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“Determinants of the payment method in M&A deals”

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Abstract

There are studies that analyze determinants of payment method in M&A Deals. In our study we attend to analyze few of them. Our study intends to examine the influence that the explanatory variables has, which is the determinant, on the selection of method of payment, which is stock or cash either. Furthermore, we proceeded in the exact calculation of this influence through the Average Marginal Effects (AME) method. Our final sample consists of 389 Deals announced during an eight year period between 01/01/2007 and 31/12/2014. Our sample include only completed Deals, with public Status bidder from United States of America. Our sample has no restrictions regarding the nation, the status and the industrial sector of the target firm. Our findings indicates that the determinants having significance influence on the payment of method are Target Public Status, Collateral, Debt Capacity and Market Run Up.

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Chapter 1

1.Introduction

The matter of Mergers and Acquisitions Deals (M&A Deals) is a matter of significant importance, among the issues of Corporate Governance, which have been analyzed mostly on the last few decades by the academics.

There is a variety of fields concerning the M&A Deals. Some of them studying the phenomenon of Merging Waves, some of them the field of Corporate Control generally, others the reaction of the corporate price stock when there are rumors or a M&A Deal is taking place and others the Method of Payment in M&A Deals. Nevertheless, all the above matters concerning the M&A Deals provide information to many stakeholders. Some of the stakeholders are:

- The Customers of the Merging Corporations
- The Governments and the state agencies such as Departments of treasuries
- The Managers
- The Employees
- The Investors
- The lenders in order to decide what the level of leverage will be
- Other corporations which may be potential competitors.

As we observe there are many stakeholders that gaining benefits from the information providing the topic of M&A Deals. Furthermore, in order to make more efficient studies on these fields we need a variety of data. Accurate data is a vital issue for researchers in order to ensure the accuracy of the information that will be provided to the wide group of stakeholders that we mentioned above. The topic of M&A Deals developed the last few decades, since the past decades the researchers hadn't the ability to the data access as researchers nowadays, they couldn't provide and develop a variety of issues concerning the topic of M&A Deals in such easy way like nowadays. The development of technology gave us

the ability to have instantly access wherever we wish in large-scale databases. These databases provide us real time information and they are connected through the global network and give us all the necessary data that an accurate research needs. For example, some of the most popular databases around the globe are Thomson Eikon, Bloomberg, and Datastream etc.

On this research we will try to analyze the Determinants of the Payment Method in M&A Deals. This specific field provides information of vital importance, to corporation managers, in order to face tough decisions which have to do with the method of Payment that they going to choose to have a successful M&A Deal. We are going to make these decisions easier through the method of Hypothesis testing of Determinants that has to do with specific financial Ratios of the corporation. In this study there are two methods of Payment that we are dealing with these are: Payment through common stock only and cash only. For the needs of the Hypothesis testing we extracted a sample of **564** M&A Deals from the Database Thomson Eikon. Furthermore, we raised the specific Ratios of the corporations took place to the Deals above for the Hypothesis testing of the Determinants from the Database Datastream. This is the reason why technology, through the access to these Databases provides us the ability to have more easy accurate results in order to advise corporation managers which Method of Payment they going to choose.

1.1 Definition of Corporate control

For the better perception of the specific topic of Payment Method in M&A Deals we consider that it worth to mention basic concepts relatively to this topic. A basic concept is this of Corporate Control that its definition worth to be mentioned as exactly introduced by *Fama, Eugene F. and Michael C. Jensen (1983a) through their studies "Agency Problems and residual Claims and "Separation of Ownership and Control" (1983c), and underlined by Michael Jensen and Richard Ruback through their study "The Market for Corporate Control: The Scientific Evidence"*.

“**Corporate control** is frequently used to describe many phenomena ranging from the general forces that influence the use of corporate resources (such as legal and regulatory systems and competition in product and input markets) to the control of a majority of seats on a corporation’s board of directors. We define corporate control as the rights to determine the management of corporate resources that is, the rights to hire, fire and set compensation of top-level managers [Fama and Jensen (1983a; 1983c)]. When a bidding firm acquires a target firm, the control rights to the target firm are transferred to the board of directors of the acquiring firm. While corporate boards always retain the top-level control rights, they normally delegate the rights to manage corporate resources to internal managers. In this way the top management of the acquiring firm acquires the rights to manage the resources of the target firm. The substantial characteristic of the above definition is that Corporate Control is the constant fight among managers in order to enhance their position in the Corporate Market through the gain of as much as access they can in the resources of the rest competitors firms”. [Jensen and Ruback (1983) “*The Market for Corporate Control*”].

1.2 Incentives for the Corporate Control

There are significant factors that cause the Merger Activity. *Gregor Andrade and Erric Staford (2004) through their thesis “Investigating the economic role of mergers” published on Journal of Corporate Finance* attempted to investigate the motivations of the occurrence of the corporate takeover. G. Andrade and E. Staford distinguished two major incentives for a Merger to be occurred. The First one has to do with the motivation for growth for each corporation and the second one is related to industry sector factors. More specific, the second one has to do mainly with regulatory issues, restructuring activity, substantial changes in production procedure or technological innovations. In order to examine the above incentives they adopted a regression model in which included independent variables that concerns specific firms that participated or not in Merger activity. Their sample consisted of 2969 M&A Deals referred to the period 1970 to 1994.

After the regression of the sample above according to the authors the motivations for a merger activity to be occurred is the expectation for future growth and strengthening of the financial position of the corporation. This motivation takes place through the control of the assets of the target firm. Authors observed that the majority of the acquirer firms after the occurrence of the Merger activity have an increased profitability and an expected future profitability. Furthermore, the evidence seems to confirm that an additional motivation is the intrinsic growth of the industrial sector. Corporation seems to intent to merge in order to stand against the occurring technological changes, restructuring activities or regulation reforming. Corporations in order to survive through economic shock attempt to merge their resources and enhance their positions into the Market.

1.3 Historic Review and Definition of Merger waves

The Historic Review and the definition of the term Takeover wave has been presented successfully through the *thesis “A century of Corporate takeovers: What we learned and where do we stand?”* written by Marina Martynova and Luc Reneboog (2008) and published on the *Journal of Banking and Finance*. M. Martynova and L. Reneboog through their Reviewable and argumentative research attempted to make an overview in merger waves from the early start of 20th century until nowadays. In their study they are underlying the definition of Takeover Wave as given below:

“The term takeover wave reflects the wave pattern of the number and the total value of takeover deals over time. Golbe and White (1993) show that a series of sine curves provides significant explanatory power for the time series of takeover activity. Furthermore, the fitted sine curves predict the actual timing of peaks and troughs in takeover activity well.”[*Martynova and Reneboog (2008) “A century of corporate takeovers: What we learned and where do we stand?”*]

Diagram I raised by the above thesis shows clearly the evolution of takeover activity through the past century. The diagram reveals the takeover activity that took place in the United States over the last century. As we look the diagram we are observing five merger waves. The first one occurred on 1900, the second on 1920, the third on 1960, the fourth on 1980 and the fifth one on 1990.

