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Thesis Title

**THE EXAMINATION OF STOCK RETURNS OF FIRMS INVOLVED IN  
MERGERS AND ACQUISITIONS IN THE GREEK MARKET OVER THE  
PERIOD 2010-2021**

by

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## **Abstract**

Mergers and Acquisitions is a really popular topic considering that many empirical studies have been conducted through the years. This paper examines the impact of M&As in Greece during the decade 2010-2021 using the stock returns of the listed companies. The study employs event study analysis to calculate abnormal returns and Cumulative Average Abnormal Returns (CAARs) during specific event periods surrounding the announcement of M&A transactions. In addition, univariate analysis and multiple regression lead us to understand the underlying dynamics influencing the stock returns of acquirer firms. The calculated CAARs provide insights into the overall performance of acquiring firm over the event window period. Moreover, the univariate analysis examines the combined effects of various variables, such as the consideration form used (method of payment), industrial relatedness and listing status of targets driving the M&A transactions. Our univariate analysis results first establish that Greek acquirers' gains are higher when they bid for listed targets using cash. Furthermore, the findings indicate that horizontal mergers produce higher abnormal returns for acquirers than non-horizontal mergers. The same conclusion holds when they acquire unlisted targets rather than listed ones. The multiple regression analysis clarifies the relationship between the independent variables -consideration structure, industrial relatedness, and target status- and the dependent variable of Cumulative Average Abnormal Return. The findings align with the existing literature and previous empirical studies, providing valuable insights into the factors that impact stock returns, including deal size, industry conditions, and overall market trends. Nevertheless, it is important to consider the sample size as a potential limitation. In other words, the results are in the same direction with the previous literature but they are not statistically significant due to the small sample size of M&As in the Greek market.

**Keywords:** M&As, Greek market, abnormal stock returns, market index model, motives

## Περίληψη

Οι συγχωνεύσεις και οι εξαγορές είναι ένα πραγματικά δημοφιλές θέμα, δεδομένου του πλήθους εμπειρικών μελετών που έχουν συνταχθεί ανά τα έτη. Η παρούσα εργασία εξετάζει τον αντίκτυπο τους στις αποδόσεις μετοχών των εισηγμένων εταιρειών στην Ελλάδα κατά τη δεκαετία 2010-2021. Η μελέτη αρχικά χρησιμοποιεί την Ανάλυση Συμβάντων για τον υπολογισμό των μη κανονικών αποδόσεων και των αθροιστικών μέσων μη κανονικών αποδόσεων κατά την διάρκεια συγκεκριμένων περιόδων κοντά στην ημερομηνία ανακοίνωσης της εξαγοράς. Στην συνέχεια, η μονομεταβλητή ανάλυση και η πολλαπλή παλινδρόμηση συμβάλλουν στην κατανόηση των παραγόντων που επηρεάζουν τις αποδόσεις των μετοχών των εξαγοραζόμενων εταιρειών. Οι αθροιστικές μέσες μη κανονικές αποδόσεις παρέχουν πληροφορίες για τη συνολική απόδοση της απόκτησης κατά την περίοδο μελέτης. Επιπροσθέτως, η μονομεταβλητή ανάλυση εξετάζει τις επιδράσεις διαφόρων μεταβλητών, όπως ο τρόπος πληρωμής του τιμήματος, ο βαθμός συσχέτισης δραστηριοτήτων των συγχωνευμένων εταιριών και το καθεστώς ιδιοκτησίας εταιρίας-στόχου που διέπουν τις εξαγορές και τις συγχωνεύσεις. Αρχικά, τα αποτελέσματα της μονομεταβλητής ανάλυσης μας αποδεικνύουν ότι τα κέρδη των αγοραστών είναι υψηλότερα όταν επιλέγουν τα μετρητά ως τρόπο πληρωμής του τιμήματος. Επιπλέον, οι οριζόντιες συγχωνεύσεις έχουν υψηλότερες μη κανονικές αποδόσεις για τους αγοραστές ενώ το ίδιο συμβαίνει και όταν αγοράζουν μη εισηγμένες στο χρηματιστήριο εταιρίες-στόχους. Η ανάλυση πολλαπλής παλινδρόμησης αποσαφηνίζει τη σχέση μεταξύ των ανεξάρτητων μεταβλητών -τρόπος πληρωμής, βαθμός συσχέτισης δραστηριοτήτων, καθεστώς ιδιοκτησίας εταιρίας-στόχου- και της Αθροιστικής Μέσης Μη-Κανονικής Απόδοσης που έχει οριστεί ως εξαρτημένη μεταβλητή. Τα αποτελέσματα εναρμονίζονται με την υπάρχουσα βιβλιογραφία και προγενέστερες εμπειρικές μελέτες, παρέχοντας πολύτιμες γνώσεις για τους παράγοντες που επηρεάζουν τις αποδόσεις των μετοχών, συμπεριλαμβανομένων του όγκου των συναλλαγών, των συνθηκών που διέπουν κάθε κλάδο και των τάσεων της αγοράς. Ωστόσο είναι σημαντικό να ληφθεί υπόψη το μέγεθος του δείγματος ως πιθανός περιορισμός. Με άλλα λόγια, ενώ τα αποτελέσματα εναρμονίζονται με αυτά τις υπάρχουσας βιβλιογραφίας, δεν είναι στατιστικά σημαντικά εξαιτίας του μικρού δείγματος εξαγορών στην ελληνική αγορά.

**Λέξεις-Κλειδιά:** Εξαγορές και Συγχωνεύσεις , ελληνική αγορά, μη κανονικές μετοχικές αποδόσεις, μοντέλο δείκτη αγοράς, κίνητρα

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## **1. Introduction**

Mergers and acquisitions (M&A) have become pervasive in the corporate world, playing a vital role in shaping the corporate landscape and driving organizational growth and transformation. These strategic transactions involve the combination of two or more companies' assets, resources, and operations, aiming to achieve synergies, expand market reach, and create value. Understanding the theories and motives behind M&A transactions is essential for comprehending the dynamics and implications of these complex corporate activities.

In finance, numerous investigations govern the field of Mergers and Acquisitions. First of all, it is necessary to give a definition. The term merger has a slight difference from the term acquisition. A merger occurs when two companies of the same size and ownership continue to be separate but operate as one. Alternatively, the acquirer becomes the new owner in an acquisition, and the company operates independently. M&A, in general, means the process of combining two or more companies to achieve discrete strategic goals.

The majority of M&A's empirical research uses daily stock prices close to the announcement date and after the event, and only a minority of studies focus on the long run. This paper focuses on the short term and specifically examines the stock returns of firms involved in mergers and acquisitions in the Greek market between 2010 and 2021, shedding light on the value creation potential and underlying factors driving M&A activity in this context.

The analysis of stock returns provides valuable insights into the financial implications of M&A transactions for acquiring and targeting firms and investors. Event window analysis is employed in this study to calculate abnormal returns, which measure the deviation of actual stock returns from expected returns during specific event periods surrounding the announcement of M&A deals. Additionally, Cumulative Average Abnormal Returns (CAARs) are calculated to evaluate the overall performance of acquiring and target firms over the event window period.

The thesis conducts univariate analysis and multiple regression using the Ordinary Least Squares (OLS) method to explore further the factors influencing stock returns. The univariate analysis examines the impact of individual variables such as deal size, industry dynamics, and market conditions on stock returns. The multiple regression analysis allows for the simultaneous examination of multiple factors and their combined effects on stock returns, including firm-specific characteristics, financial indicators, and the motives driving the M&A transactions.

Beyond examining stock returns, this thesis delves into the empirical results based on takeovers and the underlying motives leading to these M&A transactions. Analyzing the

motives driving M&A activity, such as strategic considerations, and industry consolidation, a deeper understanding of the decision-making processes and strategic objectives of acquiring and target firms is gained.

A bid is considered successful when the bidding company has acquired more than 50% of the target. The acquirer aims to complete the purchase quickly and at the lowest cost. The target company, on the other hand, intends to increase the price or even renegotiate the purchase agreement. Optimal value maximization is driven by different motives and strategies by the acquirer and target.

It is possible for the parties involved in the acquisition to gain significant benefits from a well-designed and well-executed transaction. Even if a firm is viable, a wrong decision can destroy its value. It is crucial to achieving a synergy in which the new entity's value is higher than the sum of the merged companies. The firm expansion allows the involved companies to become more competitive within their industry and, in case they belong to different industries, take advantage of economies of scale. The market efficiency hypothesis assumes that stocks should be traded at their fair value; thus, the stock return is considered a good criterion for measuring the impact of an M&A.

Additionally, M&As are divided into categories based on factors affecting the rate of return. One of these short-term factors, linked with the bidding process, refers to the industry relatedness and separates them into horizontal and vertical mergers. A horizontal merger involves companies in the same industry, compared to a vertical one, which involves companies from different industries, even though the companies should belong to the same industrial chain. In other words, they should be suppliers or distributors. Consequently, the product becomes competitive, or the profit margin increases because transaction and production costs are reduced.

Another short-term factor is the Consideration Structure which separates the bids into three categories. These are cash and equity offers or a combination of them. The majority of studies using Event Study Methodology show that cash offers lead to a higher rate of return for the shareholders than stock offers. That can be explained by the downward pressure the bidding firm's stock receives or by the overvaluation hypothesis. The above will be further analyzed below in Literature Review.

The listing status of the target firm is the third category analyzed in the following chapters. In explaining the acquirer's returns, empirical evidence indicates this criterion is important. This last category is connected with the bargaining power hypothesis, which is detailed and described later.

By examining the stock returns of acquiring and target firms, this thesis adds to the existing body of literature on M&A performance and contributes empirical evidence to



the field. The study deepens our understanding of the financial implications of M&A transactions in the Greek market and sheds light on the underlying motives and strategic considerations that drive M&A activity. The research is a foundation for further exploration and future studies examining the relationship between M&A transactions, stock returns, and firm performance in the Greek market.

The subsequent sections of the paper are arranged in the following format. The second section includes a brief discussion of the literature on the stock price performance of merging companies. Next, the third section explains the sample and methodology that was utilized. The fourth section presents and discusses the results based on previous empirical studies, and the fifth and last section contains the conclusions.

## **2. Literature Review**

### **2.1 History of M&A activity**

Historical perspective shows a pattern or cycle in frequency and volume of takeover activity. These cycles are called merger waves and are summarized in this section. At the peak of a wave, there is a significant amount of bidding deals at the cycle's trough. Cretin, Dieudonné, & Bouacha (2015) state that the seventh wave is underway after six waves have been completed. Economic, political, and regulatory changes usually precede each wave. They end with a financial crisis, a stock market crash, or a recession in general.

The two most popular theories explain this phenomenon. The first, known as the neoclassical theory, explains acquisition activity as a rational response to exogenous shocks such as an increase in economic activity, the adoption of new know-how, substitute products and the increase in firms' capital liquidity. Gort (1969) first proposed the disturbance theory of merger waves to explain merger waves. According to this theory, waves occur when increased general economic activity causes disequilibrium. Additional empirical evidence was provided by Mitchell and Mulherin in 1996 and Harford in 2005.

The second theory is behavioural, supporting that attractive market valuations cause merger waves. In other words, managers time takeovers of undervalued firms when their firm's stock is overvalued. That explains the correlation of takeover activity with stock market performance. Based on this theory, more bids take place in periods of bubbles. Buyout activity is influenced mainly by market valuation, particularly overvaluation, according to Shleifer & Vishny (2003). The empirical study Rhodes-Kropf, Robinson and Viswanathan (2005) gives additional support to the above.

The summary of the completed merger waves follows. The first merger wave from 1893 to 1904 became more noticeable in the USA than in the rest of the world. It is known as "the great merger wave", characterized by horizontal mergers and the creation of multinationals. The USA's primary manufacturing and transportation industries were defined during that period, which resulted in monopolies flourishing. The establishment of laws concerning monopoly markets and the First World War, followed by the breakdown of the capital market, ended the first wave.

The additional consolidation of small firms in the USA in continuation of the anti-monopoly policy characterized the second wave from 1919 to 1929). During this period, economies of scale are created, while monopolistic markets predominate over oligopolistic ones. This wave was also driven by factors like technological advancements, increasing concentration of industries, and the desire to gain market dominance. Mergers during this period included the combination of DuPont and General Motors and the

creation of Radio Corporation of America (RCA). The end of it came with the Great Depression of 1929.

The third merger wave formed between 1965 and 1969, following the 1929 stock market crash and World War II. Favourable economic conditions fueled it, such as stable economic growth and low-interest rates. Unrelated mergers have begun for differentiation, so firms are transformed into sizeable conglomerates trying to enter different industries. Notable mergers during this period included the formation of Time Warner and the creation of ITT Corporation. The oil crisis came in 1973, and the third wave ended.

The fourth wave from 1980 to 1989 was based on the inefficiency of the large conglomerates because of their complex structures. Based on Shleifer and Vishny (1991), this period saw a reverse trend for diversification, namely de-conglomeration, concentration on core activities, and outsourcing. The consequences were significant hostile takeovers of those firms. During that period in Europe, an attempt was made for horizontal cross-border mergers with the aim of the future creation of a common market. The use of debt capital and junk bonds for LBO financing is also prevalent during this period. Nonetheless, after the 1987 stock market crash, this wave ended.

The fifth wave from 1993 to 2000 is characterized by market globalization. In addition to the growing international market, stock prices were soaring as the competition among companies became global. In other words, share exchange offers and rapid share price increases dominate. The number of transactions and the value of this transaction are the largest among all previous ones. The upward trend continued for the cross-border takeovers to make firms more competitive. The fifth wave ended abruptly because of the dot-com bubble of 2000.

The sixth wave from 2003 to 2007 impacted the metals, fuel, telecommunications, banking, health, and utility industries. Several factors contributed to this period's cash offers, including increased liquidity and cheap borrowing due to low-interest rates. Consequently, Harford's (2005) theory about capital liquidity is confirmed. Due to this, it is characterized by higher-value deals and greater value creation for the shareholders of the acquiring companies compared with the previous wave. The financial crisis of 2008 ended the sixth wave as well.

The seventh wave from 2013 to 2015 is the highest so far in terms of transaction value. Capital liquidity has been a primary factor in the creation of the wave. As a result of the Federal Reserve's monetary policy and later the European Central Bank's low-interest rate policy, it has played an influential role in its creation. Another feature of this wave is the return of US market dominance. Investor preference appears to favour mega-deals, and managers of firms launching M&A focus on achieving more demanding goals such as

diversification and cross-selling (Rehm & West, 2015). Market globalization and cross-border mergers identify this period as well.

## **2.2 Value Creation on Mergers and Acquisitions**

A crucial issue regarding M&As is whether they will create or destroy value for a company; whether the bid benefits the company's shareholders. Value creation can be achieved by increasing asset management efficiency and synergies, which can translate into a higher return than the cost of capital. Studies illustrate what happens on average but do not necessarily reflect what happens in reality. The methodological approach, the observation period, and the characteristics of the involved companies also determine the outcome of an empirical study.

