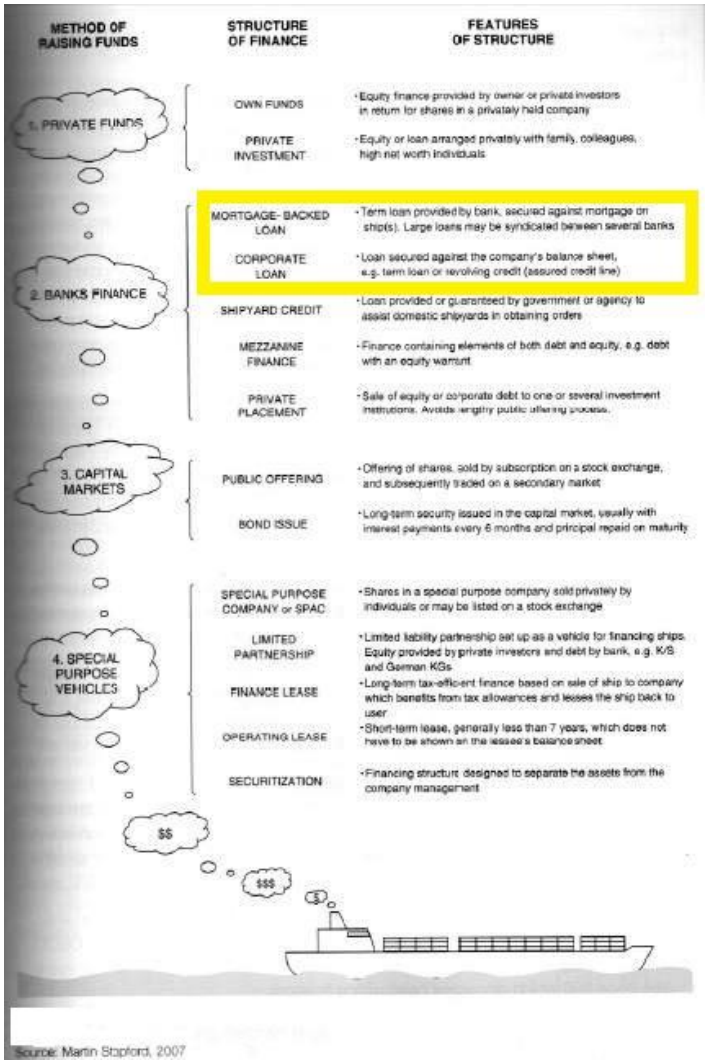
Walter Lippmann

Introduction

An ecstatic world

The Big Project

Shipping is one of the most ecstatic industries all over the world. Around 90% of world trade is carried by the international shipping industry[3]. This seaborne trade is still the most efficient way to transport goods and commodities across the world. This can be easily understood by everyone of us if we take an account of (Figure i) which illustrates the growth of cargo shipped by vessels. The whole marine industry is 'hover around' the main asset. This asset is called vessel, vessel is a feminine noun, and this owing to many different reasons. Vessels are expensive, really expensive and that is why many ship owners prefer to use debt rather than equity for their investments. Despite the above fact there are many different ways to fund a ship. According to Martin Stopford there are at least 14 different methods of financing a vessel distributed under 4 basic ideas -private funds, banks finance,



Picture i 14 different methods of financing a ship.

[3] http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade retrieved on 6th of April 2016.

capital markets and special purpose vehicles-, (Picture i). In this thesis basic principles of debt financing will be elaborated as of banking lenders who incorporate to establish a mortgage- backed loan or a corporate -syndicated- loan, and we will discuss about the feasibility research for each investment to ships as well as the essential parts of common used methods for a credit analysis as part of project finance. In addition, a case study of a time chartered Aframax which funded against a bank loan will be used in order to examine how efficient was this ship for the company, and simple assumptions will be made on how this investment can be repaid back by the shipowning- shipmanagement company.

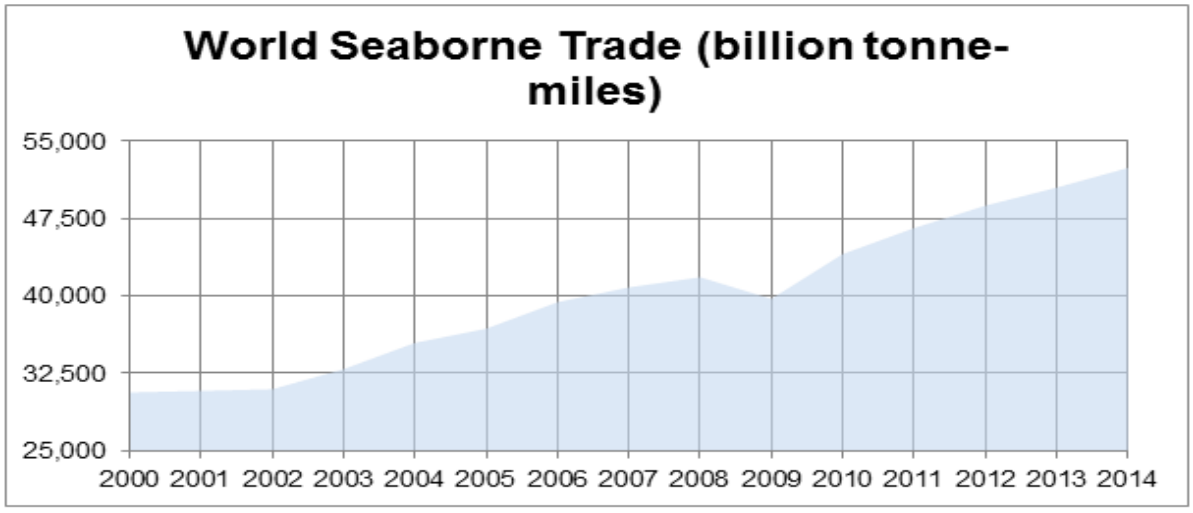


Figure i World Seaborne Trade -an increasing trend.-[4]

[4] http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade/world-seaborne-trade retrieved on 6th of April 2016.

Chapter 1

Shipping cycles' structure

"You can't cross the sea merely by standing and staring at the water."

