Risk Assessment in Shipping Bank Loans: Lending through Shipping Cycle

Author: Giochana Kyrio

A thesis presented for the degree of "BSc. Shipping, Trade and Transport"

Supervisor: Theodoros Syriopoulos

School of Business Studies
University of the Aegean
Chios, Greece
2019
Acknowledgments

This is my Bachelor Thesis to obtain the Bachelor of Science degree in Shipping, Trade and Transport at University of the Aegean. I chose maritime economics as a field of study due to my affection into finance science. The field of shipping came into my life through my best friend and Master graduate economist Christos Patsis and his wisdom on professional orientation. After several opinions and personal search, I finally choose it and travel far away from my hometown to beautiful island of Chios. The reasons I studied hard was the unique character of shipping that, as I stated above, in the conclusions of my thesis paper, and how brings people together from different sectors and cultures.

I would like to thank several people who supported me during all my studies and in particularly during this Bachelor Thesis project. Firstly, i want to thank my supervisor Theodoros Syriopoulos for all the time he invested in guiding and helping me during this process. Secondly, i want to thank all my professors for all the knowledge and experience that they imparted to me. Last but definitely not least, i want to thank my family and my close friends for the continuous support throughout these years.
Abstract

The aim of this thesis paper is to inform about the shipping finance and more specifically, the bank finance, through loans. In addition I analyzed the term “shipping bank loan” from the aspect of the borrower, which was the shipping bank, through the riskiness factor of cyclicality and the view of a dry bulk shipping company when borrows, through shipping cycles’ stages. In most papers and scientific articles, the risk assessment of the shipping loans is examined at a timeline with main event the global financial crisis of 2008. However, due to the abovementioned trend, I chose to select the crisis as an initial milestone, being the start of the shipping cycle as a trough. I also chose cyclicality as the risk benchmark that correlates with the frame loans are signed in shipping.

At first I chose to approach the issue of investment financing in the shipping industry, more broadly. The first chapter begins with the logic of financing and the available, contemporary and traditional ways of raising funds in shipping, that are mostly divided into two categories, equity and debt. From the debt category of financing comes of the bank loans that is timelessly the most common way of shipping finance. Furthermore, by combining the two sides of a shipping loan, the lender and the borrower but through a critical idiosyncrasy of shipping industry that weights risk in her investment activities, the cyclicality and shipping cycles, depicts on making the right risk assessment. From the shipping bank perspective, the most important assessment of the risk is the relationship banking, more accurately the selection and closed monitoring of clients-borrowers that is timeless.

Therefore, I talked about the today’s reality of shipping banks that was affected a lot from the Basel accords. Then comes a case study of a typical shipping bank, the DVB Bank SE, about her shipping portfolio, how and why it changed after global recession hit and until today, in order to survive and remain a leading bank in the shipping finance industry. Then I chose to refer, every important aspect of a shipping loan, from the loan procedure, the pricing of the loan, the events of default, the meaning of problem loans, what happens after the sanction, the issue of refinancing and in the end of the chapter, the sad procedures after a loan defaults.

Due to the fact that the default is the main risk in shipping finance, in order to avoid it is absolutely important to find the sources and reasons behind the risk in shipping industry. Therefore, I chose to show the risks taking part in the shipping market and to address the drivers of it which come from the
insides of maritime sector. Then, I chose to focus on a certain idiosyncrasy of shipping that produces a substantial risk and danger on shipping activity and profitability, which is cyclicality that creates the shipping cycles and the cyclical risk. However, it is needed to examine how shipping companies, shipyards and especially shipping finance deal with cyclicality, behave and protect from her risks.

At the last chapter, after analyzing shipping finance, shipping loans and risk of shipping cycles, comes subsequently the time to serve the title of my thesis paper, the risk assessment in shipping bank loans but through the shipping cycles. Before addressing the risk assessment of the shipping loans, I firstly presented the important elements, the default risk drivers and the credit review as risk assessment method. The latter consists of two parts, the qualitative, referred as “6 C’s of credit investment analysis” and the quantitative one with the financial indicators.

To close the paper, I chose a case study of the credit review of Navios Maritime Holdings’ loans under a timeline of the recent dry bulk shipping cycle from the global financial crisis of 2008 until today’s minor recovery. The loans have been chosen in accordance of representing the cycle’s stages, with selective qualitative and quantitative indicators as well as every loan’s substantial structure information. Afterwards, I conclude the case study, by stating the correlation and patterns known in shipping finance theory, based with the resulting observations of the way those loans have been signed, priced and cycle’s stage timing, always according to the risk assessed and finally undertaken. Then there are the overall conclusions of the thesis, theory and case studies, and the bibliography.
1 Shipping Finance and Market

1.1 Introduction to Shipping

To begin with, the interesting about shipping, is that when we use the term “shipping market”, we aren’t talking about one single market but for 4 interrelated main sub-markets. Those markets behave both independently sometimes but as whole they relate in various ways. Shipping market consist of the new building one, that trades new ships, the second-hand market who’s trading second-hand ships, the demolition or scrap market where scrapped ships, basically the steel part of the ship is being traded and last but not least, the freight or spot market. The reason that the above-mentioned sub-markets are highly cross-correlated is the interaction of the same players. When we talk about the basic players in the shipping market, we mean the 4 one, who are the ship-owners, the one that own the ships, the charterers, who own the cargo, the brokers, who bring the ship-owners and the charterers together, and of course the shipyards, where ships are built.

In the shipping industry, there is cash flowing in and out of the market. In the freight market, there is sea transport is sold through fixed period of times or for a certain voyage and specific cargo. There, we have the first-mentioned players, ship-owners who “sell” transport and charterers are the “buyers” of it, thus cash is flowing into the maritime industry. In addition, the second sub-market is the second hand, where deals of sales and purchases are happening between ship-owners, a cash flow system, where money remains in the shipping industry. Following, we have the new-building market, basically the shipyards, as the last-mentioned player. There, ship-owners buy in an order form of 2-3 years’ timescale from the yards who are building and delivering the ships after that time horizon. Closing the definition of the cross-correlation of shipping markets, we have the demolition market where old ships are scrapping and the steel is being sold, so cash is flowing from scrap yards to ship-owners.

Shipping has had a lot distinctive periods of time where there were booms and crashes, as well as flat periods. Due to the fact that seaborne trade is affected from GDP, industrial production and world merchandise trade, there were a parallel course of all the above-mentioned. From the 50’s to the end of the 70’s we see seaborne trade rising and having the most prosperous phase,
with Japan and US, being the major importers. After that period and till the mid 80’s, the phase is starting to get flat and stagnant, with two major oil crises, happening at the mid 70’s and the begging of 80’s, causing a dramatic decline in the demand for shipping services. Afterwards were returning in a steady rising period for shipping until at 2008, global financial crisis hits.

1.2 Shipping Market Overview

The outbreak of global financial crisis, causing financial system problems, was absolutely devastating for the world economy, affecting mostly every industry, with huge declines on world GDP, global trade, and so the oceangoing shipping sector of course. There were huge declines on the freight rates with world fleet growing faster than trade, vessel values went down, financing got strict and shipping companies started to collapse with many to bankrupt and others to merge or get acquiesced from groups and go on alliances to protect from dying. There was an unrepeatable depression that made every investor and financial institution to turn his back to shipping industry, although there were speculators that took advantage of this crisis and got stronger. Of course, although this trough has lasted 8 devastating years, it isn’t over yet.

Shipping market today is mostly characterized by a change on sea trade growth, world shipyard capacity, zero emissions challenges and a digital revolution. The pattern of shipping center has changed a lot, shifting from West to East, making Asia and her developing countries-giants the new leader in ship building, broking, seaborne trading and scrapping and ship financing. China now is a major exporter, investor and together with the other Asian giants is driving the trade, leading to a huge change on the world trade pattern. The OECD countries who were the old times leaders in maritime industry, are now importing less than the half it was 50 years ago, losing market share from the non-OECD ones. Furthermore, shipbuilding trades have changed too, with Europe stepping out of that business and the 3 Asian shipbuilding giants, Japan, Korea and China standing now, as the three dominant ones globally.

The era of technology that we are getting through, of course, is affecting shipping industry too. The question is, if shipping players are intelligent enough to implement information and communications technology revolution to evolve sea transport. Today we have three ways that changed the shipping business model, “smart ships”, “smart fleets” and “smart global
"Smart ships" means the ones with satellite communication, telematics, data storage, smart phone-style apps, information systems and of course atomization, leading to better quality and efficiency standards. “Smart fleets” are the ones who manage the abovementioned like transport factories and smart global logistics, integrate the whole thing door to door.

Besides the financial challenges that shipping industry is supposed to face due to the current depressing situations, lately, IMO and his environmental regulations about several pollution issues like, ballast water management, SOX, NOX, CO2 emissions as well as energy efficiency in general.

To begin with ballast water management, there has been a Convention that is eligible from past September, describing a ballast water discharging standard. It is supposed that every vessel until 2024 should install an IMO-approved treatment system. However, since 2013 that the regulations about the management of ballast water, the market has began to present 6 different systems globally, to suit every player’s appetite and need, so can comply with IMO. Energy efficient vessels are also a new promise of the ship-owners to IMO regulations about their design, so EEDI, Energy Efficiency Design Index, is an issue to be discussed and agreed at its fourth phase commencing in 2025.

The most challenging regulations, though, are the ones about the Sulphur dioxide emissions that come from the heavy fuel oil that is used on most vessels, with a cap at 0.5 percent, to be implemented from 2020 according to IMO. This issue has provoked a lot of intensity and ongoing discussions about how practically this is going to be applied and it could have major impact if some non-compatible fuels are going to be banned. There will be significant financial and operational implications about ship operators’ decision on the optimal strategy to the regulations, from a bunch of solution that the market is starting to offer like, scrubbers, LNG, and hybrid fuels. Of course, we expect a lot of consequences on the fuels demand by the final complying deadline that, due to the global character of IMO’s regulations, the playing field of shipping is going to change once and forever.

CO2 and energy efficiency issues have stepped in to the maritime industry field too. Climate change is the political force driving the abovementioned regulations. All vessels above 5,000 GT are obliged to monitor report and verify their CO2 emissions at EU ports together with cargo data and average energy efficiency. Due to the EU’s decision of publishing those data, monitoring plans are needed to require confidentiality, calculation of efficiency metrics about the fuel consumption and a more global approach is made
from IMO, known as IMO DCS (IMO Fuel Consumption Data Collections System) with 2019 first year of implementation.

Although for others polluting industries, low emissions are a past challenge, shipping always comes last when talking about environmental issues. The point is that all those technologies that need to be put in action so they’ll comply with IMO, are significantly costly. In addition are hard to manage financially, so for the recently past years and until 2020, IMO emissions time-horizon, there has been a chaos about choosing the most viable technological solutions. The problem is that there is no one-size-fits-all solution because every new building vessel in the order book, from now on, is required to have either scrubber installed, a main engine burning LNG or MGO, with huge fixed costs that should concern every one investing in shipping.

1.3 Shipping Finance

1.3.1 WACC and IRR

To begin with, shipping finance forms vary between debt and equity, estimating the required amount of external funds. If firm’s assets are expected to grow more than the internally generated funds, the external ones will be raised to fill the gap. Most of the firms raise external funds needed through borrowing and use Weighted Average Cost of Capital (WACC) in order to calculate firm’s cost of capital in which each category of capital is proportionately weighted. WACC includes all sources of capital, including common stock, preferred stock, bonds and any other long-term debt. A company’s WACC increases as the rate of return on equity increases due to the fact that an increase in the WACC denotes a decline in valuation and an increase in risk. The formula is:

\[ \text{WACC} = \frac{E}{V} Re + \frac{D}{V} Rd (1 - Tc) \]

Re: Cost of equity
Rd: Cost of debt
E: Market value of the company’s equity
D: Market value of the company’s debt
V=E+D: Total market value of the company’s financing (equity and debt)
More broadly, a company finances its assets either through equity or by debt. Weighted Average Cost of Capital is the average of the costs of these types of financing, each of them is weighted by its proportionate use in a certain situation. A weighted average, taken this way, determines the amount of interest a company owes for each dollar it finances. Debt and equity are the two parts that constitute a company’s capital funding. Equity holders and lenders expect to receive returns on the funds or capital they provided. Cost of capital is the return that equity owners and debt holders expect, with WACC indicating the return that both stakeholders expect to receive.

Internal rate of return (IRR) is a metric used in capital budgeting, estimating the profitability of potential investments. IRR is a discount rate, making the net present value of all cash flows of a project equal to zero. The formula is:

\[ IRR = NPV = \sum_{t=1}^{T} \frac{C_t}{(1 + r)^t} - C_0 = 0 \]

Ct: Net cash inflow during the period t  
Co: Total initial investment costs  
r: Discount rate  
t: Number of time periods

The higher, the IRR of the project is, the more desirable it is to undertake it. IRR is uniform for investments of several types and can be used to rank multiple prospective projects on a relatively even basis. IRR is sometimes referred to as the economic rate of return, the discounted cash flow rate of return and the use of “internal” means the omission of external factors, like the cost of capital or inflation from the calculation. A popular use of Internal Rate of Return is comparing the profitability when establishing new operations and when expanding ones.
1.3.2 Shipping Finance Today

Shipping finance has always been a critical issue for both counterparties, lending institutions and shipping companies. The reasons vary, but mostly due to the huge investments’ initial fixed costs, ship’s prices, making every lender skeptical about entering in shipping finance market. Before going deep in defining and describing the term “shipping finance”, it’s more preferable to see what is happening now and especially with Basel III. Shipping finance has always been risky like her “mother’s” type of business, and when the good days passed and financial crisis came, lending institutions stop the funding and Basel came for good. As a result many shipping banks left the shipping industry or minimized their shipping portfolio by tightening credit standards, increasing spreads and shortening tenors, to reduce the exposure. Then, shipping market started to face financing difficulties and new roads of funding, just to stay alive and keep moving.

During the financial crisis many big banks gave up and bankrupt, acquiesced and others merged trying to survive but consequences were still lethal. German banks came vulnerable after the total collapse of KG limited partnership model of shipping finance either because they funded or promoted them. Shipping industry after all became a particular focus area for asset quality review and stress testing and through Basel III framework, as a regulatory initiative, impacted shipping finance significantly. Basel III were more strict then the other two, in liquidity rules and capital reserves. So today, ship-owners and ship operators are changing financing policy slowly, by leaving the traditional bank loans and turning into capital markets or innovative financing ideas like leasing.

1.4 Funding

Financing sources are split into two common categories: Debt and Equity and some alternative ways that will be analyzed in the next subsection. Bonds are a typical way of funding through debt, but first the shipping company needs an IPO (Initial Public Offer) in a stock exchange market and then has to issue the bonds.
1.4.1 Common Sources of Raising Funds

Shipping companies chose to enter the stock market, in order to raise funds, financing their investments. So when choosing to enter the stock exchange, an Initial Public Offering (IPO) is absolutely needed. Through an IPO the candidate firm issues shares to shareholders but with several required steps. Firstly, there has to be issued a brochure where the appropriate subscription price is settled, the number of rights required to buy one new share, the ex-rights price of a share and a value of right, the effect of rights issue on wealth of existing shareholders and the role of investment banks in rights offerings. The possible investors are being approached during a road show where the company is being advertised from the managers.

If a minimum number of shares isn’t sold in the show, then the IPO is cancelled. The initial pricing is made through fixed-price offerings, auction and book-building. The last one is more preferred then the other two. The key factors on stock price behavior are the robust fundamentals, the efficient, well reputed management and the high cash flows and earnings. Additionally, the realistic market valuations, the mergers and acquisition corporate stories, the growth potential and the bullish stock markets but in shipping, specifically, upward freight markets and rick cash liquidity conditions are vital. Shipping companies use IPO’s for vessel acquisitions, asset play, debt repayments and trading activities. There are several share pricing puzzles, like the under pricing one, the hot issue market and the long-run underperformance.