The majority of studies show that acquirers realize negative or zero abnormal returns for acquisitions of listed targets at the announcement date (Andrade, Mitchell, and Stafford, 2001). Recent evidence (Alexandridis, Petmezas and Travlos, 2010), including worldwide M&As, supports that acquires gain in acquisitions of public firms beyond the most competitive takeover markets like the US and Canada, as they pay lower premiums. In other words, they show that target companies' shareholders gain between 20% and 40% on average while acquiring companies' shareholders record little or no changes in their wealth and sometimes even suffer small losses. At the same time, share-for-share offers are at least non-value destroying for their shareholders.

On the other hand, private acquisitions provide much more accurate evidence than public acquisitions. In most cases, acquiring firms profit from stock offers (Chang, 1998; Fuller, Netter, and Stegemoller, 2002). It is generally observed that the newly created entity has a positive abnormal return around the announcement date (Bradley, Desai and Kim, 1988; Mulherin & Boone, 2000; Bhagat, Dong, Hirshleifer and Noah, 2005).

A long-term study of bidders' abnormal returns reveals a highly negative trend and statistical significance on average. Alexandritis et al. (2017), however, found positive returns and statistical significance. On the other hand, another study supports that abnormal returns around announcement dates do not correlate positively with returns several years later (Rehm and West, 2016). As a result, wealth is transferred from the bidder to the target. As a result, the majority of the expected synergies included in the acquisition price go to the target company's shareholders. The new entity's stock returns weighted by their stock market values are also stably positive; value is created on average.

Other studies focusing on the long-term horizon of an M&A reveal significant negative abnormal returns in one year period after the announcement (Malatesta, 1983; Asquith, 1983). Further evidence shows that acquiring firms' shareholders have a statistically significant loss of about 10% over a five-year period after the merger is completed (Agrawal, Jaffe and Mandelker 1992). Others argue for loss over three years but not over five years after the event (Loderer & Martin, 1992). Another study, however, shows that underperformance is likely caused by benchmark portfolio errors rather than mispricing

at the time of the deal (Franks, Harris, and Titman, 1991). Lastly, according to Loughran and Vijh (1997), acquirers who use cash as a consideration method perform better than their benchmark over five years. However, the reverse is valid for stock-based acquisitions.

Despite extensive empirical research, the answer to the initial question remains to be discovered. The creation and destruction of value in M&As are equally common outcomes. This makes them high-risk business transactions because they have a probability of failure of about 50% or more.

Due to the small scale of M&E in Greece, a limited number of studies analyze their performance. Several of them will be discussed in the following paragraphs. At first, Kyriazis (2003) selected 30 completed deals with an event window of 2 months and CAARs that were lower for the acquirers than the targets for 1997-2002. In agreement with this conclusion was the research of Protopapas et al. (2003), with a sample of 46 acquirers and 11 targets from 1988-1997.

Additionally, Kyriazis & Diacogiannis (2008) used a larger sample of 108 completed deals - 46 public and 54 private - for 1993-2006 with a two-month event window, and targets' CAARs were higher than acquirers. As an extension of the research, Kyriazis (2010), with the same sample of acquisitions, observed that the acquirers experienced significant negative abnormal returns in the 3 years after the acquisition event . Furthermore, acquirers have higher negative returns when acquiring private targets with cash offers than with stock offers.

## **2.3 Motives of Mergers and Acquisitions**

At this point, it is important to analyze various theories that have been developed regarding not only M&A activity but also arising conflicting interests in M&A activity. Understanding the theories and motives behind M&A transactions is essential for comprehending the dynamics and implications of these complex corporate activities. Over the years, various theoretical perspectives have emerged to provide frameworks for analyzing and explaining the driving forces behind M&A decisions. These theories offer insights into the economic, financial, strategic, and behavioural factors that shape the motives and outcomes of M&A deals.

### **2.3.1 Information Asymmetry Hypothesis**

Based on this theory, mergers occur when investors have asymmetric information about the target firm, resulting in different valuations. In other words, the management of the bidding company decides to takeover the target when it believes that the market undervalues the last. Therefore, the bidder can utilize the business's potential after the acquisition. When a bidder offers a higher price to a specific business, it signals to the market and other potential bidders that its fair value is higher and that profit is possible.

Numerous pieces of research support the loss of wealth around the announcement date based on information asymmetry. For instance, the theory of information asymmetry proposed by Myers and Majluf (1984) suggests that potential investors issue shares to compensate for additional uncertainty and, therefore, an initial discount. That signals the market that the stock is overvalued, so its price moves downward.

Several early empirical studies have shown that cash offers generate much higher returns for bidders and targets than stock offers, supporting the information asymmetry hypothesis. (DeAngelo et al., 1984, Travlos, 1987, Draper and Paudyal, 1999, 2006; Sudarsanam and Mahate, 2003, Dong, et al., 2006) In addition, Myers and Majluf (1984) explain in the pecking order theory that firms with high informational asymmetry prefer financing their investments with internal funds. If that is impossible, they prefer financing by debt and last by securities.

However, information asymmetry does not last long. Over time, possible mistakes upon closing the deal become visible from both sides. Research by Myers (1977) and Martin (1996) supports that growing firms with high growth opportunities tend to have important gains by selecting stocks over bonds as a payment method. At this point, we have the danger of overvaluation the acquirer's stock. As Shleifer & Vishny (2003) point out, acquirers make offers when they believe their stock is overvalued. The use of overpriced securities as a payment method makes M&As less expensive. Mergers involving stock for stock are thought to be rational responses to mispricing. Most markets are characterized by information asymmetry, and the Greek market examined in this paper would also be accurate in this regard.

### **2.3.2 Overvaluation & Overreaction Hypothesis**

In terms of overvaluation, Myers and Majluf (1984) also argue that value-maximizing managers decide to issue stocks only when the firm's value is overvalued based on high-level information. As Chemmanur, Paeglis, and Simonyan (2009) demonstrate, acquirers whose stock prices, calculated by accounting earnings-based models, are significantly higher than fair values prefer stock offer as a payment method.

Taking advantage of public firm takeover situations can result in merger arbitrage, whereby arbitrageurs buy target firm stock at the post-announcement price, hoping to receive the offer at deal closing. However, the value of the arbitrage position is uncertain in the stock-based consideration structure. It depends on the value of acquiring firm stock on the completion date. The arbitrageurs, therefore, short-sell acquirer shares to lock in the arbitrage spread existing at the announcement of stock-financed deals. Thereby they press downward the acquirer's stock price.

DeBondt and Thaler's (1985) market overreaction theory is based on Gort's (1969) market disruption theory and is also influenced by the findings about the non-rational psychology of investors and the market called fads and fashion moves (Shiller;1984, 1989, Geroski;1984). This theory says that markets tend to overreact to announcements of good or bad information at both the micro- and macroeconomic levels. An association between M&A activity and market overreaction was shown by DeBondt and Thompson (1992).

A market timing strategy is a logical move for investors to take advantage of opportunities presented by discrepancies between fundamental quantities and market estimates. Evidence by Rhodes-Kropf and Viswanathan (2004) and Rhodes-Kropf et al. (2005) support this theory. Other study reaches similar results, documenting that companies use their overvalued shares to buy other companies with less overvalued shares (Savor & Lu, 2009).

### **2.3.3 Agency Cost Theory**

A company's agency cost is the amount it spends to resolve disagreements between shareholders and managers and maintain a positive working relationship. The agency Problem was first established by Jensen and Meckling (1976), who later formulated the Agency Cost Theory. Under this theory, managers have strong motives to promote their interests, which eventually may damage the shareholders' interests in their firms. For instance, managers' interests may include prestige, higher salaries and bonuses connected with the firm's larger size. Therefore, it is expected that bidding firms' managers who purchase listed firms, which are larger than unlisted ones, tend to satisfy their interests and benefit themselves, contrary to shareholders. Consequently, listed targets should



provide lower returns to acquirers than unlisted targets. As for the targets, based on the monitoring hypothesis, agency cost is lower in unlisted targets than the listed ones because they are mostly owned and managed by small teams. According to Ang et al. (2000), unlisted firms had lower agency costs since owners and managers were the same. Therefore, private targets are expected to have lower returns than public targets due to the above features.

### **2.3.4 Bargaining Power Hypothesis**

The Bargaining Power Hypothesis concerns both the acquired and the acquiring company. In this case, we focus only on the acquiring company, as all the acquirers in the sample are listed. The ownership status of the target firm is considered a crucial determinant of bid gain and the acquirer's rate of return. The results of Draper and Paudyal (2006) show that bidder returns are zero to negative in the case of listed/public targets, while in the case of non-listed targets, bidder returns are positive. The acquisition of unlisted firms generally occurs at lower multiples than comparable acquisitions of listed firms, according to Officer (2007a). In addition, stock-financed acquisitions of private targets are associated with even larger positive bidder returns. It could be a result of two factors. First, the acceptance of a stock offering by private target shareholders, who are likely to have received private information from the bidder, tells the market that the bidder's shares are not overvalued (the information hypothesis). Second, since unlisted targets' ownership is commonly concentrated, a stock offer creates block holders. Since block holders own a significant portion of the new entity, they monitor its managers. In other words, the market may be pricing the advantages of this expected monitoring -the monitoring hypothesis- at the announcement date.

### **2.3.5 Hubris Hypothesis**

In the Hubris Hypothesis, first introduced by Roll (1986), market efficiency is assumed. In addition to their overconfidence, Morck, Shleifer, and Vishny (1988b) found that other factors, like agency costs, also contributed to this problem. In addition to concurring with Roll's opinion, Doukas and Petmezas (2007) argue that decisions based on Hubris result in worse deals, which are significantly worse than acquisitions initiated by less confident acquirers. In order to measure overconfidence, they used a high frequency of mergers and acquisitions (5 or more M&As in 5 years).

A more recent study measures overconfidence with two more sophisticated and objective criteria (Malmendier & Tate, 2008). First, managers who own stock options are not exercising their rights, regardless of whether the options are in-the-money, and second, the managers are categorized as "optimistic". Furthermore, this study claims that over-

optimistic managers are more likely to destroy shareholder value. They are more likely to make acquisitions and pay more than they should, compared to acquirers whose managers have different characteristics. The results are reflected in negative returns during the announcement period. All the above are more obvious if those managers can easily access internal financing and perform diversifying mergers.

Finally, Kolasinski and Li (2011) provide another measure of overconfidence. These researchers identify CEOs who have recorded negative returns on selling the company's stock from their personal portfolios two years after they originally bought them. This study supports that CEOs who have suffered losses from buying and selling in their personal portfolio are more likely to make rational and beneficial acquisition decisions in the future, which involve less diversifying mergers.

### **2.3.6 The Value Maximisation**

Value Maximization is an economic theory based on the neoclassical economic approach (Friedman; 1953, Alcián; 1950, Becker; 1962). More specifically, to survive in a competitive environment, they promote goals of maximizing shareholder wealth. M&As are only considered investment projects if they have a positive net present value (NPV) (Halpern, 1983). It is possible to maximize value from acquisitions by improving efficiency and reducing production costs or increasing market power and raising product prices. Synergies lead to increased efficiency. Operational synergies can occur as a result of economies of scale, economies of scope, and economies of learning/experience. A horizontal merger is the most common method for achieving economies of scale. Comparatively, mergers of closely related or unrelated companies can produce economies of scope and economies of learning and experience.

A managerial synergy may arise from transferring managerial skills between merging firms. It is also possible to replace the ineffective management team of the target company with one from the bidding company with a better track record. Specific capabilities - production, research, marketing - allow them to work better in horizontal or vertical mergers. In contrast, if they have generic capabilities - management, planning, control - they can work better across unrelated mergers.

It is also possible to create financial synergies through increased debt capacity, excess cash flows, and tax savings. For example, differences in the debt ratio between merging companies or from the reduced correlation of the merging companies' cash flow in conglomerate mergers cause increased debt capacity. The above is called the coinsurance effect (Lewellen, 1971). Due to the fact that one company's flows somehow "secure" those of the other, the default and bankruptcy risks of the new entity are reduced.

Increased Market Power, mainly through horizontal mergers, is an additional way to increase profitability for a single firm since it leads to monopoly profits; higher prices increasing from a lack of competition. The same applies to mergers. For example, acquiring a key supplier increases the barriers to market entry. Along with PIMS (Profit Impact of Marketing Strategies) type of studies on the importance of market share in profitability, empirical academic studies show that this risk is reduced by today's strong antitrust regulations (Mueller;1980, Cowling et al.;1980; Healy, Palepu and Ruback;1992).

### **2.3.7 Game theory**

The study of game theory deals with the analysis of optimal decision-making in which all decision-makers act rationally and individually try to predict the moves and reactions of the rest. In the world of business, Games theory is applied to describe how businesses react to specific competitors' moves. In the framework of this theory, the phenomenon of mergers in the various industry branches of activity (industry clustering) can be explained. For example, the Greek banking system was affected by mergers in 1998-200 and the mergers of oil companies in 1998-2001 between BP-Amoco, Mobill-Exxon, Chevron-Texaco and BP-Conoco.

### **2.3.8 Market for Corporate Control**

This hypothesis is based on the work of Friedman (1953), Baumol (1965) and Manne (1965). According to Manne, corporate market power controls every perfectly competitive market. The market for corporate control defines as the market entitled to control the management of corporate resources (Jensen & Ruback,1983). They argue that some companies' management makes bad decisions for the shareholders, decreasing their share prices. Then the market intervenes with M&As to remove the inefficient management team, called punitive discipline or to allow the managers to correct their company's return, called corrective discipline.

Many empirical studies confirm that companies with low performance prior to a takeover event become targets and then acquired. Based on this framework, hostile takeovers act as a market discipline mechanism (Holl & Pickering;1988, Morck, Shleifer and Vishny;1988a), Holl & Kyriazis;1977). Countries with relatively free markets, such as the USA, UK, Canada, and Australia, are more likely to have a corporate control market through takeovers than countries with different systems, such as the EU, and Japan. Although in recent years, they are also gradually changing in the direction of the first category.

The above is also related to the various types of Corporate Governance Control, which have become extremely important in recent years since markets alone cannot always solve the representation problem. Despite overcoming this problem, acquiring a company can be financially burdensome for all parties involved. The various forms of corporate governance may include sizeable institutional investor shareholders in the company's share register, the ownership of shares by company managers, and the separation of the role of the President and the Chief Executive Officer. Furthermore, it may include several members of the Board of Directors Board of the company, non-executive directors, the determination of independent audit committees and determination committees, and remuneration committees.

### **2.3.9 Strategic Management theories**

There is a close relationship between strategic theories and economic theories. For instance, according to traditional views of strategic management (Porter, 1985), the decision of the external mode of development through acquisitions is connected to the optimal corporate strategy in balance with the choice of individual generic strategy, pricing, differentiation, or focus by the various SBUs, resulting in a competitive advantage for the company.

