



Critical Evaluation of M&As in the European Shipping Industry

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(ABSTRACT)

The international shipping industry has been undergoing major structural changes caused by a number of factors. Shipping companies have responded to the continuously growing demand for maritime transport and the intense competition by engaging in mergers and acquisitions or by forming other cooperative agreements.

This paper examines the activity of M&As in European shipping companies the last fifteen years and the incentives that lead firms to these transactions. The purpose of the study is to investigate value implications of mergers and acquisitions in both targets' and acquirers' shareholders at the announcement date and how this is portrayed on their stock values.

The methodology used is the event study analysis which is carried out with two models and the multivariate analysis. The two models are the market adjusted model and the market model. According to each application, the empirical findings indicate the positive effect that M&A announcements cause in companies' stock returns. However, the profits that accrue from such a transaction are higher from the perspective of the targets' shareholder value. The impact of mergers and acquisitions plays a significant role for shipping companies in order to create higher financial value.

Keywords: Mergers and Acquisitions, Shipping Companies, Maritime Sector, Targets and Acquirers, Shareholder Value, Event Study Analysis

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1. Introduction

Shipping Industry is one of the key sectors in the global economy and therefore in international trade. Practically, the concept Shipping has various meanings. It is the process of transporting commodities and merchandise goods or cargo by different ways, such as land, air, or sea. Otherwise, it is the movement of objects by ship. Regarding the last one, there is a close relationship between the development of maritime transport and world trade. The expansion of international trade has resulted in an increase in demand for transport services, whereby the largest share of this demand falls to sea shipping, which is the preferred means of transport worldwide. Many goods as raw materials, semi-finished goods and finished goods have to cover increasing distances among the greater area of Europe, North and South America, as well as Asia and that means more maritime transactions. Consequently, the vast majority of globally traded goods are transacted by seaway. The percentage approximately touches the 90% of total transactions¹.

Shipping Industry which is regulated by the International Maritime Organization includes a range of activities that can be classified into two main groups like the Tramp market and the Liner market. In the first category, vessels do not have a specific route or schedule, but their trip depends on customers' desires and is disposable at any time to convey cargo from any port to any destination. On the other hand, international liner shipping is determined as shipping services operating on a regular trade route with predetermined and publicly advertised schedules between advertised ports of call. It should be noted, that nowadays, liner market transporting goods representing approximately one-third of the total value of global trade and certainly that this mean of transportation is the most efficient and produces fewer grams of exhaust gas emissions for each tone of cargo transporting than air, rail, or road transport. Maritime services include cargoes such as iron, coal, oil and specialized cargoes like chemicals, forest products and gas both for the two categories. Moreover, some sub-sectors of the shipping industry are cruise and ferry operators, towage and salvage companies, and ports and their auxiliary services.

In the twenty-first century, the great development of maritime industry relies on the growth of the international trade and, in turn, this is based on the evolution of

¹ Cf. *International Maritime Organization (2009)*, p.7.

the global economy and politics. As a result of globalization, it is believed that the volume of the international trade will continue to grow perpetually. More specifically, an optimistic forecast, which is drawn up by the World Bank points out that substantial increases in production and income are to be expected in all regions of the world by the year 2030².

Because of the highly competitive environment in shipping sector, shipping companies will have to adjust their operations in terms of extended geographic coverage, higher frequency and better quality of services, minimization of overall costs and financial risks, faster transit times, supply chain management and provision of logistics value added services. Generally, they have to adopt new strategies, in order to be competitive in the global market.

In the future, one shipping company should operate every method of the transportation. The carrier will not only transport commodities from port to port, but also from door to door. In addition, the port will be no longer the terminal of transportation, but only a part of the whole transport chain. Actually, many large shipping firms have already introduced the modern logistics as a part of their politics. For example, AP Moller Maersk, which is the largest shipping company since 2005 was the year that acquired P&O Nedlloyd, has changed its tactics, so as to increase its logistics income ratio. This is very crucial, as they are facing more and more pressure to reduce their costs and improving their services. Other tactics that exist are most notably cooperation among major global shipping companies such as traditional conferences or alliances, an extension of containerization, and larger-sized ships. Although the use of larger-sized ships contributes to economies of scale and hence reduces the costs per unit, the shipping industry demands soaring investments.

Unsurprisingly, apart from these strategies, one of the most discussed that takes place in the international maritime transport is the activity of Mergers and Acquisitions. The shipping industry has experienced significant growth in M&A transactions the recent years. Numerous and partial major M&A transactions have led many academics and investors to explore this policy in order to find out the causes or motivations, the measurement of the effects and the impact on corporate value.

² Cf. *Food and Agriculture Organization of the United Nations (FAO): World Agriculture: towards 2015/2030. Summary, Report, Rome 2002.*

In general, the most significant factors that contend the merger activity are strategic considerations such as attempts to create monopolies or oligopolies in part by generating economies of scale, increase management efficiencies, and diversification into other products or geographic markets. Apart from these reasons, two other forces calling for closer cooperation have to be taken into consideration. These are the globalization of the world markets and the protracted poor profitability of most carriers. More often, mergers and acquisitions create additional shareholder value, for both the two parties.

As far as this dissertation is concerned, the main topic is similar to many other researches and refers to the measurement of the effect of an M&A announcement. A simple announcement of a merger immediately influences the firms' stock returns, investors and financial markets in general. This study will examine the impact of M&A announcements on firms' stock returns and will assess these effects during the period 1996-2011, which was a very crucial period in maritime industry. Furthermore, the sample of the examination includes mergers and acquisitions that have been completed and took place the last fifteen years. The corresponding shipping companies have their base in Europe, both the acquirers and the targets. The objective of this evaluation is to provide a good guide for firms and potential investors, who are willing to involve in such an activity and act more competitively in this new economic environment.

First of all, it will be quoted an extensive literature review, which focuses not only on this field, but also in other sectors like the Banking Industry and the Logistics Services. It regards researchers' studies, which measured and evaluated the changes in the shareholder value and if the merger activity is preferable than other strategies for increasing financial performance.

Subsequently, this paper will present some theoretical issues concerning the incentives of shipping companies to merge and some possible reasons of failure. There are a lot of motives both for the acquiring and the acquired companies. According to many researchers, the three most important causes of cooperation are the desire to reduce unit costs (i.e. to achieve economies of scale and remain profitable), to increase income (i.e. to increase market share) and even to generate tax gains. However, many mergers fail, as companies often concentrate on eliminating costs, while revenues and ultimately profits, suffer.

Using the event study methodology, it will be examined the success of the European M&A transactions in the shipping industry during the above period and if the shareholder value increased after the deal. The further analysis first identifies the relevant events, and then carries out an evaluation in terms of a calculation of abnormal returns and cumulative abnormal returns. These returns will be reviewed with regard to potential explanatory parameters. The next part of the empirical analysis that called multivariate analysis relates to the influence of some independent factors in the average return of the target firms on the announcement day. Finally, some useful conclusions are going to be referred with regard to the findings of the data analysis.

A better approach of the structure of this paper is the following: Section 2 gives a review on the relevant literature. Section 3 outlines the motives for such an activity, as well as the reasons for failure; Section 4 presents the data sample and the methodology that is followed. Section 5 quotes the empirical findings and finally Section 6 concludes.

2. Literature Review

i) Shipping Literature Review

In the last century, the increasing tendency of Mergers and Acquisitions, not only in the Shipping Business, but also in diverse sectors like the Banking industry or the Logistics sector raised the interest of many researchers, journalists, academics and even students about this issue. Many of them investigated and evaluated the impact of M&A on stock returns and whether this activity creates higher financial value both for the acquiring and the acquired firm.

As far as the mergers and acquisitions in shipping are concerned, the vast majority of investigations took place the last twenty years, since there was a considerable growth during this period. Panayides and Gong (2002) studied how the share price reacts to such an announcement specifically in liner shipping. Their research proved statistically significant positive returns for the acquirers as well as for the target firms on the announcement of the proposed event, which is long anticipated by the industry. However, they noted that consolidations and alliances had been

taking place in all sectors of shipping, citing not only the well known mergers of liner companies, but also deals in the tanker sector, dry bulk, the reefer trades, and third-party ship management. One such example is the study of Aristeidis G. Samitas and Dimitris F. Kenourgios (2007), who examined the tramp shipping enterprises and the effects of an M&A announcement in their stock values. The survey results indicated positive changes in tramp firms' stock returns. Furthermore, Heaver et al. (2000) probed the set of all relationships among shipping firms and other kinds of companies such as stevedoring companies, inland transport companies and ports. He observed that mergers and acquisitions are preferable than alliances or other cooperative agreements, as the shareholders maximize their value, obtain higher market share and get a better control over a broader range of activities.

