Stock Market Reaction of Bidding firms to Merger and Acquisition Announcements in the Shipping Industry

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I hereby declare that the work submitted is mine and that where I have made use of another’s work, I have attributed the source(s) according to the Regulations set in the Student’s Handbook.

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Abstract

Mergers and acquisitions have proved to be the most effective strategies towards the completion and achievement of the organizational objectives of shipping firms. The importance of this corporate event is evidenced by the increasing number of transactions that took place in recent years.

The purpose of this dissertation is to investigate the stock market reaction of listed bidding shipping firms to the announcement of a merger or an acquisition. The transactions of mergers do not only create value on the merging enterprises, but also generate a positive or negative wealth effect for the shareholders of bidding firms. Employing the classical event study methodology of the dataset consists of 172 mergers and acquisitions that occurred between 2000 and 2014. Empirical results revealed positive abnormal and cumulative abnormal returns for the acquiring firms on the announcement day and period, respectively.

Keywords: Shipping; Event Study Analysis; Stock Market Returns; Mergers and Acquisitions; Bidding firms.

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1. Introduction

1.1. Background Information

Mergers and acquisitions are some of the most popular and significant forms of corporate development. To begin with, Brooks and Ritchie (2006) stated that mergers are deemed as an alternative to generate internal corporate growth. According to Lev (1993) mergers became a “trend” during the decades of 1960 and 1980 (merger “waves”). In the beginning, these “waves” appeared as a part of financial activity, but after some years they were regarded as indispensable parts of the investment strategy. It is widely admitted that, mergers and acquisitions (M&As henceforth) generally occur in cyclical patterns, usually driven by the necessity of technological and financial restructuring.

Numerous enterprises globally engaged in such activities in order to gain benefits. According to Kummer and Steger (2008), the search and desire for growth is the main motive behind M&As. As internal growth alternatives most of the times fail, M&As seem to provide the greatest and the quickest form of growth. M&As are means of acquiring knowledge, stimulating continuous development, reaching economies of scales and scope and reducing risk exposure. Even though there is mixed evidence regarding the acceptance of the corporate transaction, the main rationale behind it is the attainment of more benefits than the firms had when they were independent. The value that is created can be classified in three sources: Operational synergy, financial synergy and managerial synergy.

Announcements of M&As have a direct impact on the stock prices of both the bidding and the target firm. This happens due to the fact that investors revise their expectations according to the arrival of the new information. Fama (1970) claimed that “stock prices reflect all publicly available information on an underlying asset”. The stock market reaction of target and bidding companies to M&As has been extensively analyzed in the literature. However, there is a literature gap about the wealth effect of M&As in the shipping industry.

Noteworthy consolidation has been observed to shipping industry, a fact that drove an increasing rate of mergers and acquisitions (Van de Voorde et al., 2009). According to Heaver et al. (2000), an amount of more than US$200 billion were spent over the last three decades on more than 4,100 M&A deals globally. The highly competitive environment of the shipping industry results in demand of high quality services in combination with low cost. It is imperative that both of them should be fulfilled in order to meet customer needs. Furthermore, in order to remain competitive, companies look for international expansion so that they can cover market needs. Therefore, maritime transportation sector is characterized by numerous cross-border mergers. Another reason that partially explains why shipping companies engage into M&As is the increasing economies of scale both in large vessels and big fleets (capacity) and because of the extended trade routes needs. Freight transport companies are merged horizontally (same mode, parallel supply
chain) and vertically (between different modes, adjacent supply chain). Although there has been prior literature on M&As of transportation sector, literature on maritime sector is limited.

This study aims to examine the financial effects of M&A announcements of acquiring firms in the liner shipping industry. On this basis, the current study:

- Investigates the acquiring firms market’s reaction to the announcement of a merger or acquisition in the shipping industry;
- Explores the factors that explain the stock price reaction during the announcement period (-1, +1 days);
- Compares the market’s reaction to M&As during the pre-crisis (2000-2007) and post-crisis (2008-2014) period; and
- Examines whether the market’s reaction depends on the way of financing of the transaction (cash or stock financed merger).

In order to fulfill the research objectives, the current study employs the event study methodology. More specifically, both the market model and the market adjusted model are utilized. What is more, by using those models, I have managed to calculate both the abnormal and the cumulative abnormal returns around the M&A for the bidding firms. Finally, I use pooled cross-sectional regression analysis in order to identify the factors that explain abnormal behavior surrounding M&As.

In order to accomplish all the previously mentioned objectives, the current research project is structured as follows. To begin with, the first section includes an introduction in which background information is presented. Consecutively, in the second and third section, an in-depth literature review on international mergers and acquisitions on shipping industry is provided. In section four, data selection and research methodology are described. The fifth section includes the empirical results of the study. Last but not least, the conclusions of the study are presented in section six.

2. International Literature on Mergers and Acquisitions

M&As combine both aspects of corporate finance and strategic management¹ and deal with the purchasing and infusing with other companies. In a merger, two organizations are joining forces to become a new one, usually with a new name. Due to the fact that firms involved are mainly of similar size, the term “merger of equals” is used. In an acquisition, a bigger business buys a smaller one; the latter might be absorbed into the parent organization or run as a subsidiary. A company under consideration by another organization for a merger or acquisition is sometimes referred to as a “target”.

¹Definitions are executed from Investopedia Website


2.1 M&A Motives

Firms among all industries are merged or acquired in order to gain specific benefits. Companies looking to expand are presented with two alternatives, internal growth or growth through mergers and acquisitions. Gaughan (2002) supported that internal growth may be a slow and uncertain process, whereas growth through M&As can be a much more rapid and beneficial process. And this is exactly the rationale behind such transactions; to obtain more benefits than they would if they were independent.

M&As refer to offer that the buyer makes to the seller. According to Ravenscraft and Scherer (1987), the buyer makes an attractive and mutually beneficial offer to the target firm in order to achieve a number of reasons such as the creation of potential synergy, the increase of the market share or the decrease of fixed costs. On the other hand, the seller would accept an offer either to diversify their investment portfolio or to increase their liquidity levels.

For shareholders of both target and bidding firms, mergers are profitable. However, there are some contradictory studies regarding the social acceptance of the corporate event. Dutz (1989) claimed that mergers and acquisitions are not desirable by the society due to rationalization of capacity and for this reason they should be formally prohibited. On the other hand, Caves (1989) emphasized on the economic and the social efficiency due to the value creation.

Value creation in mergers can be classified in three sources: operational synergy, financial synergy and managerial one; a belief firstly expressed by Sudarsanam et al. (1996).

2.1.1 Operational Synergy

According to Bradley et al. (1983), an operating synergy may be derived from economies of scale, increased market power and share, efficient management and effective combination of complementary resources.

2.1.2 Financial Synergy

Lev (1993) pointed out that the motivation behind such synergies could be both short-term and long-term. On the one hand, tax effects, liquidity improvement and price-earnings can be regarded as short-term goals, whereas on the other hand capital redeployment and improvement of debt capacity as long term goals.


2.1.3 Managerial Synergy

What is more, Lev (1993) mentioned the motives behind managerial synergies, with the most important of them being risk diversification, executive compensation and human resources.

2.2 Theoretical Frameworks regarding the rationale for mergers and acquisitions

2.2.1 Managerial Hypothesis

According to the managerial hypothesis, shareholders conduct mergers or acquisitions in order to fulfill their own interests and targets. It is believed that these objectives do not lead to mutually positive abnormal returns and do not offer value maximization for neither the bidding company nor the target firm. This hypothesis was also called by Bishop et al. (1987) “anti-takeover theory”, due to the fact that managers act so as to promote their personal agenda. Another possible reason that encourages mergers is based on managerial hypothesis and consists of the diversification and the reduction of human capital. Amihud and Lev (1981) and Morck et al. (1990) backed this claim by supporting that the new merging firm is divided and shared amongst many people of both target and bidding firms.