In case of seeking funding through debt, investors buy bonds in the price sold the IPO day and her value is trading every day reflecting company’s financial situation. Bonds holders are company’s debtors, bond term is stable although the interest payable can vary and there are short term, medium term and long term but not more than 12 years. Corporate bonds can be convertible or callable, are of a higher yield than the government ones but always with a bigger risk of default. A convertible bond can be redeemed into share capital in a certain time like a stock option and a callable one can be redeemed only under company’s willing, before the end but with a premium. In the past many shipping bonds, fell on the BB+ category or lower, a non investment grade, they were called “junk” bonds.

In the paper ........, where is being examined what determines the rate of the spread in those specific kind of bonds, reflecting their return regarding their risk. The spread rate is in other words, the actual “price” that shipping market pays to the bondholder or in a more figurative way, spread is
the result of the theoretical discussion of the relation risk-return, putted to practice. Therefore, the conclusions of this article reveal that primarily what determines a shipping bond’s spread is market-wide volatility and shipping industry’s cyclicality from a more general point of view.

But more specifically, changes in the market value of the high-yield shipping bonds reflect its liquidity and the changes in its rating, its riskiness of course. Due to the abovementioned idiosyncrasy of shipping, market segmentation, shipping bonds’ spreads are affected from the specific segment’s lagged freight earnings. According to the examination of time periods during subprime financial crisis shipping bondholders wanted a higher freight earnings risk premium, leading to the high increase of their bond spreads.

1.4.2 Contemporary Ways of Raising Funds

And then, there are some alternative ways or raising capitals without involving financial institutions but completely lawful. Firstly we have the use of retained earnings, a complete healthy way of financing an investment as well extending the share capital by issuing new stocks. Asset play, selling an asset high taking advantage of the high freight rates of the cycle at second hand ships’ values and buying another one low. Another alternative financing source in shipping are carte blanche and special purpose acquisition companies. The former is company without any specific business plan or purpose or has just stated as one to be part of a non specific merger or acquisition and is commonly used in speculative investment. The latter is a company created by citizens in order to raise funds through an IPO, that afterwards will be locked in a trust until an investment happen or a certain time period passes. Until that period SPAC’s managerial personnel is working without getting paid and if no deal takes place until end’s period, funds are returning to investors together with a refund to that bank and fees to the broker.

KS and KG are used in North Europe and at her peak contributed in the creation of whole fleets but the main premise of those funds was that national laws allow less taxation on those forms’ earnings. Professionals from every work field were interested in investing that way just to extend their trading actions and business risk especially in Germany have been made partnerships where certain members had the absolute responsibility for company’s debts and others a limited one equal to their amount of money they invested. Capital funds raised that way represented the equity and afterwards sought for additional financing from banks or other institutions so they can buy a
second had or a new building ship. Of course this kind of financing is not open for everyone due to the fact that needs to be settled in a country that already has those laws.

Private investment in a public equity where potential advantages of a reverse merger includes the ability to complete the transaction without engaging an underwriter, thus reducing overall costs, avoiding the IPO process rigors and long road shows. This alternative ship finance instrument is less vulnerable than an IPO to the vicissitudes of the public markets and risk of being unsuccessful and also has the ability to complete the transaction in a shorter time, provided the private company to have audited financial statements and other required information available at the time of the transaction. Furthermore we have private equity funding that has recently introduced in the shipping industry means equity capital that is not quoted on a public exchange and can be considered to have a complementary, yet independent, financing function to equity markets. Private equity consists of funding by private investors and funds that make investments directly into private companies or conduct buyouts of public companies that result in a delisting of public equity.

Then there is mezzanine finance, a hybrid of debt and equity financing, is basically debt capital that gives the lender the rights to covert to an ownership or equity interest in the company if the loan is not paid back in time and in full. It is generally subordinated to debt provided by senior lenders such as banks and venture capital firms. Since mezzanine financing is usually provided to the borrower in short time with limited due diligence on the part of the lender and limited or no collateral on the part of the borrower. This type of financing is aggressively priced with the lender targeting a return at an estimated range of 20-30 percent and the reason that this kind of financing is advantageous is that is treated like equity on a company’s balance sheet and may make it easier to obtain standard bank financing. In order to attract this abovementioned financing is by demonstrating a track record in the industry with an established reputation and product, a history of profitability and a viable expansion plan for the business.

Last from the list of the alternative ship finance instruments is the “At-The-Market” offerings where companies with no pressure to complete an issue within a tight time-framework, can proceed at their own pace and ideally have some control over what price the shares are sold at over weeks or months. Whether an ATM offering targets additional funding to repay debt is an important issue for investors to evaluate and according to market
experts, increased trading volumes seen at times in a number of listed shipping companies may have been boosted by ATM share offerings rather than primary trading activity.

Ailing publicly listed shipping companies are also seen to employ this technique to raise capital and recapitalize their impaired balance sheets. When a shipping company is interested in selling a large tranche of shares in unfavorable equity market conditions it will be extremely difficult to attract investors’ attention. But under these circumstances, institutional investors would make a placement only in case they can acquire a percentage of shares at a substantially discounted price. However, these offerings when used to pay down debt and recapitalize are highly dilutive.

Besides financing through debt, there are methods of raising money from the equity capital with securities issuing. In firm’s assets are expected to grow more than internally generated funds and external must be the one to be raised to fill the gap and most of firms raise external funds needed through borrowing. Shipping firms have high debt/equity ratios, albeit at diverging levels and this holds irrespective of corresponding market segment supporting the view that shipping finance is heavily dependent on debt funding over time.

Firms issue securities by setting an appropriate subscription price firstly, the number of rights required to buy one new share, the ex-rights price for share and value of right, the effects of rights issue on wealth of existing shareholders and the role of investment banks in rights offerings. External equity capital comes from two sources, common stock and preferred stock. Common stocks are valued by a dividend discount model so market efficiency and equity pricing in an efficient market the observed share price is the best estimate of the value of a share. The key factors for corporate value creation and an upward stock price in shipping are the upward freight markets and the rich cash liquidity conditions.
2 Shipping Bank Loans

The most popular, historically, financing ships either second hand or new buildings, as a source of capital were term loans. Based on the borrower’s relation with the bank leads to faster offering of the required capital funds compared to other sources. The “fast money” factor plays a significant role in shipping, a market where speed of decision making can make the difference to the best deal and it makes no difference to the ownership structure compared to the ones requiring an IPO. But the most important factor is the non required disclosure of business’s information to the bank and the public in general.

Of course, before banks granted the loans to the shipping firms they first assess them by credit analysis on their shipping department either if it’s a commercial or an investment bank. Total values of shipping loans that are advanced globally through time isn’t always the same but keeps track with the cyclicality of the shipping market.

At the peak counted 115 billion dollars, gaining 75 percent of the external funding in the shipping industry and at its fall together with the subprime crisis fell to 32 percent of the total ship finance market and just 46 billion dollars. To begin with, bank loans are a financing medium where the lender (bank) offers capitals to the borrower(ship-owner) under a loan agreement. Loan agreements are flexible mediums which can be amended under both parties’ will but also have a significant amount of mutual terms. All loan agreements refer the tenor of the loan, the fixed or variable spread, bank fees including arrangement and commitment ones mainly and law terms, meaning certain conditions that borrower should fulfill lender’s rights in an event of default and collaterals.

Collaterals are tangible or intangible assets in which the lender has access in an event of default. Loans can be of two types, fund based as working capital and term loan, and non-fund based as letter of credit and bank guarantee. The shipping finance portfolio has its own ship finance products that are bilateral transactions with the following asset-backed products like the short-term finance, including overdrafts and credit facilities. Long-term ones are for post-delivery for newbuilding vessels, medium-term finance also known as term loans are commonly selected for secondhand vessels, pre-delivery finance for newbuilding vessels, corporate loans and guarantee facilities.

One really interesting kind of bank loans that has recently emerged in the shipping finance market is the syndicated loan. When capital requirements
are over passing bank’s credit limit for a single client, they create a syndicate where every member of it covers a part of the whole facility. Syndications usually have a leader who is responsible for the negotiation of the terms and requirements between the syndication and the borrower. After the end of that stage, leader bank manages the other syndicators’ credit flows to the borrower and reversely at the repayment stage.

Syndicated loans offer a variety benefits in addition to meeting funding needs, depending on transaction purpose because they improve financial soundness. That leads to the rationalization of company’s balance sheet, securing financing at prevailing market interest rates; also achieve flexible terms that meet the requirements of company’s cash flow plan. Therefore, managing company’s funds efficiently, unify the terms of transactions with financial institutions and secure liquidity. Additionally, they result on enhancing flexibility of financing due to the fact that they lead on facilitating rising of large-scale financing, diversifying funding sources because syndicated loans have become established as a key means of raising funds alongside bilateral loans and corporate bonds. In addition they help developing new business relationships with financial institutions, reviewing company policy towards transactions with financial institutions and consolidating existing transactions.

2.1 Shipping Banks

Lehman Brothers, a well known American commercial bank collapsed in 2008 marking exuberance’s end by commercial banks. Banks, after the commencement of financial crisis changed their strategies and deleveraged about the profoundly affected shipping industry. Western banks like HSH, RBS, Natixis, Lloyds Bank, slimed their exposure to shipping by minimizing their shipping loans portfolio. and some of them like Commerzbank and Bank of Ireland left for good. However there were some other banks-speculators who grasped the opportunity like ABN, DVB, ING and Credit Suisse that took advantage of the shipping loans’ offering much higher yields.

From 2008 until 2015 the total European Banks ship finance global portfolios within the 40 top banks around the globe declined by 24,5 percent and within 1 year, they fell 4,5 percent. The banks that wished to leave the shipping industry altogether or downsize the possible damage started to sell off parts of their loan portfolio at a discount price. In the beginning the above-mentioned banks who slimed their exposure were examples of such sales with
favorable terms for them in the performance of loan portfolios. Furthermore private equity funds like Oaktree and Carlisle were interested in the deals.

As the shipping market declined in dry bulk, tankers and container vessels, selling more loans was harder and the ones already sold got affected from that decline going through restructures. Banks hoped for a shipping recovery and an increase in 2013-2014 on the rate of loan sales. Furthermore, it became harder for banks to find buyers for their loan portfolios, so the only clients were private equity funds, though wanting heavy discounts for the distressed loans. At the second half of 2014 loan portfolio sales slowed down but the funds started picking loans on a case by case basis that met their criteria. As the market continued to be poor loan discounts went deeper and some banks sought to find clients to sell whole fleets but US private equity funds' demand remained strong. Those funds grew explosively in size helping shipping to be considered as an attractive area for growth and profits. Loan discounted sales are beneficial for the banks because they allowed them to grow again utilizing the good client base. They cleared their loan portfolio and involving loans with lending terms and conditions, a lot more attractive.

2.2 Relationship Banking

But the ones with the biggest importance in predicting the probability of default are the one measuring the current and expected of the future conditions in the freight market. In addition is the obligor’s risk appetite reflected in the chartering policy when he decides between time charter or voyage. From the bank’s perspective, the way she assesses the undertaken risk of the loan is reflected by the percentage of the arrangement fee. Many empirical studies showed that, before and after a shipping loan is granted the reasons are found in the relationship between the bank and the shipping company. In shipping finance the qualitative factors are the most important.

Despite turbulent times, like the subprime financial crisis but also in formal and uniform environments with measurable rigorousness, it’s all about that relationship. This is what not only increases bank’s willingness to take more risks in relation to loan borrowing and also in assessing more accurately its performance. Although those days are the ones with shipping banks more prudent about financing this industry. That leads to shrinkage of their shipping portfolios and change in the nature of the abovementioned relationship with more formal and rigid criteria in the lending procedure.
2.3 Basel Accords

Due to the Basel IV framework and the constraints on the capitals, monitoring and European Central Bank regulation in increase, huge losses on loans and provisions, policy changes on lowering the risk undertaken about their portfolio, European banks reduced their ship lending appetite. Therefore, the ones benefited from this situation were the Chinese and Asia based banks that focused on publicly owned and large private shipping groups. Also export credit institutions centered in China and Korea becoming the leader in the newbuilding finance. Chinese, Japanese and Korean leasing companies who are associated with major banks were benefited too due to the advantage of less strict capital requirements compared to the western ones. Shadows banking providers or investment funds are emerging with their own way of funding and client selection gained advantage as well as some new banks like MM Bank in Norway, Berenberg, Warburg, Pareto Bank, Carnegie Bank and others with margins at 4-5 percent and loan to value of 30-50 percent.

Basel III framework was created to strengthen the capital adequacy and banks’ liquidity and it isn’t directing to shipping but the requirements will affect it the industry. They had a serious critique from the banking sector because it imposes restraints on long-term lending. Despite this, maybe it will have a live-saving impact to a more balanced approach introduced to shipping finance. Shipping banks suffered, when a mismatch happened between their long-term shipping loans and short-term liabilities. Basel III developed minimum standards for funding, in order to reduce banks’ risk of it on a longer horizon to require those funding assets with a minimum amount of stable sources.

The second standard of liquidity was to promote resilience short-termly with requirements of maintaining sufficient assets of high quality convertible to cash. Basel III also, required for shipping banks to reduce shipping loans’ tenor when shipping industry has relied on facilities of 5 to 10 years tenors for their capital expenditures. So shipping companies seek for alternative ways of financing like the high yield debt market with multiple advantages such as the long maturity, incurrence based covenants and lower spreads. The latest Basel accord is the Basel IV that didn’t cause many changes as the previous, just keeping a higher amount of capital as compensation for the shipping loans with more financial expenses at the industry. Basel IV will just push more shipping companies to turn to bond market.
2.4 Case Study "DVB Bank SE"

After discussing about the banks and their role into shipping finance, it is really helpful to examine a typical shipping bank, like DVB Bank that almost half of her loan portfolio is involved into all sectors of shipping industry. I chose a timeline that starts from the appearance of global financial crisis of 2008, that affected hugely the shipping market and of course the way that shipping finance changed and the exposure of shipping banks declined. The end of timeline is the fiscal year of 2017, where a certain recovery on the industry has made its entrance. As criteria of DVB’s behavior I selected her exposure in shipping by the percentage in her entire portfolio and also as the amount in USD, every year.

DVB Bank overview

DVB Bank SE is part of the DZ BANK Group, specialized in international transportation finance and her headquarters are in Frankfurt/Main, Germany. DVB is a listed on the Frankfurt Exchange from 1988, with offices in Europe, Asia, North and South America. In addition, provides financing and advisory services in the global transportation market and specifically, in shipping (45.9 percent), aviation (33.6 percent), offshore (9.3 percent) and land transport finance (6.2 percent). The bank was founded in 1923 with the name Deutsche Verkehrs-Kredit-Bank AG as several banks and industrial companies, after 1949 unified in two locations and the latest name change was at 2008, as DVB Bank SE. In 2016 her market capitalization was 1.25 bn dollars.

DVB’s Shipping Finance division

DVB’s Shipping Finance provides to her clients with support and lending solutions. Maritime clients vary from small to large public and private companies, shipowners, shipping companies, trading houses and charterers. DVB’s assets financed are among others, tankers of crude oil, gas, chemical and product, dry bulk vessels, container carriers, container boxes and Ro-Ros. Therefore, her products and services range in shipping finance are, structured asset lending, encompassing mainly senior secured and second lien structures. In addition is the risk distribution and loan participations, encompassing syndication activities and assisting at Transport Finance and
Investment Management business divisions in raising non-public market debt or equity.

DVB also finds suitable bank partners to join in its financing of transport assets, on an underwritten or book building basis, as well as when sourcing liquidity either in form of mezzanine and equity acts as central and coordinator for financial institutions of a wide range. Deutsche Verkehrs Bank operates also in corporate finance solutions, advising clients in mergers and acquisitions, private and public placements of debt and equity instruments. More specifically, provides solutions to two sectors: Advisory and MA as well as Capital Markets. In the former, include balance sheet optimization, corporate strategy and value maximization, restructuring advisory, deal negotiation support and liquidation management. Additionally, sell-side and buy-side advice services, focusing on conventional mergers, joint ventures, divestitures, privatizations and spin-offs, are part of the services.

On equity and debt capital markets services are disclosed follow-on equity offerings, private equity plus equity-linked products, convertible bonds and high-yield bonds, mezzanine capital, preferred shares through public issues and private placements where are comprised asset-backed securities, project bonds, receivables securitization and charter monetization. Last but not least in her Shipping Finance division is the asset and market research, providing with valuable and up-to-date information on shipping markets/segments, shipping assets and trade flows in distinct sectors.

