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M.Sc. in Maritime Studies

Thesis

CAPITAL LOAN ANALYSIS FROM 2010 TO 2016

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ΠΕΡΙΛΗΨΗ

Η ναυτιλία αποτελεί μία πολύ ιδιαίτερη αγορά, με συνεχείς διακυμάνσεις και ανάγκη για υψηλής εντάσεως κεφαλαίου επενδύσεις. Η χρηματοδότηση των εταιρειών, αποτελεί βασικό συστατικό τόσο της μεγέθυνσης όσο και της βιωσιμότητάς τους.

Από το 2007, όπου υπήρξε μία τρομερή άνοδος των ναύλων, το κλίμα αισιοδοξίας βρισκόταν στα ύψη και οι εταιρείες αποκόμισαν τεράστια κέρδη, την τελευταία δεκαετία παρατηρούμε ακριβώς το αντίθετο. Το κλίμα έχει αλλάξει άρδην, οι περισσότερες εταιρείες αντιμετωπίζουν πρόβλημα στις δανειακές τους υποχρεώσεις και η αγορά αντιμετωπίζει μια υπερπροσφορά χωρητικότητας που επηρεάζει άμεσα τα ναύλα άρα και τις ταμειακές ροές τους.

Στην παρούσα εργασία έχει γίνει μια προσπάθεια μελέτης των δανειακών υποχρεώσεων οχτώ εταιρειών, πως εξελίχθηκαν από το 2010 έως και το 2016 και πως συνδέονται με την πορεία της ναυλαγοράς. Ξεκινάμε με μία ανάλυση των δύο βασικών αγορών, μεταφοράς χύδην ξηρού φορτίου και πετρελαίου, και στη συνέχεια αναφερόμαστε στους βασικούς τρόπους χρηματοδότησης των εταιρειών και πως επηρεάζονται από τους ναυτιλιακούς κύκλους. Στη συνέχεια γίνεται αναφορά στα προφίλ των εταιρειών που επιλέξαμε, στη μεθοδολογία που χρησιμοποιήσαμε και στην παρουσίαση των βασικών αριθμοδεικτών που θα αναλύσουμε. Στο τελευταίο κεφάλαιο γίνεται η παρουσίαση των αποτελεσμάτων και τα συμπεράσματα της συγκεκριμένης μελέτης.

Λέξεις Κλειδιά: Ναυτιλία, Χρηματοδότηση, Αριθμοδείκτες, Δανειακές υποχρεώσεις, τιμές ναύλων

ABSTRACT

Shipping is a very special market, with constant fluctuations and a need for high-capital investment. The financing of companies is a key component of both their growth and their sustainability.

Since 2007, when there has been a tremendous rise in freight rates, the optimism climate has been soaring and the companies have made huge profits, over the last decade we have seen exactly the opposite. The climate has changed sharply, most companies have problems with their debt obligations and the market faces an oversupply of capacity that directly affects their freight rates and thereafter their operation cash flows.

In this paper, an attempt has been made to study the debt obligations of eight companies, how they evolved from 2010 to 2016 and how they are linked to the course of the market. We begin with an analysis of the two main markets, dry and wet, then we are referred to the main ways of financing methods and how they are affected by maritime cycles. After that we analyze the profiles of the chosen companies, the methodology we used and the presentation of the key figures we will lay down. The last chapter presents our results and the conclusions of this study.

Key Words: Shipping, Finance, Ratios, Debt liabilities, Freight rates

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INTRODUCTION

The rapid fall in commodity prices and the deterioration in global demand combined with an increase in the global fleet capacity and the construction of bigger ships, based on optimistic day-to-day forecasts, have led freight rates to a historic low point. A typical example is the rates of freight rates in commercial dry bulk index, which ranged from around 2,300 units in December 2014 to around 230 and raised again over 800 nowadays. On the other hand oil transportation industry seems to have suffered the smallest effect, in addition to the strong fluctuations throughout the previous years.

The huge dropped in freight rates was a result from the price reductions and the limited demand for raw material transport from China and other manufacturing developing countries, as well as the consequent limitation of their exports to the developed ones, and ultimately, the decline in the global demand as a result from the fragile situation of the European economy and the instability in the international environment, causing uncertainty in the markets and the curtailment for further business investments.

The negative effects of the effort to overcome the crisis through restrictive fiscal and monetary (in the case of Europe) policies are clear. The US exception and the regulatory role of the central bank decisions in dealing with monetary aggregates may have been the most critical factor in attempting to restore normality to global economic developments. In this context, Greek shipping - one of the largest internationally – is still going through a systemic crisis.

The questions of the de-valuation of ships due to their fall in their revenues are highlighted. The reduced present values of their yields drag their current valuations, leaving important balances in relation to the initial market values on which loans have been issued. As a result, banks are claiming to cover the difference with equity, without of course referring to arrangements without the inclusion of further collateral, maritime guarantees and prefixes on other ships. Furthermore in the current crisis of the financial system, it is almost

impossible to transfer the loan liabilities of the shipping companies to other banks. The result is the violent demands for fleet rebalancing, which leads to ship sales with great damages and is conducive to a business constraint that prevent the implementation of further investment plans.

Greek dry-bulk shipping companies are facing serious problems in meeting their liabilities. This also results problems to Greece's balance of payment, where shipping industry has a prime role. It is a matter of optimism that most of the income from Greek shipping, comes from oil tankers, which, along with neighboring sub-sectors in which Greek ship-owners have invested, are steadily, if not upward.

This thesis aims to address the economic effects of period 2010 to 2016 in the shipping industry. More specifically, the main emphasis is given on the analysis of their financing source and the fulfillment of their debt obligations. Since the nature of shipping demands investments of high intensive capital, questions arising regarding the risk and the cost of each investment.

Taking into consideration the problem statement we will try to decode some inquiries, which mainly concern the structure of the companies involved in shipping transportation.

- a) "Which is the most appropriate source for shipping investments?"
- b) "How did the fluctuations of the freight rates influenced the economic structure and the strategy of each company?"

As previously discussed, shipping sector is in great instability nowadays as happens with almost every sector which is closely linked to the global economy and is directly affected by the fluctuations in the trade flows demand. The ship-owners face many challenges in this ever-changing environment and are willing to implement cost and pricing strategies not only for increase the utilization of their fleet but also for mitigating and spreading their risks.

This research has a clear aim, to present performance results of the two main sectors in shipping transportation derived from their operations during a tough period of time as these reflect to their stock prices and test their correlation with the freight rates measure. In order to achieve the main goal of this project, initially we have to understand some key points, of how shipping funds its business.

CHAPTER 1

1 MARKET ANALYSIS

Since 2008 and the crash of the financial market, economic growth still remains in low levels. This has a significant effect in the shipping industry, which continues to lack in several sectors.

Shipping markets, still need a lot of years and have to make several adjustments in order to catch the rates of the previous years. During this period what we noticed was an extra supply of available tonnage in order to cover the small demand for commodities. This has resulted to very low freight rates, thus a significant drop in potential earnings for both companies and investors.

If we have a look at 2016, we will notice that shipping industry had face better days in trading flows. No significant economic growth and lesser demand for trading among the negative optimism have lent companies to reduce their portfolio.

Many socio-economic changes took place during the previous months. Some of these events have direct impact on the shipping market for instance the low oil prices while others have indirect impact.

In addition, the economic crisis in Russia as a result of the sever sanctions imposed by the USA and European Union; the economic slowdown of major global economies such as China and Japan while at the same time more and more emerging worries regarding the stability and growth of Euro-zone, constitute an completely insecure economic environment. Of course, shipping market could not be an exception of that rule as is closely linked with the global demand and supply.

1.1 Dry Bulk Market



Figure 1: BDI Index Bloomberg.com

From 2008 until today the bulk dry sector has face an enormous disaster in freight rates. There was a sign of recovery at the end of 2013 and the start of 2014, but this was only for few months. Unlike these negative turbulences, the period between 2003 and 2008 was of high development investment in the sector.

Currently the dry bulk market is struggling and will continue to struggle mainly due to political and economic reasons. There have to be a lot of changes and adjustments so it can recover and catch previous years' growth.

Despite the hope and the positive thinking the real truth is that the dry bulk sector face more risk than a year before. There are potential trade barriers and of course new standards that come to the surface everyday. Who wasn't surprised by the political changes in Europe and the Brexit phenomenon? No one knows how the market will react when it will truly take place.

The most important factors can be found to growth development as a whole. The rate of trade is not growing as the previous years. This combined with that the fleet growth was

bigger than the demand one, give us a good picture of what is happening. Also the prices of some of the most innovative products have dropped, such as iron ore, coal and grain.

The dry bulk market is heavily affected from China's development and its decisions regarding the future, if we think that this country accounted the 40% of the global dry bulk trade in 2016. What is more, China is going to reduce her internal growth rate, as a result of her new campaign for environmental approach, as the pollution has reached very worrying levels. This of course, will influence trade from and to other countries. These could be said to be the worrying or even bad news for bulk carriers.

However, there are some bright spots on the horizon, showing that 2017 will be a turning point for the crisis. What we see is a lack of orders to add new capacity. In particular, the order book for bulk carriers is at some of the lowest levels (compared to the active fleet) of what we have seen in more than 15 years.

Taking into account the current order book schedule, this also means that the increase in supply will begin to fall after June. At the same time, and unlike what we have seen in the past, there is currently no appetite for another order frenzy, while many yards are already in wretched conditions, making it extremely difficult to offer additional incentives, such as easy financing and favorable payment terms. Taking under consideration the above, and if we add that there are a lot of second hand ships that are driven to the scrap market, we expect at some point in the future that demand will expand the tonnage supply.

1.2 Wet Bulk Market

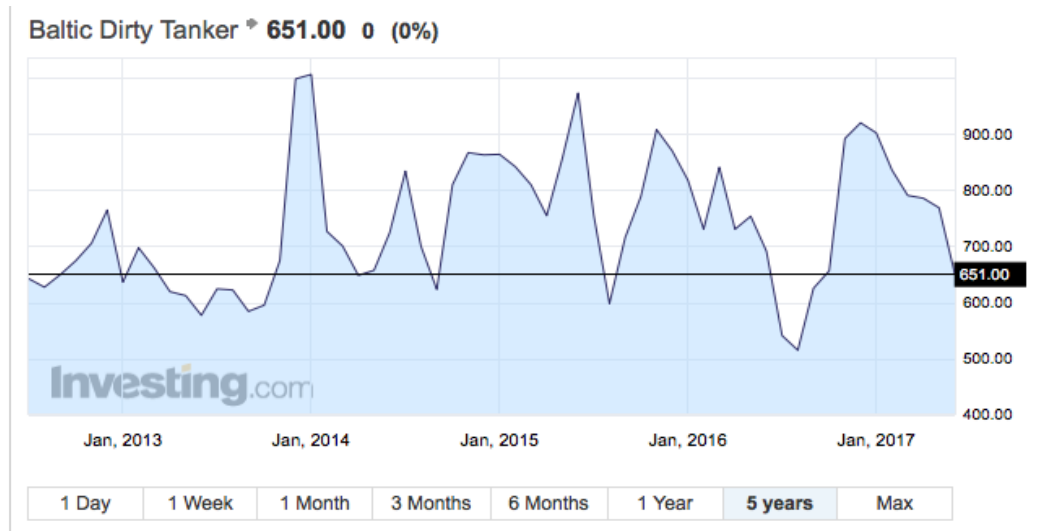


Figure 2: BTD Index investing.com

Unlike the dry bulk market, the tanker market has provided high profitability to ship-owners, especially after 2014 that world oil prices fell. Through low bunkering costs and China's strategy to import oil when the price dropt significantly per barrel, the tanker market spent good days unlike the rest of the sector which was sinking from the oversupply crisis.

With the last big wave of scraping dating back to 2010 and the orders given in the context of the development of the industry, a large wave of deliveries were created. From 2014 to 2016 crude tanker fleet had an almost 8% raise. According to BIMCO this was a result of the new order book and that only few second hand crude tankers were given for demolition. During the coming years the market expects a further increase in fleet growth.

At the same time, there is a widespread belief that the recent legislation on ballast water treatment and the global sulfur cap at 2.5% by 2020, imposed by IMO, will speed up the demolition of several inefficient vessels.

The main question is if this is going to have a positive or negative effect in the freight rates. Most companies expect that this legislation will affect positive the market, giving them motivation for further investment in new buildings and growing their fleet. A market that remains in the foam against the tide that affects the dry cargo, resulting in further rise to the freights for some routes.

On the other hand, there are several analysts that raise questions and warnings to the companies. They argue that the tanker market will come soon on a crossroad. They advice ship-owners, not to hurry and be absolutely sure before taking any risks, in order to avoid the creation of a negative environment such as the one in the dry bulk cargo market.

Chapter 2

2 FINANCING METHODS AND SHIPPING CYCLES

2.1 Introduction

The financial aspects pertaining to commercial activities of the marine industry are covered mostly under maritime finance. Some of these commercial activities include buying and purchasing of ships, development or repairing of gadgets and instrumentations, and even marine insurance and law payments. Shipping industry is a high intensive capital sector and unfortunately some of its characteristics do not fit easily with the financial community's requirements.

Since the marine industry is highly volatile, it becomes imperative that these requirements are strictly met and not defaulted upon. Some of the conditions can be enumerated as follows:

- Strong credit worthiness
- Healthy reserves of cash or;
- any other strong back-up to indemnify against potential deprivations

There are a lot parties involved in the domain of maritime financing. Some of these parties are conventionally established in their method of operational activities while ship finance operators are unconventional yet established in their own singular way. This difference existing between the many available ship financiers creates a wide array of feasibilities for the people requiring maritime financial aid.

Shipping financing is a necessary cog in the marine industry. It helps the marine industry to take risks and reach new heights, and also attract newer and newer business organizations to enter the fray.

On the other hand, financing shipping companies with loan capital may create strong disadvantages for the life of the company. Too much debt might restrict a company's ability to raise additional capital, which can prevent a company from getting the capital it needs if it gets into a bind. An existing lender might restrict a business from taking on more debt. Potential new lenders and investors might refrain from providing capital to an over-leveraged company. If a company is unable to deal with its liabilities, the risk of losing its assets it pledged as collateral and might be forced into bankruptcy.

The aim of this chapter is to demonstrate the most common finance methods of a shipping company and examine some advantages and disadvantages. Furthermore we will analyze the debt theory and how companies could find a golden edge between financing their assets and growth of their entity. We are not going to search dip in this methods. There are plenty researches, publications and books which demonstrate and analyze all these methods. Our scope, is to understand how ship-owing companies fund their development and analyze the risk of creating a debt inside their entity.

2.2 Shipping Finance methods

Shipping by sea continues to provide the lowest unit transportation cost. As it is the principal form of transportation in international trade, it is by definition international in scope.

In a capital intensive business as ship ownership, it comes as no great surprise that financing terms can make or break any given transaction.

For the above reason we will assess the traditional financing methods and the results in the shipping industry while we will point out the mistakes and benefits from these in shipping. Finally we are going to explore the new finance sources, how these affect the shipping industry and by which method these can be applied to different shipping companies. Furthermore, we are going to pay great attention to the benefits that the owner and the company in general are going to have if they decide to apply these new methods.

2.2.1 Bank Funding

The largest share of shipping finance worldwide is being handled by major international commercial banks. Banking has grown far in relation to the past, since shipping continues to be a capital-intensive industry, and the ship is considered as long-term asset.