Additionally, the strategic view of Resources and Capabilities emphasizes firms' unique powers as a source of sustainable competitive advantage (Prahalad and Hamel, 1990). Therefore, acquisitions are considered to be a rapid method of achieving the above. The relationship between Resources and Capabilities and the Analysis of Value Chains among the acquirer and target plays an essential role in this case.

## **2.4 Determinants of Acquisition returns**

### **2.4.1 Industry relatedness**

The firms prefer industrial relatedness because they stay close to their existing capabilities when expanding into new product markets. Specifically, the target's value is easier to determine if both firms are active within the same industry. Furthermore, if the acquirer and the target are related, it is easier to integrate knowledge and combine operations, reducing duplication and realizing economies of scale (Capron & Insead, 1999; Ahuja & Katila, 2001; Nesta & Saviotti, 2005). As a result of high relatedness, the acquirer can understand and absorb the acquired capabilities more quickly after the deal is completed (Cohen & Levinthal, 1990; Mowery et al., 1996; Duysters & Hagedoorn, 2000). In contrast, achieving synergies in unrelated transactions is more complex, and integration efforts are more extensive, leading to fewer benefits and higher costs.

Investors and strategy researchers more value-related acquisitions for the above reasons (Lubatkin, 1983; Matsusaka, 1993; Fan and Lang, 2000). As a result, targets in similar product markets are more attractive and are more likely to increase firm value.

Diversification, which leads to a competitive advantage, is another reason firms enter industries close to their existing business lines. However, diversification strategies are driven by firm-specific resources, so firms do not diversify randomly but tend to add activities that relate to aspects of their existing businesses or assets (Teece, 1982; Winter, 1987; Teece et al., 1994; Breschi et al., 2003). Contrary, firms fail to exhibit a consistent diversification pattern when their activities are randomly spread across industries (Teece et al., 1994; Breschi et al., 2003).

It is known that industry-relatedness between the involved companies also affects acquisition returns. Most of the literature argues that profits are higher when we have related acquisitions, vertical or horizontal, in contrast to unrelated (Porter, 1985; Shelton, 1988; Markides, 1995). Various evidence support that during the third merger wave in the US, vertical acquisitions -between different industries- were embraced by the market with positive returns for the acquirer firm. Matsusaka (1993) reports higher gains in vertical acquisitions than those for related acquisitions, while Hubbard and Palia (1999) reports support the opposite evidence. Based on a broader sample of firms, Morck, Shleifer and Vishny (1990) provide evidence that diversified acquisitions, including companies with different 4-digit SIC codes, have lower returns than non-diversifying ones.

Furthermore, Fan and Goyal (2006) show that vertical acquisitions and focused mergers have higher acquirer returns than pure diversification deals. In bank mergers, DeLong (2001) argue that deals where both the target company's business sector and geographic distribution have been taken into account, tend to be more profitable. Lastly, Hoberg and Phillips (2010) demonstrated that when the involved firms produce complementary goods are more likely to achieve profitability in contrast with firms that create completely different products. M&As that achieve synergies through the supply chain by taking advantage of the interdependence between buyer/acquirer supplier/target companies are more likely to achieve higher returns (Fitch et al., 2013).

However, there is also evidence showing that conglomerate mergers also create significant value either due to the creation of managerial synergies resulting from better utilization of the acquired company's resources and capabilities (Grand, Jamine and Thomas;1998, Seth;1990, Ashlinger and Copeland;1996), or by the creation of financial synergies through the low correlation between the companies' cash flows (Lewellen, 1971- co-insurance effect). Noteworthy is the argument that the relationship between performance and diversification is non-linear since there is an optimal level of diversification that increases merger profitability (Grant et al., 1988)

Another study (Ashlinger and Copeland ;1996) concluded that 80% of the 829 acquisitions they studied over a 10-year period produced returns higher than their cost of capital. Many of the mergers that seem unrelated from many angles were not, as a great deal of know-how, management skills, marketing, etc, surrounded them. In the end, the success of large companies is due to their ability to combine unrelated and related activities around a common theme, such as machine manufacturing.

#### **2.4.2 Status of the target firm**

According to empirical research, the listing status of the target firm, in conjunction with the payment method, plays an important role in explaining acquirers' returns. Studies show that, for instance, takeover bids of private target firms lead to positive returns and are statistically significant for corporate purchases. In contrast, offers for listed target firms lead to zero or even negative returns (Chang;1988, Fuller et al.;2002, Draper and Paudyal;2006, Faccio et al.;2006). A major factor contributing to these results is the illiquidity discount of target firms, which reduces the acquisition premium (Draper and Paudyal, 2006, Officer; 2007).

As a consequence of the above, another conclusion arose that private target acquisitions, where the stock offer is the chosen consideration method, result in higher positive returns for bidders. Another study shows that stock offers achieve the highest positive bidder returns (Fuller et al., 2002).

#### **2.5 Efficient Market Hypothesis**

The Event Study Methodology is based on Efficient Market Hypothesis (EMH) developed by Fama et al. (1969) and Fama (1970). When a market is efficient, "prices fully reflect all available information". An important assumption is that capital markets are sufficiently efficient to react to new information regarding the expected future profits of influenced companies. The Efficient Market Hypothesis, as defined by Ross (2008), can be divided into three forms. First is the Weak form, in which past prices are included in the information set. The following two forms are Semi-Strong, in which all publicly available information is included, and Strong, in which publicly and privately available information is included.

The theory under the weak form of market efficiency supports that an investor cannot achieve a positive abnormal return using past information on security prices. Investors cannot gain by using this information to predict returns since it is incorporated into prices as soon as it becomes public. Random Walk Theory (Ross,2008) explains that prices may fluctuate upward or downward as investors disagree on a stock's valuation. The theory

explains that even though its real value may be unknown, the price will move around its fair value, making the market efficient.

The next theory based is the Semi-Strong form. A market that fully reflects all public information makes it impossible for investors to outperform it (Ross, 2008). Plenty of research has also tested this theory by examining the market's adjustment to publicly available information, such as M&A announcements (Fama, Fisher, Jensen and Roll. 1969). All the above came to the same conclusion.

Also, there is the final form of the Efficient Market Hypothesis, the Strong form, which is generally not confirmed within the Market (Ross, 2008) that includes all information, public and private (Fama, 1965). Consequently, the market should already consider any information relevant to a stock's value, even if it is only known to one investor.

Last but not least, Kavussanos & Dockery (2001) showed that the Athens Stock Exchange is inefficient, which means that past stock prices have some information on future moves of stock prices. The same evidence was shown by Siourounis (2002) using a GARCH model. Stengos and Panas's (1992) findings support the Weak and Semi-Strong forms of efficiency, using data from selected stocks from the Greek banking sector. Based on the available information, it is impossible for a company to earn superior risk-adjusted profits in the last two forms of efficiency.

### **3. Data and Methodology**

#### **3.1 Data and Sample Construction**

All data used in this study were obtained from the Refinitiv Eikon database and focused on completed mergers and acquisitions in the Greek market between 2010 and 2021. Notably, Greece is affected by two crucial economic events during this period. First, the Greek Debt Crisis of 2008 was the first of a series of critical years. Second, Greece nearly defaulted on its debts in 2015, which explains why we do not see any M&As for listed targets in this sample.

The COVID pandemic is the second important economic event, followed by the stock market crash of 2020. Global investor fears over Coronavirus spread contributed to the crash, which made oil prices drop and a recession look likely. As a result, between 2019 and 2021, there were few bids in the sample, explaining its stable profile.

The final sample of takeovers meets some selected criteria. The criteria were formed of firms' characteristics and data availability. Specifically, the sample includes only completed domestic deals, which means that pending and failed deals are excluded from the sample, and both acquirer and target are Greek firms.

This collection, made under the selected criteria, includes 107 bids. Following that, the final sample should contain bids with full ownership control over the target, which means that the acquirer's post-bid stake is higher than 50%. Also, Acquisitions such as Property Acquisitions and Recapitalization MBOs/LBOs, Repurchases, Reverse Takeovers, Spin-Offs are excluded from the sample. Thus, 87 bids remain.

The involved companies should have public status to obtain security prices from the Refinitiv Eikon database. For the calculation of returns, it is imperative that stock prices are available. Considering that the analysis will take place in a short timeframe, the required data period starts one year before (255 trading days) and ends 30 trading days after the event. In light of the fact that our companies are located in Greece, the number of bids with listed acquirers totals 41, and only 36 have available daily data for the period covered by the examination.

Regarding the respective target companies, the ones listed constituted an inefficiently small sample. As a result, they are excluded from the sample and are not examined further. The exclusion of successive acquirers also achieved a clean return estimation period for applying the market model.



**Table 1. Acquirers' and Targets' Qualitative Data**

Acquirer Company	Target Company	Acquirer's TRBC Economic Sector	Target's TRBC Economic Sector	Acquirer's Market Value €mil.	Target's Market Value €mil.	Acquirer's Stock Exchange	Target's Stock Exchange
Motor Oil (Hellas) Corinth	ELIN VERD SA	Energy	Energy	1971,94	N/A	Athens	-
Public Power Corp SA	Carge	Utilities	Utilities	2483	N/A	Athens	-
Epsilon Net SA	Digital4U SA	Technology	Technology	277,65	N/A	Athens	-
Navios Maritime Partners LP	Navios Maritime Acquisition Corp	Industrials	Industrials	546,47	41,56	New York	New York
Trastor RE Invest SA	Syzeffix Commercial-Technical-Energy & Real Estate LLC	Financials	Financials	128,81	N/A	Athens	-
Epsilon Net SA	Data Communication SA	Technology	Technology	36,98	N/A	Athens	-
Terna Energy SA	RF Energy Omalies SA	Energy	Energy	927,3	N/A	Athens	-
Attica Publications SA	THE TOC Digital Media AE	Cyclical Consumer Goods / Services	Technology	4,87	N/A	Athens	-
Motodynamiki SA	Lyon Rental AE	Cyclical Consumer Goods / Services	Industrials	9,94	N/A	Athens	-
Trastor RE Invest SA	Agk 47 Real Estate Holding Co	Financials	Financials	68,59	N/A	Athens	-
Eurobank Ergasias SA	Grivalia Properties Real Estate Investment Co SA	Financials	Financials	1206,67	784,77	Athens	Athens

Hellenic Healthcare Sarl	Diagnostic & Therapeutic Center Of Athens Hygeia	Financials	Healthcare	1221,26	287,39	-	Athens
Grivalia Properties REIC	Nafsika SA	Financials	Financials	911,34	N/A	Athens	-
Grivalia Properties REIC	Undisclosed Property Portfolio, Athens(2)	Financials	Financials	884	N/A	Athens	-
Attica Holdings SA	Hellenic Seaways Maritime SA	Industrials	Industrials	251,07	N/A	Athens	-
Trastor RE Invest SA	Asset-Athens	Financials	Cyclical Consumer Goods / Services	64,55	N/A	Athens	-
Korres Natural Prod Sa	Calderdale Trading Ltd	Non-Cyclical Consumer Goods / Services	Financials	47,55	N/A	Athens	-
Galaxidi Marine Farm SA	Aquaculture Limanaki Voiotias Monepe	Non-Cyclical Consumer Goods / Services	Non-Cyclical Consumer Goods / Services	5,59	N/A	Athens	-
Elve Clothing SA	ENERGEIAKI PINEIAS 1 SA	Cyclical Consumer Goods / Services	Utilities	6,45	N/A	Athens	-
Entersoft SA	Alpha Software Solutions IKE	Industrials	Technology	6,64	N/A	Athens	-
Eurobank Ppty RE Invest Co	Cloud Hellas SA	Industrials	Cyclical Consumer Goods / Services	549	N/A	Athens	-
Quality & Reliability SA	DIGIBOOKS4 ALL AE	Technology	Technology	6,41	N/A	Athens	-
Eurobank Ergasias SA	TT Hellenic Postbank SA	Financials	Financials	216,76	47,79	Athens	Athens
Euroconsultants SA	Carmyco SA	Industrials	Basic Materials	20,43	N/A	Athens	-

Coca-Cola Hellenic Bottling Co	Coca-Cola Hellenic Bottling Co SA	Non-Cyclical Consumer Goods / Services	Non-Cyclical Consumer Goods / Services	5314,93	5314,93	New York	New York
National Bank of Greece SA	Eurobank Ergasias SA	Financials	Financials	1328,97	379,88	New York	Athens
Elastron SA	Fotodiodos Ltd	Basic Materials	Utilities	9,45	N/A	Athens	-
Bank of Piraeus SA	General Bank of Greece SA	Financials	Financials	449,33	155,68	Athens	Athens
SSSMF Cayman SI Holdings Ltd	SSI(Athens) Holdings I LLC	Financials	Financials	4,26	N/A	-	-
Attica Publications SA	Lampsi Radio Co SA	Cyclical Consumer Goods / Services	Cyclical Consumer Goods / Services	8,11	N/A	Athens	-
Alumil Mylonas SA	Interno SA	Basic Materials	Basic Materials	13,43	N/A	Athens	-
Hellenic Cables SA	Fulgor SA	Industrials	Industrials	34,85	N/A	Athens	-
DryShips Inc	OceanFreight Inc	Industrials	Industrials	1463,81	37,94	Nasdaq	Nasdaq
GR Sarantis SA	Koukouzelis D Ltd	Non-Cyclical Consumer Goods / Services	Non-Cyclical Consumer Goods / Services	129,24	N/A	Athens	-
Capital Product Partners LP	Crude Carriers Corp	Industrials	Industrials	404,51	242,23	Nasdaq	New York
Druckfarben Hellas SA	Ikon SA	Basic Materials	Financials	8,37	N/A	Athens	-
Petros Petropoulos SA	Ostrea Oil SA	Industrials	Energy	22,06	N/A	Athens	-