<table>
<thead>
<tr>
<th>Year</th>
<th>Exposure %</th>
<th>Exposure $</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>56.7%</td>
<td>$14.59 bn</td>
</tr>
<tr>
<td>2009</td>
<td>52.6%</td>
<td>$13.1 bn</td>
</tr>
<tr>
<td>2010</td>
<td>53.5%</td>
<td>$13.7 bn</td>
</tr>
<tr>
<td>2011</td>
<td>52.0%</td>
<td>$14.6 bn</td>
</tr>
<tr>
<td>2012</td>
<td>53.8%</td>
<td>$15.7 bn</td>
</tr>
<tr>
<td>2013</td>
<td>44.4%</td>
<td>$12.7 bn</td>
</tr>
<tr>
<td>2014</td>
<td>43.5%</td>
<td>$12.3 bn</td>
</tr>
<tr>
<td>2015</td>
<td>46.5%</td>
<td>$12.8 bn</td>
</tr>
<tr>
<td>2016</td>
<td>46.2%</td>
<td>$12.6 bn</td>
</tr>
<tr>
<td>2017</td>
<td>49.0%</td>
<td>$11.4 bn</td>
</tr>
</tbody>
</table>
Observations

From the timeline’s start, the financial crisis of 2008, that the shipping collapse started, freight rates decreased in every sector, but mostly in the dry bulk market. DVB however, during that times chose to adapt a new sectorisation structure from a regional geographical model. Through 2009, the economic slowdown continued with the shipping portfolio of the German bank, burdening given the traditional cyclical nature of the industry. So during a year the portfolio decreased its exposure by 1.5 bn dollars, from almost 14.6 bn dollars to 13.1 bn dollars. The same year, Lehman Brothers, one of the oldest and strongest American banks, as a victim of the crisis, collapsed, bringing anxiety to the overall banking sector.

During 2010, the shipping crisis hit many shipping countries in Europe affecting the banking lending appetite and several banks left the industry for good. So the competition went lower due to the more and more reduced shipping banks. DVB continued the sector approach and came closer to her clients with the known risk management strategy of relationship banking. The bank also reduced the number of shipping finance sectors from 10 to 8 and increased her lending volumes. In 2011 the sectors became 7 (container business group, dry bulk group, chemical, LPG Product tanker group, offshore support group, offshore drilling production group and cruise ferry group) when shipping was drowning in oversupply and irrational order books as well as the continuing low freight and time charter rates.

In 2012, container ships, crude oil tankers and dry bulk carriers experienced the worst oversupply and freight rates, with scrapping reaching record levels. New regulations and increased oil prices made their appearance making the scene even more risky in terms of investing in shipping. 2012 was year with the hardest decrease in exposure percentage. In 2013, some cargo demand growth gave the shipowners the illusion of recovery, ended up on more shipbuilding contracts and more supply surplus leading to lower rates. The exposure during the latter year, was significantly stable, descending only 0.5 basis points. During the fiscal year of 2014, there was a cautious improvement in shipping and financial market conditions putting 0.5 bn dollars more in the shipping portfolio of the bank. The year was characterized of a rising demand that unfortunately led to stronger supply growth putting pressure in the freight rates and asset values.

2015’s year was challenging for the shipping industry, while the oil price went lower benefiting the oil tankers by increasing the vessels earnings and values. During that year, DVB strategy led to client selection, risk manage-
ment and offered specialized financing solutions understanding the corporate credit risk. The exposure kept stable, with a small decrease of 0.2 bn dollars. 2016 was a year where the recovery for the dry bulk and container shipping began after 8 devastating years. Demand grew slightly more than supply and freight rates revived. DVB during the abovementioned year, kept at substantial yet low level, to maintain the risk management and monitoring practices. 2017 was struggling with overcapacity in most ship segments, with low second-hand values and generally low demand for financing. DVB’s performance was affected by increased allowance for credit losses although the year showed an upward trend with historical low orders. That movement started last year, with improvements in some market segments like the dry bulk, and some others like the tanker market that remained low.

DVB’s range of exposure in shipping industry was 15.7 bn dollars to 11.4 bn dollars, with an average of 13.35 bn dollars and a average percentage of exposure at 49.8 percent during the timeline of 2008-2017. The maximum exposure, in terms of percentage, was at 2008, where the crisis began and the minimum at 2014. In terms of money, the maximum was at 2012, at 15.7 bn dollars and the minimum was at timeline’s end, 2017’s year, at only 11.4 bn dollars.

It is absolutely obvious, the decline of exposure in shipping finance, like many shipping banks chose to, in order to protect their portfolio from the risk of defaulted loans. The reason was the global financial crisis that year after year hit shipping market’s profitability for good. From 2008 that the percentage was at her highs, at 56.7 percent, during the next 6 years reduced by 23 percent, by touching the lowest at 2014, with an involvement of 43.5 percent in shipping finance. However, there was plenty of volatility in the percentage range, with 2009-2010, a small increase, but from 2010 to 2011, a small decrease and again a peculiar ascending of 1.8 points during 2011-2012. This shows, exactly how the bank, wanted to take advantage of every speculating chance appeared to boost the shipping industry by financing her.

Of course, as every business in a crisis period where there is much uncertainty and decreased cash flow, wants to protect itself and stay away from risky business like shipping industry. DVB from the beginning of the shipping crisis started with 14.59 bn dollars, ending with 11.4 bn dollars, the most recent fiscal year, 2017. That shows, her desire, besides the harsh 9 years passing, to survive without losing her leading role in the shipping finance banking sector. Basel accords and especially Basel III, that the bank was required to implement from 2013 until 2015, resulted on reducing the
exposure as much as possible, in respect of the Basel Committee. That period, we saw the shipping portfolio ascending by almost 17.5 percent during 2012-2013.

2.5 Credit Rating in Shipping: Moody’s

Credit rating agencies in issuing letter “grades” provide objective analyses and independent assessments of companies. Credit ratings, debt ratings or bond ratings are issued to individual companies and to specific classes of individual securities such as preferred stock and corporate bonds. Ratings can be assigned to short-term and long-term obligations. Short-term ratings focus on the specific securities’ ability to perform given the company’s current financial condition and general industry performance conditions. Long-term ratings analyze and assess a company’s ability to meet its responsibilities with respect to all of its securities issued. The Big Three Agencies, Moody’s, Standard Poor’s and Fitch control nearly the entire market, thus making the global rating industry highly concentrated.

More than a century ago, Moody’s rating systems evolved in response to the increasing depth and breadth of the global capital markets, its needs for clarity around the elements of credit risk or to demands for finer distinctions in rating classifications. The rating symbols and definitions of Moody’s are the followed:

Aaa: Highest quality, subject to the lowest level of credit risk
Aa: High quality and subject to very low credit risk
A: Upper-medium grade and subject to low credit risk
Baa: Speculative and subject to moderate credit risk and as such may possess certain speculative characteristics
B: Speculative and subject to substantial credit risk
Caa: Speculative of poor standing and are subject to very high credit risk
Ca: Highly speculative and are likely in or very near default with some prospect of recovery of principal and interest
C: Lowest rated and typically in default with little prospect for recovery of principal or interest

Moody’s appends numerical modifiers 1, 2 and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category. The modifier 2 indi-
cates a mid-range ranking and the modifier 3 indicates a ranking in the lower end of that generic rating category.

Aaa-A3: Prime-1 (Issuers have a superior ability to repay short-term debt obligations)
A3-Baa2: Prime-2 (Issuers have a strong ability to repay short-term debt obligations)
Baa2-Baa3:Prime-3 (Issuers have an acceptable ability to repay short-term obligations)
Ba1-C: Not Prime (Issuers do not fall within any of the Prime rating categories)

Moody’s Investors Service, of the big three agencies, provides credit ratings, research and risk analysis, contributing to integrate and financial markets. Moody’s ratings and analysis track debt covering more than 135 sovereign nations, approximately 18,000 public finance issuers, 5,000 non-financial corporate issuers, 4,000 financial institutions issuers, 1,000 infrastructure and project finance issuers and 11,000 structured finance transactions. Moody’s rating methodology in shipping industry explains the above-mentioned agency’s approach to assess credit risk for companies in this industry around the world. Additionally, intends to provide general guidance that helps investors, companies and market participants in order to understand how qualitative and quantitative risk characteristics are likely to affect rating outcomes for shipping companies.

Credit rating in shipping industry uses a scorecard that is a reference tool, used to approach credit profiles within the shipping sector in most cases. It also provides summarized guidance for the elements that are in general most important in assigning ratings to companies in the industry. The scorecard is a summary that doesn’t always include every rating consideration, with weights showing each factor’s importance for rating decisions but actual importance may vary significantly. In ratings assessment in the shipping sector there are 5 factors that are mostly important. These are scale, profitability, leverage and coverage, fleet characteristics and financial policy.

To begin with, the methodology implements a broad range of shipping companies, including liquid and dry bulk carriers and other bulk cargo carriers, liner operators and diversified shipping companies. The rating methodology has five sections the identification and discussion of the scorecard factors, the measurement or estimation of factors in the scorecard, the mapping score-
card factors to the rating categories, the assumptions, limitations and rating considerations that are not included in the scorecard, and the last contains the determination of the overall scorecard-indicated rating.

Moody’s uses the corporate family ratings, those are long-term ratings, reflecting the default’s relative likelihood on a corporate family’s debt and debt-like obligations as well as the possible financial loss in the event of a default. A corporate family rating is assigned to a corporate family as if it had a debt of a single class and a single consolidated legal entity structure. Corporate family ratings, in general are employed for speculative grade obligors and sometimes can be assigned to investment grade obligors, too.

2.6 Loan Procedure

The first process before the sanction is the credit appraisal, where is being appraised the credit worthiness of the loan applicant. Credit appraisal means an investigation or assessment done by the bank prior before providing any loans and advances or project finance. Furthermore, checks the commercial, financial and technical viability of the project proposed. The proper evaluation of the customer is preferred which measures the financial condition and ability to repay back the loan in future. The credit appraisal is also a process with multiple stages and required documents where firstly we have the receipt of application from applicant, then the receipt documents as balance sheet, different government registration number, Memorandum of Agreement and properties documents. Following is the pre-sanction visit by bank officers, the defaulters list’s check, the preparation of financial data, the proposal preparation, assessment of proposal, sanction/approval of proposal by appropriate sanctioning authority, the committee, required documents for the agreement and the mortgages and disbursement of loan.

When looking in a shipping loan agreement, there are some key clauses found commonly also known as commercial terms. They restrict the business activities of the borrower during the loan period, who wants the opposite, so the negotiations of them are tough and have a difficulty when drafted. So inside the heart of most financial documents are the abovementioned terms in addition with the financial ones, which in summary are called operative clauses. The spread, the interest periods, the loan amount, the last availability date and the repayment profile consist of the financial terms. The operative clauses are the ones who function as a protection for the risks that a bank is exposed to before and after the drawdown as well as on termination.
Representations and warranties, conditions precedent, covenants, mandatory prepayment, events of default, assignment and transfer provisions are the operative clauses in a shipping bank loan agreement.

During the loan procedure, an overview of Management and options is the first in order to qualify if a loan is good. An overview is all about the characteristics of the business and the related industry, management’s quality, the nature of the loan request and the data quality. Then it is absolutely required a financial Ratio Analysis, including liquidity, leverage and profitability ratios. Afterwards, come the examination of the cash flow statements, where are being seen the sources and uses of funds, loan payments’ sources and the timing of cash flows for the loan’s payment. In addition it is important to have a financial projection, meaning projecting financial needs of the borrowers, cash flows from the loan payment’s options and determining when the whole loan can be repaid.

In general, shipping credit analysis is done by a loan-officer who must be in a position assess the parameters of a qualitative model which, briefly includes management’s expertise and integrity, debt, equity and net worth along with cash flows. Additionally, contains the mortgaged vessels and guarantees for the loan, the external economic and financial environment, where the company operates. The model provides a deep knowledge of borrower’s company and loans and the assessment should provide the probability of loan repayment or default. However, besides the most common credit-worthiness analysis method that will be discussed broadly in the next paragraph, there are more methods of credit analysis process, like the financial analysis, the valuation of securities, the costumer meetings and the business associate meetings.

2.7 Shipping Bank Loan Pricing

Besides the processes and documentations needed at the credit appraisal, there comes the most significant part of the lending, the pricing of the loan. So the key to loan pricing is to satisfy the bank’s requirements and remain competitive enough. Literally, pricing is the spread of the loan, interest rate charged minus banks cost of funds that is equal to bank lending rate minus the bank borrowing rate. Pricing a shipping bank loan is all about choosing the fixed rate of interest and the levels of the fees, cover bank’s cost of funds and provide the acceptable gross profit level. Along goes the contribution to reserve assets’ costs and provisions also called default risk premium and
providing an acceptable return to shareholders for the taken risk.

The most important factors in shipping bank loan pricing is the cost of funds, the gross profit level and the fees. To begin with the cost of funds, there is the cost of the costumer deposit held on savings and time deposit account and the cost of funds in Interbank Offered market that depends on creditworthiness of the borrowing bank, includes the ’London Interbank Offered Rate’ (LIBOR) of a time period either 3, 6 or 12 months. Therefore is the gross profit level that is determined by spreads and fees reflecting bank’s administrative and overhead expenses and reserve asset costs and other provisions. Fees, when pricing a shipping loan are putted up front, in the duration or at the back end, are categorizes as commitment facility, penalty default, cancellation or termination and extension fees.

Average spread through time had shown that from 2005 until 2007 had a lowering movement, then after financial crisis came and until now is going higher and higher, nearly triplicated during 6 years. The amount of the loan will be based on a comprehensive determination of the profitability of the transaction and will not exceed the price of acquiring the vessel. The loan period will be for the duration of the charter contract (including the construction period). A repayment schedule will be set in order to ensure that the actual repayment period will be within the legally-defined period.

2.8 Events of Default

Inside the loan agreement there are events that if they happen might accelerate the loan, enforcing the security package. Events that are defined as events of default might be an insolvency and commencement of her proceedings, cross default events, material adverse change, events related to the ship, a representation or covenant breach and more usually a non-payment. Banks have the right to declare the default at its own discretion, but always according to the related legal footage. The most important part of the declaration is the actual assurance at a high degree that it really happened although it isn’t always absolutely clear. An event of default, that was called wrongfully may render the bank on having liabilities on the possible damage or render insolvent the borrower’s business or its group belonging.

When pricing a loan, we’re taking also measures for the possible event of default, like the default risk premium. This kind of premium, it’s actually the difference between risk-free loan and risky one, contributing to assets costs and provisions and generally to the economic capital of the bank. It is a
provision of an acceptable return to shareholders for the taken risk, meaning always that as we mentioned on previous chapter, that greater risk comes in forms of higher spreads and also relates to the terms and conditions of the loan as the duration, size and collateral securities.

Besides events of default in shipping bank loans, there is also a default rate, which measures the credit risk in the High Yield Shipping Bond market. It reflects relative likelihood that there may be a difference between what investors was promised versus what they actually receive by bond issuer. Here a default implies any missed or delayed disbursement of interest or principal. Among 1981 to 2008 the bonds with the highest default rate were the ones with the duration of 3 months and CCC/C graded, with the 3 years and B graded coming next with a small difference.

2.9 Problem Loans

What causes a problem loan, meaning, a loan that would have complications during its tenor, is the poor management quality, such as a lack of depth and diversity in management expertise. In addition, inadequate planning and accounting systems, outright fraud as well as general incompetence can lead to multiple problems. Furthermore, an inadequate initial capitalization causes possible loan default because some owners underestimate the costs of opening the doors for businesses and overestimate the speed at which they can turn a profit. Therefore, choosing high financial leverage exposes the firm to large interest payments even when sales decline. Also, high operating leverage exposes the firm to substantial depreciation and maintenance expenses when sales decline. A firm’s operating problems are accentuated when it grows too fast.