A bank loan is therefore a strict legal agreement whereby a bank lends a predetermined amount for a predetermined period, including repayments over its entire duration. The amount granted is called credit and covers a period of some years. The loan agreement specifies, inter alia, the duration, the time of its completion, its purpose, the schedule of repayments, the currency and the interest.

The margin or spread is usually agreed at a rate above the London Interbank Offered Rate (LIBOR) which, due to the high risk of investment in shipping, is higher than the rate borrowed by other businesses and moves between 0.5% and 2%.

Banks engaged in shipping finance, with the main purpose of profitability, risk spreading and expanding to other activities, are mainly:

- Commercial Banks
- Investment Banks
- Export-Import Banks

Banking maritime financing may have the following characteristics in terms of repayment of the loan:

1. Grace period: it is usually agreed for the early stages of the loan and concerns a period of 1-2 years in which there is no scheduled repayment of the capital (interest is, of course, capitalized). This is particularly the case in times of economic recession, where an economically powerful ship-owner can acquire a ship benefiting from low-priced ships at low freight.

2. Balloon Program: according to this specific redemption scheme, a one-off payment, determined by the bank is paid on the repayment date of the loan. Very small installments of the loan have been made, including part of the loan and installments. Essentially, Balloon must represent the residual value (scrap) of the ship and is applied cases of inadequate or uncertain cash flow.
3. Repayment with the bullet program: the entire amount of the loan is paid on the due date and only interest is paid throughout its duration. Because of its very high risk - as a practice - it is often not applied.
4. The back / front end option: if the borrower believes that the loan period is the beginning of a market downward course, he may request to pay larger installments of the capital as long as the repayment period is close to maturity (Back loaded loan). Usually, the repayment schedule is structured in such a way that capital installments in the first half of the repayment period are higher (frontloaded loan), as borrowing is usually demanded by shipowners at upward market times. However, frontload tactics are also being pursued by banks at times when the market is high, in order to prevent the fund from "picking up" as long as the positive conditions prevail.

Banks and ship-owners have completely different objectives, so negotiation of terms is a common phenomenon. Banking loans, generally depends on the strength of the ship-owner, the size of the bank and the future market conditions. The owner's goal is to have a low interest rate, a long repayment period and the obligation to provide little or no collateral for the loan. The bank, on the other hand, wants high interest rates to cover the market fluctuations, short repayment periods in order to exploit as many new opportunities as possible and of course the maximum possible collateral rate on the part of the ship-owner. Due to the nature of the negotiations, bank and ship-owner relations tend to be personal and long-term.

The advantages of this method from the perspective of the ship-owing company are:

- Large potential funding
- Acceptable interest rate

- Flexibility in repayment period
- The bank does not integrate in the investment

As the advantages, the disadvantages have also an important role in choosing this method:

- Need for guarantees
- Possibility of floating rate
- Speed of the process
- Funding of a part and not the entire investment
- No Tax relief
- Risk of the ship market

2.2.2 Leasing

This method of financing is considered by economists to be particularly important. Originally developed in the United States, later in the UK in 1960s and 1980s, and finally in the rest of Europe.

Leasing is an integrated financial institution that enables a business to create or expand its production equipment without allocating its own funds. The required funds are available from the Leasing Company, which purchases the equipment according to the company's instructions and then leases this equipment to the enterprise for a predetermined period and for a particular rent.

More specifically, finance Leasing is usually concluded when the ship is owned by a bank or an economic organization that does not know how to take advantage of the ship professionally. Thus, he leases the ship to a ship-owner or ship manager. The operator to which the ship belongs is called the lessor and the operator responsible for managing the ship is called lessee. The lessor continues to own the ship but does not interfere with its operational management. The lessee manages the ship against a rent and when the contract expires (after 10 to 20 years), usually buys the ship for a small fee.

The whole process of Leasing is because there is a bank that has capital and wants to invest in shipping, but it does not have the proper knowledge and experience.

As mentioned above, leasing usually covers the whole or the longest duration of a ship's economic life and the rent is equal to the interest-bearing installment of the loan that would be required to acquire it. In particular, the installments of the finance lease are paid either per month, quarterly or semi-annually. The interest rate on which the installments are calculated is slightly higher than the interest rate. The company also pays a one-off amount to cover management costs, ranging from 0.1% to 1% of the value of the investment. With regard to the repayment period, it can range from three to five years. If the funds are high, the leasing period exceeds 10 years. Such a case may be combined with a charter of equal duration with the leasing.

Some of the forms this method could take are:

- Direct Leasing
- Service Leasing
- Vendor Leasing
- Master Lease Line
- Leveraged Leasing
- Sale and Lease Back
- Cross-Border ή Off-Shore Leasing

2.2.3 Mezzanine Finance

Independent investment firms undertake the financing of the shipping business by offering the so-called mezzanine capital against the acquisition of shares (share capital), ie against the acquisition of partial ownership over the borrowing company.

Most of this type of funding is "withdrawn" either through the resale to the original owner of the blocked capital or through the re-capitalization of the firm. The duration of the interim financing is usually five to eight years, while the pre-sale agreement foresees the possibility of early exit.

This mode of financing does not require equity participation since the ship-owner has only the obligation to pay interest to the bank and the dividend to the mezzanine fund. It is therefore a 100% financing scheme for the fixed assets. Banks offer Better credit, loan and repayment terms and more generally treat companies that choose mezzanine financing favorably. Another advantage of mezzanine finance is favorable taxation and tax security -economic relief to the lessee and of course the improvement of its economic situation. Of course, the process of implementing the interim financing is fast and less costly than long-term borrowing.

Of course, this way of financing is not free of negative elements. In principle, most shipping companies that are mainly organized on a family basis exclude this way of financing because it requires the transfer of part of the ownership of the existing business. The shipping company does not have the absolute control over its activities but is forced to make joint decisions.

Furthermore, the lessee is required to take all risks from accidental incidents to force majeure and at the same time he faces the risk of extraordinary termination of the contract in the event of default of the contract. In this case, the lessor (the bank in combination with the private equity company) reserves the right not only to deduct the equipment but also to demand the immediate payment of all the rents that are outstanding until the expiry of the contract.

Finally, the investor takes a higher risk of intermediary financing than bank borrowing, which is why the apparent cost of mezzanine financing is high. It is understandable that the interest rate on mezzanine financing is higher than that of bank (first mortgage). Also, given the small - in relation to that of the main funding - the amount of the loan, the lender's involvement in the company's share capital is a factor that is negatively affected by the choice of this type of financing. In any case, this type of financing is not very common in shipping.

2.2.4 Bond Issuance

Funding of shipping through bond issuance is relatively a recent method. Bond securities are fixed income securities, which secure the amount lent by their holder to their issuer. Each such denomination indicates the nominal value and the interest rate of the loan. Bonds also include a series of receipts indicating the amount of interest and the date of payment, the so-called coupons, which, if the holder redeems them at the specified time intervals, will receive interest on the bonds. The repayment term of the loan from the issuer may be between 3 and 20 years.

It is worth mentioning that the use of bond loans was particularly high in the years 1996-1999. Indeed, it is estimated that at that time the shipping companies issued bonds of 3.5 billion dollars.

In order for a shipping company to issue bonds, it must first contact an international firm such as Moods, Standards & Poor's and others. A rating procedure takes place to see whether the company can meet its obligations to buyers of its bonds. It examines the company's ability to pay interest and capital. In general, issuers of bonds should adhere to strict conditions and have a satisfactory credit level.

The main advantage of maritime bond financing is the increase in the company's liquidity, without the need for a variety of collateral such as bank loans. In addition, bond issuance is long-term and its duration is almost identical to the economic life of the ship.

The main disadvantage of this type of funding is the fact that the interest rate is determined from the outset, so it is likely that problems arise due to fluctuations in interest rates.

With regards to bank financing, issuance of bonds is less restrictive. It has a higher interest rate, but with better repayment terms, since during the repayment only interest is paid every six months or annually and the capital on the last day.

One of the main features of the bond market is that of the primary and secondary bond market. The primary bond market is where a new bond is offered to investors for the first time, while a secondary bond market is when a bond issue follows the original issue (in the primary market) and its price now follows the laws of supply and demand. In any case, the liquidity achieved in the second case is significantly lower than the first one, which is why companies are looking mainly at the primary bond market. It should be stressed that the bonds of the shipping companies, precisely because of their intense fluctuations in the market and their high risk, are high yield bonds.

The most important factor in the pricing of high yield bonds is the rating of the companies that intend to issue the bonds, which depends on the reports of specialized rating agencies such as Standard & Poor's, Moody's, Fitch and Duff & Phelps. Based on the economic characteristics and prospects of the companies, the quality of the management and the quality and value of the assets, these firms draw up the relevant list, classifying and rating companies to facilitate investors.

Bonds are rated by the firms as investment grade bonds or bonds that are at high risk or precarious and non-investment grade.

2.3 PRIVATE OR PUBLIC EQUITY FINANCING

2.3.1 General

Traditionally, investing funds for shipping come from the shipping industry. They are, therefore, positions of their own Ship-owners, with funds from profits from freights or the sale of their ships.

However, in recent years, efforts have been made to raise funds from sources other than the shipping industry, such as major financial institutions, insurance companies, insurance funds, leasing companies, etc. More recently, shipping companies have approached the international capital markets and, in particular, the US stock exchanges in order to raise capital for their development through the Initial Public Offering (IPO) process. (NYSE, NASDAQ)

Investment funds are the most important source of funding. The process of financing an enterprise with investment funds provides for the division of its capital into shares of par value. The face value of the units is always lower than their market value. At the same time, the firm pledges not to issue shares with an even lower par value. This is to convince investors that no one else will benefit from this privileged treatment.

Shares are property titles and are transferable (shares-shares). The company, if it sees fit, distributes profits at the end of a profitable year to the shareholders, depending of course on the number of shares they hold. The profit attributable to each share is the dividend. It is up to the board of each business if the shareholders receive a dividend or the profits will be used for the development of the business.

There are two kinds of shares: common or ordinary shares and preference shares. Holders of ordinary shares have the right to vote (eg in the case of appointment of directors or auditors) and have the right to claim a dividend if and when stated by the board of directors and approved by a majority of shareholders. Common stocks are the most risky form of capital because they are not linked to a claim on the assets of the company if it proceeds

with liquidation. On the other hand, they are most likely to make profits if the business generates profits. The feature of preferred shares is that they have a fixed dividend rate that needs to be fully repaid before ordinary equity holders begin to receive money.

In cases of liquidation, the holders of preferred shares are prior to the claim on the company's assets in relation to the holders of ordinary shares. Therefore, preferred shares are considered to be a "pedestrian", but rather a relatively invisible form of investment.

An enterprise can increase its capital by using the surplus method in order to issue new shares, and to place them publicly at a price higher than the par value. The resulting difference will go to the company's funds as additional paid-in capital or as a surplus of capital.

2.3.2. PRIVATE EQUITY

Private equity funds are considered to be the most direct form of financing. Although a higher leverage - as expressed by a lower private equity investment in an enterprise - can generate more profit, the placement of private equity in an enterprise is a form of funding that has certain advantages, which certainly do not Can be ignored by any businessman or ship-owner.

In shipping, the main source of investment capital is dedicated ship finance funds. These financial schemes are investment vehicles specially designed to allow private equity investors to invest their capital on merchant ships. In addition to ship funds, there are large funds management schemes, which when they consider that market conditions are appropriate invest in shipping. Thus, although shipping is considered to be a high-risk investment, these financial schemes have financially supported shipping companies such as Quintana, Eagle Bulk and others.

Some of the shipping management schemes are: Navigation Capital Corporation-NFC (consortium between DVB Bank and Northern Navigation), Fortis Bank Maas Capital, American Marine Advisors-AMA, Pareto Private Equity, Great Circle Capital and others.

The basic practice on which private equity investment funds are based in order to be sources of raising capital for companies is the issue of shares. It happens, therefore, that it is also the case with public investment funds, but only in case the shares are traded on a private "closed" market where a limited number of investors are involved. Another resemblance to public placements is that we also have common and privileged shares.

If we attempted to assess the advantages and disadvantages of private equity as a choice of shipping financing, then these could be:

Advantages:

- Facilitates cooperation between people who have knowledge, expertise and experience from the maritime market.
- Less stringent legislative framework, relative to public placement, where a company should meet specific criteria.
- Small leakage of internal company confidential information.
- Lower fees of brokers and guarantors for the listing and sale of shares, of which in public placement.

Disadvantages

- Taking limited funds in relation to public funds
- Investors may have knowledge for the process of investment
- Closely monitor the company's financial performance
- Exercise control over their votes
- Shares are quite rigid and low

In any case, private equity as decision to finance shipping companies, should not be taken on opportunistic criteria and without a flexible management. Attention should also be paid to developing a future exit strategy from the private placement and transition to bank lending conditions, as leveraged leaves more profit margins.

2.3.3 PUBLIC EQUITY

International capital markets help industry raise capital and finance its growth. In order for companies to raise their capital, they are publicly addressed to private investors through international stock exchanges. The whole process is based on the issuance of shares representing a certain percentage of the assets of the business and selling them at a price above their face value to the public. It is the least expensive way of financing. But it is only available in transparent and well-structured businesses.

Since the new shares are issued, market forces act on them and thus determine their value. The "vehicle" used by businesses to enter the stock market for the first time is the Initial Public Offering (IPO). The process followed by companies for listing, differs slightly depending on the legal framework in which each stock exchange operates.

Through IPN shares, companies can raise large amounts of funds in a relatively short period of time. The only prerequisite for these processes is that there is liquidity on the market, or else such a move may be unprofitable and expensive in times of falling market.

In maritime funding, NIPs were significantly used in the 2004-2006 three-year period as an alternative source of fund raising, mainly by Greek shipping companies, which have capitalized on the internationalization of investment funds, which has made stock exchanges - especially those in the US still attractive And for such high-risk businesses.

2.4 Risks of Shipping Finance

Due to the nature of derivation of the international shipping market, as well as to the complexity and uncertainty of both internal and external circumstances, shipping enterprises must exercise analysis, evaluation and judgment over the various immeasurable elements in such situation, so that it can control the process of decision-making and gain the most favorable result from it. This will reduce the risk of ship financing.

The risk of ship finance refers to the chance that any unforeseeable negative elements may occur in the future and its scope of influence on the value of vessels. Comparing with risks

of financing in other branches of business, shipping financing has its own features in explaining type of risk and risk elements. The shipping industry is considered to be of high risk because of its nature as a capital intensive industry. A failed shipping loan leads not only to the loss of the ship but also to the management of the ship, under • International economic growth or recession that results in an increase or decrease

the "first preferred mortgage" scheme, while, on land-based businesses only in the event of bankruptcy the businessman loses management of his business. Risk avoidance or more efficient management is achieved with risk analysis of shipping investment and approach of the factors that affect them.

2.5 Shipping Cycles

As we all know economy is a cycle phenomenon. It starts from a bottom line, there is high development for a period of time, comes to its peak and then slowly goes down to start again from the beginning. This phenomenon may occur for a small period of time but its duration may hold for decades as well.

Something familiar is also happening with shipping cycles, but first let's examine what a shipping cycle is.

In shipping a circle appears in the development of freight rates and the values of ships. This maritime circle which sometimes lasts longer and sometimes lesser could be find in the below order:

- Recession

At the recession stage, initially, there is increased capacity. The result is the large number of ships at landing points and the effort to save fuel, using economic cruising speed, leading to a delay in the port. Fare prices are plummeting, even below the operating cost of less profitable ships. With the continued fall in freight rates and the bank's poor credit policy, the negative cash flow of ships is expected. New orders are diminishing and banks restrict funding. Ship-owners are beginning to face liquidity problems and are forced to sell their

ships at their cost. The value of older ships reaches their scrap value, leading them to the market for dismantling.