Rabindranath Tagore

All the way round

The aim of the first chapter is to define some of the fundamental features of the shipping industry in general. Shipping is one of the most capital intensive industry worldwide. It is a fact that shipping industry is always fluctuating, in maritime business this trend of variation is called shipping cycle. Shipping cycles are alive, and behave as creatures. They have their own entity, and they are too strong, or else strong enough to define global trade, worldwide transportation, markets or even our lives. They are able to promote one's nation prosperity whereas they can force nations in starvation. But why those shipping cycles are so brutal? Is it because of their complexity or they are being resourced by their own means of power? I would say both. Shipping cycles are so complex, something that makes them so difficult to understand them. According to Martin Stopford there are four basic markets that control shipping cycles, and shipping in general[5]. First comes 'The Freight Market' determined by charterers, secondly is 'The Sale & Purchase Market' controlled by ship owners, 'The Shipbuilding Industry' comes third as shipyards define it, and last but not least is 'The Demolition Market' which regulated by demolition yards. As a fluctuating pattern a typical shipping cycle consists of a trough, a

STAGES IN A 'TYPICAL' SHIPPING CYCLE

Stage 1: *Trough*. A trough has three characteristics. Firstly, there are clear signs of surplus shipping capacity with ships queuing at loading points and sea slow-steam to save fuel. Secondly, freight rates fall to the operating cost of the least efficient ships, which move into lay-up. Thirdly, as low freight rates and tight credit produce negative cashflow, financial *pressures* build up, leading to stagnation as tough decisions are put off, and finally distress as market pressures overwhelm inertia. In extreme cycles banks foreclose and shipping companies are forced to sell modern ships at *distress* prices well below their book value, to raise cash. The price of old ships falls to the scrap price, leading to an active demolition market and the seeds of recovery are sown. As the wave of difficult decisions passes and the market starts to correct, a state of *quiescence* sets in.

Stage 2: *Recovery*. As supply and demand move towards balance, freight rates edge above operating costs, and laid up tonnage falls. Market sentiment remains uncertain, but gradually *confidence grows*. Spells of optimism alternate with doubt about whether a recovery is really happening (sometimes the pessimists are right, as shown by the false recovery in periods 7 to 9 in Figure 3.2). As liquidity improves, second-hand prices increase and sentiment firms as markets become *prosperous*.

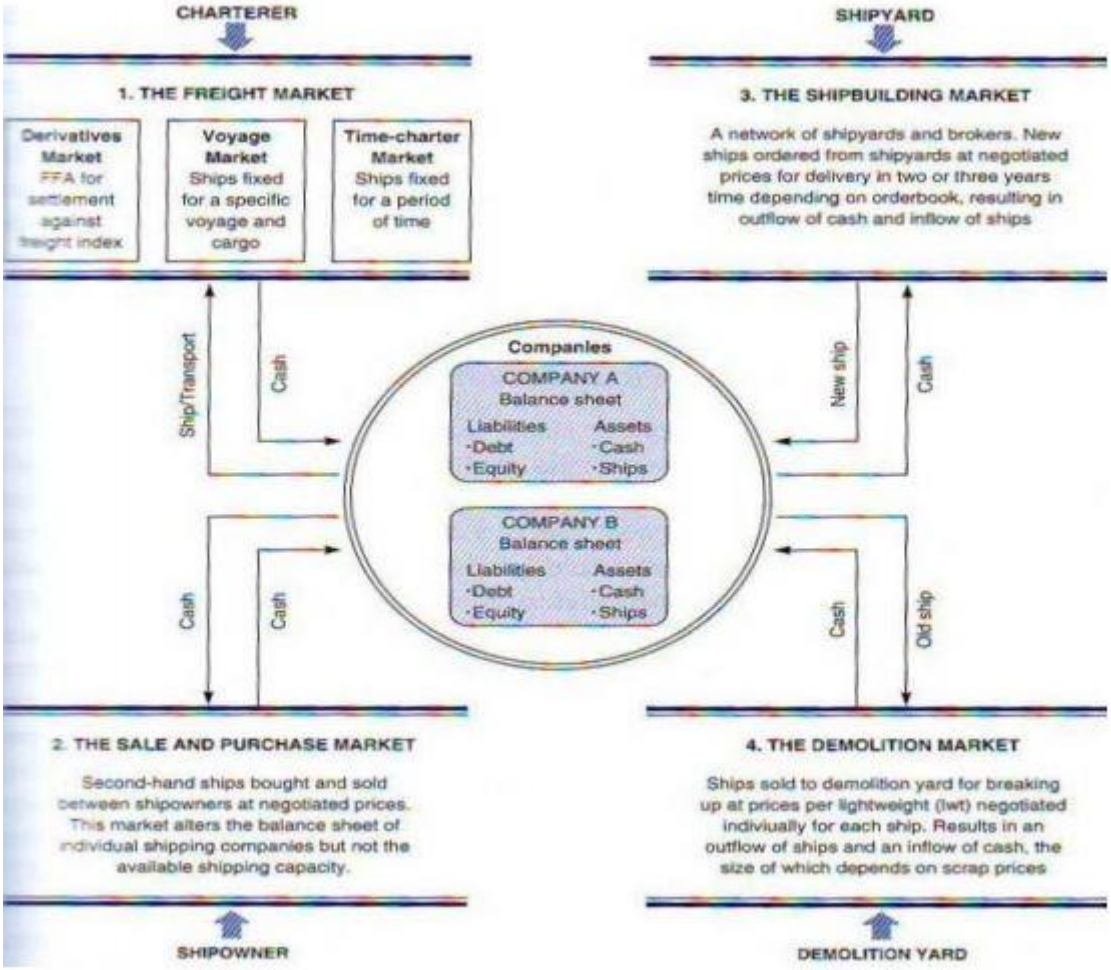
Stage 3: *Peak/Plateau*. As the surplus is absorbed supply and demand tighten. Only untradable ships are laid up and the fleet operates at full speed. Freight rates rise, often two or three times operating costs, or on rare occasions as much as ten times. The peak may last a few weeks (see periods 5–6 in Figure 3.2) or several years (see periods 12–15 in Figure 3.2), depending on the balance of supply–demand pressures, and the longer it lasts the more the excitement increases. High earnings generate excitement, increasing liquidity; banks are keen to lend against strong asset values; the international press reports the prosperous shipping business with talk of a 'new era'; and shipping companies are floated on the stock market. Eventually this leads to *over-trading* as second-hand prices move way above their replacement cost, modern ships sell for more than the newbuilding price and older ships are bought without inspection. Newbuilding orders increase, slowly at first, and then rapidly until the only berths left are three or four years ahead, or in unattractive shipyards.

Stage 4: *Collapse*. As supply overtakes demand the market moves into the collapse (convulsion) phase and freight rates fall precipitately. This is often reinforced by the business cycle downturn, but other factors contribute, for example the clearing of port congestion, the delivery of vessels ordered at the top of the market, and in depressions we generally find these factors reinforced by an economic shock. The oil crises of 1973 and 1979 are prominent examples. Spot ships build up in key ports. Freight rates fall, ships reduce operating speed and the least attractive vessels have to wait for cargo. Liquidity remains high and there are few ship sales since owners are unwilling to sell their ships at a discount to recent peak prices. Market sentiment is initially confused, changing with each rally in rates and reluctant to accept that the peak is over.

Picture ii Stages of a shipping cycle according to Martin Stopford.