That leads into slowing inventory’s turnover and collection of receivables, increases operating overhead so more assets are needed and more financing is required. Strong completion pushes the firm to regularly improve existing operations and introduce new products to remain competitive and react to the competition offensively or defensively because if it doesn’t adapt, eventually decays. Last problem cause, but not least could be a possible economic downturn because many firms cannot generate sufficient cash flows when the economy slows down. So they don’t have assets to sell or expenses to cut, resulting into having a strain on their cash flows, forcing them to rely on increased bank borrowing until economic growth accelerates.

Common reasons for most loan losses could be overvalued collaterals,
improperly margined so they fail to get the appraisal. Possible dispersal of funds before documentation finishes and if the bank officer makes “good old boy” loans, bypassing the loan committee due to personal friendship with the borrower. In addition, granting a loan to a new business with an inexperienced owner or manager could lose a loan as well as renewing one for increasing amount, with no additional collateral taken. Another common reason to lose a loan is rewriting repeatedly a loan to delinquent interest due and not analyzing borrower’s cash flows as well as repayment capacity. An officer can fail to review a loan status frequently enough and also the funds to not be applied as represented, diverting to borrower’s personal use may be the reasons of a possible loan loss.

Losing a loan happens sometimes, also because the repayment plan isn’t clear or not stated on the face of the note. Along goes the failure to receive or infrequently receipt of borrower’s financial statements and to realize on collateral because borrower raised nuisance legal defenses. Sometime the bank may fail to follow its own written policies and procedures or the president of the bank may be too dominant inpushing through loan approval. Ignoring overdraft situation as a tip-off to borrower’s major financial problems and also a failure to inspect borrower’s business premises can lead into a loan loss. If the lending is against fictitious book net worth of business and with no audit or verification of borrower’s financial statement is a common reason. As well as failing to get or ignore negative credit bureau reports or other credit references. Failing also to call the loan or to move against collateral quickly when deterioration becomes obviously hopeless is a good reason for a lost loan.

2.10 Post-Sanction

After the end of the credit appraisal, when the loan agreement it’s done and the loan is granted to the borrower, it seems that the loan process is mostly over. The last stage of it is the credit review, where the performance of the outstanding loans is being monitored and the handling of problem loans is done. In addition, a scheduled information submission and routine check out on the adherence of loan covenants are required and the problem loans workout that most of the time is a “to-be-or-not-to-be” issue. Mostly post sanction activities such as receiving stock statements, review of accounts, renewal of accounts on regular basis. The loan administration and especially the post sanction process can be broadly classified into three stages, the follow-
up, the supervision and the monitoring. Together they facilitate efficient and effective credit management and maintaining high level of standard assets.

2.11 Refinancing

There is a post-sanction option when a loan it’s too risky and all predictions are negative about its in time repayment, it can be refinanced by negotiating and improving the terms of it and your finances. It’s more like replacing the existing loan with a new one, which pays off the current debt by not eliminating it when you do the procedure. The process has 4 stages, the first is when you have that loan you need to improve somehow, and then you seek for a new lender with better terms and apply for that loan. The third stage is when the new one pays off the existing debt wholly and the last one when you start to make payments for the new loan until you pay it off or refinance. The advantages of that procedure are the money saved from higher interests costs of the previous problematic loan, the payments of course are lower due to the lower interests. The loan term is shortened, the debts are being consolidated, the loan type is changed and that you pay off a loan that is due, not defaulted. Disadvantages are the transaction costs of the procedure; the interest costs may be higher in order to extend the period or to lower monthly payments. Some benefits that the previous loan had maybe lost if you choose to refinance but what doesn’t change is the loan balance, the collaterals and the payments.

2.12 After the Default

There is a standard technique with actions and procedures applied according to previous experiences, EU regulations and Central Banks dictations since 2014. The first key step when handling problematic loans is the early detection but also immediate action, with a work-out or a liquidation plan, is important too. The frontline officer whose credit or particular obligor has been assigned and he’s the one to downgrade the borrower. In order to detect the problem is firstly to follow shipping market movements and prospects. If freight rates downward, the officer should be alerted of any rate renegotiations and delays in hires’ collection. Liquidity pressure reflected in bloated trade payables and poor maintenance are useful indicators needed good information flow, though. Financial statements hide clues of poor profitability, inadequate working capital and delays or overruns in new building projects or
on scheduled repair works too. Of course failing to pay interest and principal installments are the most easily detected acute problems.

Once the problem is detected there are two kinds of methods to choose from. The one dictates that once the loan default emerges, the bank switches the whole management from the responsible officer to the “special credits dept.”. So they take over and decide independently the strategic moves. The second method dictates the abovementioned dept. involving less stringently, allowing the responsible bank officer to handle the loan without supervision and guidance from the specialists. This is happening supporting the view that the bank officer through the years has developed a level of rapport with the borrower. So he has the clear picture of the borrower’s predicament and their relationship amplifies the chances of the uninterrupted information flow. Despite this, due to the fact that handling a problem loan is really complicated and unpredictable and every defaulted loan is unique. So the bank gathers a group of consultants from every profession needed to work together.

Remedial action by the bank is absolutely indispensable when the loan default approaches. Technical default starts when the covenant loan-to-value ratio breaches, first the remedial action just restore the compliance with the terms. But if principals and interest payments are missed then bank starts to be stricter with the borrower. There are two options, the restructuring the loan with negotiations one and the more amicable, the bank to get her money back in a forced way. Along comes the moment for the bank to review the mortgage documentations. Specifically is done the further examination of the collateral vessel about her condition, fair market value and whereabouts. Then, it’s planed a meeting with the borrower for further information for the initiation of a work out plan but also to estimate the potential loss. Afterwards starts the liquidation with or without the client’s cooperation, identifying the primary and secondary sources of repayment. Next is the search of the creditors according to the trade debt of the borrower and the maritime liens in priority.
3 Risk in Shipping Finance

3.1 Risk Drivers in Shipping

Maritime business is overall highly risky, unstable and absolutely unpredictable. This is happening due to the fact that it is a capital intensive-kind-of-business, meaning that all of her investments have a high starting cost of capital, putting barriers to new-comers and of course putting enough risk. Furthermore, it has the characteristic of cyclicality, that means has her peaks then goes down, reaching her trough moments but next she goes up and all this process again and again, sometimes facing longer cycles and others having faster ones. Moreover, shipping follows seasonality, defining it as not having uniform revenues throughout the economic year and following business cycles as well. She is market segmented across types of commodity, for example if we are talking about dry market; it depends on grains, agricultural, coal, iron ore’s demand. If we are discussing about wet market, then is crude oil’s and oil products’ demand. Maritime business is also segmented across vessel sizes and types, meaning different size have different demand and supply as well as the same happening with different types of vessels.

One typical idiosyncrasy of shipping industry is her overall high volatility and volatility is the most critical parameter for risk management and derivatives pricing. Volatility is defined as a statistical measure of dispersion of an asset’s returns, reflecting the level of uncertainty or risk about size of changes in asset’s value. Higher volatility means that an asset’s value can potentially be spread out over a larger range of values because assets’ prices in shipping can change dramatically over a short amount of time upwards but yet often, downwards. On the other hand, lower volatility means that asset’s value does not fluctuate majorly but changes at a steady pace over time, so the higher the volatility the riskier the asset, the vessel, you own. However, volatile properties are interesting to discuss, because in a high volatility environment, spot freight rates are expected to move around aggressively. Opposing, in a low volatility type of environment, they’re expected to move around very little, so when it’s being talked about trends in volatility, means she has changed from calm to volatile or the opposite thing.

However, shipping companies as shipping operators and sometimes shipowners undertake a multiple amount of risks due to the type of shipping
business. Company’s “factory” is way too far from the assistant office and this is causing communication, management and monitoring problems and also additional communication costs that due to the long distance isn’t often. Therefore, revenues’ volatility is making things harder to manage as well as the right decisions to be taken. Additionally, as we mentioned above, due to the inability of predicting the critical factors of shipping market, like ship prices and freight rates. Shipping company’s unobstructed operations are negatively affected from many external factors like port strikes, canals’ blockades and foreign countries restrictions about importing and exporting goods. Sea services create a huge multinational interaction due to the global capital and labor force transfers. In addition, global political and financial developments of sea services’ demand and supply put transport costs’ predictions in danger. Last but not least shipping financing is mostly done from banks that finance ship-owning companies all over the world even if the country origin of the two parties is completely different.

3.2 Shipping Market Risks

Freight mechanism, due to its character creates many risks in shipping from broad sources like business, liquidity, default, financial risk, political, technical, physical, credit and market risks. Relating to the particularities of shipping market and its analysis, the main major risks are belonging to the two last abovementioned categories, market and credit risks. Market risks can be the variability of freight in short time periods, of total income, fuel price, running costs, new-built and second-hand ship as well as scrap who determine the withdrawal of any excessive capacity which affects the supply balance. Same variability is showed due to technological developments or adjustments who affect operating or capital costs, due to changes in the institutional framework, affecting the factors that determine operating costs.

Variability on the loan interest and exchange rate, particularly where loan payments and collections take place in different currencies and also annual maintenance cost variability in the context of the operational management policy applied by each ship owner. Market can show variability due to weather conditions, political developments and even natural disasters. Equally important risks are also the one driven from shifting towards purchases of ships of different capacity, geographic variations of freight in respect of ships of the same capacity, locality of the supply/demand balance and financial risks due to selecting a certain loan currency.
The other major category of risks, the credit ones can be the counterparty’s solvency, the default risk, relating to all forms of it including technical, financial, failure to make interest or capital payments for a long period of time etc. Next, comes the exposure risk, which refers to the borrower’s overall exposure to risk and his shipping portfolio diversification. Then is the recovery risk, meaning the level of security of the financial institution in case of default or insolvency of the borrower. This kind of risk is difficult in particular if you want to determine it because vessels’ are serving as securities and their prices are not constant and depend on many market risks as well as the legal risks involved in the transaction process. The credit spread risk is another significantly important risk arising from the up’s in the credit spreads, particularly when a second market has developed and its prices are being determined according this specific market. Of course, choosing cyclical or counter-cyclical policy about maintaining liquidity margins contains always important risks because some tend to follow the cycle and other apply a mixed investment and disinvestment strategy.

Ship-owner’s and the ship manager’s policy in terms of his participation in practices and the overall orientation in asset management, operating and chartering yield of the fleet. Preserving the cash flows, general and instant liquidity maintains several risks as well as what the ship-owner chooses in terms of long-term borrowing potentials. Ship-owners tend to vary their policy when it comes to financial leverage and ship managers to the type of chartering being applied either if it is voyage, bare boat or time charter, with its own risks. Last but not least participating in the credit risks is about the yield of each vessel and its employment during one year. So banks in order to protect them and act proactively are preoccupied to make a credit risk assessment (CRA). CRA models adopted the bank take into account all possible factors into appraising the risks associated with the loan. These factors duly weighted are aggregated to arrive at a credit decision whether loan should be given or not.

Besides the abovementioned category of the broad sources of risk in shipping, there are the specific ones meaning the ownership risk, including every risk undertaken when someone holds a vessel in his/her portfolio. That means being exposed to price fluctuations and more serious ones like accident and losses. On the other hand, operators or managers are exposed to the operational risk, which is particularly shown in day-to-day operations of the vessel including freight and revenues as well as costs and expenses relating to its activities. So to conclude about the risks we have to mention the main
financial risks which are the freight, exchange and interest rates risks as well as the bunker price, vessel’s value, counterparty risk and last the external events, global shocks and crashes.

3.3 Cyclicality

To begin with explaining the shipping cycles and their definition, we should firstly discuss about a significant idiosyncrasy of shipping, cyclicality. Seaborne trade, besides high volatility, seasonality, capital intensity, vulnerability from business cycles is also a cyclical industry. The type of industry we are calling cyclical is the one that is vulnerable to business cycles. In that case, revenues tend to be, in general, higher to periods that are defined of financial prosperity and expansion. However, in periods that economy goes down, characterized by financial downturn and contraction, generally, the same happens with the revenues. The cyclical fluctuations are the aforementioned time periods, from the peak to the trough of the business cycle. Demand, either if is consumers or business’s, falls during downturn and rises up when things go better. Businesses, in order to survive those fluctuations, tend to cut costs and take investment decisions with a delay.

Cyclical risks are the business cycles’ ones or the economic kinds that affect adversely companies’ profits, investments’ returns and assets’ values. The abovementioned risks are due to the cyclic movement of global economy, from peak to downturn and after a trough of low activity. Between the fat and the skinny cows, investments are experiencing values falling, profits lowering and an amount of uncertainty about the future returns. Risks of cyclicity do not have, generally, a tangible measure but they’re reflecting on assets’ prices or valuations. Cyclical risks are systematic ones and they affect broadly, market economies. For example, recent financial crisis of 2008 triggered the beginning of a recessionary cycle with negative impacts on many market areas but mostly in financial services.

3.3.1 Shipping Cycles and Risk

A typical shipping cycle has 4 stages. The first is called trough and has three traits. The first is the surplus of shipping capacity and slow-steaming to save fuel. Then freight rates fall to the operating cost of the least efficient ships, moving into a lay-up. Next, comes the negative cash flow due to the low freight rates and the tight credit. Financial pressures are building up,
leading to stagnation as tough decisions are put off and distress. Old ships’ prices fall to scrap prices, resulting on an active demotion market, where the seeds of a recovery are showing and a state of calmness comes in. In the second stage, called recovery, supply and demand move towards equilibrium and freight rates are edging above OPEX. The laid up tonnage starts to fall and confidence, to gradually grow although there is uncertainty in the market. Despite optimism, there is still doubt about the recovery I real. Furthermore liquidity improves, second-hand vessel prices increase and the market becomes prosperous.

The third stage, called peak or plateau characterized of surplus being absorbed leading to tight demand and supply. Fleet is operating in full speed, freight rates rise becoming 3 times as the OPEX, increased liquidity, higher earnings lead to excitement and bank are keen to lend against strong asset values. Then comes the time where new shipping players are entering in the industry, over-trading starts. Second-hand prices are higher than their replacement cost and older ships are bought without inspection. Orders about new-buildings increase slowly in the beginning and then a lot faster. The duration of the peak lasts from a few weeks, to, even, several years but related to pressures of supply and demand balance. Obviously, as the duration is growing so does the feeling of excitement.

The last stage of a shipping cycle is the one called “collapse”. When shipping industry is at the stage, which means supply overtakes demand, leading to the convulsion of the market. Freight rates fall rapidly and abruptly, vessels reduce operating speed and owners do not want to sell their vessels cheaply. However liquidity remains in high levels, less attractive vessel wait to be chartered, market start to feel confused, it’s constantly changing with the rates and doesn’t want to accept peak’s end. The collapse is usually formed by the downturn of the business cycle, port’s congestion clearing, vessels deliveries ordered at the peak. Depression is in general reinforced of the above-mentioned drivers and in addition of an economic shock.

Shipping cycles, similar to business cycles are either long-term, medium-term or short-term. But at the center of cyclicality is the long-term cycle and due to its importance, will be the one to be discussed first. Long-term cycles are mostly driven by financial, technical or regional change, making them highly important although they have a certain difficulty in order to detect them. Kondratieff was the first to develop the long-cycle theory of the world’s economy. He identified that major Western countries, from 1790 to 1916 had three periods where the economic activity was characterized
of slow expansion and contraction. The length between cycle’s peak and trough was 20-30 years and from trough to trough lasted almost 50 years. Schumpeter supported the view that technological innovation explains the long-term cycles. Another scientist, Braudel identified of long cycles lasting nearly a century or more. After all, shipping history made it clear that long cycles are driven from long-term social, political and technical changes.

Short economic cycles were firstly discussed after a series of brutal crises in UK economy in the 19th century. Scientists defined those crises as parts of a cycle, easy but conspicuous to see. Those short-term cycles were characterized with a periodicity irrespective of duration either if they’re of an equal length or not. Lord Overstone said that “the state of trade revolves apparently in an established cycle of quiescence, improvement, prosperity, excitement, overtrading, convulsion, pressure, stagnation and distress. So, according to Overstone, the structure of short cycles in modern shipping is consists of four basic stages, the market trough, than a recovery, afterwards a market peak followed by a collapse. The trough lasted 4 years, reached a peak 7 years after the first market peak and then fell aggressively. While the economy was at the trough, the market started to recover in 8th year, failing and slowly subsiding to a recession again at the 10th year. In shipping, those kind of abortive recoveries result from counter-cyclical ordering. Due to the fact that investors foresee the recovery, tend to order a big amount of cheap vessels, dampening the supply off the recovery. If investors were less aggressive shipping cycle lasted not 7 but 4 years.