2.2.2 Value Maximizing Hypothesis

Gonzalez et al. (1997) and Sudursanam et al. (1996) stated that the most important reason of a merger or acquisition is the rapid growth of shareholders’ wealth. In order to materialize, a M&A’s net present value should be positive or at least non-negative. Consequently, should the above object cannot be met, managers of the bidding firms may not proceed with the merging proposal and those of target firms may not accept the offer (Powell, 1997). Furthermore, according to Berger et al. (1988), the combination of assets of merging firms becomes bigger than it was when they were independent. This is called static effect. Therefore, the bigger the assets, the greater the probability of merging firms to present a greater value maximization or wealth effect for their shareholders. It is agreed that consistent with this hypothesis are the financial motives and synergy effects.

2.2.3 Non-Value Maximizing Hypothesis

Non-Value maximizing hypothesis has been proposed by Halpern (1973 and 1983) and claims that any merger or acquisition has no economic gains or value for the
merging firm. According to him, the reasons that firms proceed to mergers are not financial, but there are other hidden motives behind them. Purchasing companies may desire to maximize their market share, enter a new market or expand to a new geographical region; actions that would not have been possible without a merger. The majority of the non-value maximizing mergers are horizontal. Due to the fact that most of the times they are subject to government regulations, they tend to create monopolies.

2.2.4 Inefficient Management Hypothesis

Inefficient management of target firms became one significant motive for merger or acquisition. This inefficiency can be pointed out in various indicators and ratios such as low P/E ratio or undervalued stocks. Acquiring companies focus on the non-efficiently utilization of targets’ resources and; therefore are motivated to takeover the target firms (Malatesta, 1983).

Concluding, there appears to exist a variety of motives that leads shareholders and managers to conduct mergers and acquisitions. The four basic hypotheses behind the rationale of mergers and acquisitions have been analyzed above.

2.3 Historical Background of M&As

The history of mergers is mainly dominated by five distinctive time periods. According to Gaughan (2002), time periods of high merging activity were usually followed time periods of lower activity, forming a never-ending time-loop. These waves occurred between 1897 and 1904, 1916 and 1929, 1965 and 1969, 1984 and 1989 and in the early 1990's.

The first merger era (1887-1904) was one of the highest intensity because it happened right after the great depression of 1883. Wenston et al. (2001) identified that during this first wave many horizontal mergers took place in the field of steel, oil, telephone and basic manufacturing industries.

According to Gaughan (2002), the second merger wave (1916- 1929) was mostly characterized by Oligopolies, industry consolidation and large-scale formation of conglomerates. The invention of radio and automobile are fine examples of this period. Moreover, Gaughan (2002) claimed that many of the corporations that were formed during this period are still successful by today.

The third merger wave (1965-1969) included various activities in multiple industries. The majority of them, approximately 80%, were conglomerate mergers because it was difficult to develop horizontal and vertical mergers in the United States due to antitrust laws.
Gaughan (2002) claimed that the fourth merger wave (1984-1989) was characterized by mega mergers and hostile takeovers with innovative acquisition techniques and investment tools being employed. Junk bonds and financial improvements led the majority of the companies to seek buyers in order to take over. The deregulation of major industries, for example aviation and maritime industry, caused a disproportional number of transactions in favor of specific industries in contrast to some others.

The consolidation of some industries through larger scale acquisitions of companies took place in the fifth merger wave. In this period mergers became a worldwide phenomenon, as Gaughan (2002) supports. Firms realized that economic expansion through mergers and acquisitions is viable and quicker than trying to grow internally. It is an undisputed fact that within this fifth wave the shipping industry has conducted the biggest, in both size and value, and the most significant deals in its history.

Figure 1: M&As waves during the last decades

![Graph showing M&As waves during the last decades](image)


Having analyzed the M&As till the early of 90s, Figure 2 presents the number of transactions that took place between 1994-2011. An increasing trend is observed as time passes since it is obvious that more M&As, both domestic and cross borders, occurred globally.
2.4 Classification of Mergers and Acquisitions

The corporate event of M&As is classified into three main categories: horizontal, vertical and conglomerate.

2.4.1 Horizontal M&As

To begin with, according to Leory (2002), the first kind of M&As consists of transactions between companies that are found within the same sector of activities. In other words, companies that were competitors in the same industry chose to merge in order to improve their competitive position. In my opinion, economy of scale is the most significant benefit that companies gain from merging horizontally since the increasing size also causes an increase of market share. Leory (2002) supported that this “size effect” will undoubtedly affect positively the bargaining and negotiation power of a company with its vendors and clients.

2.4.2 Vertical M&As

Cameron and Green (2009) defined vertical M&A as a merger or an acquisition in which the two participating companies have a customer-supplier relationship. This type of activities allows companies to decrease the number of intermediaries and the transaction costs. Leory (2001) adopted the above thesis in his paper highlighting the enlarged market power in controlling distribution channels.
2.4.3 Conglomerates

If a company acquires or merges with another company which is “neither a competitor, nor a buyer, nor a seller” (Cameron and Green, 2009) then this acts referred to as a conglomerate. As enterprises that operate under conglomerate activities are not found in the same sector or industry, the fundamental reason regarding M&As is the diversification seeking.

3. Mergers and Acquisitions on Shipping Industry

It is an undeniable truth that during the last decades the shipping industry has conducted a series of high profile mergers and acquisitions. This industry is mainly characterized by big alliances and mergers around the world. Two of the most important and possibly the largest M&As that occurred, took place in 1997 and in 1999 respectively. The first one was the integration of P&O Containers by Royal Nedlloyd Line (P&O Nedlloyd) while the second one was the takeover of SeaLand by Maersk (Maersk- SeaLand). AP Moller-Maersk, world’s largest shipping company headquartered in Copenhagen, operates in more than 136 countries with more than 500 container vessels generating more than US$60 billion revenues per year. The global dominance of Maersk has been achieved by a series of efficient and profitable mergers and acquisitions. The pattern of full scale mergers was emerged in the second half of nineties, triggered off by the deregulation and the abolishment of the liner conference system. Consequently, shipping industry transformed to a deregulated market structure having some big participants and a petite number of smaller ones.

3.1 Feedback on Maritime Sector

It can be easily said that in recent years maritime industry has expanded greatly. The new century started with numerous orders in vessels due to the increased demand of shipping services. Therefore, freight rates increased, providing large profit margins to the ship owners and shareholders. Figure 3 presents, on the one side, the existing fleet and on the other side, the new vessel orders for the 30 biggest shipping firms globally.
The increased demand of the shipping services correlated with the supply growth rates in the period 2000-2014 is illustrated in Figure 4. It can be said that from 2008 until 2009, in the beginning of the global financial crisis, the supply exceeded the demand growth. The sudden decrease of imports and exports greatly affected the maritime sector. Since 2014 and up to today, demand growth is slightly above the supply; therefore, shipping firms continue to order vessels with excessive capacity to fulfill their market needs.
3.2 Reasons why shipping firms are engaged into M&As

Some of the key reasons that shipping companies present a high number of M&As are below:

- The U.S. Ocean Shipping Reform Act (1988) in the international liner shipping industry;
- The deregulation of the Staggers Act (1980) in U.S.;
- Significant changes in the regulations of trucking (Brooks and Ritchie, 2005);
- The challenge to provide door-to-door integrated transportation services (Heaver et al., 2000);
- The need for economic and operational synergies (Carbone and Stone, 2005);
- The potential for value creation and other economic gains (Syriopoulos and Theotokas, 2007; Samitas and Kenourgios, 2007).

Das (2011) investigated how shipping companies choose between partnerships and acquisitions. By using a large sample of 427 firm-events, he concluded that shipping firms are most likely to acquire target firms originating from their home “region”. In other words, domestic M&As seem to be more preferable than cross-border M&As. Additionally, Das (2011) found that if a shipping company has prior acquisition experience, the likelihood of repeating an acquisition is increased since it possess
the experience and the means to do so. On the other hand, prior partnership experience decreases the percentages of the possibility of a M&A to be preferred.

3.3 Wealth Effect of M&As in Shipping

Undoubtedly, M&As affect the value of both bidding and target firms. Many studies have investigated whether M&A’s impact is positive or negative. Weston et al. (2004) classified these studies into three categories: Value increasing, value neutral and value destroying studies. Firstly, value increasing studies claim that technology and regulatory changes motivate mergers and acquisitions so as efficiency improvements to occur. Secondly, value neutral is implied by the hubris hypothesis of Roll, (1986). Last but not least, agency managerial and agency problems are associated with value decreasing studies.