[5] Stopford, M. (2009). *Maritime economics*. 3rd Edition (London: Routledge) p.177-80

recovery period, from then and on it reaches a peak/plateau, and last comes the collapse of the prosperous epoch. In my thesis I will focus on the third stage of a 'typical' shipping cycle as this step is the green light for financing a vessel. Specifically, in this period of time which can last a few weeks or even several years in some occasions there are freights two to three times higher than the regular operating cost. Due to high earnings, there is an increasing liquidity for most of the companies, and banks are eager to lend as much as they can. Second-hand prices rise as new-buildings. In that time new-building orders present a sharp boost by numbers of vessels and as well deadweight does.



Picture iii Analysis of the main contributing factors of a shipping cycle.[6]

Every prospective ship owner should examine the future expectations of his investment, there comes feasibility study, because of its complexity it is common to be called by many as a research because it presents many different aspects of the same asset –vessel-. But let us

[6] Stopford, M. (2009). *Maritime economics*. 3rd Edition (London: Routledge) p.179

penetrate to the basic parts of a feasibility study. A notorious acronym appoints the aspects of feasibility. It is called TELOS which stands for: Technical Feasibility, Economic Feasibility, Legal Feasibility, Operational Feasibility, and Schedule Feasibility.

In the first chapter, the complexity of shipping industry was described as well what is the main idea before firsts strands of every ship owner who want to invest money for a new vessel to get started.

Chapter 2

Thesis's Method

"It's the way I study - to understand something by trying to work it out or in other words, to understand something by creating it. Not creating it one hundred percent, of course; but taking a hint as to which direction to go but not remembering the details. These you work out for yourself."

Richard P. Feynman

The First Idea

After a little brain storming along with Mr. Nick Adamopoulos about the title, it finalized to "Feasibility Research On Ship's Finance" as the first general title. As customization seemed to me mandatory after the guidance from operation department of MTM, where they encouraged me to be more specific to one of the three main ideas (Operation/ Management- Technical- Financial), I chose financial. Methodology, to begin with this chapter will focus on the employed methods to achieve the thesis aims, and objectives. To paraphrase, it describes the research from the beginning all the way till the accomplishment of this paper. Moreover, it defines the limitations of my study.

Let us go back in 2015, when this thesis drew its first ideas, as the subject of funding a vessel which cost many millions brought my attention to it. The first thought was to make a bibliographic thesis, then another brilliant idea came to my mind, it would be a bibliographic research accompanied by a questionnaire. To put it in a nutshell, secondary and primary would make the ideal result for this thesis. Unfortunately, this seemed hard to pull through, not only according to my deficient knowledge on the forming of a successful questionnaire, but also due to low budget, thus the truly first idea would become reality. For reason of convenience, the research was divided into two phases. The first one was a secondary research, while the second one involved data compilation, conclusions and recommendations.

Phase one: Secondary Research

In order to achieve the first phase, secondary sources were collected through electronic and mechanical means, and utilized in order to illustrate the general knowledge which is in existence today. By use of this method, broader knowledge and general understanding was

Talking for info

achieved, as this is the main reason of each thesis· AUTh's library was a real helper along with Nick Adamopoulos from operation department of MTM as of bibliography. Books, previous researches and papers helped me significantly to achieve the goal of this thesis. It was vital for me to acquire the dominant beliefs regarding the subject, and to form the aims and objectives of my thesis. The information was gathered from several excellent postgraduates' theses from Department of Maritime Studies - University of Piraeus, NTUA, and UoM after an interview with Stavros Hatzigrigoris Managing Director of MTM and a Corporate Underwriter[7] (Shipping Division) of a Greek bank. Archives and markets' papers fulfilled the need for more information.

Phase Two: Compilation of findings, Analysis, Discussions, Conclusion & Recommendations

One step before the last task of phase two, was the compilation of all findings, their interpretation and analysis. As nearing to the end, a conclusion of all ideas, beliefs, findings and a recommendation for further more detailed and proved research found a necessity. Due to lack of different perspectives on the subject, it was compulsory to include a great variety of resources and not only those resources which are close to this disquisition.

[7] The name of the Corporative Underwriter cannot be published due to confidentiality of the information

Theoretical Part

Part Two
It Takes Two To Tango

2 It Takes Two To Tango

"You look at your bank account, and you see the currency of love and happiness is more important than the currency of money."

Richie Sambora

Chapter 3

Step by Step, Jump by Jump

Coming closer to finance an investment on a vessel using debt and more specifically using bank lending -commercial banks- as a fund method, extra guarantees will be needed for the lender as commercial banks are interesting for a project (vessel/s) which stables annual return. In order for a ship owner to convince a commercial bank to lend him money, he should be able to present himself and his corporate group as solvent. By being solvent, the ship owner enables the bank to invest on him and his business. Most of shipping investments are being funded by the traditional way of loans by commercial banks. Commercial banks and shipping industry are working together for many years now, not only for funding of ship owners' investment plans, but also ship owners use those banks to withdraw their freights, to pay voyage costs, to make transactions through foreign currencies and receive financial information and guidance[8]. As shipping is one of the most intensive capital industry with high risk, what make banks to fund projects like these? Banks are keen on lending ships for reasons like, risk dispersion, bigger profits and lastly improve their cross selling[9]. Five 'C's are compulsory requirements for banks to fund a project.

[8] Γουλιέλμος, Α Μ. (2007). *Χρηματοδότηση Ναυτιλιακών Επιχειρήσεων*. Αθήνα: Αθ. Σταμούλης. p.265
[9] http://www.martrans.org/educational/notes/introfinance/.pdf retrieved on 5th of November 2015

"The Five 'C's of Credit Analysis"[10]

5 Cs or
5 Difficulties?

Character (Excellent Character)

Reputation and integrity of the borrower are considered as two fundamental elements of excellent character's description. Bank will seek for previous contracts of lending in order to check whether ship owner was punctual in his repayments in past time.

Capacity (Sovereign Manager)

This 'C' includes Manager's profile. It describes and takes into account the actions of a Manager as well as how this Manager faced previous crisis and how competent he is. Bank try to understand the mentality of the Manager and business plans of the managing company in short term as well as long term.

There are two separate components as sub-categories in the above stage:

- Investment & Finance: Bank looking for the fluidity and cyclicality of the shipping markets in relation to its prospective customer. The current fleet and the reason of acquiring the new vessel are two further elements that bank take into consideration in order to give a loan.
- Chartering: Is one of the most significant points of a credit analysis. It shows and forecasts the cash-flow of the vessel and the company. Long term time charter at a good freight is a positive signal which assures the income of the vessel/ company, at the same time guarantees the capability of the ship owner to payback his debt.
- Costs: Analysis of costs are based on the:
  i. Operational Costs
  ii. Way of management, staff efficiency & in what extend safety matters are being taken into consideration
  iii. Maintenance Costs
  iv. Insurances' Costs
  v. Managerial Costs -in terms of income maximization-

[10] Παπαδόπουλος, Γ. *Shipping Industry: Islamic banking vs. West banking.* (Master's thesis, University of Piraeus). Piraeus. p.13-16

- Hedging & Risk Minimization: Fluidity of shipping markets in conjunction with high risk is a further aspect for a bank
- Debtors & Creditors: In this phase, bank analyze the credibility of the company. Past report of a ship attachment plays an important role in the final decision.

