Norwegian School of Economics

Bergen, Spring, 2015

Sailing through shipping equity

Analysis of factors of success and failure

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Master thesis in Energy, Natural Resources and the Environment

NORWEGIAN SCHOOL OF ECONOMICS

Abstract

The thesis offers a holistic success and failure factor analysis into the largely untapped area of the shipping equity. The sample is comprised of 59 dry bulk and crude oil tanker companies, representing a wide set countries in both developed as well as emerging shipping nations.

Shipping industry was found to be a money-losing investment for most of the investors since 2000 despite the boom of the mid-2000s ahead of the financial crisis. Digging deeper, it was uncovered that the typical factors, analysed to identify the future potential of the shipping companies have largely failed to explain the equity returns over time and offers a cautious look into the practitioners' analysis of the market.

On the other hand, the industry-wide factors, including the global economic growth, volume of international trade as well as the shipping market data in terms of expected supply growth and prevailing day rate levels, proved more insightful. This once again demonstrates the truly international and commoditized nature of the shipping industry.

Despite the relative success of industry-wide factors in comparison to the company-specific ones, the companies have differed in their equity performance by a great amount and thus the overall predictor power of only the industry-wide factors is insufficient. However, in order to improve the company-specific data in terms of fleet profile, corporate strategy and other matters, the data set should be built based on prevailing and future market information as historical detailed company data is in many cases hardly available, especially in case of emerging country companies.

Contents

Introduction

Shipping represents 90% of the global trade volumes and directly generates around 2% of the global GDP (Petrofin, 2008). More than one million seafarers operate over 50,000 vessels worldwide (ICS, 2013). However, when it comes to the financial world, shipping industry represents less than 0.5% of the total market capitalization and even smaller portion of the IPO market (Petrofin, 2008). Unsurprisingly, this has led to relatively low academic interest in shipping equity markets. It is worth highlighting that despite numerous IPOs since 2000, the global shipping market still remains one of the most private industries. To illustrate the fact, since 2007 some USD 15bn was raised in private equity markets in the US, UK and Norway, nearly as much as has been raised through IPOs (Jeffries, 2014)

While the market activity has greatly increased over the last 20 years, the shipping equity returns have been uneven, to say the least. Many investors have been lured by the prospects of great returns while others have lost all their fortune in many bankruptcies, which are not uncommon in the industry. Among other infamous examples, we find Britannia Bulk which defaulted in less than five months after the IPO (Cohen Milstein, 2008). Despite these failures, the high volatility in day rates (Greenwood and Hanson, 2013) also means strong potential equity returns, which have historically been a major bait for investors. Even more, large number of failures increases the need for effective analysis tools for shipping equity in order to assure the effective use and distribution of capital from the investor's and economist's point of view respectively.

The master thesis aims to cover the identifiable factors behind the likely future winner cases by expanding the present academic inquiry into the topic as well contribute a more appropriate regression-based tool for the practitioners.

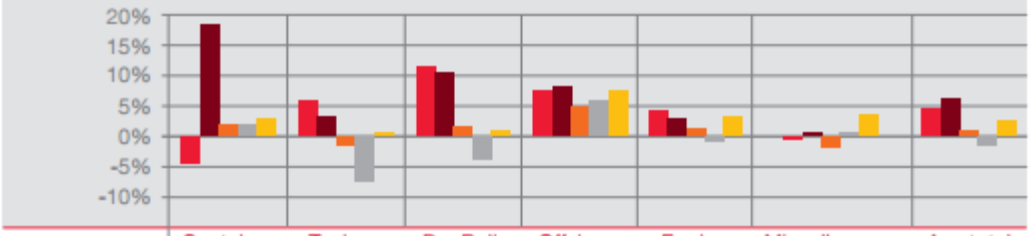
1. Shipping – an industry like no other

Importantly, shipping is among the most capital intensive industries and magnitude of the amount of required capital is further under pressure since it has to be attracted under reasonable cost in order to facilitate continuation in highly volatile and dynamic business environment involving numerous sophisticated factors of long-term success under the pressure of fierce competitive forces (Grammenos, 2010). As one of the more recent trends since 1990s, international capital markets began providing more and more of the required equity and debt capital and thus have emerged as a major alternative funding source for the industry, previously dominated by mostly private investors, partnerships and other facilities targeted specifically at the shipping industry.

It is also worth highlighting, that shipping is a highly cyclical industry: a longer 7-year cycle and a shorter less severe 4-year cycles were identified for the dry bulk industry by Christe and Vuuren (2013). Some researchers (e.g. Veraros, 2008, accesed via Grammenos, 2010) claim that even in this environment the shipping companies on average generate return on total assets of around 10% (per annum). However, this rather attractive number should be taken with a pinch of salt since the research has estimated the mentioned long-term return level at the very top of the most recent shipping cycle. It is likely that the numbers delivered rather upside skewed return profile. For example, PwC (2015) reported significantly lower figures for the shipping companies in terms of return on net operating assets during the period of 2009-2013. While the market average has not exceeded 6%, the tanker companies have yielded the average returns of barely 0.4% compared to 4.0% by the dry bulk companies. Arguably, the figures seem to be below th reasonable cost of capital for the companies for both the overall market as well as tanker and dry bulk companies specifically. Having said that, it is also important to highlight that using arithmetic average returns slightly positively biased figures as the negative return values during some years undermine the long-term profitability further than evaluated by the arithmetic average (for example, the geometric averages are respectively 0.3% and 3.8% for tanker and dry bulk companies).

Table 1. Return on Assets in different shipping sectors during 2009-2013

Return on net operating assets (RONOA)

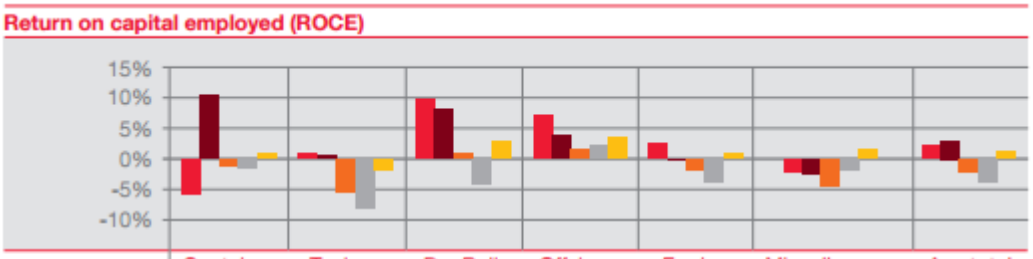


	Container	Tankers	Dry Bulk	Offshore	Ferries	Miscellaneous	Avg total
2009	-4%	6%	11%	7%	4%	-1%	4%
2010	18%	3%	10%	8%	3%	0%	6%
2011	2%	-1%	2%	5%	1%	-2%	1%
2012	2%	-7%	-4%	6%	-1%	1%	-2%
2013	3%	1%	1%	7%	3%	3%	3%

Source: PwC (2015)

One way to look at the returns versus the cost of capital is to analyze the return on capital employed (ROCE). Namely, the return on net operated assets is calculated before the interest payments and taxes are deducted (i.e. on EBIT level rather than net profit). Since ROCE is calculated as net profit divided by interest bearing liabilities plus value of equity, its negative values would imply that the retøurns are not sufficient even for the cost of debt capital, yet alone the decent return on equity. As provided in the table 2, both tanker and dry bulk segments had years when the sector companies were not able to generate sufficient returns even to meet the cost of debt. Admittedly, the situation seems far worse in the tanker shipping since it failed to meet the level of returns to make interest payments during all years from 2011 to 2013 and in 2009-2010 the returns on equity were very marginal. This is surely understantable given the weaker tankers' RONOA compared to the dry bulk segment. The situation in the dry bulk segment was much brighter during 2009-2010 when returns of 8-10% are in line with the findings of Veraros (2008). In general, PwC found that dry bulk market ROCE was higher to the figures of the tanker market in all years during 2009-2013.

Table 2. Return on Capital Employed in different shipping sectors during 2009-2013



	Container	Tankers	Dry Bulk	Offshore	Ferries	Miscellaneous	Avg total
2009	-6%	1%	10%	7%	2%	-2%	2%
2010	10%	0%	8%	4%	0%	-2%	3%
2011	-1%	-5%	1%	1%	-2%	-5%	-2%
2012	-1%	-8%	-4%	2%	-4%	-2%	-4%
2013	1%	-2%	3%	4%	1%	1%	1%

Source: PwC (2015)

Nevertheless, this proves a point that timing is one of the crucial in shipping decision making (Grammenos, 2010) as on average the returns tend to be very low or negative once reflected for the periods of relatively poor performance.

It is also important to dig deeper into the factors influencing the cyclicallity of the business. While some of these underlying factors, such as the global economy being cyclical itself with fluctuating economic growth rates and international trade swings are a common reason behind the business trends of any cyclical sectors, the shipping industry seems to experience fa more volatile upswings and market weakness due to the market's specific factors (Grammenos, 2010).

Skimming through the most easily identifiable ones, we find that shipping is one of the world's most fragmented industries. Importantly, the pattern is visible within both the demand side of the freight as well as the supply side of the market. On the demand side, it is important to understand that while shipping is a global market, it is very fragmented in terms of available ships at a certain region or port at any given time. Given the fact that transportation typically constitutes rather small part compared to the value of the cargo as well as the economic oportunity costs of not having the cargo at the needed time at place, is one of the major facts impacting the shipping market dynamics. First, it results in an overcapacity of vessel fleet compared to the demand level. Secondly, if the supply is tight, the day rates are pushed upwards very quickly and can skyrocket in a very short period of time (Greenwood and Hanson, 2015; Clarksons, 2015b). It is also important that the shipping rate volatility seems

to increase under the higher absolute value of the same commodity, e.g. when prices of oil are higher in absolute terms during 2000s in comparison to 1990s (Clarksons, 2015b).

As a result of such market suppy and demand imbalances and the resulting freight rate volatility, the vessel prices, at least theoretically reflecting the net present value of the future freight revenues (Greenwood and Hanson, 2015) are also far from stable. However, in practice valuation of shipping shipping companies ahead of listing equity on the exchange is a major fundamental problem. In practice the majority of shipping IPOs receive a price close to the market-adjusted net asset value (NAV) per share. However, the NAV in many cases does not fully reflect the underlying value of the earnings or cash flows to fully support the NAV valuation. In many cases the vessel prices imply a rather high valuation multiple on operating cash flow and earnings,especially within the segments where operating earnings have been negative for a number of years in a row (Grammenos, 2010).

All of this points to the fact that capital structure optimization is probably more important in shipping compared to most other sectors, it also suggests that choosing the appropriate funding method is of critical importance. Also, this implies that equity, being the most value sensitive to the performance of the company and its asset value, is the funding source being most exposed to the peculiarities of shipping as an industry compared to other sources of funds.

Despite all of the risks associated with the shipping industry, the companies in the sector have historically demonstrated strong track-record in attracting the finance from risk-seeking investors. Namely, this has put the industry at a relative ease to expand their fleet capacity at far faster pace than this could be attained in other sectors. As a result of relatively weaker restraints on fleet growth, more strategic options are available for the shipping companies in comparison to the restricting forces of the outside environment observed in other sectors.

Indeed, Stokes (1997) found that during the long-term shipping companies can access senior loan facilities at a 1% to 2% spread over LIBOR, which implies a rate of around 7% evened out for ups and downs. Subordinate corporate debt usually costs 10–12% for a typical 10-year maturity evened out for different cycles. Finally, equity investors seem to target a return on equity of 15-20%, depending on the investor type and the associated risks. While the required equity return might seem rather high compared to other sectors, it reflects the uncertainties related to the volatile freight markets and other operating factors.

To complicate matters further, every shipping company has to choose its path of expansion: either to build new ships or acquire already existing fleet from its competitors in the second hand market. Even more, second-hand ship acquisitions have a great deal of available choices in terms of ship age. Being asset intensive business with a ship life of 20-25 years in most cases (Gratsos and Zachariadis, 2005), fleet age composition is directly related to the operational leverage of the company. I.e. the older the fleet, the higher operational leverage the company has all else equal. Even in terms of acquiring already built vessels, the company may participate directly in the asset, i.e. the vessel market, or expand itself through merging with other companies or acquiring them as a whole (Syriopoulos and Theotokas, 2007).

Finally, while the listed shipping companies, as all the listed companies for that matter, are at least theoretically expected to aim for long-term shareholder value creation (Syriopoulos and Theotokas, 2007), in practice the near-term earnings pressures should also be considered to meet the equity and debt market expectations for quick profits in order to assure generation of business liquidity to withstand occasionally occurring unexpected operational challenges or market weaknesses, internal cash funds for expansion as well as to facilitate good relationships and assure the potential future funding (Grammenos, 2010). This seems especially important for the companies well-known for their dividend payments as it requires cash outflows with every periodic dividend payment.

2. Financing the industry

Broadly speaking, one could distinguish three key elements of financing for any company, including the shipping entities: internal sources, external debt and external equity (Grammenos, 2010). To begin with the internally generated funds, their importance has already been covered to some extent. It is, however, worth adding that the purposes of internally generated funds might be conflicting. Namely, the company's dividend policy is at stake with its ability to expand using internally generated funds. The higher is the dividend pay-out, the fewer funds are retained for the reinvestments into the business.

Moving to the debt markets, bank financing is one of the dominant forms of debt on the shipping company balance sheets. The bank loans can be further broken down by the level of sophistication and counterparties involved into ordinary loans, leasing agreements, mezzanine financing solutions and even securitized deals with another party taking the default risk rather than the bank keeping the financial commitments of its own books (Grammenos, 2010). Another form of debt that shipping companies tend to focus on, though far less important in magnitude, is the international corporate bond markets. It is worth highlighting that shipping is generally perceived as a risky business, thus to attract the investors shipping companies usually have to tap into the high yield bond debt markets in order to acquire the risk-seeking investors and providing higher return than that of the investment grade bonds. As side deals, shipping bonds might have more elaborative implicit safety mechanisms than other bonds thanks to the use of escrow cash account that can be used only for very limited other uses rather than securing coupon payments for the bondholders or the pledged vessels as collateral. It is also worth highlighting that is rather common for the high yield bonds to have only the secondary pledge to the companies vessels as the primary right is held by the banks. In turn, while this means higher risk for bondholders in event of default, they are also rewarded by the higher return on their investments compared to the banks.

While it is undeniably important to take a look at the whole spectrum of the shipping company financing options, for the purpose of this thesis, the debt side of the funding will not be investigated deeper as this research was meant to explain the place of the equity financing and its peculiarities in the shipping business rather than understand the debt side financing.

Moving to the final major part of the available financing, the external equity, the shipping companies have three major options: private equity funding, Initial Public Offerings (IPOs) or

the Secondary Equity Offerings (SEOs). While all these forms provide fresh funds and usually mean new shareholding structure (unless the new issues are fully subscribed solely by the existing shareholders), there are a few notable distinctions. Namely, IPO leads to the company's shares being listed on the stock exchanges. As a result, the company's accounting standards and governance usually has to meet stricter requirements. In addition, continuous trading provides valuable information of the perceived company's value at any point in time, which is not one of the perks of the privately held companies (Grammenos, 2010). Regarding the SEOs, two key types of them might be defined. Firstly, some shipping companies need new equity in order to facilitate ambitious growth plans. These could be defined as success cases. The other type of the secondary offerings are usually targeted as the final resort of the funding for the company to avoid bankruptcy by providing sufficient liquidity for the company to operate and being able to refinance already outstanding financial commitments.

While international debt markets as well as the public equity financing (i.e. IPO and SEO) can be deemed as "marginal participation" in comparison to the bank lending (Grammenos, 2010), it is generally agreed that the importance of these funds has increased over the recent decade. While since the mid-2008, shipping listings have notably slowed down (at least for crude tankers and dry bulk companies), stricter banking regulations (e.g. Basel II, governmental supervision) remain as a driver for increasing importance of the public equity as a funding source for shipping companies in the future.