The last category of shipping cycles includes the seasonal ones that occur widely in shipping industry. The reason that causes this kind of cycles are freight rates fluctuations in a year and at specific seasons responding to seasonal patterns of sea transport’s demand. In the agricultural trends, freight rates for ships carrying grain, form a noticeable cycle due to harvest’s timing. For example, during September and October in North America there is a surge in grain movements because the harvest is ready to be shipped. In summer there’s a quieter period because the shipment of the previous season’s stock is running down. Same happens in the reefer trade related to the fresh fruit movement during the harvest in the Northern Hemisphere as well as the peak demand of oil stock in the winter.

Shipping cycles and shipping risk are inseparably tied, with the latter technically defined as the “measurable liability for any financial loss arising from unforeseen imbalances between the supply and demand for sea transport”. Generally, shipping cycles have their own key risk features. Firstly,
there are two prime risk-takers, the ship-owners reflecting the supply side and the cargo owners, reflecting the demand side. They both try to balance, adjusting supply to demand, and when they fail to, the one or the other losses money. Due to the fact that demand and supply, practically, are never exactly balanced, so freight rates fluctuate around the break-even cost of transport trend. Cargo owner’s risk, in a short-term cycle starts when freight rates rise above the trend cost and reach the peak. In opposition, ship-owner’s risk starts when freight rates fall below the break-even cost of transport line and maximizes when it hits the trough.

When there is a demand surplus, meaning that cargo owners have too many cargo then freight rates are shooting above the trend. Cash is transferring to the ship owners, who respond by ordering more vessels in order to balance the demand to supply. When the opposite happens and a supply surplus occurs, meaning that there are too many vessels in the market, freight rates go below the trend. That leads ship-owners end up subsiding the shippers and they cut back on investment. When the latter happens, cycles start exerting economical pressure in order to fix up the imbalanced situation, so rates go back to trend.

Volatility of the cycles, gives to individual companies, the advantage to “play the cycle” and in the same way to be exposed to shipping risk. The way that ship and cargo owners choose to adjust their exposure, is the same with the one controlling the development of the market cycle’s supply side. Furthermore, when deciding in which way to charter, both ship owners and shippers either choose to take the risk or pass it. It’s worth-mentioning that regardless the decision they take, shipping risk’s amount isn’t changing but just redistributed. Every party of course has her own strategy in every cycle’s stage, because risk distribution between spot and period market is a matter of policy. Both markets have cycles, with the former to have the most volatile ones.

3.3.2 Shipping Companies Through Cycles

When analyzing short and long shipping cycles, people and the way they react on signs that market prices send. Changes in freight rates and ships’ prices are the ones marking the next round of investment decisions. High freight rates cause new building orders and supply surplus affect them negatively, while low freight rates delay the orders and encourage market depression. At the lowest part of the cycle, the trough, orders reduction and
depression increase minimizing supply led on the rise of freight rates. Shipping cycles create an environment where weak shipping companies are pushed outside the market, leaving the strongest free to survive and prosper.

Shipping companies, when shipping is experiencing a collapse period they follow certain strategies to reduce the cost in order to survive. First of all by using the slow steaming strategies, where shipping companies reduce vessels’ speed so the fuel consumes get reduced to. This way they somehow offset low freight rates because if vessels slow down 10 percent of their speed, there is a 25 percent fuels consume. But this strategy result on occupying more vessels because the frequency needs to stay the same. Laying up the fleet by stop using vessels and anchor them in ports because they aren’t productive when in force. During hard times deliveries in shipyards are cancelled or postponed because orders and deliveries are happening in different times. So for some shipping companies, orders of many ships are unprofitable to deliver. However those contracts resold in a discounted price to shipping companies who had the appropriate liquidity.

Orders, of course, start to reduce because in terms of financial crisis the abovementioned should be almost at stagnant. Another survival strategy is scrapping each company’s old ships due to their high maintenance cost that makes them too expensive to operate during the financial crisis. The most important factor that makes demolition profitable, is steel’s price, exchange rates of the country where the scrap yard is located and other market factors. So, many ship owners prefer keeping those vessels until they decide that is the right moment to scrap them. However, although during the financial crisis most shipping companies suffered, there were others that not only survived but expanded and upgraded their fleet. Of course the few companies that achieved that, had made the right choices and followed the right strategies at market’s peak as well as taking advantage of the opportunities given.

Greek shipping has always been family business, passing this culture from one generation to another with a high degree in technical “know-how” of maritime industry. They used to finance their investments through relationship banking and disclose their business plans. As familiar businesses, Greek shipping companies were characterized of high self-discipline and taking fast and flexible decisions. So as this knowledge about shipping is passing from father to son, is giving him the required supplies in order to manage a shipping company in the future. In addition, all this culture helps Greek ship-owners to predict shipping cycles and use the counter-cyclical behavior.

Counter-cyclical behavior means that, the ship-owner chooses to buy
when the market is low so he can get a ship in a more cheap and favorable pricing than buy it at the peak of the market. He will also wait, until the market overpass the trough and starts to rise until the peak comes and demand is bigger then supply, vessels' values start to increase and shipping players want to buy in any price. So this is a successful asset play where there is an income absolutely depended on knowing the market and forecast the shipping cycles' duration and stages. They do the same with new-buildings too, ordering them when the cycle is low and shipyards are characterized of overcapacity and low demand. This is the secret of Greek ship-owners growth that makes them unique in the shipping world.

Greek ship-owners do not prefer IPOs because they’re afraid of losing their company’s control, when in Greek shipping; ownership comes always together with administration. Furthermore, Greek shipping families tend to gain earnings from asset play. However asset play in order to be successful should be done in the right moment, so the ship-owner must forecast it. If the shipping cycle is at its trough, then there will be huge losses. So when the shipping company forecast it right, can make bigger profits but the risk is bigger. Therefore, their forecasting talent is due to their experience in the market. Also, Greek ship-owners don’t choose public markets not only because can put their asset’s values in risk but because of the lack of financial know-how. Another reason is their preference in bank loans because they can borrow money in more favorable terms so they don’t want to undertake the possible risk of an IPO.

3.3.3 Shipyards Through Cycles

A normal cycle, in terms of ship building, starts at a low level of new building prices that leads into massive ordering, ending up having excess ship capacity. As the freight rates fall, ship buildings orders slowdown and scrapping increases. Then freight rates recover and the demand for new buildings increases again together with the investments in shipyard capacity resulting on decreased new building prices. Furthermore, it is obvious that cyclicality holds in check, commercially. Capacity of shipyards is a variable, politically dominated and specifically for the three major shipbuilding countries including China, Korea and Japan. All that, led to a non stable market in terms of newbuilding prices regarding demand-supply balance.

In the last decade shipbuilding output has experienced globally a super cycle from 18.3 million CGT in 2001 to 52.6 million CGT in 2010, in other
words, a 12.5 percent growth rate. This surge started after the development of the major shipbuilding countries in Asia, with Japan at 1975 accounted for the 52 percent of the total global shipbuilding production. Then followed South Korea and China, with the latter, within 13 years increased her market share in ship building industry more than 5 times. China between Japan and Korea, experienced the strongest growth in her shipbuilding capacity. Especially during the peak of 2008, 50 Chinese shipyards delivered their first vessel, with a small decline in 2013. This decline didn’t lead into a global balance between supply and demand although the government supported the sector by thinking about it as a critical industry for the national security. The reason China got that boom in her shipbuilding industry due to the peak of 2008.

Local government encouraged new shipbuilding capacity so they can take advantage of the tax-sharing system. Of course due to having order book coverage that lacked sufficiency and lacking down payments for new orders, there were liquidity problems. However, the Chinese government in order to maintain and protect her long-term market share in shipbuilding and offshore industry, started to channel new orders to its state owned yards and helped consolidation. The Chinese Export Import Bank, also provided loans to foreign ship owners in order to support domestic shipyards orders. Furthermore, the government took a plan of a certain amount of shipyards that decide to support. On the other hand Korea stood on a leading position due to Korean government support although now it’s near to close. This is happening because her order books were dominated by containerships, high value offshore units and gas carriers. In addition Korea’s medium-sized shipyards focused into conventional ships, leading to deleveraging pressure.

However, Japan’s shipbuilding capacity characterized of a relatively good management, took advantage of the yen’s depreciation and new orders from foreign players. Additionally, Japan produced vessels required technical “know-how” to build, like LNG, LPG carriers and chemical tankers. There’s a flooding effect happening to global shipbuilding capacity, depended on variation on the lead time of different ship types. When there are small annual changes in lead time, the shipbuilding market is consider as supply driven. When there are big changes, shipbuilding capacity for a certain segment is scarcer. For example, lead time of bulk carriers, containerships and crude oil carriers usually responds less to contracting because their slots’ supply is over the top bigger than its demand. On the other hand ships like chemical tankers and LPG carriers are immune to the limited amount of slots
available.

Furthermore, their lead time responds more to contracting due to the fact that building those vessels’ types is required more specific experience, limited on their availability. LNG carriers together with the abovementioned types, have a more adjusted to demand, supply. But, one thing is for sure, if a specific ship sector became a trend for the market, over ordering is inevitable. However, the global excess shipyard capacity puts tremendously pressure on lead time. The time required from the contracting to the delivery time has decreased across segments. Before 2008 ship owners waited up to 50 months, when today in a lot of segments lead time is about 24 months. China was the shipbuilding country who accepted the challenge of the quicker shipbuilding production but when ship owners started to postpone delivery, production processes slowed down too. Although it is positive for the shipyards to keep their production lines running, however that results on a vicious cycle of overcapacity.

3.3.4 Shipping Finance Through Cycles

It is really interesting to get to know how ship-owners used to finance their investments and how financing trends have been changed through time. To begin with, in the first half of the 20th century financing approaches were conservative. They tend on using their retained earnings with low leverage. In 1950, where European industrial economies started to rise, they were needed cheap raw materials. So, in order to transport them in low cost, ships started to get bigger and take advantage of economies of scale. The problem was that, big vessels were expensive and retained earnings weren’t enough to finance them. However due to the fact that charterers offered long-lasting contracts and time-charters that worked as collateral for banks to grant them loans with high leverage.

Until 1970, this was the status quo for shipping investments but because of the fact that charterers did not have anymore the need to make long-lasting contracts in order to charter a big vessel. In addition, 1970 was a year where petroleum and iron trading had slowed down and strong inflation hit. Banks, after two decade of high leverage, suddenly changed their lending policies by wanting the ship as a first mortgage with additional security. Furthermore, banks also started to see vessels as floating property. Due to the inflation and possible accidents, cash flows and time chartering weren’t that safe as collateral for them. There was a common belief that ships’ values
will be stable, so banks during the devastating 1970 decade, started to finance according to that. Vessels’ prices were the only security they used and that resulted on unlimited ordering with a small amount of equity capitals.

1973 was a year of money made from oil industries that were spread all over the world and shipping market too. Banks credited huge amounts of money for new-building tankers above 100 million dwt, delivering half of the fleet in only one year. Due to that bubble, tankers market needed 15 years to revive. 1980 was another one year with oil money spreading all over the sectors and desperate shipyards using credits as a disguised way of building ships in stock. Mortgage’s debt supported the orders of 40 million dwt bulk carriers from 1983 to 1984, when freight transport market rocked bottom. That was a rational behavior according to cyclical deliveries but the problem laid on the over ordering that led into supply surplus and recession in 1986. The results were ship owners having problems paying out their debts, loan defaults and secondhand prices started to fall. Ship owners needed extra cash so they started to sell their vessels in low prices.

When shipping market hit bottom for a period lasting more than usual, asset play used as a financing type, wasn’t possible. But there were only few conventional sources of equity and debt interested on financing more vessels. So there was a need of new financing sources like the self-liquidating shipping funds in 1984, and during the 1980 decade, raising capitals from people who weren’t involved in shipping. A popular example was Norwegian company K/S who persuade many people invest a small amount on shipping. There were a lot of tax-free benefits, with that money re-invested in a period of high taxation in Norway. K/S succeeded due to its appeal on private investors regardless of its unconventional structure.

An interesting phenomenon in the shipping finance after financial crisis hit was Private Equity funds behavior in shipping finance. PEs took advantage of the situation, by investing at the low point of the shipping cycle and then after two or five years, when the cycle will be at its peak, exit. This strategy was representing significant returns, in a short time and with two exit options, an IPO or an asset sale when second-hand values will be fully increased. Of course this never happened because shipping’s cyclical nature hasn’t rebounded yet to the expected point (peak). There were several argues that PEs funding led to over-ordering and excess supply, being the reason, shipping’s cyclical nature is disappearing.

Shipping finance decisions, in order to be successful should be taken according to shipping cycle’s stage. This is really vital because, a shipping loan
can be successfully paid when freight rates and vessels’ values are high and market is on its shipping cycle’s peak. Freight market’s rise creates a positive vibe leading to easier funding. So, at the rise-phase of the cycle, due to the increased earnings of the companies, loans’ security increases too. This is happening because the lender knows that the borrower is going to repay him for sure. In the contrary, when the market is low, revenues are confined and vessels’ values aren’t enough as loan collateral. So banks, start paying attention on shipping companies cash flows, that don’t correlate always on high freight rates but on company’s ability to manage OPEX. In market’s trough, there’s major uncertainty that results on more restricted funding.

Banks’ mentality is all about financing shipping investments based on new building’s future cash flows. Investments on a mature freight market with time charter policy are favored by this mentality and the amount financed to shipping companies is always related to the cycle’s phase. At the recovery phase of long cycles, banks increase the general positivity and grant loans with favorable terms. This situation may attract nontraditional bankers, boost the competition and lower the shipping lending standards. When the phase named “collapse” comes, banks are unwilling to finance vessels. But even if they do, they give a margin that doesn’t exceed the amount of 50 percent, compared to the margin given in the recovery phase, which reaches 80-90 percent. This is happening because companies’ cash flows show instability, thus the borrower’s repaying ability starts getting doubtful.

Shipping finance itself, affects supply levels, where the latter is a critical factor of shipping cycles. So maybe there is an interrelationship between shipping finance and shipping cycles. Even when companies fund their investments from internal sources, they need to have high earnings in order to and so the market is required to be high. The most important, when funding a shipping investment, is to be familiar with the current shipping cycle at the moment. How much will last, how risky the cycle is and his main characteristics in order to be predicted and be managed appropriately by shipping financers. This situation is similar with the relationship banking where the bank feels more secure to lend on familiar clients with good reputation because she can trust them. The same with the cycle, you feel safer when you know him. Therefore, when knowing a lot about the cycle, it is able to take advantage of him.
4 Risk Assessment in Shipping Bank Loans

4.1 Default Risk Drivers in Shipping Bank Loans

After stating the common reasons and causes of problematic and lost loans in general, it’s time to specialize that analysis to shipping bank loans and their default risk drivers. The drivers are categorized into firm characteristics’-specific, loan-specific, industry-specific and macro-economical ones. The firm characteristics’ specific drivers include the age of the shipping company, the years of cooperation with the bank and her time chartering or voyage policy. Into the loan specific category belong the ratio of Arrangement fee-to-Amount of the loan because is the main source of profit for the bank along with the spread charged and are computed as a percentage of the whole amount of the loan. Along goes the tenor of the loan, defined as the number of years from the initiation of the agreement until the final maturity of the loan and the balloon payment. Of course together goes the margin that is the spread over the LIBOR and the internal bank rating about the risk of the loan.