Alliances are usually described as forerunners of mergers according to Bleek and Ernst (1995). In the attempt to switch from alliance to the potential merger, wealth may be destroyed. Harrigan (1988) strengthened even more this proposal by providing evidence and showing that approximately 60% of all the alliances fail to meet their financial goals. For comparison reasons, Bruner (1999) assessed both the value destruction and recovery of an alliance and a proposed merger. He proved the existence of significant abnormal returns associated with this corporate event. Besides, in 1997, Zhang and Aldridge found a significant effect of mergers and alliances on the stock prices of firms in a study mainly concentrated on the Canadian airline industry. One year later, in 1998, De Mortanges and Rad (2000), proved that the negative market reaction was caused by the negative publicity of the event. Of course, similar studies have been made for various corporate events such as earnings, announcements, stock splits and international cross-listings (Miller, 1999).

Given the fact that there are numerous M&As in shipping industry that affect significantly the shareholders’ value, it seems justifiable to conduct a study examining this value, taking on account the acquiring firm’s point of view. M&As in shipping industry will undoubtedly affect firms’ long term performance, and therefore, should be reflected on the stock price when the event is announced (t=0). Even though the literature on M&As in maritime is adequate, literature focusing on the financial and economic implications of M&As in liner shipping is relatively limited. Specifically, Panayides and Gong (2002) found that there is a direct positive impact on the stock prices of firms on the announcement day of M&As. This evidence is also supported by Samitas and Kenougios (2007) in a later paper, who examined M&As in the tramp shipping industry and proved that these events affect positively stock market prices and shareholders’ value.

The majority of the studies analyze the wealth effect of target firms and present positive and significant excess returns. Regarding the acquiring firms, the literature is restricted. Andreou et al. (2012) presented insignificant results of the abnormal return by conducting an OLS regression in the acquirers. The current study will investigate
whether there are positive or negative abnormal returns on the announcement day for the acquiring company’s shareholders.

3.4 Deal Characteristics

Due to the fact that there are many contradictory theories and studies related to the contribution of mergers and acquisition in the firms’ value creation, I examine a variety of characteristics of firms and deals that may affect the impact of M&As.

3.4.1 Announcement Effect

Target Gains

Many studies support that there are high significant positive abnormal returns observed in the target firms, on the announcement day. Andrade et al. (2001) argued that shareholders of the target firms receive important premiums for bestowing control to the acquirer.

Acquirer Gains

Literature that examines abnormal returns under the scope of the acquirer is restricted. This is the main motive to investigate how stock prices of bidding firms react on the announcement day. Andrade et al. (2001) found evidence of no significant abnormal returns for the acquirers on the announcement day. Netter et al. (2010) argued that these findings may have been executed due to the biased sample selection procedures that focused only on large mergers. However, the sample of the current study covers a variety of deals so the results may be reliable.

3.4.2 Types of Deal

Cross-Border vs. Domestic M&As

Shipping firms prefer to conduct cross border mergers so as to promote their relationships with their universal clients over the relations with the domestic ones. It is obvious that the higher the risk that a cross-border integration has, the higher the financial cost of the deal would be. According to Martin et al. (1998), acquirers who are seeking international expansion should pay a premium in order to enter the market. Target firms have relatively higher benefits in cross-border mergers than in domestic. The current study includes a sample of both domestic and cross-border mergers as it examines all the events that took place from 2000 up to 2014 globally. However, it is well known that the majority of the shipping mergers are classified as cross-border.
Private vs. Public

It has been observed that bidding firms gain higher abnormal returns if they acquire public target firms instead of private ones. Fuller et al. (2002) claimed that privately held companies seem to appear as less attractive investments than similar ones who are listed on stock exchange market. This sample contains 18 public and 154 private target firms. As the percentage of public firms is extremely low, it is not beneficial to investigate them empirically.

Cash vs. Stock Financed

Travlos (1987) claimed that M&As financed by cash, experience higher abnormal returns for both acquiring and target firms. The above conclusion can be explained by the fact that cash payment is a risk free payment, whereas the stock purchase includes risk. Fuller et al. (2002) supports that while bidding firms are merged with private target and pay in stock, they tend to benefit more than when paying in cash. The present dissertation examines the existing sample and presents the result in the empirical section.

Friendly vs. Hostile M&As

Another factor that holds a significant role in the formation of abnormal returns of both target and acquiring firms is whether the merger is friendly or hostile. Hostile mergers are extremely rare, as it is well established by existing literature. Roll (1986) supported that friendly deals are commonly motivated by hubris, so as the acquirer is possible to overpay for the target. In this situation, target firms present wealth increase, whereas bidding firms present losses. Rau and Vermaelen (1998) validated the above results.

3.5 Reasons of Failure

First and foremost, the fundamental reason that shipping firms may engage into an M&A is cost reduction, or cost minimization. In order to succeed, a merger should prioritize its daily production and operation. These two factors generate revenue and therefore profits for the company. As financial conditions are changing and technology is developing, managers who decide to conduct a transaction like a merger or acquisition, should definitely focus on the factors mentioned above. If not, the probabilities for a merger failure are greatly increased.

Cross-border mergers encounter major problems and difficulties. Shipping industry is mainly characterized by cross-border M&As due to their object as mentioned above. These kinds of operations are proved to be expensive in terms of both time and effort. However, there are many legal and regulatory hurdles that managers should overcome. The various corporate cultures between enterprises of different counties form one of the biggest problems in the cross-border mergers. When the decision of a company acquisition or merger is taken, it is based only on market or product
synergies. Cultural differences and peculiarities are often ignored. Personnel issues cannot be easily overcome.

Another reason that can damage shareholder value in a potential merger is the different perceptions of firm objectives. For instance, managers usually prefer their enterprise to be one among the supervisors, while shareholders generally admitted that they prefer to become target. The efficiency of the company is absolutely affected negatively by the different attitudes of stakeholders.

What is more, parameters such as tax structures, legal frameworks and insufficient information transparency affect absolutely the value creation, by increasing the managerial and organizational costs.

4. Sample Selection and Data Describing

The aim of this research is to examine the stock price reaction to the announcement of mergers or acquisitions for a sample of acquiring firms in the liner shipping industry. It is well known, that share prices reflect management’s future expectations regarding profit and value maximization. According to Efficient Market Hypothesis (Fama, 1970), stock prices reflect all available information, as capital markets react rapidly to signals and publicly available information. Therefore, if a market receives positive feedback about a corporate event, there will be an immediate reflection in the form of a positive abnormal return. On the other hand, a negative abnormal return occurs if a market receives a potential negative feedback/expectations.

The time period I have chosen to delve deeper is 2000 to 2014. The sample covers a relatively long period and allows me to separate the sample into two distinctive eras, the pre-crisis period of the global financial turmoil of 2008 and the post-crisis period. Furthermore, M&A deals were culled from Thomson-One Database applying some criteria. The acquirer firms must be public and classified as Freight Transportation Company (NAIC code 488510) deriving their main income from the provision of deep-sea freight transport services. On the contrary, no special characteristics or activity was required for the target firms, which can be either public or private. Moreover, the event of merger or acquisition should be finalized. These criteria resulted in an initial sample of 223 deals. Data unavailability reduces the initial sample to 172.
As it is observed from Figure 5, year 2014 presents the most M&A deals that took place in the examined period. In 2000 shipping industry conducted only two M&As. As time passes, shipping companies engage into big alliances and M&As in order to stay competitive and active in the market.

Furthermore, the market indices in which each acquiring firm is subject to have been taken from Bloomberg according to geographical criteria. The required daily stock returns for both equities and market indices are retrieved from Bloomberg Database and Yahoo! Finance as well.

4.1 Research Methodology

In order to examine the stock price reaction to the announcement day of mergers and acquisitions the classical event-study approach was utilized (Brown and Warner, 1985). In order to gauge stock price reaction to M&As I have employed the: market model and the market-adjusted model. Due to the fact that these two models capture formulation of the abnormal return in the most easily way, the current study makes a comparison of their results.