## Brief Description of M&As of the Final Sample

1. Motor Oil (Hellas) Corinth Refineries SA acquired ELIN VERD SA, a Kifissia-based organic chemical manufacturer.
2. The state-owned Public Power Corp SA acquired Carge, an Athens-based electric power distributor.
3. Epsilon Net SA acquired a 51% interest in Digital4U SA, an Athens-based internet portal operator.
4. Navios Maritime Partners LP (NMP) took over the entire share capital of Navios Maritime Acquisition Corp (NMA), a Piraeus-based provider of deep sea freight transportation services, for EUR 46.963 mil (USD 55.275 mil), in a stock swap transaction. NMP offered 0.1275 common ordinary shares per 1 NMA share. The transaction was valued based on NMP's closing stock price of EUR 2.889 (USD 3.40) on 25 August 2021, the last full trading day before the announcement. Upon Completion, NMA was delisted from NYSE.
5. Trastor Real Estate Investment SA, a unit of Varde Management LP, acquired the entire share capital of Syzefxis Commercial-Technical-Energy & Real Estate LLC, an Eleusis-based lessor of nonresidential buildings, for a total EUR 2.326 mil (USD 2.757 mil).
6. Epsilon Net SA acquired an 80% interest in Data Communication SA, a Melissia-based software publisher, for a total of EUR 6.3 mil (USD 7.439 mil).
7. Terna Energy Sa acquired RF Energy Omalies SA, an alternative energy sources establishment, from RF Energy SA, jointly owned by First Energy International Holding Bv and FG Europe SA.
8. Attica Publications SA acquired the entire share capital of THE TOC Digital Media AE, a Marousi-based internet portal operator, for a total of EUR 0.4 mil (USD 0.44 mil).
9. Cars Motorcycles & Marine Engine Trade & Import Company Sa acquired an 85% interest in Lyon Rental AE, an Athens-based provider of passenger car rental services, for a total of EUR 15 mil (USD 16.973 mil).
10. Trastor Real Estate Investment SA(Trastor SA), a unit of Piraeus Bank SA, acquired the entire share capital of Agk 47 Real Estate Holding Co, a Marousi-based real estate agency, for a total EUR 5.102 mil (USD 5.768 mil). Concurrently, Trastor SA acquired the entire share capital of Koukounaries Real Estate Holding Co, a Kifissia-based real estate agency, Mantecol Real Estate

- Holding Co, an Argyroupoli-based real estate agency, BS94 Real Estate Holding Co, an Athens-based real estate agency.
11. Eurobank Ergasias SA (Eurobank) merged with Grivalia Properties Real Estate Investment Co SA (Grivalia), an Athens-based provider of real estate investment services, majority owned by Fairfax Financial Holdings Ltd, in a stock swap transaction valued at EUR 719.45 mil (USD 815.856 mil). Eurobank offered 15.8 new ordinary shares per 1 Grivalia ordinary share. Based on Eurobank's closing stock price of EUR 0.468 (USD 0.531) on 23 November 2018, the last full trading day prior to the announcement, each Grivalias ordinary share was valued at EUR 7.401 (USD 8.393). Upon completion, Eurobank's and Grivalia's shareholders were to own 59% and 41% of the merged entity, respectively. Originally, in November 2018, Eurobank was rumored to be planning to acquire the entire share capital of Grivalia.
  12. Hellenic Healthcare SARL, a unit of CVC Capital Partners Ltd, acquired a 70.384% interest or 215.2 mil ordinary shares in Diagnostic & Therapeutic Center of Athens Hygeia, an Athens-based provider of ambulatory health care services, from Marfin Investment Group Holdings SA, for EUR 0.95 (USD 1.119) per share or a total of EUR 204.43 mil (USD 240.716 mil). G.Apostolopoulos Holdings SA was named a bidder.
  13. Grivalia Properties Real Estate Investment Co SA, a unit of Fairfax Financial Holdings Ltd, acquired an 80% interest in Nafsika SA, an Athens-based nonresidential property manager.
  14. Grivalia Properties Real Estate Investment Co SA also acquired Undisclosed Property Portfolio, located in Athens, for a total EUR 22.57 mil (USD 26.739 mil).
  15. Attica Holdings SA (Attica), a unit of MIG Shipping SA, acquired a 50.3% interest in Hellenic Seaways Maritime SA, a Piraeus-based provider of inland water passenger transportation services, for an amended total EUR 58.206 mil (USD 68.212 mil), from Piraeus Bank SA and other minority shareholders, in a stock swap transaction. The consideration consisted of EUR 25.61 mil (USD 30.012 mil) in cash and issuance of 24.146 mil Attica's new ordinary shares valued at EUR 32.596 mil (USD 38.199 mil). Originally, Attica offered EUR 30.61 mil (USD 36.041 mil) in cash and EUR 38.199 mil (USD 38.199 mil) in Attica's new ordinary shares. The shares were valued based on Attica's closing stock price of EUR 1.35 (USD 1.59) on August 10, the last full trading day prior to the announcement.

16. Trastor Real Estate Investment Co, a unit of Piraeus Bank SA, acquired Asset-Athens, an Athens-based parking lot and garage operator, for a total EUR 1.1 mil (USD 1.176 mil).
17. Korres SA Natural Products acquired the entire share capital of Calderdale Trading Ltd, provider of financial investment services, for EUR 0.12 mil (USD 0.125 mil).
18. Galaxidi Marine Farm SA acquired the entire share capital of Aquaculture Limanaki Voiotias Monepe, a Kyriaki-based fish farming establishment, for EUR 0.635 mil (USD 0.683 mil).
19. Elve Clothing SA acquired ENERGEIAKI PINEIAS 1 SA, a Pyrgos-based alternative energy sources establishment, for EUR 1.52 mil (USD 1.617 mil). Entersoft SA acquired the entire share capital of Alpha Software Solutions IKE , a Thessaloniki-based software publisher, for EUR 0.406 mil (USD 0.556 mil).
20. Entersoft SA acquired the entire share capital of Alpha Software Solutions IKE , a Thessaloniki-based software publisher, for EUR 0.406 mil (USD 0.556 mil).
21. Eurobank Properties Real Estate Investment Co SA a unit of Eurobank Ergasias SA acquired Cloud Hellas SA, an Athens-based owner and operator of department stores, for a nominal consideration of EUR 1 (USD 1.366).
22. Eurobank Ergasias SA (Eurobank) acquired the entire share capital of Athens-based TT Hellenic Postbank SA, from Hellenic Financial Stability Fund {HFSF}, in exchange for EUR 681 mil (USD 890.312 mil) in Eurobank new ordinary shares, via an auction.
23. Quality & Reliability SA acquired the entire share capital of DIGIBOOKS4ALL AE, a provider of digital novels, for EUR 0.096 mil (USD 0.096 mil).
24. Eurobank Ergasias SA (Eurobank) acquired the entire share capital of Athens-based TT Hellenic Postbank SA, from Hellenic Financial Stability Fund {HFSF}, in exchange for EUR 681 mil (USD 890.312 mil) in Eurobank new ordinary shares, via an auction.
25. Euroconsultants SA acquire the entire share capital of Carmyco SA, an Athens-based manufacturer and wholesaler of paint.
26. Coca-Cola Hellenic Bottling Co SA (Coca-Cola Hellenic), a Marousi-based producer and wholesaler of soft drinks, completed an exchange offer for 73.57% out of the remaining 76.7% of the company's ordinary share capital, or 269.673 mil ordinary shares, in a transaction valued at EUR 4.439 bil (USD 5.739 bil).

- Coca-Cola Hellenic offered 1 ordinary share in exchange of 1 Coca-Cola Hellenic ordinary share. The shares were valued based on Coca-Cola Hellenic's closing stock price of EUR 16.46 (USD 21.283) on October 10, the last full trading day prior to the announcement.
27. National Bank of Greece SA (National Bank) raised its interest to 84.75% from 0.40%, by acquiring an 84.35% interest, or 466.398 mil ordinary shares, in Athens-based EFG Eurobank Ergasias SA (EFG Eurobank), in a stock swap transaction valued at EUR 543.82 mil (USD 717.441 mil). National Bank offered 0.58 new ordinary share per EFG Eurobank share. Based on National Bank's closing stock price of EUR 2.01 (USD 2.62) on 04 October 2012, the last full trading day prior to the announcement of terms, each EFG Eurobank share was valued at EUR 1.166 (USD 1.52). Previously, National Bank agreed to acquire the entire share capital of EFG Eurobank in a stock swap transaction valued at EUR 644.627 mil (USD 840.233 mil). National Bank offered 0.58 new ordinary share per EFG Eurobank share. Based on National Bank's closing stock price of EUR 2.01 (USD 2.62) on 04 October 2012, the last full trading day prior to the announcement of terms, each EFG Eurobank share was valued at EUR 1.166 (USD 1.52).
  28. Elastron SA acquired a 93% interest in Fotodiodos Ltd, an electric utility company.
  29. Bank of Piraeus SA (Piraeus) acquired the entire share capital, or 1.73 bil ordinary shares, of General Bank of Greece SA (Geniki), an Athens-based commercial bank, from Societe Generale SA (SG), for EUR 1 mil (USD 1.303 mil). Originally, in July 2012, SG announced that it was seeking a buyer for Geniki. Piraeus was named a potential bidder.
  30. SSSMF Cayman SI Holdings Ltd acquired the entire share of SSI(Athens) Holdings I LLC, an Athens-based investment company. Concurrently, SSSMF Cayman SI Holdings Ltd acquired the entire share capital of SSI(Athens) Holdings III LLC. The two transactions had a combined value of for EUR 3.09 mil (USD 4.08 mil).
  31. Attica Publications SA, acquired the entire share capital of Lampsi Radio Co SA, an owner and operator of radio stations, from P7S1 Broadcasting Europe BV and SBS Broadcasting UK Ltd, for a combined value of EUR 4.35 mil (USD 5.949 mil). Concurrently, Attica Publications acquired the entire share capital of HRS Ltd. Terms were not disclosed.

32. Alumil SA acquired 93.66% interest, in Interno SA, a Thessaloniki-based manufacturer and wholesaler of aluminum profiles.
33. Hellenic Cables SA, a unit of Halcor SA acquired the entire share capital of Fulgor SA, which it did not already own, an Athens-based manufacturer of electric and communication cables and wires.
34. Dryships Inc merged with OceanFreight Inc, an Athens-based provider of ocean transportation services, for EUR 81.790 mil (USD 118.743 mil). The consideration was to consist of EUR 46.077 mil (USD 66.895 mil) in cash and the issuance of 3.111 mil Ocean Rig UDW Inc ordinary shares valued at EUR 35.713 mil (USD 56.204 mil). The shares were valued based on Ocean Rig UDW Inc's closing stock price of EUR 11.478 (USD 16.664) on July 25, 2011, the last full trading day prior to the announcement.
35. GR Sarantis SA acquired the entire share capital of Koukouzelis D Ltd, a Marousi-based manufacturer and wholesaler of cosmetic products.
36. Capital Product Partners LP (CPLP) acquired Crude Carriers Corp (CCC), a Piraeus-based provider of transportation services, in a stock swap transaction valued at EUR 189.676 mil (USD 275.892 mil). CPLP offered 1.56 units per CCC share. Based on CPLP's closing stock price of EUR 7.599 (USD 11.27) on 04 May 2011, the last full trading day prior to the announcement, each CCC share was valued at EUR 11.854 (USD 17.58).
37. Druckfarben Hellas SA acquired the entire share capital of Ikon SA, a seller of digital pre-printing and printing systems, marketing consumables Graphic Arts, and providing technical support, for EUR 0.610 mil (USD 0.763 mil).
38. Petros Petropoulos SA acquired Ostrea Oil SA, an Athens-based distributor of gas and oil, for a total value EUR 12.7 mil (USD 17.23 mil).



**Table 2. Annual number of M&A deals per category from 2010 to 2022**

<b>Year</b>	<b>Frequency</b>	<b>Cash offer</b>	<b>Stock offer</b>
2010	3	0	0
2011	6	1	1
2012	5	1	2
2013	3	0	1
2014	1	0	0
2015	0	-	-
2016	3	0	0
2017	3	2	0
2018	4	1	1
2019	2	2	0
2020	2	1	0
2021	2	1	0
2022	3	0	0
<b>Total</b>	<b>37</b>	<b>9</b>	<b>5</b>

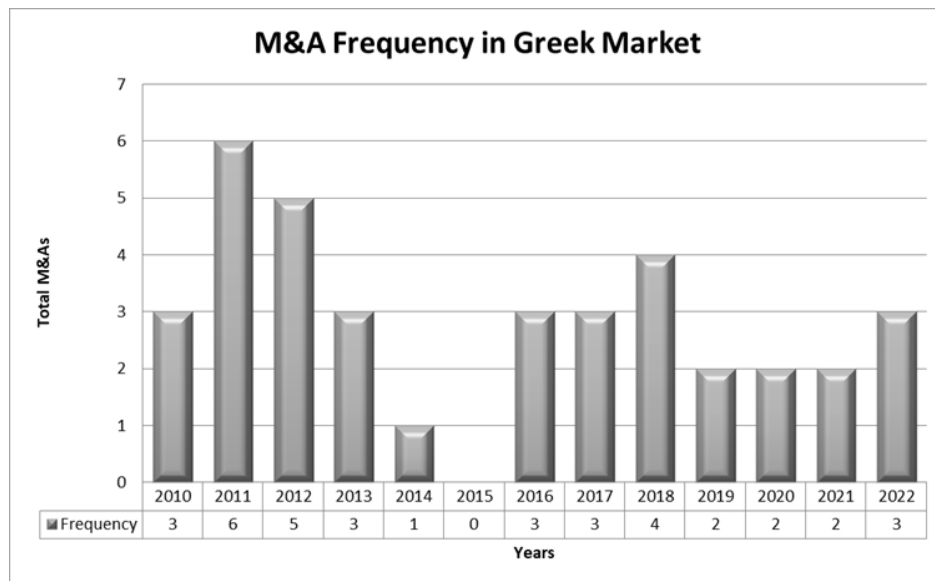
<b>Year</b>	<b>Frequency</b>	<b>Horizontal</b>	<b>Non-horizontal</b>
2010	3	1	2
2011	6	6	0
2012	5	3	2
2013	3	1	2
2014	1	0	1
2015	0	-	-
2016	3	1	2
2017	3	1	1
2018	4	2	2
2019	2	1	1
2020	2	2	0
2021	2	2	0
2022	3	3	0
<b>Total</b>	<b>37</b>	<b>23</b>	<b>13</b>

<b>Year</b>	<b>Frequency</b>	<b>Listed Target</b>	<b>Unlisted Target</b>
2010	3	0	3
2011	6	2	4
2012	5	3	2

<b>2013</b>	3	1	2
<b>2014</b>	1	0	1
<b>2015</b>	0	-	-
<b>2016</b>	3	0	3
<b>2017</b>	3	0	3
<b>2018</b>	4	2	2
<b>2019</b>	2	0	2
<b>2020</b>	2	0	2
<b>2021</b>	2	1	1
<b>2022</b>	3	0	3
<b>Total</b>	37	9	28

**Diagram 1. Annual number of M&A deals from 2010 to 2022**



### 3.2 Methodology

The impact of a specific economic event on a firm's value is easily measured using event study methodology. *Event study analysis* is a statistical method used in finance and economics to measure the impact of a specific event or announcement on the value of a firm, stock, or other financial asset. It aims to evaluate the market's reaction to an event and assess its significance. The analysis typically focuses on the abnormal returns associated with the event. Abnormal returns refer to the difference between the actual returns observed during the event period and the expected returns based on the stock's historical performance or a benchmark index. By comparing these abnormal returns to normal market behaviour, researchers can determine whether the event had a significant impact.