- Recovery

Supply and demand are moving towards balance and the first signs of recovery are evident. Fares are rising to levels higher than ship's operating costs. Ship owners' liquidity is improving as the value of second-hand ships increases and market psychology is stabilizing.

- Peak

At this stage of the shipping cycle, supply and demand are in balance. The fares are quite high, reaching even four times the cost of operating the ships. This peak in the shipping cycle can last from few weeks to few years, depending on the ship's demand for and supply capacity. Banks are becoming more flexible in their credit policy, allowing ship-owners greater funding, thereby increasing their liquidity. In addition, there is an increase in new orders and the value of second-hand vessels, sometimes exceeding their book value.

- Collapse

The great optimism and the many new shipbuildings of the previous stage have resulted in a large supply of new vessels on the market, beginning to outweigh the demand. In the collapse stage, fares are reduced, ship's cruising speed is decreasing and less competitive ships remain inactive at the port. Market psychology is distinguished by uncertainty.

From the above analysis of the four stages we can clearly understand that as in any economic magnitude the evolution of fares and rates which are associated with ships' values are shaped by the law of supply and demand. In case of the shipping industry this is connected with the supply and the demand of the capacity of the world fleet.

The factors that influence this phenomenon in the shipping cycle are many and of course contribute to increasing or decreasing supply capacity and increasing or increasing capacity demand respectively.

Most important of them are:

- International economic growth or recession that results in an increase or decrease of the main migrant products
- Over-storage of products internationally resulting in increased demand tonnage during product concentrations and vice versa
- Weather conditions and agricultural production (mainly cereals) and its distribution among the continents
- Deliveries of newly built ships, ordered during the course of recovery, expanding the capacity offered.
- Increased ship dismantling, decided at a time of crisis, decreasing the available capacity.
- Changes in the prices of different products

Many economists during the years, tried to categorize maritime cycles using the time factor. Everyone from their perspective have gave their own view. They have been formulated many theories, but the prevailing view is that maritime cycles are divided, depending on their length, into **short-term**, **medium –term** and **long-term** maritime cycles.

2.5.1 Short-Term Cycles

The theory of short-term cycles was first developed by Michael Hampton in 1990. He argued that maritime cycles last for 3 to 4 years and their feature is that "theoretically" start and finish with extremely low fares. Also, according to Hampton these little shipping cycles are due to the commercial cycle of the economy and to the ship owners' psychology.

Hampton argues that a short cycle begin and ends at low fares. This is because there is no hope, but on the contrary, there is uncertainty about whether any change brings a recovery. At these low fares, the charterers are willing to pay only very low fares and ship-owners feel that it is pointless to ask for higher ones. However they take measures in order to deal with the situation by stopping ship orders and send old ships for scrap. These circles,

according to Hampton, are due to the commercial economy cycle and ship owners' psychology. The shipping cycle is normally delayed of the commercial few months because the growing demand in the global economy does not automatically translate into an increase in maritime demand.

Consists of 8 phases that each locally last for at least 2-3 months and 6-9 months max, unless a phase extends to external factors. The cycle short term can be seen in the Bulk Cargo Ship between June 1986 and March 1987, but also until 1989. At peak demand is increasing and the supply of capacity starts to decrease while the freight moves upwards. Pessimistic psychology has passed. At low 2, the fare rises stabilized, followed by the phase of the correction, as there is an adjustment of demand and supply.

During the next phase 2 to 3 the fares start to rise again, confidence in the market and the increased income pushed new markets for second-hand ships, while their prices are rising. In Phase 3 to 4, fares fall, without this being expected, due to the supply and demand for capacity. The smallest income of ship-owners leads to fewer orders that drive prices of new construction upwards. In phase 4 to 5, an improved fare starts again motivating group orders. The climate of confidence is coming back new investors enter the market. In Stage 5 to 6, fares fall back once again due to commercial economic cycle, although the fall in the market is not believable. Interest rates rise to reduce inflation and there are only few orders placed. In phase 6 to 7 fares are reduced (despite the temporary increase) but the psychology remains good, as new investors are waiting for improvement of the market. At the top 7, fares do not exceed the peak level 5. Finally in phase 7 to 8 we have a sharp drop in fares and orders take-overs, dissolutions are generalized, and psychology changes.

2.5.2 Medium-Term Cycles

According to Stopford this cycle is a consequence of the commercial one and is aimed at balancing the supply and demand of ships in creating an environment where weak shipping companies are forced to exit the market leaving only the capable which can thrive, thus enhancing a strong and capable shipping activity. Maritime risk stems from their timing coating and dissolutions and leads to the above process. Except the timing another factor

that influences the creation of the circles is the psychology of those who are active in the maritime market.

When there is an oversupply of ships the profits are low and the shipowners are forced to decommission and send the ships for scrap. On the contrary, when supply of ships is low and there is a great demand, fares are rising until new ships are ordered and create a balance. Peaks and turns in the circle are signs that the market tries to adjust supply to demand by adjusting cash flow.

The mid-term maritime cycle consists of the following stages:

1. There is a surplus of capacity offered and ships are creating queues at loading points. Fares fall to levels of operating costs of less efficient fleet ships and ships tend to decommissioning. Low fares create negative conditions for credit granting and business receipts are declining. The shipping companies due to lack of money are forced to sell their ships at extremely low prices as there are only a few buyers. The value of used and old ships corresponds the scrap value prompting the market to collapse
2. As supply and demand tend to balance, the first positive sign of recovery is the raise of fares above the level operating costs, accompanied by a reduction in decommissioned tonnage. The Market psychology remains stagnant, with reservations for the future and is shifting from feelings of optimism with doubts about whether there is really a recovery. Liquidity improves the prices of used ships.
3. Overcapacity has been absorbed and the market enters in a phase where supply and demand are in balance. Fares are high, often 2 to 3 times higher than operating costs. The duration of this stage can take from a few weeks to few months and that depends on the factors that put pressure on the supply and demand balance. The fleet operates at maximum speed, banks lend more easily to ship owners, the prices of used ships are increasing and new orders are growing.
4. The offer is bigger than demand and the market is going through the phase of descent. Although downward movement is generally due to fundamental factors

such as the trade cycle, the reduction of port congestion and the delivery of ships ordered during the highest point of the cycle, psychology can accelerate the descent to only a few weeks. Fares are falling, ships are slowing down among speeding as well. Liquidity remains at high levels, psychology is confused and altered depending on the fare changes.

In conclusion, we would say that the medium-term maritime cycle has the following characteristics:

- It is a mechanism coordinating supply and demand in the maritime market.
- A complete cycle consists of 4 stages.
- It is irregular and the duration of each phase varies from case to case.
- There is no method to predict the shape of the next one cycle. Each cycle is unique.

2.5.3 Long-Term Cycles

Hampton argues that he first discovered the so-called "Long" Maritime Cycle with duration of 20 years, which consists of 2 separate periods: the construction phase and the phase of the correction lasting 8-12 years each.

Unlike other circles, in the Long Circle not only the investment decisions of the ship-owners play an important role but also the decisions of the shipyards and the banks, regarding entry or exit from the maritime market. In the phase of building new businesses come into the market while at the time of the correction many leave voluntarily or by force.

The construction phase consists of three smaller circles, which they form three peaks of increasing height. During this phase, new investors are being attracted, due to the favorable climate that exists in creation capital, expanding the fleet and facilitate its modernization. Also, banks and shipyards are expanding assets data related to shipping. Profitability is high and there is optimism. At this stage according to Hampton is created oversize capacity. What Hampton does not mention as the root cause of the high orders is of course the level of the current and in particular of the future fright, which may lead to high profitability. It

also does not refer to either the liquidity of the business or the structural characteristic of the shipping industry, where decisions are individual, nor in crises that may come from the demand side. He thinks that, the demand constantly demand for new orders and that the market drop is due only to the supply of ships.

The correction phase consists of three smaller cycles of 2.5-4 years each, with the first having smaller tops of freights rates, while the the next two are of equal heigh and express their resistance to the fall. This phase ends when supply and demand begin to balance. The minimum ships built in this phase have ordered for purely prediction reasons, usually by ship-owners who interpret upward movements in freights as a recovery. At the end of the correction phase the fleet is older and its size smaller relation to the construction phase.

2.6 Shipping Finance and Shipping Cycles

As we can understand maritime cycles consist of alternating phases of economic maritime activity. From the above analysis, it is concluded that maritime cycles have a significant impact on the maritime market. They have a significant influence on the level of fares, the level of the purchase value of new and second-hand ships, shipbuilding costs, and the ship owners' psychology. All of these affects the shipping companies' cash flow program. Maritime cycles have a direct impact on shipping finance, since the period which a shipping investment is made, depends on the stages of the shipping cycle, and determines whether it will be successful or failed in the future.

As mentioned above, maritime cycles consist of phases. The above analysis of these phases leads to the conclusion that, depending on the phase in which the shipping cycle is located, financing method is changing. The phases of the maritime cycles affect the level of funding as well as the charter market. Also, the yards, are trying to contribute to maritime financing by granting loans on tempting terms.

In conclusion, shipping financing affects the supply level tonnage; so maritime financing has interdependent relation to shipping cycles.

CHAPTER 3

3 METHODOLOGY

In this chapter we will analyze our methodology and how we approached our research. First, we analyze the profiles of the chosen companies. All our companies are listing in the stock market, thus we were able to receive data from their financial statements. Having all the necessary information, we continued to next step, calculating ratios in order to make their evaluation.

Our target is to compare their debt, evaluate it and come to conclusions regarding their strategy on the shipping industry. We demonstrate all relative ratios, their theory and the method we used for each one. Finally we will try to show how these ratios follow the market, by comparing the companies' ratios with industry's indices in order to understand why most of the enterprises face problems and out there, and how to react in this continually changing environment.

3.1 Companies Profiles

As our country, Greece, is one of the most significant maritime nations in shipping industry, we decided to make our research on four companies of each of the two sub-categories of bulk cargo, dry and wet. Below we will make a short presentation of their company profiles and which is their area of expertise.

3.1.1 Dry Bulk Sector

- **Diana Shipping Inc.**¹

Diana Shipping Inc. (NYSE: DSX) is a global provider of shipping transportation services. They specialize in the ownership of dry bulk vessels. As of their last report their fleet consists of 51 dry bulk vessels (4 Newcastlemax, 14 Capesize, 5 Post-Panamax, 5

¹ <http://www.dianashippinginc.com>

Kamsarmax and 23 Panamax). As of the same date, the combined carrying capacity of our fleet was approximately 5.9 million dwt with a weighted average age of 7.89 years.

Their fleet is managed by their wholly-owned subsidiary Diana Shipping Services S.A. and their established 50/50 joint venture with Wilhelmsen Ship Management named Diana Wilhelmsen Management Limited in Cyprus.

Diana Shipping Inc. also owns approximately 16.7% of the issued and outstanding shares of Diana Containerships Inc. (NASDAQ: DCIX), a global provider of shipping transportation services through its ownership of containerships, that currently owns and operates eleven container vessels (6 Post-Panamax and 5 Panamax).

Diana's main objective is to manage and expand their fleet in a manner that will enable to enhance shareholder value. To accomplish this objective, they intend to pursue highly focused business strategies, including: maintaining a high quality fleet; strategically expanding the size of their fleet; pursuing an appropriate balance of short-term and long-term time charters; maintaining a strong balance sheet; and maintaining low cost, highly efficient operations. In addition, they intend to capitalize on their reputation for high standards of performance, reliability and safety to establish and maintain relationships with major international charterers and financial institutions.

• **Euroseas Ltd.** ²

The Company's roots go back four generations to the times when steam and diesel engines did not exist and ships were propelled by sails! These were the times when shipowners were also the captains of their ships and their family the crew. Those days ships were maximum 1000 tons and cost about 3000 pounds sterling to build. Euroseas Ltd. was formed on May 5, 2005 under the laws of the Republic of the Marshall Islands to consolidate the ship owning interests of the Pittas family of Athens, Greece, which has been in the shipping business over the past 140 years. Euroseas trades on the NASDAQ Capital Market under the ticker ESEA since 2017.

² <http://www.euroseas.gr/home.html>

Euroseas operates in the dry cargo, drybulk and container shipping markets. Euroseas' operations are managed by Eurobulk Ltd., an ISO 9001:2008 and ISO 14001:2004 certified affiliated ship Management Company and Eurobulk (FE) Ltd. Inc., also an affiliated ship management company, which are responsible for the day-to-day commercial and technical management and operations of the vessels. Euroseas employs its vessels on spot and period charters and through pool arrangements.

The Company has a fleet of 14 vessels in the water, including one Kamsarmax drybulk carrier, three Panamax drybulk carriers, one Ultramax drybulk carrier, one Handymax drybulk carrier, and eight Feeder containerships; and a Kamsarmax newbuilding contract. With the addition of the Kamsarmax newbuilding, Euroseas will have seven drybulk carriers with a total cargo capacity of 499,753 dwt. Euroseas owns its 15 vessels through 15 separate wholly-owned subsidiaries. The operations of the vessels are managed by Eurobulk, an affiliated company, under management contracts with each ship-owning company. These services include technical management, such as managing day-to-day vessel operations including supervising the crewing, insuring the fleet, supplying, maintaining and drydocking of vessels, commercial management regarding identifying suitable vessel charter opportunities and certain accounting services.

Their business strategy is focused on providing consistent shareholder returns by carefully timing and structuring acquisitions of drybulk carriers and containerships and by reliably, safely and competitively operating of their vessels. They continuously evaluate purchase and sale opportunities, as well as long term employment opportunities for their vessels.

• **Seanergy Maritime Holdings Corp.**³

Seanergy Maritime Holdings Corp. is an international shipping company with offices in Greece and Hong Kong. The Company provides marine dry bulk transportation services through the ownership and operation of dry bulk vessels.

It owns a modern fleet of eleven dry bulk carriers, consisting of nine Capesizes and two Supramaxes, with a combined cargo-carrying capacity of approximately 1,682,582

³ <http://www.reuters.com/finance/stocks/companyProfile?symbol=SHIP.P>

deadweight tonnages (dwt) and an average fleet age of about 8.1 years. Its fleet comprises vessels, including Leadership, Gloriuship, Geniuship, Premiership, Squireship, Championship, Gladiatorship and Guardianship. The Company's subsidiaries, which are all, owned by it either directly or indirectly, conduct all of its operations and own all of its operating assets. The Company manages its vessel's operations, insurances and bunkering, and has the general supervision of its third-party technical and commercial managers. V.Ships Limited, which is an independent third party, provides technical management for its vessels.

V.Ships Limited (V.Ships), which is an independent third party, provides technical management for its vessels that includes general administrative and support services necessary for the operation of vessel, such as crewing and other technical management, accounting related to vessels, provisions, and, subject to its instructions, operation, and sale and purchase of vessels. Seanergy Management Corp. (Seanergy Management), its subsidiary, has entered into a commercial management agreement with Fidelity Marine Inc. (Fidelity), an independent third party, pursuant to which Fidelity provides commercial management services for all of the vessels in its fleet. Its customers include national, regional and international companies.

The Company competes with Diana Shipping Inc., , Safe Bulkers Inc., Scorpio Bulkers Inc. and Star Bulk Carriers Corp.