Diagram I United States takeover activity

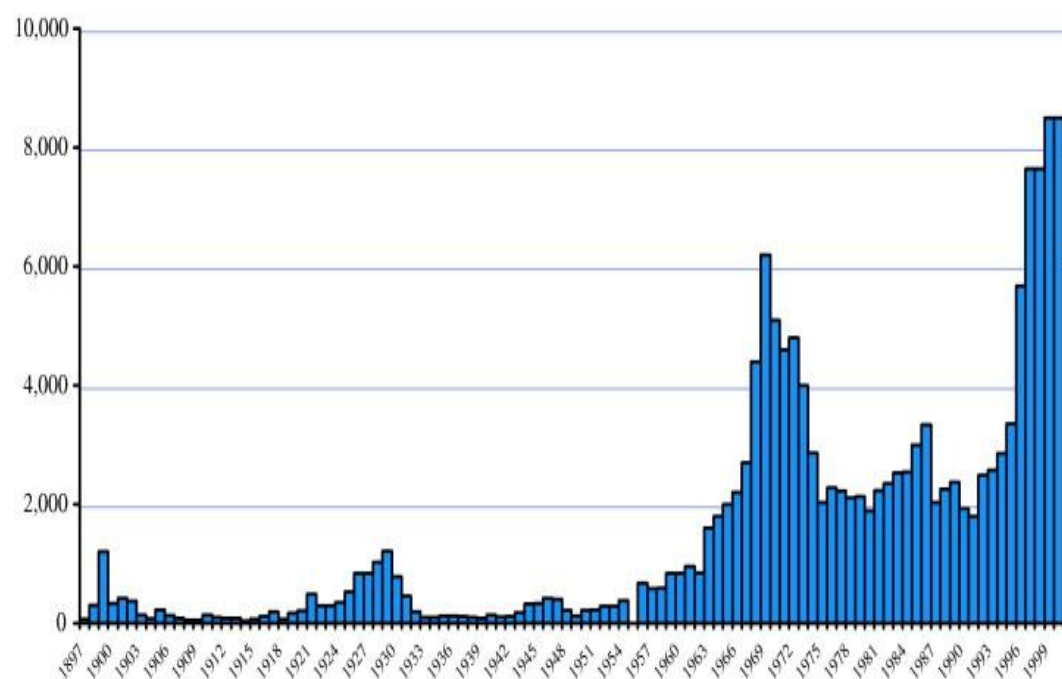


Diagram I. U.S. merger waves since 1897 (total number of Deals) Source: 1897-1904 from Gaughan (1999); 1904-1954 from Nelson (1959); 1955-1962 from Historical Statistics of the US- Colonial Times to 1970; 1963-1997 from Mergerstat Review, 1998-2002 from Value Creators report.

[M. Martynova and L. Reneboog (2008) "A century of Corporate takeovers: What we learned and where we stand" Journal of Banking and Finance, Volume 32, Issue 10, 2008, 2148-2177. www.sciencedirect.com]

Martynova and Reneboog noticed that a few data are available for the Merger Waves of the European Area in comparison to the United States and a few also had been written on the subject of Merger Waves on a global level. However, through their study attempt to reveal and gather as many elements they can for the issue of the merger wave on a global level. For this reason, they are giving the diagram of the Merger Waves on a global level as indicated below:

Diagram II Global Merger Activity

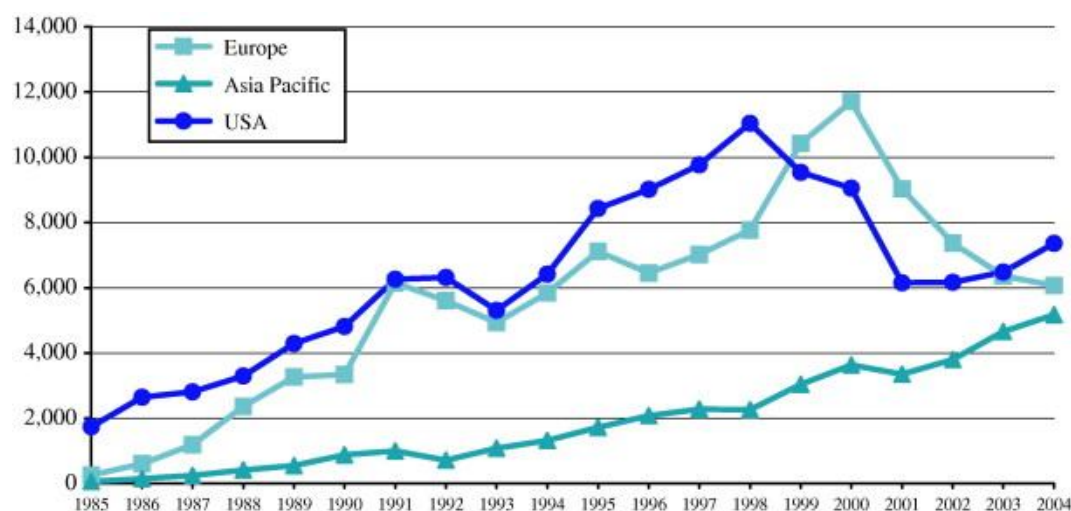


Diagram. II Worldwide merger waves since 1985 (total number of Deals). Source: Thomson Financial Securities Data.

[M. Martynova and L.Reneboog (2008)” A century of Corporate takeovers: What we learned and where we stand *Journal of Banking and Finance*, Volume 32, Issue 10,2008, 2148-2177. www.sciencedirect.com]

As we observe Diagram II provides information concerning European Merger Waves since the decade of 1985 due to lack of further information about the takeover waves in the European Area. However, through the diagram we are able to observe that the takeover activity of the European Area is rising mainly after the half decade of 1980 and also after 1995 the rate of the increase is the same, and a little bit bigger than the rate of the U.S. merger waves.

M. Martynova and L.Reneboog also underlined the fact that merger waves maybe occurred due to a variety of factors. For the example they implied that merger wave is taking place in the beginning of significant changes in financial environment such as economic crises, large scale technological innovation etc.