For instance: Piraeus Bank[11] uses the below mentioned formula to determine ship owner's future credit capability (mortgage loan):

$$\frac{Operating\ Expenses + Dead\ Service\ Payments\ (interest + capital)}{362\ Days\ (ship's\ working\ days)}$$

The result of the above fracture will conclude vessel's profitability and in what extend company will be able to manage payback the loan of the vessel.

Capital (Owner's Equity)

In this stage, it is being decided the equity the owner will contribute to his project as percentage of the total investment. In the past, a common percentage was at least 50%, but year by year this changed and today some loans fund up to 80% of the total investment.[12]

Collateral (Sufficient Guarantees)

This part consists of guarantees of the borrower to lender, a mortgage on vessel is a common practice as well as on other company's assets.

Conditions (Favorable Conditions)

Global economy and political background are two factors that can affect significantly the shipping markets. Such conditions which influence markets are being analyzed by specialized reports (like demand/supply, freights, legal aspects and prospective changes in legislation,

[11] Γιούργη Μ., Τράπεζα Πειραιώς (interview), Παπαδόπουλος, Γ. *Shipping Industry: Islamic banking vs. West banking.* (Master's thesis, University of Piraeus). Piraeus. p.15

[12] Παπαγεωργίου Κλ., Εθνική Τράπεζα (interview) Παπαδόπουλος, Γ. *Shipping Industry: Islamic banking vs. West banking.* (Master's thesis, University of Piraeus). Piraeus. p.16

business competitiveness etc.). Marsoft is a typical example for Piraeus Bank.[13] Below, the table will help us to understand the size of Greek shipping portfolio using 5Cs' practice during the previous 15 years, but how many banks convinced by Greek owners each year to lend them money? The answer is stated in Figure ii.

Table i The development of Greek ship finance over the last 15 years it is being cited.

	Dec 2001	Dec 2002	Dec 2003	Dec 2004	Dec 2005	Dec 2006	Dec 2007	Dec 2008	Dec 2009	Dec 2010	Dec 2011	Dec 2012	Decr 2013	Dec 2014	Dec 2015
Growth %		28.66%	20.19%	26.61%	11.62%	28.45%	44.31%	9.39%	-8.478%	-1.17%	2.20%	-2.83%	-6.51%	4.1%	-2.04%
Total Greek Shipping Portfolio	$16,525m	$21,261m	$25,554m	32,353m	$36,112m	$46,387m	$66,941m	$73,228m	$67,020m	$66,235	$67,694	$65,780	$61,498	$64,019.47	$62,711.51
Petrofin Bank Research © - April2016															

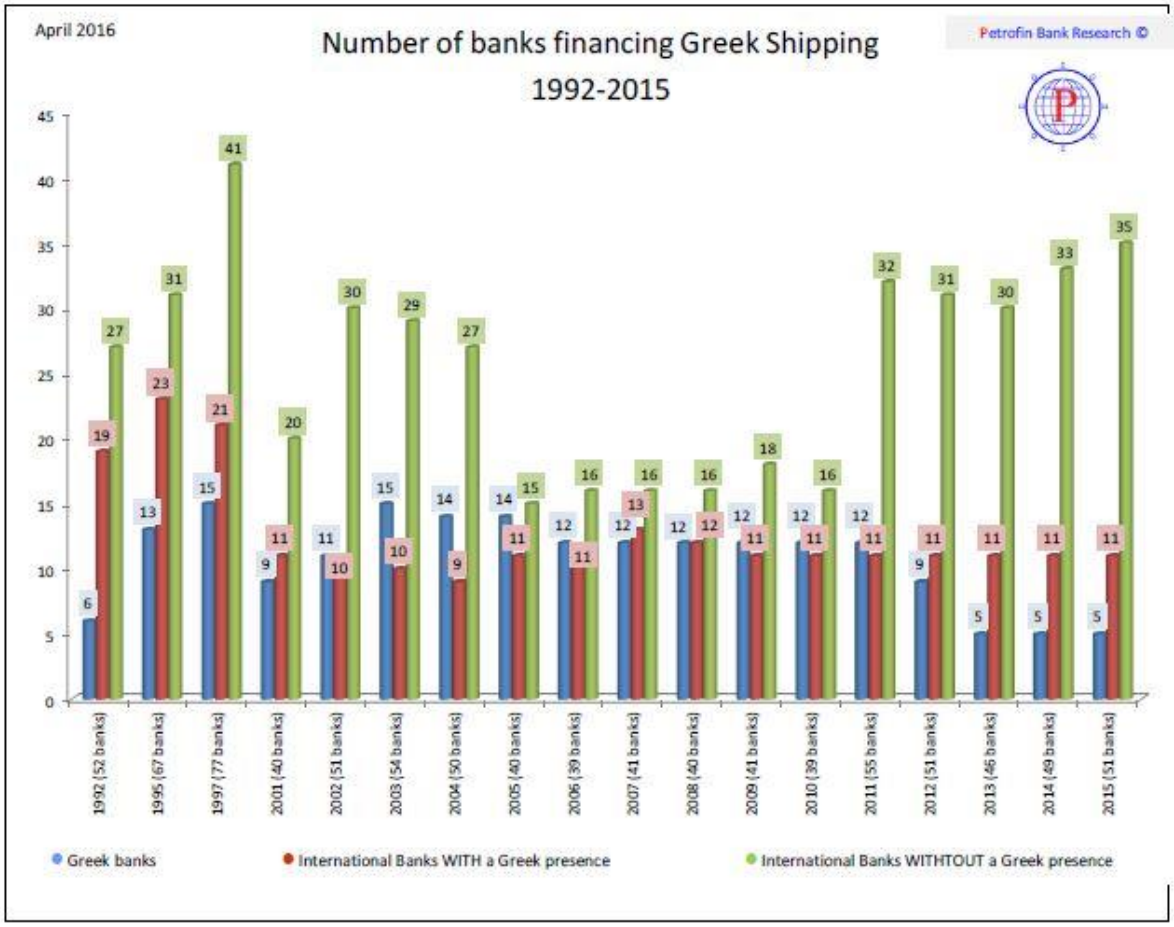


Figure ii Number of banks investing in Greek Shipping.

[13] Γιούργη Μ., Τράπεζα Πειραιώς (interview), Παπαδόπουλος, Γ. *Shipping Industry: Islamic banking vs. West banking.* (Master's thesis, University of Piraeus). Piraeus. p.16

Chapter 4

The Reality Part

"The secret of business is to know something that nobody else knows."

Aristotle Onassis

How does it work?