• **Star Bulk** ⁴

Star Bulk is a global shipping company providing worldwide seaborne transportation solutions in the dry bulk sector. Star Bulk's vessels transport major bulks, which include iron ore, coal and grain and minor bulks which include bauxite, fertilizers and steel products. Star Bulk was incorporated in the Marshall Islands on December 13, 2006 and maintains executive offices in Athens, Greece. Its common stock trades on the Nasdaq Global Select Market under the symbol "SBLK". On a fully delivered basis, Star Bulk will have a fleet of 74 vessels, with an aggregate capacity of 8.1 million dwt, consisting of

⁴ <http://www.starbulk.com/en/corporate-profile>

Newcastlemax, Capesize, Post Panamax, Kamsarmax, Panamax, Ultramax and Supramax vessels with carrying capacities between 52,055 dwt and 209,537 dwt. Star Bulk's fleet currently includes 70 operating vessels, 1 vessel acquired and due for delivery and 3 newbuilding vessels under construction at shipyards in China. Additionally, the Company has one chartered-in Supramax vessel, under a time charter expiring in September 2017.

The Company's fleet, which emphasizes Capesize vessels, primarily transports minerals from the Americas and Australia to East Asia, particularly China, as well as Japan, South Korea, Taiwan, Indonesia and Malaysia. The Company's Supramax vessels carry minerals, grain products and steel between the Americas, Europe, Africa, Australia and Indonesia, and from these areas to China, Japan, South Korea, Taiwan, the Philippines and Malaysia. The Company's vessels include Goliath, Gargantua, Peloreus, Star Pauline, Star Borealis, Star Angelina, Star Nina, Mercurial Virgo and Star Gamma. The Company charters its vessels to iron ore miners, utilities companies, commodity trading houses and diversified shipping companies.

3.1.2 Wet Bulk Sector

• Capital Products Partners LP⁵

Capital Product Partners L.P. (Nasdaq: CPLP) is an international, diversified shipping company and leader in the seaborne transportation of a wide range of cargoes, including crude oil, refined oil products, such as gasoline, diesel, fuel oil, jet fuel and edible oils, as well as dry cargo and containerized goods. As a publicly traded master limited partnership, CPLP has elected to be treated as a C-Corp. for tax purposes which is most beneficial for U.S. investors (as they receive the standard 1099 form).

Capital Product Partners L.P., incorporated on January 16, 2007, is an international owner of tanker, container and drybulk vessels. The Company's fleet consisted of 36 high specification vessels with an average age of approximately 7.4 years, as of December 31, 2016. As of the same date, its fleet consisted of four Suezmax crude oil tankers (0.6 million

⁵ <http://ir.capitalpplp.com/overview.cfm?pg=profile>

dead weight tons (dwt)), 21 medium range product tankers (0.9 million dwt), 10 post-panamax container carrier vessels (0.9 million dwt) and one Capesize bulk carrier (0.2 million dwt). The Company's vessels are capable of carrying a range of cargoes, including crude oil, refined oil products, such as gasoline, diesel, fuel oil and jet fuel, edible oils and certain chemicals, such as ethanol, as well as dry cargo and containerized goods.

The Partnership is well-positioned to benefit from the long-term growth dynamics of the global shipping industry and to capitalize on potential acquisition opportunities in the fragmented shipping market. CPLP benefits from the commercial and technical management agreement with its Sponsor, Capital Maritime & Trading Corp. (“Capital Maritime”), an established and reputable diversified shipping company.

• **Tsakos Energy Navigation Ltd.**⁶

Tsakos Energy Navigation Limited is a provider of international seaborne petroleum product and crude oil transportation services and bids to list in the New York Stock Exchange (NYSE) under the brand name of “Tsakos Energy Navigation Ltd (TEN)”. Since its inception, Tsakos Energy Navigation Ltd has had an exceptionally successful record of growth and ranks as one of the largest transporters of energy in the world, controlling a versatile fleet of more than 50 modern crude, oil and product tankers, LNGs and shuttle tankers of a young age. It has also become one of the largest ice-class tanker operators in the world listing, among its clientele, state entities, international oil majors and major oil traders.

TEN’s vision is to maintain its leading position as an international seaborne trade transporter of energy. This is being accomplished by the company’s substantial investment in its fleet expansion, which presently comprises a modern, high quality and technologically state of the art fleet of VLCC, Suezmax, Aframax, Panamax, Handysize and Handymax Tankers, as well as LNG and Shuttle tankers.

Long-term sustainable growth and stability throughout the industry's cycles, is maintained through a well-balanced employment strategy. Furthermore, the company gains significant

⁶ <http://www.tsakoshellas.gr/ourgroupp/tsakos-energy-navigation>

commercial leverage from its association with Tsakos Shipping and Trading S.A. capitalizing on synergies of the Tsakos Group's expertise, long term established commercial relations and reputation. Tsakos Shipping and Trading S.A. acts as the exclusive commercial managers for TEN. Considerable economy of scale benefits are realized through Tsakos Columbia Shipmanagement ("TCM") S.A., a joint venture between the Tsakos Group and Hamburg based Schoeller Group, acting as the Technical Manager for the Group's Fleet.

It operates a fleet of approximately 45 petroleum product tankers and crude oil carriers that provide marine transportation services for national, major and other independent oil companies and refiners across the world under long, medium and short-term charters. All vessels are owned by its subsidiaries.

• **Top Ships Inc.**⁷

Top Ships Inc., incorporated on January 10, 2000, is an international provider of oil, petroleum products and chemicals transportation services. The Company owns and operates eco medium range (MR) tanker vessels focusing on the transportation of crude oil, petroleum products (clean and dirty) and bulk liquid chemicals.

The Company is committed to provide world-class ship management services that meet or exceed safety and environmental requirements as well as, customers' expectations, and to conduct its operations in a manner which protects safety, human health, quality of the provided services, the environment and property.

The Company's Mission statement is to set the standards for safe and environmentally friendly sea transportation of goods with modern, technologically advanced ships, crewed and operated by motivated, professional and well-trained seaborne and shore personnel

It's fleet consists of over two chartered-in 50,000 deadweight ton (dwt) product/chemical tankers vessels, the Motor Tanker (M/T) Stenaweco Energy and the M/T Stenaweco Evolution; approximately two 39,000 dwt product/chemical tankers vessels, the M/T Eco

⁷ <https://www.topships.org/company>

Fleet and the M/T Eco Revolution, and over two 50,000 dwt product/chemical tankers scheduled for delivery from Hyundai Dockyard. Its newbuilding fleet consists of Hull No S414 (tbn M/T Stenaweco Excellence) and Hull No S417 (tbn M/T Nord Valiant). The Company's subsidiaries include Ocean Holdings Inc., Top Tanker Management Inc. and Lyndon International Co.

• **Aegean Marine Petroleum⁸**

Aegean Marine Petroleum Network Inc., incorporated on June 6, 2005, is an international marine fuel logistics company. The Company markets and physically supplies refined marine fuel and lubricants to vessels in port, at sea and on rivers. As a physical supplier, the Company procures marine fuel from refineries, oil producers and other sources, and resells and delivers these fuels from its bunkering vessels to a range of end users. The Company owns and operates a fleet of approximately 50 bunkering vessels. The Company operates over 10 land-based storage facilities, with an aggregate storage capacity of approximately 1,160,000 cubic meters. The Company operates a vessel as a floating storage facility with a cargo carrying capacity of approximately 19,900 deadweight tonnage (dwt). The Company provides fueling services to various types of ocean-going and various types of coastal vessels, such as oil tankers, container ships, drybulk carriers, cruise ships, reefers, liquefied natural gas (LNG)/liquefied petroleum gas (LPG) carriers, car carriers and ferries.

Bunker services are provided to all type of vessels, including container ships, dry bulk carriers, cruise ships, oil tankers and ferries. They boast a long-established relationship with a diverse range of ship operators, marine fuel traders, brokers and other users. As an independent physical supplier they aim to meet all their clients' needs and conduct supply operations in various jurisdictions.

Aegean service centers have been demonstrating strong and reliable presence. Their highly qualified team boasts years of experience in every aspect of the marine fuel supply and

⁸ <http://www.reuters.com/finance/stocks/companyProfile?symbol=ANW.N>

shipping industry. All operations are carried out under strict safety and environmental procedures exceeding the highest environmental standards. The company operates one of the world's largest and youngest fleets of high specification bunkering tankers of diverse sizes and types, ranging from inland waterway barges to ocean-going offshore bunkering tankers. Aegean Bunkering Services Inc. provides physical bunkering and cargo transportation services, focusing on safety, environmental protection, efficiency and reliability.

Having analyzed above the profiles of the companies, next step is to demonstrate and analyze the data we found for each one but also as a per sector group. All companies are quoted in the stock exchange market, thus our research specializes in their loan capital and the importance for their shareholders and the future of the companies.

3.2 Ratios

3.2.1 Enterprise Value

The enterprise value (EV) is an index of how the market attributes value to a business as a whole. Enterprise value of the business is a term written by analysts to find the overall value of a company as a business and not just stay on its current capitalization. When sizing up a company, investors get a clearer picture of real value with EV than with market capitalization.

Someone may ask why does not the market capitalization properly represent a firm's value. The answer is that it does not count a lot of components, such as the company's debt obligations and its cash. Enterprise value is basically a transformation of market cap, as it takes into account debt and cash for determining a company's valuation.

Calculation of EV

EV is the sum of a company's market cap and its net debt. To calculate the EV, we first calculate the company's market cap, adding total debt (including long- and short-term debt reported in the financial statements) or total liabilities and subtracting cash and cash equivalents. Market capitalization is the share price on a time point multiplied by the number of outstanding shares. Therefore, rather than telling the company's value, market cap simply represents the company's price tag.

Therefore, we can calculate the enterprise value of a company as per below:

- **EV = market value of common stock + market value of preferred equity + market value of debt + minority interest - cash and investments.**

Diana Shipping							
Diana Shipping		Cash and Equivalents	Total Debt	Net Debt	Market Cap	Enterprise Value	Net Debt /EV
31/12/2010	USD	345,41	459,87	114,46	985,11	1099,57	10,41%
31/12/2011	USD	416,67	395,59	-21,08	617,65	596,57	0,00%
31/12/2012	USD	446,62	476,38	29,76	600,3	630,06	4,72%
31/12/2013	USD	240,63	448,59	207,96	1101	1308,96	15,89%
31/12/2014	USD	218,9	504,9	286	549,28	835,28	34,24%
31/12/2015	USD	171,72	618,6	446,88	359,08	805,96	55,45%
31/12/2016	USD	98,14	612,07	513,93	249,29	763,22	67,34%

Figure 3: Diana's Enterprise Value

The above figure demonstrates the calculation of Diana's Shipping enterprise value. Subtracting from the Total Debt the Cash and Equivalents we calculate net Debt. Then adding the Market Cap as per the end of each financial year we have the enterprise value of our company. Same has been done for each one of the other companies.

The Role of Debt and Cash

Why should we take under consideration the debt and cash when calculating the value of an enterprise? If the firm is sold to a new owner, the buyer has to pay the equity value and must also repay the firm's debts. Of course, the buyer gets to keep the cash available with the firm, which is why cash needs to be deducted from the firm's price as represented by market cap.

Why is EV better than Equity Value

Enterprise value and equity value are two common ways that a business may be evaluated from a sales view. Both may be used in the valuation or sale of a business, but each offers a slightly different view. While company's value gives an accurate calculation of the overall current value of a business, similar to a balance sheet, the equity value offers a snapshot of both current and potential future value.

Businesses calculate enterprise value by adding up the market capitalization plus all of the debts in the company. Debts may include interest due to shareholders, preferred shares and other such things that the company owes. Subtract any cash or cash equivalents that the business currently holds, and we have the enterprise value.

Equity value uses the same calculation as enterprise value, but adds in the value of stock options, convertible securities, and other potential assets or liabilities for the company. Because it considers factors that may not currently impact the company, but can at any time, equity value offers an indication of potential future value and growth potential. The equity value may fluctuate on any given day due to the normal rise and fall of the stock market.

EBIT to Enterprise Value

Knowing a company's EV alone is not so useful. What we can do, to absorb more information about a company in the market, is comparing EV to a measure of the company's cash flow or EBITDA. This ratio is very useful in order to compare companies with different portions in equity and debt, in other words, differing capital structures. It is important to use EBITDA in the comparative ratio because EV assumes that, upon the selling of a company, its buyer immediately pays debt and consumes cash

Conclusion

The value of EV lies in its specialty to compare companies with different capital structures. By using enterprise value instead of market capitalization to look at the value of a company, investors can have a more accurate sense of whether a company worths investment or not.

3.2.2 Weighted Average Cost of Capital

Weighted average cost of capital (WACC) is a calculation of a firm's cost of capital in which each category of capital is proportionately weighted. It is the average rate of return a company expects to satisfy all its different investors. The weights declare the fraction of each financing source in the company's target capital structure.

All sources of capital, including common stock, preferred stock, bonds and any other long-term debt, are included in a WACC calculation. A firm's WACC increases as the beta and rate of return on equity increase, as an increase in WACC denotes a decrease in valuation and an increase in risk.

In order to calculate this ratio, we have to multiply the cost of each capital component by its proportional weight and take the sum of the results. The formula for calculating the WACC is as per below:

$$\text{Weighted Average Cost of Capital (WACC)} = ((E/V) * Re) + ((D/V) * Rd)$$

Where:

R_e = cost of equity

R_d = cost of debt

E = market value of the firm's equity

D = market value of the firm's debt

$V = E + D$ = total market value of the firm's financing (equity and debt)

E/V = percentage of financing that is equity

D/V = percentage of financing that is debt

Explanation of Formula Elements

Cost of equity

Cost of equity is not so easy to be calculated, as shares do not have an exact value but depends on the market and the growth of the company. When companies pay debt, the amount they pay has a predetermined associated interest rate that debt depends on size and duration of the debt, though the value is relatively fixed. On the other hand, unlike debt, equity has no stable price that the company must pay. Yet, that doesn't mean a company has no cost of equity. Since shareholders will expect to receive a certain return on their investment in a company, the equity holders' required rate of return is a cost from the company's perspective, since if the company fails to deliver this expected return, shareholders will simply sell off their shares, which leads to a decrease in share price and in the company's value. The cost of equity, then, is essentially the amount that a company must spend in order to maintain a share price that will satisfy its investors.

Having taken under consideration all of the above, the most commonly used method for calculating cost of equity comes from the Nobel Prize-winning capital asset pricing model (CAPM):

The cost of equity is expressed formulaically below:

$$R_e = r_f + (r_m - r_f) * \beta$$

Where:

- Rf – Risk-free rate - This is the amount obtained from investing in securities considered free from credit risk, such as government bonds from developed countries. The interest rate of U.S. Treasury Bills is frequently used as a proxy for the risk-free rate.

<i>Year</i>	<i>Earnings Yield</i>	<i>Dividend Yield</i>	<i>T.Bond Rate</i>	<i>Implied ERP</i>
2000	3,94%	1,23%	5,11%	2,87%
2001	3,85%	1,37%	5,05%	3,62%
2002	5,23%	1,83%	3,81%	4,10%
2003	4,87%	1,61%	4,25%	3,69%
2004	5,58%	1,60%	4,22%	3,65%
2005	5,47%	1,79%	4,39%	4,08%
2006	6,18%	1,77%	4,70%	4,16%
2007	5,62%	1,89%	4,02%	4,37%
2008	7,24%	3,11%	2,21%	6,43%
2009	5,35%	2,00%	3,84%	4,36%
2010	6,65%	1,84%	3,29%	5,20%
2011	7,72%	2,07%	1,88%	6,01%
2012	7,18%	2,13%	1,76%	5,78%
2013	5,81%	1,96%	3,04%	4,96%
2014	5,49%	1,92%	2,17%	5,78%
2015	5,20%	2,11%	2,27%	6,12%
2016	4,86%	2,01%	2,45%	5,69%

Figure 4: T Bond Rate and ERP

- β – Beta - This measures how much a company's share price reacts against the whole market. A beta of one, for instance, indicates that the company moves in the same line as the market. If the beta is in excess of one, the share is exaggerating the market's movements; less than one means the share is more stable. Occasionally, a company may have a negative beta (e.g. a gold-mining company), which means the share price moves in the opposite direction to the broader market. For public companies, we can find database services that publish betas like Ycharts, yahoo finance and from other financial sources.