Hence, given the small relative importance of the public equity capital, it should not be surprising that there is a major gap in academic research when it comes to the holistic understanding of the publicly listed shipping companies. Admittedly there have been a number of attempts to reflect on a single or a handful of factors by some researchers, which will be discussed in the next chapter. However, the increasing importance prompts a need for such an analysis, which this thesis attempts to serve.

3. Literature review

The purpose of the literature review is two-fold. Firstly, it seeks to review the recent research on the shipping equity and to find the gaps in the academic coverage of the shipping market. Secondly, the literature review is aimed at identifying the theoretical and empirical suggestions for factors resulting in the attractive equity returns. An overview regarding both operational, financing, ownership and other factors is provided from both academic as well as the practitioners' view.

3.1 Previous investigations of the shipping equity returns

While there has not been any major research on the full spectrum of factors influencing the long-term listed shipping companies' equity performance, a number of attempts to look at the historical performance of the shipping companies and some factors influencing them should be looked at.

To begin with, Grammenos and Arkoulis (1999) were the first pioneers to examine the performance of Initial Public Offerings (IPOs) in the shipping industry. The authors used the initial period of twenty four months of trading in the secondary market on a sample of 27 shipping IPOs. The IPOs of the period from 1987 to 1995 from seven different exchanged were considered against the local stock market indices as well as the Morgan Stanley Capital International (MSCI) index for the shipping equity market. The authors found that the portfolio of shipping IPOs significantly underperformed both the local stock markets by nearly 40% by the end of the second year after the IPO. However, there was virtually no evidence of underperformance compared to the MSCI Shipping index, potentially implying very high correlation of the shipping IPOs to the general shipping equity returns.

Merikas et al. (2009) performed an analysis of the short- as well as long-term shipping company IPO pricing performance. The sample of 143 companies and global IPOs from 1984 to 2007 were considered through a diverse set of countries (the lion's share of these IPOs, admittedly, came from Greece, Norway and the US). Among the key findings, the authors calculated the average under-pricing of the IPO to be nearly 18% (in terms of share excess performance on the first day after the IPO). Interestingly, the authors found that most of the IPOs demonstrate relatively strong performance during the next few months after the listing,

but on average this share over-performance typically ends after the five month-period. Specifically, Merikas et al. (2009) calculated that the average return on a three-year holding period when shares are bought on the first day of the listing (i.e. without the mentioned IPO discount of nearly 18%) is negative at -16%. The authors concluded that this indicates relatively poor maturity regarding the behaviour of the typical shipping equity investors. However, it is worth highlighting that the average values do not apply for all the spectrum of the companies, thus investors might be aiming for the best performing shipping IPOs are a lured by the potential upside rather than the average performance.

Other attempts (Grammenos and Papapostolou, 2012) have primarily dealt with the under-pricing of the IPOs and the share returns of the first day of listing for the IPO subscribers. Such research should be primarily attributed to the effects on available information and the factors affecting the initial IPO pricing rather than the company's performance on the long-term basis and the consequent equity returns. Therefore, since no direct link is seen with the aim of this master's thesis, they are not investigated further.

Yet another area of academic research which dealt with the performance of the listed shipping companies is risk management. Syriopoulos and Roumpis (2009) estimated the VaR (Value at Risk), measures for a number of listed shipping companies, but stopped short of looking deeper into the core drivers of these returns or the historical performance as such.

Panayiotis et al (2012) have evaluated the shipping equity returns in the light of the M&A. The authors found that both the buyer and the target company shareholders ended up in a better position, but the majority of the synergistic benefits accrued towards the target company owners, especially in the hostile takeover cases. While the research proved to be valuable academic contribution in case of M&A, it does not cover the business-as-usual operations of the shipping enterprises.

All in all, the underlying factors behind the shipping equity performance seem to have not been properly attributed in the academic research. While there have been some attempts, a more holistic approach reflecting many observable characteristics seems necessary in order to understand the situation in depth given the high volatility of the industry in order to grasp the potential of the investments.

3.2 Previous research on the success factors for the listed shipping companies

The factors affecting the long-term equity returns can be broadly categorized to either environmental, i.e. affecting the whole shipping sector and every single shipping company within in; or company-specific factors, influencing only one company.

3.2.1 Environmental market factors

PwC (2015) as well as Grammenos and Arkoulis (2002) argued that the shipping market optimism is highly correlated to the global economic activity and **world trade**, the first one being measured in the **global GDP** and the latter one in the value of the traded goods between different countries. Naturally, these two gauges are most relevant for the shipping companies according to the major shipping flows. Namely, the demand for imports in more advanced economies and the export activity in the emerging economies. As the demand in the driver for higher freight rates, it indirectly translates to the earnings and the value of the shipping companies' assets, thus being important measures to consider when evaluating the appeal for investors. Importantly, the two measures are more appropriate to identify the general market upturns rather the attractiveness of the specific companies.

Needless to say, the prevailing day rates as well as any indications about the potential future earnings are the most important drivers of the shipping companies (Greenwood and Hanson, 2015, Tsolakis et al, 2003). Namely, they both affect the shipping company earnings as well as the values of the ships. As it has been already explained, ship values rather than the earnings level tend to matter when valuing the company for the IPO. All in all, **day rates** will be looked into at a greater depth. In order to understand the importance of day rates, firstly it will be measured if higher day rates transform to better profitability for shipping companies. E.g. Greenwood and Hanson (2015) argued that heightened ship values usually lead to period of rather low profitability. Secondly, if the higher day rates do increase earnings, it is worth checking if the improved earnings profiles are reflected in the valuation of the shipping companies in the listed equity markets.

Clarksons (2015b) analysed the importance of lack of available vessels on day rates. Unsurprisingly, lower number of idle vessels nearly always translated into higher day rates.

Even more importantly, the day rate level and number of available vessels demonstrated not linear, but rather hyperbolic relationship, i.e. the day rates spiked disproportionally high when very few idle vessels in the port were available. This implies a number of criteria that should be considered. Firstly, the companies choose either to put their vessels in the spot market or on long-term charter rates. Therefore, among the independent variables **absolute number of idle ships** as well as the **newbuild orders in the shipyards** should be analysed as determinant of shipping equity returns. Secondly, it implies that the **market strategy**, which is a company-specific factor, has a significant impact on the day rates. Thus, it seems fair to inquire whether investing during tight or loose supply/demand balances in the shipping markets yielded better results for investors historically.

OECD (2007) report focused their research on the cost of financing as an important driver for the shipping companies. Namely, the authors argued that the prevailing low interest rates at a time were one of the reasons for investors to choose shipping companies as a target for their investments as one of the alternatives to achieve a higher return on their investments. Therefore, it seems that the **market interest rate** level has a twofold effect: on the one hand it decreases the capital costs, which are positive for investors, on the other hand the effect is negative, as it incentivizes newbuilding activity overall and thus potentially undermines a supply/demand balance. The research of El-Masry (2010) also investigated the importance of the interest rates for the share performance of the shipping companies and concluded that the correlation is rather low since the majority of the shipping companies tend to hedge their interest rate risk to avoid additional risks.

FBR Capital Markets (2010) have highlighted that most US shipping company IPOs during 2004-2010 were actually major failures. Namely, only companies listed in 2005 managed to return only a marginal (+0.2%) return until end-2010. The companies listed in 2004, 2006, 2007 and 2008 have lost 48.6%, 27.1%, 34.7% and 67.4% respectively. Even more, largely the same trends were visible in the secondary offering market as well – on average equity investments to companies have lost money. However, the key difference is that secondary offerings were profitable in 2004 and 2009 at 29.2% and 24.9% respectively. While 2004 was pre-boom period, 2009 should be considered as an investment during the bust times. These findings were also confirmed by Merikas (2008) who found that IPOs during the booming markets tend to underperform the market at first, but actually enjoy far greater performance on average compared to the IPOs in the weak markets as well as the market benchmarks in general. The authors hypothesized that this is related to the fact that during booming (“hot”

was the term used originally) markets the earnings prospects might be easily overestimated, which boosts the share prices further than the intrinsic valuation would suggest. Given these contradictory findings, it seems fair to conclude that one of the determinants of the potential investment success should be the timing of the market. For the purpose of this paper, the **timing** is also divided into periods of booms and busts to identify if there are any major differences for the success rates.

3.2.2 Company-specific factors

When it comes to the company-specific factors, FBR Capital Markets (2010) found that historically companies with more rewarding dividend policies tended to perform better in terms of achieving better IPO pricing, higher valuation in terms of net asset value versus the market capitalization (P/NAV), though enterprise value and the earnings ratio (EV/EBITDA) showed seemingly very weak correlation. I deem it important to measure if the dividend policy has a major effect on the valuation of the listed companies in general. Importantly, the **dividend** policy should be tested on two criteria: if higher dividend yield increases the valuation multiples of the listed shipping companies and if sustainable dividend payments correlate with the positive long-term capital appreciation.

Another practitioner, PwC (2014) has indicated that around half shipping IPOs generate a negative return during the year after the listing. More importantly, PwC found that in some exchanges, namely US and Asia the shipping companies are typically listed at higher multiples than comparable companies in Scandinavia or Europe in general. Therefore, one of the variables to consider should be the **exchange of listing**. The findings of PwC are also echoed by the research of Merikas et al (2009) who found that major differences exist between the performance of the different stock exchange listed companies. Namely, Athens and the US stock exchanges were found to be the only strong performers, while the Bombay and Nordic exchanges (Oslo, Copenhagen and Stockholm) were major losers.

Next PwC (2014), highlighted that Marshall Islands were the primary domicile for the attractive tax rate for newly listed companies. While the authors did not provide any meaningful comparison of the importance of domicile area and effective tax rate, it seems to be an important factor from the perspective of the ship owners. Therefore, my empirical analysis also reflects the choice of the **domicile region** as well as the **effective tax rate**. The distinction between the two is that domicile effect is largely the same for all of the companies

domiciled in the same country while effective tax rate reflects the individual company's ability to exploit the tax law to minimize expenses. Needless to say, lower tax rates translates into stronger cash flows for equity investors and thus should be expected to contribute to both long-term returns as well as valuation multiples such as P/NAV or EV/EBITDA.

The importance of tax rate is further highlighted by the Indian credit ranking company CRISIL[1] (2002), which argued that Indian fleet being taxed at 22% is put at a high disadvantage versus the global competition enjoying far lower tax rates thanks to creative accounting and registration in low tax regimes. In addition, Indian companies are deemed to have higher relative cost of capital as well as pay higher insurance premiums than shipping companies from more developed countries due to the underdeveloped capital markets. The importance of the country is found even more evident when it comes to hiring local expertise to operate the fleet at the HQ level as well as run the ships on daily operations. As a result, some countries cannot achieve as high fleet utilization as their peers. All in all, as a proxy for capital market efficiency and local know-how, the **country of HQ** should be used as one of the independent variables. Even more, Lee and Lin (2013) argue that shipping companies from different companies have rather different financial ratios in focus when both operating the company as well as handling ongoing challenges. While the research is primarily focused on the Asian context (Suth Korea and Taiwan), it is hardly arguable that shipping traditions and school of thought might be a country-specific factor.

Polesie (2013) has performed an analysis on the Norwegian shipping companies across various shipping subsectors to measure whether the financing structure matters as a factor of long-term success. The findings suggest that within moderate debt levels the company valuation (in terms of EV/EBIT) does not have a strong positive or negative impact. It is important to verify if the relationship holds for a wider variety of regions. However, HSBC (2008) has concluded that that less leveraged companies enjoy a lower cost of capital since they are perceived less risky and can refinance their obligations with relative ease is worth a deeper look. Namely, it seems that the **cost of capital**, including both the **cost of equity** and the **cost of debt**, the **financing structure** should be investigated as factors determining both the valuation multiples as well as long-term success of each shipping company to at least some extent.

[1] Part of the Standard and Poor's Group

Polesie (2013), based on the already-mentioned listed Norwegian shipping company sample, concluded that being within the offshore sector and having a single family as a majority owner does contribute to higher company's valuation compared to other situations of the shipping company. While the offshore sector shipping companies fall behind the reach of my study, the ownership structure seems worth investigating in a greater depth. Namely, the **presence of single majority shareholder** and the **free-float** are likely determinants of the shipping company valuation as well as the long-term success. The importance of the ownership structure was also highlighted by Panayiotis et al (2014) who based on the US-listed company sample were able to draw a relationship between higher insider ownership (i.e. lower free float) and the more positive shipping company performance.

Syriopoulos and Tsatsaronis (2011) have also found empirical support for their hypothesis that companies governed by the CEO from the founding family demonstrate better financial performance versus other companies. To elaborate on this further, Syriopoulos and Tsatsaronis (2011) have further looked into the wider scope of the corporate governance criteria, namely involving the independence of the board and any ownership stakes held by the board members. The researchers have concluded that their findings were rather contradictory when it comes to the independence of the board as well as the ownership of the company by the board members. The authors hypothesized that their data set might have been affected by taking into account two different countries (Greece and Norway) as well as different time periods considered.

Furthermore, Polesie (2003) investigated the companies' targeted solvency ratios as a result of the earnings volatility. While such research is not directly related to the analysis aimed at this master thesis, it suggests that the companies significantly vary in terms of their earnings volatility (lower volatility being implied by more conservative fleet management under long-term contract and exactly opposite being true for companies with high exposure to the sport markets). Therefore, I also aim to measure if accepting higher risk in terms of **earnings volatility** does generate any long-term benefits for the company. One should expect that companies with higher earnings volatility should on average trade at lower valuation multiples, but have somewhat higher long-term returns. Otherwise, there would not be any economic rationale for the ship owners not to charter their ships on the long-term contract basis.

PwC (2015) data for 2009-2013 (please refer to table 1) suggests that at least during the analysed period, the more volatile market segments, measured by the standard deviation of the return on the net operating assets, have yielded higher average returns. E.g. the tanker and dry

bulk segment average RONOA of 0.4% and 4.0% respectively had standard deviation of 4.9% and 6.4%. Admittedly, the example might be biased by relatively short period of analysis, but apparently, there is some evidence to suggest the correlation between the positive correlation between the earnings volatility and the higher long-term returns. As for the shipping investors, this would be very practical findings since the investors with higher willingness to accept higher risk and the ability to accept near-term losses due to more volatile earnings profile would be generally able to achieve higher return on their investments. Needless to say, this suggests that the volatility should be investigated deeper.

Yet another easily observable factor, which has proved to be important determinant of the long-term success is the **age of the company**. E.g. Merikas (2009) found that less than 10-year-old firms tend to underperform the market by around 25% over the first three years of the listing. In contrast, the companies older than 10 years on average overperform their respective benchmarks by around 8-10%. This might be explained by more smooth business operations, higher human capital, stronger long-term relationships with clients and a number of other factors than older firms have as an advantage versus their younger competitors.

Merikas (2009) also argued that **the size of the shipping company** matters as a factor for its long-term success. While theoretically, the tanker and dry bulk companies cannot have any major economies of scale, apparently, the practice suggests a different answer. The researchers found that the companies with the market capitalization of below USD 200m tend to underperform the market by around 15% after three years post-IPO. For the companies with the market capitalization within USD 200m and USD 400m as well as USD 400m to USD 800m demonstrated no strong patterns compared to the general market performance (0.79% and -3.96% respectively). Finally, the largest companies with the market capitalization greater than USD 800m returned more than 10% above the comparable benchmarks.

While the research of Grammenos and Papapostolou (2012) is not directly related to the long-term returns and achieved pricing of the shipping equity, the researchers have looked into the fact that the active analyst coverage of the shipping companies has increased over time. Namely, the more analysts are actively covering any company, at least in theory this signals stronger investor interest on the one hand, and better market's knowledge of the company, on the other hand. Therefore, the **number of analysts covering the share**, might prove to be an important determinant of the company's ability to achieve higher pricing in terms of valuation multiples. In addition, it is also intriguing to measure whether the analysts tend to focus on the

historically most successful companies and this measure can be used to identify potential winners early on.