Contrary to Panayides and Gong, a postgraduate student named Karen V. Gregory (Virginia, 2000) investigated also the international liner shipping and if economies of scale exist, but he concluded that there was a significant drop in the market share of small and medium sized companies, while the largest firms continued to acquire higher market share. Quite different were the results of the research of Christian Kammlott and Dirk Schiereck (2010). They studied the value effects of the integration activity in the international shipping industry during the period 1980-2007. In spite of the general growth of the world economy and the advantages of the consolidation in the transportation sector, they found an overall loss for shareholders' value in the maritime business for the acquirers, especially after 1999, but significant positive returns for the target firms. Another investigation, which concluded to similar findings, was that of Moeller et al. (2005), who compared the value effects of M&A activities between the decade of 80s and the merger wave during the period 1998 to 2001. The observation was that considerably more shareholder value had been destroyed on the part of the buyer this three year period than in the 1980s, as a consequence of a small number of major transactions with negative effects. According to Parola and Musso (2007), another possible reason for these negative results is the increasing concentration tendency in the above period in the shipping industry as a trend to move away from the alliance as a preferred form of cooperation, because M&A are considered that yield higher efficiency. However, the empirical findings from the previous researchers indicated that defensive strategies targeted for cost synergies do not generate higher financial value in a situation of increasing competition.

The results of research of Lyroudi, Lazaridis and Subeniotis (1999), Kohers and Kohers (2000), Eckbo and Thorburn (2000) were completely different than the outcomes of investigation of Karen V. Gregory (2000), because they asserted with their study that shareholder value for stockholders of the acquiring enterprises regresses. In contrast, stockholders of target firms are generally experiencing a considerable added value (Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), Bruner (2002), Eckbo and Thorburn (2000)).

ii) Other Literature Review on M&A transactions

Apart from the Shipping sector, many researchers have investigated the effects of M&A transactions in firms from other sectors. For instance, Cybo-Ottone and Murgia (2000) studied the European Banks and the Mergers and Acquisitions that took place in this industry. Their conclusion was that, this activity creates significant positive abnormal returns and shareholders increase their wealth. A few years later, Havrylchyk's (2004) research concluded to the same findings concerning the Polish banking sector. But on the other hand, Scholtens and De Wit (2004) who also studied bank mergers in Europe and USA noted that this activity had resulted in small positive abnormal returns for the acquiring banks, but target banks realized significantly higher returns than the bidders.

Contiguous to the previous one, was the research of Parisi and Yanez (2000) and Otchere and Ip (2006), who found that the target firms from other industries also realized important positive abnormal returns. Regarding other industries, a recent study by Mentz and Schiereck (2008) on the global automobile supply industry documented positive results. Analogously, Darkow et al. (2008) stated that these transactions in the past sixteen years have been an appropriate instrument for the increase of shareholders' value in the logistics industry. It is certain that there are motives both for the target and acquiring companies. The existence of strong target motivations was confirmed by Brooks and Ritchie (2006). They found that many target firms deliberately seek to be acquired, not only for reasons of financial distress, but also for increasing market share or the recognition that the company's current size is insufficient to ensure long-term survival.

Broadly, an M&A activity can lead to varied conclusions. Kiymaz and Mukherjee (2001) observed through their research that pre-announcement and post-

announcement factors can affect either positively or negatively the change of the shareholders value in cross-border mergers. Another important study was that of Gregor Andrade and Eric Stafford (2004), who investigated the economic role of mergers and the internal corporate investment, which are similar ways of adding to a firm's asset base and productive capacity. They performed a study with data from 1970 to 1994 and found that merger activity clusters through time by industry, while internal investment does not. Bleeke and Ernst (1995) have doubts regarding the joint ventures, considering that alliances are often precursors to acquisition and that wealth may be destroyed in a merger attempt. Moreover, Cartwright and Schoenberg (2006) noted that the failure rates of mergers and acquisitions have remained consistently high. Bergh (2001) considered that one reason for the high frequency of failure rate is the retention of the wrong acquired company.

Contrary to the prior researchers, Midoro and Pitto's (2000) conclusion was that the current structure of strategic alliances in liner shipping was insufficient to achieve investors' goals. In their opinion, some negative factors driving such instability were the wrong distribution of responsibilities and the increased organizational complexity between the two parties as well as the establishment of a certain degree of intra-alliance competition. Therefore, they considered M&A transactions would be a more suitable and efficient choice for liner companies. Brooks (2000) concluded, following detailed case studies of several co operations in shipping, air, and rail industries, that M&A offer strategic advantages quite different from alliances, and that both can create value for the shareholders. Finally, Sherman (2006) believed that the effective structuring of an M&A deal, to ensure a successful outcome, begins with understanding the basic motives of the two parties. If the picture of M&A is not complete, then the transaction can lead to negative results.

3. Mergers and Acquisitions, Motivations and Reasons of Failure

Mergers and Acquisitions (M&A) are often referred to as a single term. The main factor distinguishing the two is the companies' willingness for the M&A activity to take place. A merger happens when two companies decide on joining forces in their

relevant fields of business in order to become a single entity. On the other hand, an acquisition involves one company essentially taking over another company. An acquisition -in most cases- occurs when one of the two parties known as the target company, displays hostility towards the acquiring company or -in several cases- the target company may seek to be acquired in order to ensure its long-term survival. The key principle for the acquiring company is to achieve higher shareholder value than that of the sum of the two companies separately. It is a significant activity mainly when times are tough.

A notable segregation regarding the M&A is the Horizontal and Vertical Integrations. The first one exists, when a company performs a strategy in order to increase its market share by taking over a similar company. Less common than the horizontal integration, a vertical integration is the process in which several steps in the production or distribution of a product are controlled by a single company, so as to grow its power in the marketplace. Although there are different motivations, the main feature of both M&A is that the new company replaces the two existed companies, having as assets the sum of the two old.

Nowadays, there are a huge number of M&A transactions in all sectors of industries and especially in the maritime business. A very interesting question is which motivations are behind the activity of mergers and acquisitions.

Firms merge with or acquire one another for a variety of reasons. The pursuit of economies of scale is a critical factor, particularly when demand is rising. The definition of this motive is the lowering of the average cost of producing one unit, when the total amount of production increases. The main idea is that the new company accruing from a merger can produce more cheaply and faster than the separate firms through the sharing of resources and technology. In the shipping industry, for example, the containership technology has produced enormous vessels that in some cases may be too expensive for small shipping companies to deploy in viable service string. But, these vessels offer significantly reduced unit costs, when deployed properly by a new larger firm. Therefore, cooperative agreements allow small firms to share with their partners the burden and the risk of the high capital expenditures, such as fixed costs, fuel costs and administrative expenses that are required to cope with the impending containerization of trades and to maintain a consistent frequency of service, as these expenditures are generating substantial pressure for the shipping companies to succeed. Efficiency is the basic philosophy to

achieving economies of scale and retaining market power. Economies of scale are considered good as a rationale for merger, but in many cases it is difficult to accomplish in practice.

Admittedly, mergers and acquisitions are seen as a natural adjustment to new economic realities. In some cases, M&A appear to be motivated by firms' strategies for gaining market entry to extend or diversifying their product line. For example, a shock to demand in one market may require a diversion of productive resources to different product or wider geographic markets. Cross-border and domestic M&A may be the means to provide entry into these new markets, as they allow a line to enter a trade even without the deployment of additional tonnage, simply by using slots on its partners' existing services. By this way, companies can expand their knowledge and capabilities, they can provide better and faster services and products and consequently they can increase their profits. Although the primary motivation behind M&A transactions is economies of scale and the pursuit of market power in a changing regulatory environment, it seems more likely that combinations among large carriers are undertaken to eliminate a competitor. Furthermore, alliances or collaborations may expand the base of customers and provide a more solid overall corporate business base.

On the other hand, there are important benefits concerning the vertical integration. By consolidating many elements of the production chain, acquiring companies can gain full control over raw materials and distribution channels. In this way, they can communicate and coordinate more effectively. Additionally, larger-sized firms obtain competitive advantages over rivals, who will have to negotiate with and rely on external firms for inputs and sales of the product. Other advantages for a larger entity is the ability to buy bulk quantities at discounts, the ability to store more conveniently, the possibility of having a larger volume of inventories, and the opportunity to achieve mass distribution through greater negotiating power. Moreover, a greater market share means pricing with an advantageous way, since larger firms are able to compete more effectively through higher volume sales with thinner profit margins. A typical example of such a fusion is between a firm which is very good at distribution and marketing with a very efficient producer.

Another significant motive that makes an M&A transaction attractive is the existence of unused tax shields. In the case of a company that loses money, the

corporate tax code allows the acquired firm to use the tax shields as a shelter for the income generated by the acquiring firm.