In other words, we can quantify whether the investors believe that the announcement of a merger will create or destroy value. According to Brown and Warner (1980,1985), an event study uses financial market data as security prices observed in a short-term frame. Initially, someone has to select the event of interest, which in this case is M&As and the period when the event takes place in order to obtain the information content, such as the share price of that period. In concrete terms, it contributes to examining how the stock market reacts to the announcement of M&As and calculating its profitability.

The methodology is divided into two parts. The first section presents univariate analyses that generate abnormal returns for acquirers' companies, comparisons of consideration structure, and economic sector. As a second part, a multivariate regression analysis verifies the results of the univariate analysis regarding the determinants of abnormal returns by adding more variables other than the method of payment; equity or cash offer, and the economic sector; horizontal or non-horizontal. Univariate analysis focuses on examining individual variables in isolation, while multivariate analysis involves analyzing multiple variables together to uncover relationships and patterns among them. Both approaches have their specific uses and are often employed in combination to gain a comprehensive understanding of the data.

### **3.2.1 Estimation of abnormal returns**

A common hypothesis test of Fama (1998) supports the efficiency of the market for all models of expected performance and that models are able to measure the variation of expected returns. Moreover, in a semi-efficient market, any delayed response to new information would likely only last a short time. As a result, abnormal returns for a few days will not signify the magnitude of model misspecification.

The returns are divided into two categories. The first one is logarithmic returns. The logarithmic returns can encounter values in any interval, whereas discrete returns can only encounter finite values, so logarithmic returns are preferred. Logarithmic returns can be analyzed more easily when linking subperiod returns. In practice, they are more likely to be normally distributed and follow standard statistical techniques' assumptions.

Given all the above, the rate of return for each firm is calculated as follows

$$R'_{qt} = \ln(R_{qt}) = \ln(P_{qt} / P_{qt-1}) \quad (1)$$

Where,  $R'_{qt}$  = the daily rate of return for share  $q = 1,2,3,\dots,N$  bidder firms at time  $t = 1,2,3,\dots,T$  (days) taken in logarithmic form,  $P_{qt}$  = the price of share  $q$  at the end of day  $t$ ,

day t was taken from the ex-dividend date, and  $P_{qt-1}$  = the price of share q at the end of day t-1.

Having obtained the daily security prices of acquirers and the ATHEX market index, calculations of abnormal returns are made for each of them. The abnormal returns are given from the following formula:

$$AR_{qt} = R_{qt} - E(R_{qt}) \quad (2)$$

Where q refers to the shares of the sample, t refers to days, and  $AR_{qt}$ ,  $R_{qt}$ , and  $E(R_{qt})$  symbolize the abnormal, actual, and expected return of q shares in t periods, respectively.

Average Abnormal Return and standard error are calculated respectively as follows:

$$AAR_t = \sum_{q=1}^N \frac{AR_{qt}}{N} \quad (3)$$

$$S(AAR_t) = \sqrt{\sum_{t=-n}^{-T} \frac{[(AAR_t - \overline{AAR}_t)]^2}{(t-1)}} \quad (4)$$

t= -n...-T

In Market Model and in Market Index Model, respectively, Cumulative Average Abnormal Returns (CAAR) are calculated as follows

$$CAAR_t = \sum_{t=-n}^T AAR_t \quad (5)$$

$$CAAR_t = \sum_{q=1}^N \frac{CAR_{qt}}{N} \quad (6)$$

$t = -1 \dots T$ , for instance, observation period,  $-1, 0, +1$ , and CAAR is the cumulative return over the same time period.

The formulas of the t-statistic of AAR and CAAR are given below

$$t_{AAR} = \frac{AAR_t}{S(AAR_t)} \quad (7)$$

$$t_{CAAR} = \frac{CAAR_t}{\sqrt{T} * S(AAR_t)} \quad (8)$$

$T$  = total number of points in time during the observation period

According to Brown and Warner (1980,1985), the following applies to the null hypothesis

$$\begin{array}{l} H_0 : AAR = 0 \\ H_1 : AAR \neq 0 \end{array} \quad \text{and} \quad \begin{array}{l} H_0 : CAAR = 0 \\ H_1 : CAAR \neq 0 \end{array}$$

When the value of the t-statistic is higher than or equal to a critical value according to the respective significance level, the null hypothesis, that the AARs or CAARs are statistically significant, is rejected.

Notably, event studies include two time periods called estimation and observation periods. The estimation period starts 255 trading days before the event and ends 30 days before. On the other hand, the observation period, which can be separated into subperiods called event windows, ends 30 trading days after the event. The event window should include the announcement date of each acquisition. Market Model and Market Index Model are the selected approaches to calculating abnormal returns.

### 3.2.2 Univariate analysis

Univariate analysis is defined as analysis carried out on only one ("uni") variable ("variate") to summarize or describe the variable (Babbie, 2007; Trochim, 2006). However, another use of the term "univariate analysis" exists and refers to statistical analyses involving only one dependent variable used to test hypotheses and draw inferences about populations based on samples, also referred to as univariate statistics (Tabachnick & Fidell, 2007). It refers to the quantitative data exploration we do at the beginning of any analysis.

Univariate Analysis is one of the simplest forms of data analysis; unlike regression, it does not analyze causes or relationships and focuses on describing a single variable, in this case, CAARs. Univariate analyses are contrasted with multivariate analyses (analyses of two or more variables simultaneously) but help us determine which types of multivariate analyses to conduct later.

Abnormal returns are obtained using both the market index and the market model. Compared with the market index model, the results of the market model are not materially different, but they are less significant. Both of these models are used in finance to estimate and analyze the relationship between the returns of individual stocks and the market as a whole. They do, however, differ in a few key ways.

In summary, the market model focuses on how a stock's return relates to a single market index return. As opposed to this, the market index model incorporates multiple factors that can influence a stock's return to estimate expected returns and capture additional risk factors.

### **Market Model**

The market model, also known as the single-factor model or the simple linear regression model, estimates an individual stock's expected return based on its sensitivity to the overall market. This statistical model relates any given security's return to the market portfolio's return. The model's linear specification follows the assumed joint normality of asset returns. For any security  $q$  the market model is

$$R_{qt} = \alpha_q + \beta_q R_{mt} + \varepsilon_{qt} \quad (9)$$

$$E(\varepsilon_{qt}) = 0 \quad \text{Cov}(R_{mt}, \varepsilon_{qt}) = 0 \quad \text{var}(\varepsilon_{qt}) = \sigma_{\varepsilon_q}^2$$

where  $R_{qt}$  and  $R_{mt}$ , respectively, represent the period- $t$  returns on security  $q$  and the market portfolio,  $\varepsilon_{qt}$  is the error term and  $\alpha_q$ ,  $\beta_q$  and  $\sigma_{\varepsilon_q}^2$  are the market model's parameters;  $\alpha_q$  is the intercept term,  $\beta_q$  is the beta of the market which shows the stock's volatility relative to the market. Thus,

$$AR_{qt} = R_{qt} - (\alpha_q + \beta_q R_{mt}) \quad (10)$$

As shown above,  $AR_{qt}$  represents the abnormal return of stock  $q$  at time  $t$ ,  $E(R_{qt})$  represents the expected stock returns  $q$  at time  $t$ , and  $R_{qt}$  represents the actual raw total stock returns  $q$  at time  $t$ .

Therefore, this estimates the wealth gains generated in our sample under the standard event study analysis framework, using actual minus expected returns to calculate abnormal stock returns.

A distributional property of abnormal returns can be used to outline inferences over any period in the event window under the null hypothesis,  $H_0$ , in which the event does not affect returns. The distribution of the sample's abnormal return of observation within the event window follows the normal distribution, and it is written as  $AR_{qt} \sim N(0, \sigma^2(AR_{qt}))$ .

Market models result in abnormal returns having a lower variance than raw returns, resulting in more effectively performed statistical tests. This produces smaller correlations between abnormal returns across securities, giving a closer match to standard statistical tests. A market model regression's benefit will depend on its  $R^2$ . A higher  $R^2$  means a greater variance reduction and a greater gain.

### **Market Index Model**

Market Index Model or Market Adjusted Return Model in which the benchmark of predicted returns for sample firms, assuming no takeover event occurs, equals the actual market return, as measured by a market index. The market index model is an extension of the market model that considers multiple factors in addition to the market return. It recognizes that other factors beyond the market index can influence a stock's return. In general, the model is a simplified version of the market model.

$$E(R_{qt}) = \alpha + \beta R_{mt} + \varepsilon_{qt} \quad (11)$$

where  $\alpha=0$  and  $\beta=1$ , which leave as with the following equation

$$E(R_{qt}) = R_{mt} \quad (12)$$

A share  $q$  will earn the market return  $R_{mt}$  over any  $t$ -period. During the observation period,  $R_{mt}$  equals the DataStream Total Greek Market Index (ATHEX). The abnormal return  $AR_{qt}$  is the actual return  $R_{qt}$  minus  $R_{mt}$ .

$$AR_{qt} = R_{qt} - R_{mt} \quad (13)$$

### **3.2.3 Multiple regression analysis**

The process requires two or more predictor variables, thus called multiple regression. The multiple regression model explains the relationship between multiple independent variables (predictors) and one dependent variable (criterion). Dependent variables are modeled as functions of several independent variables with corresponding coefficients

and a constant term. Weights are associated with each predictor value, indicating how much each predictor contributes to the overall prediction.

The goal is to model the relationship between the dependent variable and multiple independent variables by estimating the coefficients that represent the strength and direction of the relationships. These coefficients indicate how much the dependent variable is expected to change for a unit change in each independent variable, holding all other variables constant.

The population regression model of a dependent variable  $Y$  on a set of  $n$  independent variables  $X_i, i=1, 2, \dots, n$  is given by the following formula

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon \quad (14)$$

where  $Y$  is the dependent variable, all  $X_i$  are the independent variables,  $a$  is the constant term of  $Y$  on the regression and each  $\beta_i, i=1, 2, \dots, n$ , is the slope of the regression in terms of the  $X_i$  variable. Calculating the weights,  $a, \beta_1, \dots, \beta_n$ , regression analysis gives a maximal prediction of the dependent variable from the set of independent variables.

Model Assumptions:

- i. For a given observation, the error term  $\varepsilon$  is normally distributed with the mean equal to zero and the standard deviation  $\sigma$ . Also,  $\varepsilon$  is independent of the error terms associated with all other observations. Thus,  $\varepsilon_j \sim N(0, \sigma^2)$  for each  $j=1, 2, \dots, n$ ,
- ii. In terms of regression analysis, the variables  $X_j$  are considered fixed quantities, although in the context of correlation analysis they are random variables. In any case, all  $X_j$  are independent of the error term. When assuming that all  $X_j$  are fixed quantities, it is essentially assumed that there are  $n$  realizations of  $X_j$  variables and that the only randomness of  $Y$  comes from the error term.

The estimated regression equation follows

$$\hat{Y} = b_0 + b_1 X_1 + b_2 X_2 + \dots + b_n X_n \quad (15)$$

Where  $\hat{Y}$  is the predicted value of  $Y$ , the value that lies on the estimated regression surface, the terms  $b_i$  with  $i=1, 2, \dots, n$  are the least squares estimates of the population parameters of the regression  $\beta_i$ .



A multivariate time series analysis can be performed using this approach when one variable is dependent on a set of other variables. The dependent variable  $Y$  can be modeled on the set of independent variables. The following cross-sectional OLS regression finds the determinants of acquirers' and targets' gains proxied by their CARs within a multivariate framework:

$$CAR_q = \alpha + \sum_{q=1}^N X_q + \varepsilon_q \quad (16)$$

where,  $CAR_q$  represents the cumulative abnormal return for each acquiror  $q$ ,  $\alpha$  is the regression intercept,  $X_q$  is a vector including the explanatory variables for each firm  $q$  and  $\varepsilon_q$  represents the residual or error term of the regression. Identical and normally distributed residuals are assumed.

The analysis employs the Market Index Model, which considers the market-wide factors that can influence firms' abnormal returns in mergers and acquisitions. The model controls for market-wide movements and aims to capture the specific impact of the consideration structure, industrial relatedness, and target status on the abnormal returns of the acquiring firms. This regression analysis will provide insights into the significance and magnitude of the relationships between these variables and the abnormal returns experienced by acquiring firms in the context of mergers and acquisitions in the selected time period.

As a result of the data availability, ordinary least squares (OLS) regression is used to estimate the regression coefficients. More specifically, no data values were available for the target companies' independent variables, such as market value and book value. As a result, the range of methods available for analysis was limited. OLS finds the best-fitting line by minimizing the sum of squared differences between the observed values of the dependent variable and the predicted values based on the independent variables.

Moreover, OLS regression is relatively straightforward to understand and implement. It provides a clear and intuitive approach to estimating the coefficients representing the relationships between the independent and dependent variables. In terms of efficiency and under certain conditions, OLS produces the most efficient estimators. It means that the estimated coefficients obtained through OLS have the smallest variance among all unbiased estimators, given that the assumptions of OLS are satisfied.

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the estimated coefficients obtained through OLS have the smallest variance among all unbiased estimators, given that the assumptions of OLS are satisfied.

Based on its assumptions, OLS regression yields unbiased estimates of coefficients. Unbiasedness means that, on average, the estimated coefficients converge to the true population values, providing accurate information about the relationships between variables. Also, it provides a framework for statistical inference, allowing for hypothesis testing and confidence interval estimation. These statistical tests help determine the significance of the relationships between the variables and give insights into the population parameters. OLS regression offers interpretable coefficients that represent the change in the dependent variable associated with a unit change in the independent variable, holding other variables constant. This makes it easier to understand and communicate the results of the analysis.

However, it is important to note that OLS regression has limitations and assumptions. Violating these assumptions, such as non-linearity, heteroscedasticity, or multicollinearity, can affect the accuracy and reliability of the estimates. Therefore, it is crucial to assess the assumptions and address any violations to ensure the validity of the results. OLS regression is valuable because of its simplicity, efficiency, interpretability, and statistical inference capabilities. It provides a powerful and widely applicable approach for estimating the relationships between variables, making it a popular choice in many research fields.

## 4. Results and Discussion

### Examination of CAARs

#### 4.1 Event Study Analysis Results

Cumulative Average Abnormal Returns (CAAR) is a measure commonly used in event study analysis to assess the impact of a specific event, such as a merger or acquisition (M&A), on the stock returns of the involved companies. It provides insights into how the stock prices deviate from the expected returns during a specified event window. Positive CAAR indicates that the stock returns are higher than expected during the event window, suggesting a positive market reaction to the event. Negative CAAR indicates lower than expected returns, indicating a negative market reaction. The magnitude and significance of CAAR can be evaluated to assess the overall impact and statistical significance of the event on stock returns.

The abnormal returns and by extension the cumulative average abnormal returns generated by both the market model and market index model are estimated for two event windows in this paper. The first event window covers the 30 days before and after the bid announcement date. The second event window includes 5 days before and after the announcement date. Since a bid is typically completed within a month after the public announcement date, the first event window incorporates the full effect of the market's reaction on stock prices. Meanwhile, it allows any information relating to the bid offer to leak to the market before the announcement.