Afterwards, they presented with many details and categorized the five Merger waves. Regarding the firsts Wave named the “Great Merger Wave” began on the 1890 and lasted until 1905. The causes of this wave as M. Martynova and L. Renneboog mentioned were the revolutionary industrial and technological inventions that according to Stigler (1950) created huge scale- industries with characteristics of monopolies. They also mention that the rising and the fall of this

merger wave has a direct connection with the introduction of industrial sector in New York Stock Exchange and the massive losses of Stock Prices on the 1905.

Regarding the second merger wave occurred by the end of World War I on 1918 and rose by the 1924-1930. This period coincided with the global economic crisis of 1929 and the main cause of this wave was the lack of ability of many industries to stand the economic crisis of 1929. Because of the economic crisis many industries stopped their production and went into bankrupt. The result was to have this large merger wave.

Relatively to the third wave authors observed its beginning on the decade of 1950 were corporations expanded in new introduced markets and created largest associated companies in order to decrease the production costs. This wave lasted about 12 years and stopped on 1973 through 1975 when the big oil crisis occurred.

Concerning the fourth wave which started on the 1981 its cause was mainly the end of the global oil crisis of 1970 decade. The specific characteristics of this wave are the introduction of new legislation, financial products and technological achievements that made the production easier. Furthermore, another element of this wave was its hostility bands its large scale gearing.

The fifth merger wave introduced in 1993. This period was the beginning the globalization of economies. This globalization made corporations more vulnerable on occurring changes on the field of Finance, technology, information etc. Moreover, another characteristic was the fierce competition among the corporations. The highest point of this wave observed in 1999.

Taking in mind all the above M. Martynova and L.Reneboog observed that all the occurring merger waves occurred due to large- scale amendments in a variety of fields. Furthermore, all the other features of each merger wave vary according to the reason that a merger wave is taking place.

1.4 Literature Review of the theoretical Background generally on M&A Deals, corporate control and its waves

In order to understand the structure of the M&A Deals process we have to make an overview on Literature that tried to study the issue of M&A Deals, corporate control and the topics related to this.

Michael C. Jensen and Richard S. Ruback (1983) through their study “*The Market for Corporate Control*” which published on *Journal of Financial Economics 11 (1983) 5-50* mentioned the definition of the Corporate Control which says that Corporate Control is the description of the causes that coming up through the time, which influence the way that corporation use its resources. Examples of such causes are regulation systems, the emerging competitors in the market or new entered products. So, corporate Control substantially is the control of the Corporate resources, the right of the executives selection as well as the rights to hire or to fire employees to the crucial position of the corporation [(Fama and Jensen (1983a; 1983c)]. When an M&A Deal is taking place the management of the resources including the human resources is transferring to the acquirer. Taking in mind the above definitions the substance of the definition of M&A Deal is the fierce competition among corporation managers to take over the Control of the resources and the human resources of a large number of corporations in order to transfer the gaining Cash Flows in their corporation.

Jensen and Ruback through their argumentative Literature Review they concluded that the evidence appeared to agree that M&A Deals derive positive financial results and benefits for the target corporation and its shareholders. This fact does not seem to have negative influence for the shareholders of the acquired firm. Also, the profits coming from M&A Deals does not seem to be related to the forces of the demand and supply which are known as Market power. Furthermore, the evidence seems to show that we rarely find managerial decisions related to M&A Deals that have negative results for the shareholders of both parts of target and acquired firm.

Following his previous analysis concerning the Market for Corporate Control *M.C. Jensen (1991) published an article with title “Corporate Control and the politics of Finance” through Social Science Research Network (SSRN)*. Through the above article he tends to describe the effects of the applicable legal framework on the Takeover Market. M.C. Jensen analyzes his article to several parts. Each part includes various matters relative to applicable policies to Market Control Market.

On the introductory part he presented few basic macroeconomic indexes for example productivity, unemployment rate the cost of labor per hour etc. The evidence for the above indexes, concerning the decade of 80's proved that the major takeover activity that observed this period benefited these indexes as well as the economic activity. Through this presentation he argued with those that supported the opinion that this major takeover activity was harmful for the economy. Second part consist on his opinion that this massive takeover activity affected mainly by the conflict of interest among stockholders and managers that had to do with the control of the Free Cash Flow of the corporation. This theory formulated by *M.C Jensen on Oct. of 1987 through his argumentative Thesis “The Free Cash Flow Theory of Takeovers: A financial Perspective on Mergers and Acquisitions and the economy”* .Afterwards, he analyzes the meaning of LBO associations and supports that they are more efficient that the big public associations. Also, he contrasts them with the similar Japanese LBO's named “Keiretsu”. Furthermore, he disagrees with the opinion that those LBO associations will lead to a potential bankruptcy like that one happened in Japan. In this article M.C. Jensen also introduces his theory called “boom bust” that describes the waves of takeover activity and analyzes the reason of the economic difficulties that faced the firms which participated in takeover activity that implemented through borrowing capital.

Another topic that is directly related to M&A Deals is the topic of Merger Activity. There are periods that Merger activity flourishes and other periods that this activity is reduced. These periods are known as Merger waves.

Bengt Holmstrom and Steven N. Kaplan (2001) through their research “Corporate Governance and Merger Activity in the United States :Making Sense

of the 1980s and 1990s” which published to the *Journal of Economic Perspectives- Volume 15, Number 2-Spring 2001- Pages 121-144* made an Historical Review of the Merger Activity concerning the decades of 1980 and 1990. Their findings suggest that before 1980 there wasn't any particular framework for the corporate governance that corporations were following. In the decade of 1980 a large scale merger activity took place. The features of this merger wave were the hostility and the large level of leverage. The restructuring activity increased dramatically especially through the years 1984 to 1990 when stock buybacks were occurred. The amount of repurchases of own stock was about 500 billion \$. This was the period of a substantial change on the manager's perspective, because until 1980 they were acting mostly for the benefit of the corporation. After the 1980 managers changed their perspective and their priority was the benefit of the shareholders.

Holmstrom and Kaplan noticed that in the decade of 1980 takeovers were occurred mostly by usage of leverage. Corporations were purchased by other firms through borrowed capital by usage of cash and not by their own cash or by stock issuing. The statistical evidence of Holmstrom and Kaplan study suggest that 50% of all big corporations in U.S. were repurchased through a hostile M&A Deal. Those firms which didn't repurchased by hostile M&A Deal in order to stand the pressure of the hostile Merger activity chose the solution of restructure.