As the number of analysts following the sectors has increased more than tenfold during 2005 to 2009, the available data for analysts ability to identify the most promising shares is also possible to measure at least to some extent using the weighted **share price targets** or **recommendations**. While similar research has been performed on numerous markets and sectors (Boni and Womack, 2002; Gleason et al, 2012; Hopkins et al, 2012 and Dechow et al, 2010 as well as numerous others), no research was found to be focused specifically on the shipping sector. The mentioned research has almost unanimously concluded that the sell-side (i.e. equity research reports provided by the brokerage firms and investment banks; buy-side research refers to the asset manager's own research) analysts tend to over-estimate the future earnings potential to a major degree, which in turn leads to the fact that the expected share price targets are not reached in most cases. Dechow et al (2010) found that in general the sell-side analysts' earnings growth forecasts are "systematically overly-optimistic" in case they work for the company performing an equity offering. Even more, the analysts employed by the lead managers of the offerings have the most upwardly biased estimates. Finally, the authors identified a positive relation between the corporate banking fees paid to the analysts' company and the level of exaggeration of the estimates. All this points to the fact that currently available sell-side shipping equity research does not meet the real requirements of the investors and the aim of this market thesis to find a set of determinants to gain advantage in finding out the future winner shares is both practical as well as material increase in the knowledge regarding the area.

Finally, Clarksons (2015a) quoted Mr. Warren Buffet saying: "Close the door. Be fearful when others are greedy. Be greedy when others are fearful" to highlight the importance of the timing when making shipbuilding or fleet spin-off decisions. Importantly, they demonstrated that sailing through the tough times yields an attractive rate of return in case the company has sufficient equity base as debt markets tend to tighten up during the bust periods. Even more, Clarksons argued that another highly appealing strategy is to sell the ships during the boom periods. For the purpose of this analysis, thus I aim to identify the companies that use contrarian approach compared to the herd, i.e. which do not necessarily participate and leverage up during the booms and in some cases potentially decrease their fleets. At the same time, it is important to identify the companies that tend to enter major shipbuilding programmes during the very weak periods in the shipping markets. The rationale goes like

this: during the weak market periods the new building and already operating ship prices tend to be depressed, thus acquiring the vessels cheaper should be a competitive advantage.

Among other company specific factors, Drobetz et al (2014) have taken a look at the corporate social responsibility of the shipping companies as one of the success factors. Building on the previous research linking the successful firms to the CSR disclosure, the authors were able to identify empirical relationships also holding for the sample of the international shipping companies. Drobetz et al (2014) argued that nearly all shipping companies have had published their CSR statements in their sample of the US, UK, Singapore and Norway-listed shipping companies. The key thesis for the relationship between the CSR disclosure and the higher company valuation, which is also of interest in my research, is the fact that more transparent disclosure serves to diminish the investor risk. It is worth highlighting that the CSR transparency has been created by the authors in order to measure the CSR disclosures.

4. Methodology

While literature review aimed to lying out the key factors, methodology discusses the actual use of all the variables as well as the sampling.

4.1 Building sample

The dataset required for the purposes of this thesis was not readily available and thus had to be compiled from various sources. To begin with, the company list was taken from the Bloomberg data terminal, which delivered a list of 350 globally listed companies under the shipping segment.

However, the list had to be filtered for the companies that are not relevant for the analysis. Namely. The analysis aims to identify the factors behind pure dry bulk and crude oil companies' long-term returns and relative valuation. Having other types of companies would have exposed the sample to numerous other factors that would have mattered, but could not be controlled for. The key source for the company profiling were the company own websites.

Many Asian firms on the initial list proved to be conglomerate-like holdings with interests in other industries such as real estate or manufacturing. Even more, a number of Asian "shipping"-labelled companies were ferry operators (both sea and river). Needless to say, the said two factors led to a greatly reduced sample of Asian companies.

When it comes to European and the US firms, the companies seem to have been increasing their exposure to the natural gas and product tanker businesses, floating crude oil production units of offshore support segment.

At the end, the sample was reduced to the 60 companies, 52 of which are dry bulk and 8 tanker fleet operators and owners. The resulting list was then checked with the available data from other available sources (Guggenheim Investments, 2015; Petrofin, 2008, Tradewinds, 2015, PwC, 2014, and Hin Leong, 2014), however, this did not yield any new company additions.

Table 3. Sample companies

Ticker	Name	Type	Total return	Annualized return	Established	HQ	Exchange	Incorporated
005880 KS	Korea Line Corp	Dry bulk	-95%	-15%	1968	Korea	Korea	Korea
129260 KS	Integris	Dry bulk	-21%	-6%	2006	Korea	Korea	Korea
2343 HK	Pacific Basin	Dry bulk	22%	2%	1987	Hong Kong	Hong Kong	Hong Kong
2605 TT	Sincere Navigation Corp	Dry bulk	334%	8%	1968	Taiwan	Taiwan	Taiwan
2606 TT	U-Ming Marine	Dry bulk	413%	9%	1968	Taiwan	Taiwan	Taiwan
2639 TT	Kuang Ming Shipping	Dry bulk	-78%	-24%	1990	Taiwan	Taiwan	Taiwan
2641 TT	Franbo Lines	Dry bulk	0%	0%	1998	Taiwan	Taiwan	Taiwan
368 HK	Sinotrans Shipping	Dry bulk	-75%	-17%	1950	China	Hong Kong	China
3683 HK	Great Harvest Maeta	Dry bulk	101%	16%	2010	Hong Kong	Hong Kong	Hong Kong
5608 TT	Shih Wei Navigation	Dry bulk	165%	6%	1985	Taiwan	Taiwan	Taiwan
600242 CH	Zhongchang Marine	Dry bulk	-24%	-2%	1993	China	China	China
600798 CH	Ningbo Marine	Dry bulk	154%	6%	1996	China	China	China
600896 CH	China Shipping Haisheng	Dry bulk	62%	3%	1989	China	China	China
9127 JP	Tamai Steamship	Dry bulk	210%	8%	1959	Japan	Japan	Japan
9132 JP	Daiichi Chuo Kisen Kaicha	Dry bulk	-25%	-2%	1892	Japan	Japan	Japan
APOL IJ	Arpenti Pratama Ocean Line	Dry bulk	-81%	-16%	1975	Indonesia	Indonesia	Indonesia
ATPLRA CZ	Atlantska Plovidba	Dry bulk	563%	13%	1955	Hungary	Hungary	Hungary
BALT US	Baltic Trading	Dry bulk	-89%	-35%	2010	Marshall Islands	US	Marshall Islands
BEL NO	Belships	Dry bulk	-3%	0%	1918	Norway	Norway	Norway
CHOW IN	Chowgule Steamships	Dry bulk	212%	5%	1923	India	India	India
CMG SP	Courage Marine	Dry bulk	-71%	-12%	2001	Hong Kong	Singapore	Bermuda
COVG RO	Navrom	Dry bulk	73%	5%	1890	Romania	Romania	Romania
DSX US	Diana Shipping	Dry bulk	-58%	-8%	2005	Greece	US	Greece
EGLE US	Eagle Bulk Shipping	Dry bulk	-81%	-16%	2005	US	US	Marshall Islands
FREE US	FreeSeas	Dry bulk	-100%	-71%	2004	Greece	US	Greece
GLBS US	Globus Maritime	Dry bulk	-96%	-36%	2006	Greece	US	Greece
GOGL US	Golden Ocean	Dry bulk	-66%	-7%	1996	Norway	US	Bermuda
GSKNF US	Genco Shipping	Dry bulk	-66%	-72%	1997	US	US	US
HCL LN	Hellenic Carriers	Dry bulk	-90%	-27%	2007	Greece	UK	Greece
JDPLRA CZ	Jadroplov	Dry bulk	87%	4%	1947	Croatia	Croatia	Croatia
JIN NO	Jinhui Shipping	Dry bulk	377%	11%	1994	China	Norway	Bermuda
JUTHA TB	Jutha Maritime	Dry bulk	-10%	-1%	1976	Thailand	Thailand	Thailand
MBC MK	Malaysian Bulk Carriers	Dry bulk	-20%	-2%	1988	Malaysia	Malaysia	Malaysia
MRLN SP	Mercator	Dry bulk	-95%	-33%	2005	India	Singapore	India
NMM US	Navios Maritime	Dry bulk	-46%	-8%	1958	Monaco	US	Monaco
PANL US	Pangaea Logistic Solutions	Dry bulk	-62%	-49%	1996	US	US	US
PRGN US	Paragon Shipping	Dry bulk	-99%	-49%	1996	Greece	US	Marshall Islands
PSL TB	Precious Shipping	Dry bulk	2176%	22%	1989	Thailand	Thailand	Thailand
RLOG US	Rand Logistics	Dry bulk	-28%	-3%	2004	US	US	US
SALT US	Scorpio Bulkers	Dry bulk	-75%	-61%	2014	Monaco	US	Marshall Islands
SB US	Safe Bulkers	Dry bulk	-81%	-21%	2007	Greece	US	Greece
SBLK US	Star Bulk Carriers	Dry bulk	-97%	-31%	1964	Greece	US	Marshall Islands
SHIP JR	Jordan National Shipping Lines	Dry bulk	279%	9%	1976	Jordan	Jordan	Jordan
SHIP US	Seanergy Maritime	Dry bulk	-99%	-50%	2008	Greece	US	Marshall Islands
SZPR RM	North-Western Shipping	Dry bulk	-67%	-30%	1923	Russia	Russia	Russia
VNA VN	Vinaship	Dry bulk	-92%	-32%	2006	Vietnam	Vietnam	Vietnam
VOS VN	Viet Nam Ocean Shipping	Dry bulk	-73%	-24%	1970	Vietnam	Vietnam	Vietnam
VST VN	Vitranschart	Dry bulk	-89%	-30%	1975	Vietnam	Vietnam	Vietnam
WBULK NO	Western Bulk	Dry bulk	-66%	-50%	1992	Norway	Norway	Norway
WILS NO	Wilson Shipping	Dry bulk	-32%	-4%	1923	Norway	Norway	Norway
WLOLQ US	Winland Ocean Shipping	Dry bulk	-100%	-57%	2002	China	US	China
9130 JP	Kyoei Tanker	Tanker	120%	5%	1937	Japan	Japan	Japan
DHT US	DHT Holdings	Tanker	-94%	-26%	2005	Norway	US	Bermuda
DIS IM	d'Amico International Shipping	Tanker	-81%	-19%	1936	Ireland	Italy	Ireland
EURN BB	Euronav	Tanker	-51%	-7%	1995	Belgium	Belgium	Belgium
FRO US	Frontline	Tanker	-65%	-7%	1996	Norway	US	Bermuda
NAT US	Nordic American Tankers	Tanker	23%	1%	1995	Norway	US	Bermuda
TIL NO	Tanker Investments	Tanker	40%	29%	2014	Bermuda	Norway	Marshall Islands
VTO VN	Vietnam Tanker	Tanker	-87%	-24%	1975	Vietnam	Vietnam	Vietnam

Source: compiled by author based on Bloomberg and company websites

4.2 Dependent variables: Historical returns

The data for share price returns has been purposely limited since the start of the year 2000. While the choice is arguably rather arbitrary, the sample size for the companies with available share price information is barely fifteen. As it has been discussed in the literature review part, the public listing of the shipping companies is a rather recent phenomena.

For the descriptive analysis of the returns, daily share prices have been used while for the factor analysis the quarterly share prices were chosen. This rationale is based on the fact that for the descriptive return analysis should be as detailed as possible (i.e. daily), while the majority of factors used as independent variables are based on quarterly interim reports, thus the respective time frame was chosen in this case to be able to produce correlation and regression analysis.

On top of the purely descriptive total return and annualized return analysis (to reflect for different duration of listing), the portfolio of the equally weighted shipping companies is constructed to grasp the return dynamics over time in contrast to simply the average returns. The weights were reset daily to effectively include new companies as well as to produce less biased results from the shares that have substantially appreciated or depreciated in value.

4.3 Dependent variables: valuation multiples

EV/EBITDA is among the most popular multiples used in equity research. Its appeal comes from a couple of sources. Mainly, EBITDA is a good proxy for the underlying cash flow in contrast to the net profit – the latter excludes depreciation and interest charges. Depreciation is non-cash cost and in most cases represents sunk, non-recoverable investment costs. In addition, EV/EBITDA is less sensitive to short-term swings in profitability than e.g. P/E ratio, which makes it possible to use EV/EBITDA in many cases were P/E is negative or not meaningful (i.e. it gets very high value simply because of weak profitability). Using enterprise value (net debt + market value of equity) is a better representation of the overall firm value despite its financing of equity versus the debt while at the same time reflecting the overall burden of debt in case of acquisition. It is worth highlighting that companies during periods with EV/EBITDA were excluded from the calculation of the mean in order to avoid upwardly biased statistics. The rationale behind this choice is based on the fact that the company

valuation during such periods is based on other factors (e.g. asset values or expectation about the future profitability) rather than the current earnings level.

Moving to the next ratio, price-to-book value (P/B), the gauge captures the market valuation of the company's net asset value in comparison to the accounting value, which is reflected at the original cost minus depreciation charges. The ratio, to explain it in brief, reflects the management's ability to generate value in excess of the original investment costs. It is also usable in a great many cases as the book value is less sensitive to the near-term fluctuations compare to the company earnings. Finally, it is worth highlighting that P/B also reflects the company's financing structure since it is calculated net of outstanding debt and it is thus comparable between the companies with different financial structure. As a word of caution, while high P/B ratio implies a richer valuation, low P/B does not always translate into attractive investing opportunity as it may simply reflect the market's expectations of prolonged weak profitability and thus the return on equity below the cost of equity capital.

4.4 Measuring cost of capital and financial leverage

Cost of equity, debt and thus overall capital were acquired from Bloomberg terminal. The source measures cost of debt based on the interest rate that companies pay on the unsecured debt. The equity costs are estimated using CAPM method and the estimated market beta. While CAPM is largely theoretical model, it still remains one of the most used and applicable approaches to measure the riskiness of equity and the required investor return.

When it comes to the financial leverage, net debt-to-equity ratio was chosen as a gauge of measure. It was chosen ahead of other alternatives such as the equity ratio since the net debt (i.e. total debt minus cash) is used, which seems as a better measure to capture the true nature of the financial leverage than purely using the gross debt. Even more, while net debt-to-equity is in nature similar to other leverage measures, it is generally demonstrates larger volatility among companies thanks to the debt comparison to equity rather than total assets.

4.5 Analyst recommendations

While plotting the sector analysts' outstanding number of recommendations and target prices is rather simplistic exercise, the actual recommendations ranging from "Strong sell" to "Strong

buy" had to be quantified. A common industry practice was chosen with strong sell rating receiving a numerical value of 1, sell – 2, hold – 3, buy – 4, strong buy – 5; then the average of these numbers is calculated for each day and every company.

4.6 Day rates

Inclusion of day rates has been done using the Baltic Dry Index data for crude oil tankers as well as the dry bulk companies. The approach was chosen over the use of any particular route day rate in order to better meet the versatile sample of the shipping companies. In addition, the dry bulk index and the day rate data have demonstrated strong correlation (exceeding 0.85 in all cases).

4.7 Variables with insufficient data

Admittedly, while the literature review suggested a relatively large number of valuable factors to look into. However lack of credible data for many companies as well as the shipping market in general has made it hardly possible to use the dominant shareholder (free float is covered though) and the market utilization data (in terms of idle ships). Finally, the country of domicile was found to be the same as the country of the HQ with exception of a number of Norwegian and Greek companies.

5. Analysis

The analysis part is comprised from four main parts: the descriptive analysis of the share price return profiles as well as the valuation multiples, the relationship between the global factors affecting all the industry companies and the company performance, the relationship between the individual company specific factors as determinants of the company valuation and investor returns and finally the multidimensional regression model.

5.1 Historical return overview: descriptive analysis

As it has been largely expected from the findings of the sources covered in the literature review, the historical returns of the shipping shares are both highly diverse with a large portion of the companies being very poor investments while the leaders produced highly exciting profits.