DIANA'S AVERAGE BETA PER YEAR	
Average	Beta
2016	1,493
2015	1,259
2014	1,456
2013	1,465

2012	1,525
2011	1,557
2010	1,615

Figure 5: Diana's Beta 2010-2016

- $(R_m - R_f)$ is Equity Market's Risk Premium (EMRP) - The equity market risk premium (EMRP) represents the returns investors expect to acquire them for taking extra risk by investing in the stock market over and above the risk-free rate. In other words, it is the difference between the risk-free rate and the market rate. It is a highly contentious figure. Many commentators argue that it has gone up due to the notion that holding shares has become more risky. The EMRP usually cited is based on the historical average annual excess return obtained from investing in the stock market above the risk-free rate. The average may either be calculated using an arithmetic mean or a geometric mean. The geometric mean provides an annually compounded rate of excess return and will in most cases be lower than the arithmetic mean. Both methods are popular, but the arithmetic average has gained widespread acceptance.

Once the cost of equity is calculated, adjustments can be made to take account of risk factors specific to the company, which may increase or decrease a company's risk profile. Such factors include the size of the company, pending lawsuits, concentration of customer base and dependence on key employees. These adjustments differ from one company to other and are relevant to internal information.

Cost of debt

Calculating cost of debt (R_d), on the other hand, is an easy process. To determine the cost of debt, we use the market rate that a company is currently paying on its debt. If the company is paying a rate other than the market rate, we can estimate an appropriate market rate and substitute it in your calculations instead.

In our research in order to calculate the cost of debt we use the LIBOR Rate plus the R_f as our market rate, because we do not have the company's market rate. We suppose that the minimum rate that the investors would like to be paid is the risk free rate. The combination of these two rates gives us the Cost of Debt for our company.

Month / LIBOR rate 2016	first	last	high	low	average
january	0.612 %	0.613 %	0.624 %	0.612 %	0,62%
february	0.619 %	0.633 %	0.636 %	0.617 %	0,62%
march	0.632 %	0.629 %	0.642 %	0.623 %	0,63%
april	0.629 %	0.637 %	0.638 %	0.627 %	0,63%
may	0.633 %	0.686 %	0.686 %	0.625 %	0,65%
june	0.681 %	0.654 %	0.682 %	0.624 %	0,65%
july	0.653 %	0.759 %	0.759 %	0.653 %	0,70%
august	0.759 %	0.839 %	0.842 %	0.759 %	0,81%
september	0.836 %	0.854 %	0.866 %	0.833 %	0,85%
october	0.858 %	0.884 %	0.890 %	0.858 %	0,88%
november	0.881 %	0.934 %	0.937 %	0.876 %	0,91%
december	0.942 %	0.998 %	0.998 %	0.942 %	0,98%
Average					0,743583%

Figure 6: Calculation of LIBOR Rate

In general, a company finances its assets either through debt or with equity. WACC is the average of the costs of these types of financing, each of which is weighted by its proportionate use in a given point. By taking a weighted average in this way, we can determine how much interest a company owes for each dollar it finances.

Debt and equity are the two ingredients that constitute a company's capital funding. Lenders and equity holders will expect to receive certain returns on the funds or capital they have provided. Since cost of capital is the return that equity owners (or shareholders) and debt holders will expect, so WACC indicates the return that both kinds of stakeholders (equity owners and lenders) can expect to receive. Put another way, WACC is investor's opportunity cost for funding with money a company.

A company's WACC is the total required performance for a business. Because of this, company managers will often use WACC internally to make decisions, such as identifying the economic feasibility of mergers and other expansion opportunities. The WACC is the discount rate to be used for cash flows at a risk similar to that of the overall business.

In order to understand WACC, we can think the company as a pool of money. Money enters the pool from two separate sources: debt and equity. Proceeds earned through business operations are not considered a third source because, after a company pays off debt, the company retains any leftover money that is not returned to shareholders (in the form of dividends) on behalf of those shareholders.

$wacc = K_e \left(\frac{E}{D+E} \right) + K_d \left(\frac{D}{D+E} \right)$ $K_e = R_f + B(R_m - R_f)$		
Rf	2,27%	a
Beta	1,26	b
Rm-RF	6,12%	c
Cost of Equity (Ke)	9,98%	
Libor	0,32%	d
Margin	2,27%	e
pre-tax cost	2,59%	
tax	0%	
Cost of Debt (Kd)	2,59%	
WACC		
Debt	55,45%	f
Equity	44,55%	
WACC	5,88%	

Figure 7: Calculation of WACC

As we can see from the above figure, Diana's WACC in 2016 was 5.88%. This means that investors were expecting a return of 5.88% per one euro of their invested funds. The exact analysis will be made to next chapter, where we will compare all our companies' weighted average cost of capital for a time frame of seven years, from 2010-2016.

Uses of Weighted Average Cost of Capital (WACC)

Securities analysts frequently use WACC when assessing the value of investments and when determining which ones to accept. For example, in discounted cash flow analysis, one may use WACC as the discount rate for future cash flows in order to find out a business's net present value. WACC may also be used as a hindrance rate against which to gauge ROIC performance. WACC is also essential in order to perform economic value added (EVA) calculations.

WACC is used from investors as an sign of whether or not an investment is worth pursuing. Put simply, WACC is the minimum acceptable rate of return at which a company yields returns for its investors. To determine an investor's personal returns on an investment in a company, simply we subtract the WACC from the company's returns percentage. If the company's return is more than the WACC, then the company creates value. On the other hand, if the company's return is less than WACC, the company is losing value.

WACC is a very useful tool for investors, in order to analyze and understand if a company worth for investment. However is a complicated tool, and it needs detailed data in order to be calculated. Nowadays, there a lot of bases where someone can find such data, but there are always internal information that could no be known by common investors. Nonetheless, if someone can understand WACC and its usage inside a company then has no problem to understand also what analyst's contain on their reports.

3.3 Debt Ratios

A company's debt ratio is the ratio of total debt to total assets. Total debt includes both short-term and long-term debt. There are many debt ratios, which give users a wide idea of the company's total debt load as well as its blend of equity and debt.

Debt ratios can be used in order to find out the overall risk level of a company. Practically, the bigger the amount of debt taken by a company, the greater the future level of financial risk the company could have, including bankruptcy.

Debt is a form of financial leverage. If a company has a high level of leverage, then it faces a high level of financial risk. On the other hand, leverage plays an important role to the

company's decisions. Most of the companies are looking for an optimal combination of equity and debt.

Debt is translated as liabilities in the section of a financial balance sheet. Creditors have a claim on the company's debt. Liabilities are commitments of the company, so false operation and management to these commitments may cause even the bankruptcy of the company.

We can find two types of liabilities — operational and debt. Operational includes balance sheet accounts, such as accounts payable, accrued expenses, taxes payable, pension obligations, etc. The latter includes notes payable and other short-term borrowings, the current portion of long-term borrowings, and long-term borrowings.

The debt ratios that we analyze in this thesis are the most common used ratios in order to evaluate and compare debts between our companies. For most analysts, these ratios represent what is hidden beneath a company's balance sheet.

3.3.1 The Debt Ratio

The debt ratio shows a company's total debt to its total assets. This gives analysts and investors with a common idea as to the amount of leverage that a company uses. If the percentage is small, then the company uses a high level of equity. In general, the higher the ratio, the more risk that company is considered to have taken on.

The debt ratio is calculated as follows:

$$\text{Debt Ratio} = \text{Total Liabilities} / \text{Total Assets}$$

The debt ratio tells us the degree of leverage used by the company. If a company has a high debt ratio, this is an indication that the company must make a significant portion of its ongoing cash flow to the payment of principal and interest on this debt.

On the other hand, a company that employs a very small portion of debt, notably if this is

low compared to other companies in the same industry, may not be properly using leverage that might increase its growth level.

Data analysts need to search beyond the ratio to determine what makes up the company's liabilities. Items such as trade payables and good faith might be excluded to provide a more precise picture of the company's long-term debt burden compared to their assets.

3.3.2 Debt to Equity Ratio

Debt to equity ratio is another debt ratio that compares a company's total liabilities to its total shareholders' equity. This is a measure of the company's balance sheet rate financed by suppliers, lenders, creditors and debtors in relation to what the shareholders have committed.

The debt to equity ratio gives another advantage point on a company's leverage thesis, in that it compares total liabilities to shareholders' equity as opposed to total assets in the debt ratio. Similar to the debt ratio, a smaller percentage means that a company is using less leverage and has a much stronger equity position.

The ratio is calculated as:

$$\text{Debt to Equity Ratio} = \text{Total Debt} / \text{Total Equity}$$

In our research, instead of the total equity we use the enterprise value of each company, as we need to show the proportion of the debt to the total value of the company, if an investor comes tomorrow and asks for a price.

Like the debt ratio, this ratio is not a pure measurement of a company's debt because it includes operational liabilities as part of total liabilities.

This ratio is commonly used so we can compare companies from the same market. If a firm's debt-equity ratio differs significantly from its competitors or the averages for its industry, this should make them pay an extra attention. Companies with a ratio that is too high can be at risk for financial problems or even a default if they can't meet their debt obligations. On the other hand, companies employing too little leverage may be earning less than their competitors as a result.

3.3.3 Net Debt to Enterprise Value Ratio

The capitalization index measures the debt 'ingredients' of a company's capital structure, defined as the combination of debt and equity in the company's balance sheet. This means that the company uses to finance its operations and any capital expenditure.

In order to finance operations, a company uses debt and equity. Debt has the advantages that interest payments are tax deductible. Debt also doesn't dilute ownership of the firm like issuing additional stock does. When interest rates are low, access to the debt markets is easy and there is money available to lend. Debt can take two forms, long and short term, and may be bank's loans or bonds issued by the company.

Equity sometimes could be more expensive than debt, and by raising it you even let investors influence some decisions. On the other hand, equity doesn't have to be paid back.

The ratio is calculated as:

Total Debt to Capitalization = Net Debt / Enterprise value

A company with excessive debt may find that the freedom of action is limited by its creditors and / or its profitability is affected by high interest costs. The worst that may happen is to face problems during adverse economic market conditions in fulfilling operational and debt commitments. Finally, a firm in a highly competitive industry, if

dropped out of high debt, will find its competitors taking advantage of its problems to gain bigger market share.

The capitalization ratio is one of the more weighty debt ratios because it concentrates on the relationship of debt liabilities as an ingredient of a company's total capital base, which is the capital raised by shareholders and lenders.

3.3.4 Interest Coverage Ratio

The interest coverage ratio is used to determine how easily a company can pay their interest expenses on outstanding debt. The index is calculated by finding a company's earnings before interest and taxes (EBIT) and be divided by the company's interest expenses for the same year. The lower the ratio, the more the company pays for the debt. When a company's interest coverage ratio is only 1.5 or lower, its ability to pay interest expenses may be very problematic.

The ratio is calculated as:

Interest coverage Ratio =EBIT/Interest Expenses

The ratio measures how many times over a company could pay its outstanding debts balance using its returns. This can be seen as a red point for the company's creditors if the company faces financial difficulties. The skill to service its debt obligations is a key factor in defining a company's solvency and is an important statistic for shareholders and future investors.

Potential investors will place money only to a company that pay back all her liabilities. Otherwise they don't want the company's growth derailed by these types of financial issues. Creditors are interested in the company's ability to pay the interest payments. If they are struggling to make interest payments for their current debts, it makes no sense for a credit to extend them additional credit.

The interest coverage ratio at a point in time can help show analysts a bit about the company's ability to service its debt, but analyzing the interest coverage ratio over time will provide a clearer picture of whether or not their debt is becoming a burden on the company's financial position. If the interest coverage ratio is declining through the time is something that should make the investors to be aware of, as it indicates that a company may be find it very difficult to pay its debts in the future. However, it is difficult to accurately predict a company's long-term financial health with any ratio or metric.

Moreover, the advisability of any particular level of this ratio is in the eye of the beholder to an extent. Some banks or potential bond buyers may find it more attractive with a less good ratio in exchange for charging the company a higher interest rate on their debt.

3.3.5 Cash Flow to Debt Ratio

This coverage ratio calculates a company's cash flows from operations to its total debt. Operating cash flow is the amount of cash generated by the company's normal business operations.

Ratio formula:

$$\text{Cash flow to Debt Ratio} = \text{Operating cash flows} / \text{Total debt}$$

Depreciation is an expense for increment accounting purposes, but there is no cash outlay so it is added back to reported net income. Increases in accounts receivables denote increased revenues but result in no actual cash inflows, hence they are subtracted. A decrease in inventories would indicate that less money had been spent adding to inventories, hence the increase in cash flow. An increase in inventories would have been a reduction in cash flow. The decrease in accounts payables means that the firm paid down some of its payables, which is a use or reduction of cash.

Debt is the sum of short-term borrowings, the current portion of long-term debt and long-term debt. This ratio provides a sight of a company's ability to cover total debt with its yearly operation cash flows. The higher the percentage ratio, the better the company's ability to carry and service its total debt.

CHAPTER 4

4 DATA ANALYSIS

Having described our methodology in the previous chapter and the ratios we have used, we are ready to present our results. We will see how the debt of our selected companies have reacted during the seven years of the crisis in the shipping industry and if the companies achieved to maintain a strong capital structure.

As we described in the first chapter, the dry bulk sector had face very bad days. According their financial statements their CF have been reduced and the debt portion has grown. This comes in accordance with all the reports and the BDI index that shows the significant drop in the freight rates during these years.

On the contrary, the wet bulk sector had maintain a positive performance and consequently companies with a strong capital structure and an experienced management team have become more competitive.

4.1 Dry Bulk Sector

Enterprise value

DRY BULK							
Enterprise Value							
COMPANY/YEAR	2010	2011	2012	2013	2014	2015	2016
DIANA SHIPPING	1099,57	596,57	630,06	1308,96	835,28	805,96	763,22
EUROSEAS	114,46	126,08	76,56	106,81	108,40	89,26	101,89
SEANERGY	468,35	357,63	230,72	178,01	14,23	249,14	250,64
STARBULK	371,49	325,31	258,39	535,79	1539,61	937,52	1079,23
MARKET	513,47	351,40	298,93	532,39	624,38	520,47	548,75

Figure 8: Summarized EV for Dry Bulk Sector

The first thing to examine is the enterprise value of each company. Of course we cannot compare EV between companies because there are different growth values and each

company has different strategy and different position in the industry. What we can compare is the direction of the enterprise value between 2010 and 2016.

If we examine the above figure we could say that the company that had raised by 3 times its EV is STARBULK. Starting with 371, 47 million in 2010 achieved a price of 1079.23 million by 2016. Of course we have to think that the EV is the sum of the market cap and the net debt, thus we have to take into account that there is something hidden in such an increase. As we will see later, this increase is due to a larger debt portion, which means that the company was forced to resort to further liabilities..