Finally, the increase of management efficiency plays an important role in the decision making for an M&A transaction. Managers claim that by acquiring or merging with firms from other industries the total risk associated with the firm's operations reduces. For this reason, if there is excess cash, then the firm should find outlets for new investment opportunities, in order to diversify the business risk. By this way, the lower total risk means less uncertainty in future business performance and this stability makes management looks good. But, regardless of the motivation, excess cash is a primary motivation for corporate acquisition activity. Moreover, concerning the corporate takeover activity, there is the hypothesis that managers of acquiring firm are more capable to do a better job of utilizing the targets' assets and strategic business opportunities. This means higher prestige in managing a larger firm, which may include other bonuses for managers, such as club memberships or access to amenities such as corporate jets or travel to distant business locales. These factors cannot be ignored in detailing the set of factors motivating merger and acquisition activity.

Despite the great importance of M&A and the major benefits of these transactions, many surveys have shown that two thirds of big mergers failure. More insight into the failure of mergers is found in the highly acclaimed study from McKinsey, a global consultancy.

According to this, the main purpose of merged companies is only the minimization of the cost, ignoring the daily operation and production, which should be the basic factor, as it generates revenues and consequently profits, for the enterprise. This is due to the fact that the development of technology, the changing economic conditions and generally the globalization, at many times affect negatively managers, who decide to merge with or acquire another company, because of a generalized fear.

However, Mergers and Acquisitions, especially those involving cross-border operations can be expensive in terms of time and effort required meeting legal and regulatory hurdles and in many cases the merger does not meet the financial objective. One of the most common problems is the various corporate cultures between companies of different countries. When a company is acquired, the decision is

typically based on product or market synergies, but cultural differences are often ignored. It is a mistake to assume that personnel issues are easily overcome. For example, employees at a target company might be accustomed to easy access to top management, flexible work schedules or even a relaxed dress code. These aspects of a working environment may not seem significant, but if new management removes them, the result can be resentment and shrinking productivity.

Other problems include different perceptions of firm objectives, which mean significant management effort to overcome. Mergers and acquisitions can destroy shareholder value if motives other than value maximization prevail. For example, shareholders generally prefer their company to become a target, while managers prefer their company be one of the survivors. The different attitudes of stakeholders can affect negatively the efficiency of the company, while contrary managerial aims are likely to lead to value destroying acquisitions and bring in lower returns. Furthermore, parameters such as sundry legal frameworks, tax structures and insufficient information transparency cause increased integration and organizational costs. Hence, the advantages in competition and synergies resulting from the merging are presumably depleting. Finally, a particularly large merger may also induce shippers to diversify suppliers fearing that an overreliance on one large carrier puts their shipments at risk.

A general conclusion is that within a company, which accrues from a merger or acquisition, there is a great potential for organizational complexity. This complexity is made itself felt, starting from the board of directors and then down through all the levels of the involved firms. Therefore, it should be noted that successful M&A transactions cannot be set up by just putting together the assets and the resources of each member. Instead, they are built upon the core competencies of each partner. Only in this way, an M&A transaction can deliver a value which is greater than the sheer sum of its parts. The specialization of roles and contributions means that each partner will be able to take relevant decisions within its area of responsibility, without prior consultation with the others.

4. Data set and Methodology

The next part of the dissertation describes the empirical analysis of the shipping M&A transactions in Europe. First of all, the analysis presents the data set and the criteria for this selection, while in the research results some tables and figures are portrayed in order to give a full report about these transactions. Subsequently, and using the event study methodology, it will be investigated the impact of the M&A announcement in companies' stock returns and how this event influences the shareholders value. For this reason, the average abnormal returns and the cumulative average abnormal returns of the corresponding stocks are calculated so as to examine if these findings are statistically important.

i) Information regarding the specific M&A

The data that are used in this dissertation refer to Mergers and Acquisitions among companies in European shipping industry and their stock last prices before and after the event. Using the data base Bloomberg, the relevant transactions are identified in order to compose the data set. The companies that were merged or were acquired by competitors are shipping firms from seven different countries and all the deals are both cross-border and domestic transactions.

The sample is constituted by twenty nine dealings, from which twenty five are acquisitions and four deals are spin-offs³. The reason why acquisitions are preferable than mergers is the fact that a merger between two companies is more complicated and difficult than a takeover. The majority of companies are still listed in the stock exchange, while many acquired companies stopped to exist after the acquisition date. The study investigates the last fifteen years, in which many important facts took place, such as the increase of freight rates, the rise of vessels' value, the increased number of orders of new building vessels and the entry of shipping firms in the stock exchanges. The sample includes a wide range of daily observations in closing prices before and after the event. The choice of daily rather than weekly or monthly stock

³ *Spin-off* is a transaction in which at least 80% of the equity in a subsidiary is distributed to shareholders of the parent company.

price permits more precise measurement of abnormal returns and more informative studies of announcement effects.

Nevertheless, for the purposes of this project the research takes into account 249 days before the event, the closing price in the announcement date and 10 observations after the transaction. Although the deals are twenty nine during this period, the events examined are twenty six, because of the lack of important information. As it was noted, the shortage of this specific information relates to the fact that many acquired companies stopped operating after the transaction. In most cases, some shipping companies were listed in the stock exchange after the M&A transaction, while others were delisted before the deal. Furthermore, the insufficiency of data in other cases is due to the fact that some stocks of the sample were not exchanged on trading days for their countries' stock market and index, which made impossible to calculate data that are necessary for the implementation of the market models and market adjusted models.

As far as the criteria for the selection of the sample are concerned, the study refers to transactions, in which the deal status has been completed. Moreover, both target and acquiring firms belong to the European region and finally, as it was mentioned, the examined period is from 1996 to 2011. This specific period was very crucial for maritime business, as the European Union eliminated the incentive for conference participation in favor of unfettered competition and it motivated carriers to pursue unit cost savings and economies of scale by seeking integration with competitors through M&A or other cooperative agreements.

Taking into consideration the previous criteria and the above restrictions regarding the stock prices of the involved shipping firms, the final sample consists of twenty one acquiring companies and twenty quoted target firms.

ii) Event study methodology

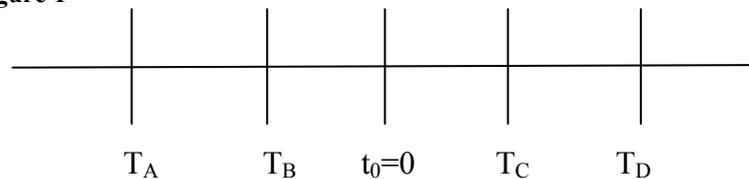
In empirical finance, the event study analysis is widely accepted as a research tool, which attempts to measure the valuation effects of a corporate single event (or series of events) such as an M&A announcement for a sample of firms, by examining the response of the stock price around the announcement of the event. This is the reason why this type of methodology applies.

Thus, event studies start with the hypothesis about how a particular event affects the shareholders value. The hypothesis that the value of the company has changed will be translated in the stock showing an abnormal return (AR). Coupled with the notion that the information is readily impounded in to prices, the concept of abnormal returns is the central key of event study methods. Average abnormal returns and cumulative average abnormal returns across stocks that are exposed to the same event of interest are calculated to identify if the event has caused the stocks to deviate significantly from a relationship suggested by a benchmark model. To do so, it is necessary a model for normal returns.

A variety of expected return models such as market model, constant expected returns model, factor model and capital asset pricing model have been used in event studies. In this paper the two models that are used are the Market Model, which is the most popular in practice and the Market Adjusted Model.

According to the particular methodology, the expected normal stock returns during a period of $[t_0 \pm t_i]$ days are examined in combination with the announcement date (t_0). The time line for a typical event study is shown in the graph below.

Figure 1



In the first case the interval $[T_A, T_B]$ is the estimation period and regarding this study, it consists of 239 observations. Secondly, the interval $[T_B, T_C]$ refers to the event window, which includes 21 closing prices and the last interval $[T_C, T_D]$ is a post-event window. It is noteworthy that the announcement date is equal to 0.

Considering the case of market model, the abnormal returns are calculated as the difference between the actual observed returns and the theoretical predicted returns without announced M&A transaction. For each sample security i , the abnormal return on the security at the time t relative to the event, $AR_{i,t}$ is given by the following formula.

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

Where,

$AR_{i,t}$ = the abnormal attribution of shipping firm's stock i at the day t

$R_{i,t}$ = the daily real return of share i at the time t , which includes all rate changes and pay-off like dividends and

$E(R_{i,t})$ = the expected return of the security i at the same time t

Thus, the abnormal return ($AR_{i,t}$) is a direct measure of the unexpected change in the shareholder wealth associated with the event. The security is typically a common stock, although some event studies look at wealth changes for firms' preferred or debt claims.