To begin with, among the 59 companies (see table 3), only 19 have positive share price returns for their track record. Even more, the average annualized share price return stand at -13% (standard deviation of 22% and median of -7%). In contrast to typical case with the average being above the median due to superb performance of the winners, the shipping companies seem to have a large number of very strong losers undermining the average returns. Needless to say, this is a crucial evidence that simply holding a portfolio of shipping companies itself should in no way satisfy the investor and stock-picking plays a crucial role in achieving required returns.

Digging deeper, only five companies have returned share price CAGR of above 10%, leaving some 55 out of 59 companies earning returns below the likely threshold of the equity capital cost. Overall, the companies with positive share price returns since 2000 (or since listing in case it happened later) yielded on average 9% annually (with median of 6% per annum). Hence, in case the investors are able to distinguish early on among the likely winners and losers are in fairly good position compared to the average shipping investor.

Looking at the losers, the average annualized company share price dropped 23% per annum (median -19%). Given such performance over a couple or more years, one should not be surprised to find that 30 companies in the sample have lost 50% or more of their value since

2000 or listing. Of them 17 have dropped by 80% or more and 10 more than 90%. This all implies that in order to beat the average shipping investor one should aim to avoid losing shares probably to even a greater extent than identify the top performers. All in all, buy and hold strategy is one of the worst ones to pursue in this sector.

5.2 Historical return overview: simulated portfolio

While the average returns discussed in the previous chapter do provide the clear picture of the riskiness of the shipping industry as well as the long-term returns and the need for diligent selection of companies to invest, the timing of investments gets hidden. Therefore, the equally-weighted portfolio is used to demonstrate the return dynamics over time.

Indeed as the data suggests, timing is a factor of a paramount importance. As it can be inferred from the chart 1, representing daily-rebalanced equally-weighted shipping portfolio, the shipping equity investment returns are both highly volatile and cyclical. Starting from 2000 with 15 listed companies and adding new companies as they became listed would have increased the portfolio to 59 companies at returned 745% by May 22nd, 2015. This implies an annualized return of 10.4%. However, compared to the peak value of the simulated portfolio these figures lose any investor's appeal. On October 29th, 2007, the aggregated return of the portfolio stood at +2,491% (annualized – 34.5%).

Chart 1. Equally weighted shipping portfolio return simulation

Source: own calculations based on Bloomberg data

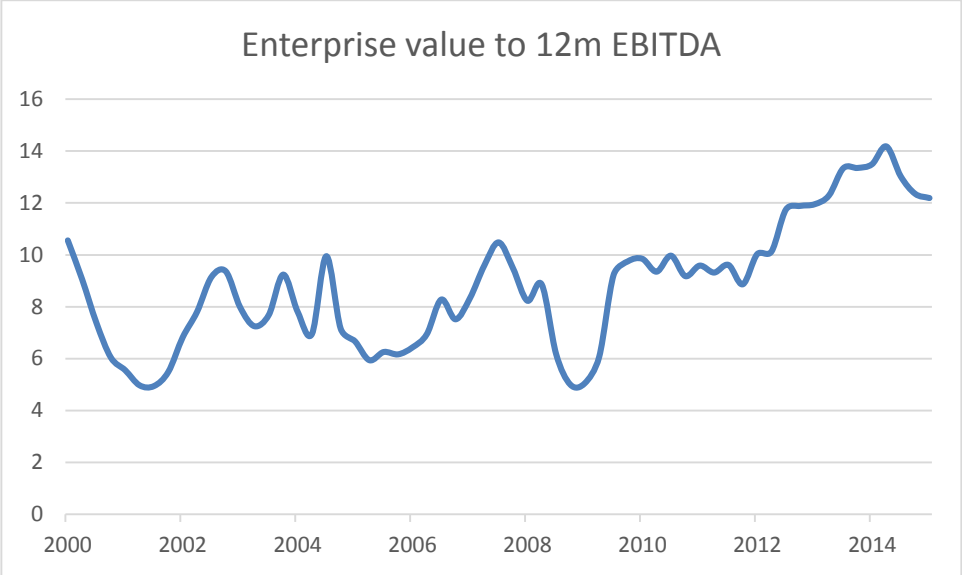
Apparently, while the average long-term returns in the shipping equities seem are far from attractive to the majority of investors, the very strong performance during the boom years is arguably a very major incentive for any risk-seeking and profit-hunting portfolio manager.

On this note, it is also worth clarifying some differences between the findings of the individual company return profile and the simulated portfolio with the significantly higher returns indicated by the latter. Namely, the portfolio simulation results have benefited from the relatively stronger performance of the companies with longer listing periods as well as the fact that returns demonstrated a mean-reversal tendency. To put it in other words, relatively strong performers often experienced periods when they underperformed other companies and major winners had experienced some rebounds in their share prices. Therefore, the rebalancing of the portfolio each day to equal weights for all companies meant that investor had taken the profits from the winning shares before their share prices dropped while increasing exposure to the companies that have experienced share price drops before they have rebounded. The effect has been further strengthened by a number of relatively illiquid shares with major but rare price swings.

5.3 Valuation multiples: dry bulk and tankers are not too different

Plotting the sector average quarterly EV/EBITDA data returns the average ratio of 8.8 (standard deviation – 2.4). The ratio has been between 6 and 10 for the most of the time. As it is rather common for cyclical industries the ratio has been somewhat below the average during the boom years and above the avera during the recent bust. This is primarily related to the fact that investors expect reversal to the mean profitability levels to at least some extent and are thus willing to pay relatively higher price of current earnings during the slump while being more conservative during the peaks as can be seen in chart 2.

Chart 2. Enterprise value to EBITDA ratio development



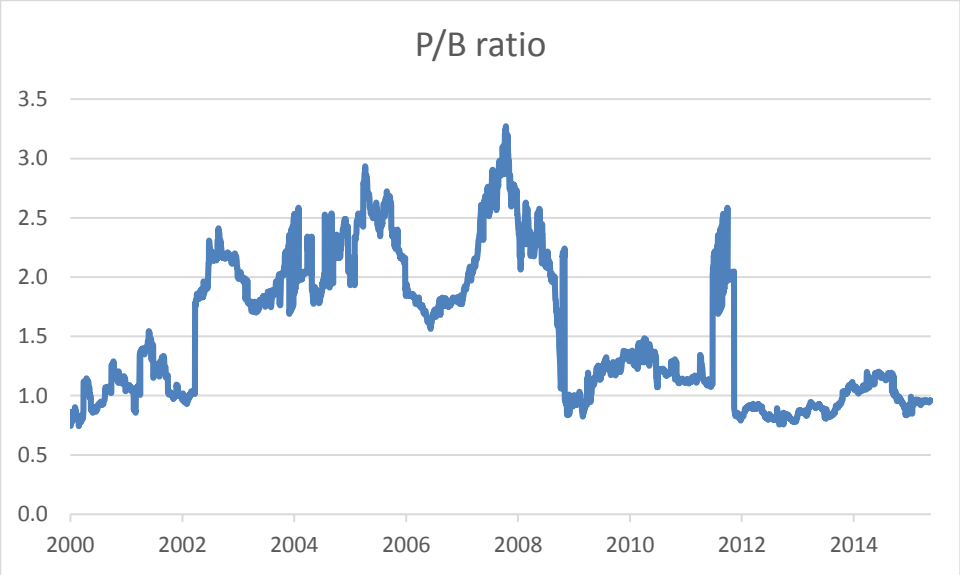
Source: own calculations based on Bloomberg data

Naturally, the company individual EV/EBITDA multiples differ given their own circumstances and appeal to investors. Average EV/EBITDA differs from less than 4 to more than 16, but most companies fit between 8 and 12 (see chart on appendix 2). It is worth highlighting than all else equal companies valued at EV/EBITDA of 12 are value at a premium of 50% compares to the enterprises trading implying a ratio of 8. It seems that even though investors might be able to estimate future earnings rather precisely, there is the need to understand the underlying factors behind the valuation multiples and the companies' specifics in order to grasp the value creation.

To shed some light on the differences between dry bulk and tanker sectors, there is virtually no difference. The dry bulk shipping companies trade on average EV/EBITDA of 10.2 versus the 10.1 for tanker companies.

Moving to the price-to-book value ratio, shipping sector has demonstrated highly volatile P/B ratio, ranging from 0.7 to nearly 3.4 (average 1.23, standard deviation 0.67). This is hardly surprising as the ratio reflects the underlying volatility of the asset (i.e. vessel) values, which, in turn, is determined by highly volatile company earnings. Unsurprisingly, the shipping sector traded at lower price-to-book multiple during the lower market activity periods while during the booms it has spiked above 2.0 for a couple of times (see chart 3 below).

Chart 3. Price-to-book value development



Source: own calculations based on Bloomberg data

When it comes to different subsectors of shipping, i.e. crude oil tankers and dry bulk companies, the average historical ratios stand at 1.32 and 1.22 respectively. This implies that since year 2000 tanker companies managed to generate somewhat more appealing returns and created more shareholder value in excess of the investment costs.

5.4 Big picture

Among the factors that are affecting all of the sample dry bulk and tanker companies, global GDP growth rate, world trade volume, day rate and newbuilding capacity (as % of existing capacity at a time) as well as LIBOR interest rate are included. It is worth highlighting that dry bulk and tanker day rate and newbuilding data was used according to the company type in order to avoid spurious statistical relationships.

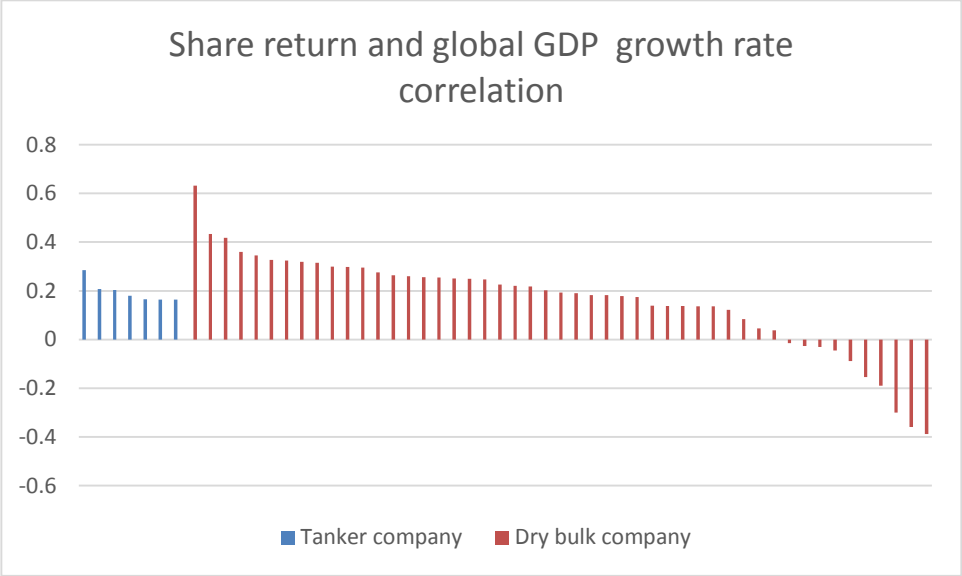
5.4.1 Does economy matter?

The global economic data is widely used by practitioners to argue for the future potential of the shipping companies. This is hardly surprising given the internationality of the shipping industry as well as the physical importance of the industry for the movement of goods. However, the empirical data analysis suggests that the relationship is rather vague and less

straight-forward than shipping equity analysts tend to taunt and is far from enough to provide valuable insights for the future.

To begin with the global GDP growth rate (see chart 4), the average correlation rate of the sample companies quarterly equity returns and the global GDP growth rate stands at 0.20 and 0.16 for the tanker and the dry bulk companies. This implies rather weak statistical relationship. Interestingly, the data for tanker companies is by far more cohesive compared to a more skewed profile of the dry bulk companies. Arguably, this should be probably taken as a fact that the oil market is at a closer proximity with the global economic growth than the dry bulk products.

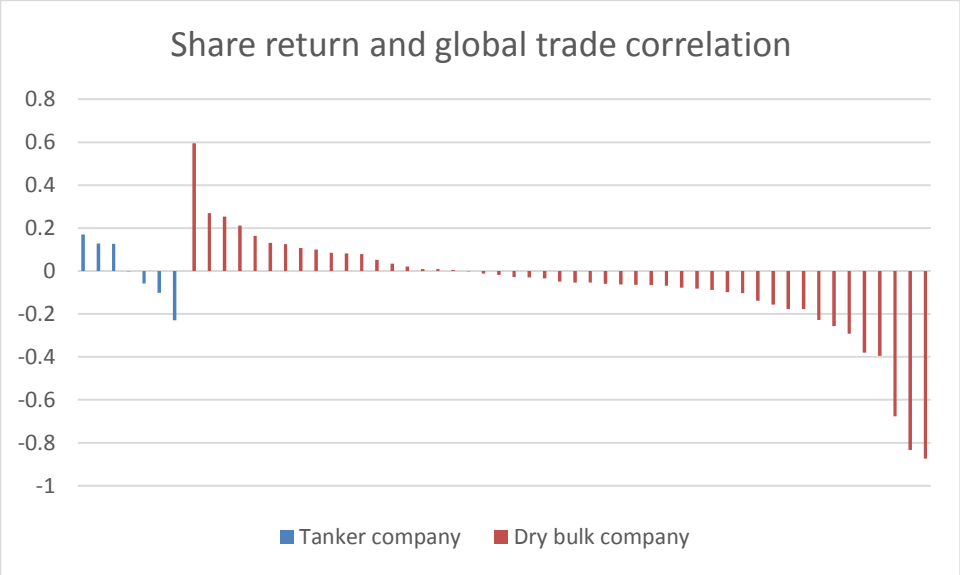
Chart 4. Global economic growth impact for shipping equity



Source: own calculations based on IMF and Bloomberg data

Looking at the global international trade volumes (see chart 5), the results are somewhat surprising. Firstly, the correlation ratios are higher compared to the ones relating to GDP in absolute terms. Secondly, for both tanker and dry bulk companies the distribution of the ratios is rather even in both positive and negative territory. Partly such relationship could be explained by world trade being more volatile than GDP growth as well as individual company listings coinciding with major shifts in the shipping demand.

Chart 5. Global international trade impact for shipping equity



Source: own calculations based on WTO and Bloomberg data

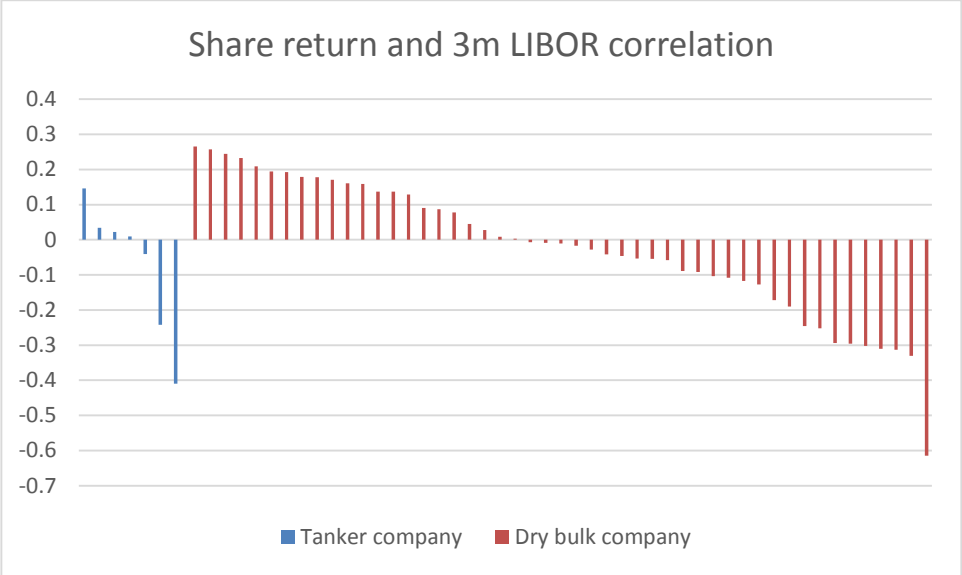
However, such rather complex relationships also indicate that different companies potentially employ different strategies towards the market. E.g. companies with higher revenue coverage thanks to long-term contracts are likely less sensitive to the near-term demand fluctuations and the opposite is also true. In addition, the lower ratios for tanker companies imply that oil trade is less volatile than the dry bulk products.