In the 1st chapter basic aspects of feasibility research stated in general. But in what extend this kind of feasibility study is applicable in shipping? In shipping market, it is known that maritime accounting is completely different to general accounting undoubtedly[14]. As those two accountancies differ in such a way, feasibility research on ship's finance differ from all other feasibility studies too· in terms of fields that the study includes. Indeed, they are pretty much variant between each other. The most important technical feasibility is being carried by shipyards, economic mainly from lenders through a credit analysis[15] as well as from ship owning company, while legal from both company and lender, operational aspect is accomplished by ship owning company and then from lender. Schedule feasibility is a combination of all three involved parties. There come the intelligence services through Clarksons, Lloyd's List Intelligence or Marsoft, which collect and analyze various information from politics to nations' economies and from new-building industry to demolition markets and freights. Banks, ship owners and shipyards are being guided by information from shipping intelligence services as we mention them above. It is a fact that ship owners do not always follow markets' rules. In detail they act with their own insight, this is the most important part of a feasibility study[16]. In other words, a ship owner can do whatever he wants –in terms of financing- and this is because he is able to do it· he can choose to fund a worse vessel –as an investment- because he has 'the feeling that this investment will succeed' whereas he can decide not to finance a generally good ship due to his 'bad feeling'. From time to time there are investments with only basic preparation from a ship owner as talking for feasibility studies in order to catch-up the proper time for the investment.

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[14] Σαμπράκου, Ε. Α, & Γιαννόπουλου, Ι. Γ. (2008). *Οικονομική Εκμετάλλευση Πλοίου*. Αθήνα: Ίδρυμα Ευγενίδου. p.58

[15] Credit Analysis according to my research will be elaborated and analyzed later in the next chapter, common used methods by banks might as well.

[16] Extracted after e-mail contact with Mr. Nick Adamopoulos MTM Deputy Operation Manager

Empirical Part

Part Three
Ship Owners vs Bankers

3 Ship Owners vs Bankers

"After a certain point, money is meaningless. It ceases to be the goal. The game is what counts."

Aristotle Onassis

Chapter 5

The million game

In maritime business there are some basic values concerning borrowing from a commercial bank. Some of the strategic steps every successful ship owner follows are shown below:

Optimal Strategies[17] (for owners/borrowers)

1. Have a number of banks; say one bank for every five vessels. Try not to borrow more than $250m from each bank.
2. Give ancillary business only to banks lending to you. In the long run this will reduce your borrowing costs and increase availability of loans.
3. Try to avoid syndicates. They are wholly dysfunctional when it comes to problem solving and often the borrower gets caught between vendettas in different banks and/or actions driven by internal risk appetites. Furthermore, syndicated loans are more expensive in their administration expenses.
4. Always remember relationships are give and take. Try not to take advantage in "borrowers' markets" as this will be remembered in "lenders' markets". In 2006/07 and early 2008 borrowers often "pressurized" their banks into reducing their interest margins threatening to refinance. Until late 2008 these actions were remembered.
5. As possible is, stick to "shipping banks". Avoid banks that place more emphasis on "investment banking". Try to establish long term relationships both with the institution and its staff. Check the number of years of service staff have in ship finance and the years they have been with that institution.

[17] Karakitsos, E., & Varnavides, L. (2014). *Maritime economics: A macroeconomic approach*. (Basingstoke: Palgrave MacMillan) p.270

6. Opt for banks based in countries where shipping and ship finance is important. They are more likely to stay the course and be under less pressure to favor domestic over global business.
7. Forge closer lending relationships with domestic banks but still remember (1) above. Domestic banks usually show preference to their domestic clients as evidenced by the treatment of German clients by German banks in 2009 onwards.
8. Irrespective of the health of shipping departments they will depend on the overall health of the institution to provide capital and funding. This must be monitored. A successful shipping department will still suffer if the parent bank is weak.
9. Look at the other clients of your bank. An owner knows the good and bad in the industry. Avoid banks that have a significant number of bad owners as clients, although we suspect all banks have at least one or two. A shipping bank with bad owners will be the first to fail in a low market causing problems for their good owners too. As the Greeks say "show me your friend and I will tell you who you are". In banking it is "show me your clients and I will tell you what kind of bank you are".

On the other hand, banks' strategies vary as below in order to stay on the safe side. Except 5Cs which is the general rule, some banks:

1. Prefer syndication for risk dispersion.
2. Prefer to lend less money to more ship owners for the same reason as above.
3. Have different policies. Those policies differ for each bank. For instance, one bank is keen on lending money to ship owners with many ship while another prefers ship owners with less vessels and better prestige.
4. Can use swaps[18] or even hedging[19] owing to minimization of the risk for them or even their clients in case of a surge on bunker costs or interest rates.
5. Can choose to invest only on tankers and bulks and exclude other ships such as cruise vessels, container-ships, tugs, reefers and special purpose vessels.

[18] A swap is a derivative contract through which two parties exchange financial instruments. These instruments can be almost anything, but most swaps involve cash flows based on a notional principal amount that both parties agree to. Usually, the principal does not change hands. Each cash flow comprises one leg of the swap. One cash flow is generally fixed, while the other is variable, that is, based on a benchmark interest rate, floating currency exchange rate or index price.

[19] A hedge is an investment to reduce the risk of adverse price movements in an asset. Normally, a hedge consists of taking an offsetting position in a related security, such as a futures contract.

The Confidential Project

As a ship owner has chosen the bank which is going to lend him money based on the above criteria, now it is lender's time. When a new project is afoot, and ship owner apply for a loan, the bank starts a credit analysis[20] as below:

The shipping division of the bank make a proposition with qualitative and quantitative characteristics. Financiers analyze the basic characteristic of the ship (LOA, Beam, Deadweight, Displacement, etc.), and how productive this vessel can be throughout the payback period (An agreed time chartering through the payback period plays a vital role[21] even if it is not mortgaged and cannot be foreclosed by the lender). (Bulk Carriers differ from Tankers in analysis)[22] Moreover, they check the group of companies and not only the ship owning company.[23] Another important factor is the track record of the ship owner, it is even more important when the bank has previously fund ship owner's projects. Bankers try to figure out, if the ship owner keep funding his vessels, and take care of them and their maintenance through photographs of previously owned vessels and vessels' inspection reports. Liquidity is another key factor for banks. They check management's company liquidity as well as company's property and assets.

[20] Most of the commercial banks today use cash flow financing, as a traditional, common and simple way of financing a vessel. This method is also called project financing (fund an investment plan). Γουλιέλμος, Α Μ. (2007). *Χρηματοδότηση Ναυτιλιακών Επιχειρήσεων*. p. 292-3

[21] Time charter is as good as charterer. Γουλιέλμος, Α Μ. (2007). *Χρηματοδότηση Ναυτιλιακών Επιχειρήσεων*. p. 293

[22] Interview with unnamed Corporate Underwriter (Shipping Division) on 26th of January 2016.