On the decade of 1990 this merger wave stopped. The level of the leverage reduced substantially. The main reason of this reduce was the introduction of a new legislation that was against hostile and leveraged takeovers. Also, it is worth to mention that another establishment of legislation that changed the Merger Activity of 1990 was the demand of the U.S. Security and Exchange Commission (SEC) for more transparency to the compensation of the high-level executives of the corporations. S.E.C. demanded the compensations of the executives to be related to the stock performance of the corporation. This change to the legislation pushed executives to improve the corporation's Earnings per Share Ratio in order to increase their own compensations.

There are circumstances that M&A Deals are influenced by several factors. Some of these factors are the firm's stock valuation or the waves of M&A Deals.

Andrei Shleifer and Robert W. Vishny (2003) with their Thesis “*Stock market driven acquisitions*” published in *Journal of Finance Economics* 70 (2003) 295-311 studied which factors could influence the decision if a M&A Deal will occur. Through a model they supposed that two firms with different capital (K and K_1), different stock valuation (Q and Q_1) are about to merge. Also, they assumed that Q and Q_1 are misvaluated. Afterwards, their assumption was that after the completion of M&A Deal their market value will be $V = S(K+K_1)$, S is the combined short-run Stock valuation. Through an empirical testing of three propositions concerning the above model they noticed that cash offer would occur from the part of an overvalued acquirer only if the target firm is an undervalued firm. We are meeting this fact very often in too much undervalued firms which would have low returns, especially in the period before the takeover Deal.. Also, the results of the study of Shleifer and Vishny showed that investors should not assume and taking into mind the previous performs of the merging firms in order to foresee the performance of the firm that will accrue from the M&A Deal. Concerning the Method of Payment they noticed that in case that managers obtain more accurate information than the market, for the future performance of the target firm they use stock in order to acquire the target firm, especially when it is overvalued. On the other hand when target firm is undervalued they use mostly cash in order to acquire the target firm. In Shleifer and Vishny study the factor that influence the decision if an M&A Deal will take place or the chosen Payment Method is the proper market timing. Furthermore, the evidence shows that acquirers choose stock as Method of Payment when their long-run expectations for the firm’s equity return are not positive and they choose this method in order these expectations to be as much less negative they can.

Additionally another finding was that the second half of 1990 decade the Merger activity increased because of the overvalued stock valuations. The Chosen method of Payment was particularly stock and the acquirer firm was much more valuable firm than the target. The factors that contributed to this wave were the development of the technology, the European integration and the industrial unification.

Taking in mind all the above Shleifer and Vishny, assuming the stock misvaluation in their model, they underlined that the overvaluation is a strong

motivation for corporations to overvalue their stocks in order to have the ability to finance the takeover activity through stock issuing. Generally, the evidence shows that firm with high valued stocks tend to be potential acquirers and these with undervalued equity potential target firms.

We analyzed above through the Literature Review of Bengt Holmstrom and Steven Kaplan the topic of Merger Waves. Another topic that became object of studying was the relation between Merger Waves and Market Valuation.

Matthew Rhodes-Kropf and S.Viswanathan (2004) studied this relation through their study “*Market Valuation and Merger Waves*” which published to the *Journal of Finance Vol. 59 No. 6 (Dec. 2004), pp. 2685-271*. Their findings suggest that whenever stock merger activity is observed there is a correlation with periods of high market valuation. Also, they observed that whenever there is overvaluation or undervaluation of the stocks comparing their book values of either acquirer or target firm there is a correlation between merger waves and market valuation. Kropf and Viswanathan used a model of stock mergers. They supposed that both acquirers and target firms may be misevaluated. Their study shows that merger waves could take place only because of issues that has to do with valuations market. Furthermore, with this proof they don’t want to exclude the possibility that merger waves don’t influenced by issues like technology development, regulation framework or corporate governance new models.

Kroph and Viswanathan through their study showed that wrong decisions could be taken even by the most rational managers of both bidder and target firm. Also, they tried to focus on the possibly relation between these mistakes and the market misevaluation. For example, in periods of market overvaluation, target firm doesn’t accept the value of a proposed stock offer as given but makes its own corrections in the stock value in order to agree with market’s average valuation. Furthermore, they proved that the possibility of a misevaluated offer is increasing dramatically especially when the takeover activity occurring through stock offer rather than cash offer. Also, cash merger activity has more positive results on markets than stock merger activity.

In this point, we have to mention that there are many issues coming up from the previous misvaluations, especially from Equity overvaluations. There are agency costs that appear to be very serious mistakes from the part of managers.

Michael C. Jensen (2005) mentioned these agency costs through his argumentative thesis with title “*Agency Costs of Overvalued Equity*” published on *Financial Management, Vol. 34 No. 1 (Spring 2005) p.p. 5-19*. Jensen gave the definition of an Overvalued Equity which says that Corporations ‘s Equity is overvalued in case that its annual results doesn’t manage to confirm the overvaluation. Through several examples Jensen tries to warn managers for the deep impacts of an Overvalued Equity. Furthermore, he proposes several solutions in order to minimize the effect of overvaluation. Through his study Jensen prevents managers from Equity Overvaluation. He advises that managers should understand and distinguish the real value of their firm and not to adopt the opinions of the analysts without critical judgment. Managers should speak the truth in front of the stockholders for their potential achievements and provide them with accurate financial statements. Jensen believes that if the majority of the managers follow this strategy then, in the long-run period, the positive results will be appeared to the whole Market. Finally, another valuable result will be that Agency Costs will be eliminated as well.

Through this introductory section to the topic of M&A deals and the Market for Corporate Control we tried to depict the significant importance of the M&A Deals among the Matters of Corporation Governance. On the next section of this chapter we will present the structure and the target of our study.

1.5 Structure of the Study

In this section we will present the structure of our study. This study consists on **five chapters**. The **first chapter** as indicated above examines the **Theoretical Background in M&A Deals Generally**.

The **second chapter** contains the **Literature Review of The method of Payment in M&A deals**. Through this chapter we will try to examine what is the

existed Literature on our subject. We will discuss the results of the Literature in order to verify and use them on the development of our thesis. In the **second section** of this chapter we will present the **Assumptions** that we going to check in order to find out which are the determinants that influence the Method of Payment that we are choosing in an M&A Deal.

In the **third chapter**, and especially in the **first section** of the **Descriptive analysis**, we will analyze the statistical selected sample of the M&A Deals and the criteria that we used in order to choose it.

In the **fourth chapter**, we present the results of our regression probit model.

The **fifth chapter** will include the discussion over our findings and compare them with the previous Literature we mentioned on the previous second chapter.