The expected returns $E(R_{i,t})$ are determined by the market model and are estimated by the formula below

$$E(R_{i,t}) = a_i + b_i * R_{m,t} + e_{i,t}$$

With,

$R_{m,t}$ = the return of market index at the time t

$e_{i,t}$ = the interference term of the return of share i at the day t

a_i = the intercept coefficient and

b_i = beta coefficient and means the tendency of a security's return to respond to swings in the market

In the above equation, an Ordinary Least Squares (OLS) regression is applied to estimate the model parameters a_i and b_i that are defined by the stock returns of the examined period. McWilliams and Siegel (1997) appraised the market model as the best currently available model, although it has its shortcomings. Since the ideal market index does not exist and even the broadest defined market index does not perfectly represent all traded assets, only approximations of the market portfolio are used. In this study, the market return is approached taking into account the corresponding national sector index⁴. The estimated period begins with 249 trading days prior to the event and concludes to 10 days before the announcement. As it was stated before, the choice of event window includes the interval $[-10, +10]$, however, there are several periods that are studied within the event window such as $[-5, +5]$,

⁴ Data regarding the national sector indices have also been taken from Bloomberg

[-1, +1], [-1, 0] etc. Obviously, longer intervals ensure that anticipation effects as well as delayed reactions are also listed.

In most academic event studies the approach followed regarding the interval of the event window is to allow a predetermined number of days for the stock price to react to an announcement of an event. In case, where the number of the examined stocks is not relatively small, it is not practical to determine event window length separately for each company in the sample. Moreover, the reason for which the reaction of many companies to an event is being averaged is because the market might initially misinterpret the event's effect on some of the individual firms. By this way, these miscalculations will offset one another.

The entire procedure is performed in order to test whether the abnormal returns are statistically significant. First of all, it should be calculated the average abnormal returns (AAR) of all companies for each day of the event window. The mean abnormal return is estimated by the next type

$$\mathbf{AAR_t = 1/n * \sum AR_{it}}$$

Where,

n = the number of analyzed stocks and

t = point of time to analyze

This research utilizes the trimmean of companies' abnormal returns, which attributes the arithmetic mean within a data set. The function trimmean calculates the arithmetic average obtained, disregarding a percentage of data points from the top and bottom side of a data set.

Consequently, the statistical importance can be checked through the parameter T-Statistic for every day of the event window, which is determined by the following equation

$$\mathbf{T-stat = AAR_t / S (AAR_t)}$$

Where,

AAR_t = the trimmean of abnormal returns and

S (AAR_t) = the standard deviation of AAR_t, which is estimated by the standard deviation of all trimmeans for the estimation period [-249, -11]

Apart from the abnormal returns, a better observation of repercussions at the stock price returns is carried out by the use of cumulative abnormal returns (CAR). The cumulative abnormal returns are calculated by adding the average abnormal returns of all days determined by event frames. The relevant formula is given below

$$\mathbf{CAR_{t_1, t_2} = \sum AAR_t}$$

As in the previous case, T-Statistic can be used so as to investigate if the cumulative abnormal returns are statistical significant. The corresponding equation is

$$\mathbf{T-stat = CAR_{t_1, t_2} / S (CAR_{t_1, t_2}) * SQRT (N)}$$

Where,

S (CAR_{t₁, t₂}) = the same standard deviation as before and

N = the number of days during the observation period [t₁, t₂]

The importance of AR_s and CAR_s is identified using the T-Statistic. This statistic is a measure of the likelihood that the actual value of the variable is not zero. The larger the absolute value of T-stat, the less likely that the actual value could be zero. In each case of statistical hypotheses tests, the critical values are obtained by the t-student distribution at 5% and 10% level of significance. The absolute values are [2,086] and [1,725] respectively.

On the other hand, considering the market adjusted model, the abnormal returns arising from the difference between the actual return and the market index.

$$\mathbf{AR_{i, t} = R_{i, t} - R_{m, t}}$$

Where,

R_{i, t} = the actual daily return of share i at the time t and

R_{m, t} = the return of the national sector indices at the time t

Although the formula about the average abnormal return is the same in the case of market adjusted model, however the T-Statistic results from the next equation.

$$\mathbf{T-stat = AAR_t / S (AAR_t) * SQRT (N)}$$

Where,

AAR_t = the trimmean of abnormal returns

$S(AAR_t)$ = the standard deviation of AAR_t , which is estimated by the set of companies' returns for each day separately and
 $SQRT(N)$ = the square root of all target firms

As far as the cumulative abnormal returns are concerned, the calculations are exactly the same, not only for the CARs of each period $[t_1, t_2]$, but also for the estimation of the T-Statistic.

iii) Multivariate analysis

The previous part of the methodology examines the market trend of enterprises in the shipping industry in the course of M&A announcements for both the targets and the acquirers. This issue aims at specifying the observed development of the aggregate value as well as the independent characteristics.

Multivariate analysis is a statistical tool for determining the relative contributions of different factors to a single event or outcome. Based on the regression analysis, the study considers a combination of some independent quantitative variables that are summarized in the table 1 below⁵. The dependent variable is the abnormal return of target firms in the announcement date and is tested for each model (Market model and Market adjusted model).

Table 1

ASSET TURNOVER
PROFIT MARGIN
EBIT
ROE
CURRENT RATIO
QUICK RATIO

First of all, the Asset turnover measures the company's efficiency at using its assets in generating sales or revenue. It is calculated by dividing sales by assets.

Regarding the profitability ratios, they include a class of financial metrics that are used to assess a business's ability to generate earnings as compared to its expenses and other relevant costs incurred during a specific period of time. The profit margin is one of the above mentioned ratios and is calculated as net income divided by

⁵ *These variables measure the companies' profitability, efficiency and liquidity.*

revenues, or net profits divided by sales and measures how much the company actually keeps in earnings. EBIT is also an indicator of profitability that means earnings before interest and tax and calculated as revenues minus operating expenses, excluding taxes and interest.

Consequently, return on common equity is the difference between the net income and the preferred dividends divided by the average common equity. ROE is expressed as a percentage and measures the corporation's profitability by revealing how much profit a company generates with the money that shareholders have invested. In addition, other independent variables that used are the current ratio and the quick ratio, which belong to the category of liquidity ratios. The first one measures the company's ability to pay short-term obligations and is calculated by the division between current assets and current liabilities. The second indicator is a little different from the previous one and counts the firm's ability to pay short-term obligations with its most liquid assets⁶.

The following equation includes some of the independent variables that can affect the ARs.

$$AR_i = a + b_1AT_i + b_2PM_i + b_3EBIT_i + b_4ROE_i + b_5CR_i + b_6QR_i$$

Furthermore, the regression analysis uses OLS employing White's heteroscedasticity consistent standard errors.

5. Empirical Results

i) Descriptive statistics of the data set

A first interpretation with regard to M&A transactions in European shipping industry is that the vast majority of them took place domestically. Specifically, the percentage of domestic deals was 86 per cent, while the number of cross-border acquisitions was only four, as it is observed in the table 2. This remark indicates that, in most cases, the acquiring companies prefer to acquire domestic firms for a variety of reasons. First of all, cross-border operations are much more expensive in terms of time and effort, due to the greater distance. Furthermore, the various legislative rules

⁶ Information about the financial ratios have been taken from www.investopedia.com

of countries, as well as the different corporate cultures of varied regions prevent companies from merging, leading them to other ways of cooperation.

Table 2

Countries	Number of Domestic Deals	Number of Cross-border deals
Sweden	2	
Norway	11	
Denmark	2	
U.K.	0	
Belgium	2	
Italy	1	
Greece	7	
Sum	25	4

Another noteworthy observation is that the 84 per cent of these domestic transactions occurred in North and Southeast Europe. For instance, nearly half of them were in Scandinavian countries, such as Norway and Sweden, while one third of them took place in Greece and Italy. The basic reason for this phenomenon is the geographical location of these countries, as Greece is situated between three continents and the Scandinavian region connects countries from the Northeast Europe and Asia with ports from West Europe. This means that these countries play an important role in maritime business and in the international trade.

As far as the cross-border acquisitions are concerned, there were four agreements among four countries. Three out of four acquirers were from Norway and the other from United Kingdom, while two target firms were Swedish and the others from Norway and Denmark.

The figure 2 illustrates the annualized distribution of the 29 transactions during the examined period. In spite of the marginal levels of activity in the first two years of the sample, mergers and acquisitions accelerated after the year 1998.