[23] The reason for this is that: It has long been the practice in the shipping business to arrange for several ships which are financed by a common source and managed or operated as a fleet, to be registered in the names of separate companies whose only asset is the particular ship registered in its name. Often such companies will be registered in a country where the identification of shareholders in companies is not a matter of public record. This arrangement has become known colloquially as the "one-ship- company" and has been a source of irritation to cargo interests and others who consider that they are thereby deprived of the benefit of the sister ship provisions. However, it is clear that the courts have recognized that the "one-ship company" is a legitimate business arrangement, and in the absence of evidence of fraud it is not permissible to lift the corporate veil in order to look behind the "one-ship company" structure for the purposes of identifying the beneficial owner of the company and say that the beneficial owner of the company is the beneficial owner of the ship. In law the beneficial owner of the ship is the company, which is a separate and distinct legal entity or person from the beneficial owner of the company." retrieved from http://admiraltypractice.com, Chapter 85, 8th Edition (2014). One-Ship Companies according to Charikleia's Koulouri thesis Athens (January, 2012) p.18, first time established in order to reduce cost of transportation through time chartering.

The Common Practice

Qualitative Characteristics [24]

Some other quality characteristics are as follow:

- Flag
- Classification Society
- Reputation & Quality of Shipyard
- Technical Aspects of the Ship
- Hull & Machinery Insurance

Quantitative Characteristics[25]

- Financial Analysis of Ship-owning & Management Company[26] (Holding Structure)
- Number of other vessels of corporate group and their financial indices as well as their debts
- EBITDA as a percentage

Or

- what percentage of the loan is being paid back from EBITDA[27]
- Analysis is being undertaken for the last two years at least

Some additional guarantees from ship owner to lender is the company's guaranty and his personal assurance. In case of a previous favor from the lender to the borrower, banks can include a clause in the contract of loan for faster payback. For the above processes banks need audited by a certified public accountant fiscal data. The final stage before the financing of the ship is the set out of final proposal in which seven key issues will be included accompanied by an attached term sheet and a disclaimer making it clear that the offer is subject to various conditions such as credit committee approval.[28]

1. The *amount*, or maximum size of the loan. This depends on security (i.e. the values of the ship, etc.) and the other factors listed below. Normally the advance will be 50-80% of the market value of the ship, depending on its age and the security available. The purpose of the loan and terms on which can be drawn down are defined.

[24] Interview (Phone Call) with unnamed Corporate Underwriter (Shipping Division) on 18th of February 2016.
[25] Interview (Phone Call) with unnamed Corporate Underwriter (Shipping Division) on 22nd of February 2016.

[26] Financial analysts often assess the following elements of a firm:

Profitability
Solvency
Liquidity
Stability

[27] A company's earnings before interest, taxes, depreciation, and amortization.
[28] Stopford, M. (2009). *Maritime economics*. 3rd Edition (London: Routledge) p.287-8

2. The *tenor (term)*, the period over which the loan is to be repaid. Banks prefer to lend for no more than 5-7 years, since the bank funds its loans by borrowing short, despite that longer terms may be approved for strong credits.
3. The *repayment*, which determines how the loan is repaid. This is usually by equal installments, probably every 6 months. For modern ships a 'balloon'[29] repayment may be used to reduce the annual principal repayments (e.g. repay half the principal at the end) and possibly a grace period at the start.
4. The *interest rate*: loans are generally made at a 'spread' over the bank's funding cost, for example, LIBOR for a dollar loan. Spreads range from 0.2% (20 basis points) to 2% (200 basis points).
5. The *fees* charged to cover the bank's costs in arranging and administering the loan. For example, a 1% arrangement fee, charged when the loan is drawn and a commitment fee to cover the cost of tying up the bank's balance sheet, even if the loan is not drawn.
6. The *security*: the loan agreement requires assets to be pledged as collateral to which the bank has legal access if the borrower defaults. This is usually a mortgage on the vessel, but other security may be sought.
7. The *financial covenants*: the borrower pledges to do certain things and not to do others. Affirmative covenants pledge to comply with laws, maintain the condition and the class of vessel held as collateral and maintain the value of collateral relative to the loan. Restrictive covenants limit third-party debt, cash dividends and the pledging of assets to third parties.

[29] An oversized payment due to the end of a mortgage, commercial loan or other amortized loan. Because the entire loan amount is not amortized over the life of the loan, the remaining balance is due to a final repayment to the lender. Balloon payments are often prepackaged into what are called "two-step mortgages." In this type of mortgage, the balloon payment is rolled into a new or continuing amortized mortgage at the prevailing market rates.

Case Study & Conclusion

Part Four
Oil Through An Aframax

4 Oil Through An Aframax

"If the highest aim of a captain were to preserve his ship, he would keep it in port forever."
Thomas Aquinas

Chapter 6

The case

The Costly Project

Table ii World Economic Growth.[30]

World economic growth, 1991–2012[a] (annual % change)

Region/country	1991–2004 average[a]	2008	2009	2010	2011	2012[b]
WORLD	2.9	1.5	-2.3	4.1	2.7	2.3
Developed economies	2.6	0.0	-3.9	2.8	1.4	1.1
of which:						
United States	3.4	-0.4	-3.5	3.0	1.7	2.0
Japan	1.0	-1.0	-5.5	4.4	-0.7	2.2
European Union (27)	2.3	0.3	-4.4	2.1	1.5	-0.3
of which:						
Germany	1.5	1.1	-5.1	3.7	3.0	0.9
France	2.0	-0.1	-3.1	1.7	1.7	0.3
Italy	1.6	-1.2	-5.5	1.8	0.4	-1.9
United Kingdom	3.1	-1.1	-4.4	2.1	0.7	-0.6
Developing economies	4.7	5.3	2.4	7.5	5.9	4.9
of which:						
Africa	3.2	4.8	0.9	4.5	2.5	4.1
South Africa	2.5	3.6	-1.7	2.8	3.1	2.7
Asia	5.9	5.9	4.1	8.4	6.8	5.5
Association of Southeast Asian Nations	4.9	4.0	1.3	8.0	4.5	4.9
China	9.9	9.6	9.2	10.4	9.2	7.9
India	5.9	7.5	7.0	9.0	7.0	6.0
Republic of Korea	5.0	2.3	0.3	6.2	3.6	3.3
Latin America and the Caribbean	2.7	4.0	-2.0	6.0	4.3	3.4
Brazil	2.6	5.2	-0.3	7.5	2.7	2.0
Least Developed Countries (LDCs)	5.2	7.7	5.0	5.8	4.0	4.1
Transition economies	..	5.2	-6.5	4.2	4.5	4.3
of which:						
Russian Federation	..	5.2	-7.8	4.0	4.3	4.7

Source: UNCTAD *Trade and Development Report, 2012*, table 1.1. World Output Growth, 2004–2012.
Notes: [a] Average % change. [b] Forecasts.
Reproduced with the kind permission of UNCTAD Secretariat.