<b>Table 3. CAARs for the whole sample</b>		
<b>Panel A. CAARs estimated by the Market Model</b>		
	<b>Acquirers</b>	
	<b>EW 1 (-30, +30)</b>	<b>EW2 (-5, +5)</b>
CAAR	0,82%	-0,71%
t-stat.	0,18104	-0,00501
Number of firms	37	37
<b>Panel B. CAARs estimated by the Market Index Model</b>		
CAAR	3,80%	1,93%
t-stat.	0,76116	-0,00536
Number of firms	37	37

From Table 3, using the Market Model and the Market Index Model, acquirers gain value around the announcement date, with CAARs of 0,816% and 3,803%, respectively, 30 days before and 30 days after the announcement date. However, from the value of the

control statistic  $t$  of 0.1810 and 0,7612, comparing it with the critical value 1.689, for a 10% level of significance, we see that although we have positive performance with both models is not statistically significant.

The above table lists the Cumulative Average Return (CAR) for each acquirer individually as calculated by the Market Model (MM) and the Market Index Model (MIM) for the first observation period (-30,30).

From Table 3, using the Market Model and the Market Index Model, acquirers gain value around the announcement date, with CAARs of 0.139% and 1,555%, respectively, 5 days before and 5 days after the announcement date. However, from the value of the control statistic  $t$  of 0,0727 and 0,7332, comparing it with the critical value 1.689, for a 10% level of significance, we see that although we have positive performance with both models is not statistically significant.

The above table lists the Cumulative Average Return (CAR) for each acquirer individually as calculated by the Market Model (MM) and the Market Index Model (MIM) for the second observation period (-5,5).

The Market model looks at the actual returns of a reference market, such as the Greek market, and track how a company's stock correlates with it. On the contrary, the market index model calculates stock returns by using market indices such as ATHEX to represent common or systematic factors. All the above tables lead us to observe some differences between the two models selected for the event study. The Market Index Model tends to produce higher Cumulative Average Abnormal Returns (CAARs) compared to the Market Model in both event windows at the calculation of all sample acquirers.

Several factors can contribute to higher returns. Regarding industry-specific information, the market index model captures industry-specific information and factors that may affect the returns of the target firm. The above allows a more precise measurement of abnormal returns focused on specific industry dynamics that may drive the target firm's performance. Consequently, this can lead to higher CAARs than the broader market benchmark in the Market Model.

The market index model uses a benchmark closer to the target firm's industry, leading to a better comparison of its performance against its peers. Suppose the target has significant positive or negative events specific to its industry. In that case, it may result in higher CAARs when using the industry-specific benchmark compared to the overall market benchmark used in the Market Model. An industry-specific benchmark can be used in the Market Index Model to account for market inefficiencies. The market index

model may capture inefficient markets or misprice within an industry, resulting in higher CAARs.

Then, we continue the analysis, dividing acquirers into groups based on certain characteristics. These are consideration structure, industrial relatedness and target company's status. The above is analyzed in the next chapter.

## 4.2 Univariate Analysis Results

<b>Table 4. CAARs of Acquirers based upon deal characteristics for EW (-30, +30)</b>			
<b>Panel A. By mode of payment</b>			
	<b>Cash</b>	<b>Stock</b>	<b>Means Dif.</b>
CAAR	5,945%	-3,653%	9,597%
t-stat.	1,622120449	-2,357 *	2,57058
p-value			0,16959
Number of firms	10	5	15
<b>Panel B. By industrial relatedness</b>			
	<b>Horizontal</b>	<b>Non-Horizontal</b>	<b>Means Dif.</b>
CAAR	7,100%	-3,066%	10,166%
t-stat.	1,16785	-0,36074	2,39510
p-value			0,02945 **
Number of firms	25	12	37
<b>Panel C. By listing status of targets</b>			
	<b>Listed/Public</b>	<b>Unlisted/Private</b>	<b>Means Dif.</b>
CAAR	-14,406%	9,655%	24,062%
t-stat.	-1,17568%	1,77827 *	2,2616
p-value			0,2971
Number of firms	9	28	37
<i>Notes : 1. CAARs estimated by the Market Index Model.</i>			
<i>2. *** means statistical significance at the 1% level,</i>			
<i>    ** means statistical significance at the 5% level and</i>			
<i>    * means statistical significance at the 10% level</i>			

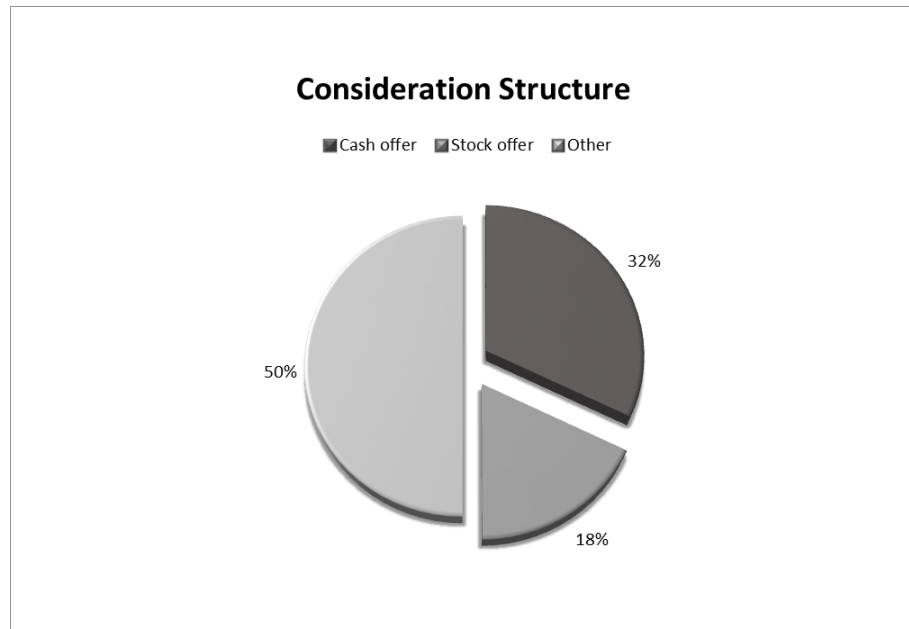
By looking at Table 4 and 5, there is a clear difference in the returns obtained between cash and stock offers, horizontal and non-horizontal mergers and listed and unlisted target firms. Thus, acquirers obtain higher abnormal returns by acquiring listed firms using cash as a means of payment. From the table, we see that all acquirers using cash gain positive CAARs ranging from 5,945% in the event window (-30, +30) to 10,543%, which is statistically significant at the 5% level, in the event window (-5, +5). These

results are much higher than those obtained by acquirers using equity offers. The latter are negative ranging from -3,653%, which is statistically significant to 10%, to -20,805%, which is statistically significant to 5% level of confidence, respectively for the two event windows. The differences of these mean values are 9,597% for the (-30, +30) event window and 31% for the (-5, +5) event window accordingly though not statistically significant. This result is in line with the vast majority of the empirical studies later reviewed and may be explained by the existence of information asymmetries which lead the market to perceive the issuance of stock by bidders as an overvaluation signal for these companies.

The observation that cash offers tend to gain higher returns than stock offers in mergers and acquisitions (M&A) is a phenomenon noted in empirical studies. At first, Kyriazis and Diacogiannis (2008) examined a sample of 108 completed deals in Greek market and reported that all acquirers using cash gain statistically significant positive CAARs ranging from 9.16% in the event window (-30, +30) to 5.43% in the event window (-5, +5), which are much higher than those obtained by acquirers using stock ranging from -1.05% to 1.83%, respectively, for the two event windows. Travlos (1987) examined a sample of 1,381 M&A transactions and found that cash offers yielded significantly positive abnormal returns for acquirers during the short run. His research highlighted the financial benefits of cash offers for acquiring firms.

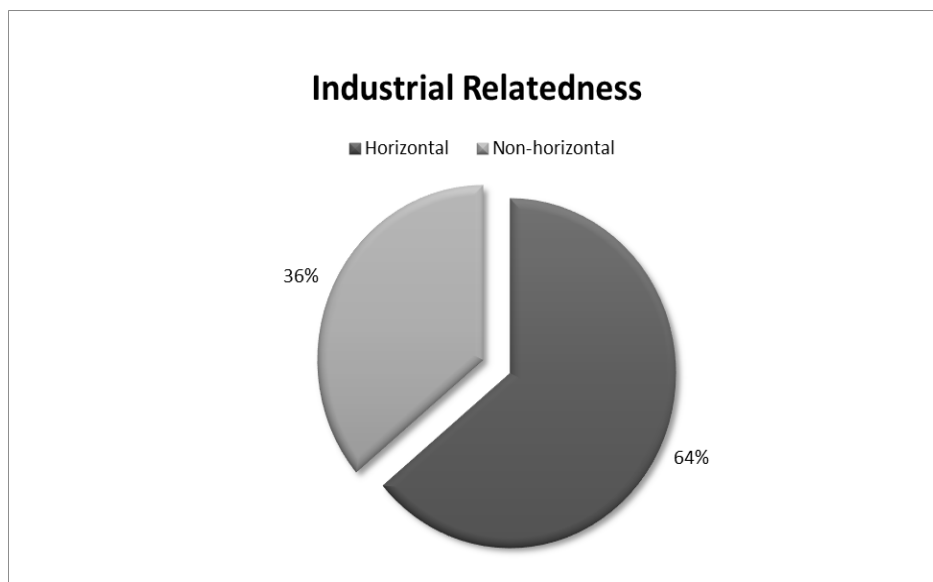
Additionally, Jensen and Ruback (1983) found that acquirers experienced positive abnormal returns during the announcement period, indicating that cash offers also were associated with higher returns. Later, the study of Mitchell and Mulherin (1996) examined a sample of 2,387 M&A transactions and found that they yielded significantly higher announcement-period. Andrade, Mitchell, and Stafford (2001) analyzed a large sample of 2,673 M&A transactions and assumed the same outcome during the announcement period. It is evident from the empirical research above that the acquirers benefit significantly from cash offers financially.

**Diagram 2. Percentage of M&A deals based on payment method**



This may occur for a variety of reasons. Shareholders benefit from cash offers in terms of liquidity and certainty of value. In other words, by converting ownership in the target company to cash, shareholders eliminate the uncertainty associated with holding shares in the acquiring company. As a result of this liquidity preference, cash offers can provide higher returns since investors are willing to pay a lower premium for cash assurances (Rhodes-Kropf et al., 2005). Secondly, the stock offer risk is higher than cash offers. Stock offerings involve the sale of shares of the acquiring company, which introduces additional risks such as stock price fluctuations and ownership dilution. In contrast, cash offers eliminate these risks and may appear as a more attractive alternative (Mitchell and Mulherin, 1996).

**Diagram 3. Percentage of M&A deals based on industrial relatedness**



Regarding the information asymmetry, an acquiring company may interpret a cash offer as a sign of positive information or confidence. Moreover, they often require more financial resources and confidence that the deal will succeed. The market can react positively to this, resulting in higher returns of cash offers (Billett et al., 2006). Another reason may be the market reaction to the deal's consideration structure. For various reasons, market participants may prefer cash offers, including tax considerations, diversification benefits, or individual investment strategies (Kaplan and Strömberg, 2009). The stock market is generally efficient at incorporating information into stock prices as soon as it becomes available. A cash offer could be mispriced because of investor sentiment, market inefficiency, or limited arbitrage opportunities. By taking advantage of this mispricing, investors can earn higher returns on cash than on stock offers (Moeller et al., 2004).

It is important to note that cash offers versus stock offers can have different returns depending on the specifics of the M&A transaction, market conditions, and investor preferences. Empirical studies have observed that the general trend of cash offers outperforming stock offers is not a universal rule. Each M&A transaction should be evaluated on its basis, considering the specific characteristics and circumstances of the merging companies.



**Table 5. CAARs of Acquirers based upon deal characteristics for EW (-5, +5)****Panel A. By mode of payment**

	<b>Cash</b>	<b>Stock</b>	<b>Means Dif.</b>
CAAR	10,543	-20,805	31%
t-stat.	2,34152 **	-2,99833 **	2,57058
p-value			0,25592
Number of firms	10	5	15

**Panel B. By industrial relatedness**

	<b>Horizontal</b>	<b>Non-Horizontal</b>	<b>Means Dif.</b>
CAAR	1,922%	0,792%	1,130%
t-stat.	0,74450	0,21940	2,03951
p-value			0,26917
Number of firms	25	12	37

**Panel C. By listing status of targets**

	<b>Listed/Public</b>	<b>Unlisted/Private</b>	<b>Means Dif.</b>
CAAR	-8,237%	4,725%	12,962%
t-stat.	-1,58300%	2,0491 **	2,2622
p-value			0,37328
Number of firms	9	28	37

*Notes : 1. CAARs estimated by the Market Index Model.*

*2. \*\*\* means statistical significance at the 1% level,*

*\*\* means statistical significance at the 5% level and*

*\* means statistical significance at the 10% level*

The next part of the results relates to the industrial relatedness of the companies involved. Compared to non-horizontal mergers, horizontal mergers produce higher abnormal returns for acquirers. According to the first table, horizontal mergers gain 7,1% positive CAARs in the event window (-30, +30) compared to non-horizontal mergers, which lose 3,066% negative CAARs. Alternatively, we see that horizontal mergers gain 1,922 positive CAAR in the event window (-5,5), which is more than the 0,792% positive CAAR gained by non-horizontal mergers. The differences of these mean values are 10,166 % for the (-30, +30) event window and also statistically significant at a 5% confidence level with a p-value of 0,02945. In the (-5, +5) event window, the difference is 1,13% but not statistically significant.

Several empirical studies have also demonstrated that horizontal mergers generate higher returns than non-horizontal mergers. By emphasising the strategic motives and synergies that drove horizontal mergers, Jensen and Ruback (1983) found they were associated with higher abnormal returns for acquirers. A few years later, Ravenscraft and Scherer (1987) highlighted the economic benefits of horizontal mergers for acquirers and reached

the same conclusion. Loughran and Vijh (1997) analysed a sample of 164 deals in the UK market and acquisitions and found that acquirers in horizontal mergers experienced higher abnormal returns in the short run.

In a similar study, Andrade, Mitchell, and Stafford (2001) analysed a large sample of M&A transactions and found that acquirers of listed targets in horizontal mergers experienced higher abnormal returns in the short run than non-horizontal mergers. Last but not least, Shleifer and Vishny (2003) examined various empirical studies and concluded that horizontal mergers generate higher abnormal returns for acquirers than non-horizontal mergers. The authors suggested synergies and increased market power in horizontal mergers contribute to their profitability.