Figure 2



During this two year period, a lot of agreements took form predominantly as a means to share fixed operating costs, and as a response to the weakening participation of the conference membership, that was pressured by the European Union. After the year 2000, in which no transaction took place, there was a period of five years, where several deals occurred, because companies began to discover the limitations of strategic alliances and the advantages of mergers and acquisitions. Although M&A activity subsided after 2005 for one year, it was observed a significant rise in 2007. This is quite logical, as from 2007 and after the global financial crisis affected all international markets negatively. Thus, because of the generalized fear, many companies were forced to merge or to be acquired.

This tendency continued in the coming years, following the general M&A trends in other industries.

ii) Evaluation of ARs' and CARs' significance

Maritime transport is considered as a key element in international trade among the worldwide economies. The M&A decisions have a considerable influence on shareholders' value to all sectors of the economy, and therefore in the shipping sector. The impact of this activity relates both the target firms and the acquirers.

According to many researchers in the international shipping industry, such as Christian Kammlott and Dirk Schiereck (2010) and Moeller et al. (2005), M&A

transactions are totally disappointing for the acquiring companies, which are accompanied by nearly similar findings observed in other sectors. For example in banking, where Scholtens and De Wit (2004) studied bank mergers in Europe and USA, and noted that this activity had resulted in small positive abnormal returns for the acquiring banks.

In contrast to these researches, this study concluded that there were no statistical significant changes in the abnormal returns of the acquirers, except from the first day after the transaction. The table 3 depicts the ARs of the acquiring shipping firms during the days of the event window [-10, +10] regarding the market model.

Table 3

	AR%	T-STATISTIC	
-10	-0,451%	-0,76	
-9	0,365%	0,61	
-8	0,848%	1,43	
-7	-0,531%	-0,89	
-6	0,357%	0,60	
-5	-0,837%	-1,41	
-4	0,707%	1,19	
-3	0,311%	0,52	
-2	0,689%	1,16	
-1	0,604%	1,02	
0	-0,165%	-0,28	
1	1,268%	2,14	**
2	0,127%	0,21	
3	0,176%	0,30	
4	-0,456%	-0,77	
5	-0,902%	-1,52	
6	0,293%	0,49	
7	0,320%	0,54	
8	0,292%	0,49	
9	-0,155%	-0,26	
10	-0,234%	-0,39	

ARs of the acquirers (N=21), *, ** indicates the significance on the 5% and 10% level

On the day of the M&A announcement acquiring companies are not affected by this corporate event and their returns remain the same, as the parameter T-Statistic is not important. Nevertheless, one day after the M&A notice acquirers are updated with economically manageable but statistically significant abnormal return of +1,268%. This positive evaluation will not be continued within the following days, as the remaining ARs are not significantly distinct from null, hence excluding further interpretations.

In addition, cumulative abnormal returns show an overall positive excess return of +2,625% up to $t = 10$. Table 4 presents the CARs for all the intervals among the event window.

	Table 4	
	CAR%	T-STATISTIC
CAR (-10 +10)	2,625%	0,97
CAR (-10 -1)	2,061%	1,10
CAR (+1 +10)	0,729%	0,39
CAR (-5 +5)	1,522%	0,77
CAR (-5 -1)	1,474%	1,11
CAR (+1 +5)	0,213%	0,16
CAR (-1 +1)	1,707%	1,66
CAR (-1 0)	0,439%	0,52

CARs of the acquirers (N=21), *, ** indicates the significance on the 5% and 10% level

The non-existence of significant CARs during the examined period documents that the announcement of merging created no higher financial value for the acquiring shipping companies. A possible reason can be that the acquirer stakeholders overestimated the advantages of such a transaction and paid a higher premium to targets, or the management did not properly assess the integration costs.

Like the foregoing case, the results arising from the market adjusted model are approximately the same with the previous model. It is observed a tendency for the abnormal returns with a significant growth of +1,648% one day after the announcement and some negative but no statistically important changes the next days. However, it was noted a significant increase 8 days before the event with the average abnormal returns touch the percentage +1,820%, as illustrated in the table 5. Since the sample of M&A deals under investigation is contaminated, meaning that other corporate events might have also taken place in the time period of our interest, such as a stock split or a regulatory event, which affects a subset of the population of firms that belong to the same country. Thus, it makes sense to observe significant abnormal returns, which are not linked to that specific event.

Table 5

	AR%	T-STATISTIC	
-10	-0,379%	-0,55	
-9	0,192%	0,40	
-8	1,820%	1,97	*
-7	-0,633%	-0,93	
-6	0,196%	0,45	
-5	-0,818%	-1,39	
-4	0,041%	0,09	
-3	0,318%	0,51	
-2	0,810%	1,70	
-1	0,143%	0,17	
0	-0,311%	-0,38	
1	1,647%	2,35	**
2	0,833%	0,21	
3	-0,283%	-0,46	
4	-0,688%	-0,93	
5	-0,676%	-0,98	
6	0,442%	0,72	
7	0,330%	0,48	
8	0,522%	0,79	
9	-0,033%	-0,07	
10	-0,297%	-0,71	

ARs of the acquirers (N=21), *, ** indicates the significance on the 5% and 10% level

In both cases, the behavior of cumulative abnormal returns is similar. Table 6 shows the CARs, as they were calculated by the market adjusted model for the whole period.

Table 6

	CAR%	T-STATISTIC
CAR (-10 +10)	5,036%	1,45
CAR (-10 -1)	3,552%	1,48
CAR (+1 +10)	1,796%	0,75
CAR (-5 +5)	1,015%	0,40
CAR (-5 -1)	0,494%	0,29
CAR (+1 +5)	0,820%	0,48
CAR (-1 +1)	1,479%	1,12
CAR (-1 0)	-0,168%	-0,16

CARs of the acquirers (N=21), *, ** indicates the significance on the 5% and 10% level

Again, in this case cumulative returns are not statistically important during the above intervals and that means no change in the shareholders' value.

On the other hand, shareholders of the target shipping firms are found to gain positive value generated by the activity of merging. This is a rule that applies in most cases, as many other researchers came to this conclusion such as Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), Bruner (2002), Eckbo and Thorburn (2000).

The outcomes for the average abnormal returns of target shipping companies with regard to the market model are given in the table 7.

Table 7

	AR%	T-STATISTIC	
-10	-1,311%	-1,40	
-9	0,629%	0,67	
-8	0,805%	0,86	
-7	1,496%	1,60	
-6	-0,599%	-0,64	
-5	0,161%	0,17	
-4	-0,467%	-0,50	
-3	-0,592%	-0,63	
-2	0,748%	0,80	
-1	2,730%	2,92	**
0	2,796%	2,99	**
1	-0,421%	-0,45	
2	0,509%	0,55	
3	0,999%	1,07	
4	0,743%	0,80	
5	0,534%	0,57	
6	0,684%	0,73	
7	0,417%	0,45	
8	-0,587%	-0,63	
9	-0,921%	-0,99	
10	-0,442%	-0,47	

ARs of the targets (N=20), *, ** indicates the significance on the 5% and 10% level

Unsurprisingly, there is an important positive influence in the targets' stock prices. Target firms earn a +2,796% average return on the day of the announcement and an approximately similar return one day before. This positive impact can be interpreted by the fact that the effect of the announcement of an M&A deal could reflect immediately all the corporate assets.

Additionally, cumulative abnormal returns get a significant attribution of +5,105% not only over the three days surrounding the event, but also at the intervals [-5, +5] and [-1, 0] with percentages +7,739% and +5,526% respectively. The target CARs are given in the following table.

Table 8

	CAR%	T-STATISTIC	
CAR (-10 +10)	7,910%	1,85	*
CAR (-10 -1)	3,600%	1,22	
CAR (+1 +10)	1,514%	0,51	
CAR (-5 +5)	7,739%	2,50	**
CAR (-5 -1)	2,580%	1,24	
CAR (+1 +5)	2,363%	1,13	
CAR (-1 +1)	5,105%	3,16	**
CAR (-1 0)	5,526%	4,18	**

CARs of the targets (N=20), *, ** indicates the significance on the 5% and 10% level

As a consequence of the non-existence of significant days after the event, as well as a few days before, the intervals [-10, -1], [-5, -1], [+1, +5] and [+1, +10] do not show important changes in performances. Considering the intervals before the announcement, it can be noted that the market functioned normally, with no information leakage.

The empirical findings that accrue from the adjusted market model are exactly the same regarding the abnormal returns. The next table proves this trend.

Table 9

	AR%	T-STATISTIC	
-10	-1,161%	-0,54	
-9	0,692%	1,62	
-8	1,043%	1,30	
-7	3,257%	0,81	
-6	-0,239%	-0,55	
-5	-0,127%	-0,15	
-4	-0,054%	-0,06	
-3	-0,929%	-0,48	
-2	0,504%	0,43	
-1	2,360%	2,71	**
0	5,830%	2,13	**
1	0,078%	0,09	
2	0,187%	0,18	
3	-0,639%	-0,49	
4	0,834%	0,66	
5	0,835%	0,49	
6	0,570%	0,34	
7	0,339%	0,66	
8	-0,522%	-0,50	
9	-1,053%	-1,14	
10	-0,733%	-0,59	

ARs of the targets (N=20), *, ** indicates the significance on the 5% and 10% level

It is obvious, that the same two days are statistically significant during the event window. However, there is a considerable higher abnormal return at the acquisition day with a percentage of +5,830% that in turn, affects more the intervals near the event.