4.1.1 Event-Study Approach

The most valid and consistent method of measuring the impact of any corporate event is proved to be the event-study approach. According to Bishop et al. (1987), the measurement of returns by event study approach is claimed to be a superior method to that of analyzing abnormal returns due to the fact that it offers the “best estimates” of post-merger firm’s value. As various corporate events such as earnings
announcements, stock splits and mergers announcements reflect management’s future expectations, the results should be quantified. According to Halpern (1983), the most appropriate date to gauge the impact of an event is the first public announcement (event time). At event time \( t=0 \), stock prices of both bidding and acquiring firms fluctuate to follow the effects of the merger announcement. It has been observed that, abnormal returns may exist before the announcement day due to the market anticipation or information leaks. Franks et al. (1977) showed that share prices start to anticipate the announcement day of merger or acquisition three months before, whereas Halpern (1973) argued that the anticipation may start eight months prior to the announcement day. Furthermore, abnormal returns may occur in the post-event period due to the uncertainty of profitability and success of the merger. Nevertheless, at the announcement day, stock prices are adjusted in such way to reflect the event.

According to Panayides and Gong (2002), a 21-day event window is considered to be adequate in order to successfully capture the event. Thus, supposing that the announcement date is day 0, the event window is the period (-10, 10) days and the estimation one is the (-250, -11) period. The 10-day analysis of abnormal returns following the announcement is significant due to the fact that the shareholders’ wealth effect occur at approximately 10 days after the event. Additionally, the 10-day analysis prior to the announcement is significant in order to capture price movements based on rumors of the event. Graphical representation of the time line of the event study is presented on Figure 6.

**Figure 6: Time line for Event Study**

![Event Study Time Line](image)

4.1.2 Market Model Application

Brown and Warner (1980 and 1985) concluded that a simple market model is well-specified and consistent to assess the share-price effects of various corporate events by analyzing properties of daily/monthly/annual stock returns. According to the above model, a stock price is said to be linearly related to the market return.

Standard Market Model approach is adopted in order to calculate the daily abnormal returns of the sample firms in the present study. In order to estimate the parameters of the market model (intercept, beta coefficient) an OLS regression is used. Regressing the daily returns of a firm on the daily return of their market index in the estimation window that claimed above (-250, -11), we have calculated the intercept and beta coefficient as well. Therefore, the expected return is calculated as follows:
\[ \bar{E}_{it} = \bar{a}_t + \bar{\beta}_t \bar{R}_{mt} \]

\( \bar{E}_{it} \) is the expected return at time \( t \), \( \bar{a}_t \) and \( \bar{\beta}_t \) are the parameters estimated from the regression claimed above during the estimation window period and \( \bar{R}_{mt} \) is the realized market return (index return) at time \( t \). In addition to the market model, the study presents the results of the abnormal return that occur from the market-adjusted model. Both models are designed to assess the effect of an unexpected event such as M&A announcement. This model is supposed to be a special version of the market model, in which parameter \( \bar{a}_t \) equals to zero and \( \bar{\beta}_t \) equals to zero for all sample companies. Therefore, we have

\[ \bar{E}_{it} = \bar{R}_{stock,i,t} - \bar{R}_{index,i,t} \]

Then, the abnormal return \( AR_{it} \) has been measured by deducting from the realized stock return \( R_{it} \), the expected return \( \bar{E}_{it} \),

\[ AR_{it} = R_{it} - \bar{E}_{it} \]

Having calculated the abnormal return, it is essential to measure the cumulative abnormal return in the event window period (-10, +10). So,

\[ CAR_{i(-10,+10)} = \sum_{-10}^{+10} AR_{it} \]

The Average Abnormal Return (AR) in the event period is

\[ \bar{AR}_t = \frac{1}{N} \sum_{i=1}^{N} \bar{AR}_{it} \]

Whereas, the Average Cumulative Abnormal Return (CAR) for a specified time window \( L \) during the event period is

\[ \bar{CAR}_L = \frac{1}{N} \sum_{i=1}^{N} \bar{CAR}_{iL} \]

In order to determine whether statistical significance exists or not, it is essential to compute the test-statistic of both average AR and average CAR.

\[ t(AR_t) = \frac{\bar{AR}_t}{\hat{S}(\bar{AR}_t)} \]

\[ t(CAR) = \frac{CAR (p,q)}{\left[ \hat{S}(\bar{AR}_t) * \sqrt{q-p} \right]} \]

Abnormal returns claim to capture all the effects of a corporate event, according to the literature of accounting and finance. By assessing the sign and the magnitude of
Having measured both abnormal and cumulative abnormal return it is essential to come across with the variables that affect them. According to prior literature there are five variables that are deemed vital in the formulation of the dependent variable (AR and CAR). Beta coefficient, the bidding firm’s size, the percentage of shares acquired, the way of financing and the time that the transaction of M&A took place (pre or post crisis of 2008) constitute the independent variables in the regression of the present study. The analysis of the variables is found on details in section 5.5. So the proposed linear regression model is given below:

\[
AR_0 = \text{constant} + a \times (\text{Beta}) + b \times (\text{Full Acquisition Dummy}) + c \times (\text{Cash Dummy}) + d \times (\text{Size}) + e \times (\text{Pre Crisis Dummy})
\]

\[
CAR_{(-1,+1)} = \text{constant} + a \times (\text{Beta}) + b \times (\text{Full Acquisition Dummy}) + c \times (\text{Cash Dummy}) + d \times (\text{Size}) + e \times (\text{Pre Crisis Dummy})
\]

5. Empirical Results

5.1 Analysis of the Entire Sample

The results of the event study approach are reported below. Panel A lists the average abnormal return (in percentage), the t-statistic, and the cumulative average abnormal return (in percentage) that have been measured by the Market Model in the event window period (-10, +10). Panel B presents the same data but abnormal returns are computed by the Market-Adjusted Model. Finally, in Table 2, the CAAR(Cumulative Average Abnormal Return) is presented in specific smaller event windows for both models.

Table 1: AAR and CAAR results measured by market and market-adjusted model

<table>
<thead>
<tr>
<th>Day</th>
<th>Panel A</th>
<th>Market Model Returns</th>
<th>Panel B</th>
<th>Market-Adjusted Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AAR%</td>
<td>t-Statistic</td>
<td>CAAR%</td>
<td>AAR%</td>
</tr>
<tr>
<td>-10</td>
<td>-0.009</td>
<td>-0.08</td>
<td>-0.01</td>
<td>-10</td>
</tr>
<tr>
<td>-9</td>
<td>0.139</td>
<td>1.23</td>
<td>0.13</td>
<td>-9</td>
</tr>
<tr>
<td>-8</td>
<td>-0.169</td>
<td>-1.50</td>
<td>-0.04</td>
<td>-8</td>
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<td>-0.16</td>
<td>-7</td>
</tr>
<tr>
<td>-6</td>
<td>0.105</td>
<td>0.93</td>
<td>-0.06</td>
<td>-6</td>
</tr>
<tr>
<td>-5</td>
<td>-0.174</td>
<td>-1.54</td>
<td>-0.23</td>
<td>-5</td>
</tr>
<tr>
<td>-4</td>
<td>0.022</td>
<td>0.20</td>
<td>-0.21</td>
<td>-4</td>
</tr>
<tr>
<td>-3</td>
<td>0.014</td>
<td>0.13</td>
<td>-0.20</td>
<td>-3</td>
</tr>
<tr>
<td>-2</td>
<td>-0.024</td>
<td>-0.21</td>
<td>-0.22</td>
<td>-2</td>
</tr>
<tr>
<td>-1</td>
<td>0.168</td>
<td>1.49</td>
<td>-0.05</td>
<td>-1</td>
</tr>
<tr>
<td>0</td>
<td>0.308</td>
<td>2.73***</td>
<td>0.26</td>
<td>0</td>
</tr>
</tbody>
</table>
From the above results, it is concluded that there has not been any leakage of information prior to the announcement day, as abnormal returns fluctuate in low levels without giving any clear and strong signal. However, in day=-1 a sudden movement of the return from negative to positive levels is observed. In addition, during the previous days, abnormal return is ranging from a minimum -0.174% to 0.022% by using both market and market adjusted model. Furthermore, in the market model all pre-event abnormal returns are not statistically significant, whereas in the market adjusted there are two days statistical significant; day= -5 and day= -1. There is evidence of statistical significance, however it is not a strong one since it is very close to the critical value. There may be a first indication that market feels the magnitude of the upcoming announcement and the expectations are already incorporated in returns at day= -1. At day=0, market presents the higher positive value of the average abnormal return. Market seems to react strongly on the M&A event. This can also be verified by the high statistical significance of the values (significance level at =1%). This finding is consistent with the hypothesis according to which, strategic moves such as mergers or acquisitions add value to the firm. Panayides and Gong (2002) at their study confirmed the above conclusion. On announcement day, high significance and positive reaction of the stock market is observed. At the period (+1, +10) there is a fluctuation, with the last two days being observed with high negative values. The existing volatility may indicate uncertainty among the shareholders regarding the profits or benefits from merger or acquisition. The majority of the values in the post-event period are not significant, but there are some days in both models that are considered significant.