5.4.2 Interest rate and the interest in shipping equity

As it has been laid out in the literature review, the interest rate effect for the companies is twofold. On the one hand, the capital-intensive industries, such as the shipping companies, benefit from lower cost of capital, on the other hand the lower interest rate typically signal the weaker global macroeconomic environment, which implies an adverse effect for the shipping industry.

Looking at the historical data (chart 6 below), the answer which effect is stronger seems to differ by company. Namely, within the subsamples of both dry bulk as well as tanker companies, the correlation ratios within the range of -0.3 to +0.3 have been registered with rather even distribution.

Chart 6. Global interest rate benchmark and shipping equity performance



Source: own calculations based on Bankrate and Bloomberg data

It is thus fair to conclude that the company strategy to hedge the interest rate exposure as well as have different approached to the income risk management play a significant role. Primarily this is visible from the fact that the average correlation ratio for all the sample is 0.02 in absolute terms, but the ratios for individual companies are relatively higher.

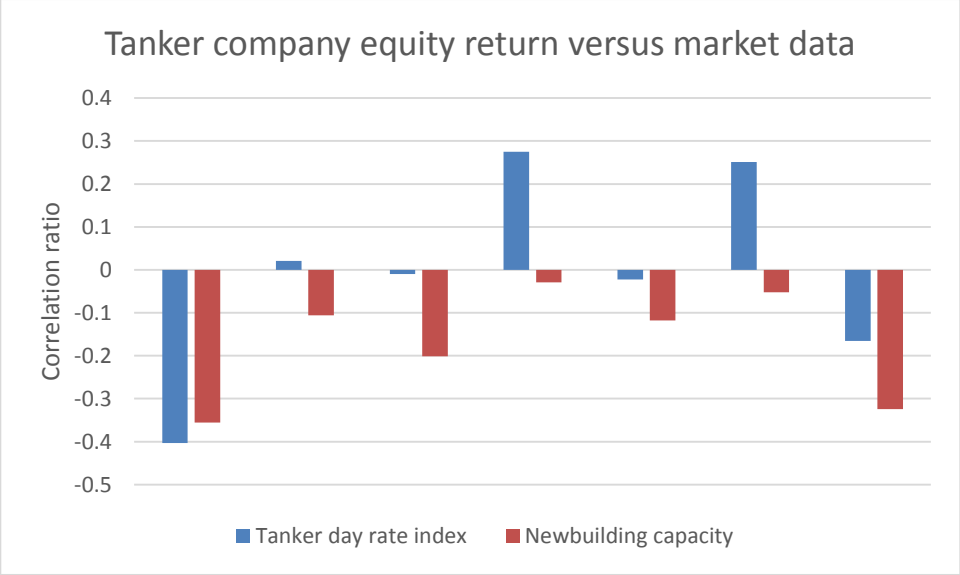
5.4.3 Present state of shipping market as predictor of the future

Naturally one cannot analyse the shipping market as a whole given the different underlying success factors for different segments of the shipping industry. Therefore, the crude oil tanker industry's prevailing earning rates and newbuilding market data was plotted against the tanker equity return while the corresponding measures of the dry bulk market were considered with regards to dry bulk company equity returns.

Before digging deeper into the tanker market, it is worth highlighting the small sample size (7 companies; Tanker Investments LTD has to be removed due to only 3 available quarterly data points which undermines the use of the correlation ratio). The rest of the data suggest virtually no relationship between the day rate level and the equity returns. This indicates that either the future expectations father than the near-term earnings fluctuations or that shipping equity valuations is more sensitive to the fleet value (which in turn is less volatile than day rates) rather than directly related to the earnings. To support the argument that the present

share price changes discount for the future earnings potential is the fact that all of the sample companies' equity returns demonstrated negative correlation ratio with regards to the newbuilding capacity (measured in % of the existing capacity), though the ratio is still rather low in absolute terms.

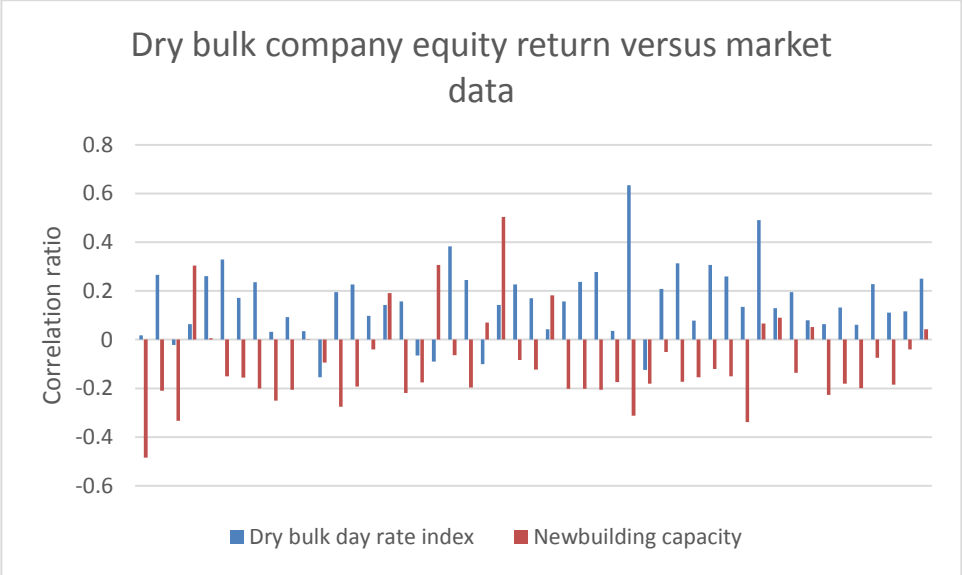
Chart 7. State of tanker shipping market and equity returns



Source: own calculations based on Clarksons and Bloomberg data

Shifting the focus to the dry bulk market, the picture is contrastingly different. While the newbuildings have somewhat similar relationship as that within the tanker segment, the day rates are equally important – correlation ratio of nearly 0.2 was calculated (this was not observed for tankers).

Chart 8. State of tanker shipping market and equity returns



Source: own calculations based on Clarksons and Bloomberg data

To summarize the ability to predict the equity returns given the key shipping market data (day rates and newbuilding information), such possibilities are rather bleak. In practice, this means that the analysts can use the data to improve their estimates, but the mentioned data alone is not enough to be reasonable precise. Finally, the historical data suggests that the earnings and future capacity data is somewhat more useful in the dry bulk equity research rather than the tanker companies.

5.5 Individual factors

The analysis continues with a look into company-specific individual factors including: the country of the company, primary exchange of listing, age and size, effective taxation rate, free float to measure the ownership structure, financials ratios as well as the investment analyst expectations. While this enables to dig deeper into the interactions between the individual factors and the success of the shipping companies such as long-term equity returns and achieved valuation multiples, the more holistic analysis follows in the next chapter in order to measure all the effects' interrelationships.

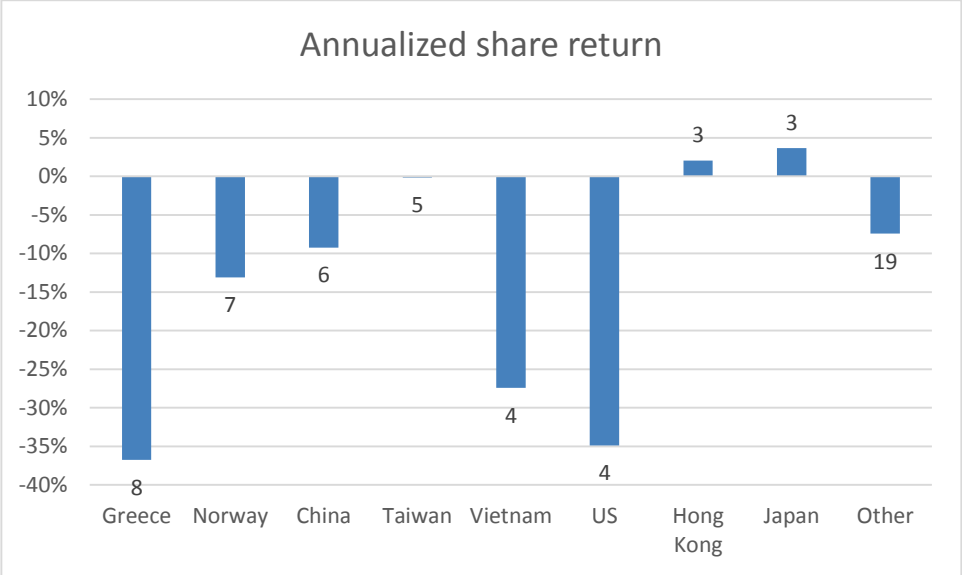
5.5.1 Country of origin and exchange of listing

There are numerous theoretical and very practical factors to argue that the country where the company's headquarters are located and the exchange that the shares are listed on matter to a great extent. They include availability of human capital, access to financial capital, rule of law (shareholder protection) and businesses practices among others. However, the empirical analysis proves that though some relationships do exist, the picture is not fully clear.

Looking at the country of the company, it is worth distinguishing the actual location of the HQ (which is used in the following analysis) and the legal region of domicile (e.g. low-tax regimes such as Marshall Islands and Bermuda). The actual place of HQ was chosen over the domicile area because of two main reasons: 1) the market factors of the HQ country matter since the operations are run from there 2) Most companies, except for some cases within Norwegian and American enterprises, are also legally established in the same place as the HQ.

Talking about the historical results of the companies from different countries (chart 9, number marks companies from each country), there are rather clear loss-makers and a few marginal winners. Among the losers, Greece, the US and Vietnam stand with annualized losses of more than 25%. On the other side of the equation, one finds mostly Asian countries – Hong Kong, Japan, Taiwan and mainland China). Among the likely explanations of these trends stands the importance of timing as numerous IPOs by Greek, Norwegian and American companies performed in min-2005 have demonstrated very poor performance afterwards; Vietnam, though, remains a special case on its own, being unable to repeat the boom enjoyed by other Asian shipping companies.

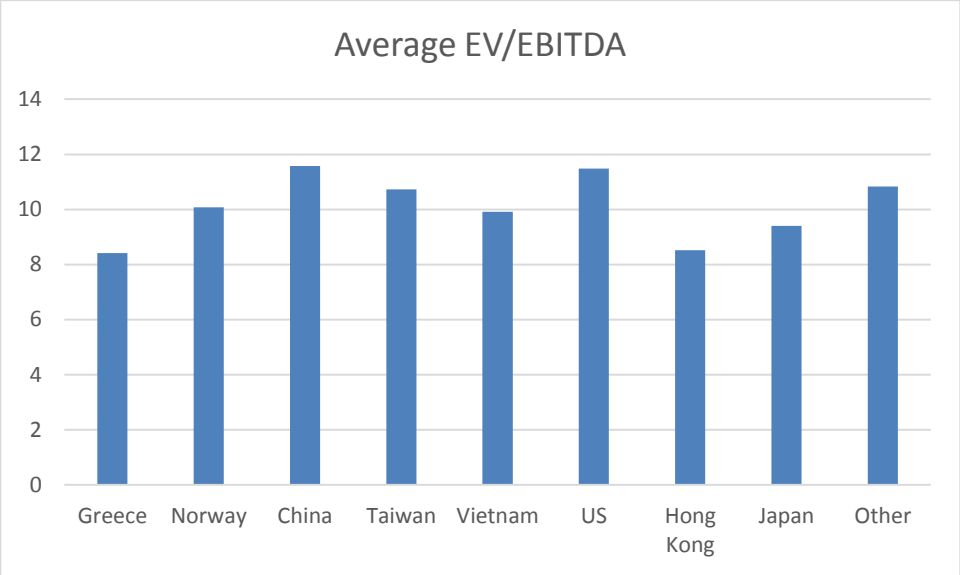
Chart 9. Annualized shipping company returns by country HQ



Source: own calculations based on Bloomberg data

Rather similarly to the rather sharp historical share price return differences between various countries, the valuation level in terms of EV/EBITDA is also far from even. Looking at the chart 10, Greek and Hong Kong-based enterprises are valued at relatively lowest multiples while the US and Chinese companies stand at around 40% premium compared to the mentioned countries. Interestingly, the Greek companies, which demonstrated the worst historical performance, are traded at the lowest multiples. In contrast, the US-based companies with the average second-worst performance trade at the highest multiples, which could probably be attributed to the legal framework and the protection of the small shareholder rights.

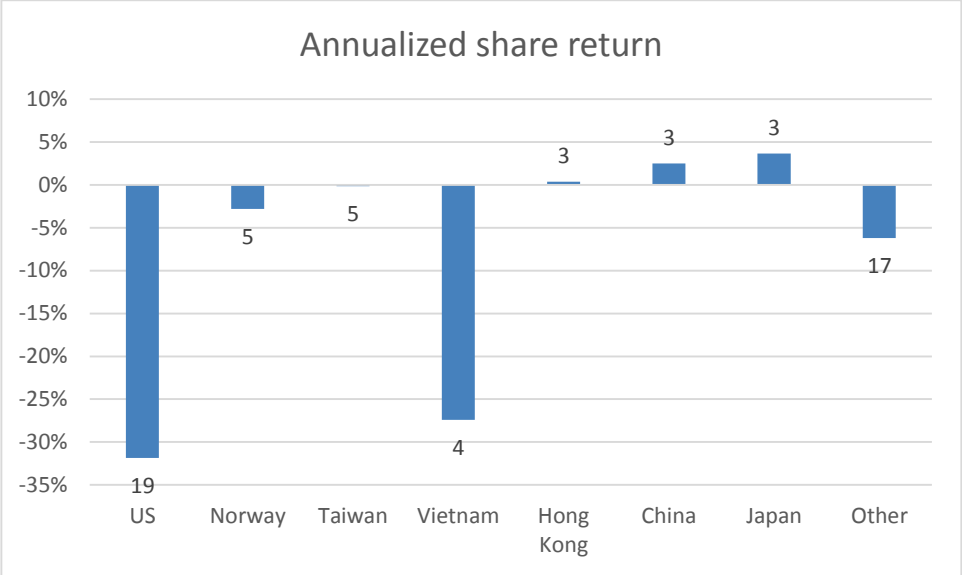
Chart 10. Relative shipping company pricing by country HQ



Source: own calculations based on Bloomberg data

It was also found that for shipping companies it is not uncommon to list the shares on the exchanges other than their home country's ones: 22 of the 59 companies in the sample had their primary listing in other country than their HQ was located. Interestingly, all the Greek companies and more than half of Norwegian ones have raised their equity capital outside of national stock exchanges. When it comes to the average shipping stock returns in the different equity markets, the US and Vietnam are the clear losers, similarly as it was the case with the location of the HQ. All Vietnamese shipping companies are listed in Vietnam and the US listed companies include the poor performers from the US, Greek companies as well as apparently Norwegian companies with poorer returns and other Norwegian companies.

