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Short-Run and Long-Run Performance of Global Shipping IPOs

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Abstract

This paper examines the short-run and the long-run performance of Initial Public Offerings (IPOs) that shipping firms have issued during the period 1997-2010 in major Stock Exchanges. The sample is underpriced at 31.74% on the first listing day. The underpricing is strongly positively related to the market size of the company at a 1% level of significance. In the long-run, the sample was found to be positively related to the proportion of equity offered at the first trading day at a 10% level of significance. Cumulative Abnormal Returns (CARs) indicate that shipping firms underperform after 1, 2 and 3 years, while both Buy-and-Hold Abnormal Returns and Wealth Relatives show that there is an overperformance in all time periods under examination.

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1. Introduction

This paper seeks to detect two anomalies of the Initial Public Offerings (IPOs), the short-run underpricing and the long-run underperformance. The first objective of this project is to test the factors that affect the underpricing of the Shipping IPOs. The data were retrieved for the period 1997-2010. The sample consists of 63 IPOs that have 14 different countries of domicile and are listed in 10 different Stock Exchanges.

The factors evaluated in order to investigate their impact on shipping IPO stock market performance are:

- The gross proceeds of the IPO issue
- The size of the company
- The proportion of equity offered
- The gearing level
- The age of the company
- The age of the fleet
- The reputation of the underwriter
- The reputation of the Stock Exchange
- The initial underpricing (is used only in the examination of the long-run performance).

The second objective of this project is to test the long-run performance of the IPOs in the first, second and third year after their listing. For the purposes of the study, the measures of Cumulative Abnormal Return (CAR), Buy-and-Hold Abnormal Return (BHAR) and Wealth Relative will be used as to evaluate the long-run performance. The next step is to investigate how the long-run performance is affected by some institutional factors. The benchmark used for each country's IPO is the corresponding index in which the listing took place.

We extract the majority of the data from the prospectuses and the financial reports of the listed companies that have issued IPOs during the period under examination. The

data will be analyzed using mainly econometric models with the support of the statistical package EViews and MS office products.

The main reasons that the period of 1997-2010 has been chosen for analysis are the growth that the shipping industry presented during this period and the fact that there is inadequate literature for shipping IPOs during this specific period. Shipping is a sector that is unique because of its particular characteristics, such as the market size of a shipping company, which is directly related to the company's assets (vessels), and the cyclical nature of the business. During the dot-com crisis, when the shipping rates were ranging at a very high level, researchers observed a wave of shipping IPO push. Another wave has recently been observed, during the period just before the credit crisis (2007-2010). Shipping companies were entering the IPO market in order to finance vessel acquisitions and vessels that would be delivered to them within the period of the credit crunch. The purpose of this paper is to present evidence about the shipping sector shares, such as their movement and their progress over a period of time. Despite the fact that we use techniques which have already been tested, we examine the effect various factors have on the short-run and long-run performance of shipping stocks by implementing new combinations using these factors in the regression models. The initial underpricing is a factor that its effect on the long-run performance of the shipping IPOs has not been examined so far to the best of our knowledge. We examine the relationship between the underpricing on the first listing day and the long run performance of the shipping IPO.

The remaining sections of the paper are organized as follows: Section 2 reviews the relevant literature about IPO underpricing, IPO underpricing in the shipping sector specifically and the long-run performance. The data, the sources from which they were retrieved and the factors that are used in the regression models, are described in section 3. In section 4 the methodology used both in short-run and long-run performance examination is analyzed. The short-run and long-run performance results are included in section 5. Finally, in section 6 the conclusion of the research is presented.

2. Literature Overview

2.1 IPO Underpricing

Initial Public Offering is a company's first listing in the Stock Exchange. This price is not affected from the Laws of Supply and Demand, but is agreed by both the company and the Investment Bank during the underwriting process, and finally approved from the Securities and Exchange Commission (SEC). The company has to collect a great deal of information to be considered and all its financial records have to be audited, in order to end up with a prospectus that totally complies with SEC and Sarbanes-Oxley Act 2002 regulations.

A company chooses to issue new stocks mainly because it wants to raise capital in order to expand its businesses, finance research and development or even pay off its debt. Except from creating liquidity, the company also increases its publicity, becomes known to a new group of potential consumers, revive its image and has the ability to receive better lending terms as the debt to equity ratio improves when the company goes public. On the other hand, the issuance of stocks also means expenses, some of which is the payment of the Advisory council, and the filing and listing fees. An additional cost that has to be considered is the Opportunity Cost of the corporate resources that is high due to the fact that the preparation of the offering is a lengthy process.

The method used to evaluate the companies that are about to be listed varies from sector to sector. Common methods used are the Discounted Free Cash Flow (DCF) and the Residual Income Model (RIM), however, Comparable Multiples is the most frequently used method by investment banks. In Comparable Multiples method the evaluation takes place by comparing measures of the company with the same measures of companies that share the same basic characteristics with the company under consideration and are already listed in the Stock Exchange. Such measures could be the price to earnings ratio (P/E), the EV/EBITDA ratio, the market to book equity ratio (M/B) and any other ratios that could lead the analyst to safe results about the company.

The time that the company chooses to enter the Stock Market, initially depends on two very important variables. The first variable is the company's level of development

and the second is the market conditions at the time, however the preparation starts months before the issuing of the stocks.

An IPO is a crucial decision for the company. There are several theories that attempt to explain why companies decide to go public. One theory supports that the issuing of an IPO gives the firm the opportunity to minimize the cost of capital, in order to achieve the optimal capital structure (Scott, 1976; M&M, 1963). One other theory supports that the creation of a public market, give the firms the currency of shares for acquisitions (Brau, Francis, and Kohers, 2003). Moreover, Maksimovic and Pichler (2001) support that many companies enter the IPO market to increase their publicity and their reputation. Additionally, going public allows more dispersion of ownership (Chemmanur and Fulghieri, 1999),and according to Zingales (1995) and Mello and Parsons (2000) the IPO offers the opportunity to a company to establish a market value, which will be different from its book value derived from the financial statements.

By studying the IPOs prospectuses, we come to the conclusion that shipping companies enter the IPO market for several reasons. According to the prospectuses, all shipping companies raise capital in order to acquire extra vessels, to repay their debt or for other corporate purposes that are not specified in more details. Moreover, shipping companies issue equity in order to finance general working capital purposes and the expansion of their activities. The examination of the sample lead us to the result that most of the companies need liquidity in order to finance more than one activities at once, for example either vessel acquisition and debt repayment, or debt repayment and general corporate purposes. According to the sample, the basic reasons for a shipping company to go public are to raise capital, through stock issue, in order to acquire vessels and repay its debt at a proportion of 57% and 51% respectively. Other reasons include the need for liquidity for general corporate purposes at a proportion of 33% and to finance general working capital purposes using net proceeds at a proportion of 29%.

Grammenos and Marcoulis (1996) examined in their study the reasons why the shipping companies enter the IPO markets and they concluded that the first reason was vessel acquisition, the second was the asset play role, the third the debt repayment and the final one other trading activities.

It is obvious that the basic reason behind the listing, despite the passage of time, is vessel acquisition. The purpose of the asset play is not among the reasons of going public for the companies of our sample or there is no reference in the companies' IPO prospectuses concerning this activity. On the other hand, we can observe that shipping companies use the proceeds of the stock issuing for different reasons than the previous study of Grammenos and Marcoulis such as general corporate purposes. It is possible though, that shipping companies are placing the asset play in general corporate purposes.

One of the most frequent irregularities that is observed in new markets for an IPO is the underpricing. Many researches and studies have been conducted in order to explain the underpricing and the factors that may cause it. The underpricing occurs when the offer price of a share is lower than the close price. This difference between the offer price of a stock and its closing price on the first trading day concerns mainly the issuer. The closing price of the stock represents the real price of the stock in the market, but in the case of IPOs the issuer does not benefit from the closing price but the offer price instead, when there is the phenomenon of the underpricing, the issuer obtains less than the possible raised capital (Daily, Certo, Dalton and Roengpitya, 2003; Ibbotson, Sindelar and Ritter, 1988). When underpricing occurs the wealth is being transferred from the founders of the firm to new investors (Filatotchev and Bishop, 2002). IPOs exhibit underpricing due to the information asymmetry between the issuers and the investors. Baron's (1982) principal-agent model supposes that the underwriter know more about capital market conditions and potential investors than the IPO issuer does. Underpricing is based on models which assume that the issuer is better informed about firm value than external investors are (Allen and Faulhaber, 1989). On the other hand, according to Rock (1986) and to Benveniste and Spindt (1989), adverse selection and "book-building" models assume that IPO investors have better information than the issuer about market conditions and demand for IPO shares. Many studies on IPOs, such as the studies of Reilley and Hatfield (1969), Brown (1970), Stoll and Curley (1970), Block and Stanley (1980) and Neuberger and LaChapelle (1983) were principally concerned with testing the likely profit for investors in these issues. The results of all the above studies specify that on average, IPOs offered positive surplus returns in the short run, and it is widely accepted that this was due to the underpricing of these new issues by the underwriters.