On the contrary, CAARs presents significant divergence depending on the method. CAARs in the market model, continue the trend that was described in AAR. Extremely positive abnormal return is observed when the outcome publicizes (t=0), as market reacts to the announcement. After day=5, abnormal return passes to negative levels and it keeps increasing (in absolute value) day by day. This may indicate that the announcement of corporate event includes negative information for the shareholders of the bidding firms. Market-Adjusted Model, on the other hand, presents a low positive reaction on day=0 and greater in the time period (+1,+10). The highest value is observed at day=2. Market participants react on stock market
activity after the merger or the acquisition has been announced. This may be interpreted as signal of market inefficiency in a sense that stock prices did not fully reflect publicly available information that is usually incorporated in the first announcement.

Additionally, it is important to compare the results of the cumulative average abnormal returns for specified time periods within the event window. So, we have:

Table 2: Various Cumulative average abnormal return of acquiring firm

<table>
<thead>
<tr>
<th>Period</th>
<th>Market Model Returns</th>
<th>Market-Adjusted Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAAR%</td>
<td>t-Statistic</td>
</tr>
<tr>
<td>(-10,-1)</td>
<td>-0.052%</td>
<td>-0.14</td>
</tr>
<tr>
<td>(-5,-1)</td>
<td>0.007%</td>
<td>0.03</td>
</tr>
<tr>
<td>(-1,0)</td>
<td>0.476%</td>
<td>2.98***</td>
</tr>
<tr>
<td>(-10,+10)</td>
<td>-0.527%</td>
<td>-1.02</td>
</tr>
<tr>
<td>(-5,+5)</td>
<td>0.163%</td>
<td>0.44</td>
</tr>
<tr>
<td>(-1,+1)</td>
<td>0.392%</td>
<td>2.01**</td>
</tr>
<tr>
<td>(+1,+5)</td>
<td>-0.152%</td>
<td>-0.60</td>
</tr>
<tr>
<td>(+1,+10)</td>
<td>-0.783%</td>
<td>-2.19**</td>
</tr>
</tbody>
</table>

(\(^*\)): significance level 5\%, (\(^***\)): significance level 1\%

The total cumulative average abnormal return in period (-10,+10) is negative in both models, but the values are not significant. The highest significance noted is in period (-1,0). Market model results in CAAR 0.476\% whereas market-adjusted in CAAR is 0.519\%. Furthermore, these values seem to be among the highest positive values of the table. Market expectations regarding value creation from the event is again confirmed. Market participants react positively to the upcoming event one day prior to the announcement. This reaction remains till the day of announcement as previous results reveal. This finding is also confirmed by Samitas and Kenougios (2007), who found positive stock market reaction in the period (-1,0) for the tramp shipping. Market-Adjusted model does not present any other statistical significance. On the contrary, market model provides significant CAAR for the period (-1,+1) and (+1,+10).

5.2 Comparison of the abnormal returns of the models

Figure 7 below illustrates the trend of the average abnormal return of acquiring firms in event period based on market model and market-adjusted model. Although the results accelerate in the same direction for the measurement period, market-adjusted model is observed to present higher abnormal returns in absolute value.
Figure 7: Average Abnormal returns of acquiring firms in the event period (Market Model and Market-Adjusted Model)

For each of the 21 days of measurement, market-adjusted exceeded in abnormal return the market model. On the announcement day, market model presented an AAR of 0.308%, whereas the market-adjusted a value of 0.325%. These outcomes demonstrate that the market-adjusted model generates a better result in the positive levels and worse result in the negative levels compared to the market model. That is consistent with the literature as the market model is supported to be superior and more consistent than the market-adjusted model.

5.3 Pre-Crisis and Post-Crisis Period

The distinction between pre-crisis and post-crisis period is important in order to gather valuable intelligence and reach useful conclusions. The time span is fourteen years, beginning in 2000 and ending in 2014. This period is intentionally separated into two periods; one before the global financial crisis of 2008 and a second one immediately after it. During the pre-crisis period (2000-2007) I have decided to monitor 74 bidding firms while during the post-crisis one (2008-2014) I analyzed 98 firms.

As it is shown of Table 3, the average abnormal return during the pre-crisis period on the announcement day of a M&A is 0.77% according to the market model and 0.56% according to the market-adjusted model. However, on the announcement day both models reveal statistical significance and exhibit a positive CAAR. It is my belief that market reacts positively in M&As that took place during the 2000-2007 period. After day $t=0$, there is a fluctuation in the abnormal return, with the majority of them to be negative. High significance is observed only in day $t=9$ and $t=10$ of the market adjusted model.
Table 3: AAR and CAAR results of pre-crisis period measured by market and market-adjusted model

Pre-Crisis Period

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Market Model Returns</th>
<th>Panel B</th>
<th>Market-Adjusted Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td>AAR%</td>
<td>t-Statistic</td>
<td>CAAR%</td>
</tr>
<tr>
<td>-10</td>
<td>-0.06</td>
<td>-0.22</td>
<td>-0.06</td>
</tr>
<tr>
<td>-9</td>
<td>0.26</td>
<td>0.93</td>
<td>0.20</td>
</tr>
<tr>
<td>-8</td>
<td>-0.02</td>
<td>-0.07</td>
<td>0.18</td>
</tr>
<tr>
<td>-7</td>
<td>-0.24</td>
<td>-0.88</td>
<td>-0.07</td>
</tr>
<tr>
<td>-6</td>
<td>0.14</td>
<td>0.52</td>
<td>0.08</td>
</tr>
<tr>
<td>-5</td>
<td>-0.49</td>
<td>-1.77*</td>
<td>-0.41</td>
</tr>
<tr>
<td>-4</td>
<td>0.44</td>
<td>1.57</td>
<td>0.02</td>
</tr>
<tr>
<td>-3</td>
<td>0.11</td>
<td>0.41</td>
<td>0.14</td>
</tr>
<tr>
<td>-2</td>
<td>-0.26</td>
<td>-0.92</td>
<td>-0.12</td>
</tr>
<tr>
<td>-1</td>
<td>0.32</td>
<td>1.14</td>
<td>0.20</td>
</tr>
<tr>
<td>0</td>
<td>0.77</td>
<td>2.77***</td>
<td>0.96</td>
</tr>
<tr>
<td>1</td>
<td>-0.02</td>
<td>-0.09</td>
<td>0.94</td>
</tr>
<tr>
<td>2</td>
<td>-0.26</td>
<td>-0.94</td>
<td>0.68</td>
</tr>
<tr>
<td>3</td>
<td>0.03</td>
<td>0.11</td>
<td>0.71</td>
</tr>
<tr>
<td>4</td>
<td>-0.15</td>
<td>-0.54</td>
<td>0.56</td>
</tr>
<tr>
<td>5</td>
<td>-0.09</td>
<td>-0.32</td>
<td>0.47</td>
</tr>
<tr>
<td>6</td>
<td>-0.15</td>
<td>-0.54</td>
<td>0.32</td>
</tr>
<tr>
<td>7</td>
<td>-0.15</td>
<td>-0.54</td>
<td>0.17</td>
</tr>
<tr>
<td>8</td>
<td>-0.23</td>
<td>0.82</td>
<td>0.40</td>
</tr>
<tr>
<td>9</td>
<td>-0.42</td>
<td>-1.50</td>
<td>-0.02</td>
</tr>
<tr>
<td>10</td>
<td>-0.46</td>
<td>-1.66*</td>
<td>-0.48</td>
</tr>
</tbody>
</table>

(*): significance level 10%, (**): significance level 5%, (***): significance level 1%

On the other hand, in the post-crisis period on the announcement day, abnormal returns are positive and statistically significant. According to market model, market reacts positively in window (0, 1) whereas in window (2, 10) the reaction is negative. This may be interpreted as market inefficiency at the point that share prices do not reflect all available information.