For several reasons, horizontal mergers generate higher returns than non-horizontal mergers (Travlos, 1987; Moeller et al., 2015). A key factor is the potential for synergies and cost savings. Mergers between similar companies are more likely to result in duplicated operations, functions, and resources (Megginson & Smart, 2008). As a result of removing these redundancies, the merged entity can achieve significant cost savings and efficiency gains, contributing to higher returns (Rhodes-Kropf & Viswanathan, 2004). As a result, the new entity is likely to perform better financially.

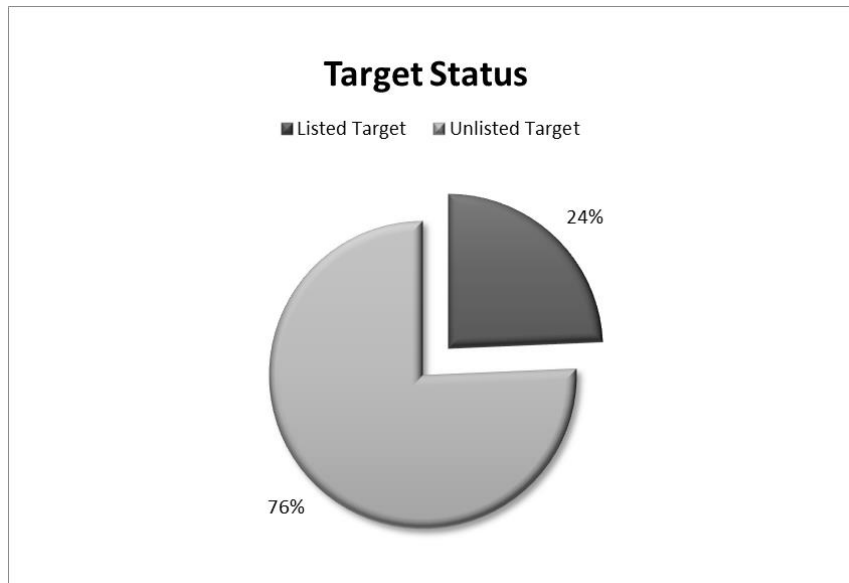
In addition, horizontal mergers can give rise to greater market power and market share. Combining operations within a certain industry may give the merged entity greater pricing power, better bargaining leverage with suppliers, and a greater market presence (Baker & Ruback, 1999). As the merged entity gains a larger market share, it can capture a larger customer base and benefit from economies of scale, further enhancing its competitive position and financial performance (Ghosh, 2001).

An industry's competitive advantage can also be enhanced. Having a stronger position in the market allows the merged entity to navigate industry dynamics more effectively, respond to market changes more quickly, and capture a larger share of the marketplace. As a result, the merged companies can gain a sustainable competitive advantage, resulting in higher long-term returns (Rumelt, 1982).

It is also possible to reduce competition within an industry through horizontal mergers by eliminating competitors. As a result, the new entity can increase its pricing power and profitability (Mitchell & Mulherin, 1996). As fewer competitors compete for market share, the merged company may enjoy more stable market conditions, allowing it to focus on value creation and strategic growth initiatives, ultimately leading to higher returns (Hitt et al., 2001). Lastly, market participants often view horizontal mergers as more strategic and value-enhancing than non-horizontal mergers. In our final category, we examine the targeted company's status. Compared to public targets, acquirers tend to achieve greater abnormal returns when they acquire private targets.

According to Panel C, public targets lose 14,406% negative CAARs in the event window (-30, +30), whereas private targets gain 9,655% positive CAARs, statistically significant at a 10% confidence level. Additionally, we observe that private targets gain 4,725% positive CAAR in the event window (-5,5), which is statistically significant at a 5% confidence level and more than the 8,237% negative CAAR lost by public targets. The differences in these mean values are 24,062% for the (-30, +30) event window and 12,962% for the (-5, +5) event window, but they are not statistically significant.

**Diagram 4. Percentage of M&A deals based on target status**



In many empirical studies, acquisitions of private targets have shown higher returns for acquirers than acquisitions of public targets. Also, based on the Greek market, Kyriazis and Diacogiannis (2008) supported that all acquirers of listed target firms achieved higher CAARs than those of unlisted targets, ranging from 5.51% in the longer event window of 61 days to 4.01% in the shorter event window of 11 days, compared with 3.76% to 3.64% for the corresponding event windows of acquirers of unlisted firms. Furthermore, Moeller, Schlingemann, and Stulz (2004) conducted an analysis of a substantial sample of 4,037 mergers and acquisitions and found that acquirers of private targets had higher abnormal returns than acquirers of public targets. In this study, information advantage and lower bid competition associated with private targets contributed to higher returns. Mitchell and Stafford (2000) also examined a large sample of 1,604 tender offers and reported similar conclusions by emphasizing the potential for superior information and strategic advantages. Loughran and Vijh (1997) performed a comparative analysis of 160 deals, compared the returns for acquirers of private and public targets and also found higher abnormal returns in private targets' takeovers. According to the study, these findings resulted from information advantage, lower bid competition, and potential

synergies. For the following reasons, private target bids in mergers and acquisitions typically produce higher returns than public targets. In private target acquisitions, bidders typically possess an information advantage over their counterparts in public target acquisitions. This advantage stems from their access to more detailed and exclusive information about the target company, which allows them to make more reliable financial estimates and strategic decisions (Boone et al., 2007).

In addition, private target acquisitions generally involve fewer potential acquirers, resulting in less competition. By reducing competition, winning bidders are less likely to be involved in bidding wars, resulting in lower acquisition costs and higher returns (Loughran & Vijh, 1997). Furthermore, acquirers in private target acquisitions often enjoy greater bargaining power and flexibility than in public target acquisitions. This enhanced bargaining power empowers acquirers to negotiate deals that correspond with their interests, potentially leading to increased returns (Offenberg & Pirinsky, 2010).

Private target acquisitions also exhibit higher returns due to synergies and value creation. The first can provide specialized assets, technologies, or market positions that can be effectively combined with the acquiring company's operations, resulting in increased efficiency and revenue growth (Sudarsanam, 2016).

Additionally, private target acquisitions offer acquirers a unique opportunity to exert greater influence over the target's company strategic direction and decision-making processes. Acquiring a controlling stake in a private company gives the acquirer direct control and guides the target's operations according to their strategic vision. This control premium, typically higher in private target acquisitions, enhances the acquirer's ability to maximize value creation (Megginson et al., 2004).

The information advantage, limited competition, negotiation power, the ability to create synergies and value, and the control premium associated with private target acquisitions collectively account for the higher returns observed in such transactions than in public target acquisitions. Although, the higher returns are not universally applicable to all situations. Additionally, transaction-specific factors, such as the acquisition price, financing structure, and post-merger integration, can influence acquirers' returns.

### **4.3 Multiple Regression Results**

The regression model examines the relationship between abnormal returns ( $CAR_j$ ) as the dependent variable and three independent variables: consideration structure ( $CS_1$ ), industrial relatedness ( $IR_2$ ), and target status ( $TS_3$ ).

The model is specified as follows:

$$CAR_j = \beta_0 + \beta_1 CS_1 + \beta_2 IR_2 + \beta_3 TS_3 + \varepsilon \quad (17)$$

Where  $CAR_j$  represents the cumulative abnormal returns for firm  $j$  over the event window, explanatory variables are three dummies, each with a value of 1/0, of which CS controls for Consideration Structure (cash=1/equity offers=0), TS reflects Target Status (listed=1/unlisted=0), and IR stands for Industrial Relatedness (horizontal=1/non-horizontal=0),  $\beta_0$  is the intercept term, representing the baseline level of abnormal returns when all independent variables are zero,  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$  are the regression coefficients that estimate the effect of each independent variable on the cumulative abnormal returns and  $\varepsilon$  represents the error term, accounting for unexplained variation in the dependent variable.

By looking at Table 6 and Panel A, the coefficients represent the estimated effect of each independent variable on the dependent variable. The coefficient CS (Consideration Structure) of 0,1013 suggests that, for every one-unit increase in the Consideration Structure (CS), the dependent variable  $CAR_j$  should increase by 0,1013 units. The coefficient IR (Industrial Relatedness) of 0,2205 suggests that, for every one-unit increase in Industrial Relatedness (IR), the dependent variable  $CAR_j$  should increase by 0,2205 units. The coefficient TS (Target Status) of -0,2437 suggests that, for every one-unit increase in Target Status (TS), the dependent variable  $CAR_j$  should decrease by 0,2437 units.

However, the p-value of 0.35943098, 0,1615 and 0,2202 for the three variables indicate that the relationships are not statistically significant. Additionally, it is worth considering the model's limitations, such as the sample size, data quality, and potential omitted variables, which could influence the estimated coefficients and statistical significance.

The F-test is a statistical test used to determine whether the overall regression model is statistically significant. The F-test result of 0,167621174 assesses the overall significance of the regression model. In this case, the F-test result is smaller than the critical value of 1,685 is more than the significance level; we accept the null hypothesis, suggesting that the regression model does not have a significant overall explanatory power. Based on this, no statistically significant relationship exists between the independent and dependent variables.

**Table 6. OLS Multiple Regression Results**

**CARs is the dependent variable and the explanatory variables are: CONSIDERATION STRUCTURE, INDUSTRIAL RELATEDNESS & TARGET STATUS**

**Panel A EW (-30, +30)**

$$\hat{Y}=0,02+0,1CS+0,22IR-0,24TS$$

	Coefficients	p-value
Intercept term	0,02087	0,9213
CS	0,1013	0,3594
IR	0,2205	0,1615
TS	-0,2437	0,2202

R-squared 0,140180004

R-sq.adjusted 0,06201455

Sample size 37

F-test 0,167621174

**Panel B EW (-5, +5)**

$$\hat{Y}=0,01+0,04CS+0,07IR-0,12TS$$

	Coefficients	p-value
Intercept term	0,01044	0,93377
CS	0,03907	0,5505
IR	0,0676	0,46469
TS	-0,1232	0,29533

R-squared 0,08115

R-sq.adjusted -0,00238178

Sample size 37

F-test 0,41787

The following equation represents the estimated relationship between the dependent variable ( $\hat{Y}=CAR_j$ ) and the independent variables (CS, IR, TS) based on the coefficients obtained from your regression analysis.

$$\hat{Y}=0,02+0,1CS+0,22IR-0,24TS \quad (18)$$

Interpreting the coefficients:

For every one-unit increase in CS, the predicted value of  $\hat{Y}$  is expected to increase by 0,1 units. This suggests a positive relationship between CS and  $\hat{Y}$ , indicating that a higher consideration structure is associated with higher predicted values of  $\hat{Y}$ .

For every one-unit increase in IR, the predicted value of  $\hat{Y}$  is expected to increase by 0,22 units. This suggests a positive relationship between IR and  $\hat{Y}$ , indicating that higher industrial relatedness is associated with higher predicted values of  $\hat{Y}$ .

For every one-unit increase in TS, the predicted value of  $\hat{Y}$  is expected to decrease by 0,24 units. This suggests a negative relationship between TS and  $\hat{Y}$ , indicating that a higher target status is associated with lower predicted values of  $\hat{Y}$ .

The intercept term represents the estimated value of the dependent variable ( $\hat{Y}$ ) when all the independent variables (X1, X2, X3) are equal to zero. In this case, the intercept is 0.02, suggesting that even when all the independent variables are zero, there is still a baseline value of  $\hat{Y}$  at 0.02.

By looking at Table 6 and Panel B, the coefficients represent the estimated effect of each independent variable on the dependent variable. The coefficient CS (Consideration Structure) of 0,03907 suggests that, for every one-unit increase in the Consideration Structure (CS), the dependent variable CAR<sub>j</sub> should increase by 0,03907 units. The coefficient IR (Industrial Relatedness) of 0,0676 suggests that, for every one-unit increase in Industrial Relatedness (IR), the dependent variable CAR<sub>j</sub> should increase by -0,0676 units. The coefficient TS (Target Status) of -0,1232 suggests that, for every one-unit increase in Target Status (TS), the dependent variable CAR<sub>j</sub> should decrease by -0,1232 units.

However, the p-value of 0,5505, 0,46469 and 0,29533 for the three variables indicate that the relationships are not statistically significant. Additionally, it is worth considering the model's limitations, such as the sample size, data quality, and potential omitted variables, which could influence the estimated coefficients and statistical significance.

The F-test is a statistical test used to determine whether the overall regression model is statistically significant. The F-test result of 0.167621174 assesses the overall significance of the regression model. In this case, the F-test result is smaller than the critical value of 1,685 is more than the significance level; we accept the null hypothesis, suggesting that the regression model does not have a significant overall explanatory power. Based on this, no statistically significant relationship exists between the independent and dependent variables.

The following equation represents the estimated relationship between the dependent variable ( $\hat{Y}=\text{CAR}_j$ ) and the independent variables (CS, IR, TS) based on the coefficients obtained from your regression analysis.

$$\hat{Y}=0,01+0,04\text{CS}+0,07\text{IR}-0,12\text{TS} \quad (19)$$

Interpreting the coefficients:

For every one-unit increase in CS, the predicted value of  $\hat{Y}$  is expected to increase by 0,04 units. This suggests a positive relationship between CS and  $\hat{Y}$ , indicating that a higher consideration structure is associated with higher predicted values of  $\hat{Y}$ .

For every one-unit increase in IR, the predicted value of  $\hat{Y}$  is expected to increase by 0,07 units. This suggests a positive relationship between IR and  $\hat{Y}$ , indicating that higher industrial relatedness is associated with higher predicted values of  $\hat{Y}$ .

For every one-unit increase in TS, the predicted value of  $\hat{Y}$  is expected to decrease by 0,12 units. This suggests a negative relationship between TS and  $\hat{Y}$ , indicating that a higher target status is associated with lower predicted values of  $\hat{Y}$ .

The intercept term (0.01) represents the predicted value of  $\hat{Y}$  when all independent variables (CS, IR, TS) are zero. However, it's important to note that the interpretation of the intercept term should be considered in the context of the specific variables and data being analyzed.

The absence of statistical significance does not necessarily mean no relationship between the variables. In the context of the limited sample, it might need more variability or diversity to detect meaningful relationships. Due to the limited variation in the data, wide confidence intervals and high standard errors make it difficult to detect statistically significant effects. It is crucial to consider the limitations of the small sample size and their implications for generalizability and robustness.

Among a sample of U.S. acquisitions, Moeller et al. (2004) studied the effect of payment methods on acquisition performance focusing on 4,037 U.S. acquisitions. According to their findings, cash-financed deals resulted in higher abnormal returns for the acquiring firm. Martynova and Renneboog (2008) studied the impact of payment methods on analyzing an extensive dataset of 1,353 European deals. Their results revealed that cash offers led to higher announcement returns for the acquirer, further supporting the positive relationship between cash offers and acquirer returns. In an analysis of global M&A transactions and the relationship between payment method and bidder's return, Agrawal et al. (2013) obtained the same result examining a diverse set of 16,936 M&A transactions worldwide. In their study, cash offers generated higher abnormal returns for the acquiring firm than stock offers, emphasising the value generated by cash-financed acquisitions. Furthermore, Sudarsanam and Mahate (2003) examined the performance of cash and stock acquirers in the U.K. market and showed that cash acquirers outperformed the latter.