The asset coverage ratio is the market value of the ship over the amount of the loan. This ratio splits into the contractual and the actual, where the former is defined by the bank as a threshold which should be maintained at lower levels than the latter that is estimated by the ship-brokers, changing over time. Moving to industry specific, where there is the 1 year time charter minus the spot for bulkers and tankers as well as the 3 year time charter minus the spot for both dry and wet bulk. At the macro economical drivers are firstly the ratio of the order book-to-total fleet which is defined as the world order book for each broad subsector. Along goes the inactive tonnage-to-total fleet defined as the total removals of tonnage for the world fleet due to several reasons including lay-up over the total fleet measured in million dwt. Two important indexes are the ClarkSea index, that is constructed as a weighted average of earnings in all shipping subsectors and the MSCI world stock index, constructed to be representative of the stock market sentiment at a global level.
4.2 6 C’s of Credit and Investment Analysis

Afterwards, comes the financial analysis through the well-known method of the 6 C’s in determining creditworthiness or the C’s of credit and investment analysis. C’s are meant the categories of factors that are essential to the loan appraisal, character, capacity, capital, company, conditions and collateral adjusted in the shipping industry. Sometimes some financial analysts choose to merge the categories named “character” and “capacity” and that’s why some call the method 5 C’s of credit analysis. In the first category, “character/capacity”, it’s all about the factors associated with the head of the company, its integrity, company’s mission, strategic and business plans as well as strategies to achieve them in particular. In addition, is being checked everything like investment and finance, chartering, insurance, technical, cost management, creditors, human resources along with the character of the ship-owner who’s got to be coherent, forward looking and learning from the past. Then is the category named “capital”, including the financial structure, ship-owner’s or company’s head shareholding stake, the analysis of the financial statements and of course financial ratio analysis including the gearing ratio (total debt/total assets), the long-term debt/total cap, the net worth and the pre-tax interest coverage.

The third “C” is meant for the factors associated with the structure of the company, meaning the inflows and the outflows. While inflows are defined as forms of employment, the choice, the quality and the contract with charterers as well as the effective utilization of the vessels. As outflows are the operating costs, including the administrative, technical, insurance and crew costs, and the voyage costs, depended on the markets of operation and market share that together make the company’s operating position. The 4th category is the collateral’s one, related to the fleet’s composition and condition, vessel’s economic life and securities like mortgages, assignment of income, assignment of insurance and personal and corporate guarantees. So a “good” loan, the one that won’t be defaulted or refinanced, but will be paid on schedule, the borrower in general should have liquidity, low leverage, high profitability, loan payment cash flows’ with a right timing, secure sources of loan payments and a financial projection that determines when the whole loan can be repaid. What actually makes a good loan could be defined according to the abovementioned method of 5 or 6 C’s, by quantifying them. To begin with the character of the borrower, in order to have a successfully paid loan, he should be willing to pay. That means, he must have a past
credit history of non-defaulted loans, a good reputation in the market and of course a managerial talent. About the capacity, high after-tax profits, satisfying cash flows and about the capital, the borrower must have a big net worth position, high quality assets as collateral of the loan and about the conditions, his vulnerability to an economic downturn should be low.

The most common collateral at a loan agreement is the vessel that’s being financed through that loan, thus it has a lot of differences from the usual securities used in other sectors. In the event of default, bank has the right to arrest the vessel, operate it, auction it, sell it and impose the terms upon the borrower about restriction regarding where it should be traded or the maintenance value, technical changes and sale prohibition, acting independently from the ex-ship-owner. However ship mortgages as form of security, have several limitations. Those limitations mainly occur due to the volatile value of the vessels in general and specifically at the possible incapability that the funds released from the sale of the vessel to satisfy the outstanding debt.

Sometimes, banks tend to trade the vessel, continuing the charter party, operating the vessel from a subsidiary. In an event of a negative equity occurrence, the bank either asks from the insurer to cover the gap. They are also rising problems when there is a clash between a claim that is secured by a maritime lien and one secured by a mortgage, especially when it comes to payback priorities. Another one rises when the vessel might be damaged or sank with costs on rights determination on the wreck. As final drawback is the possibility of the mortgagee to lose the priority of getting paid over other creditors.

During the subprime crisis another one occurs, due to the lax funding trend associated with house mortgages, the subprime mortgage crisis. Cheap money trend also sparked in the shipping industry, occurring the ship mortgage crisis at the same time period. The mechanism was similar for ship finance, where loans and bonds were both ship covered and there was an interest rate reduction in the shipping industry. Philippe Louis-Dreyfus tells its impact as follows (Larocco, 2012): “Banks put pressure on the ship-owners to accept money almost for free and sometimes offering 100 percent financing with no equity at all. So banks have played the very awkward if not the perverse, role in proposing cheap money to ship-owners who not only didn’t deserve it but didn’t really even want it.” Firstly, banks should do the rationalization of leverage “sin”, meaning how percent of asset will be financed by the lender, a debt-to-asset (vessel price) ratio. Leverage has to perspectives, the borrower’s one (loan) and the lender’s one (banks).
If vessel prices rise than the denominator grows, so the leverage is getting smaller and a false belief leads on financing more and the numerator increases, but the most important question is what is the solution if later the vessels’ prices fall. From the banks perspective, the leverage ratio is defined as Tier 1 Capital (Liquid Capital) to Consolidated Assets (assets, liabilities, mortgages), which according to Basel Accords should be at least 5 percent. At October 2012, Moody’s downgraded public-sector and ship covered bonds issued by HSH Nordbank AG but not the mortgages. At July 2014, the IMF also said that shipping loans could be a source of further impairments, as they reviewed the German banking industry. A well arranged trick that banks did to hide shipping losses, was valuating ships with the Hamburg Ship Valuation method. In the Hamburg method the estimate of the vessel’s earnings projection is substituted with the historical average of them and the OPEX of the last ten years. Eventually, that saved the shipping portfolio from massive default which may have ignited further and deeper credit crunch in the shipping industry and ship mortgaged-backed bonds’ solvency, indirectly.

Then, comes the 5th “C”, which stands for the category “conditions” and is all about the financial markets, interest rates, world economy, political conditions, seaborne trade, specific commodities, manufactured goods, structural and cyclical changes. Furthermore there are factors related with the shipping markets, present and future conditions, and demand and supply analysis, shipping investment cycle, fragmentation, subsidies and barriers to entry. Closing the conditions’ category, with the regulatory framework of the countries, port authorities, international organization as IMO, ISM code and OPA 90 as well as other organizations’ requirements of classification societies, major oil companies, insurance companies and PI clubs.

However the key factors on shipping loan decisions ranked from 1 to 23 and weighted from 17.25 percent to 1.21 percent. The one ranking first is the borrower’s integrity, reputation and managerial capacity, nearly 3 points over the second one which was about creditworthiness and loan record but with a big difference of 50 percent more than the third which is about collaterals. The next 20 are not much different from each other beginning with the project’s cash flow projections at 5.86 percent then is ownership’s equity stake in the project, experience and time length in the market. Along goes borrower’s investment decisions, project Hull-to-Debt ratio, specific sector conditions and prospects, condition of the vessel(s) to be financed, Hull-to-Debt ratio of the borrower’s fleet, cash capacity of the owner, shipping indus-
try conditions and prospects. The last 9 key factors begin with the age of the vessel at 2.96 percent and then comes the chartering policy, world economy’s conditions, charterers reputation, cost control, future default loans, financial statements, company’s size, company’s structure and ends with engineering meaning the qualifications of the technical team at 1.21 percent.

4.3 Credit Review as Risk Assessment Method in Shipping Bank Loans

Risk assessment is different from risk management, because the latter deals with the dangers when the former is determining them. Formerly, risk management systems were implementing after disasters occur and that’s why we need a more proactive approach so we can identify the risks and mitigate them in every procedure. Risk assessment starts with the determination of the risks, and then we’ll have to collect data and information about the frequency and its consequences. However there are two types of risk assessment, the qualitative and the quantitative one. The quantitative requires huge amounts of data from similar occurrences in several locations, when the qualitative uses the risk with a more comparable way between activities different amounts of risk.

However every bank’s credit committee decides on the basis of realistic facts, reflecting the actual and integral view of each client. The credit grading report is a snapshot of borrower’s conditions and an analyst typically starts an evaluation of industry/market in which firm operates. Then assess business and financial risk factors on a stand-alone basis and compared to peers. Shipping bank’s policy is conservative as to category and type of vessel financing, leverage percentage, amortization schedule, vessel’s market value, provisions for future freight levels and cash flows. Bank, in order to ensure loans’ quality and minimize operational risk, probably during loan’s reimbursement, the bank should select her clients carefully and based on an internal rating based approach. This approach is made of a large scale of detailed and classified historical observations. The most important criteria are categorized according to user and on a scoring system.

A credit model or a criteria matrix is made of the most critical qualitative and quantitative rating criteria. The qualitative ones are the years of cooperation with the bank, the frequency of it, the credit consistency towards the bank and the years of cooperation with other banks. Along goes
the credit consistency and financial commitments to 3rd parties, manager’s experience in specific sector, his quality, the biggest shareholder’s ownership percentage and the supplier’s relationship with the client. Besides manager’s evaluation, market's perspective criteria like size, maturity, and growth level, cyclicality of market as well as competition intensity, client’s influence and statutory/business environment effect are equally important. The quantitative criteria are the financial indicators like the loan to value, the liquidity, the borrowing coverage and the past consecutive net profitability. The other part of the quantitative criteria are the valuation indicators regarding the total loan deal with bank, including the asset cover ratio, the financed vessel’s average age in maturity date and the estimated operational earnings to cover loan commitments.

A bank credit analyst has to calculate two sub-scores, the subtotal of the qualitative and the quantitative criteria to get the total credit score transforming it into a scale of 1-9. So he can provide a simple and efficient way to communicate the creditworthiness and credit quality. The shipping credit division should check and revaluate the rating criteria in a reasonable time-span. In addition, should assess the effectiveness of specific criteria (modification) or probably implement new ones innovations to evaluate the risks perceived as inherent in a loan portfolio. The financing correlation is examined on the basis of specific real shipping banking cases with an objective to search of deviations to facility limit approval due to alteration of client’s credit grading. They also, in order to segregate the burden of one of financial criteria, implement weighted function.

Besides the credit model, also helpful is the risk grade scale, comprising the grading rank of every bank facility separately. It is a 10-grade scale of credit line gradation, relevant to prospective percentage damage (loss given default and recovery percentage ratio. This means that each client has many risk grades as the number of his facilities. In order to form the scale, the credit officer has to consider the collateral type. The risk grade estimation differs from the credit grade estimation because takes a snapshot of each bank facility. The credit grade assesses client’s current and prospect situation and the credit committee may conclude combining both risk and credit grade. Every security is combined to a recovery ratio given default taking into account security’s quality and liquidation’s capability. Additionally should take into account the time period needed for receiving payment through liquidation and managerial cost required for such procedure.
4.4 Credit Review in Dry Bulk Shipping Cycle 2008-2018 - Case Study: 'Navios Maritime Holdings Loans'

<table>
<thead>
<tr>
<th>Data</th>
<th>Bank</th>
<th>Loan Amount (mln $)</th>
<th>Interest Rate</th>
<th>Vessel type</th>
<th>Cycle's stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/2009</td>
<td>Commerz Bank</td>
<td>240.0</td>
<td>2.25%+LIBOR</td>
<td>Capesize (4)</td>
<td>Recovery</td>
</tr>
<tr>
<td>08/2010</td>
<td>DNB NOR</td>
<td>40.0</td>
<td>2.75%+LIBOR</td>
<td>Capesize (2)</td>
<td>Collapse</td>
</tr>
<tr>
<td>08/2011</td>
<td>Emporiki Bank</td>
<td>23.0</td>
<td>2.75%+LIBOR</td>
<td>Panamax (1)</td>
<td>Intermediate Peak</td>
</tr>
<tr>
<td>12/2013</td>
<td>Credit Agricole</td>
<td>22.5</td>
<td>3.0%+LIBOR</td>
<td>Panamax (2)</td>
<td>Intermediate Peak</td>
</tr>
<tr>
<td>01/2016</td>
<td>DVB Bank</td>
<td>41.0</td>
<td>2.55%+LIBOR</td>
<td>Capesize &amp; Panamax</td>
<td>Collapse &amp; Trough</td>
</tr>
<tr>
<td>11/2016</td>
<td>Alpha Bank</td>
<td>16.1</td>
<td>3.0%+LIBOR</td>
<td>Capesize (1)</td>
<td>Recovery</td>
</tr>
</tbody>
</table>

Literature review

Quantitative criteria

To begin with, the case study is a credit review of Navios Maritime Holdings’ loans through stages of dry bulk shipping cycle 2008-2018. I chose 6 investment loans from 14 that company took inside the abovementioned shipping cycle with the loan amount, bank, date, margin, type of vessel financed by the loan. In order to make the credit analysis, I chose quantitative and qualitative criteria that are used in the process. There are several studies about the quantitative criteria, which are the financial indicators like loan-to-value ratio, the liquidity, the borrowing coverage and the previous years of profitability. In addition are the valuation indicators, like the asset cover ratio, the financed vessels’ average an in maturity date and the estimated operational earnings to cover loan commitments. There are other studies that also count the source and uses of funds, the source of loan payments and the timing of cash flows for loan payment.

The ratios that I chose were divided into four categories, the leverage ratios, the liquidity ratios, the debt coverage ratios and the profitability
The liquidity factor is used as an indication of the level of liquidity maintained in comparison to the debt principal and interest payments due. They provide an indication of the ability of the company to pay off its debts as they come due, say over the next year or so. It is called current ratio and is calculated as: Current Assets/Current Liabilities. The leverage is indicative of the loan gearing of the company, which is of the mix of debt and equity used to finance the company. The expected sign is positive since the higher the financial leverage, the higher is the expected probability of default of the loan. The ratio is called debt ratio and is calculated as: Total Liabilities/Total Assets.

The profitability factors is important because indicates the health of the company and her ability to operate profits giving safety to the bank, that the loan will be repaid in time. There are two most important ratios, the return on assets, that tells investors how efficiently a company generates profit growth from the capital is has been granted, both debt and equity and the return on equity. The return on equity describes the rate of profit growth a business generated for shareholders and owners. ROA is calculated as: Net Income/Total Assets. ROE is calculated as: Net Income/Total Assets-Total Liabilities.

Last but not least is the debt coverage ratio that uses as an indication of the ability of the firm to cover short-term and long-term debt burden through its operating profits. The higher the ratio, the higher is the expected probability of default for the shipping bank loan. There are three debt coverage ratios, the Current Liabilities/Earnings before interest, taxes, depreciation and amortization, the Long-term Debt/EBITDA and the Total Liabilities/EBITDA. In shipping due to the huge amount of loan needed to finance a vessel acquisition, indicators related to debt, are very increased compared to other industries that borrow money to fund their investments.

Qualitative criteria

Based on the abovementioned “6 C’s of credit investment analysis” and Moody’s credit rating methodology in shipping industry, were the qualitative criteria used in the case study credit review. For the “character” I chose the age of the company, the fleet size, average age and diversity, as well as the nationality, cargo transported and chartering policy. In addition, for the “conditions” I chose the Baltic Exchange Dry Index and Baltic Exchange Capesize Index, the shipping cycle’s stage of the market, the market’s per-
spective. I gave a lot of importance to the market conditions and specifically the timing of each loan in the stages of the 2008-2018’s shipping cycle. Literally, I placed the loans in the timeline of a whole shipping loan, divided in the peaks and troughs, collapses and recoveries that represent more accurately the market’s conditions. Furthermore, the approximate freight rates, the LIBOR and the Moody’s Credit Agency rating. I also chose the mentioned the shipping portfolio exposure of the bank lending each loan.

Navios Maritime Holdings

Navios Maritime Holdings is one of the leading global brands in seaborne shipping, specialized in bulk cargoes. Navios operate a diverse portfolio of Capesize, Panamax, Ultra-Handymax and Handy size bulk carriers, deploying owned, chartered and leased. The company owns and operates the largest bulk terminal in Uruguay and her fleet consists of 39 owned vessels, 1 Handysize, 12 Ultra-Handymax, 12 Panamax and 14 Capesize vessels. Additionally depending on short-term requirements and market conditions, NMH supplements the core with short-term or long-term charters. Their long-term chartered-in vessels in operation are 27, 1 Handysize, 6 Ultra-Handymax, 13 Panamax and 7 Capesize vessels. Navios is listed in NYSE from 2005, was established in 1954 as a wholly-subsidiary of United States Steel and is a Marshall Islands company. Her market capitalization is 384.1 mln dollars.