Additionally, IPO companies use underpricing in order to have more concentrated owners (Stoughton and Zechner, 1998). At this point, it has to be mentioned that most literature until the end of 1990s supports the notion that underpricing is explained from the existence of information asymmetry (Ritter and Welch, 2002). In the same research they also reveal that underpricing is a very common phenomenon over the last few years and mainly in the period of dot-com crisis, especially in US. It is essential to indicate that there are no shipping IPOs in our sample that have been issued during the dot-com crisis. Ritter and Welch (2002) found that the returns in the first listing day were 7.4% on average in the 1980s and increased to 11.2% and 18.1% in the early 1990s and the mid-1990s, respectively. During the dot-com crisis the average return on the first listing day was 65%. More recent literature stated that conflicts of interests and agency problems are responsible for the underpricing (Ljungqvist and Wilhelm, 2003).

2.2 Shipping IPO Underpricing

Shipping is a developing sector of the world economy. During the 80s and 90s most shipping companies were family-owned businesses and there was a limited number of listed shipping firms. From 2000 to 2010 the number of shipping companies listed increased dramatically. London's Stock Exchange was the main market with shipping stocks in the 1980s; later in the 1990s Oslo Stock Exchange and New York Stock Exchange were getting a bigger share of the shipping market. Today with leader stock markets in shipping stocks being the NYSE and NASDAQ, the shipping sector penetrates in markets all over the world.

The market value of a shipping company is often closely associated to the underlying value of the physical assets (vessels) (Syriopoulos, 2007). We have to take under consideration, that during the underwriting of a shipping company, one basic factor that affects the decision of the price is the assets of the company, thus, the fleet of the company. The companies under examination have a fleet that in most cases is composed of one or two types of vessels. According to the sample most shipping companies use either dry bulk carriers or tankers. Dry bulk carriers are vessels that carry homogenous, non-liquid, unpackaged cargo, "that can be poured, tipped or pumped into the holds or tanks of the ship" (Grammenos, 2002), such as, cement, coal

or grain. On the other hand, tankers are vessels, exclusively designed to carry liquid cargo, such as, oil, chemicals, wine, food oils, etc. The sample also contains companies that own containerships. Containerships are vessels that carry their cargo into containers and can be easily loaded and unloaded.

Grammenos and Marcoulis (1996) have examined the underpricing in a cross country analysis. Their sample consists of 31 shipping IPOs from seven different countries: Hong Kong, Singapore, USA, Sweden, Norway, Greece and Luxemburg. The IPOs were issued during the period 1983 to 1995 and the characteristics that were examined are the gross proceeds of the IPO issue, the size of the company, the proportion of equity offered, the gearing level, the age of the company and the age of the fleet. The data required for their research, were retrieved from the IPO prospectuses of the listed companies. Grammenos and Marcoulis (1996) concluded that the main reason for a shipping company to raise capital through the issuing of the IPOs is the acquisition of the vessels and secondary reasons are the asset play and the debt repayment. Additionally, they found out that the shipping IPOs tend to increase over time and so does the size of the shipping companies that enter the IPOs market. The proportion of equity offered through the IPOs was on average 98% from US companies, 29% from Hong Kong companies, 25% from Greek companies, while in Sweden, Norway and the remainder of the US companies the equity offered was between 42% and 48%.

The findings about the average age of fleets show that the age is increasing over time. Moreover, the Stock Exchanges are attracting on average more newly established companies, or companies that have been created through mergers or acquisitions of older companies. Grammenos and Marcoulis study indicates that the underpricing (5.32%) is of small magnitude but is statistically significant.

Finally, the most significant finding of their study is that gearing is positively related to underpricing and was the only factor found to have explanatory power over cross-sectional underpricing of the whole sample. Furthermore, gearing and the proportion of equity offered were found to be positively related to cross-sectional underpricing as far as the sample is concerned to be free from the shipping funds.

Merikas, Gounopoulos and Nounis (2009) in their paper “Global Shipping IPOs Performance”, examined 143 Global Shipping IPOs of companies that were listed during the period 1984-2007. This paper, among other subjects that analyzes, also

tests how some factors affect the underpricing of the shipping IPOs. The characteristics examined, were the age of the issuing firm, the market in which the Shipping IPOs were listed, the underwriter's reputation, the size of the company, the period of listing and the reputation of the Stock Exchange.

In order to examine the significance level of these determinants on their sample, they constructed a regression model to enhance the multivariate regression. The model, they came up with is:

$$P_t = a + \beta_1 \text{Log}(1+\text{AGE}) + \beta_2 (\text{MRK}) + \beta_3 (\text{UND}) + \beta_4 \text{Log}(\text{SIZE}) + \beta_5 (\text{H/C}) + \beta_6 (\text{EXC}) + \epsilon_i$$

Where AGE, is the age of the issuing firm is in operation since its constitution before the year of listing, MRK is the market where Shipping IPOs have been classified. UND is the Underwriters' reputation. SIZE is the logarithm of the market capitalization of an IPO, H/C describes the period of listing and finally EXC is the reputation of the stock exchange in which the issuing took place. The cross sectional regressions indicated that the Age is a statistically significant variable and the conclusion was that the "younger" firms were facing greater underpricing than the "older" firms. For the second determinant examined, and that was the Market that the IPO was listed, they found that the statistical result was insignificant, though, they concluded that the New Market IPOs perform better over a three years period and the Main Market IPOs yield better returns. Shipping firms listed with non reputable underwriters experienced severe level of underpricing (Merikas et. al. 2009). At the same study, the results of the research showed that the size of the company doesn't affect the underpricing, thus, there isn't evidence that bigger offers lead to a smaller amount of underpricing. Levis (1993) has also derived the same results. But, it's necessary to take into account that a country's valuations of firms and size of capital markets are directly attributable to the degree at which entrepreneurs receive better terms, (Moore, Bell and Filatotchev, 2010). Thus, there is a strong relationship between the size of the company and the Stock Market that Shipping Companies chose to issue their IPO.

The Cold Market IPOs have lower initial returns from the Hot Market IPOs, since investor's interest is low, but, in a Hot Market, in a six month period, returns are

decreasing because of the investor's realization that the stock is overvalued (Merikas et. al., 2009). The same study showed that when IPOs are issued in the main Global Markets, they experience greater level of underpricing than the IPOs that are issued in Secondary Markets. Thus, IPOs in the main Global Markets don't only have greater initial returns, but also in the long term.

Credit ratings are also playing a crucial role in the Shipping IPO pricing. Heng An and Kam C. Chan (2008), examined a sample of U.S. common share IPOs that were issued during the period 1986-2004, and found that the companies that have credit ratings when they go public experience significantly less underpricing than the companies that don't have credit ratings, and this because the existence of the credit ratings decreases the information asymmetry.

2.3 Long-Run Performance

For the purposes of the study, we calculate the long-run returns on a monthly basis in order to detect if there is underperformance or overperformance in the long-term. Underperformance occurs when the long-run return of the shipping company has a lower performance than the benchmark. Overperformance occurs when the long-run return of the shipping company has a higher performance than the benchmark's, on the same period.

Using the data after the formation of the IPO, analysts have closely examined the IPO performance over time. The long-run performance of the IPOs is a very interesting subject in a number of ways. From the investors' aspect, the comprehension of the IPO performance is a way to create arbitrage opportunities. From the issuers' aspect, the performance results of IPOs that belong to the same sector is a way to evaluate the perspective of their listing or even use it as a decision tool for the company's entrance in the IPO market.

Shiller (1990) supports the theory that issuers underprice the IPOs in order to attract investors. Aggarwal and Rivoli (1990) found that their sample was underperformed after a 3year period. Ritter (1991) concludes that possible explanations for the IPO underperformance are the risk mismeasurement, bad luck or fads and overoptimism.

Using a sample that consisted of 1,526 U.S. IPOs that went public during the period 1975-84, Ritter (1991) found that three years after the issuing, “the firms were significantly underperformed (by about -34.47%) using a set of comparable firms matched by size and industry” by using Cumulative Abnormal Returns (CAR) and the Wealth Relative factor (WR). Levis (1993) examined 712 IPOs that were listed on the London Stock Exchange during the period 1980-88 and found that the long-run underperformance is not a phenomenon unique to U.S. IPOs. Additionally found that the long-run underperformance extends beyond the three years and that the firms with the highest initial returns have the tendency to have the worst aftermarket performance. Loughran and Ritter (1995) concluded that the stocks issued during the period 1970-90 have been poor long-run investments for investors. Moreover, investors after five years received average returns of only 5% per year, moreover, they found evidence that underperformance is the product of the utilization of “windows of opportunity” by the issuer and the underwriter. Cai et. al. (1997) investigated the long-run performance of 180 IPOs that were listed on the Tokyo Stock Exchange during the period 1971-92 and concluded that “the post-issue deterioration in operating performance cannot be attributed to the reduced managerial ownership”. Hong Teoh et. al. (1998), through their paper provide evidence that IPOs with unusually high accruals in the first year of issuing, experience poor stock return performance after three years. They showed as well, that “IPO issuers in the most “aggressive” quartile of earnings have a three-year aftermarket stock return of approximately 20% than IPO issuers in the most “conservative” quartile”. Gompers and Lerner (2001) examined the underperformance of 3,661 U.S. IPOs that were issued during the period 1935-72 using both Cumulative Abnormal Returns and Buy-and-Hold Abnormal Returns. The findings showed that the underperformance disappears when CARs are used, but there is some evidence of underperformance when BHRAs are used. Merikas et. al. (2009) analyzed the long-run performance of 143 Global shipping IPOs listed during the period 1984-2007 in major Stock Exchanges. They concluded that an investor who buys immediately after listing and holds the shares for three years will make a loss of 15.72%, Merikas et. al. (2009) used both BHARs and CARs in their research.