In the previous chapters of this thesis, basic principles of a maritime feasibility study and credit analysis were elaborated. Besides, the commonest used method of shipping finance was illustrated in details, with reference to common applied practices from the side of banks. As the fundamental rules of debt financing -bank loan- were explained, now it is useful to examine a case study. The project finance was called Maran Atlas. Maran Atlas is a typical Aframax. It was built in 2009 in HHI (Hyundai Heavy Industries) Ulsan, Korea. The vessel is under the Greek Flag and is classed from one classification society which is IACS member. Her GT is 56.957. The cost of the above mentioned ship was estimated around 64.000.000$ USD. That period of time was just the beginning of the worldwide economic crisis. (Table ii) shows the economic downturn during the 2009 year. As we can notice economic growth plummeted down to negative indices for most of the developed countries during that era. This made it more difficult for Maran Atlas -from now on Atlas or tanker- to

[30] Branch, A. E., & Robarts, M. (2014). *Branch's elements of shipping*. 9th Edition (London: Routledge) p. 6

withstand the financial crisis which stepped back the whole world. As Atlas is a product oil tanker it would be useful for us to see the probable fluctuation of demand for oil compared to demand for seaborne trade (Figure iii) as well as oil demand alone.

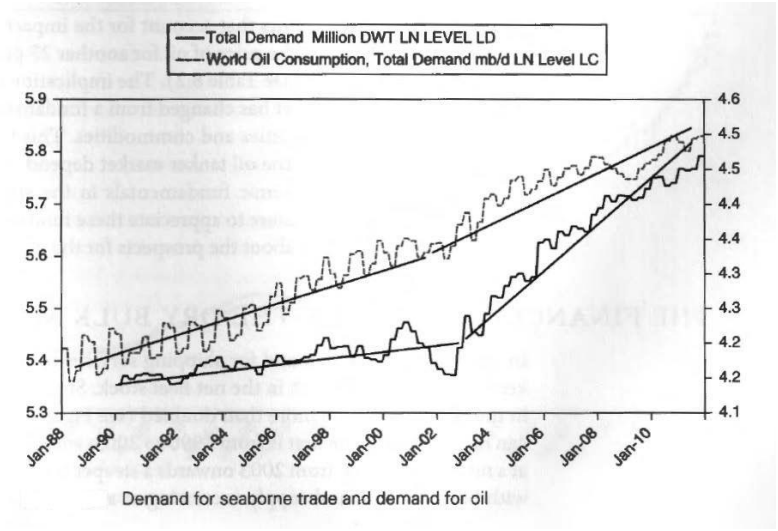


Figure iii Difference between demand for seaborne trade and for oil.[31]

The Downturn

(Figure iv) below will help us to understand better the situation back in 2009 where her keel laid. There was a steep fall in demand for products and byproducts of oil in general. However Atlas was able to resist this crisis, she made it in the safe way of timechartering. Looking deeplier, there was a 12-years time charter contract with one of the biggest oil majors. The day hire was 23.500 $ for those 12 years. Everyday almost 8.000 $ should be spend for Atlas as voyage cost. Voyage cost inlcudes spare, maintenance, crew wages and their expenses etc. Vessel's EBITDA income is approximately 1.500 US $ everyday.

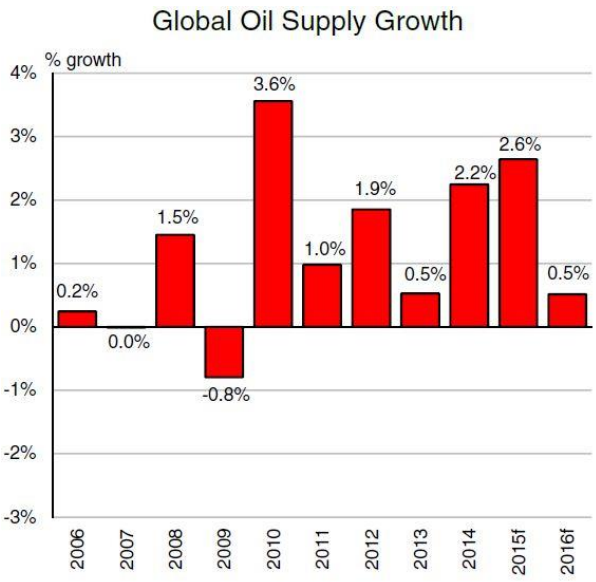


Figure iv The supply growth over the last 10 years and the forecast for 2016.[32]

It does not include the payback cost. An executive from MTM stated that "Maran Atlas was a competent -fair- investment but not a good one."
At this point basic assumptions will be made in order to examine Atlas's case. Atlas's loan can be described by the simple model (Figure v). In addition, officers of the ship owning and management company were able to present the extra security of a time chartered vessel. Because of time chartering and the 'good' name of the ship owner bank accepted to cover 80% of the total cost of the vessel.

[31] Karakitsos, E., & Varnavides, L. (2014). *Maritime economics: A macroeconomic approach*. (Basingstoke: Palgrave MacMillan), p.285
[32] Clarksons Research *Oil & Tanker Trades Outlook* Vol. 20, No. 12 (December 2015) p.28

The Case Study:

M/T Case Study

Type of loan: Mortaged Bank Loan (Mortgaged Vessel)

Table iii Residual Value Calculation

Age at which residual value calculated	10
Initial cost of the ship	64.000.000 US $
Depreciation rate (% per annum)	5%
Book value after 10 years	32.000.000 US $
Inflation rate (% per annum)	3%
Expected residual value	41.600.000 US $
Cyclical trough margin, say	70% (-)
Resale price at trough	12.480.000 US $
Value at cyclical peak	70% (+)
Resale price at peak	70.720.000 US $

Atlas's Case

After 10 years Maran Atlas will have a resale value of about 41.6 million USD. (Table iii) We calculate the residual value in ten years because of the terms of the mortgaged loan. Even if 10 years is long time for shipping loans it is an acceptable period because the vessel is new. At that time ship owner has to pay the last big payment usually called 'balloon' because of the size. In our case it is about 12.8 million USD.

Loan Terms

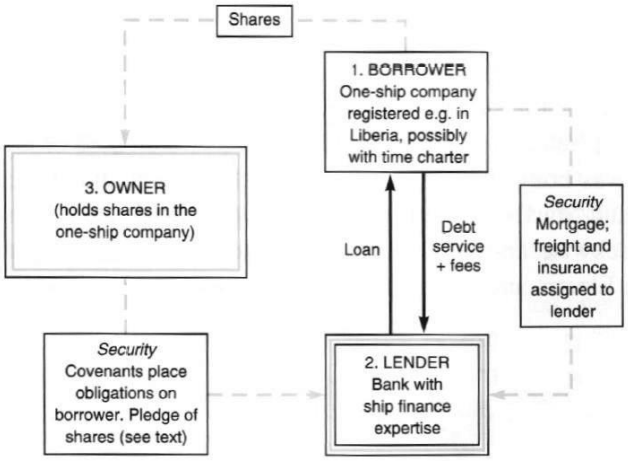
Table iv Aframax's Loan Terms

Initial cost of the ship	64.000.000 US $
Loan as a percentage of the total cost of the ship	80%
Equity as a percentage	20%
Size of the loan in US $	51.200.000 US $
Equity in millions US $	12.800.000 US $
Term (payback period) in years	10
Repayment ➢ Balloon as a percentage of loan ➢ Balloon in millions US $	19*6 months equal -to capital- instalments 25% 12.800.000 US $
Interest Rate (Total) • LIBOR • Spread	2% 0,4% 1,6%
Fees as percentage Fees as an amount	1% 640.000

Interest rate is about 2%, spread is at 1,6% or 160 basis points due to the high percentage of the balloon repayment (25%). LIBOR is about 0,4% because the bank was a Greek one and the Euribor[33] at that time were fluctuating at 0,37 – 0,42%. (Table iv)

[33] The Euro Interbank Offered Rate (Euribor) is a daily reference rate, published by the European Money Markets Institute, based on the averaged interest rates at which Eurozone banks offer to lend unsecured funds to other banks in the euro wholesale money market (or interbank market). Prior to 2015, the rate was published by the European Banking Federation, retrieved from https://en.wikipedia.org on 18th of March 2016.