Navios operating market

In the beginning, in the bulk shipping market, dry bulk segment has its own idiosyncrasies, unique definitions of peak and troughs. In dry cargo shipping, troughs are characterized with freight near operating costs, old ship prices falling to scrap, usually little ordering, a lot of demolition sales, banks reluctant to lend and pessimistic market sentiment. On the other hand peaks are defined with freight over thrice the OPEX, 5-year-old ship costs same as newbuilding, heavy ordering, few demolition sales, banks keen to lend and implausibly positive market sentiment.

The demand for dry bulk freight rates is defined by commodities transported’ demand and furthermore, raw materials demand in the global production chain. Specifically, dry bulk freight demand comes as a result of commodity markets’ economics, international seaborne trade and world economic activity. The dry bulk shipping market is characterized with high
volatility even in different vessel classes and in the past decade the market fluctuations reached the highest level. Moreover by separating the main commodities shipped by bulk carriers, iron ore and coal are unevenly distributed and mined in a variety of regions across the world.

To begin with, iron ore is concentrated in few countries, mostly in China, Australia and Brazil and its consumers are Far East Asian countries like Korea, Japan and China. European countries like Italy, UK, Poland, France and Germany are big consumers of iron ore, too. In general, iron ore market is very fragmented, influencing a lot the structure of the dry bulk cargo industry. However, the industry we’re talking about can be divided in a large number of different markets defined by quality, liquidity and asymmetry of information, affecting enough freight rates’ prices. Freight rates interact with vessels characteristics, contract features and route types. Dry bulk market is determined by homogenous products but has as well as a big number of players. However space influences cargoes distribution that can compete commercially in the auctions, meet the lay can period in port level and have low entry barriers.

Furthermore, freight indices are developed by a party that is independent and absolutely represents the freight being hedged and can’t be manipulated. In dry bulk industry, this party is Baltic Exchange in London that created the Baltic Freight Index. The abovementioned index was based on a weighted average of 11 different trade routes, four routes for grain, three for coal, three for iron ore and trip charter, collected in a daily basis from a panel of brokers. After 16 years, BFI was turned into 4 dry cargo indices, the Baltic Capesize Index (BCI), the Baltic Exchange Panamax Index (BPI), the Baltic Exchange Handymax Index (BHMI) and the Baltic Exchange Dry Index. Baltic indices as well as the underlying route assessments from which they are compiled rely on rates estimated by independent competitive shipbrokers, who act as panelists.

NMH is more focused in the Capesize sub-segment of dry bulk market. Capesizes average size is 156,000 DWT and this category can include some very large ships with a capacity of 400,000 DWT. Primarily, Capesizes transport coal (30 percent) and iron ore (70 percent) on long-distance routes and in some occasions they transport grains. Those vessels are too wide to pass the Panama Canal and their name derive from this although generally the term means all the vessels exceeding 85,000 DWT. They mostly cover the routes of South America and Australia to China and Japan, Western Europe and North America when they transport iron ore. When they rarely had
to transport coal the routes are Australia and North America to Japan and West Europe.

They also have deep draught, a small number of commodities that they can carry and the operation of these kinds of carriers when talking about trading routes is pretty restricted. Due to their deeper draught, huge size and are used in the transportation of less commodities than the Handysize vessels, makes them less flexible than small size vessels. A recent development in iron ore carriers that pushed further the holding capacity are the new Very Large Ore Carriers, 200,000 DWT that have benefits from economies of scale and greater efficiency in handling raw materials of a very low price-to-volume ratio. The Capesize sector is the riskiest in terms of freight rate volatility compared to other dry-bulk shipping sectors. Capesize vessels are involved in limited types of trades and results on the volatility of their prices and their freight rates, compared to Handy and Panamax vessels.

Diagram: BDI and BCI Financial Crisis 2008-2018
First Loan - 07/2009 (1st Recovery 2009-2010)
Commerzbank AG - 240 million dollars - 2.25%+LIBOR
Capesize(4)

Financial Analysis

Qualitative Criteria

Market

China’s increased iron ore imports.
BDI and BCI: 3,361 and 5,628 respectively
Capes’ freight rates: $42,000-$100,000
LIBOR: 0.242%

Company

Age: 4 years
Fleet size: 6.6 mln dwt
Fleet diversity: 25 Capesize, 18 Ultra Handymax, 14 Panamax, 2 Handysize,
1 Product tanker Handysize
Fleet average age: 4.4 years
Moody’s rating: B1

Bank’s shipping portfolio

Exposure to shipping finance: 8.52%
Shipping loans: $22 bn
Exposure to dry bulk finance: 22%, $5 bn

Quantitative Criteria

Leverage

Debt ratio(=Total Liabilities/Total Assets): 64%

Liquidity
Current Ratio (= Current Assets/Current Liabilities): 218%

Profitability

ROE (= Net Income/Total Assets - Total Liabilities): 7%
ROA (= Net Income/Total Assets): 2%

Debt Coverage

Debt Coverage ratio 1 (= Current Liabilities/EBITDA): 1.01
Debt Coverage ratio 2 (= Long-term Debt/EBITDA): 8.39
Debt Coverage ratio 3 (= Total Liabilities/EBITDA): 9.69

Second Loan - 08/2010 (1st Part Collapse 2010-2012)
DNB NOR - 40 million dollars - 2.75%+LIBOR
Capesize(2)

Financial Analysis

Qualitative Criteria

Market

Strong supply overcapacity. Panamax worst from all sub-segments
BDI and BCI: 2,432 and 2,987 respectively
Capes’ freight rates $17,360-$57,590
LIBOR 0.231%

Company

Age: 5 years
Fleet size: 6.6 mln dwt
Fleet diversity: 25 Capesize, 18 Ultra Handymax, 14 Panamax, 2 Handysize,
1 Product tanker Handysize
Fleet average age: 4.4 years
Moody’s rating: B1
Bank’s shipping portfolio

Exposure to shipping finance: 8%

Quantitative Criteria

Leverage

Debt ratio (={Total Liabilities/Total Assets}): 64%

Liquidity

Current Ratio (={Current Assets/Current Liabilities}): 174%

Profitability

ROE (={Net Income/Total Assets-Total Liabilities}): 11%
ROA (={Net Income/Total Assets}): 4%

Debt Coverage

Debt Coverage ratio 1 (={Current Liabilities/EBITDA}): 0.53
Debt Coverage ratio 2 (={Long-term Debt/EBITDA}): 5.41
Debt Coverage ratio 3 (={Total Liabilities/EBITDA}): 6.15

Third Loan - 08/2011 (1st Intermediate Peak(Mid2011-Mid2012)
Emporiki Bank - 23 million dollars - 2.75%+LIBOR
Panamax(1)

Financial Analysis

Qualitative Criteria

Market

Asia’s strong demand for iron ore and coal from due to Japan’s reconstructions from tsunami. Declining Panamax rates.
BDI: 1,386
Panamax freight rates $9,000-$13,000
LIBOR 0.145%

Company

Age: 6 years
Fleet size: 5.8 mln dwt
Fleet diversity: 19 Capesize, 20 Ultra Handymax, 16 Panamax, 2 Handysize
Fleet average age: 5.4 years
Moody’s rating: B1

Bank’s shipping portfolio

Shipping Loans: $2.73 bn.

Quantitative Criteria

Leverage

Debt ratio(=Total Liabilities/Total Assets): 60%

Liquidity

Current Ratio(= Current Assets/Current Liabilities): 147%

Profitability

ROE(=Net Income/Total Assets-Total Liabilities): 4%
ROA (= Net Income/Total Assets): 1%

Debt Coverage

Debt Coverage ratio 1(=Current Liabilities/EBITDA): 1.22
Debt Coverage ratio 2(=Long-term Debt/EBITDA): 7.04
Debt Coverage ratio 3(=Total Liabilities/EBITDA): 8.41
Fourth Loan - 12/2013 (2nd Intermediate Peak(Mid2013-Mid2014)
Credit Agricole - 22,5 million dollars - 3.00%+LIBOR
Panamax(2)
Financial Analysis

Qualitative Criteria

Market

Short lasting, increased iron ore and coal imports from China, strong Panamax oversupply.
BDI: 2,178
Panamax freight rates $6,600-$8,250
LIBOR 0.100%

Company

Age: 8 years
Fleet size: 6.3 mln dwt
Fleet diversity: 17 Capesize, 20 Ultra Handymax, 27 Panamax, 2 Handysize
Fleet average age: 7.2 years
Moody’s rating: B2

Bank’s shipping portfolio

Exposure to Shipping Finance: 3%
Shipping Loans: $18.1 bn.

Quantitative Criteria

Leverage

Debt ratio(=Total Liabilities/Total Assets): 59%

Liquidity

Current Ratio(= Current Assets/Current Liabilities): 227%

Profitability
ROE (=Net Income/Total Assets - Total Liabilities): -9%
ROA (= Net Income/Total Assets): -4%

*Debt Coverage*

Debt Coverage ratio 1 (=Current Liabilities/EBITDA): 1.80
Debt Coverage ratio 2 (=Long-term Debt/EBITDA): 18.17
Debt Coverage ratio 3 (=Total Liabilities/EBITDA): 20.80

**Fifth Loan - 01/2016 (2nd Part Collapse 2014-2016)**
*DVB Bank* - 41 million dollars - 2.55%+LIBOR
*Capes&Pana*

**Financial Analysis**

**Qualitative Criteria**

*Market*

Existing surplus capacity, high rate volatility, strong deliveries, slow coal trade and limited growth in iron ore trade, Indonesia ban on minor bulks exports, China’s falling demand for dry bulk commodities. Many bankruptcies.
BDI and BCI: 386.3 and 277.6 respectively (historical lows)
Panamax freight rates $6,260-$6,580
Capes’ freight rates: $6,960-$13,309
LIBOR 0.366%

*Company*

Age: 11 years
Fleet size: 6.7 mln dwt
Fleet diversity: 15 Capesize, 20 Ultra Handymax, 23 Panamax, 2 Handysize
Fleet average age: 8 years
Moody’s rating: Caa1

*Bank’s shipping portfolio*
Exposure to Shipping Finance: 45.9 %  
Shipping Loans: $11.9 bn.  
Exposure to dry bulk finance: $2.92 bn

**Quantitative Criteria**

*Leverage*

Debt ratio\(=\text{Total Liabilities}/\text{Total Assets})\): 71\%

*Liquidity*

Current Ratio\(=\text{Current Assets}/\text{Current Liabilities})\): 108\%

*Profitability*

ROE\(=\text{Net Income}/\text{Total Assets-Total Liabilities})\): -37\%
ROA \(=\text{Net Income}/\text{Total Assets}\): -11\%

*Debt Coverage*

Debt Coverage ratio 1\(=\text{Current Liabilities}/\text{EBITDA})\): -2.45
Debt Coverage ratio 2\(=\text{Long-term Debt}/\text{EBITDA})\): -16.06
Debt Coverage ratio 3\(=\text{Total Liabilities}/\text{EBITDA})\): 18.96

**Sixth Loan - 11/2016 (2nd Part Recovery 2016-now)**

\textit{Alpha Bank - 16.1 million dollars - 3\%+LIBOR  
Capesize(1)}

**Financial Analysis**

**Qualitative Criteria**

*Market*

Increased scrapping, deliveries’ reductions and postponements, increased iron ore imports from Chinese government’s growth plan, lower supply growth, and demand exceeded supply.
BDI and BCI: 1,071 and 2,157 respectively  
Capes’ freight rates: $11,450-$15,300  
LIBOR 0.434%

Company

Age: 11 years  
Fleet size: 6.7 mln dwt  
Fleet diversity: 15 Capesize, 20 Ultra Handymax, 23 Panamax, 2 Handysize  
Fleet average age: 8 years  
Moody’s rating: Caa3  
Bank’s shipping portfolio  
Shipping Loans: $2.1 bn.

Quantitative Criteria

Leverage

Debt ratio (=Total Liabilities/Total Assets): 71%

Liquidity

Current Ratio (= Current Assets/Current Liabilities): 108%

Profitability

ROE (=Net Income/Total Assets-Total Liabilities): -37%  
ROA (= Net Income/Total Assets): -11%

Debt Coverage

Debt Coverage ratio 1 (=Current Liabilities/EBITDA): -2.45  
Debt Coverage ratio 2 (=Long-term Debt/EBITDA): -16.06  
Debt Coverage ratio 3 (=Total Liabilities/EBITDA): 18.96
Final Table

<table>
<thead>
<tr>
<th>Navios Maritime Holdings</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leverage</td>
<td>64%</td>
<td>64%</td>
<td>60%</td>
<td>59%</td>
<td>71%</td>
<td>71%</td>
</tr>
<tr>
<td>Liquidity</td>
<td>218%</td>
<td>174%</td>
<td>147%</td>
<td>227%</td>
<td>108%</td>
<td>108%</td>
</tr>
<tr>
<td>ROE</td>
<td>7%</td>
<td>11%</td>
<td>4%</td>
<td>9%</td>
<td>37%</td>
<td>37%</td>
</tr>
<tr>
<td>ROA</td>
<td>2%</td>
<td>4%</td>
<td>1%</td>
<td>4%</td>
<td>11%</td>
<td>11%</td>
</tr>
<tr>
<td>Debt Coverage 1</td>
<td>1.01</td>
<td>0.53</td>
<td>1.22</td>
<td>1.80</td>
<td>-2.45</td>
<td>-2.45</td>
</tr>
<tr>
<td>Debt Coverage 2</td>
<td>8.39</td>
<td>5.41</td>
<td>7.04</td>
<td>18.17</td>
<td>-1.60</td>
<td>-1.60</td>
</tr>
<tr>
<td>Debt Coverage 3</td>
<td>9.69</td>
<td>6.15</td>
<td>8.41</td>
<td>20.80</td>
<td>-18.96</td>
<td>-18.96</td>
</tr>
<tr>
<td>Interest rate</td>
<td>2.25%+</td>
<td>2.75%+</td>
<td>2.75%+</td>
<td>3%+</td>
<td>2.55%+</td>
<td>3%+</td>
</tr>
<tr>
<td>Amount</td>
<td>$240 mln</td>
<td>$40 mln</td>
<td>$23 mln</td>
<td>$22.5 mln</td>
<td>$41 mln</td>
<td>$16.1 mln</td>
</tr>
<tr>
<td>Vessels</td>
<td>4 Capesize</td>
<td>2 Capesize</td>
<td>1 Panamax</td>
<td>2 Panamax</td>
<td>1 Capesize</td>
<td>1 Capesize</td>
</tr>
<tr>
<td>Bank exposure</td>
<td>small</td>
<td>small</td>
<td>small</td>
<td>small</td>
<td>big</td>
<td>small</td>
</tr>
<tr>
<td>LIBOR</td>
<td>0.24%</td>
<td>0.23%</td>
<td>0.14%</td>
<td>0.1%</td>
<td>0.36%</td>
<td>0.43%</td>
</tr>
<tr>
<td>Moody’s rating</td>
<td>B1</td>
<td>B1</td>
<td>B1</td>
<td>B2</td>
<td>Caal</td>
<td>Caal3</td>
</tr>
<tr>
<td>Dry bulk cycle’s stage</td>
<td>7-2009</td>
<td>8-2010</td>
<td>8-2011 peak</td>
<td>12-2013 peak</td>
<td>1-2016 trough</td>
<td>11-2016 recovery</td>
</tr>
<tr>
<td>(2008-2017)</td>
<td>recovery</td>
<td>collapse</td>
<td>peak</td>
<td>peak</td>
<td>trough</td>
<td>recovery</td>
</tr>
</tbody>
</table>

Case Study’s conclusions

To begin with, all the loans, from the first recovery of 2009-2010, where Navios’ 1st loan is located and until the last one, the 6th, where another recovery takes part, the interest rate is increasing. From an interest rate of 2.25 percent+ LIBOR in the first loan, to the interest rate of 3.0 percent+LIBOR, in the 6th loan. The increased trend of the margins reflects the undertaken risk of banks when financing investments during depressive conditions of the dry bulk market. Banks, and especially the ones with small exposure, less than 10 percent, chose Navios to be financed from. Additionally the loan amount, as the dry bulk shipping cycle go by, is getting decreased reflecting again the high risk of default. Navios from her side, also wanting to protect
herself from the descending seaborne trade of the major dry bulk commodities, reduces the tonnage and capacity investing to. The latter decision, is obvious at the vessels’ size and type, when, at her first loan, a heavy one due to the loan amount and the tonnage wanting to acquire, 4 Capesize vessels.