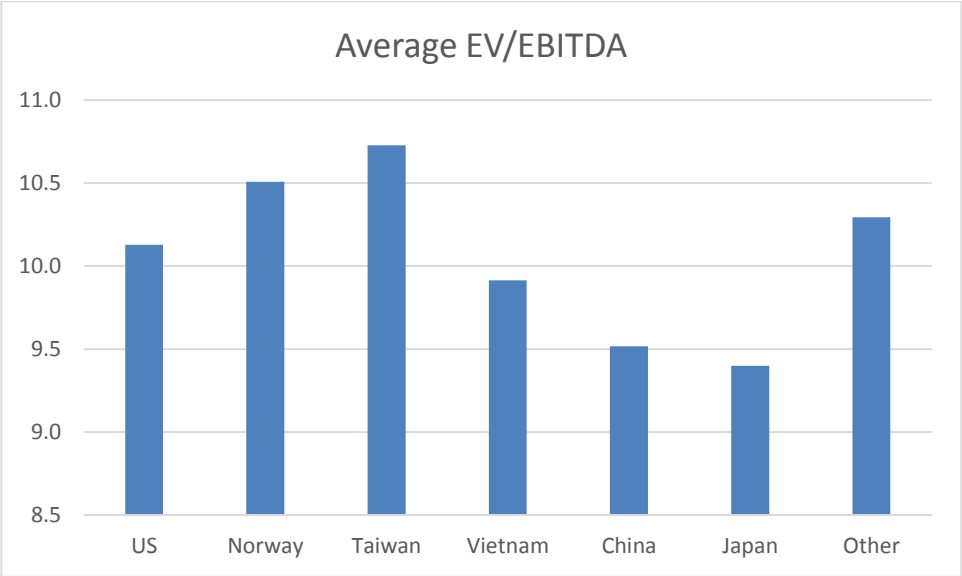
Chart 11. Annualized shipping company returns by the country of equity listing



Source: own calculations based on Bloomberg data

While the Vietnam and the US-listed companies demonstrated the poorest historical returns, they are around the average in terms of achieved relative pricing (EV/EBITDA). It is worth highlighting that in general differences between various exchanges in terms of company pricing are more modest than the impact of the HQ country.

Chart 12. Relative shipping company pricing by the country of equity listing



Source: own calculations based on Bloomberg data

To briefly summarize the key findings of the importance of the country and the stock exchange, historically the companies listed on their home country stock exchanges have performed better (with exception of Vietnam). In terms of achieving relative pricing, which is mostly relevant for investors seeking exit opportunities, the location of HQ proved a more important factor than the exchange of listing, but home country national exchanges seem to be preferred by investors.

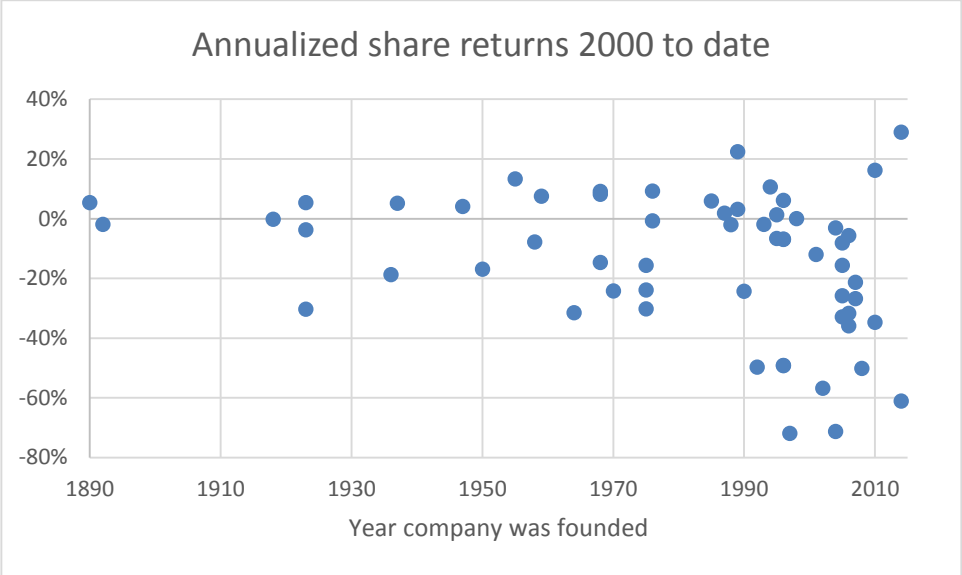
5.5.2 Age and size: choice between experience and flexibility

There are both arguments for why larger companies should outperform smaller (seasoned management, relationships with clients and financiers) as well as why smaller companies should lead the way (less bureaucratic, more dynamic and eager. Virtually the same applies for the age of the company.

Ahead of presenting the empirical data, it is worth cautioning that the sample does not include companies that are currently no longer functioning (though it still contains a couple of enterprises under bankruptcy protection). This has very likely put older companies at a relative advantage at least in terms of historical returns and the data is upwardly biased since poor-performers are not included as their list is not readily available.

Unsurprisingly, older companies of the sample have demonstrated somewhat stronger share performance (correlation coefficient is 0.30). It is worth highlighting, however, that the observed relationship is not linear and that the distribution of the returns has changed over time. Having said that, the worst performers within the sample are the companies founded during early 2000s – none of them had experienced positive share price returns since listing to today.

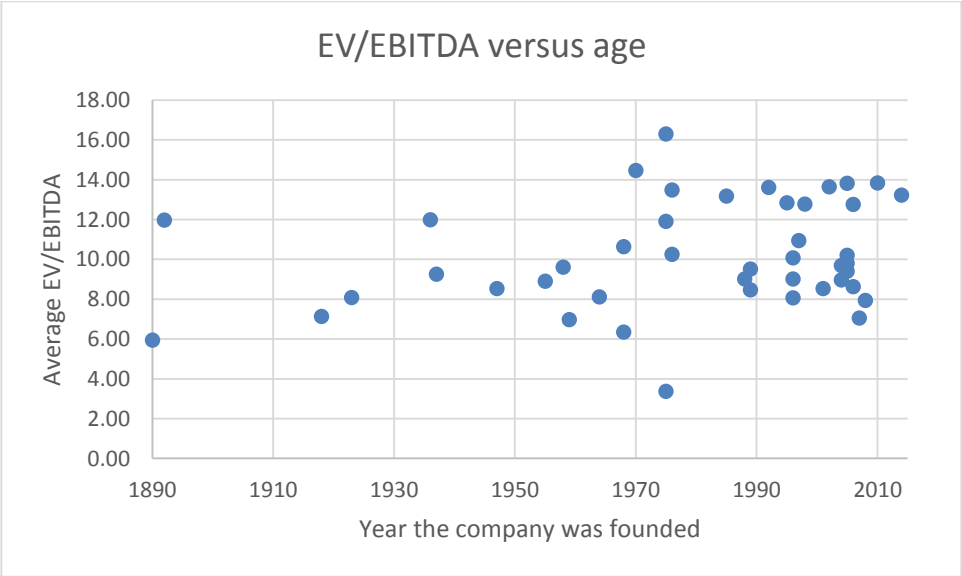
Chart 13. Company age profile and historical chare returns.



Source: own calculations based on Bloomberg data

Shifting the focus to valuation, the age, however, seems to diminish the EV/EBITDA level by a tad. Statistically, one more year of age has translated to EV/EBITDA decrease of 0.02 per year. It I worth highlighting that though correlation coefficient of 0.25 was registered, the decrease of 0.02 in terms of EV/EBITDA is of very little significance for investors.

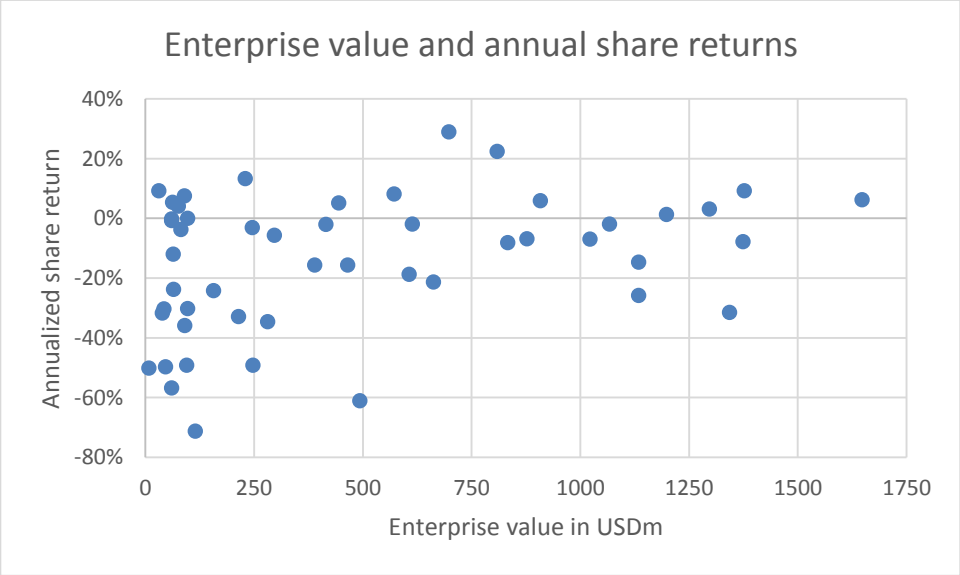
Chart 14. Company age profile and achieved relative valuation



Source: own calculations based on Bloomberg data

Talking about the company size, enterprise value in USD was used to measure the factor. Admittedly, the gauge is not perfect, but a number of companies (primarily in Asian subset of data) do not provide up-to-date (or any at all) fleet structure. Similarly to the biases arising between the age and return, the EV and long-term data is also very interdependent. Namely, poor performers historically should have experienced continuous company value declines while best performers naturally grew in size as time progressed. Therefore, the identified modest relationship (correlation coefficient of 0.29) between the size of the company and its long-term returns should be taken with a pinch of salt.

Chart 15. Company size effect on long-term share price returns



Source: own calculations based on Bloomberg data

No meaningful relationship between size of the company and its achieved relative pricing in terms of EV/EBITDA was found. The correlation coefficient stands at 0.08, implying virtually no statistical relationship.

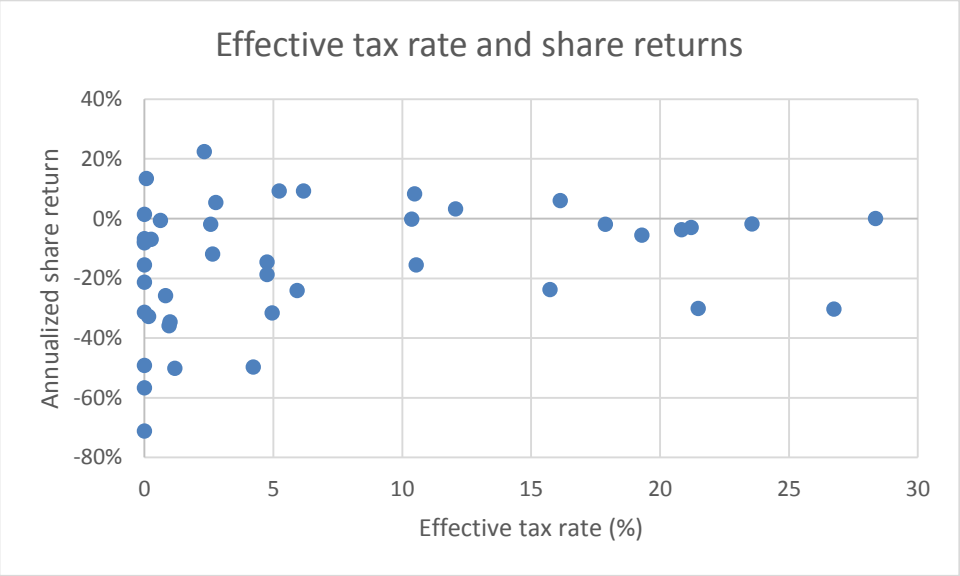
5.5.3 Taxation: do heavens matter?

To quote Benjamin Franklin, "In this world nothing can be said to be certain, except death and taxes". However, a number of the shipping companies are trying to prove (and so far very successfully) that the taxes part is not that certain. Among the sample of 59 companies, 10 have enjoyed effective tax rate of 0% over the last couple of years. Sixteen more companies have paid less than 10% and a total of 39 companies have paid less than 20%. Actually, the

average tax rate for the sample companies stands at only 7.9%. But does this help create value for the shareholders?

The answer is not exactly clear. On average, the companies paying higher tax rate achieved higher stock returns (chart 16). The relationship, though, is rather weak with correlation coefficient of 0.24. Partly, this could be attributed to higher company profitability in turn resulting in both higher tax receipt as well as higher share prices. However, one cannot disregard the legal factors such as most developed countries offering superior investor protection and stock exchange requirements for certain disclosures which might prevent the management from value destructive moves.

Chart 16. Effective tax rate and historical share price returns



Source: own calculations based on Bloomberg data

The relative valuation in terms of EV/EBITDA and the effective tax rate proved to be virtually unrelated historically. The correlation coefficient of only 0.05 was registered.

5.5.4 Importance of ownership structure

The ownership structure of any company directly impacts its decision making by setting the composition of the boards who in turn are part of strategic decision-making. Anecdotal evidence from the shipping industry suggests that some prominent shipping investors have achieved superior returns over time and strong family brand names are known in Norway,

Greece and a number of other countries. On top of the single largest owner, the majority of the company might be held by a number of related investors, who tend to have the most important role to assigning the board members. The rest of the shareholders, who are typically assume to be financially rather than strategically-oriented, are known as free float.

Despite the anecdotal evidence, the empirical data is rather bleak and implies only very weak relationship between the ownership structure and the historical share performance. Namely, the correlation coefficient of less than 0.01 in absolute terms was registered.

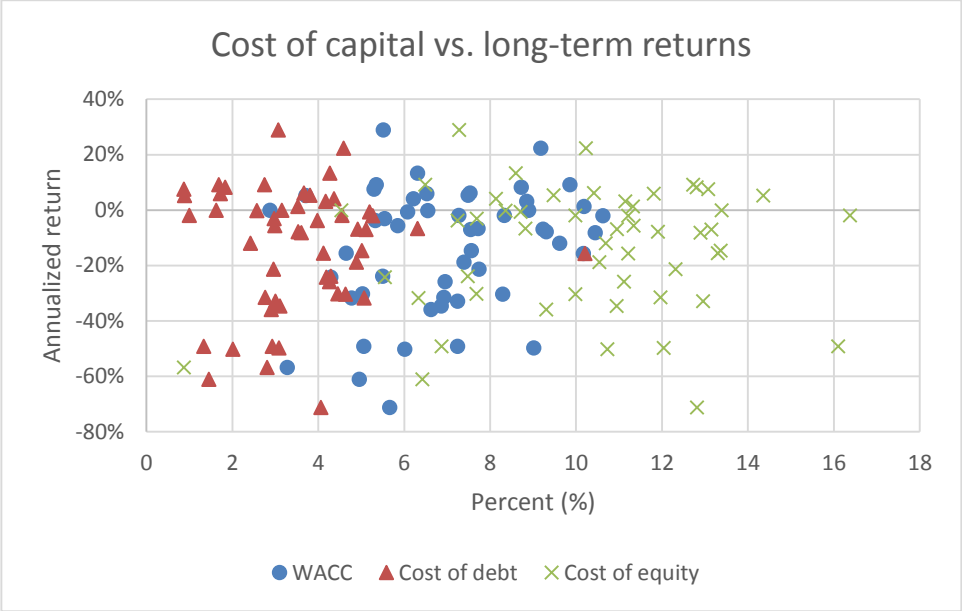
There is an impact on valuation multiples to at least some extent, but while the correlation coefficient of 0.19 was calculated, the slope is only marginal. I.e. the companies with lower than 50% free float ratio have historically achieved an average EV/EBITDA of 10.29 versus 10.05 of the rest of the sample.

5.5.5 Cost of capital

Cost of capital, comprised of debt and equity, is a determinant of the company's ability to expand its fleet. In turn, this naturally determines the ability to provide investors with attractive return over the long term. As it has been discussed in literature review, shipping companies have historically demonstrated the ability to attract capital for expansion at a relative ease compared to other sectors.

However, the historical empirical data suggests that there is hardly any direct relationship between the cost of capital (including cost of equity, cost of debt as well as weighted average cost of capital – WACC). As it can be seen from chart 17 below, neither of the capital costs are aligned with the actual long-term performance of the shipping company shares. The correlation ratios stand at 0.24, 0.03 and 0.24 for WACC, cost of debt and cost of equity respectively, which implies only very weak statistical relationships.