3. Data

The Shipping IPO sample is constructed using the information given in each company's IPO prospectus. The sample consists of 63 shipping companies that were listed during the period 1997-2010, from USA, Norway, Greece, United Kingdom, Singapore, Bermuda, China, Netherlands, Switzerland, Monaco, Malaysia, Korea, Ireland and Bahamas. The companies under examination are listed in Stock Exchanges around the world, such as New York Stock Exchange, NASDAQ, Oslo Bors, Singapore Exchange, London Stock Exchange, Euronext Amsterdam Stock Exchange, Hong Kong Stock Exchange, Bursa Malaysia, Frankfurt Stock Exchange and Berlin Stock Exchange. In Table 3.1 there is a report of the sample in detail.

THE DISTRIBUTION OF THE SAMPLE IN TERMS OF THE MARKET

<i>Stock Exchange</i> ¹	<i>Nasdaq</i>	<i>NYSE</i>	<i>OSE</i>	<i>SGX</i>	<i>LSE</i>	<i>FWB</i>	<i>OTC</i>	<i>BER</i>	<i>KLSE</i>	<i>HKEX</i>
<i>Number of IPOs</i>	17	25	7	4	4	2	1	1	1	1

Table 3.1

We retrieved the requisite information for the IPO sample from Bloomberg database, Thomson one, Perfect Filings, SEC Filings and other well-known financial sources such as Yahoo Finance . Additionally, the official sites of some shipping companies proved to be useful in some cases. However, it is difficult to extract information about the prospectuses of some European shipping companies. In order to find the necessary data for these maritime firms, there was direct communication with the authorized personnel which in some cases it proved to be very useful.

The data that we collected from each prospectus were the date of issue, the Market of listing, the country of domicile, the number of shares offered, the offer price, the purpose that the company had issued the shares, the underwriting discount per share, the average age of the fleet at issuing date, the type of the fleet and the underwriter of

¹ NYSE: New York Stock Exchange, OSE: Oslo Stock Exchange, SGX: Singapore Stock Exchange, LSE: London Stock Exchange, FWB: Frankfurt Stock Exchange, OTC: Over the Counter, BER: Berlin Stock Exchange, KLSE: Malaysia Stock Exchange, HKEX: Hong Kong Stock Exchange.

the IPO. We also retrieved the company's year of foundation from the official sites, in order to be aware of each company's age. The companies' and indices' historical prices were extracted from Bloomberg database and we used the last Financial Statements before the issuing to extract the Total Debt and the Total Assets for each company. The historical risk free rates and betas were also extracted from Bloomberg.

3.1 Shipping IPOs Underpricing Factors

3.1.1 Gross proceeds

One factor that its effect on IPO performance is examined, is the gross proceeds of the shipping firm. We calculated the gross proceeds of the companies as the number of IPO shares multiplied by the offer price. The average gross proceeds of the sample is \$524,735,605. If we examine carefully, the companies' gross proceeds according to the country of domicile we can observe that United Kingdom has the highest average (\$1,928,719,993). On the other hand, the shipping company of Netherlands Fairmount Heavy Transport N.V which is listed in Oslo Stock Exchange has the lowest amount of gross proceeds (\$52,800,000). The average gross proceeds of the Greek shipping companies is close to but higher than the average of the sample (\$670,378,643). The average of the companies of Hong Kong is almost equal with the average of the sample. Finally, the rest of the countries of domicile, US, Norway, Bermuda, Singapore, Bahamas, Korea and at last Malaysia have shipping companies with lower average than the sample's. One can observe that in 2006 the IPOs with the highest average gross proceeds (\$1,466,235,839) were listed, while in 2001 and 2002 the IPOs with the lowest average \$62,680,000 and \$95,250,000 were listed, respectively. In 2004, 2005 and 2007 IPOs with an average almost \$400,000,000 were listed. In years 1997, 2008 and 2010 one can observe that the IPOs have an average very close to \$200,000,000. Figure 3.1.1 shows that 2006 was the year with the highest gross proceeds.

GROSS PROCEEDS IN TERMS OF THE ISSUING YEAR

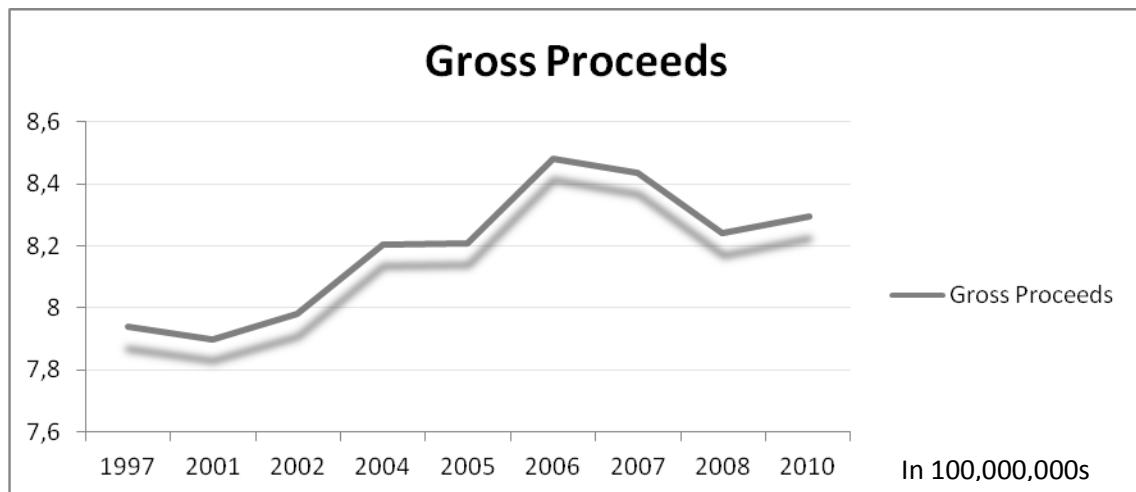


Figure 3.1.1

3.1.2 Size of the company

The sample gives a clear view of the size that companies have at issuing date. The sample has an average size \$824,166,166. The shipping companies that have United Kingdom as country of domicile, exhibit the highest average size which is \$5,692,868,947, Greek shipping companies are next with average size \$917,640,430, Norwegian and Chinese shipping companies are following with an average size \$464,181,482 and \$401,243,133, respectively. We calculate that shipping companies from United Kingdom have the largest proportion of size in the sample which is 43.85%, Greek shipping companies own the 35.34% of the total size of the sample. Finally, Norwegian and U.S. shipping companies own the 5.36% and 3.17%, respectively. If the size of the companies is analyzed through the passage of time, it is noted that in 2004 was the beginning of a significant increase in the size of the shipping companies entering the IPO Market, with average size of the year the \$306,898,100 while in 2002 the average size was only \$30,480,000. The peak of this increase is observed in 2007 that the average size reaches the \$1,668,448,982 although in 2008 there is a big fall and the average size of the shipping companies entering the IPO Market is \$175,930,000 (Figure 3.1.2).

SIZE IN TERMS OF THE ISSUING YEAR

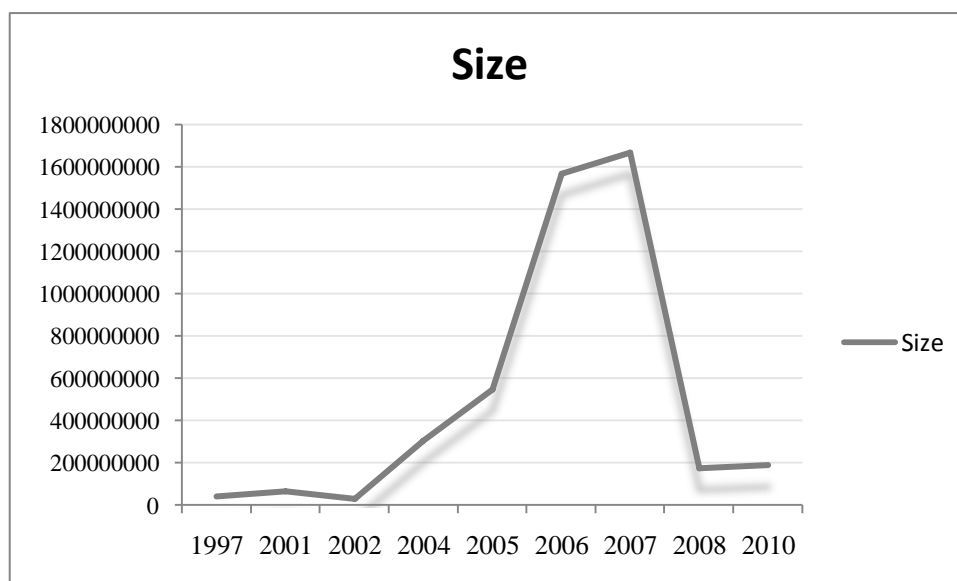


Figure 3.1.2

3.1.3 Proportion of Equity offered

Another factor, whose influence on underpricing of shipping IPOs will be examined, is the proportion of equity offered. At this point it is essential to underline that the most stock exchanges have requirements about the number of stocks that are publicly held or a minimum amount of capital that must be in public hands. In order to get listed in NASDAQ Stock Exchange a company has to have at least 1,250,000 publicly held shares outstanding or the market value of these stocks must be at least 45 million US \$. In the case of NYSE the requirements are quite different, there must be at least 1,100,000 publicly held shares outstanding or 2,000 shareholders must have on their property rights 100 or more shares, alternatively the market value of publicly held shares must be between a minimum of 9 million US \$ and a maximum of 40 million \$, depending on the market conditions. At the Stock Exchange of Oslo the requirements are different than those of the U.S. Stock Exchanges. The first requirement is that a minimum of 25% of the total shares must be publicly held. The second one is that the market value of shares must be 30 million NOK and in the case the equity certification must be at least 8 million NOK. The last requirement, which is qualitative, is that the company must exist at least 3 years. In Malaysia Stock Exchange at least 25% of the Company's share capital must be publicly held and a

minimum of 1.000 public shareholders must hold not less than 100 shares each. In Hong Kong and in Singapore a minimum of 25% of the total shares must be publicly held. Moreover the same requirement exists in the German Stock Exchanges of Berlin and Frankfurt. Finally the London Stock Exchange has no requirement for listings.