On the other hand, SEANERGY seems to have faced a lot of problems during this period. Starting from 468.35 million in 2010, lost almost all her value in 2014 reaching value of 14.23. The company had been on bankruptcy regime, since she lost a great amount of shareholders between 2011 and 2014. The market cap minimized and the value of the company reached a history low.

For the rest of the companies, we could say that they managed to maintain their average value from 2010 to 2016. The turbulences on their values are a significant mark of the shock that the dry bulk market has experienced. The good sign, is that all four companies as a market, did not face any reduction.

Net Debt to Enterprise Value

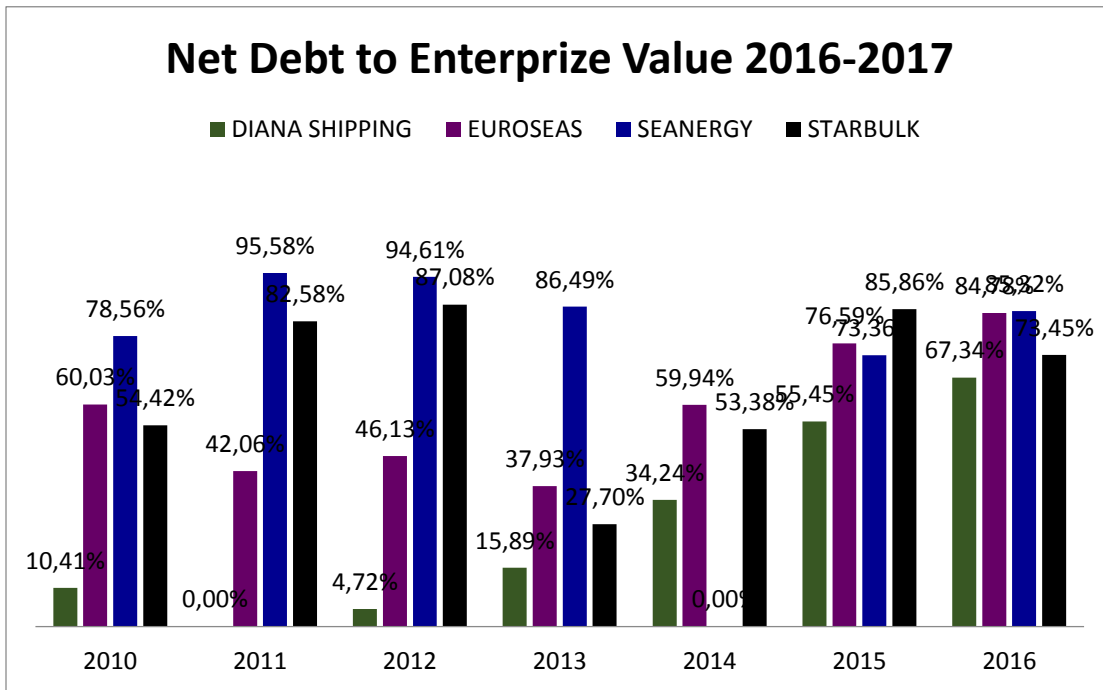


Figure 9: Net Debt to Enterprise Value

Next step is to look on net debt to enterprise value. As we told above we cannot compare enterprise value between companies, but we can compare their capital structure. Between companies of the same sector we expect seeing similar capitalization strategy. Investors can acquire lots of information by analyzing the portion of the net debt in a company.

What we see in the above figure, is that from 2010 to 2016 all companies have raised the portion of net debt. This means that these years all companies have faced serious problems responding to their liabilities and with reduced cash and operating cash flows their net debt has risen. The further reduction of the freight rates and the loans coming from the investment of the previous years have led the market to a crossroad.

It is worthwhile to comment on the following. Diana shipping from zero percent of net debt in 2011, has led to count a portion of 67.34% in 2016, 6 times above the portion in 2010 when the crisis starts showing the first results. Furthermore, Seanergy, although in a bankruptcy regime between 2011 - 2014, has accomplished to renegotiate its loans' payments and after a crucial point in 2014, to recover external funding.

Debt Ratio and Debt to Equity

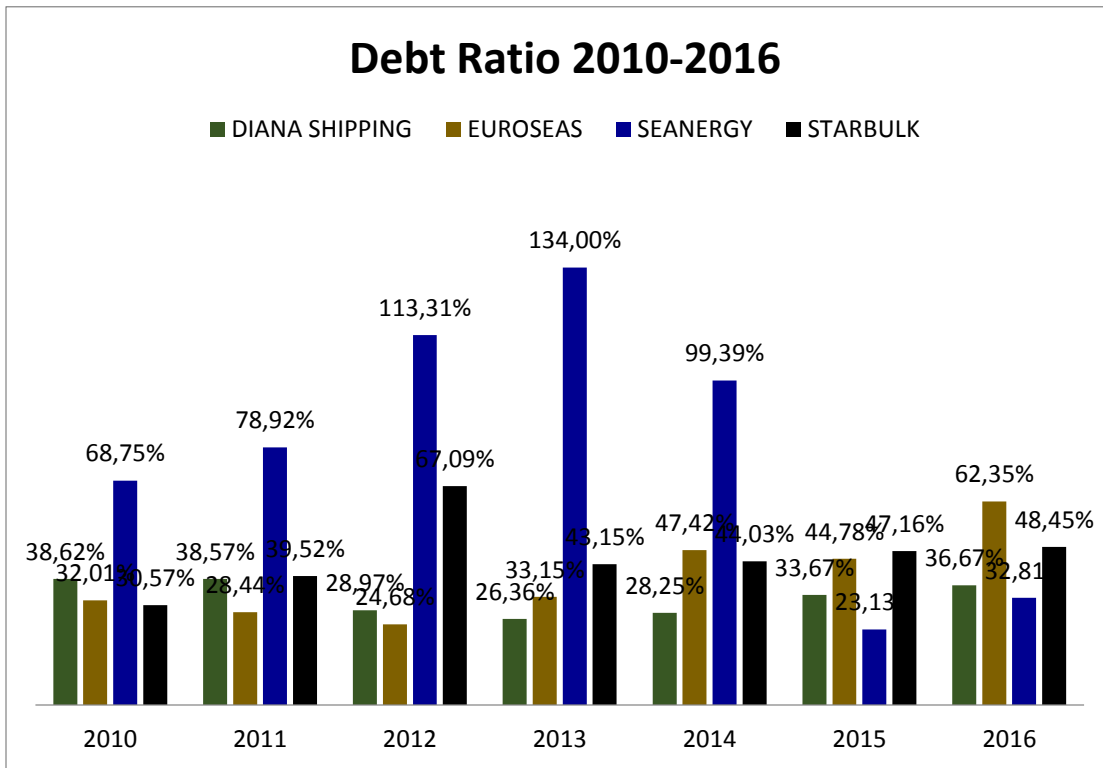


Figure 10: Debt Ratio

The debt ratio shows the percentage of a company's assets that are financed through debt. In common words it shows how leverage is our company.

On the contrary of the net debt, the above table shows that all companies have a stable leverage level and have maintain the ability to repay their liabilities through the assets.

Once again, the company that draw our attention is Seanergy. The years 2010-2014 find itself struggling with the ratio overcome 100%. In fact, debt ratio takes values between 0-1, thus in terms of Seanergy that portion means that the company has bankrupt, as the liabilities worth more than its assets. The next two years the company shows signs of recovery, with a debt ratio same as the average of the market.

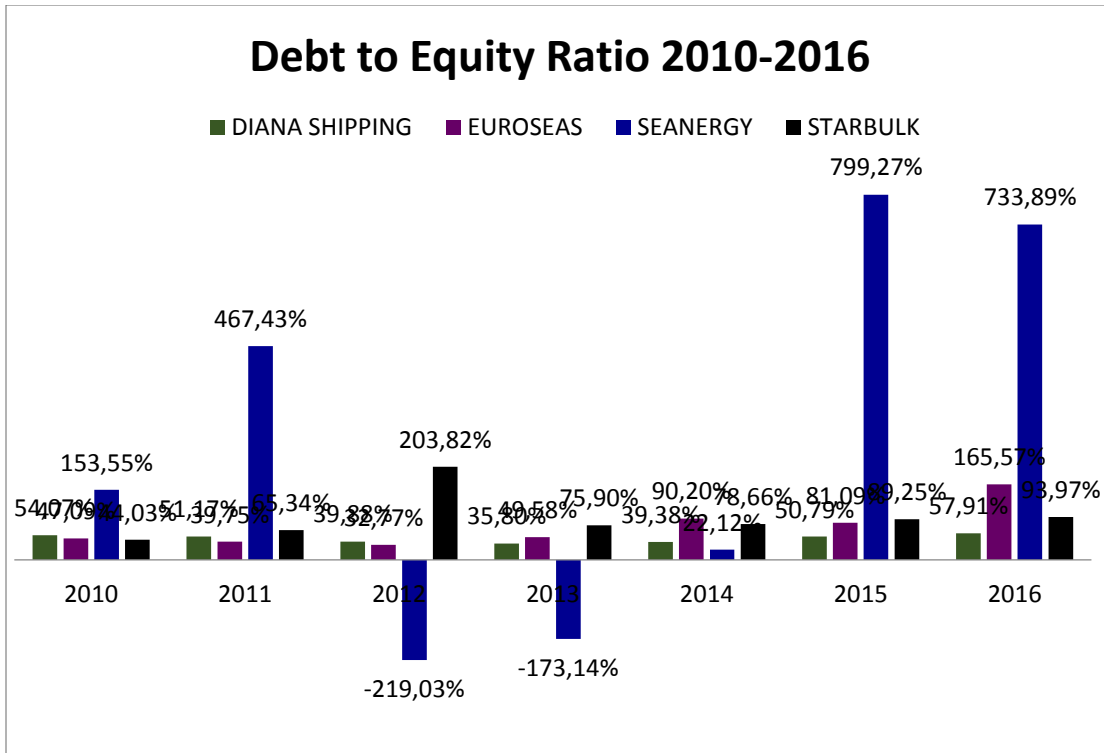


Figure 11: Debt to Equity

This ratio calculates how much of the company's debt is used to finance its asset relative to the amount in shareholders equity. It also shows a company's riskiness.

From the above table chart we can clearly see that the only company which has maintain a stable debt to equity ratio is Diana Shipping. Starting from 54.07% in 2010, we find almost the same portion in 2016 at 57.91%. This means that the company, independently of the market crisis, has acquired to keep a balance between the debt capital and the equity.

On the other hand, all of the other 3 companies have a tremendous rise in their ratio. Starbulk from 44.03 in 2010, rocket the portion in 203.87% in 2012, to have it reduced it in 93.97% at the end of 2016. This was a result of both inability to pay its debt during the crisis and the loss of shareholders due to reduced price in the stock market.

Euroseas has maintain a steady debt equity ratio from 2010 to 2013, but the last 3 years started to face problems with its financing structure. Starting from 47.09% in 2010, end up having 165.57% in 2016, meaning that all its assets are financed by the debt.

Starbulk, once again is out of the market limits. Although it has acquired an acceptable debt ratio from the above table we can clearly realize that is the most risky company. During years 2010 and 2011 has risen the percentage 4X times. Years 2012-2013, the company bankrupt having more cumulative losses that equity and the ratio turned negative. After 2014 and a quick recovery, we find it again to rely on debt financing as it closed 2016 with a ratio of 733.89%.

Weighted Average Cost of Capital

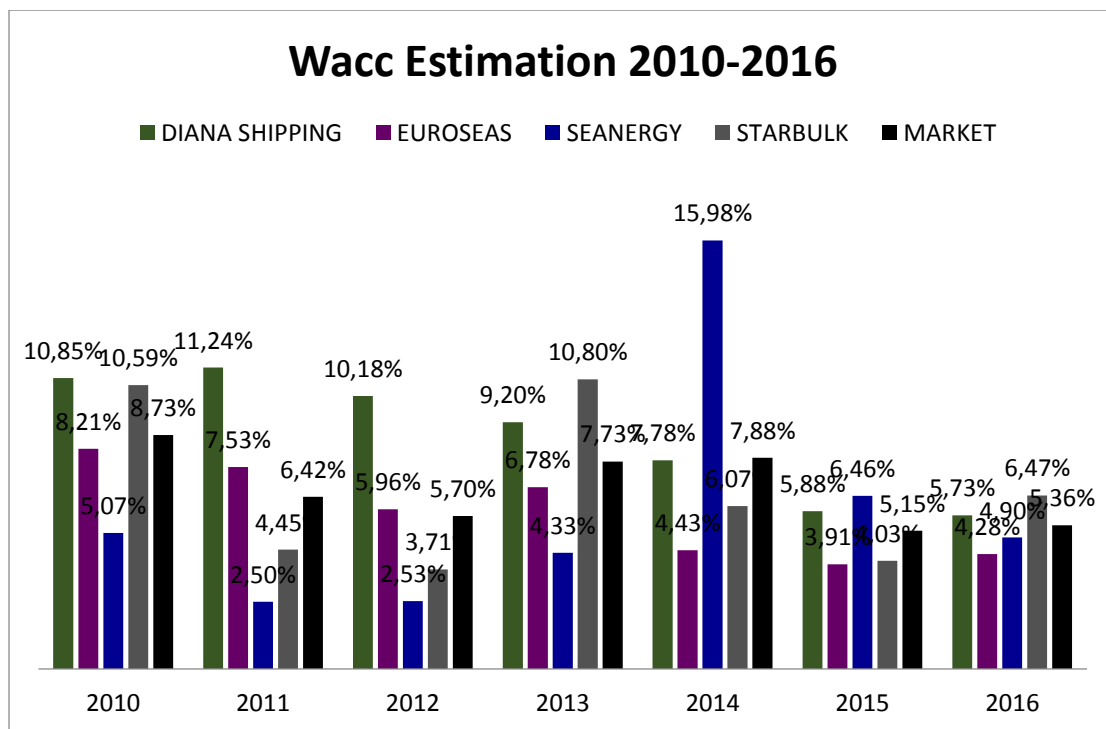


Figure 12: WACC estimation for dry bulk sector

The Weighted Average Cost of Capital is the average cost of all capital contributed in a company. It is the minimum expected return in order to make investors simply put money within the company and the value the company creates for each dollar spent. In common words, the smallest the WACC the better for the company.

What we see from the figure is that the biggest WACC is from Diana Shipping while the lowest from Seanergy. The question arising is how is this possible as from the above debt ratio analysis we made, we saw that Seanergy has the worst performance through the years.

The answer is hiding to the components of this ratio. If we check the structure of the WACC we will notice that the cost of debt is much cheaper than the cost of equity. This means that Seenergy, with a big debt structure will have a smaller WACC than the other companies.

Diana with a strong equity and a wacc of 10.85% in 2010, has managed to increase its financing from sources other than equity, and ended 2016 with a percentage of 5.73%. Euroseas and Starbulk, continue in the same route through these years, ending with a competitive WACC of 4.28% and 6.47% respectively. Seenergy, having a very low WACC in years 2011 and 2013 as the company was in distress zone, in 2014 managed to approach more shareholders, thus to increase equity and rocket the WACC at 15.98%. Finally, as a market, all 4 companies have maintain to keep a weighted average cost of capital under 10%, which means that they managed to have a positive capital structure.