Table 4: AAR and CAAR results of post-crisis period measured by market and market-adjusted model

Post-Crisis Period

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Market Model Returns</th>
<th>Panel B</th>
<th>Market-Adjusted Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td>AAR%</td>
<td>t-Statistic</td>
<td>CAAR%</td>
</tr>
<tr>
<td>-10</td>
<td>-0.07</td>
<td>-0.43</td>
<td>-0.07</td>
</tr>
<tr>
<td>-9</td>
<td>0.16</td>
<td>0.93</td>
<td>0.09</td>
</tr>
<tr>
<td>-8</td>
<td>-0.28</td>
<td>-1.59</td>
<td>-0.19</td>
</tr>
<tr>
<td>-7</td>
<td>-0.06</td>
<td>-0.36</td>
<td>-0.25</td>
</tr>
<tr>
<td>-6</td>
<td>0.08</td>
<td>0.48</td>
<td>-0.17</td>
</tr>
<tr>
<td>-5</td>
<td>-0.03</td>
<td>-0.16</td>
<td>-0.20</td>
</tr>
<tr>
<td>-4</td>
<td>-0.29</td>
<td>-1.64</td>
<td>-0.48</td>
</tr>
</tbody>
</table>
To sum up, pre-crisis results are, in absolute values, higher compared to the results of the post-crisis period from day -10 up to day +2. Likewise, as previously discussed, pre-crisis results are significant on the announcement day. This conclusion is also illustrated in the diagram below. Market reacts in a greater degree in M&As that occurred prior to the depressing financial crisis of 2008.

Figure 8: Diagram of AAR% in the event window (-10, +10) in the pre-crisis and post-crisis period

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>0.09</td>
<td>0.52</td>
<td>-0.39</td>
<td>-3</td>
<td>-0.01</td>
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<td>-0.34</td>
</tr>
<tr>
<td>-2</td>
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<td>0.34</td>
<td>-0.33</td>
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<td>0.52</td>
<td>-0.30</td>
</tr>
<tr>
<td>-1</td>
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<td>0.56</td>
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<td>0.74</td>
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<td>0.55</td>
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<td>0.15</td>
<td>1.67*</td>
<td>-0.06</td>
</tr>
<tr>
<td>1</td>
<td>-0.18</td>
<td>-1.01</td>
<td>-0.31</td>
<td>1</td>
<td>-0.15</td>
<td>-1.02</td>
<td>-0.21</td>
</tr>
<tr>
<td>2</td>
<td>0.37</td>
<td>2.14**</td>
<td>0.06</td>
<td>2</td>
<td>0.43</td>
<td>2.04**</td>
<td>0.22</td>
</tr>
<tr>
<td>3</td>
<td>-0.22</td>
<td>-1.26</td>
<td>-0.16</td>
<td>3</td>
<td>-0.30</td>
<td>-1.91*</td>
<td>-0.08</td>
</tr>
<tr>
<td>4</td>
<td>-0.20</td>
<td>-1.13</td>
<td>-0.36</td>
<td>4</td>
<td>-0.14</td>
<td>-1.29</td>
<td>-0.22</td>
</tr>
<tr>
<td>5</td>
<td>0.29</td>
<td>1.67*</td>
<td>-0.07</td>
<td>5</td>
<td>0.19</td>
<td>1.93*</td>
<td>-0.03</td>
</tr>
<tr>
<td>6</td>
<td>-0.18</td>
<td>-1.03</td>
<td>-0.25</td>
<td>6</td>
<td>-0.15</td>
<td>-1.86*</td>
<td>-0.19</td>
</tr>
<tr>
<td>7</td>
<td>-0.16</td>
<td>-0.90</td>
<td>-0.40</td>
<td>7</td>
<td>-0.17</td>
<td>-1.13</td>
<td>-0.36</td>
</tr>
<tr>
<td>8</td>
<td>0.19</td>
<td>1.07</td>
<td>-0.22</td>
<td>8</td>
<td>0.23</td>
<td>1.50</td>
<td>-0.13</td>
</tr>
<tr>
<td>9</td>
<td>-0.16</td>
<td>-0.90</td>
<td>-0.37</td>
<td>9</td>
<td>0.02</td>
<td>0.16</td>
<td>-0.12</td>
</tr>
<tr>
<td>10</td>
<td>-0.10</td>
<td>-0.58</td>
<td>-0.47</td>
<td>10</td>
<td>-0.08</td>
<td>-0.53</td>
<td>-0.19</td>
</tr>
</tbody>
</table>

(*): significance level 10%, (**) : significance level 5%, (***) : significance level 1%
5.4 Cash Vs Stock Financed M&As

Bidding firms can be classified into two categories: strategic buyers and financial buyers. Strategic buyers are all those enterprises that acquire other firms in order to create synergies. The choice of financing is also affected by the desire to maintain ownership concentration and prevailing levels of corporate control. According to Travlos (1987), acquisitions that are financed by cash, experience higher abnormal returns for acquirers' shareholders. While cash constitutes a risk-free payment, stock payment distributes risk between acquirers and targets. This may increase the possibility of misvalued security being used as payment mean. Furthermore, Isfandiyar Shaheen (2006) supported that acquiring firms prefer a cash financed M&A, when managers believe that their shares are fairly valued. On the other hand, if managers believe that their shares are overvalued, they prefer a stock financed transaction which allows them to pay less than the announced total amount, by using their already overvalued shares as method of payment. In the present research from the entire sample of 172 acquirers, 121 of them are stock financed and 51 of them cash financed.

Table 5: AAR and CAAR results cash-financed m&a measured by market and market-adjusted model

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Market Model Returns</th>
<th>Panel B</th>
<th>Market-Adjusted Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td>AAR%</td>
<td>t-Statistic</td>
<td>CAAR%</td>
</tr>
<tr>
<td>-10</td>
<td>-0.26</td>
<td>-0.95</td>
<td>-0.26</td>
</tr>
<tr>
<td>-9</td>
<td>0.35</td>
<td>1.25</td>
<td>0.08</td>
</tr>
<tr>
<td>-8</td>
<td>-0.35</td>
<td>-1.27</td>
<td>-0.27</td>
</tr>
<tr>
<td>-7</td>
<td>-0.33</td>
<td>-1.19</td>
<td>-0.60</td>
</tr>
<tr>
<td>-6</td>
<td>0.38</td>
<td>1.36</td>
<td>-0.22</td>
</tr>
<tr>
<td>-5</td>
<td>-0.53</td>
<td>-1.91*</td>
<td>-0.75</td>
</tr>
<tr>
<td>-4</td>
<td>0.19</td>
<td>0.68</td>
<td>-0.57</td>
</tr>
<tr>
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<td>0.30</td>
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</tr>
<tr>
<td>-2</td>
<td>-0.13</td>
<td>-0.48</td>
<td>-0.40</td>
</tr>
<tr>
<td>-1</td>
<td>0.08</td>
<td>0.27</td>
<td>-0.33</td>
</tr>
<tr>
<td>0</td>
<td>0.15</td>
<td>0.55</td>
<td>-0.17</td>
</tr>
<tr>
<td>1</td>
<td>0.09</td>
<td>0.32</td>
<td>-0.09</td>
</tr>
<tr>
<td>2</td>
<td>0.46</td>
<td>1.64</td>
<td>0.37</td>
</tr>
<tr>
<td>3</td>
<td>0.04</td>
<td>0.13</td>
<td>0.41</td>
</tr>
<tr>
<td>4</td>
<td>-0.21</td>
<td>-0.77</td>
<td>0.19</td>
</tr>
<tr>
<td>5</td>
<td>0.27</td>
<td>0.96</td>
<td>0.46</td>
</tr>
<tr>
<td>6</td>
<td>-0.21</td>
<td>-0.77</td>
<td>0.25</td>
</tr>
<tr>
<td>7</td>
<td>-0.66</td>
<td>-2.37**</td>
<td>-0.41</td>
</tr>
<tr>
<td>8</td>
<td>0.51</td>
<td>1.82*</td>
<td>0.10</td>
</tr>
<tr>
<td>9</td>
<td>-0.72</td>
<td>-2.59***</td>
<td>-0.62</td>
</tr>
<tr>
<td>10</td>
<td>-0.31</td>
<td>-1.12</td>
<td>-0.94</td>
</tr>
</tbody>
</table>