In the sample the maximum amount of stocks that one shipping firm offers is 1,400,000,000 and this company is Sinotrans Shipping which is listed in the Stock Exchange of Frankfurt, while the minimum amount that is offered is 2,700,000 stocks for both Nordic American Tankers and Trailer Bridge Inc. The average equity offered from the companies that are listed in NYSE is 9,680,583 stocks while the minimum is 2,700,000 stocks and the maximum is 28,570,000 stocks of Nordic American Tankers and Seaspans Corporation, respectively. The firms that are listed in NASDAQ have an average equity offered 11,585,149 stocks, while the minimum is 2,700,000 stocks that is the equity offered from Trailer Bridge Inc., while the maximum is 22,000,000 stocks offered by Seenergy Maritime Corporation. In Oslo Stock Exchange the company with the minimum equity offered, is Awilco ASA with 3,000,000 stocks while the company with the maximum is Camillo Eitzen with 420,000,000 stocks, finally the average shares of the listed shipping companies in Oslo Stock Exchange is 105,466,308 stocks. Furthermore, in Singapore Stock Exchange the company with the minimum quantity of stocks is First Ship Lease Trust with 220,000,000 stocks and the company with the maximum is Rickmers Maritime with 274,350,000 stocks outstanding while the average is 258,635,281 stocks. In London Stock Exchange the minimum offering of equity is 8,423,333 shares and the maximum is 25,531,915 shares, the offering of Globus Maritime Carriers and the offering of Golden Port Holdings, respectively. Additionally, the average proportion is 15,923,156 stocks. In the Stock Exchange of Berlin there is only the US Shipping Partners with 6,000,000 stocks outstanding and in Frankfurt we have two companies, STX Pan Ocean Co Ltd with 600,000,000 stocks and Sinotrans Shipping with 1,400,000,000 shares outstanding. Moreover, in Malaysia we have the Shin Yang Shipping Corporation BERHAD with 305,186,000 shares. We can observe that shipping companies with a high number of shares outstanding have very low initial prices. Figure 3.1.3 shows that there is low volatility proportionally to the equity offered from the shipping companies, after 2008 though, there is a steady and strong increase.

PROPORTION OF EQUITY IN TERMS OF THE ISSUING YEAR

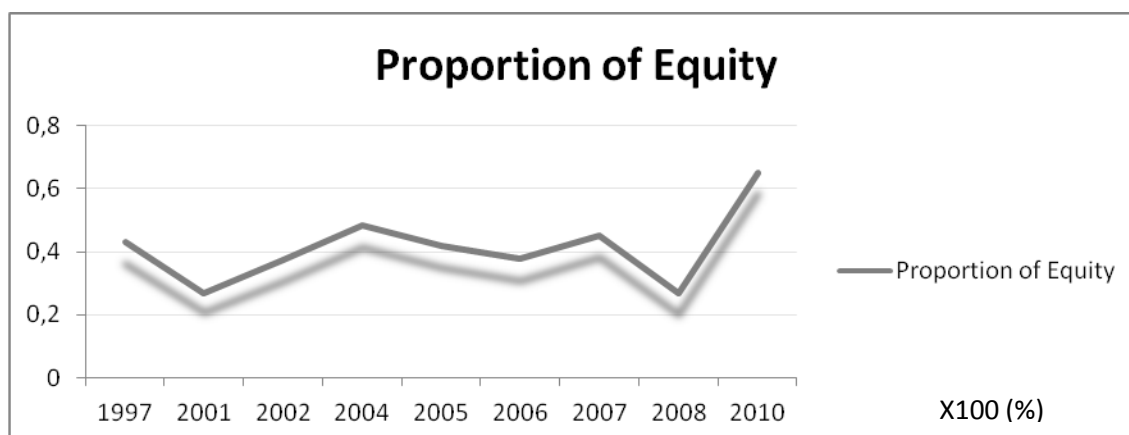


Figure 3.1.3

3.1.4 Gearing level

A very important factor to be examined is the gearing level of each company. We will examine if the gearing level affects the underpricing of an IPO. The gearing level is estimated as the total debt to total assets expressed as a ratio. The average gearing of the shipping companies of the sample is 0.54. If each country is investigated individually, the average gearing level of the Greek companies is 0.51, almost the same with the average of the sample, while the average gearing for US shipping companies is 0.54 which is exactly the same with the average of the sample. The average for UK shipping companies is 0.56, slightly higher than the average of the sample. The Norwegian companies have an average gearing ratio of 0.52. Companies whose domicile countries are Netherlands and Monaco have a gearing level of about 0.37 and 0.39, respectively. Moreover, the average gearing for shipping companies of Bermuda is 0.51 very close to the average of the sample. In Asian countries, maritime firms based in Singapore have an average of 0.39. The Korean shipping company has an average of 0.58 and the Malaysian shipping company has a gearing ratio of 0.18 which is the lowest of our sample. Hong Kong firms have an average of about 0.52. The shipping company with the highest gearing ratio (1.42) is Ultrapetrol Limited. There are in total 3 out of 63 shipping companies with no long term debt at the time of entering the IPO Market. Figure 3.1.4 shows the gearing level of the shipping company during the issuing.

GEARING LEVEL IN TERMS OF THE ISSUING YEAR

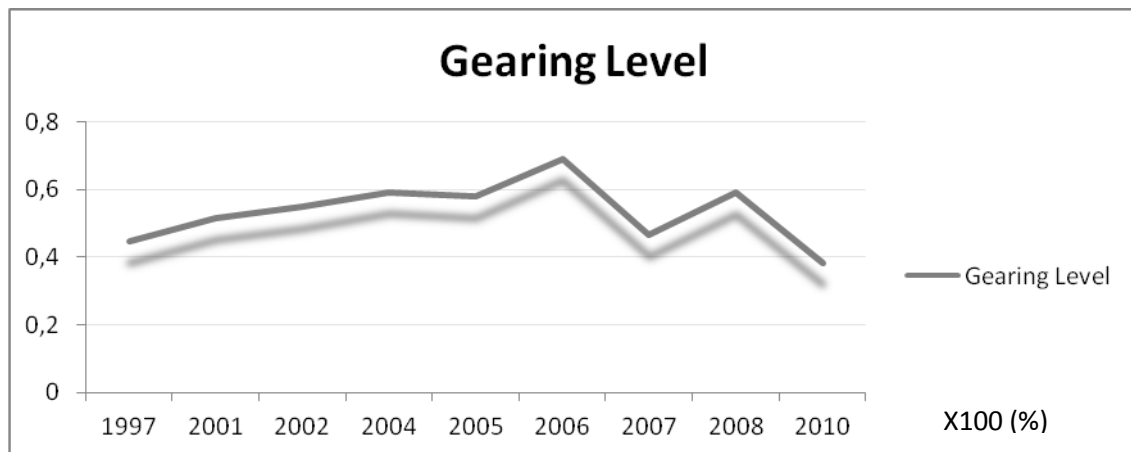


Figure 3.1.4

3.1.5 The age of the company

We examine if the age of the company at the time of the issuing is a factor that influences the shipping IPO underpricing. The vast majority of the shipping companies in our sample, is newly established companies and have 1-15 years of operation before the issuing date. The average age of the shipping companies is 16.43 years. At this point it is essential to mention that if we exclude from the sample four companies whose age is close to a hundred, we conclude that the 93.65% of the shipping companies have average age 9.72 years. The 46% of the sample are shipping companies that entered the IPO Market during their first or their second year of operation.

3.1.6 The age of the fleet

One other factor, whose effect on the underpricing of IPOs is going to be tested, is the age of the fleet. At this point it is underlined that the sample is separated into dry bulk sector, containership sector and tanker sector.

The average age of fleet of the sample is 11.1 years. The average age of the dry bulk companies' fleet is equal to 11 years, while the average age of fleet for tanker companies is 10.7. The average age of the containerships is 7.8 years; we have to underline the fact that in our sample we have to test only 5 container companies, of which we only have information for the 3 of them concerning the age of their fleet. The shipping company with the oldest fleet is Trailer Bridge Inc. with average age of

fleet 27.9 years and Horizon Lines with the youngest fleet, with average age of fleet 0.75 years.

Moreover, in a cross-country analysis, we can see the country with the youngest fleet is Singapore with an average of 2 years. Bermuda and Netherlands have an average age of fleet of 6 years and Hong Kong has an average of 6.1 years which is very close to Monaco with an average of 6.6 years. Greek companies have an average of 10.7 years, very close to the sample's average, Norway with an average of 12.3 years and UK and Malaysia with an average of 13.6 and 13.95 years, respectively. Finally, US shipping companies have the highest average of 14.2 years.