Interest Coverage and Cash Flow to Debt Ratios

DRY BULK							
Interest Coverage							
COMPANY/YEAR	2010	2011	2012	2013	2014	2015	2016
DIANA SHIPPING	25,54	24,94	8,78	0,00	0,00	0,00	0,00
EUROSEAS	0,00	13,29	0,00	0,00	0,00	0,00	0,00
SEANERGY	36,42	0,00	0,00	1393,85	5825,71	0,00	0,00
STARBULK	0,50	0,00	0,00	34,80	0,00	0,00	0,00

Figure 13: Interest Coverage

DRY BULK							
Cash Flow to Debt							
COMPANY/YEAR	2010	2011	2012	2013	2014	2015	2016
DIANA SHIPPING	29,13%	24,93%	23,75%	15,02%	8,89%	3,87%	-3,43%
EUROSEAS	3,96%	5,85%	3,06%	2,57%	-0,38%	-1,18%	-0,58%
SEANERGY	7,48%	7,35%	1,09%	0,66%	0,00%	-2,55%	-6,77%
STARBULK	12,51%	7,05%	5,36%	5,87%	0,62%	-0,68%	-1,66%

Figure 14: CF to Debt Ratio

The above panels show us two important ratios as to understand our companies' performance and the reason of the debt rise within them. The first one, presents the ability of each company to pay the interest expenses coming from their loans, while the

second one shows the ability of loan service from each years' operation cash flows. The combination of these two ratios, give us a picture of the performance of our companies relevant to their debt.

Diana Shipping from years 2010-2013 was able to cover all interest expenses from its earnings, although 2012 the rate was much reduced that the previous two. From 2013 to 2016 the value of the ratio is 0, because of the negative EBIT. This means, that the earnings of the company were lesser than the costs. If we look the second panel, we will see that the operations' CF for years 2010-2012 could cover almost the 3 times payments for the debt, thus the interest expenses. But from 2013, has started to decline with a fast tempo, turning negative in 2016. The reduction in freight rates have made the cash flows from operations insufficient to cover expenses of the company.

Euroseas and Starbulk were unable to cover their interest expenses for the whole period except years 2011 and 2013 respectively, and this due to re-negotiations of their loans. Their CF to Debt ratio is considerably smaller than Diana's Shipping, turning negative for both companies in 2015-2016. Negative cash flow from operations, influence total earnings and thus results in inability to meet their payment liabilities.

As for Seenergy, these ratios give us lot of signs for the performance of the company. The year 2010, although able to cover interest expenses of the debt, in the coming years was sank by the burden of the debt and the low operation cash flow. We may see an extraordinary high value in interest coverage for years 2013 and 2014, but we cannot take this as accurate, as the company in essence went bankrupt.

Generally, all companies present a weakness for payment after 2012, where the crisis in dry bulk industry was in high point. Inability for payment interest expenses and very small to negative cash flows, make us understand why the 4 last years were a disaster for the dry bulk market.

4.2 Wet Bulk Sector

Enterprise Value

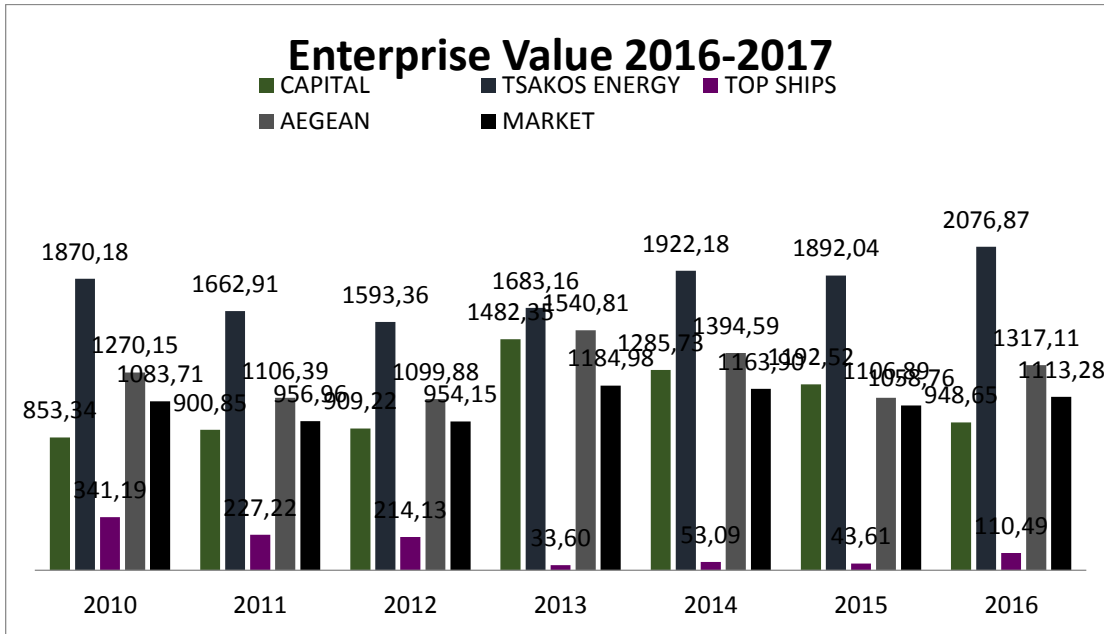


Figure 15: Enterprise Value of Wet bulk

On the contrary of the dry bulk market, wet bulk companies have maintain their enterprise value between 2010-2016. Clearly we can see from the figure all companies except Top Ships ended 2016 with bigger value than 2010.

Wet bulk market faced much lesser fluctuations than the dry bulk market, and our companies have maintained to respond positively. Top Ships is the only company which faced problems in conserve a steady course, losing almost 6 times its value in years 2013-2015.

Net Debt to Enterprise Value Ratio

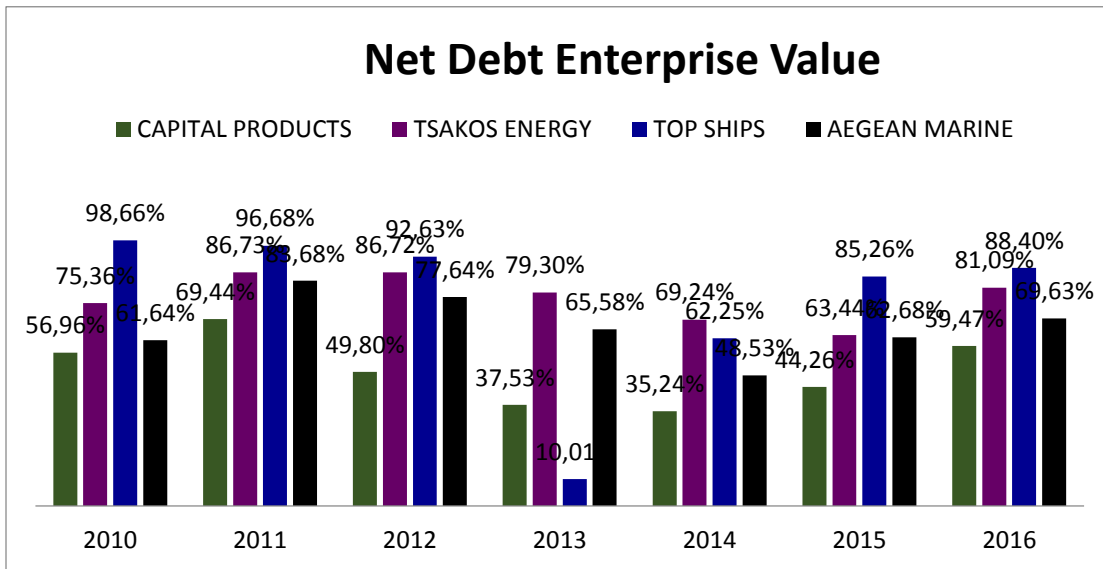


Figure 16: Net Debt to enterprise Value

As in dry bulk sector, next ratio to examine is the net debt to enterprise value. It show us the portion of the net debt to the real value of our company.

Each company, has a different growth value, but by examining the above figure we could understand each company's capital structure and how they behave during our research period.

Examining the above column table we notice a steady pattern in the net debt portion. Our three companies, Capital, Tsakos Energy and Aegean Maritime have almost the same portion through the years. This means that each year, their strategy was able to overcome any obstacles occurred.

On the other hand the, Top Ships was again the negative factor of the market, starting in 2010 with a 98.66% ratio, meaning that the value of the company was in fact its debt. As the company did not generate any cash and equivalents for three years in a row, and the market cap value was dramatically smaller that its debt, was driven in 2013 in selling assets to get debt relief. The portion fell in 10% to start rising again from 2014 as the company started a steady growth strategy.

Debt and Debt to Equity Ratio

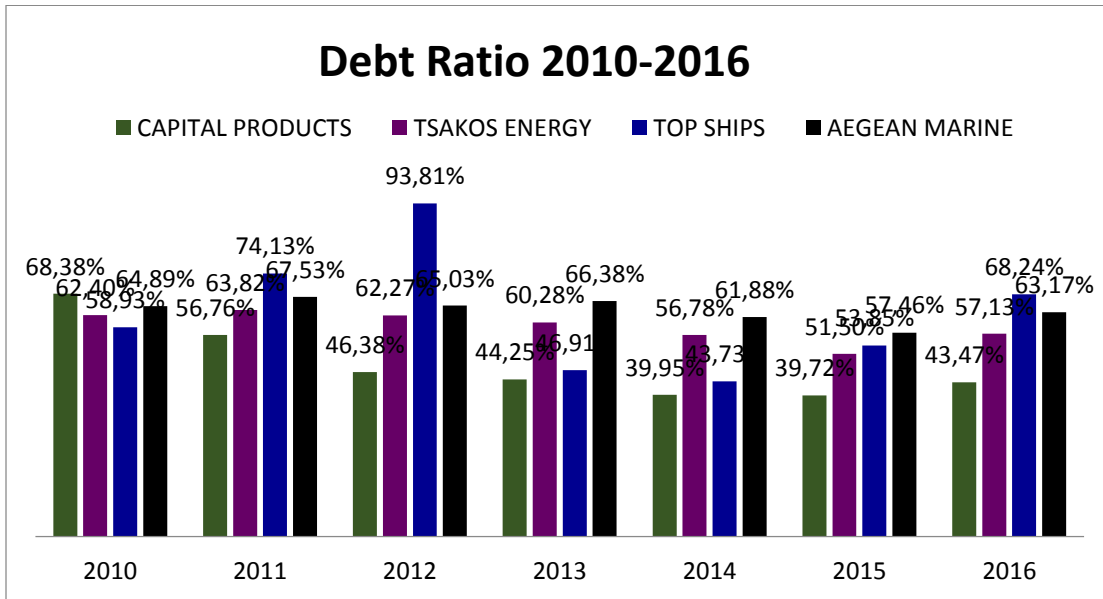


Figure 17: Debt Ratio

Similarly to the dry bulk market, with the above ratio we will examine the percentage of assets that are financed by the debt of the company.

What we can notice is that all companies have a steady average leverage rate through our period. In business terms this means that there were no significant changes to the structure of the company, and the assets of each company are greater than the debt.

What we have to mention, is Top Ships ratio in 2012 rating 93.81%. This means that the assets of the company were almost equal to the debt. The health of the company was in a critical point as the 9/10 of the company's value was compromised by debt. From 2014, the ratio fell, meaning that the company proceed to debt reduction.

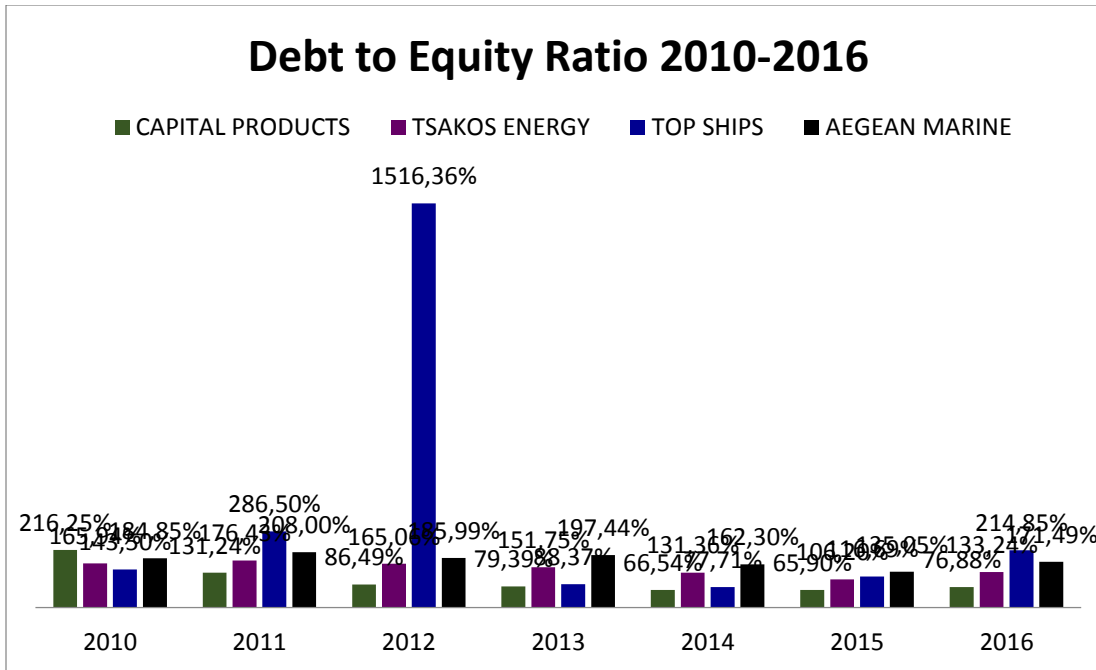


Figure 18: Debt to Equity Ratio

For the tanker market this ratio shows very interesting results and help understand why shipping is a capital aggressive industry.

Capital Products is the only company which managed to run down the ratio below 1. While the debt in comparison to the equity was 2 times bigger in 2010, in 2016 we find the debt counting 0.7 times the equity. The company has managed to reduce the portion of the debt internal and have a stronger equity.

Tsakos Energy and Aegean Maritime have maintained a value above 1 for the whole period meaning that their assets were financed more from debt than the equity. This means that debt holders have bigger claim in volatile earnings and the risk company's risk is higher. Of course, the maintenance of a high debt to equity ratio many times is a form of growth strategy, especially in shipping industry.

Top ships financing problems could be found clearly from the above panel. From 2010-2011 the ratio had a reasonable value according the market but in 2013, with the minimizing of the equity and the loss of a great amount of shareholders the ratio took an outrageous value. Changing the strategy and with a huge reduction on debt the company restored the ratio in reasonable terms.