As said before, the cumulative abnormal returns are greater in the two intervals, in which the T-Statistic is significant. Both of them surpass the percentage of 8% return in contrast with the market model. Table 10 below portrays the CARs of target firms in accordance with the second model.

Table 10

	CAR%	T-STATISTIC	
CAR (-10 +10)	11,072%	1,49	
CAR (-10 -1)	5,347%	1,04	
CAR (+1 +10)	-0,105%	-0,02	
CAR (-5 +5)	8,879%	1,65	
CAR (-5 -1)	1,755%	0,48	
CAR (+1 +5)	1,294%	0,36	
CAR (-1 +1)	8,268%	2,94	**
CAR (-1 0)	8,190%	3,57	**

CARs of the targets (N=20), *, ** indicates the significance on the 5% and 10% level

A general idea is that a merger or an acquisition can create value for the target company, yielding efficiency to it. Specifically, an M&A transaction can improve the poor managerial performance of the target by replacing the inefficient team management. Other factors like the new technology that is adopted more quickly and easily by the acquiring firms, can enhance the targets' productivity and reduce their unit costs, in order to remain profitable.

iii) Significance of quantitative variables

In this research the values of quantitative factors have been derived from the database of Bloomberg. The first step is whether there is high correlation among the independent quantitative variables, which lead to contradictions, in order to achieve robust results. The table 11 below depicts these findings.

Correlation Matrix

	A Coefficient	Asset Turnover	Current Ratio	Ebit	Profit Margin	Quick Ratio	Return on Equity
A Coefficient	1	-0,0168	-0,05155	0,033038	-0,008675	-0,096326	0,43504
Asset Turnover	-0,0168	1	0,004255	-0,079784	-0,330562	0,110632	0,192953
Current Ratio	-0,05155	0,004255	1	0,156006	0,153434	0,88615	0,604535
Ebit	0,033038	-0,079784	0,156006	1	-0,10505	0,000761	0,048928
Profit Margin	-0,008675	-0,330562	0,153434	-0,10505	1	0,043337	0,194424
Quick Ratio	-0,096326	0,110632	0,88615	0,000761	0,043337	1	0,612637
Return on Equity	0,43504	0,192953	0,604535	0,048928	0,194424	0,612637	1

The above table reveals that there is high correlation between the two liquidity ratios (0.88615). Thus, these quantitative variables should not be comprised simultaneously in the same regressions⁷.

⁷ In this study the lower limit that taken into account in relation to the correlation of the independent variables was the 80%.

After examining the correlation of various variables, the research concluded with four regression models, which are presented in the table 12.

Table 12

Regression Models	AR MARKET MODEL 1	AR MARKET MODEL 2	AR ADJ MARKET MODEL 3	AR ADJ MARKET MODEL 4
Independent Variables				
Alpha Coefficient (a)	10,229 (2,453)**	9,933 (2,869)**		
Asset Turnover (AT _i)	0,055 (1,345)	0,063 (1,630)	0,1267 (2,979)***	0,108 (2,557)**
Beta Coefficient (B _i)				
Current Ratio (CR _i)	-0,0092 (-3,557)***	-0,010 (-3,397)***		
Earnings before interest and tax (EBIT _i)		0,000267 (2,506)**		
Profit Margin (PM _i)	2,88E-05 (3,998)***	3,38E-05 (3,981)***	2,10E-05 (1,8518)*	
Quick Ratio (QR _i)				-0,017 (-2,518)**
Return on Equity (ROE _i)				0,00089 (3,005)****
R-squared	0,383	0,469	0,295	0,385
Prob (F-Statistic)	0,125	0,105	0,061	0,056
No of observations	19	19	19	19

*, **, *** Indicate the significance on the 10%, 5% and 1% level

In the market model 1 the current ratio appears to have a significant negative impact on the abnormal returns, hence the negative coefficient. It denotes that target firms that are less capable of honoring their obligations may receive more benefits than companies with a better current ratio. Moreover, the profit margin is an indicator of profitability. Since it has a high positive impact, it means that a greater profit margin contributes to increased abnormal returns.

The second market model includes five independent variables; however three out of them are statistically significant. Taking into consideration the earnings before interest and tax, the findings are similar to the results of the previous regression. In this case the current ratio has a slightly greater coefficient, which means that the ARs

decline when the deals include targets with higher current ratio. EBIT is an indicator of profitability and measures the operating earnings. Thus the greater the EBIT, the higher are the profits and returns for the targets. Additionally, the profit margin shows the same trend.

In the case where the abnormal returns are determined by the adjusted market model, the profit margin is not statistically significant on the 5% level. It has a positive influence with regard to the ARs on the 10% level. On the other hand, the independent variable examined in this model is the asset turnover, which has a strong effect on the ARs' value with a coefficient of 0.1267. According to the pricing strategy, companies with low profit margin tend to have high asset turnover.

The next adjusted market model includes three variables and all of them produced statistically significant coefficients. The first ratio denotes that target firms that manage more properly their assets can obtain higher ARs. Return on equity indicates the amount of profit that a company generates with the shareholders' money. As a result, the targets' ARs increase, when they achieve higher ROE. At last, the quick ratio has an important negative influence on the abnormal returns. It is similar to the current ratio, except for the fact that companies pay their obligations with their most liquid assets.

The conclusion is that the independent variables that were chosen in these regressions affect significantly the targets' abnormal returns either positively or negatively.

6. Conclusion

This study provided analytical evidence on the valuation effects of mergers and acquisitions in the European shipping industry. The research analyzed the success of 21 acquiring companies and 20 target firms for the time period 1996 to 2011. In spite of this difficult period affected by globalization, deregulation and intensive competition, the findings indicate that M&A announcements in this sector led to a positive impact on stock returns, not only for the acquirers, but also for the targets. The outcomes are consistent to Panayides and Gong (2002) with regard to liner shipping sector and in line with Samitas Aristeidis and Kenourgios Dimitris (2007) regarding M&As in tramp shipping firms.

M&As among target companies gave significant positive affection around the event announcement [-1, +1] and [-1, 0], while there was no specific effect some days before and after the event. Respectively, the ARs for acquirers were significant only one day after the event, but with lower average values compared to targets. This means that these announcements seem not to be known before the official announcement date. Generally, the results support that these strategic decisions affect positively shipping firms' stock prices and increase financial value.

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8. Table of Illustrations

i) List of Tables

Table1. Information about the transactions

Announce Date	Target Name	Acquirer Name	Deal Kind	Comments
30/9/1998	Gorthon Lines AB	Leif Hoegh & Co A/S	Cross-border	Tender Offer, Company Takeover
2/10/1998	Mercur Tankers	Ganger Rolf ASA	Domestic	Spin off
15/10/1998	Swan Reefer ASA	Ugland International Holdings PI	Cross-border	Tender Offer, Additional Stake Purchase, Company Takeover
28/12/1998	Ugland Nordic Tankers AS	Ugland Nordic Shipping	Domestic	Company Takeover
1/9/1999	Blue Star Maritime SA	Attica Holdings SA	Domestic	Spin off
2/9/1999	DANE Sea Line	Anek Lines SA	Domestic	Tender Offer, Additional Stake Purchase, Company Takeover
23/9/1999	ICB Shipping AB	Frontline Ltd/Bermuda	Cross-border	Minority Purchase, Cross - Border
22/2/2001	Swan Reefer ASA	Siem Shipping Inc	Domestic	Tender Offer, Additional Stake Purchase, Cross Border
23/4/2001	Mosvold Shipping Ltd	Frontline Ltd/Bermuda	Domestic	Additional Stake Purchase
8/6/2001	Gorthon Lines AB	Rederi AB Transatlantic	Domestic	Spin off
1/7/2002	D/S Norden A/S	Torm A/S	Domestic	Tender Offer, Majority Purchase, Company Takeover
6/12/2002	Loki ASA	First Olsen Ltd	Domestic	Company Takeover
6/5/2003	D/S 1912	AP Moeller - Maersk A/S	Domestic	Minority Purchase
19/6/2003	Exmar NV	Shareholders	Domestic	Company Takeover
7/10/2004	Gorthon Lines AB	Rederi AB Transatlantic	Domestic	Minority Purchase
26/10/2004	Euronav NV	Shareholders	Domestic	Spin off
21/2/2005	Minoan Lines SA	Attica Holdings SA	Domestic	Additional Stake Purchase, Asset Sale, Cross - Border
5/1/2007	Deep Sea Supply ASA	Deep Sea Supply PLC	Domestic	Additional Stake Purchase, Private Placement
11/4/2007	Norwegian Carriers AS	Wilhelm Holding ASA	Domestic	Offer, Additional Stake Purchase, Squeeze Out, Company Takeover
12/9/2007	U-SEA Bulk Shipping A/S	Jason Shipping ASA	Cross-border	Asset Sale, Company Takeover
24/10/2007	Blue Star Maritime SA	Attica Holdings SA	Domestic	Tender Offer, Additional Stake Purchase, Company Takeover
25/1/2008	Minoan Lines SA	Attica Holdings SA	Domestic	Majority Purchase, Cross - Border
4/7/2008	Premuda SpA	Assicurazioni Generali SpA	Domestic	Minority Purchase
14/10/2008	Ganger Rolf ASA	Bonheur ASA	Domestic	Additional Stake Purchase
11/11/2009	Eitzen Chemical ASA	Jason Shipping ASA	Domestic	Tender Offer, Minority Purchase
13/9/2010	Golar LNG Energy Ltd	Shareholders	Domestic	Company Takeover
23/12/2010	Diana Containerships Inc	Shareholders	Domestic	Company Takeover
5/5/2011	Crude Carriers Corp	Capital Product Partners LP	Domestic	Minority Purchase
3/6/2011	Golar LNG Energy Ltd	Golar LNG Ltd	Domestic	Tender Offer, Majority Purchase