After ten years, ship owner should pay the money of loan back. If he will not be able to raise this capital all these years while the vessel will be in operation he will have to sell the vessel in her residual value, but there comes the time charter with a contract for this vessel for 2 more years. In this situation ship owner should convince bankers to refinance vessel's loan for at least 2 years, when he will be able to sell the vessel. Despite that ship owner earns about 1.500 US $ everyday of ship's operation. Appendices will clarify the more demanding reader to what extend this investment was an efficient one.



Mortgage-backed bank loan model
Source: Martin Stopford, 2007

Figure v Mortgage-backed bank loan model.

This was the worst case scenario for ship owner (not being able to payback his debt). In reality a typical Aframax has a service life of about 20 years, and the project proposals have (+) and not (–) as their sign. In this -bad- case there are two 'simple' ways for ship owner to pay his debt, first to get a refinance for his mortgaged loan and the other one is to provide another vessel in charterers for those two remaining years of time chartering if he eventually decides to sell the vessel, in the end of the loan, in order to pay the balloon. Every theory is difficult in practice because of the complexity of shipping cycles as we mentioned above. Even if it is easy -which is not- to predict shipping cycle's period, it is more difficult to see how the rest ship owners will act cyclically or anticyclical in order to maximize their incomes.

Conclusion

The cognition

"Men will die upon dogma but will not fall victim to a conclusion."

John Henry Newman

As we mentioned above vessel is feminine noun and is very thrilling to all of us, her funding is a real challenge because of her expensiveness. Furthermore, some basic ideas were elaborated in order to present the common practice in the today's world, related to theoretical base of shipping finance with use of debt and more specifically using mortgaged bank loans and syndicated loans. Fundamental aspects of feasibility study were explained in details. In addition, it was illustrated what are the most important things banks check when they have a proposal for funding an investment. On the other hand, some basic rules for ship owners were explained as their optimal strategies. Finally, a simplistic case study of an Aframax was shown to create an extensive cognition on the subject.

The above thesis helped us to clarify how important is shipping to our everyday life. It is so important as complex and erratic can be. It is our world; our life, and our job; hence probable will become one of our best friends.

As this thesis step by step comes to its end, it is worth to mention how important was this project for me to establish a better knowledge of shipping as a general idea, as well as to elaborate parts of it that are in the interest of mine and there was an insufficient knowledge till the completion of this dissertation.

To be honest, it was difficult for me, because I did not have a clue about funding a ship. Even if this thesis was not so easy, it helped me to understand many things, despite that further education is a must for every deck officer. But every difficulty comes for a reason to our lives. We should try hard and finally we will become able to find our path to the real answer for every problem that comes in our way, as every successful ship owner and bank does. The recommendations I would focus, varies from enhancement of financial subjects we face in our academies as part of our degree, as well as the need for further interconnection between Merchant Marine Academies with country's shipyards & ports in order for us -students- to improve day by day ourselves.

Appendix

Contents

Appendix (I): Typical Balance Sheet of an Aframax

M/T Case Study

BALANCE SHEET - DECEMBER 31, 2014
(Currency -- U.S. Dollars)
(000's omitted)

ASSETS	DECEMBER 31, 2014 Unaudited
CURRENT ASSETS:	
Cash and cash equivalents	$ 8
Voyage Receivables	5
Inventories on board	291
Prepaid expenses and other receivables	152
Total Current Assets	456
Vessels at cost	65,302
Less Accumulated depreciation and amortisation	-13,191
	52,110
Total non-current assets	52,110
Total Assets	$ 52,566
LIABILITIES AND SHAREHOLDERS' EQUITY	
CURRENT LIABILITIES:	
Trade accounts payable	$ 247
Accrued expenses and other current liabilities	14
Total Current Liabilities	261
Long term debt	29,331
Deferred income	0
TOTAL LIABILITIES	29,592
SHAREHOLDERS' EQUITY:	
Additional paid-in capital	8,748
Retained earnings	14,227
Total shareholders' equity	22,974
Total Liabilities and Shareholders' Equity	$ 52,566
(000's omitted) except share data	0

Appendix (I): Typical Balance Sheet of an Aframax

M/T Case Study

CONSOLIDATED STATEMENT OF INCOME
FOR THE PERIOD TO DECEMBER 31, 2014
(Currency -- U.S. Dollars)
(000's omitted)

		Twelve months to December 31, 2014 Unaudited
VESSEL'S REVENUES:	$	8,409
Less: Voyage expenses		-268
Net operating revenues		8,142
Less:		
Vessel operating expenses		-3,602
Net operating profit before depreciation		4,540
Depreciation		-2,426
Operating Profit		2,114
Net operating income		2,114
OTHER INCOME (EXPENSE):		
Interest expense		-230
		-230
Net profit	$	1,883

Appendix (II):

Debt Capital per year

Table v Debt per year.

Year	Remaining Capital In Debt
1	51.200.000 US $
2	47.157.895 US $
3	43.115.790 US $
4	39.073.685 US $
5	35.031.580 US $
6	30.989.485 US $
7	26.947.370 US $
8	22.905.265 US $
9	18.863.160 US $
10	14.821.055 US $
Balloon Payment	12.800.002 US $

Appendix (III):

Money Paid as Interest Every Year

Table vi Amount of interest per year.

Year	Interest
1	1.024.000 US $
2	943.158 US $
3	862.316 US $
4	781.474 US $
5	700.632 US $
6	619.790 US $
7	538.947 US $
8	458.105 US $
9	377.263 US $
10	296.421 US $
Balloon's Interest	256.000 US $
Total:	6.858.106 US $

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"Τη νύχτα σου 'πα στο καμπούνι μια ιστορία,
την ίδια που όλοι οι ναυτικοί λένε στη ράδα,
τα μάτια σου τα κυβερνούσε σοροκάδα
κι όλο μουρμούριζες βραχνά «φάλτσο η πορεία…»"

του Νίκου Καββαδία Cambay's Water, Πούσι