Weighted Average Cost of Capital

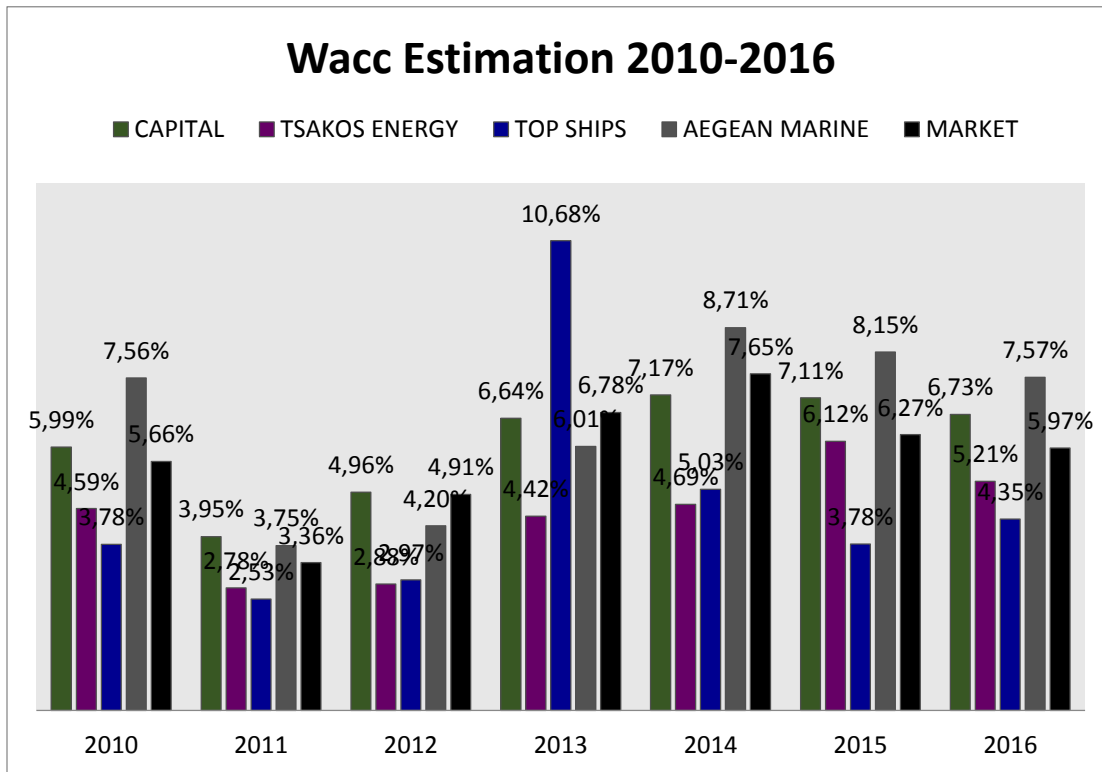


Figure 19: WACC for wet bulk

The weighted average cost of capital for the wet bulk industry has faced some fluctuations through the years but in general the average value for all companies maintained stable. Relatively smaller than the WACC of the dry bulk sector could explain the more debt financing of this sector.

Capital Products and Aegean Maritime, has managed an average WACC rate of 6% for these 7 years. Although these companies have a bigger cost value than Top Ships and Tsakos Energy, the portion of the net debt in the formula states a stronger equity structure.

On the other hand Tsakos Energy and Top Ships, which portion of debt in the capital structure is significant, have maintain a smaller WACC of 4.5% on average. As we mentioned above, the cost of debt is cheaper than the cost of equity. For Top Ships, the year 2013 could be characterized as an intercalation, because the debt relief that succeed has launched the ratio to 10.68%, as the portion of the net debt for that period was only 10%.

Interest Coverage and Cash Flows to Debt Ratio

TANKER							
Interest Coverage							
COMPANY/YEAR	2010	2011	2012	2013	2014	2015	2016
CAPITAL PRODUCTS	1,57	3,58	0,21	7,22	3,29	3,75	3,16
TSAKOS ENERGY	1,79	0,00	0,00	0,03	2,09	6,53	2,51
TOP SHIPS	0,30	0,00	0,00	1,19	10,99	0,00	1,41
AEGEAN MARINE	2,27	1,65	2,34	2,56	1,94	2,76	3,27

Figure 20: Interest Coverage Ratio

TANKER							
Cash Flows to Debt							
COMPANY/YEAR	2010	2011	2012	2013	2014	2015	2016
CAPITAL PRODUCTS	6,60%	4,73%	7,92%	9,24%	8,11%	8,63%	10,05%
TSAKOS ENERGY	3,08%	1,80%	2,48%	4,75%	3,96%	8,10%	5,20%
TOP SHIPS	5,72%	5,32%	7,16%	11,02%	-3,71%	1,87%	4,68%
AEGEAN MARINE	4,82%	3,05%	8,63%	2,51%	12,24%	3,43%	-2,98%

Figure 21: CF to Debt Ratio

Although the above figure give us some confused results with a first sight, in combination with the above ratios could give us a lot of information.

Capital Products is the only company with positive results. Being able to pay back all interest expenses, with a small break in 2012, give us a picture of a well management company. Moreover, its operation cash flow covering the 6.60% of the total debt ended covering the 10.05% in 2016. This is a result of the reduction in the debt of the company and its profitable operations.

Tsakos Energy and Top Ships are the two companies with weakness in covering their interest expenses. Top Ships high debt's and low profitability from operation cash flows made unavailable for the company to cover its expenses.

Tsakos Energy, in 2011 and 2012 had the smallest cash flow to debt ratios. This, among the high net debt ratio for the same years, can explain the inability of payment. After 2013 the company started recovering.

Aegean Marine in 2010, 2011 and 2016 faced negative cash flows from operations. Nevertheless its strong portfolio and positive EBIT all the years, retained the possibility of being able to pay interest expenses that occurred.

4.3 DISCUSSION

Having analyzed the capital structure of these two markets, and especially the role of the debt, we made a step to understand how our companies reacted in these seven years of a downward trend of the shipping industry. What is common for the shipping industry and well known is that follows the global economic cycles. Moreover, the high volatility and the high risk of investment makes it a particularly difficult and an unpredictable sector.

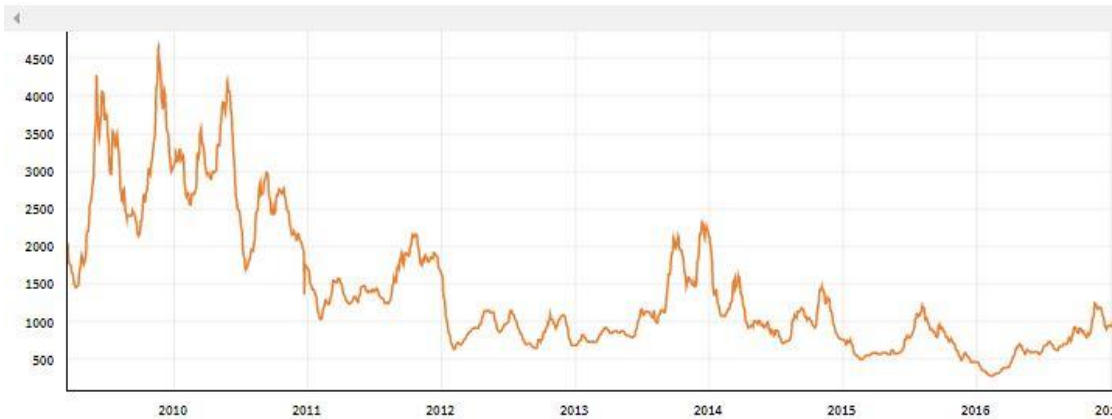


Figure 22: <https://www.quandl.com/data/LLOYDS/BDI-Baltic-Dry-Index>

The above figure shows the BDI index from 2009 until the end of 2016. Comparing the ratios of our companies with this index, we can see a high relation between the freight rates and the decrease in their performance.

2008 to 2010 was a period of high optimism and the hope for greater earnings have driven the market to an unstoppable investment to increase their fleet. The outcome was an oversupply of vessels to cover a much smaller demand, since global economy started to slow down. This has resulted to a sharp reduction in freight rates, thus less profitability for the companies. This can explain, why the net debt of our chosen companies have been raised significantly and why most of them were unable to meet their debt liabilities.

On the contrary, the wet bulk market (i.e. tanker market), has much less negative results than the dry bulk sector. Although influenced by the slower growth of global economy, different components made it possible to resist in this pessimistic environment.

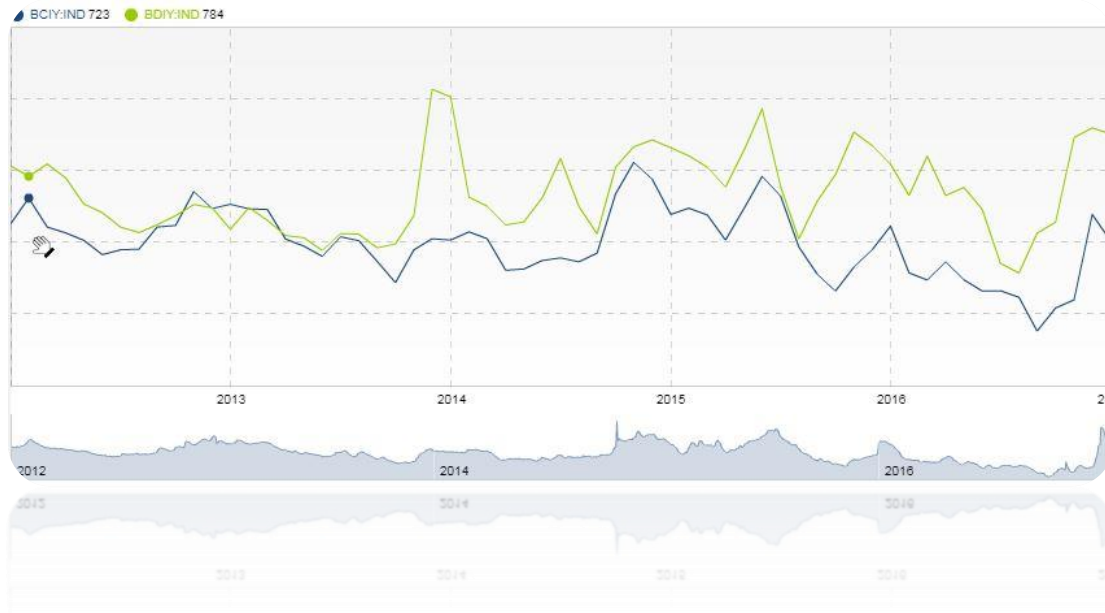


Figure 23: <https://www.lloydlistintelligence.com/llint/tankers/baltic-index.htm>

On the above graph we can see how the freights rates were formed from 2012 to 2016. Despite the reduction after the financial crisis starting on 2008, rates remained stable until the middle of 2013. After this period there are signs of recovery, as lot of companies have been forced to reduce or rationalize their fleet capacity. As the dry bulk market, the tanker market has been influenced by the low freight rates.

The low crude oil prices lead to a high demand of oil orders, and tankers started operating obtaining high earnings. Another key factor for the tanker market, is that during the low oil prices, were used as storage facilities so could take advantage of the higher price later.

Tankers that transported oil had great earnings the years 2014-2015. The high demand of the cheap oil gave to the companies the opportunity to manage profitably their fleet. Generating profit, means that the company can make further investments and meet all its liabilities. This comes in accordance with our data, which shown a stable net debt portion of capital through 2010 to 2016, and an increase of the enterprise value of our companies. In general, the wet bulk companies accomplished to maintain a profitable activity, and any

problems that occurred were due to weakness of fast adaption the sudden changes in the market.

5 CONCLUSION

In a more specific view, debt and risk management is of high importance in the shipping industry. Ship-owners and investors should have the ability to analyze and judge the necessity and the effectiveness of an investment. The peculiarity of this market is not the high earnings in periods of great prosperity, but the ability to manage risk when the rules of the market demands only the strongest to survive.

In this thesis we examined the shipping industry from a finance scope. We left aside factors as fleet utilization and company's strength and focused on funding sources and management strategies in terms of economic prosperity.

We tried to answer two critical questions, which will always affect shipping market, regarding the capital structure of such companies and strategies for smooth maintenance of debt liabilities, in terms of risk and investment.

In this context, first thought in chapter two was to understand the main financing sources that exist in the shipping market, analyzing advantages and disadvantages in each case. Every method has not the same results and do not fit in every company. There is no such thing as optimal capital structure in shipping market. Instead, each company should find the one that gives it a balance in its operation.

What we did next in chapter three, was selecting our research data and build the methodology. We chose Greek companies as we did want to have a general overview of the market in our country. The ratio analysis and the comparison between our companies, was the best option as we had to stay in strict financial borders, and the data were selected from each company's annual financial statements.

In chapter four we demonstrated our results. We showed that companies in the dry bulk sector faced almost the same course. This represents the general market situation and the reduced expectations. On the other hand results in dry wet market were a bit confused.

Companies' data were different both internal from year to year and in comparison between them because of the unpredictable changes in global level during this period.

What someone can understand from this thesis, is that shipping companies are struggling in terms of debt exposure. The proportion of their debt obligations increases significantly and it may affect their future growth. Financial leverage of 'players' in such a market is very valuable. It affects their operation performance, their earnings and in general their flexibility in steep market changes. We saw that companies with a strong capital structure in the beginning of the crisis, maintained a positive sign, while others were a step if not totally in state of bankruptcy. The rate of financing, the repayment period of the loan and the guarantees received from the lenders are key elements that should be of concern to the companies.

In light of the above, the research demonstrates a method that ship-owners, financing institutions and investors should focus when judgements are made in the ship finance sector. Ship-owners should recognize the ability of their company to respond in future liabilities, financial institutions the risk of loans they give and investors the balance between return on investment and the risk they accept.

Should someone stay only in debt analysis in order to have an accurate opinion is not something that will have results. Further research should be made on how the debt obligations are directly linked to the operations of shipping companies and are influenced from freight rates and changes in trends of global trading. How does a company divide the different components of such loans? Does a company contract a loan to invest in its growth or to cover negative earnings? Loans are a necessity for shipping companies if they want to stay competitive, but have to be pro-active in any market changes.

To sum up, one thing we can say with certainty. The shipping sector fulfills in full almost all the conditions of the perfectly competitive market model. To that extent there is no space for shipping companies to influence the freight rates and their exposure and thus they are considered as "price takers". Each company must make the right choices to avoid risk and to be covered up against the uncertainties of the market.

APPENDIX

Stock price per company

Dry Bulk

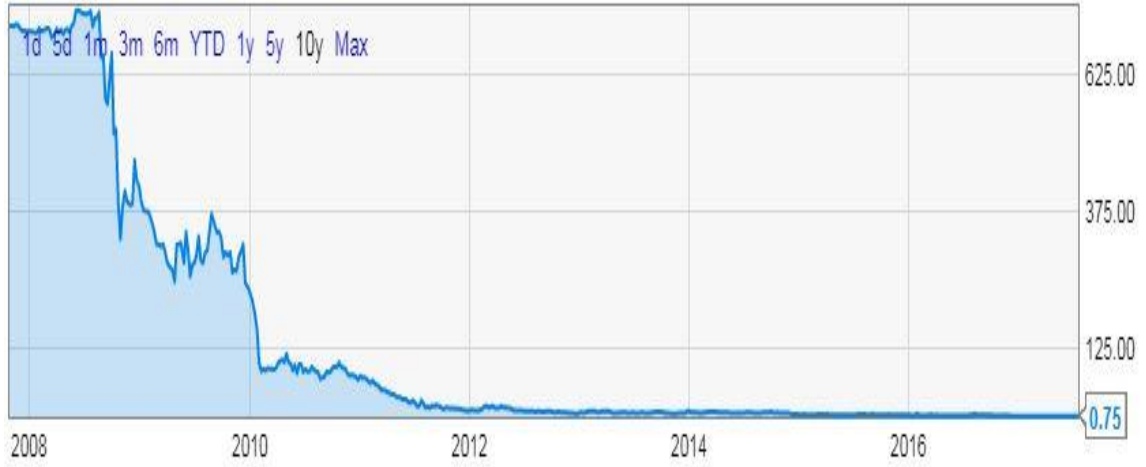
- **Diana Shipping**



- **Euroseas**



- **Seanergy**



- **Star Bulk**



Wet Bulk

- **Capital Products Partner**



- **Tsakos Energy**



- **TOP Ships**



- **Aegean Marine Petroleum**



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- <http://www.myaccountingcourse.com/financial-ratios/interest-coverage-ratio>
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