Table2. Acquirers' Abnormal Returns
(Market Adjusted Model and Market Model)

	AR%	T-STATISTIC		AR%	T-STATISTIC		
-10	-0,379%	-0,55		-10	-0,451%	-0,76	
-9	0,192%	0,40		-9	0,365%	0,61	
-8	1,820%	1,97	*	-8	0,848%	1,43	
-7	-0,633%	-0,93		-7	-0,531%	-0,89	
-6	0,196%	0,45		-6	0,357%	0,60	
-5	-0,818%	-1,39		-5	-0,837%	-1,41	
-4	0,041%	0,09		-4	0,707%	1,19	
-3	0,318%	0,51		-3	0,311%	0,52	
-2	0,810%	1,70		-2	0,689%	1,16	
-1	0,143%	0,17		-1	0,604%	1,02	
0	-0,311%	-0,38		0	-0,165%	-0,28	
1	1,647%	2,35	**	1	1,268%	2,14	**
2	0,833%	0,21		2	0,127%	0,21	
3	-0,283%	-0,46		3	0,176%	0,30	
4	-0,688%	-0,93		4	-0,456%	-0,77	
5	-0,676%	-0,98		5	-0,902%	-1,52	
6	0,442%	0,72		6	0,293%	0,49	
7	0,330%	0,48		7	0,320%	0,54	
8	0,522%	0,79		8	0,292%	0,49	
9	-0,033%	-0,07		9	-0,155%	-0,26	
10	-0,297%	-0,71		10	-0,234%	-0,39	

ARs of the acquirers (N=21), *, ** indicates the significance on the 5% and 10% level

Table3. Targets' Abnormal Returns
(Market Adjusted Model and Market Model)

	AR%	T-STATISTIC		AR%	T-STATISTIC		
-10	-1,161%	-0,54		-10	-1,311%	-1,40	
-9	0,692%	1,62		-9	0,629%	0,67	
-8	1,043%	1,30		-8	0,805%	0,86	
-7	3,257%	0,81		-7	1,496%	1,60	
-6	-0,239%	-0,55		-6	-0,599%	-0,64	
-5	-0,127%	-0,15		-5	0,161%	0,17	
-4	-0,054%	-0,06		-4	-0,467%	-0,50	
-3	-0,929%	-0,48		-3	-0,592%	-0,63	
-2	0,504%	0,43		-2	0,748%	0,80	
-1	2,360%	2,71	**	-1	2,730%	2,92	**
0	5,830%	2,13	**	0	2,796%	2,99	**
1	0,078%	0,09		1	-0,421%	-0,45	
2	0,187%	0,18		2	0,509%	0,55	
3	-0,639%	-0,49		3	0,999%	1,07	
4	0,834%	0,66		4	0,743%	0,80	
5	0,835%	0,49		5	0,534%	0,57	
6	0,570%	0,34		6	0,684%	0,73	
7	0,339%	0,66		7	0,417%	0,45	
8	-0,522%	-0,50		8	-0,587%	-0,63	
9	-1,053%	-1,14		9	-0,921%	-0,99	
10	-0,733%	-0,59		10	-0,442%	-0,47	

ARs of the targets (N=20), ** indicates the significance on the 5% and 10% level

Table4. CARs for the Acquirers
(Market Adjusted Model and Market Model)

	CAR%	T-STATISTIC		CAR%	T-STATISTIC
CAR (-10 +10)	5,036%	1,45	CAR (-10 +10)	2,625%	0,97
CAR (-10 -1)	3,552%	1,48	CAR (-10 -1)	2,061%	1,10
CAR (+1 +10)	1,796%	0,75	CAR (+1 +10)	0,729%	0,39
CAR (-5 +5)	1,015%	0,40	CAR (-5 +5)	1,522%	0,77
CAR (-5 -1)	0,494%	0,29	CAR (-5 -1)	1,474%	1,11
CAR (+1 +5)	0,820%	0,48	CAR (+1 +5)	0,213%	0,16
CAR (-1 +1)	1,479%	1,12	CAR (-1 +1)	1,707%	1,66
CAR (-1 0)	-0,168%	-0,16	CAR (-1 0)	0,439%	0,52

CARs of the acquirers (N=21)

Table5. CARs for the Targets
(Market Adjusted Model and Market Model)

	CAR%	T-STATISTIC		CAR%	T-STATISTIC		
CAR (-10 +10)	11,072%	1,49		CAR (-10 +10)	7,910%	1,85	*
CAR (-10 -1)	5,347%	1,04		CAR (-10 -1)	3,600%	1,22	
CAR (+1 +10)	-0,105%	-0,02		CAR (+1 +10)	1,514%	0,51	
CAR (-5 +5)	8,879%	1,65		CAR (-5 +5)	7,739%	2,50	**
CAR (-5 -1)	1,755%	0,48		CAR (-5 -1)	2,580%	1,24	
CAR (+1 +5)	1,294%	0,36		CAR (+1 +5)	2,363%	1,13	
CAR (-1 +1)	8,268%	2,94	**	CAR (-1 +1)	5,105%	3,16	**
CAR (-1 0)	8,190%	3,57	**	CAR (-1 0)	5,526%	4,18	**

CARs of the targets (N=20), ** indicates the significance on the 5% and 10% level

Table6. Regression Analysis
(Market Model 1)

Dependent Variable: AR_MARKET__0				
Method: Least Squares				
Date: 10/10/12 Time: 01:20				
Sample: 1 19				
Included observations: 19				
White Heteroskedasticity-				
Consistent Standard Errors & Covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
A_COEFFICIENT	9,933587	3,461289	2,86991	0,0131
ASSET_TURNOVER	0,063331	0,038843	1,630437	0,127
EBIT	0,000267	0,000106	2,506634	0,0263
PROF_MARGIN	3,38E-05	8,48E-06	3,981529	0,0016
CUR_RATIO	-0,010644	0,003133	-3,39722	0,0048
C	0,001603	0,026031	0,061576	0,9518
R-squared	0,469223	Mean dependent var		0,023324
Adjusted R-squared	0,265078	S.D. dependent var		0,06815
S.E. of regression	0,058423	Akaike info criterion		-2,59012
Sum squared resid	0,044372	Schwarz criterion		-2,29188
Log likelihood	30,60617	Hannan-Quinn criter.		-2,53965
F-statistic	2,298477	Durbin-Watson stat		1,636347
Prob(F-statistic)	0,105281			

Table7. Regression Analysis
(Market Model 2)

Dependent Variable: AR_MARKET__0				
Method: Least Squares				
Date: 10/10/12 Time: 01:35				
Sample: 1 19				
Included observations: 19				
White Heteroskedasticity-				
Consistent Standard Errors & Covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
A_COEFFICIENT	10,22988	4,169451	2,453531	0,0279
CUR_RATIO	-0,009167	0,002577	-3,55727	0,0032
ASSET_TURNOVER	0,055202	0,041039	1,345119	0,2
PROF_MARGIN	2,88E-05	7,21E-06	3,998343	0,0013
C	0,015946	0,025916	0,615299	0,5482
R-squared	0,383003	Mean dependent var		0,023324
Adjusted R-squared	0,206719	S.D. dependent var		0,06815
S.E. of regression	0,060698	Akaike info criterion		-2,54487
Sum squared resid	0,05158	Schwarz criterion		-2,29633
Log likelihood	29,17622	Hannan-Quinn criter.		-2,5028
F-statistic	2,172641	Durbin-Watson stat		1,583313
Prob(F-statistic)	0,125299			