3.1.7 The reputation of the underwriter

This part will examine whether the underwriters' reputation has any effect on the prices of the IPOs or not. In the sample 26 IPOs out of 61 have the appropriate information available and have non famous underwriters and the remaining 35 have famous. At the top is Singapore, in which all shipping companies of the sample have reputable underwriters. In US 80% of the companies and 87.5% in Bermuda have famous underwriters. Then, there are the shipping companies of Hong Kong with a percentage of 67% and UK with a percentage of 60%. We can see that the countries with the lowest percentages are Greece with 44% and Norway with 17%. Finally, we come to the conclusion that in Korea, Malaysia, Netherlands and Monaco the shipping companies of the sample do not have reputable underwriters.

3.1.8 The reputation of the Stock Exchange

Moreover, we examine the extent at which the reputation of the Stock Exchanges affects the underpricing of the IPOs. In the sample, 73% of the shipping companies are listed in famous stock exchanges (NYSE, NASDAQ, and London). The rest of the companies are listed in un reputable Stock Exchanges such as Singapore, Malaysia, Berlin, Frankfurt, Oslo and Hong Kong.

All Greek shipping companies of the sample are listed in reputable stock exchanges, specifically, 18 out of 20 are listed in the U.S. markets and the remaining 2 in London Stock Exchange. All the U.S. shipping companies are listed in U.S. markets except

from one which is listed in the Berlin Stock Exchange. The same results are derived for the shipping companies which are based in Bermuda and in the UK, only 1 out of 9 is listed in Hong Kong Stock Exchange and 1 out of 6 is listed in OTC market. The Norwegian shipping companies are listed in Oslo market. The Hong Kong shipping companies are listed in non reputable markets except from one company. The shipping companies of Malaysia and Singapore are listed in the local markets. Finally, the shipping company of Korea is listed in Frankfurt market.

4. Methodology

4.1 Short-Run Performance Regression

For the purpose of the study, the regression analysis statistical tool is used, in order to investigate the relationships between the variables. In the first part of investigation in the study, cross sectional regression analyses are undertaken to determine the effect of the independent variables on the dependent variable. In this case, the dependent variable is the continuously compounded returns of the IPO, since the aim is to examine the effect the independent variables have on underpricing. The independent variables are the gross proceeds of the IPO issue, the size of the company, the proportion of equity offered, the gearing level, the age of the company, the age of the fleet, the reputation of the underwriter, and the reputation of the Stock Exchange. The IPO underpricing is an effect that takes place in every Market round the world and in every sector. Although it is a widespread effect, very little work has been carried out on the performance of IPOs in shipping sector. According to Syriopoulos (2007), shipping companies that offer more equity to the public, experience higher underpricing than those offering less equity. The models predict that underpricing is more severe in the case of smaller issue sizes, Ranjan (2004). Shipping companies that entered the Market during the hot period experience more underpricing, than the companies listed during the cold period. Furthermore, young shipping companies exhibit higher underpricing than those that have a long operation history before the issuing, Merikas et. al. (2009).

A regression model has been constructed for this purpose that will be modified according to the circumstances:

$$R = a + b_1(\text{GP}) + b_2[\log(\text{SZ})] + b_3(\text{EO}) + b_4(\text{D/A}) + b_5[\log(1+\text{age01})] + b_6[\log(1+\text{age02})] + b_7(\text{RU}) + b_8(\text{RSE}) + \varepsilon_i$$

Where R are the returns, GP are the gross proceeds, SZ is the size of the company, EO is the proportion of equity offered, D/A is the gearing level, age01 is the age of the company, age02 is the average age of the fleet, RU is the reputation of the underwriter, and RSE is the reputation of the Stock Exchange.

The gross proceeds of the IPO issue are calculated by the number of issued shares times the offer price. The size of the company is the number of the issued shares times the close price at the first trading day. The proportion of equity offered is the number of shares that are issued related to the company's total equity. The gearing level is determined as the total debt that the company had before the issuing divided by the total assets before the issuing. The age of the company are the years of company's operation, from its day of foundation till the issuing date. The age of the fleet is the average age of all company's vessels at the issuing date. The reputation of the underwriter is a qualitative factor and not a quantitative and as a result a dummy variable is used in order to examine it. We recognize as reputable underwriters the following: Citigroup, Goldman and Sachs, J.P Morgan, Merrill Lynch, UBS, Bank of America Securities LLC and Lehman Brothers. The reputable underwriters are represented from the number "1", and the non reputable underwrites, which are all the underwriters except the reputable, are represented from the number "0". The reputation of the Stock Exchange as it is also a qualitative factor is treated in the same way as the reputation of the underwriters. This time the reputable Stock Exchanges are: NYSE, NASDAQ and LSE and are represented from the number "1", and the non reputable are all the Stock Exchanges except the reputable and are represented from the number "0".

4.2 Long-Run Performance Measures

The long-run performance is examined in a sample that consists of 51 shipping IPOs issued during the period 1997-2008. A reduced sample is used, because the initial consisted of IPOs that were issued in year 2010 and it is not possible to examine their long-run performance. The long-run performance is analyzed on a monthly basis and

we measure the performance of 51 shipping IPOs for one and two year periods and 42 shipping IPOs for a three year period, the sample is decreased due to the fact that some IPOs were issued during the year 2008. Table (4.1.1) shows a distribution of the sample in terms of the market that the issuing took place in. For the long-run performance analysis, we use monthly returns of the stocks, the time periods examined are 12, 24 and 36 months. The measures that are used are: cumulative abnormal returns (CAR), buy-and-hold returns (BHR) and wealth relatives (WR). Barber and Lyon (1997) and Kothari and Warner (1997) argue that the BHAR represents a better method than CAR. In addition, Lougran and Ritter (2000) demonstrate that a BHAR relative to a benchmark portfolio is superior to the Fama and French (1993) three-factor model when estimating post-IPO performance. The next step is to investigate how some institutional factors affect the long-run performance by running cross sectional regressions. The factors that will be examined are the same that were used in order to examine their effect on underpricing, i.e. the gross proceeds of the IPO issue, the size of the company, the proportion of equity offered, the gearing level, the age of the company, the age of the fleet, the reputation of the underwriter and the reputation of the Stock Exchange. For the purpose of this regression, an extra explanatory factor is used; we have used initial underpricing as a determinant of the long run performance. This factor is introduced in the regression model as a dummy variable. The value (1) corresponds to the shipping IPOs that exhibited underpricing in the short-run and the value (0) to those that did not. A regression model has been constructed for this purpose that will be modified according to the circumstances:

$$\text{BHAR} = a + b_1(\text{GP}) + b_2[\log(\text{SZ})] + b_3(\text{EO}) + b_4(\text{D/A}) + b_5[\log(1+\text{age01})] + b_6[\log(1+\text{age02})] + b_7(\text{RU}) + b_8(\text{RSE}) + b_9(\text{IU}) + \varepsilon_i$$

Where BHAR are Buy-and-Hold Abnormal Returns, GP are the gross proceeds, SZ is the size of the company, EO is the proportion of equity offered, D/A is the gearing level, age01 is the age of the company, age02 is the average age of the fleet, RU is the reputation of the underwriter, RSE is the reputation of the Stock Exchange and IU is the initial underpricing.

THE DISTRIBUTION OF THE REDUCED SAMPLE IN TERMS OF THE MARKET

<i>Stock Exchange</i> ²	<i>Nasdaq</i>	<i>NYSE</i>	<i>OSE</i>	<i>SGX</i>	<i>LSE</i>	<i>FWB</i>
<i>Number of IPOs</i>	16	23	3	3	4	2

Table 4.1.1

4.2.1 Cumulative Abnormal Returns

As already mentioned, monthly raw returns are used for the purposes of the study, the formula for their calculation is:

$$R_{st} = (P_{st} - P_{st-1}) / P_{st-1} \quad (1)$$

Where:

R_{st} : The Rate of Return of the shipping company (s) in the month (t).

P_{st} : The closing price of the shipping company (s) in the month (t).

P_{st-1} : The closing price of the shipping company (s) in month (t-1).

Expected Rate of Returns of the shipping companies on the benchmark, which is the market that the issuing took place, during the corresponding time period are calculated by the following formula:

$$R_{st}^* = a_s + \beta_s R_{mt} + \varepsilon_t \quad (2)$$

Where:

$E(R_s)$ = Expected Rate of Return of the shipping company (s) in the month (t).

a_s = Measures the mean return on security (s) over the examined period.

β_s = The systematic risk of the shipping company (s).

R_{mt} = The observed Return of the market (m) in the month (t).

² NYSE: New York Stock Exchange, OSE: Oslo Stock Exchange, SGX: Singapore Stock Exchange, LSE: London Stock Exchange, FWB: Frankfurt Stock Exchange.

According to Ritter (1991), Levis (1993), Syriopoulos et. al. (2007), Merikas et. al. (2009), for the calculation of the Abnormal Rate of Returns the following formula is used:

$$AR_{st} = r_{st} - r_{mt} \quad (3)$$

Where:

AR_{st} = The Abnormal Rate of Return of the shipping company (s) in the month (t).

r_{st} = The Rate of Return of the shipping company (s) in the month (t).

r_{mt} = The Rate of Return of the market (m) in the month (t).