(*): significance level 10%, (**:): significance level 5%, (***): significance level 1%
Even though literature claims that cash financed purchases experience higher abnormal returns, the table above reveals that cash M&A do not reveal any statistical significance on the announcement day. Even if average abnormal return is positive in both models, the cumulative average abnormal return is negative. Day t=7 and t=0 present high significance level in both models with negative value. In general the sign of AAR% is fluctuating without a specific pattern or outcome. As most of the days in the event window present no significance, it is rational to conclude that acquiring firms do not experience any abnormal performance in cash financed transactions at any time during the period surrounding the announcement.

Table 6: AAR and CAAR results stock-financed M&A measured by market and market-adjusted model

<table>
<thead>
<tr>
<th>Panel A</th>
<th>Market Model Returns</th>
<th>Panel B</th>
<th>Market-Adjusted Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td>AAR%</td>
<td>t-Statistic</td>
<td>CAAR%</td>
</tr>
<tr>
<td>-10</td>
<td>-0.20</td>
<td>-0.63</td>
<td>-0.20</td>
</tr>
<tr>
<td>-9</td>
<td>0.26</td>
<td>0.82</td>
<td>0.06</td>
</tr>
<tr>
<td>-8</td>
<td>0.01</td>
<td>0.05</td>
<td>0.08</td>
</tr>
<tr>
<td>-7</td>
<td>-0.21</td>
<td>-0.67</td>
<td>-0.14</td>
</tr>
<tr>
<td>-6</td>
<td>-0.13</td>
<td>-0.42</td>
<td>-0.27</td>
</tr>
<tr>
<td>-5</td>
<td>-0.19</td>
<td>-0.61</td>
<td>-0.46</td>
</tr>
<tr>
<td>-4</td>
<td>-0.05</td>
<td>-0.17</td>
<td>-0.52</td>
</tr>
<tr>
<td>-3</td>
<td>0.26</td>
<td>0.82</td>
<td>-0.26</td>
</tr>
<tr>
<td>-2</td>
<td>-0.34</td>
<td>-1.09</td>
<td>-0.60</td>
</tr>
<tr>
<td>-1</td>
<td>0.37</td>
<td>1.18</td>
<td>-0.23</td>
</tr>
<tr>
<td>0</td>
<td>0.82</td>
<td>2.59***</td>
<td>0.59</td>
</tr>
<tr>
<td>1</td>
<td>-0.22</td>
<td>-0.69</td>
<td>0.38</td>
</tr>
<tr>
<td>2</td>
<td>-0.05</td>
<td>-0.15</td>
<td>0.33</td>
</tr>
<tr>
<td>3</td>
<td>-0.43</td>
<td>-1.34</td>
<td>-0.10</td>
</tr>
<tr>
<td>4</td>
<td>-0.32</td>
<td>-1.01</td>
<td>-0.42</td>
</tr>
<tr>
<td>5</td>
<td>0.13</td>
<td>0.40</td>
<td>-0.29</td>
</tr>
<tr>
<td>6</td>
<td>-0.07</td>
<td>-0.22</td>
<td>-0.36</td>
</tr>
<tr>
<td>7</td>
<td>-0.03</td>
<td>-0.10</td>
<td>-0.39</td>
</tr>
<tr>
<td>8</td>
<td>0.32</td>
<td>1.02</td>
<td>-0.07</td>
</tr>
<tr>
<td>9</td>
<td>-0.27</td>
<td>-0.86</td>
<td>-0.34</td>
</tr>
<tr>
<td>10</td>
<td>-0.33</td>
<td>-1.03</td>
<td>-0.67</td>
</tr>
</tbody>
</table>

(*): significance level 10%, (**): significance level 5%, (***): significance level 1%

On the other hand, stock-financed purchases present high significance level on the announcement day. Market reacts in a greater degree when the M&A is financed by stock. Furthermore, both values at t=0 are positive in comparison with the cash table. The market adjusted model reveals plenty of significant values but they are not meaningful because there is no clear trend. CAAR results in market model are mostly negative. On the contrary, market adjusted is observed to present positive values in
the whole event period (-10,+10). That confirms the conclusion stated above that market adjusted model present higher abnormal and cumulative abnormal return in absolute values than those measured by standard market model.

Figure 9: Diagram of AAR% in the event window (-10,+10) in cash and equity financed mergers and acquisitions

At the announcement day is clear enough that stock financed mergers affect the market with high value of abnormal return. Managers should proceed in M&As by purchasing stocks instead of cash. This outcome comes in contrast with Travlos (1987) who supported that cash-financed stocks present higher abnormal returns. Even though cash-financed mergers produce insignificant values, at the period (+1,+5) seems to exceed in value the stock financed one.

5.5 Regression Analysis

The results of an unvaried analysis, that shows how mergers and acquisitions affect bidders’ stock price, depend on a number of factors. In order to make conclusions regarding the explanatory variables that affect the formulation of the average abnormal return and cumulative average abnormal return, it is essential to read across prior literature. The five significant parameters that affect the average abnormal return and cumulative average abnormal return of bidding firms are presented below.

To begin with, the impact of the beta’s measurement of the acquiring firms is very significant. One of the most common reasons, that firms are engaged into mergers and acquisitions, is to become able to control the systematic risk. It is an undeniable
truth that, market risk cannot be eliminated even with perfect diversification. The incentive to reduce systemic risk should be higher for the companies that have a higher initial level. It is my firm belief that my sample incorporates acquiring firms that activate globally, so their market indexes are not the same. Therefore, beta coefficient may play significant role in the results of AAR and CAAR. Lakonishok and Shapiro (1986) have used beta in their regression in an attempt to find out the determinants of the stock market abnormal return. Their empirical results have shown that traditional measurement of risk, beta, cannot explain the cross-sectional variation in abnormal returns.

The percentage of shares that the bidding firm acquires constitutes a significant variable in the regression. An acquiring company may obtain 100% of a target firm or only a minority of its shares. This potential is dependent on the need of management control of the merging firm. Rationally, this fact affects the way and the extent that abnormal returns are formulated. When a bidder acquires or totally merges with the target firm, both benefits and disadvantages should be measured in a greater degree. I have defined full acquisition or full merger using a dummy variable that equals one. Percentage less than 100% is defined with dummy variable that equals 0.

Besides, the impact of the payment method on wealth effects of merger or acquisition is captured with a dummy variable that equals one if the method of payment is cash, and zero otherwise. The bidding firms that have used a combination of stock and cash for the payment, are represented by zero value as stock financed mergers. According to Myers and Majluf (1984), managers and shareholders of acquiring firms prefer a stock financed merger if they think their company is overvalued and a cash financed if they think their firm is undervalued. Furthermore, after investigating, Travlos (1987) found that there is a negative association of cash financed mergers and bidders’ abnormal returns at announcement day. Therefore, a negative relationship is expected from our empirical results.

One more variable that affects the abnormal returns of the acquiring firms is their size. The determination of the size has been measured by the logarithm of the firm’s market capitalization. If the bidder firm is characterized as enormous firm, with high market capitalization and be merged or acquire a low percentage of a target firm of a small or medium capitalization, the effect on the abnormal return will be subtle. Luke (2014), having used as independent variable the logarithm of companies' size in his regression, supported that the smaller firms may be less liquid. These liquidity problems could emphasize and accentuate abnormal returns on the earnings announcement and announcement of M&A as well. Unquestionably, the target’s size plays also significant role, but in the present study we examine the effects under the eye of the acquirers.