1.6 Scope of the study

This study intends to search which are the factors that determine the method of Payment of an M&A Deal. The differentiation of our approach lies on the fact that our sample consist in acquirer corporations from United Kingdom only. We used the Database Thomson Eikon in order to collect our sample of **564** Deals and we used twelve criteria. The main criterion was the acquirer nation to be the United States of America. Our scope is to examine which features of the corporation both of acquirer and target affects the method of Payment. In our study we have two Methods of Payment in M&A Deals, Payment by cash only, Stock only. We will try to manage our scope through the testing of several Hypotheses that has to do mainly with corporation's financial ratios. Afterwards, in order to confirm or reject these Hypotheses we will use the testing of the statistical significance of these ratios with the e-views program. Finally, after this testing we are going to return on our hypotheses and reject or confirm them in order to formulate our conclusions in such way that will be useful as information for further research or information that will be taken in mind by stakeholders like managers that dealing with matters of corporate governance and especially decision that have to do with Payment Method in M&A deals.

Chapter 2

2. Literature Review on Method of Payment Determinants

2.1 Revision and Summary of the studies

On this point we will discuss the previous literature over the method of Payment of M&A Deals. We will make comments on the findings of previous researchers and some of these will be used as instruments on our study.

The first who introduced the capital structure of a takeover activity was *Miller and Modigliani (1958)* through their study “*The cost of Capital, corporation finance and the theory of Investment*” published in the *American Economic Review* on 1958. Miller and Modigliani through a testing of three propositions noticed that corporations as long as they haven’t influence on their value they don’t care about the Method of Payment of takeover activities. This model based on the assumption that the Market that the corporation participates is in equilibrium.

The same authors through their study “*Corporate Income Taxes and the cost of capital: A correction*” (1963) published also in the *American Economic Review* introduced the idea that corporations maybe choosing the borrowing capital to fund their investments. They argue that this choice has to do with Taxation issues. Corporations make this choice in order to profit the taxation discount of the leveraged capital.

On second half of the 1980 decade presented many studies that based on the assumption that managers are aware of information concerning the value of the firm or its assets that investors are unaware. This assumption is reported as asymmetric information by the study of *S.C Myers and N.S. Majluf (1984)*.

S.C Myers and N.S. Majluf (1984) on their thesis “*Corporate Financing and investment decisions when firms have information that investors do not have*” published on the *Journal of Financial Economics* introduced the proposition of asymmetric information. Myers and Majluf presented a model of a firm takeover. On this model assumed that manager has access to important information concerning the value of the firm he manages. On the other hand, shareholders are unaware of this information. Manager thinks that the best optimal source for the capital he needs to proceed in the valuable M&A deal is the shareholders of the firm. Therefore, he proposes the issue of new common shares. On the other hand shareholders may haven’t the intention to buyout these stocks and not to fulfill manager’s expectations. In this case, shareholders through their decision put at stake the M&A Deal and an opportunity of a profitable takeover will be lost.

Taking in mind all the above, the model of Myers and Majluf suggests that the managers should choose another Method of payment and more specific under the pressure of losing the opportunity of a profitable M&A Deal he should choose the debt Financing. Furthermore, Myers and Majluf make a distinguish among the Method of Payment of Cash and Share. On the first case, when a takeover activity is taking place by the usage of cash investors, shareholders and the Market generally assume that the valuation of the acquirer is low, but when the chosen Method of Payment is share they assume that acquirer is overvalued.

On the base of asymmetric information assumption another article author developed his article. This author was *Hansen (1987)* who expanded the above assumption in both parts of acquirer and target firm and he introduced the negotiation and auction procedure within the M&A process.

Hansen (Jan.1987) through his thesis “*A theory for the choice of Exchange Medium in Mergers and Acquisitions*” published in *The Journal of Business* reexamined a sample from the previous study of Carleton W., Guilkey k., Harris R.S. and Stewart J.F. (1984) with title “An empirical analysis of the role of the medium of exchange in Mergers”. This sample included 45 Deals from mining and manufacturing sector covering the period 1976-1977. To the sample above Hansen added 61 more Deals raised by the Federal- Trade Commission reported on year 1978. His total expanded sample included 106 M&A deals reported in the

years 1974-1975 and 1978 strictly. Hansen's conclusions after a test of five propositions suggested that the takeover procedure can take place through a variety of Payment means and a variety of different forms. More specifically through his sample confirmed that M&A deals could take place by negotiations or auctions procedures. Moreover, Hansen through the testing of five propositions summarizes that acquirer tends to use stock as Method of Payment under the assumption of the asymmetric information from the part of the acquirer. On the other hand from the part of the target are not so willing to accept the stock offer because of the asymmetric information that may exist behind the stock pricing.

Another examined field is that of the influence that Method of Payment has on target firm's abnormal Returns. We are going to present a study examined this matter.

Yen- Sheng Huang and Ralph Walking (May 1987) published their study "*Target abnormal Returns associated with Acquisition announcements*" on the *Journal of Financial Economics*". Huang and Walking examined the target firm's abnormal return during the pre-announcement date and how is correlated with issues like Method of Payment, kind of the offer and how much target resist to the offer. In order to examine the above issues they used a sample of announced M&A Deals but not completed. The number of Deals that included in their sample was 204 raised from CRSP (Center for Research in Security Prices at the University of Chicago) and the period that took place was April of 1977 until September of 1982. Based on this sample Huang and Walking tested three Hypotheses. The second one concerning the Method of Payment was that Cumulative Abnormal Returns (CAR) of the target firm was highest in cash offers than in stock offers. Their findings confirmed the Hypotheses above and suggested that Cumulative Abnormal returns were indeed higher on the selected Method of Payment of cash rather than shares offer. This confirmation could explain rationally through the existence of Share taxes. Shareholders prefer cash offers in order to avoid paying taxes for their share profits. This explanation constitutes the assumption of the model which is the existence of the taxation costs.

Following the previous study another thesis that deals with the Abnormal Returns of the bidding Firm's shareholders has been written by N. Travlos on 1987.

N. Travlos (Sep. 1987) in his thesis "Corporate Takeover Bids, Methods of payment and Bidding Firm's Stock Returns" issued on the Journal of Finance on 1987 examined how the medium of exchange influence the Abnormal Returns of the bidding Firm shareholders. For the examination of this subject Travlos used a sample of 167 announced Merger Deals and tender offers proposed that were succeeded. Also, he defines the meaning of a successful Merger or a Tender Offer. In case that a Merger Deal include the completion of the procedure with the total merge and the erase of the Target Firm consider to be successful. As long as concerning the tender offer is considering being successful if and only if the acquirer obtains the plurality of the target firm's Share. This sample rose from the Center for Research in Security Prices (CRSP) and refers among the period 1972-1978. Travlos based on this sample employed on a Hypothesis Testable Model with depended variable the Cumulative Abnormal Returns (CAR) of the shareholders of the bidding firm. His findings confirmed that through takeovers occurred with common stock payment method the shareholders of the acquirer firm experienced damages on their Abnormal returns instead of them that takeovers occurred with cash Payment Method they noticed that the Abnormal Returns where the expected.