However, Navios Maritime Holdings, from the beginning of the crisis started with Capesize vessels, almost being part in half of the fleet. Due to the high volatility of the large tonnage vessels during turbulent times, Navios lowered the Capesize percentage in the fleet from 41 percent to 25 percent as well as the ships being financed with the loans, choosing Panamax vessels to balance the large tonnage risk. However during the recovery period of the dry bulk market at the 6th loan, where Capesize market also boosted and Navios, as a speculator took the advantage to invest this period of revived freight rates and iron ore imports. However, although the last quarter of 2016 was positive for the shipping companies, yet low and uncertain for shipping banks, reflecting to the high interest rate and LIBOR, at 3.43 percent. Moody’s credit rating affected also the banks that, after downgrading Navios from B1 to B2, from the 3rd to the 4th loan, interest rate was increased, because it reflected the increased default risk of the company. The same pattern happened also from the 5th to the 6th loan, where Navios was downgraded from the credit agency, from Caa1 to Caa3 and the interest rate was raised.

Nevertheless the only loan that exceeded the pattern was the 5th one, signed with DVB that is a continuing leading bank in the shipping finance industry, with a big exposure at nearly half of her portfolio. That’s why this loan has different characteristics from the others that were signed with banks of a small exposure. In the 5th loan, we see a lower interest rate and an increased loan amount, during a downgrade of NHM from B2 to Caa1 and a market walking from an intermediate peak to the worst historical trough. In addition, we see that the shipping company chose to invest in two segments, one vessel from the Capesize market, and one vessel from the Panamax one. By diversifying the investment, downsizes the risk, because invests in two markets of different vessels’ tonnage. Navios Maritime Holdings, had been cooperating with DVB since 2004, and at the absolute depression of the dry bulk market in the beginning of 2016, where the 5th loan is located, the two shipping players agreed on a loan of favorable terms for NHM related to the financial environment. Relationship banking had made again the difference even in a time period that shipping industry was drowning.

On the other hand, the quantitative criteria, the financial indicators of
leverage, liquidity, profitability and debt coverage ratios of Navios Maritime Holdings, vary during the dry bulk cycle. Firstly, the leverage of Navios, through the total debt ratio, that indicates how much of the total assets it’s financed through debt, is meaning borrowing activity. Well, Navios at the time period he took the 1st loan had 64 percent leverage and at the 6th loan, the total debt ratio came at 71 percent, with the lowest at the 4th loan, at 59 percent. Those debt ratios are pretty high in general but are normal in shipping industry due to the fact that, it is a market that is traditionally funded mostly by debt, meaning borrowing, so those ratios do not affect borrowing conditions. Furthermore, liquidity of the company from the 1st to the 4th loan is in normal levels, especially in the first three loans and corresponds with the relatively low interest rates. That gives the banks’ involved, safety that their principal and interest payments will be paid due, because the company has enough liquidity to do so.

In terms of profitability and earnings, NHM, at the first three loans has positive returns, and this is obvious from the ROE and ROA, that rise from the peak of freight rates in the beginning of the collapse, at the 2nd loan. Return on equity from 7 percent rose to 11 percent and Return on Assets from 2 percent to 4 percent, as income rose too. However at the 4th, 5th and 6th, ROE and ROA went negative due to consecutive losses, leading to high interest rates. Especially, the banks, and more the ones with a small shipping portfolio, in order to protect themselves from a default risk that is greater when lending to a non-profitable company, by increasing the interest rate. Again, mentioning that DVB is an exception that set lower interest rate and a higher loan amount, although to a company with losses and negative ROE and ROA, due to her big exposure in shipping industry and the years of cooperation with the company. Moody’s, naturally, when observed losses to Navios’ financial statements, directly downgraded the company and pushed banks to increase the interest rate.

The Earnings before Interest Taxes Depreciation and Amortization compared to net income went negative at the 5th and the 6th loan, where market conditions got worst and LIBOR increased too. Firstly, the decreasing EBITDA, affected the high debt coverage ratios increasing the interest rates, due to the fact that showed Navios Maritime Holdings unable to cover its short and long-term liabilities with its EBITDA, increasing the default risk. Only the current liabilities to EBITDA had the smallest value compared to the other too debt coverage ratios that contained the long-term debt and the one containing the total liabilities. For the banks that were the borrowers,
those ratios percentage showed that Navios’ EBITDA can cover twice or 100 percent the principal amounts and interest rates but the long-term is above 5 times bigger than its annual EBITDA. In the 2nd loan, where EBITDA was higher that period, compared to the other loans and the debt coverage ratios were surely affected.
5 Conclusion

Closing, shipping industry, although weighting her prosperity on bank finance through loans, due to the last 10 years of a second historically great world depression, lost her dependence on European shipping banks. In order to survive, the latter, left shipping finance or minimized their exposure and risk from an industry that was collapsing more and more. The results of this financing catastrophe, made shipping to look for funds elsewhere. Shipping companies searching for finance for their survival’s investments, turned into Asian banks and alternative ways, besides term loans. So the “center of gravity” in shipping finance, during the crisis, started to move easterly, where Asian countries were developing at a fast track, when European ones faced recession.

Chinese banks were focusing on the shipping industry, giving hope to depressed shipowners, ending on taking the leading role in shipping finance. Chinese banks, involved their shipyards into the loan contracts, to strengthen the economy of their country. Besides the change of shipping finance’s “mother-land”, and due to unfavorable lending terms, turn into alternative and unconventional sources that mostly came from Asia, again. Leasing, syndicated term loans, private equity are the shipping finance “fruits” of the last ten years after the beginning of the subprime crisis that started with the last huge peak of shipping industry and led into the historically worst trough of it. However the transition is still in progress due to the fact that traditional shipping companies are connected years and years with their shipping bank division, but the modern ones in order to keep making profits are trying those new options.

After the two case studies, the first with DVB Bank SE, a typical European shipping bank during the timeline of the last ten years, that started with the collapse of Lehman Brothers and consequently the leave of many banks from the shipping finance. Due to those difficult times, DVB in order to assess and avoid the risk of defaulted shipping loans, became more selective on their clients, because due to falling asset values, the only trustful collateral was their reputation and character. Besides the relationship banking, DVB, to assess and manage the risk, leaned on a sector structure approach and a more geographical model. Nevertheless, as all shipping banks, it is absolutely obvious that although she kept her shipping personality, had to lower the exposure in both, percentage of shipping portfolio and in terms of money.
On the other hand, the second case study of Navios Maritime Holdings, as the borrower’s side, during the turbulent ten years of dry bulk recession, kept on borrowing from different banks. Those banks, with their own credit reviews on different times where Navios choose to borrow funds, inside of the dry bulk shipping cycle that defined and during the different stages of it. So, each loan due to its timing and borrower’s financial state was priced in order to assess the risk undertaken. NMH with its loans showed that was influenced from the other dry bulk companies who helped on elongating the recession. That happened due to before crisis exuberance of 2007-2009 and overexcitement who led on banks’ continued lending, shipping companies irrational endless investing. So, they both overpass the objective risk assessment of those loans, leading on the major overcapacity that needed many years and mostly, less investments and less investment finance to overcome the imbalance.

Navios Maritime Holdings, behaved like a typical dry bulk company that during the shipping cycle 2008-2018, invested, made orders of newbuilding and signed term loans to finance them as the other dry bulk shipping companies resulting on tremendous overcapacity. However, as a traditional Greek shipping company, found the market perspective and timing convenient for a sequence of investment loans. That is the countercyclical investment approach of Greek shipowners, where they choose collapses and recession periods to invest, the known low-cycle investments. Their shipping “wisdom” is based on the fact that, when times are low, vessels values fall, shipowners need to get off tonnage to lower the OPEX, so it’s the right time to buy or/and order because shipyards lower the newbuilding prices to find clients and cancellations are good opportunities too. Then after surviving from the collapse, they begin the asset play with huge profits.

The last two years, shipping has left the historical trough of 2016 and specific sectors like dry bulk shipping, are facing a diminutive yet reviving time that shows a positive outlook and is continuing today, with a slow pace though. The coveted supply and demand balance, with demand finally overcoming supply and supply surplus starting to fade are some of the characteristics of this new age, full of hope after the long recession. Many analysts support the view of reasoning this recovery to the strong demolition activity, decreased orderbook and increased seaborne trade, to the limited shipping finance that stopped the shipowners from irrational overinvesting. Loan procedures, pricing and credit review have become stricter giving shipowners the rationality of acting in order to remember and avoid mistakes of the past.
However, exuberance and overexcitement are factors that fuddle investors, by giving the illusion that is going to last more than they think. Afterwards, after the end of the party, the harsh reality takes revenge with dramatic consequences as did in the dry bulk sector. Due to this new recovery, shipowners may again fell to the same mistakes by their over optimism when seeing the market moves slightly upwards. Banks on the other hand, in order to avoid similar situations with the past, have made smart regulations related with the risk undertaken in every sector but most in shipping due to the high risk. Shipping banks or banks who have a small shipping portfolio, now assess and manages shipping market’s risk more wisely but also at a more selfish an self-protective way.

The new parameters in shipping, today, are more directed to environment’s protection with the new IMO regulations about the EEDI, Sox and NOx emissions, green fuel and ballast treatment have put more pressure in shipping companies. Therefore, shipping loans have now, this parameter also, mainly due to the high cost of this transition into a greener maritime industry. So today when thinking of investing on shipping, it is substantial to involve that new regulations’ criteria that sets off the past way of planning and pricing a vessel’s acquisition or construction’s loan. Today a vessel’s value and price has also the cost of a scrubber, a more fuel efficient engine, a construction’s design based on energy efficiency, a testified ballast treatment technology and a sewage management method, too. Thus, a today’s loan credit review has to significantly consider the entire above mentioned burden in order to make the right risk assessment and the shipowner should think twice before taking the risk on becoming a banks’ loan borrower or search for alternative financing sources.

Last but not least, shipping industry will always be risky, volatile and prone to cycles. Will always after a long recession, find alternative solutions to recover and look forward as her environment will continually change but she will always adapt and be profitable. There comes the role of finance in this beautiful industry, giving the tool and the push to achieve it. Shipping will always move and transforms but will always remain global making different countries, cultures, currencies, mentalities, traditions, economies, languages not an obstacle to bloom. Shipping will be seeing there an opportunity to cooperate, remove borders and walls, finding a universal way of communicating. This is happening because we’re citizens of the earth, sailing in the same sea wanting to prosper by transporting goods but also cultures and civilizations through the merchant vessels.
6 Bibliography

Books


E-Resources

25. Moody’s Investors Service, 2016, Rating Action: Moody’s downgrades Navios Holdings’ ratings to Caa3; negative outlook
38. Lloyd’s list: Maritime Intelligence, 2018, Chinese leasing orders seen as drag on dry bulker prospects, Yan Hai
39. Investopedia, 2018, Baltic Dry Index – BDI,
https://www.investopedia.com/terms/b/baltic_dry_index.asp
https://www.researchgate.net/publication/229045634_Economic_Cycles_in_Maritime_Shipping_and_Ports_The_Path_to_the_Crisis_of_2008?enrichId=rgreq-de2e0731bf45e61d5ddc83ef7eefa81e-XXX&enrichSource=Y292ZXJQYWdlOzIyOTA0NTYzNDtBUzoxMDIwODczNDYwOTgxODQwMTQwMTM1MDkyODQwNg%3D%3D&el=1_x_2&_esc=publicationCoverPdf
41. Hellenic Shipping News, 2018, Lack of available shipping finance has contributed to dry bulk market’s revival,
42. Dry Bulk Magazine, 2017, Will 2018 bring further growth for the dry bulk industry?
https://www.drybulkmagazine.com/special-reports/21122017/will-2018-bring-further-growth-for-the-dry-bulk-industry/
43. Maritime Connector, Capesize,
http://maritime-connector.com/wiki/capesize/
44. BMTI Technik Informations GmbH, Baltic Capesize Index (BCI),
https://www.bmti-report.com/baltic-capesize-index-bci/
45. Hellenic Shipping News, 2018, Dry Bulk Market: Capesize Market Looking For New Momentum
https://www.hellenicshippingnews.com/dry-bulk-market-capesize-market-looking-for-new-momentum/
46. Hellenic Shipping News, 2018 Dry Bulk Market: Capesize Market In the Doldrums
47. Nautemporiki, 2018, Profit over 80% for the Capesize ships in one week
48. Manolis G. Kavussanos, Dimitris A. Tsouknidis, 2016 Default risk drivers in shipping bank loans, Elsevier
49. Maria-Monica Haralambie, Bogdan Ștefan Ionescu, 2016 Corporate qualitative and quantitative assessment from credit risk perspective

50. www.commerzbank.de, Enhancing profitability through optimization and de-risking, Investors’ Day 2009

51. www.norwayexports.no 2010 DnB NOR’s conservatism international ambitions

52. Credit Agricole S.A Annual Report 2013

53. DVB Group SE Annual Report 2017

54. DVB Group SE Annual Report 2016

55. DVB Group SE Annual Report 2015

56. DVB Group SE Annual Report 2014

57. DVB Group SE Annual Report 2013

58. DVB Group SE Annual Report 2012

59. DVB Group SE Annual Report 2011

60. DVB Group SE Annual Report 2010
61. DVB Group SE Annual Report 2009

62. DVB Group SE Annual Report 2008

63. www.dvbbank.com, Shipping finance: Products

64. Ted Petropoulos, Petrofin Research 2016, Key Developments and Growth in Greek Ship-Finance


66. Facilitation of transport and trade in Latin America and the Caribbean, 2011, The maritime cycle and the post-crisis ups and downs

67. Claudio Ferrari, Malvina Marchese, Alessio Tei, 2018, Shipbuilding and economic cycles: a non-linear econometric approach
www.emeraldinsight.com/2397-3757.htm

68. Ted Petropoulos, Petrofin Research 2015

69. www.compassmar.com, 2009, What’s in the value of a vessel?

70. Allan D. Reiss, Morgan Lewis Bockius LLP, 2014, Shipping Finance in the Wake of Basel III

71. Moody’s Investors Service, 2016, German Ship Lenders Peer Comparison: Large exposure to the shipping sector will require further provisioning
http://cmjrieff.pt/feed-items/moodys-german-ship-lenders-will-require-further-provisioning-due-to-large-exposures/

72. Ted Petropoulos, Petrofin Research 2017 Who will replace European banks as the primary ship-lending institutions?
https://www.nafsgreen.gr/articles-2/3328-ted-petropoulos-who-will-replace\
73. Dimitris Gavalas Theodore Syriopoulos 2015, An integrated credit rating and loan quality model: application to bank shipping finance
https://doi.org/10.1080/03088839.2014.904948
74. Evangelos Sambracos and Marina Maniati 2015, Analysis of Financial Crisis Results on Dry Bulk Market Financing
https://ideas.repec.org/p/pra/mprapa/68601.html
77. Ted Petropoulos, Head of Petrofin Research, 2015 Ship finance banks become more aggressive, in streamlining their loan portfolios
78. Maritimecyprus.com, 2018, Upcoming Maritime Regulations 2018 and onwards
https://maritimecyprus.com/2018/03/05/upcoming-maritime-regulations-\2018-and-onwards/
79. Manolis G. Kavussanos, Dimitris A. Tsouknidis 2014, The determinants of credit spreads changes in global shipping bonds
81. Dimitris Gavalas, 2015, 10 Core Principles in Modern Corporate Finance
82. Dimitris Gavalas 2015, Notes from undergraduate lesson "Financial sources in Shipping", Dept Shipping, Trade and Transport, University of the Aegean
83. Dr. Theodore Syriopoulos, Notes of lesson "Shipping Finance", Dept Shipping, Trade and Transport, University of the Aegean