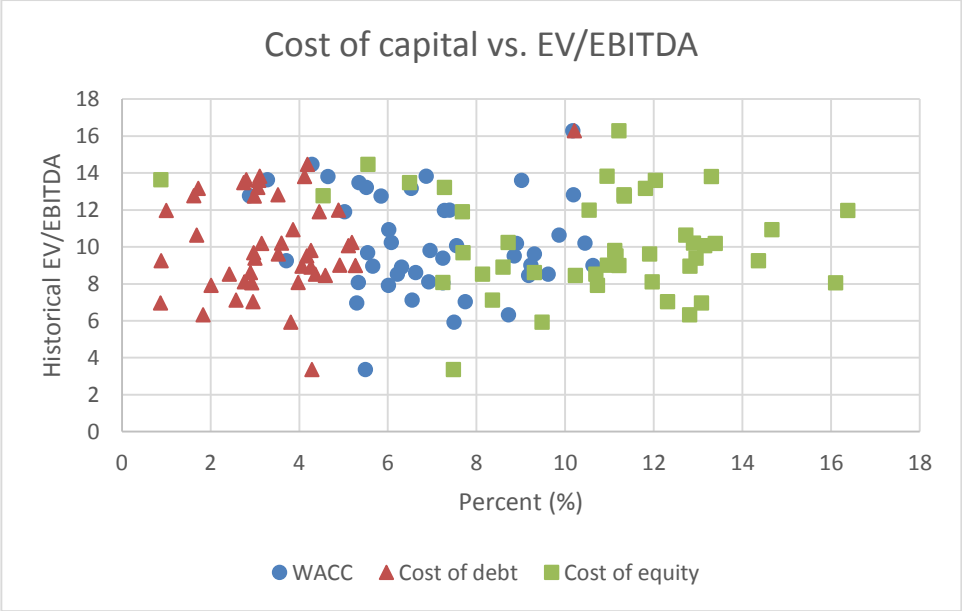
Chart 17. Cost of capital and long-term return relationship



Source: own calculations based on Bloomberg data

Interestingly, the capital costs also have very limited effect on the company pricing in terms of EV/EBITDA. As it can be seen from the chart below as well as the correlation ratios of -0.10, 0.21 and -0.16 between WACC, cost of debt, cost of equity and the EV/EBITDA respectively, the statistical relationship is also virtually non-existent.

Chart 18. Cost of capital and achieved market pricing



Source: own calculations based on Bloomberg data

The findings between the cost of various sources of capital and the pricing of the companies as well as their long-term performance are somewhat counterintuitive: one would expect the lower capital costs to result in excess value creation all else equal. Apparently, the factors of success are to be found in other areas than cheaper access of capital.

5.5.6 Efficient use of cash: dividends vs. capital reinvestment

Each company, as it has been laid out in the literature review, has a choice of paying its profits as dividend to the shareholders or reinvesting the earnings into expansion. On the one hand, all else equal the investors would naturally prefer to be paid excess cash in a form of dividends. On the other hand, the shipping company may re-invest the capital to increase its fleet and thus give even higher earnings and future dividend potential in turn. All in all, the choice has no really clear theoretical answer as the outcome depends purely on the fact if the individual investors or the company can achieve higher returns on the investment on excess cash.

When it comes to the sample 59 dry bulk and tanker companies, 20 of them had paid dividend at least once and nine have still paid them as of the first quarter 2015. The history suggests that dividend-paying shipping companies actually underperform the ones that dedicate all profits to the future growth. The average annualized return of the dividend payers stands at -19% in comparison to the -9% achieved by the companies that have never paid dividends. Even more, among the 19 companies with positive long-term returns, only four have paid dividend at least once.

When it comes to achieving higher pricing in terms of EV/EBITDA, companies paying dividends trade at the average EV/EBITDA of 10.18 versus that of 10.15 for the companies without dividends. It is thus fair to conclude that such small difference implies virtually no difference in achieved pricing.

All in all, at the end of the day companies seem to be using internally generated capital better at their own rather than distributing it to shareholders when it comes to the long-term returns. One could expect that companies that are able to employ their capital more profitably tend to re-invest earnings rather than pay dividends, which results in the current situation when no-dividend-payers outperform dividend payers.

5.5.7 Financial leverage

Before digging to the empirical data, one might expect two key outcomes regarding the company's share performance. First, higher leverage might signal that the company perceives the outlook positively for itself and thus uses more debt to fund its growth faster. Secondly, it is also reasonable to anticipate somewhat binary outcome of the higher leverage: in case of the strong outlook the companies should benefit more than companies with lower leverage; in case of the weak markets, the companies would end up in much better position.

The history, however, suggests that there is only very weak relationship between leverage and the long-term share performance as well as the achieved market pricing. The correlation ratios stand at respectively 0.14 and -0.03. Furthermore, there is no binary-like outcome as well.

Apparently, companies with a history of strong balance sheets as well as very weak ones have both have performed strong as well as poorly. One must conclude that scanning shipping companies by their financial leverage will not help identify potential future winners and other factors must be looked into.

5.5.8 Does earnings volatility pay off?

As it had been outlined in the literature review, different companies prefer different operational strategies. For example, some companies tend to charter their fleet in advance using term charters while others have significantly larger exposure to the spot market. In addition, the bottom line volatility is also dependent on other matters such as variable interest rates, currency risk etc.

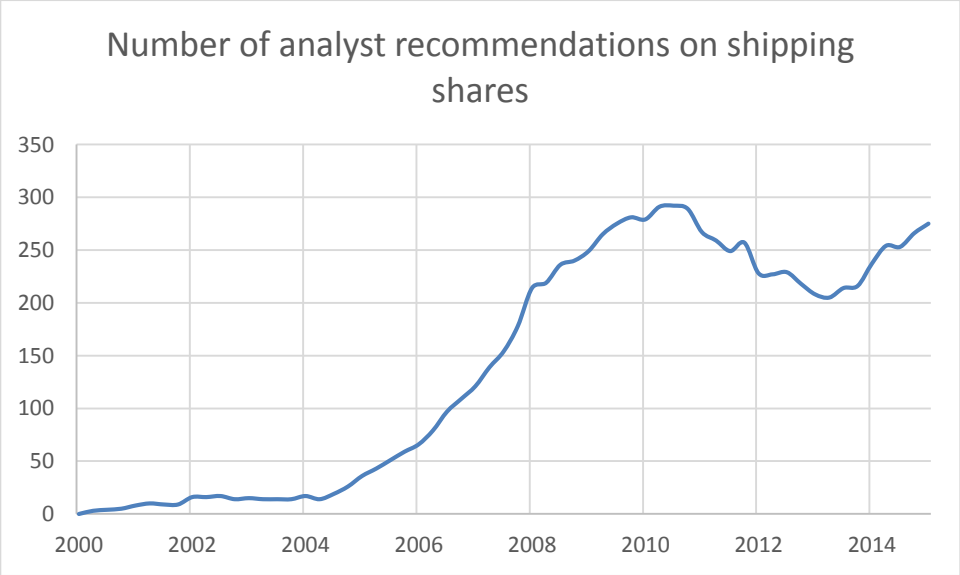
In order to make economic sense, over the long-term the companies with more volatile earnings profiles should earn higher profits and thus compensate their investors for the increased near-term uncertainties. However, the empirical data finds little evidence for this to be the case. Investigation into the volatility in terms of revenues, EBITDA and the net profit as a ratio of the enterprise value (data had to be standardized in order to compare different size companies) shows that volatility is actually negatively correlated with the long-term returns. The correlation coefficients of -0.26, -0.30, -0.43 were registered for sales, EBITDA and net profit respectively. Apparently, the market has historically rewarded the companies that exceled in risk management compared to their peers.

Furthermore, the higher earnings volatility has historically translated in lower valuation multiples (admittedly the relationship is rather weak). Namely, the correlation ratios stand at -0.12, -0.15 and -0.07 for sales, EBITDA and net profit versus the average EV/EBITDA achieved. These findings, however, are easier to understand based on economic theory as investors' risk aversion prevents them from paying higher price in terms of multiples for less certain future cash flows.

5.5.9 Investment advisory: any value created by shipping analysts?

Investment advice is readily available to nearly every investor using any broker service. Even more, since early 2000s the shipping equity coverage has significantly increased (see chart 19 below: from less than 10 to nearly 300 outstanding total buy, hold and sell recommendations for the all of the sample companies). Yet, despite the increase 17 of the 59 companies are still not actively covered by any sell-side analyst.

Chart 19. Shipping equity coverage over time



Source: own calculations based on Bloomberg data

While the analyst coverage has increased tremendously, the average return of the companies with active coverage at some point in time of -13.3% is only marginally different from -13.3% without any coverage at all. Interestingly, however, the companies that had active coverage and it has ceased are the worst performers with average returns of -18.2% and the companies

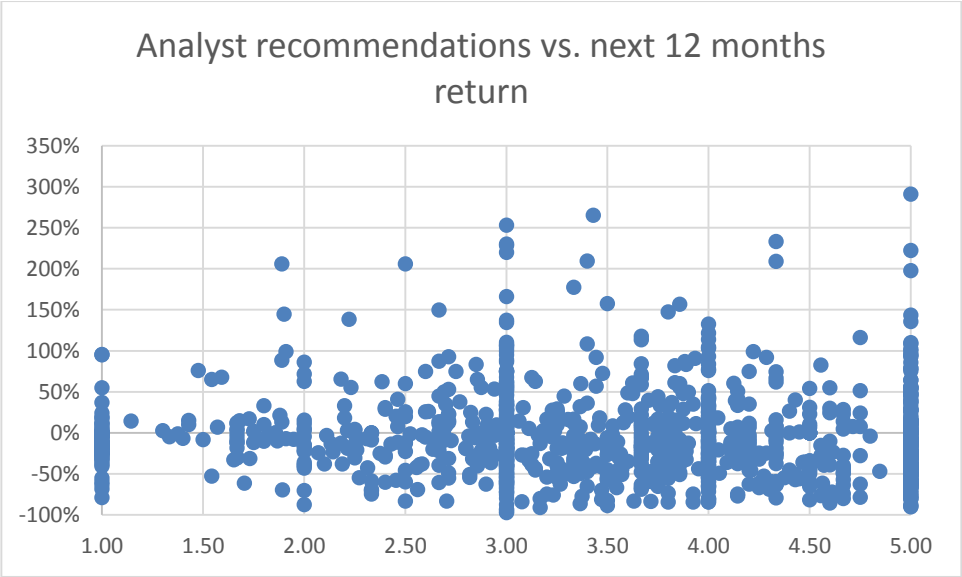
that are still covered demonstrated an annualized return of -10.6%. Apparently, the past share price performance seems to be a predictor of the analyst coverage, not the other way around.

When it comes to the achieved EV/EBITDA, though, the active coverage helps to lift the company valuation multiples. Namely, the companies that had never been covered by analysts were traded at an average EV/EBITDA of 9.0 versus 10.3 average for the companies within analyst coverage universes.

Overall, the analyst coverage seems to lift the company valuation thanks to increased transparency, but it is also fair to conclude that this does not help individual investors grasp excess return.

Admittedly, the pure number of analyst recommendations signals only the amount of the interest in any share rather than the beliefs over the future prospects of the company. Looking at the analyst consensus recommendations, ranging from strong sell to strong buy as outlaid in the methodology part of the thesis, and the consecutive share price returns, one might judge whether trusting investment analyst recommendations is a source of excess returns. As the empirical data suggests (seen on chart 20), the picture is rather grim. The correlation between the average analyst recommendation (1 marking strong sell to 5 reflecting strong buy) and the next 12 month returns is barely -0.04. Apparently, on average one cannot draw reliable conclusions purely on the sell-side analyst forecasts and expectations.

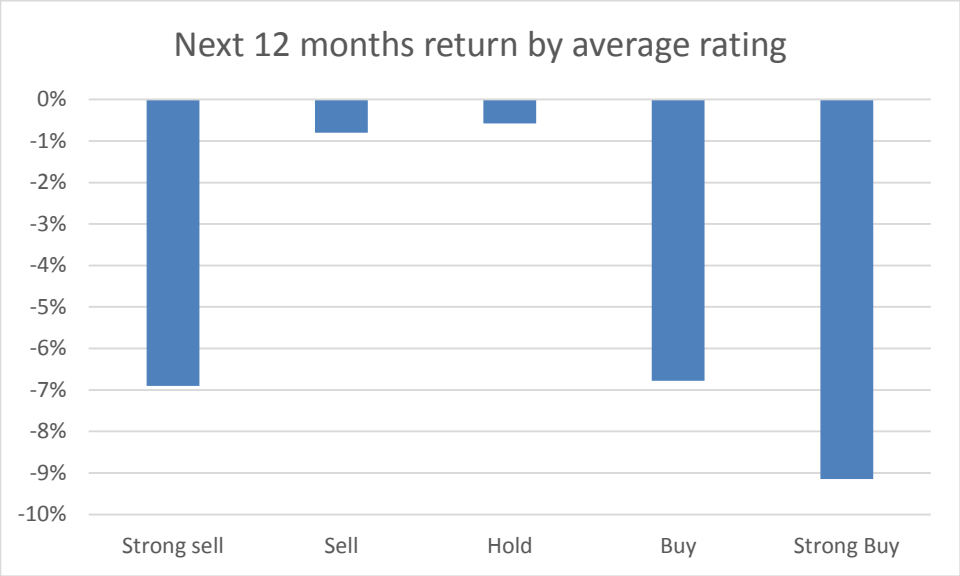
Chart 20. Historical analyst recommendations and achieved returns



Source: own calculations based on Bloomberg data

Grouping the recommendations into categories (chart 21 below), one finds that the best performers (i.e. shares losing least of their value) re typically rates either sell or hold. Evidently, the shares that analysts have either very strong positive or negative expectations tend both to deliver poor returns (with the companies deemed most attractive losing most value).

Chart 21. Average return by rating



Source: own calculations based on Bloomberg data

Given the findings of the analysts failing to assign recommendations for shares, it is hardly surprising that the expected future share price (typically referred to as target price) and the actual returns greatly diverge as well.

Looking at the historical data, it seems that the average analyst target price is some 30% above the current share price. However, the actual return for the periods with these active recommendations is on average -4%. The correlation ratio between the target price and actual next 12 months returns is only 0.01. However, digging deeper there seems to be some value in the analyst target prices. Namely, if the consensus target price drops below the current share price (i.e. the share is widely expected to depreciate in value), typically the returns are slightly positive (on average by 1.5%). Moreover, if the analyst target price is significantly (90% or more) above the current market value of the share, there also seems to be a bias towards

profitable next 12 month returns. It is, however, worth highlighting that even though such trades have historically ended up in black, the average returns virtually never exceeded 10% per annum, stopping far short of the analyst expectations.

To briefly summarize the use of the investment banking advisory services as a source of valuable information to grasp the future potential returns of the shipping companies, it is worth admitting that only limited value was found. However, the fact that analysts actively cover the company leads to greater transparency and thus higher valuation multiples in terms of EV/EBITDA.

6. Regression analysis: dealing with multiple factors at once

The overview of the individual factors suggested a number of approaches to predict the future shipping equity returns. However, one must admit that no particular factor was strong enough to estimate the future equity returns with reasonable accuracy. Furthermore, while the individual factor analysis provides insights into what factors should be looked for in order to identify future market winners, the inability to conclude in the light of conflicting signs emerges. All this points to the fact that the multiple regression analysis should be considered in order to progress towards finalizing the investment strategy.

6.1 Key drivers for tanker equity returns

While the small sample of the tanker companies has prevented a more detailed regression analysis with a larger number of independent variables, it still has proved a few intriguing insights (table 4 below). The independent variables including the company-specific (age, size, taxation, cost of debt, financial leverage and earnings volatility) as well as industry-wide ones (day rates, newbuilding order book, interest rates, global macroeconomic data in terms of GDP and international trade).