It is imperative need to refer that Travlos had these conclusions under the assumptions of the asymmetric information and taxation costs as we met them to the previous studies.

Another theory that formulated relatively to the Method of Payment was the Free Cash Flow theory. This theory formulated by M.C. Jensen on 1987.

M.C. Jensen (Oct. 1987) underlined the conflict of interest that taking place between the shareholders and the managers of the firms and indicated its relation to the method of Payment. *M.C Jensen through his argumentative thesis " The Free Cash Flow Theory of Takeovers : A financial Perspective on Mergers and Acquisitions and the economy" published in Social Science Research Network (SSRN) on 1987* noticed that in case that the firm is excessively profitable this

factor favors the increase of Free Cash Flow Capital. The optimal usage of Free Cash Flow Capital is to financing new initiatives concerning projects or through cash payment Method potential interesting M&A Deals. The conflict of interest among managers and shareholders is that shareholders demand these amounts for the development of their own individual wealth. From the other side managers insist on the availability of these amounts in order to finance potential takeover activity through the available Free Cash Flows. According to J.C Jensen the conflict of interest has to do exactly with this manager's choice, the chosen Method of Payment of the cash. Furthermore, he argues that managers care about growing the firm and the control of further resources which is the substance of the takeover activity according to the definition which we referred on the previous chapter. More specific we referred the above definition on the study of M.C Jensen and R.S Ruback on 1983 "The Market for Corporate Control".

In accordance to previous reviewed researches of Y.S Huang, R. Walking (May 1987) and N. Travlos (Sep.1987), *R.S. Harris, J. Franks and C. Mayer (Dec. 1987) delivered the same findings through their study "Means of Payment in takeovers results for the U.K. and U.S." which published to National Bureau of Economic Research.* For their study used a sample of 2.500 Acquisitions concerned the period 1955 through 1985. Through the examination of these data they agreed that the usage of cash in M&A Deals implies much more (CAR) than the usage of Shares but their findings indicates more differences on a variety of issues. First of all, they found that taxation costs are not affecting the Payment Method especially in U.K. that the country experienced during the 30 year period a variety of changes in tax regulation. Another finding is that in both countries overvalued acquirer firms prefer cash as Payment Method but on the other hand undervalued acquirers prefer stock as medium of exchange. Moreover, the evidence seem to agree that when the Method of Payment tend to be cash offers the shareholders of the target firm have higher profits. Also, another interesting finding is that under the asymmetric information assumption those bidders who use cash as Payment Method experienced better post-merger stock prices instead of these who chose common shares.

Another study that developed over the conflict of interest assumption between managers and shareholders that introduced by M.C Jensen (1987) was the study of R.M. Stulz (1987)

R.M. Stulz (1988) presented his model through a lemma proof with his study "*Managerial Control of voting Rights*" published to the *Journal of Financial Economics*. The basic hypothesis that used was similar to the Free Cash Flow Theory of M.C. Jensen (1987). The two assumptions were similar to the part of conflict of interest between shareholders and managers but were differentiated to the part of the cause of the conflict. Stulz describes that the biggest the participation of a Manager is to the voting rights of his firm the more likely is the fact to affect the mean of Payment of a potential acquisition. In other words if the manager of the firm owns a significant number of voting rights he is able to decide that takeover activity will be funded by cash rather than equity. The preference above is explained by the fact that managers are not willing to lose their majority to the voting rights through the common stock Payment and that exactly is the reason why they choose the cash payment. Finally, it is important to mention that Stulz didn't include the asymmetric information assumption in his study.

In contrast to the previous paper of Stulz M.J. Fishman attempts to analyze the asymmetric information assumption through a probability model.

M.J Fishman (1989) presented his paper "*Preemptive Bidding and the role of the Medium of Exchange in Acquisitions*" through the *Journal of Finance*. The model he used supposed that it is functional under Equilibrium Circumstances. Also, through this model tried to explain how acquirer make his choices over the Method of Payment in M&A Deals. The major concerning of the study is to examine the preemptive period of the M&A Deal. The basic hypothesis that Fishman makes is the existence of asymmetric information among the target and potential acquirers. On the other hand Fishman assume that no tax or transaction costs exist. Under these assumptions the findings of Fishman consist as indicated below:

- In the preemptive period generally the selected Payment Method of Shares appears overvaluation instead of cash selected payment Method that appears undervaluation.
- It is probably that a tender offer will be higher if the proposed Payment Method is common Stock instead of cash.
- Also, if a tender offer is proposed to take place through common Stocks it is unlikely for the target firm to agree.

If we look backward to our Literature Review we will notice that the assumptions above as well as the conclusions are similar to previous researches we mentioned. The similarities with Myers and Majluf's (1984) study to the part of asymmetric information and the considerable valuation finding is obvious. Furthermore, we met the equilibrium Hypothesis as well as asymmetric information hypothesis to Hansen's (1987) paper.

Another thesis that deals with the managerial ownership as a Determinant of Payment method in M&A Deals was written by *Amihud Lev and Travlos (1990)*. The authors above through their thesis "*Corporate Control and the Choice of Investment Financing: The case of Corporate Acquisitions*" published on the *Journal of Finance* attempted to prove how managerial ownership influences the Payment Method in M&A Deals.

Amihud L. and Travlos (1990) tested a sample of 209 Deals concerning the period 1981 through 1983. The sample raised from the Mergers and Acquisitions Journal and its deal Value was greater than ten million \$. The variables that they used on their model were the dependent variable of Payment Method and the independent variable of managerial ownership. They included two types of Payment Method by Cash or by Shares. The other category of independent variable of managerial ownership was explaining the percentage of voting rights holding by high executives of the firms.

Amihud L. and Travlos attempted to test the same Hypothesis of Stulz (1988) that under the pressure of losing their control through the large number of Shares that hold they prefer to use cash to finance potential M&A Deals. The results of their thesis agree with the above Hypothesis and they found that managers prefer

to use cash instead of Share as Payment Method. The implementation of their model took place under the assumption of asymmetric information that indicates the existence of valuable information relative to the undervaluation of the firm's share. The external investors that hold these shares are not aware of the information of undervaluation and the managers under the pressure of revealing this information they prefer the cash as a medium of Exchange of potential M&A Deals rather than the undervalued equity.