Table.8 Regression Analysis
(Adjusted Market Model 1)

Dependent Variable: AR_MARKET_ADJ_0
Method: Least Squares
Date: 10/10/12 Time: 00:27
Sample: 1 19
Included observations: 19
White Heteroskedasticity-
Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ASSET_TURNOVER	0,126673	0,042508	2,979956	0,0088
PROF_MARGIN	2,10E-05	1,14E-05	1,85187	0,0826
C	-0,017329	0,02791	-0,62091	0,5434
R-squared	0,295	Mean dependent var		0,036724
Adjusted R-squared	0,206875	S.D. dependent var		0,077828
S.E. of regression	0,069311	Akaike info criterion		-2,35647
Sum squared resid	0,076865	Schwarz criterion		-2,20735
Log likelihood	25,3865	Hannan-Quinn criter.		-2,33124
F-statistic	3,34752	Durbin-Watson stat		2,036983
Prob(F-statistic)	0,061026			

Table9. Regression Analysis
(Adjusted Market Model 2)

Dependent Variable: AR_MARKET_ADJ_0
Method: Least Squares
Date: 10/10/12 Time: 00:26
Sample: 1 19
Included observations: 19
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ASSET_TURNOVER	0,108088	0,042275	2,556805	0,0219
RETURN_COM_EQY	0,000885	0,000294	3,005803	0,0089
QUICK_RATIO	-0,017418	0,006917	-2,51809	0,0236
C	0,013815	0,026712	0,51719	0,6126
R-squared	0,385762	Mean dependent var		0,036724
Adjusted R-squared	0,262914	S.D. dependent var		0,077828
S.E. of regression	0,066818	Akaike info criterion		-2,38903
Sum squared resid	0,06697	Schwarz criterion		-2,1902
Log likelihood	26,69574	Hannan-Quinn criter.		-2,35538
F-statistic	3,140165	Durbin-Watson stat		2,024404
Prob(F-statistic)	0,056593			

ii) List of Figures

Figure 1
(Number of M&A Transactions)



Figure 2
(Acquirers' ARs-Market Adjusted Model)

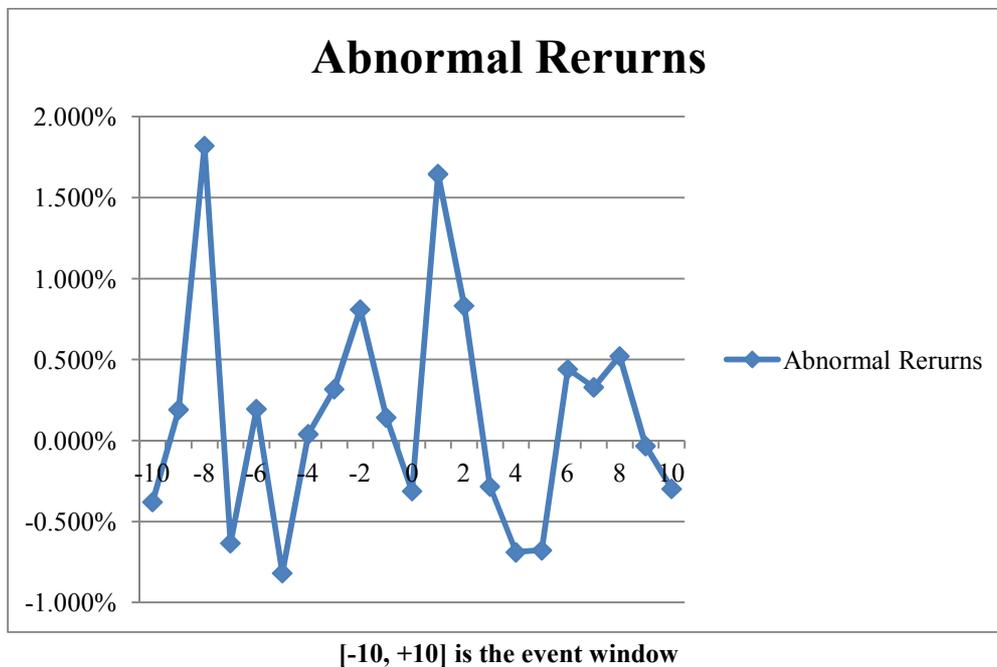


Figure 3
(Acquirers' ARs-Market Model)

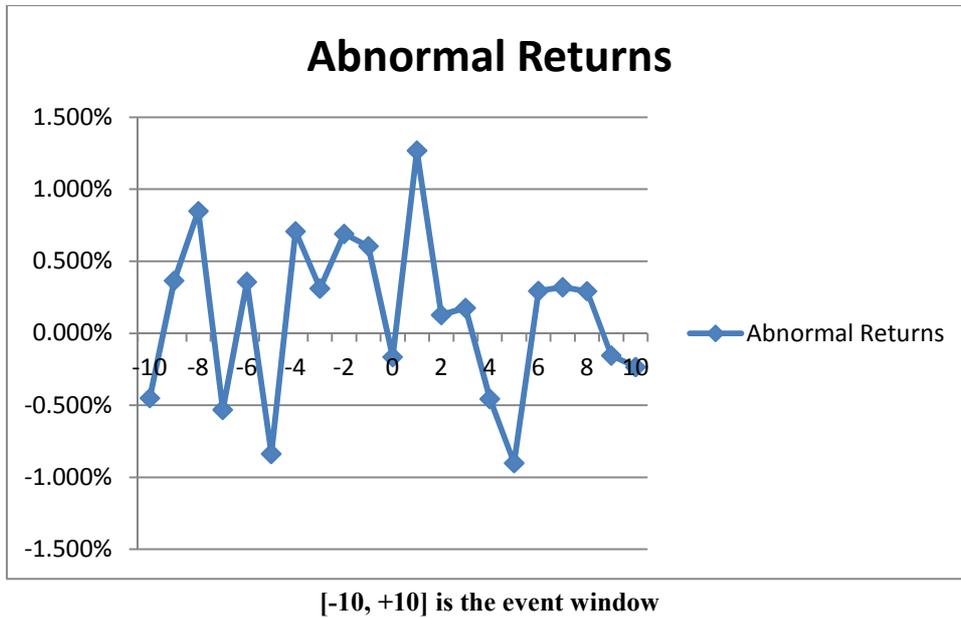


Figure 4
(Targets' ARs-Market Adjusted Model)

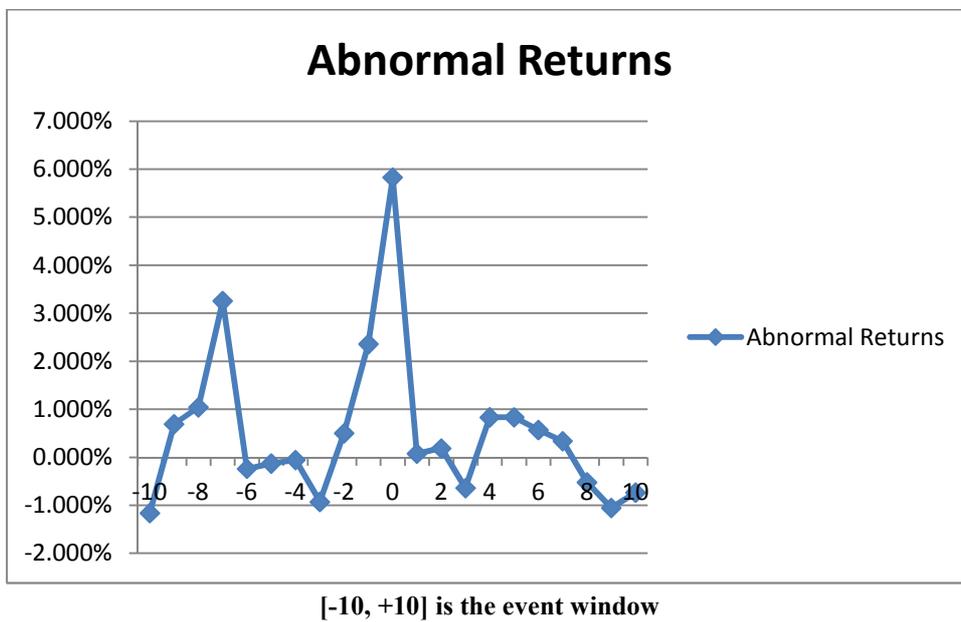


Figure 5
(Targets' ARs-Market Model)