The next step is to calculate the equally weighted arithmetic average of the market adjusted returns using the formula:

$$AR_t = 1/n \sum_{s=1}^n AR_{st} \quad (4)$$

Where:

AR_t = The equally weighted arithmetic average.

n = The number of the shipping IPOs in the month (t).

Finally, the Cumulative abnormal Returns (CARs) are calculated in order to detect if there is overperformance or underperformance. Overperformance occurs when CAR has a positive value, while a negative value of CAR indicates underperformance.

$$CAR_T = 1/n \sum_{t=1}^t AR_t \quad (5)$$

Where:

CAR_T = Cumulative Abnormal Return from month (t) to month (t+1).

The calculation of the t-statistic is a necessary step in order to check the statistical significance of the abnormal performance. According to Brown and Warner (1985) and Ajlouni (2009), the first step is to calculate the Standardization of the average Abnormal Returns (SAR).

$$SAR_{st} = AR_{st} / SD_{ARt} \quad (6)$$

Where:

SAR_{st} = Standardization of the average Abnormal Return

AR_{st} = Abnormal Return

SD_{ARt} = Standard Deviation

Then the t-statistic is retrieved from the formula:

$$t\text{-statistic} = \sum_{S=1}^n SAR_{s,t} / \sqrt{n} \quad (7)$$

4.2.2. Buy and Hold Abnormal return

The Buy-and-Hold Abnormal Return (BHAR) is the difference between the holding-period returns of stock and the market return:

$$BHAR_{st} = [\prod_{t=1}^T * (1+r_{st})] - [\prod_{t=1}^T * (1+r_{mt})] \quad (8)$$

Where:

r_{st} = The Rate of Return of the shipping company (s) in the month (t).

r_{mt} = The Rate of Return of the market (m) in the month (t).

The mean $BHAR_{st}$ over the period T is:

$$BHAR_{st} = 1/n \sum_{S=1}^n BHAR_{sT} \quad (9)$$

4.2.3 Buy and Hold Returns and Wealth Relative

Buy and Hold Return (BHR) is another measure of the long-run performance of IPOs, classified as the geometrically compounded return. Market and stock returns are calculated by using the same formula:

$$BHR_{st} = \prod_t^T (1+r_{st}) - 1 \quad (10)$$

Where:

r_{st} = The Rate of Return of the shipping company (s) in the month (t).

t = The first month of the listing.

T = The end of the time window period.

The difference between the BHRs of the stock and the BHRs of the market gives the Benchmark-Adjusted Buy and Hold Returns. According to Ajlouni (2009), when the value of BAR_{st} is higher than zero, the stock is over-performing the benchmark.

Wealth Relative (WR_{sT}) is defined as the stock's Buy-and-Hold Return over the benchmark's Buy-and-Hold Return, during a period of (T) months:

$$WR_{sT} = (1 + BHR_{sT}) / (1 + BHR_{mT}) \quad (11)$$

Where:

WR_{sT} = The Wealth Relative of the shipping company (s) during the period (T).

BHR_{st} = The Buy-and-Hold Returns of the shipping company (s) during the period (T).

BHR_{mT} = The Buy-and-Hold Returns of the market (m) during the period (T).

The individual wealth relatives are aggregated across the N stocks to calculate the aggregate WR, as:

$$WR_T = \sum_{t=1}^N WR_{st} \quad (12)$$

Where:

WR_T = The aggregated Wealth Relative during the period (T).

5. Short-Run and Long-Run Results

5.1 Underpricing Regression Results

Underpricing Tests

Regression Models	Intercept	Gearing Level	Gross Proceeds	Size	Equity Offered	Age of Company	Age of Fleet	Market Reputation	Underwriter Reputation	R ²
(A)	-1.95 (-1.37)	1.05 (0.99)	0.12 (0.74)	-	0.36 (0.67)	0.10 (1.52)	0.45 (1.54)	0.09 (0.39)	-0.2 (-1.10)	0.158
(B)	-4.18 (-3.90)	0.79 (0.85)	-	0.43 (3.30)	0.12 (0.25)	0.06 (1.01)	0.30 (1.17)	0.09 (0.46)	-0.13 (-0.78)	0.348

Table 5.1.1

When we run a regression analysis, it is very important to test if there is correlation between the variables in order to avoid multicollinearity. Multicollinearity is a phenomenon where two or more variables in a multiple regression are highly correlated and consequently the regression results are not reliable. In order to check if the variables are correlated, it is necessary to construct a correlation matrix. The correlation matrix gives us information about the volume of correlation between the variables. We run the correlation matrix that includes both the dependent and independent variables. According to Gujarati (2004), two variables are highly correlated when the value is bigger than 0.8. The outcome is that two out of nine variables that are examined are highly correlated and gross proceeds and the size of the company are correlated at a 92.4% degree. Thus, if we want the results to be unbiased, we cannot use a regression model that includes both factors.

We examine many regression models using different combinations of the independent variables and we conclude to the following models:

- A. $R_p = a + b_1[\text{Log}(\text{GP})] + b_2(\text{EO}) + b_3[\text{Log}(1 + \text{D/E})] + b_4[\log(1 + \text{age01})] + b_5[\log(1 + \text{age02})] + b_6(\text{RU}) + b_7(\text{RSE}) + \varepsilon_i$ and
- B. $R_p = a + b_1[\log(\text{SZ})] + b_2(\text{EO}) + b_3[\text{Log}(1 + \text{D/E})] + b_4[\log(1 + \text{age01})] + b_5[\log(1 + \text{age02})] + b_6(\text{RU}) + b_7(\text{RSE}) + \varepsilon_i$

Where R_p is the continuously compounded return of the first trading day, we calculate the returns using the first offering price and the first close price of the share. GP is the

gross proceeds, SZ is the size of the company, EO is the proportion of equity offered, D/E is the gearing level, age01 is the age of the company, age02 is the average age of the fleet, RU is the reputation of the underwriter, and RSE is the reputation of the Stock Exchange.

It is essential to mention that many regression models with different combinations of the variables have been checked in order to end up with the two models above. The criterion for our choice is the R-squared. “R-squared gives information about how well the model containing the explanatory variables that was proposed, actually explain variations in the dependent variable” (Brooks, 2008). In the first regression model that we use, R-squared is 15.8% and 34.8% in the second, which actually means that the regression models that we use fit well on the data. In addition, Adjusted R-squared was taken into account in order to check if a variable should be included in the regression model or not. The null hypothesis of the regressions is that there is no relationship between the dependent and the independent variable. The 31.74% of the shipping companies that are included in the sample are underpriced, this can be interpreted that the underpricing in the sample is of great magnitude.

The gearing level is found to have a positive relationship with the underpricing at the first trading day, but P-value is too high and there is no evidence that there is a relationship between the gearing level and the underpricing, in contrast with Grammenos and Marcoulis (1996) who concluded that gearing has explanatory power over cross sectional underpricing of the whole sample.

The regression results reveal that the age of the fleet is positively related to the IPO underpricing of the first trading day. This means that when a company owns a more mature fleet, is more likely to become a subject of underpricing, than a company that owns a younger fleet. However, P-value is too high and the null hypothesis cannot be rejected, thus, there is not a statistically significant relationship between the two variables.

The results that were retrieved from the regression between the continuously compounded returns of the first trading day and the age of the company didn't generate any evidence that the two variables are related. This time there is a positive relationship between the variables, but it is not a statistically insignificant one.

The reputation of the underwriter is not statistically significant related to the underpricing, although there is a negative relationship between them. This can be interpreted that an IPO that has issued by an unreputable underwriter is more likely to exhibit underpricing in the first trading day, than an IPO that has been issued by a reputable underwriter. In their research, Merikas et. al. (2009) point out that their results “clearly show that all Shipping firms listed with non reputable underwriters experienced severe level of underpricing”. Many researches support the notion that the greatest the reputation of the underwriter, the less the underpricing for the share of the issuer. This means that when famous underwriters are related with the IPO procedure, the initial price represents in a better manner the issuer’s reliability (Beatty, Ritter, 1986; Carter, Manaster, 1990; Chemmanur, Fulgieri, 1994).

The regression analysis between the continuously compounded returns of the first trading day and the reputation of the market indicates that there is no strong relationship between them. The coefficient of the regression has a positive sign. The information that is disclosed from this regression indicates that when a shipping company chooses to issue an IPO in a reputable market, it is more possible to experience underpricing in the first trading day, than a company that chooses to issue in an unreputable market.

The proportion of equity offered and the IPO underpricing are not related in a statistically significant level. Consequently, the null hypothesis cannot be rejected. The coefficient of the regression reveals that there is a negative relationship. This means that a shipping company that issues a bigger proportion of equity is more possible to become the subject of a greater underpricing. While Grammenos et. al. (1996) found that there is a positive and statistically significant relationship for a reduced sample.

The size of the company is found to be strongly and positively related to the underpricing at a 1% level of significance at. The result indicates that when a shipping company of a greater size enters the IPO market it is more likely to become subject for a greater underpricing during the first trading day. Ritter (1984), Chalk and Peavy (1990), Ritter (1991) and Ibbotson et. al. (1994) don’t concur with this outcome.

The regression results are similar to those of Grammenos et. al (1996) that show that there is a positive but not a strong relationship between the gross proceeds and the underpricing of the first trading day.