In accordance to R.M. Stulz (1988) who introduced the managerial ownership influence to the Payment Method of M&A Deals, *M.H. Song and R.A Walking (1993) developed their model through the Thesis "The impact of Managerial Ownership on Acquisitions Attempts and Target Shareholder Wealth" published on the Journal of Financial and Quantitative Analysis.*

M.H. Song and R.A Walking examined a sample of 459 firms and separated it in 3 equal parts of 153 Firms. The first part included target firms, the second industry firms non-targets and the third a random selection of non-target firms. The sample referred to a period between April 1977 and December 1986 and was coming from the front page of Wall Street Journal. Their goal through the examination of this sample was to investigate the connection of the fact between a firm becoming target and its managerial ownership. Also, another issue that they investigated was the fact how the managerial ownership affects the returns on the stockholders of the target firm. Their findings through the examination of the above sample shows that managerial ownership has influence on both of the above issues. More specific, the evidence seems to agree that the fraction of the managerial ownership is higher in non-target firms instead of target firms that have lower fraction of managerial ownership. This finding concerns also the relation between the non-target firms from the industry sector and those selected from the other economic sectors. Another finding regarding the part of the target firm that participating in tender offers, is that the fraction of the managerial ownership is much lower than those which aren't involved in a tender offer. Moreover, firms that managerial ownership exists in higher level tend to be more successful instead of them that the managerial ownership is lower. M.H. Song and

R.A. Walking , also through the regression procedure noticed that Average Abnormal Returns for 32 firms involved to a tender offer was 22.7% instead of 80 Firms didn't related to a tend offer and their Average Abnormal Returns were 23.7 %. The whole sample consisted of 112 firms and its (CAR) was 23.4%. As we observe the average number isn't substantially different. In contrast to the above evidence there is a substantial difference in Average Abnormal Returns between completed deals which is equal to 29.5 instead of the uncompleted that Average Abnormal Returns were only 5.2%. To conclude, the above evidence seems to agree that target stock Returns are substantially and specifically related to firms with high managerial ownership that participates in completed tender offers.

The management Ownership in addition to other factors has been examined by *K.J Martin (1996) through his study "The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership" published on the Journal of Finance.* Martin examines the factors of Payment method in M&A Deals through a sample of 846 M&A Deals that doesn't including crossborder Deals. The sample above includes three types of Financing. The first type is cash only, the second shares only and the third a combination of cash and shares. The firms that included in the above sample were public firms on the New York Stock Exchange or in American Stock Exchange.

Martin after the examination of the sample above through the Tobit regression method delivered results relative to the factors that affect the Payment Method of M&A Deal. Martin underlined that the factors that affect Payment Method in M&A Deals are elements of both sides of acquirer and target firm, as well as the current circumstances of the occurring acquisition Deals. Nevertheless, among these factors, the most important that affect the Payment Method in M&A Deal is the type of the acquisition. This means the case of a hostile, friendly or tender offer. The other important factor is investment opportunity that the acquirer has. The evidence seems to agree that in case of tender offers a cash payment is more likely to take place instead of a Stock Payment. Furthermore, relative to the variable of investment opportunities, Martin indicates that an acquirer with more investment opportunities it is likely to choose stock instead of cash as Payment Method to a potential M&A Deal. Moreover, another finding is that acquirers that

in their financial statements including a small part of demanding capital of the potential M&A deal it is more likely to choose the shares as Method of Payment. Finally, Martin made a separation to the variable of Managerial Ownership and he examined the firms with managerial ownership percentage 5% to 25%. His findings after the regression of the variable above showed that cash is more favorable method of Payment for the managers. This finding is in accordance with the results of L. Amihud and Travlos (1990) in their study "Corporate Control and the Choice of Investment Financing: The case of Corporate Acquisitions" as we reviewed previously.

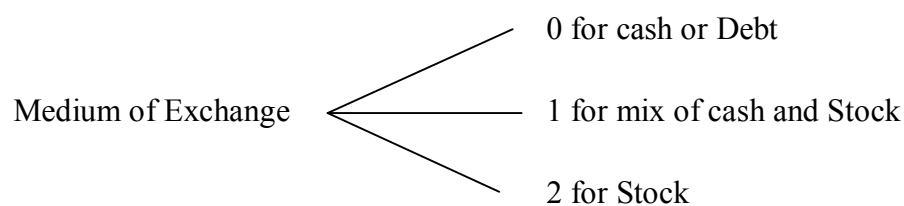
Another thesis that examined the massive merger wave occurred on decade of 1980, but specific in bank sector was this one of G. Grullon, R. Michaely and I. Swary (1997). These authors through their thesis "*Capital adequacy, Bank Mergers and the Medium of Payment*" published on *Journal of Business Finance and Accounting* examined the factors that contributed in the occurrence of the massive merger bank wave in decades of 1980 and 1990. The authors above elaborated the data that consisted of 146 M&A Deals in bank sector during the period of January 1981 until December 1990. The above Data rose from Center for Research in Security Prices (CRSP) and the firms included in it were listed in the American Stock Exchange (AMEX) and in the New York Exchange (NYSE). The independent variables that regressed and used in order to provide the testing Hypotheses concerning the rate of return on shareholder's raised from Moody's Banking Manual and Heefe Bank Book, as well as the variable of the announcement date, the Deal Value and the mean of Payment from the Heefe Bank Book also, the Wall Street Journal and the Index of Corporate Change. Using these Data authors tested three basic Hypotheses through their model. The first of them suggested that in case of a bank M&A Deal that occurs through Share selected medium of exchange providing to the Merger bank a biggest Capital Ratio. The second Hypotheses consist on exploration of the preventions of usage share as a mean of exchange when the ultimate scope is the refreshment of managerial ownership. And the last of hypotheses conclude the fact that the medium of exchange in a bank M&A Deal is stocks or cash in the unique case that the acquirer enjoys a high Capital Ratio.

Their findings proved that Payment method has a significant key-role in bank M&A Deals and more specific the variable that affects the Method of Payment is the size of the acquirer. The evidence seem to indicate that the biggest the target firm is relative to the acquirer the selection of share as a payment Method is more likely. Moreover, Capital Ratio of the merger seems to play a key-role in order to choose stock instead of cash as a medium of exchange the more high is the capital Ratio of the Merger the more likely is to select stock as payment method. Concerning the stock performance authors find that the low stock performance of the target firm in the preemptive period suggests that the selected Method of payment is the cash. Finally, concerning the stock performance of the M&A Deal the evidence seems to prove that is better when the selected medium of Exchange is cash instead of share.