Capron and Pistre (2002) examined 194 French horizontal M&A deals. In horizontal mergers, acquisition returns were significantly lower than in vertical or conglomerate



mergers. Similarly, Moeller et al. (2004) comprehensively analysed a comprehensive analysis of 4,037 U.S. mergers and acquisitions. They examined the effect of merger type on acquirer returns, further emphasising the underperformance of this merger type. In a study by Rhodes-Kropf et al. (2005) on global acquisitions, the authors investigated the performance of horizontal mergers and found that acquirer returns were significantly negative in these transactions. This is consistent with the idea that horizontal mergers face potential antitrust issues, integration complexities, and limited synergistic benefits, which can contribute to lower acquirer returns. Moreover, Andrade et al. (2001) analysed a large sample of 3,194 U.S. mergers and acquisitions. Their study on the impact of merger type on shareholder wealth yielded similar results. Although, they found that acquirers of 642 listed targets in horizontal mergers experienced higher abnormal returns in the short run than in non-horizontal mergers.

Another empirical study by Liu and Shan (2017) examined a sample of Chinese mergers and acquisitions and found that acquirer returns were lower when targeting publicly listed companies than private targets. Another study by Fuller et al. (2002) investigated the returns to acquirers in the context of listed target firms. Their results showed that offers for listed target firms led to zero or even negative returns for the acquirer, further supporting the notion that bidding public targets may result in lower acquirer returns. These studies provide additional evidence for the negative relationship between acquirer returns and bidding public targets.

## 5. Conclusion

Research findings emphasise three key characteristics of mergers and acquisitions (M&As); industrial relatedness, target firm status, and consideration structure. First of all, industrial relatedness is a crucial factor when it comes to M&As. The value of a target is easier to determine if both firms are in the same industry. Accurate valuation and decision-making are facilitated by common knowledge and capabilities. The status of the target company also influences M&As. Research highlights the importance of a company's listing status as acquiring private target firms yields positive returns for the acquirer. However, offers for listed target firms often lead to zero or even negative returns. Additionally, the chosen consideration structure impacts acquirer returns, whether cash or stock. Acquisitions involving cash offer higher positive returns.

This research contributes to M&A knowledge by providing insight into industry relatedness, target firm status, and consideration structure and provides practical guidance for decision-makers in the field. Moreover, they contribute to existing knowledge, bridging the research gap and providing insight into the dynamics of successful M&As. Comparing public and private target firms, stock and equity offers, and horizontal and non-horizontal mergers, can reveal the dynamics influencing acquirer returns. Considering the risks and rewards associated with potential targets can help decision-makers evaluate potential targets. Furthermore, the study investigates the effects of different consideration structures on acquirer returns for deal structuring and negotiation. This aspect of the research aims to fill a gap by exploring the above implications in M&A transactions.

The univariate analysis indicates that acquirers obtain higher abnormal returns by acquiring listed firms with cash. From a sample of 15 deals, we see that all acquirers using cash gain positive CAARs ranging from 5,945% to 10,543% for the two event windows. These results are much higher than those obtained by acquirers using equity offers. The latter are negative, ranging from -3,653%, which is statistically significant to 10%, to -20,805%, which is statistically significant to a 5% confidence level, respectively, for the two event windows. This result is in line with the vast majority of the empirical studies. For instance, Kyriazis and Diacogiannis (2008) examined a sample of 108 completed deals in Greek market and reported that all acquirers using cash gain statistically significant positive CAARs which are much higher than those obtained by acquirers using stock. Travlos (1987) examined a sample of 1,381 M&A transactions and found that cash offers yielded significantly positive abnormal returns for acquirers during the short run. His research highlighted the financial benefits of cash offers for acquiring firms. Later, Jensen and Ruback (1983) found that acquirers experienced positive abnormal returns during the announcement period, indicating that cash offers also were associated with higher returns. Additionally, the study of Mitchell and Mulherin (1996) examined a sample of 2,387 M&A transactions and found that they yielded significantly

higher. Andrade, Mitchell, and Stafford (2001) analysed a large selection of 2,673 M&A transactions and assumed the same outcome during the announcement period. It is evident from the empirical research above that the acquirers benefit significantly from cash offers financially.

Horizontal mergers produce higher abnormal returns for acquirers for a sample of 37 deals compared to non-horizontal mergers. Horizontal mergers gain 7,1% positive CAARs compared to non-horizontal mergers, which lose 3,066% negative CAARs in the first event window. Alternatively, horizontal mergers gain 1,922 positive CAAR in the second event window, more than the 0,792% positive CAAR achieved by non-horizontal mergers. Several empirical studies have also demonstrated that horizontal mergers generate higher returns than non-horizontal mergers. Jensen and Ruback (1983) analysed 37 corporate control transactions and found that horizontal mergers were associated with higher abnormal returns for acquirers. A few years later, Loughran and Vijh (1997) focused on mergers and acquisitions in the U.K. market and analysed a sample of 164 deals. Their study revealed that acquirers involved in 29 horizontal mergers experienced higher abnormal returns in the short run. In a similar study, Andrade, Mitchell, and Stafford (2001) analysed a large dataset of 3,438 M&A transactions, including 1,102 horizontal mergers. Their study supported the positive relationship between horizontal mergers and acquirer returns. They found that acquirers of 642 listed targets in horizontal mergers experienced higher abnormal returns in the short run than in non-horizontal mergers.

According to the first event window, public targets lose 14,406% negative CAARs, whereas private targets gain 9,655% positive CAARs, statistically significant at a 10% confidence level. Additionally, we observe that private targets gain 4,725% positive CAAR in the second event window, which is statistically significant at a 5% confidence level and more than the 8,237% negative CAAR lost by public targets. Many empirical studies support this conclusion. Kyriazis and Diacogiannis (2008) analysed a selection of 108 completed deals supported that all acquirers of listed target firms achieved higher CAARs than those of unlisted targets firms. Moeller, Schlingemann, and Stulz (2004) conducted a rigorous analysis of a substantial sample of 4,037 mergers and acquisitions and discovered that acquirers of private targets experienced higher abnormal returns than those of public targets. Similarly, Mitchell and Stafford (2000) examined a sizable dataset of 1,604 tender offers and reached similar conclusions, underscoring the potential for superior information and strategic advantages in private target acquisitions. Furthermore, Loughran and Vijh (1997) performed a comparative analysis of 160 deals, examining the returns for acquirers involved in both private and public target takeovers. Their study revealed that acquirers of private targets achieved higher abnormal returns, attributing this outcome to the information advantage, lower bid competition, and potential synergies associated with private target acquisitions.

Both univariate and multiple regression analyses produced the same results. In other words, the results of the multiple regression suggest a positive relationship between returns and cash as a payment method, a positive relationship between returns and horizontal mergers in terms of industrial relatedness and a negative relationship between returns and bidding on a public target based on target status. Moeller et al. (2004) conducted a study focusing on 4,037 U.S. acquisitions, where they found that cash-financed deals resulted in higher abnormal returns for the acquiring firm. In a separate study, Martynova and Renneboog (2008) investigated the impact of payment methods on European mergers and acquisitions, analysing an extensive dataset of 1,353 European deals. Their results revealed that cash offers led to higher announcement returns for the acquirer, further supporting the positive relationship between cash offers and acquirer returns. Agrawal et al. (2013) took their analysis to a global scale, examining a diverse set of 16,936 M&A transactions worldwide to investigate the relationship between payment method and bidder's return. Their study obtained the same result, demonstrating that cash offers generated higher abnormal returns for the acquiring firm than stock offers. Returning to the U.S. market, Moeller et al. (2004) conducted a comprehensive analysis of 4,037 U.S. mergers and acquisitions, emphasising the underperformance of horizontal mergers compared to other types.

The preferences for cash offers and the lower risk associated with them contribute to higher returns for acquirers in mergers and acquisitions. Cash offers provide liquidity and certainty of value, reducing shareholder uncertainty and resulting in lower premiums and higher returns (Rhodes-Kropf et al., 2005). Conversely, stock offers expose shareholders to risks such as stock price fluctuations and ownership dilution, making them riskier (Mitchell & Mulherin, 1996). The consideration structure and information asymmetry also play a role in the returns of cash offers. A cash offer can be perceived as a positive signal, leading to positive market reactions and higher returns (Billett et al., 2006). Market participants may prefer cash offers due to tax considerations, diversification benefits, or alignment with investment strategies (Kaplan & Strömberg, 2009).

On the other hand, acquisitions of private targets consistently yield higher returns for acquirers than public targets. Empirical studies by Moeller, Schlingemann, and Stulz (2004), Mitchell and Stafford (2000), and Loughran and Vijh (1997) have shown that acquirers of private targets achieve higher abnormal returns. These findings are attributed to factors such as the information advantage bidders hold in private target acquisitions, reduced bid competition, and the potential for synergies. Bidders in private target acquisitions benefit from access to more detailed and exclusive information about the target company, enabling more accurate financial estimates and strategic decision-making (Boone et al., 2007). The reduced number of potential acquirers leads to less competition, avoiding bidding wars and lowering acquisition costs, thereby increasing returns (Loughran & Vijh, 1997). Additionally, acquirers in private target acquisitions have

enhanced bargaining power and flexibility, allowing them to negotiate deals that align with their interests (Offenberg & Pirinsky, 2010).

Overall, the findings of this thesis offer valuable insights into mergers and acquisitions (M&As), but certain limitations should be acknowledged. Sample selection bias could be one limitation, as the study may have focused on a specific industry and geographic region, potentially limiting the generalizability of the results. Future research could consider expanding the sample size and including diverse industries and regions to improve external validity. Another potential area for improvement could be the quality and availability of data used. Depending on the data sources and period, there may be limitations regarding accuracy, completeness, or reliability. Using alternative data sources or more comprehensive datasets could extend and validate the findings in future research.

As well as the abovementioned limitations, the analysis may not include other relevant factors and potential interactions. Future research could explore additional variables such as cultural fit, managerial capabilities, regulatory environment, or macroeconomic conditions to provide a more comprehensive understanding of M&A performance. Overall, this thesis contributes to ongoing debates, theories, and practical applications by providing empirical evidence and insights that deepen the understanding of industry relatedness, target firm status, and consideration structure in the context of M&As. These findings have significant implications for acquirers in terms of target selection and deal structuring.

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## 6. Appendix

### Appendix 1. CAARs of Acquirers estimated by the Market Model and Market Index Model EW(-30,30)

Acquirer	CAR MM (%)	CAR MIM(%)
Motor Oil (Hellas) Corinth	-12,292%	-4,320%
Public Power Corp SA	-15,216%	-21,623%
Epsilon Net SA	-25,624%	15,116%
Navios Maritime Partners LP	-5,030%	27,324%
Trastor RE Invest SA	5,436%	2,011%
Epsilon Net SA	27,779%	18,935%
Terna Energy SA	23,617%	43,238%
Attica Publications SA	30,949%	10,953%
Motodynamiki SA	-18,188%	-3,793%
Trastor RE Invest SA	27,503%	7,823%
Eurobank Ergasias SA	4,409%	3,218%
Hellenic Healthcare Sarl	-2,901%	6,619%
Grivalia Properties REIC	0,752%	4,109%
Grivalia Properties REIC	-0,324%	-5,366%
Attica Holdings SA	-7,898%	-0,655%
Trastor RE Invest SA	15,550%	3,310%
Korres Natural Prod Sa	4,833%	-3,909%
Galaxidi Marine Farm SA	3,552%	-11,792%
Elve Clothing SA	15,131%	3,571%
Entersoft SA	8,393%	-1,371%
Eurobank Pty RE Invest Co	-22,742%	-9,590%
Quality & Reliability SA	73,129%	84,428%
Eurobank Ergasias SA	-108,148%	-178,011%
Euroconsultants SA	-11,777%	-23,271%
Coca-Cola Hellenic Bottling Co	-10,893%	-11,210%
National Bank of Greece SA	-39,730%	-13,549%
Elastron SA	-13,902%	-15,849%
Bank of Piraeus SA	5,722%	20,288%
SSSMF Cayman SI Holdings Ltd	-42,194%	-1,112%
Attica Publications SA	105,935%	118,489%
Alumil Mylonas SA	3,336%	0,096%
Hellenic Cables SA	63,501%	64,130%
DryShips Inc	-9,299%	8,733%
GR Sarantis SA	-11,453%	-7,012%
Capital Product Partners LP	-21,852%	6,930%
Druckfarben Hellas SA	-6,056%	3,133%
Petros Petropoulos SA	-3,821%	0,675%

**Appendix 2. CAARs of Acquirers estimated by the Market Model and Market Index Model EW(-5,5)**

<b>Acquirer</b>	<b>CAR MM (%)</b>	<b>CAR MIM(%)</b>
Motor Oil (Hellas) Corinth	-8,039%	-2,160%
Public Power Corp SA	-18,601%	-4,530%
Epsilon Net SA	7,501%	1,952%
Navios Maritime Partners LP	4,215%	15,374%
Trastor RE Invest SA	5,482%	8,050%
Epsilon Net SA	13,608%	12,693%
Terna Energy SA	6,354%	17,144%
Attica Publications SA	12,276%	-8,047%
Motodynamiki SA	-5,497%	3,089%
Trastor RE Invest SA	20,022%	5,109%
Eurobank Ergasias SA	7,764%	17,018%
Hellenic Healthcare Sarl	-1,886%	8,464%
Grivalia Properties REIC	-1,322%	-4,529%
Grivalia Properties REIC	-6,984%	-1,695%
Attica Holdings SA	6,959%	3,726%
Trastor RE Invest SA	10,244%	-0,391%
Korres Natural Prod Sa	10,640%	-3,382%
Galaxidi Marine Farm SA	16,319%	-8,123%
Elve Clothing SA	21,618%	-2,693%
Entersoft SA	8,275%	18,833%
Eurobank Ppty RE Invest Co	-20,332%	0,688%
Quality & Reliability SA	28,455%	10,459%
Eurobank Ergasias SA	-106,215%	-113,295%
Euroconsultants SA	-9,070%	-2,810%
Coca-Cola Hellenic Bottling Co	-10,892%	-0,015%
National Bank of Greece SA	-11,098%	0,957%
Elastron SA	-1,031%	5,182%
Bank of Piraeus SA	28,515%	14,618%
SSSMF Cayman SI Holdings Ltd	-21,209%	-4,181%
Attica Publications SA	103,120%	68,276%
Alumil Mylonas SA	1,333%	1,264%
Hellenic Cables SA	48,659%	29,264%
DryShips Inc	-0,717%	-8,563%
GR Sarantis SA	-0,970%	-6,808%
Capital Product Partners LP	-1,789%	-8,692%
Druckfarben Hellas SA	-24,290%	-0,173%
Petros Petropoulos SA	-10,314%	-4,522%