5.2 Long-Run Performance

CAR – BHAR – WEALTH RELATIVE

Months	No of firms trading	CARs	BHARs	Wealth Relatives
1	51	-0,060	-0,021	0,979
2	51	-0,077	0,021	1,021
3	51	-0,107	0,003	1,000
4	51	-0,172	-0,027	0,969
5	51	-0,231	-0,019	0,979
6	51	-0,244	0,024	1,025
7	51	-0,253	0,030	1,029
8	51	-0,257	0,032	1,031
9	51	-0,292	0,005	1,007
10	51	-0,376	-0,054	0,947
11	51	-0,324	0,089	1,091
12	51	-0,361	0,000	1,001
13	51	-0,401	-0,009	0,993
14	51	-0,404	0,029	1,030
15	51	-0,431	0,005	1,007
16	51	-0,490	-0,013	0,986
17	51	-0,488	0,044	1,043
18	51	-0,548	-0,017	0,984
19	51	-0,543	0,050	1,048
20	51	-0,591	-0,009	0,992
21	51	-0,637	-0,007	0,994
22	51	-0,638	0,035	1,036
23	51	-0,658	0,017	1,015
24	51	-0,671	0,021	1,019
25	42	-0,666	0,026	1,032
26	42	-0,684	0,031	1,032
27	42	-0,749	-0,021	0,980
28	42	-0,775	0,007	1,004
29	42	-0,848	-0,032	0,970
30	42	-0,898	0,000	1,002
31	42	-0,895	0,049	1,049
32	42	-0,952	-0,015	0,986
33	42	-0,992	0,004	1,003
34	42	-1,011	0,013	1,011
35	42	-1,013	0,060	1,088

Table 5.2.1

5.2.1 CAR Empirical Results

Table 5.2.1 depicts Cumulative Abnormal Returns (CARs), Buy-and-Hold Returns (BHARs) and Wealth Relatives for the 3 year period after the shipping IPO issuing. For the 1 year and 2 years periods we examine 51 shipping companies, while for the three years period we examine 42 companies. Only 5 adjusted monthly average returns are positive and all the cumulative monthly average adjusted returns are negative. Due to the fact that it is unavoidable to lose an observation when Returns are estimated, the sample has 35 observations and there is no value for the 36th month. None of these average abnormal returns are statistically different from zero. After the three year period of secondary market trading, the CAR is -97.514%. The maximum negative abnormal return is observed in the 10th month (-8.42%), while the minimum negative abnormal return is observed is 0.10% in the 22nd month. The maximum positive return is 5.18% and occurs in the 11th month while the minimum positive return is 0.18% and occurs in the 17th month. The results of the long-run performance using the Cumulative Abnormal Returns reveal that there is an underperformance during all the months. The figure 5.2.2 shows that there is a strong and steady decrease of CARs in the passage of time.

MONTHLY CUMULATIVE ABNORMAL RETURNS

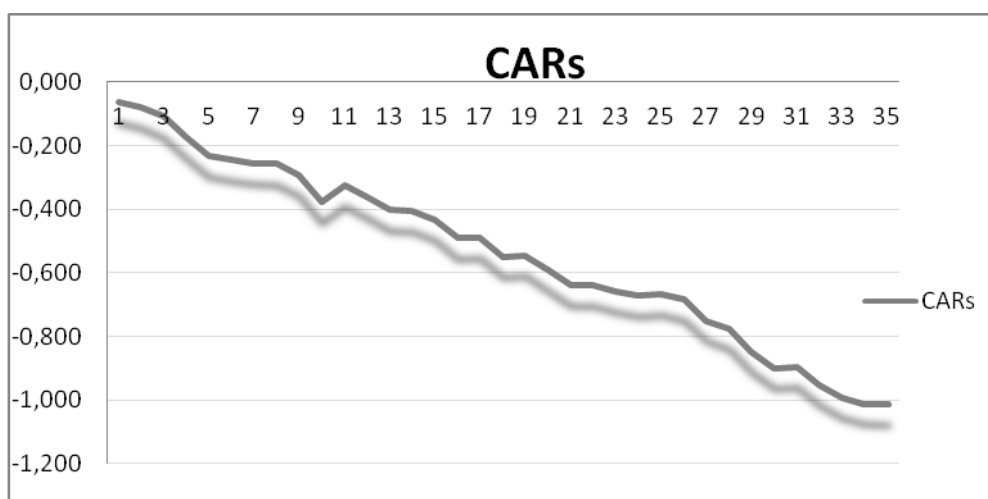


Figure 5.2.2

5.2.2 BHAR Empirical Results

There are many previous studies which state that the examination of the long-run performance using CARs, may lead to false results because CARs are a biased predictor for long term (Lyon et. al., 1999; Ajluni, 2009). Thus, the long-run performance of shipping IPOs will be further analyzed by using the BHAR measure. Table 5.2.1 reveals that the mean BHARs are positive. Only 12 out of 35 months have a negative value of mean BHAR. Three years after the issuing, the mean BHAR is estimated 6.03%. Thus, the BHAR measure indicates that after a three year period there is an overperformance of about 6.03% for the sample that consists of 42 shipping companies. Two years and one year after the issuing, the mean BHAR is estimated to be equal to 3.05% and 0.04%, respectively, for the sample that consists of 51 shipping companies. The results show that there is evidence of overperformance for all the periods under examination. As we can observe in Figure 5.2.3, there is high volatility in BHARs during all the months under examination. The lower value of the BHARs is observed during the 10th month, while the higher is observed immediately after, in the 11th month.

The results of this study indicate that new shares of Shipping Companies, offer to investors positive returns if they buy stocks during the offering period or at the end of the first trading day. Consequently, according to buy and hold strategy, investors that buy IPOs of Maritime firms at the offering period and they hold them for one, two or three year period, obtain positive returns because the offer price is lower than the price of those time windows. However, according to BHAR measure, the most beneficial investment to make in the shipping industry is to buy stocks during the 10th month and sell during the 11th month, simultaneously, for someone who bought a shipping IPO it is also beneficial to sell during the 11th month.

MONTHLY BUY-AND-HOLD ABNORMAL RETURNS

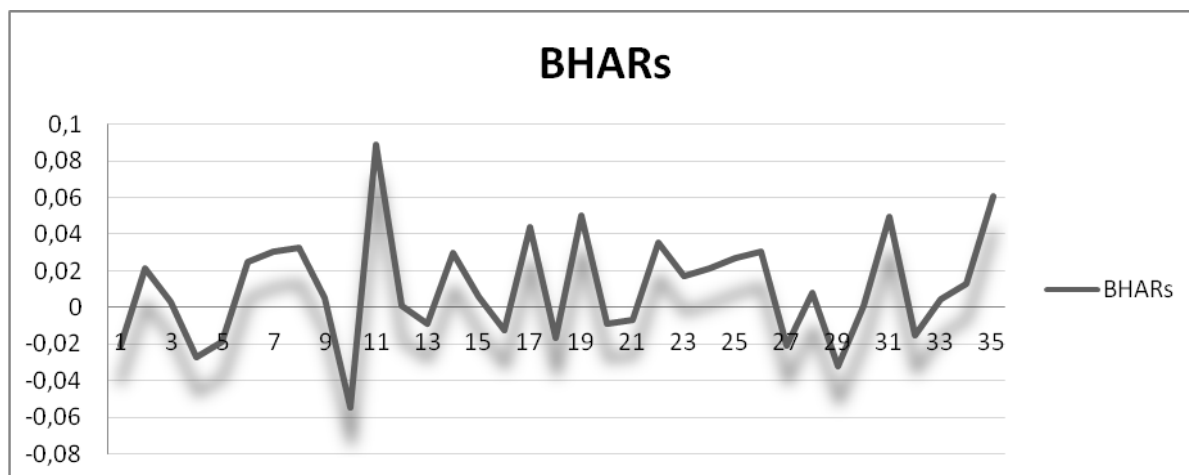


Figure 5.2.3

5.2.3 Wealth Relative Empirical Results

The Wealth Relative Benchmark is 1. When the wealth relative is higher than 1, the IPOs overperform the Market Benchmark. On the other hand, when the Wealth Relative is below 1, the IPOs underperform the Market Benchmark. As shown in Table 5.2.1, there are 12 out of the 35 observations with a value lower than 1. Thus, Wealth Relative measure reveals that there is IPO underperformance in 12 months. It is obvious, that during the remaining months there is IPO overperformance. When there is a comparison of the results between the BHAR measure and Wealth Relative, it is clear that both measures show overperformance in the same months, which is reasonable if we take under consideration the methodology used in order to calculate the Wealth Relatives. In the 12, 24 and 35 months time periods, both measures reveal an overperformance. The Figure 5.2.4 shows that there is high volatility of the Wealth Relatives during all the months under examination. Additionally, we can observe that there is a great similarity among the two Figures 5.2.3 and 5.2.4. Wealth Relative measure also reveals higher performance on the 11th month and lower performance on the 10th month.