Table 4. Determinants of quarterly share price changes

Regression Statistics	
Multiple R	0.2890
R Square	0.0835
Adjusted R Square	0.0495
Standard Error	0.2534
Observations	308

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	11	1.7321	0.1575	2.4527	0.0060
Residual	296	19.0027	0.0642		
Total	307	20.7347			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.8391	2.2302	-0.3762	0.7070	-5.2281	3.5499	-5.2281	3.5499
age	0.0004	0.0011	0.3594	0.7195	-0.0018	0.0026	-0.0018	0.0026
size	0.0000	0.0000	0.8412	0.4009	0.0000	0.0001	0.0000	0.0001
tax	0.0004	0.0027	0.1320	0.8951	-0.0049	0.0056	-0.0049	0.0056
debt cost	-0.0082	0.0216	-0.3810	0.7034	-0.0509	0.0344	-0.0509	0.0344
net debt to equity	0.0000	0.0000	1.3531	0.1770	0.0000	0.0001	0.0000	0.0001
net profit volatility	-0.0009	0.0014	-0.6765	0.4993	-0.0036	0.0018	-0.0036	0.0018
day rate	0.0001	0.0000	2.6070	0.0096	0.0000	0.0002	0.0000	0.0002
newbuilding	-0.2822	0.1731	-1.6306	0.1040	-0.6229	0.0584	-0.6229	0.0584
libor	-0.2946	1.0740	-0.2743	0.7841	-2.4082	1.8190	-2.4082	1.8190
gdp	0.0195	0.0067	2.9060	0.0039	0.0063	0.0328	0.0063	0.0328
trade	-0.0055	0.0026	-2.1508	0.0323	-0.0105	-0.0005	-0.0105	-0.0005

Source: compiled by author

Even though no particularly strong statistical relationships were identified when performing individual factor analysis, rather surprisingly, the regression analysis has found all of the considered company-specific factors to be of very limited importance. No statistically significant relationship implies that the considered factors in this thesis, primarily based on the analysis of the practitioners', such as investment banks and consulting companies, do not provide insights into the future with reasonable accuracy. This, in turn, might explain the very poor track record of the shipping equity analysts uncovered in the thesis before.

When it comes to the statistically significant independent variables, the day rate, global GDP and international trade volumes proved to be statistically significant. It is worth mentioning that while day rate and GDP relationship with the quarterly returns of the tanker companies' equity was positive, the coefficient ratio next to the international trade was found negative. One might argue that though it proved statistically significant, the oil movements are only part of the international trade and thus the use of the international trade as a proxy variable for the tanker shipping demand might not be fully appropriate.

All in all, the regression analysis demonstrates that tanker shipping is a commoditized market and company-specific factors tend to have only limited effect on the equity returns in

comparison to the general shipping market and economic data. Finally, though three independent variables as well as the whole model were found statistically significant (at 5% level), the predictor power is rather bleak. As implied by the determination ratio, the model is able to explain less than 10% of the whole equity variation.

6.2 Key drivers for dry bulk company returns

Given the previously discussed findings from the tanker market, one should not be surprised that the equity market works in a rather similar fashion in the dry bulk industry as well. Thanks to a larger sample of companies, it was possible the statistical relationship between the equity returns and a few additional independent variables such as country of the company, its stock listing exchange and the cost of equity.

Once again, the company specific factors proved statistically insignificant. However, in contrast to the tanker industry, newbuilding order book has tested as a meaningful factor for the quarterly dry bulk company returns. Needless to say, the relationship is negative, i.e. the larger the existing order book at a time, the more cautious equity investors tended to be.

Table 5. Determinants of quarterly share price changes

Regression Statistics	
Multiple R	0.2203
R Square	0.0485
Adjusted R Square	0.0392
Standard Error	0.4770
Observations	1647

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	16	18.9195	1.1825	5.1976	0.0000
Residual	1630	370.8310	0.2275		
Total	1646	389.7506			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.4450	0.9331	0.4769	0.6335	-1.3852	2.2751	-1.3852	2.2751
Greece	-0.0614	0.0525	-1.1703	0.2421	-0.1644	0.0415	-0.1644	0.0415
Norway	-0.0286	0.0442	-0.6466	0.5180	-0.1153	0.0581	-0.1153	0.0581
China	0.0138	0.0557	0.2477	0.8044	-0.0955	0.1231	-0.0955	0.1231
US	0.0875	0.0459	1.9063	0.0568	-0.0025	0.1774	-0.0025	0.1774
age	-0.0002	0.0005	-0.4391	0.6606	-0.0011	0.0007	-0.0011	0.0007
size	0.0000	0.0000	-0.8637	0.3879	-0.0001	0.0000	-0.0001	0.0000
tax	-0.0016	0.0016	-1.0448	0.2963	-0.0047	0.0014	-0.0047	0.0014
debt cost	0.0029	0.0105	0.2742	0.7840	-0.0177	0.0234	-0.0177	0.0234
equity cost	0.0072	0.0065	1.1079	0.2681	-0.0055	0.0199	-0.0055	0.0199
net debt to equity	0.0000	0.0001	-0.4605	0.6452	-0.0001	0.0001	-0.0001	0.0001
net profit volatility	0.0000	0.0000	-1.3982	0.1622	0.0000	0.0000	0.0000	0.0000
day rate	0.0000	0.0000	5.3541	0.0000	0.0000	0.0001	0.0000	0.0001
newbuilding	-0.3668	0.0746	-4.9165	0.0000	-0.5131	-0.2204	-0.5131	-0.2204
libor	-1.2731	0.8538	-1.4910	0.1362	-2.9478	0.4016	-2.9478	0.4016
gdp	0.0161	0.0055	2.9223	0.0035	0.0053	0.0269	0.0053	0.0269
trade	-0.0069	0.0020	-3.5289	0.0004	-0.0108	-0.0031	-0.0108	-0.0031

Source: compiled by author

Though four instead of three (as in tanker case) independent variables proved to be statistically significant, the predictor power of the model is also weak (it is able to explain less than 5% of the total equity return variation).

Summary and conclusion

The thesis has looked into a largely untapped area of the shipping industry research – the equity returns of the listed tanker and dry bulk companies. While previous attempts have been made to assess the historical share returns, IPO pricing and consequent performance as well as the analysis of the share returns through the prism of a few selected variables, a more holistic approach, especially in the light of truly global sample, proved to be a rather pioneering choice.

It was found that two thirds of the listed tanker and try bulk companies have lost market value since 2000 (or date of listing if this happened later). However, the returns are far from being relatively equal through time. Dynamic business environment has historically resulted in a number of boom to bust cycles and one of them is captured in the data sample.

Hardly surprisingly, one of the most international and cyclical business – the shipping industry – was found responsive to the global economic growth pace. While the correlation ratios between short-term share price fluctuations and the GDP growth were fairly low, they still proved logical economic relationship. However, the international trade volumes and the interest rate benchmark (LIBOR) were not found to have an industry-wide effect.

Similarly to the demand side, measured in the thesis by the GDP growth, the new shipping capacity order book was found to have an equally strong opposite statistical relationship on the shipping equity returns. In short, the market supply-demand balance is reflected in the day rates, which in turn is key focus area to formulate expectations for future earnings of any shipping company and it value in the market as a consequence.

The individual company-specific factor analysis covered the company location, exchange of listing, age, size, taxation, ownership, financial structure and cost if capital, dividend policy and earnings volatility as well as sell-side equity analyst recommendations and estimates. Among the key findings, it is worth highlighting that there seems to be no clear country leading in terms of successful listed shipping companies, while Greece ended up as a worst performer. Primarily this could be attributed to the number of IPOs in mid-2000s during the very peak of the market. Interestingly, the correlation analysis showed no significant relationship for the remaining variables with exception of earnings volatility. It was found that investors achieve better share returns in companies where the earnings volatility is lower.

Finally, the share returns were analysed using the multiple regression analysis in order to measure the countering effects of different factors as well as to capture the changes in the market over time. For both tanker and dry bulk industry, the market-wide factors proved to be by far more important determinants of equity returns than the company-specific measures considered in this research.

As an additional part of the analysis, the company ability to achieve certain market pricing in terms of valuation multiples (primarily, EV/EBITDA) was also looked into. In short, no individual factors proved to benefit the company in terms of achieving higher multiples apart from the country of HQ, listing exchange and the analyst coverage. Interestingly, the companies actively followed by the equity analysts enjoy an average premium of around 10% on enterprise value basis compared to the companies that are not followed. Reflecting for different company financing structure in terms of equity and debt, it translates to an equity valuation premium of 20-40%.

Though the performed analysis thanks to a relatively large pure dry bulk and tanker company samples as well as a number of factors considered has delivered a few insights in the working of the market, admittedly there remain numerous limitations to be covered for future research. First, the regression analysis, though statistically significant, has relatively poor predictor power, indicating the need to account for other variables such as the near-term fluctuation in the ship utilization and company strategy, among other. Second, in order to perform the required deeper analysis to improve the predictor ability of the model, the sample data collection should be forward rather than backward looking. It has proved a challenge to gather the data from the past, especially for the companies from the emerging Asian countries. More detailed fleet assessment in terms of age profile, ship size etc. likely hold treasures to understand why some companies have performed significantly better than other even though the market-wide factors were found to be the most important ones.

References

Boni, L. and Womack, K.L. (2002). Solving the Sell-Side Research Problem: Insights from Buy-Side Professionals. Unpublished manuscript.

Clarksons (2015a). Investment strategy - close the door & don't get greedy. *Clarkson research 10 April, 2015* [Internet blog]. Retrieved 25 April, 2015 from https://clarksonsresearch.wordpress.com/2015/04/10/investment-strategy-close-the-door-dont-be-greedy/

Chistè, C. and Vuuren, G. (2014). Investigating the cyclical behaviour of the dry bulk shipping market. *Maritime Policy & Management: The flagship journal of international shipping and port research*, 41(1), 1-19.

Clarksons (2015b). VLCC Jackpot - the best slot machine in town. *Clarkson research 20 March, 2015* [Internet blog]. Retrieved 25 April, 2015 from https://clarksonsresearch.wordpress.com/2015/03/20/vlcc-jackpot-the-best-slot-machine-in-town/

Cohen Milsten (2008). Cohen Milstein Sellers & Toll PLLC Files Class Action Lawsuit Against Britannia Bulk Holdings, Inc. Retrieved 10, April 2015 from http://www.cohenmilstein.com/news.php?NewsID=138

CRISIL (2002). Indian shipping: Not ready to sail on the high seas. Retrieved 10 April, 2015 from http://www.crisil.com/Ratings/Commentary/CommentaryDocs/shipping_deepali.pdf

Dechow, P.M., Hutton, A.P. and Sloan, R.G. (2010). The Relation between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offering. *Contemporary Accounting Research*, 17(1), 1-32.

Drobetz, W., Merikas, A., Merika, A. and Tsionas, M.G. (2014). Corporate social responsibility disclosure: The case of international shipping. *Transportation Research Part E: Logistics and Transportation Review*, 71(2014), 18-44.

El-Masry, A.A., Olugbode, M. And Pointon, J. (2010). The exposure of shipping firms' stock returns to financial risks and oil prices: a global perspective. *Maritime Policy & Management: The flagship journal of international shipping and port research*, 37(5), 453-473.

FBR Capital Markets (2010). *IPO for* Shipping & Offshore - The Past, Present, & the Future. Retieved 20 April, 2015 from https://www.marinemoney.com/sites/all/themes/marinemoney/forums/NYC10/Presentations/chris%20weyers.pdf

Gleason, C.A., Johnson, B.W. and Li, H. (2012). Valuation Model Use and the Price Target Performance of Sell-Side Equity Analysts. *Contemporary Accounting Research,* 30(1), 80-115.

Grammenos C.Th. (2010). The Handbook of Maritime Economics and Business. 2nd ed. London, Lloyd's list.

Grammenos, C.Th. and Arkoulis, A. (1999). The Long Run Performance of Shipping Initial Public Offerings. *Maritime Economics & Logistics,* 1, 71-93.

Grammenos, C.Th. and Arkoulis, A.G. (2002). Macroeconomic Factors and International Shipping Stock Returns. *International Journal of Maritime Economics,* 4, 81-99.

Grammenos, C.Th. and Papapostolou, N.C. (2012). US shipping initial public offerings: Do prospectus and market information matter? *Transportation Research Part E: Logistics and Transportation Review,* 48(2012), 276-295.

Gratsos, A.G. and Zachariadis, P. (2005). Life cycle cost of maintaining the effectiveness of a ship's structure and environmental impact of ship design parameters. Proceedings of the *RINA Conference on the Design and Operation of Bulk Carriers*, October 26-27, 2009, Athens, Greece.

Greenwood, R. and Hanson, S. H. (2013). Waves in Ship Prices and Investment. *Quarterly Journal of Economics,* 130(1), 55–109.

Hopkins, P.E., Houston, R.W. and Peters, M.F. (2000). Purchase, Pooling, and Equity Analysts' Valuation Judgments. *The Accounting Review,* 75(3), 257-281.

HSBC (2008). The impact on investment in the global shipping industry of a more volatile economic environment, November 2008. Retrieved 23 April, 2015 from https://www.cass.city.ac.uk/__data/assets/pdf_file/0013/34600/Mark-Long-5-Biennial.pdf

International Chamber of Shipping (2013). Shipping and World Trade. Retrieved 20 April, 2015 from http://www.ics-shipping.org/shipping-facts/shipping-and-world-trade

Jeffries (2014). Shipping in Global Capital Markets New York vs. London, 14 November, 2014.

Lee, P.T. and Lin, C. (2013). The cognition map of financial ratios of shipping companies using DEMATEL and MMDE. *Maritime Policy & Management: The flagship journal of international shipping and port research*, 40(2), 133-145.

Merikas, A., Gounopoulos, D. and Nounis, C. (2009). Global shipping IPOs performance. *Maritime Policy & Management: The flagship journal of international shipping and port research*, 36(6), 481-505.

OECD (2007). Report on shipping financing, June 2007. Retrieved 15 April, 2015 from http://www.oecd.org/sti/ind/47128870.pdf

Panayiotis, A.C., Christodoulos, L. and Photis, P.M. (2012). Valuation effects of mergers and acquisitions in freight transportation. *Transportation Research Part E: Logistics and Transportation Review*, 48(2012), 1221-1234.

Panayiotis, A.C., Christodoulos, L. and Photis, P.M. (2014). Corporate governance, financial management decisions and firm performance: Evidence from the maritime industry. *Transportation Research Part E: Logistics and Transportation Review*, 63(2014), 59-78.

Petrofin, S.A. (2008). *Public vs private equity in shipping*. University of Piraeus, 16 January, 2008. Retrieved 15 April, 2015 from http://www.petrofin.gr/upload/presentation_-_ted_petropoulos.pdf

Pointon, J. and El-Masry, A. (2007). Competitive Advantage and the Cost of Equity in International Shipping. T*he Journal of the Operational Research Society*, 58(9), 1138-1145.

Polesie, T. (2003). *A theoretical and empirical study of how capital structure influences the performance and enterprise value*. Bachelor thesis, University of Gothenburg, School of Business, Economics and Law.

PwC (2014). Capital Markets Shipping industry. Retrieved 10 April, 2015 from https://www.pwc.com/gr/en/events/assets/us-market-update.pdf

PwC (2015). *Clear weather on the horizon? Global Shipping Benchmarking Analysis.* Retrieved 25 April, 2015 from http://www.safety4sea.com/images/media/pdf/PwC-_Global-shipping-benchmarking2014.pdf

Syriopoulos, T. and Roumpis, E. (2009). Asset allocation and value at risk in shipping equity portfolios. *Maritime Policy & Management: The flagship journal of international shipping and port research*, 36(1), 57-78.

Syriopoulos, T. and Tsatsaronis, I. (2007). Value creation through corporate destruction? Corporate governance in shipping takeovers. *Maritime Policy &Management: The flagship journal of international shipping and port research*, 34(3), 225-242.

Syriopoulos, T. and Tsatsaronis, I. (2011). The corporate governance model of the shipping firms: financial performance implications. *Maritime Policy & Management: The flagship journal of international shipping and port research*, 38(6), 585-604.

Tsolakis, S.D., Cridland, C. and Haralambides, H.E. (2003). Econometric Modelling of Second-hand Ship Prices. *Maritime Economics & Logistics*, 5, 347-377 .