One additional dummy has been used that separates the mergers regarding whether their announcement has been made prior to global financial crisis of 2008 or after that. Financial conditions are some of the most significant factors for business
efficiency, therefore it should definitely be examined. The economic crisis of 2008 had a huge impact on global financial markets. Mosley and Singer (2009) and Sharma and Mathur (1989) have shown that capital market performance has a direct link with M&A activities. Martynova and Renneborg (2008) highlight the fact that M&A waves are ended by a financial crisis or by a major regulatory change. This statement confirms that M&As are strongly affected by the overall economic environment. This factor is assessed in details below, as it consists one of the sub-sample of the paper.

Moreover, having used as independent variables firstly the abnormal return at the announcement day and then the cumulative abnormal return (-1,+1) we regressed them with the previous described dependent variables. The AAR and CAR that have been used are measured by the market model. Additionally, due to the fact that our sample includes many years of analysis (2000-2014), we have used year dummies. Including dummies for each year allowed the model to attribute some of the variation in the data to unobserved events that took place during each year, or otherwise characteristic features of that year besides specific events. In other words, including dummies results to improving our model due to controlling temporal variation in the dependent variable (AR_0 or CAR(-1,+1)).

Table 7: OLS Regression Estimation Results for Acquiring Firms

<table>
<thead>
<tr>
<th></th>
<th>AR₀</th>
<th>CAR(-1,+1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.007</td>
<td>0.002</td>
</tr>
<tr>
<td>Beta</td>
<td>-0.014</td>
<td>-0.017</td>
</tr>
<tr>
<td>Full Acquisition Dummy</td>
<td>-0.006</td>
<td>-0.004</td>
</tr>
<tr>
<td>Cash Dummy</td>
<td>-0.002</td>
<td>-0.001</td>
</tr>
<tr>
<td>Size</td>
<td>0.001</td>
<td>0.002</td>
</tr>
<tr>
<td>Crisis Dummy</td>
<td>0.019</td>
<td>0.013</td>
</tr>
<tr>
<td>Year Dummies</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>R-squared</td>
<td>30.28%</td>
<td>14.66%</td>
</tr>
<tr>
<td>F-statistic</td>
<td>3.47***</td>
<td>1.46</td>
</tr>
<tr>
<td>No of Observations</td>
<td>172</td>
<td>172</td>
</tr>
</tbody>
</table>

(*): p value <0.05

Abnormal Return Analysis (AR₀)

Our results indicate that the only significant explanatory variable is the beta coefficient. As it is observed from the regression table, beta coefficient presents high significance level (p-value = 0 and t-statistic= 0.0031) but negative sign. When the bidding firm is supposed to incorporate high levels of systemic risk, this results negatively in the abnormal return on the announcement day. Due to the fact that there is only one significant explanatory variable, acquiring firms seem not to experience significant abnormal returns on the announcement day. Full Acquisition and Cash Dummy have both negative values and but are not significant. Though the absence of the significance, size presents positive value and affect the return in the
same direction. Data is not strong enough to so as to reject the null hypothesis that these explanatory variables affect the abnormal return on day=0. The standard error of all variables is kept in low levels, meaning that the standard deviation of the whole sample is low. The R-squared is 30.28 %, which means that the data fit approximately 30% the statistical model. This value explains that the variance of the errors are 30.28 % less than the variance of the dependent variable. In our model, the data do not very well the model, but they are still meaningful and significant. Then, F-Statistic examines if a group of variables are jointly significant. In our regression, F has a value of 3.47> 1.64 which results in a significant model.

Cumulative Abnormal Return Analysis (\(CAR_{(-1,+1)}\))

The constant term of the regression is again positive and non-significant, which indicates the positive relationship to the cumulative abnormal return if all the variables equal to zero. The sign of all variables is exactly the same with AR_0 regression. The only statistical significant value is beta coefficient. The five dependent variables affect the cumulative abnormal return in the same direction as the abnormal return. However, this regression is not fitted in the data so well as the previous one. That is concluded from R-squared which has value of 14.66%. The low R-squared value tell us that the model does a poor job of explaining the variation in the variables. As stated before, such values of R-squared are most of the time not acceptable. The fact that the outcomes are not so ultimate is also confirmed by F-statistic value that is inferior to 1.64.

Although the model is not considered strong and almost all variables are not significant, my results are absolutely consistent with prior literature. Isfandiyar Shaheen (2006) comes into the same conclusion regarding the acquiring firms. None of his explanatory variables are significant. Furthermore, Andreou et al. (2012) and Netter et al. (2011) report insignificant acquirer abnormal and cumulative abnormal returns at announcement. On the other hand, the majority of the studies conclude high significance of the variables that refer to the target firms. Panayides and Gong (2002), Merikas (2009) and many others present OLS regression results of the target firms so as not to reject the null hypothesis.

6. Conclusions

The wealth effect of M&As for the shareholders of both target and acquiring firms remains at the epicenter of M&A literature regardless of the motives behind mergers. The present study is a new attempt to investigate the stock market reaction of acquiring firms to the announcement merger and acquisitions in the shipping industry. Numerous studies on M&As have been conducted in the transportation sector, but they focused on the financial and managerial synergies effects. Furthermore, there are studies that attempt to explain the stock market reaction to the M&As in the shipping industry, such as Panayides and Gong (2002), however, focusing solely on the wealth effects of target firms. This happened because, as
literature reveals, the wealth effects of the target firms are greater enough in comparison with those of acquiring firms.

The results of this study would be of value to shareholders, management and potential investors of bidding firms. Shareholders present an important interest in the market’s evaluation of important strategic movements such as merger and acquisitions because they affect company’s future growth. Management obtains useful information so as to use them for future decisions. The fact that a merger or acquisition creates or destroy value for a bidding firm affects undoubtedly the decisions and the movements of potential investors.

The first objective of this study is to compare the market reaction of the bidding firms in the shipping industry to M&A announcements. Our findings show that, there is a positive reaction to the M&A deals. Shareholders of acquiring firms will receive wealth gains from stock price appreciations on day 0. This outcome comes in contrast with literature, which supports that gains for the bidding firms are zero or positive in the breakeven point. Taken into consideration the high statistical significance of both abnormal and cumulative abnormal. Prior to the event, both Abnormal and Cumulative abnormal returns fluctuate in negative and positive values so as it is difficult to execute precise conclusions. In the post-event period (+1,+10) it is not observed a specific trend, but there is also a fluctuation. In the table of CAAR, most of the post-event values are observed to be negative.

What is more, the sample was separated into pre-crisis and post-crisis period. Global financial crisis of 2008 had extremely affected investment, productivity and consumption globally. The results found that market reacts strongly and positively (both abnormal and cumulative abnormal return) in the transactions that took place before the outburst of the global financial crisis. On the other hand, in the post-crisis period an information leakage is observed, as abnormal returns prior to the event are positive. On the announcement day, values are positive, but only the one measured by market-adjusted model is significant.

Last but not least, another sub-sample of the paper constituted the classification of the bidding firms into groups depending on the way of financing the event of M&A. So two groups have been formulated, the cash financed and the stock financed mergers. Although literature claims that cash financed purchases experience higher abnormal returns, the results reveal that cash M&As do no present significance on the announcement day. On the other hand, stock-financed purchases present high significance level on the announcement day. That is, market reacts stronger when the M&A is financed by stock.

**Limitations and Recommendations for further research**

One major limitation of this study is the fact that the acquiring firms are shipping firms with specific NAIC code, whereas shipping industry is a huge sector with various sub-sectors. Hence, further research is required in order to examine the stock market reaction on the announcement day of M&As in the whole shipping sector or to
another industry as well. For example, when new legislation affect an entire industry, it is essential to investigate the magnitude of such effects in stock market. Furthermore, it would be useful to investigate whether different wealth gains will be observed depending on specific characteristics of the deal or of the firms involved. For instance, shareholders of acquiring firms will react differently in a domestic M&A transaction than in a cross-border one. Undoubtedly, the present study will spur further debate and empirical investigation of the M&A issue.

References