MONTHLY WEALTH RELATIVES

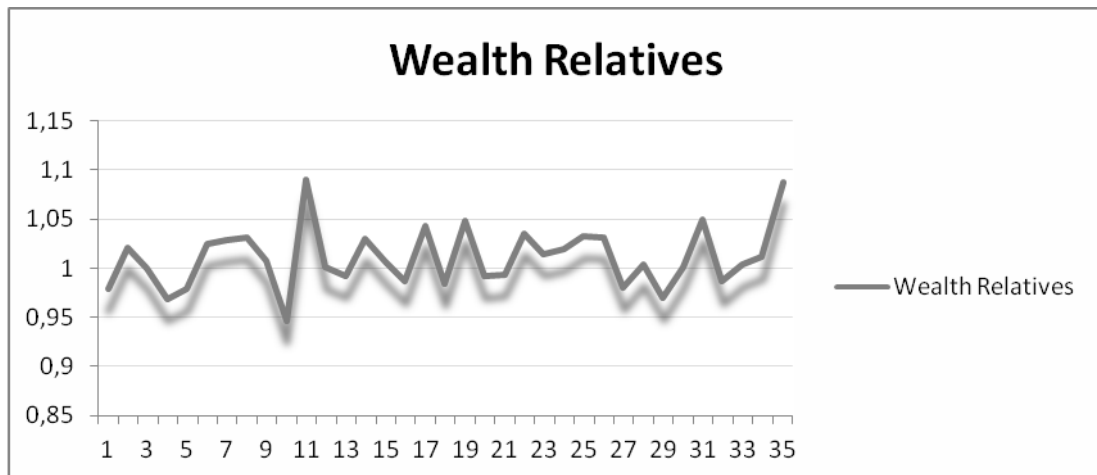


Figure 5.2.4

5.3 Long-run Performance Regression Results

In order to determine the relationship between the long-run performance and the independent variables, we run a cross-sectional regression using as a dependent variable the BHARs. The regression model that is used is:

$$\text{BHAR} = a + b_1(\text{GP}) + b_2[\log(\text{SZ})] + b_3(\text{EO}) + b_4(\text{D/A}) + b_5[\log(1+\text{age01})] + b_6[\log(1+\text{age02})] + b_7(\text{RU}) + b_8(\text{RSE}) + b_9(\text{IU}) + \varepsilon_i$$

The null hypothesis of the regressions is that there is no relationship between the dependent and the independent variable. Once again a correlation matrix has to be created, in order to avoid multicollinearity. Gross proceeds and size are found to be highly correlated, at a degree of about 95.9% and for this purpose two new regression models are constructed:

A. $\text{BHAR} = a + b_1[\text{Log}(\text{GP})] + b_2(\text{EO}) + b_3[\text{Log}(1 + \text{D/E})] + b_4[\log(1 + \text{age01})] + b_5[\log(1 + \text{age02})] + b_6(\text{RU}) + b_7(\text{RSE}) + b_8(\text{IU}) + \varepsilon_i$ and

B. $\text{BHAR} = a + b_1[\log(\text{SZ})] + b_2(\text{EO}) + b_3[\text{Log}(1 + \text{D/E})] + b_4[\log(1 + \text{age01})] + b_5[\log(1 + \text{age02})] + b_6(\text{RU}) + b_7(\text{RSE}) + b_8(\text{IU}) + \varepsilon_i$

LONG-RUN PERFORMANCE TESTS

Regression Models	Intercept	Gearing Level	Gross Proceeds	Size	Equity Offered	Age of Company	Age of Fleet	Market Reputation	Underwriter Reputation	Initial Underpricing	R ²
(A)	-0.149 (-1.764)	-0.005 (-0.073)	0.013 (1.51)	-	0.078 (1.835)	-0.003 (-0.787)	0.024 (1.04)	-0.017 (-0.856)	0.008 (0.693)	0.007 (0.611)	0.33
(B)	-0.129 (-1.747)	-0.012 (-0.170)	-	0.012 (1.51)	0.076 (1.785)	-0.004 (-0.897)	0.02 (0.891)	-0.018 (-0.932)	0.011 (0.851)	0.005 (0.416)	0.33

Table 5.3.1

The regression models are constructed by this way in order to avoid having the two variables that are correlated in the same model; both models have R-squared 33%. The only factor that was found to have a statistically significant explanatory power is the proportion of equity offered. This variable found to be positively related to the long-run performance at a level of significance of 10%. This can be interpreted as the higher the proportion of the equity that a company offers at the initial offering, the higher the long-run performance will be. If we further analyze this finding, it is essential to highlight that a possible reason for a shipping stock to be underperformed in the long-run, is the low proportion of equity offered at the initial offering.

The variables initial underpricing, age of fleet, reputation of the underwriter, size and gross proceeds are not found to be statistically significant explanatory factors. However, they are positively related to BHARs and it would be useful to understand what this indicates. The existence of underpricing, the higher the gross proceeds of the shipping IPO, the older the fleet of the company, the greater the reputation of the underwriter and the size of the company will result in a better long-run performance. Gajeski and Gresse (2006) that examined the relationship between long-term performance of the IPOs and the reputation of the underwriter concluded that this is a positive relationship. Levis (1993) points out that there is a negative relationship between issue size and long-run performance. Very interesting is the relation that is revealed between the initial underpricing and the long-run performance of the shipping IPOs. The results indicate that the existence of underpricing on the first

trading day is possible to influence positively the long-run performance of the shipping IPO.

The factors gearing level, age of the company and reputation of the market are also not found to have statistically significant relationship with the dependent variable. These factors though, are negatively related to BHARs. These results can be interpreted in favor of the shipping companies that have the issuance of an IPO in their immediate plans. The higher the gearing level, the longer the history of the company before the issuing and the greater the reputation of the market that the issuance took place in, will possibly result in the shipping IPO underperforming in the long-run. The findings of Merikas et. al. (2009) indicate that the effects of age in the long term performance is a significant factor in the three year period whether we study from the end of the first day of trading or from the end of the first month and this shows that firms with long history before going public, perform better in the long term. According to research conducted by Merikas et. al. (2009) the result about the market reputation remains statistically insignificant once they look the returns in one, two and three years from the end of the first day of trading, though, there is a light of significance when their study starts from the end of first month of trading and focus in one and three years return.

6. Conclusion

This paper presents fresh evidence for short-run and long-run performance of Initial Public Offerings that were issued from shipping companies during the period 1997-2010. The main contribution of this paper is to update the previous literature by using recent data with the intention of drawing some conclusions.

The study of the short-run performance was conducted using a sample of 63 IPOs that were issued by shipping firms in 10 different Stock Exchanges. According to the sample, most shipping companies use either dry bulk carriers or tankers. U.S companies present the highest average of gross proceeds, while 2006 was the year that

shipping companies with the highest level of gross proceeds and gearing were entering the IPO market. In 2007, shipping companies that issued IPOs were having the largest market size among all the other years under examination. Shipping firms started to offer a bigger proportion of equity at the issuing in 2008 and this proportion continues to rise until today.

Underpricing in the sample is of great magnitude (31.74%). In order to detect the factors that may affect the underpricing on the sample, we have chosen eight factors, some of which were quantitative and others were qualitative. Size was the only factor found to have positive statistically significant explanatory power over the underpricing of the global shipping IPO sample. Gearing level, age of fleet, age of company, reputation of the market and gross proceeds are also found to be positively related to short-run performance but not to a statistically significant degree. The reputation of the market and the proportion of equity offered at the issuing, found to be factors that are negatively related to the short-run performance but not statistically significant, either.

Another aspect this thesis critically examines is the analysis of the long-run performance of the shipping IPOs. For this purpose a reduced sample has been used due to the fact that the initial sample consisted of shipping IPOs that were issued during the period 1997-2010 and the new sample contained shipping IPOs that were issued during the period 1997-2008. Three time periods were examined; the sample that was used for the 3year and 2year time periods consisted of 51 shipping IPOs, while the sample that was used for the 1year time period contained 42 new listings. Three different measures were employed to examine the long-run performance, Cumulative Abnormal Returns, Buy-and-Hold Abnormal Returns and Wealth Relatives. CARs showed that there was underperformance for every month under examination. Although CARs is a commonly used measure, according to previous literature it generates biased results when used in long-run. BHARs and Wealth Relatives indicated that there is an overperformance in all three time periods examined. When an investor buys shipping IPOs, it is on his/her own benefit to sell the investment after eleven months, because at that month the highest overperformance is presented. On the other hand, the shipping IPOs are underperformed for 12 out of the 35 months and there is evidence that it is very likely for a shipping IPO to underperform during the first five months of listing.

At the last part of this thesis, we determine the relationship between some factors and the long-run performance and the effect that these may have on underperformance. BHARs are used as dependent variable, while the independent variables are the same that were used to detect the underpricing. One extra factor that is used is the relevance of the initial underpricing. The only factor found to have positive statistically significant explanatory power over the long-run performance is the proportion of equity offered. This means that when a shipping firm offers bigger proportion of equity at the issuing, it is less likely for the shipping IPO to underperform in the long-run. Gearing level, age of the company and reputation of the market found to be negatively related to the long-run performance. While, age of fleet, reputation of the underwriter, size and gross proceeds were found to be positively related to the long-run performance. Although, there is no evidence that the initial underpricing is related to the long-run performance of the shipping IPOs in a statistically significant level, it was found to be positively related, which can be interpreted that the existence of underpricing at the first listing day is possible to influence positively the long-run performance of shipping IPOs.

Potential future researchers can analyze the subject in greater extent by using a larger sample that will be divided into subgroups. Each subgroup will be represented by a Stock Exchange. This way it will enable a further investigation about the relation between the shipping IPO performance and the issuing market. Another aspect of the subject is to study the long-run performance of each IPO individually. Although, it could be a lengthy process, it would facilitate the researcher to analyze shipping IPOs in great depth.

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