The Determinant of Managerial Ownership has been examined and enhanced by *Aloke Ghosh and William Ruland (1998) through their study "Managerial Ownership, the Method of Payment for acquisitions, and executive job retention" published on the Journal of Finance*. Based on the previous analysis of Stulz (1988) "Managerial Control of voting Rights" and M.H. Song, R.W. Walking (1993). "The impact of Managerial Ownership on Acquisitions Attempts and Target Shareholder Wealth", A.Ghosh and W. Ruland (1998) attempted to analyze how the Managerial Ownership affects the both parts of Acquirer and Target firm on the Method of Payment of M&A Deals.

The authors used a sample of 50 biggest M&A Deals that occurred during every year and concerned the period from 1981 through 1988. To the sample above they excluded the M&A deals that occurred with the usage of borrowing capital. The above sample has been raised from the Wall Street Journal and referred to U.S. firms.

Authors in order to examine how managerial ownership influence the payment Method in the M&A Deal used a regression model in which included two types of variables. The first type consisted on the dependent variable of the medium of Exchange. This variable took three prices 0, 1, 2. The meaning of these prices was the below:



The other examined type of variables was the independent variable. The independent variable included the examined influence of the Managerial Ownership and was equivalent to the fraction of the Shares that were closely held by the high executives of the firms and individuals that had influence on the decision- taking procedure of the firms. In order to facilitate the regression of the model and its results Ghosh and Ruland separated the fraction of the closely hold shares to the percentages of 0% to 3%, 4% to 25% and 25% plus.

Ghosh and Ruland after the implementation of the regression with the above variables they concluded to the blow results:

- Concerning the intention of the managers of the target firm to preserve their position within the new corporation that will appear after the occurrence of the M&A Deal the evidence seems to agree that target firms with increased level of Managerial Ownership tend to accept share as Method of Payment in M&A Deals.
- Also, another additional reason that Managers tend to accept shares as Payment Method is their intention to preserve their control over the job positions and their right to make the staff recruitment in terms they choose and also the individuals they decide to hire.
- Finally, Ghosh and Ruland introduced a variable that named NEWOWN and includes the managerial ownership of the target and the relative target size. After the implementation of the regressions they observed that this variable defines the Determinant of the Payment Method in M&A Deals. Furthermore, they implemented the above model including the assumptions of the specification of the Deal Status that means if the deal is hostile or friendly, the taxation expenses. Under the above assumptions concerning the influence of Managerial Ownership variable the results remain stable and same as previous without these assumptions included.

The topic of Payment Method in M&A Deals has been analyzed efficiently through the study *“What Really Determine the Payment method in M&A Deals”*. P.Zhang (2003) through his working paper from Manchester School of Management examined with detail the Determinants that affect the Medium of Exchange in M&A Deals. His Working paper considers the most representative on the topic of M&A Deals. P. Zhang chose to examine an initial sample of 807 M&A deals that occurred in the UK and concerned the period 1990 through 1999. The final sample after the processing of the sample consisted of 103 M&A Deals since it wasn't able to find the required variables for all the firms that participated in the Deals.

P.Zhang through a Tobit regression model included the chosen Method of Payment as depended variable and relevant financial corporate indexes or ratios as independent variables. The independent variables of the final sample raised by Datastream Database and those who couldn't be found by Price Waterhouse's "Corporate Register" formula, Crawford's "Directory of City Connections" and some of them from Macmillan's "Stock Yearbook". P. Zhang classified those M&A Deals in separate tables used the criterion of Payment Method. After this classification he proceeded in the Hypothesis testing. P.Zhang posed 5 testable Hypothesis that were examined the statistical significance of specific independent variables that selected to regress with the usage of E-views statistical program. E-views use the Least Ordinary Squares Method to implement these regressions. P. Zhang made a sufficient overview through the Literature that exists on the topic of Payment Method in M&A Deals since 1984. According to these findings he formulated his testable Hypothesis that would help him to summarize which are the factors that influence the Medium of Exchange in M&A Deals.

His first Hypothesis consisted on the size of the target firm. He supposed that if the target is largest than the acquirer the selected medium of exchange would be stocks. The second one tested if the fraction of managerial ownership in both of the sides was large the cash would be selected as a method of Payment. The third one suggested that large amounts of Free Cash Flows of the acquirer indicated to cash as a chosen mean of Exchange. The fourth one had to do with the preemptive stock performance of the target firm. In case of low preemptive stock performance of the target the more likely is to use cash in order to implement the M&A deal.

The last one deal with the acquirer stock market performance that suggest that the better the stock market performance of the acquirer is the more likely to use stock exchange in a potential M&A Deal.

Testing all the above Hypothesis P. Zhang concluded that the first Hypothesis , after the regression procedure is valid instead of the managerial ownership, the second one, evidence seem to agree that is not significant. Moreover, the stock performance of the target in the preemptive period, the fourth Hypothesis, seem to be statistically significant and valid as well as the fifth one which supposed the stock exchange in case of good market performance of the acquirer.

Another thesis that follows the previous methodology and enhance the evidence on the field of the topic of Determinants of Payment Method in M&A Deals is that one written by *M. Faccio and R.W. Masulis (Jun. 2005) and published on The Journal of Finance* . The authors above in their thesis “ *the Choice of Payment Method in European Mergers and Acquisitions*” examined a sample consisted of all M&A Deals that announced around the European Continent and specifically of 13 European countries which were: U.K., Germany, France, Italy, Norway, Spain, Portugal, Austria, Finland, Sweden, Switzerland, Belgium and Ireland, The sample concerned target firms with public or private status either, percentage acquired greater than 5% and referred to a period of 4 years duration January 1997 through December 2000. Moreover, these wasn't any restriction to the target firm origin country which means that the sample include crossborder Deals. Also, another criterion that authors posed was the public status of the acquirer. The sample above rose from Thomson Financial Securities Data's SDC, Worldwide Mergers & Acquisitions database. The final sample after the classification consisted of 3,667 M&A Deals. Through the classification authors noticed that the major percentage concerning the above Deals was coming from the United Kingdom. This percentage was 65.3% for the Acquirers and 47% for the targets. The rest of the Deals concerned a variety of countries that target firm was coming from. M. Faccio and R.W. Masulis in order to find the Determinants of the Payment Method used a Tobit regression model. In this model they used as dependent variable the method of Payment. In this sample they supposed 3 Methods of Payment. These were by Stock only, Cash only and by Mixed

Payment with stock and Cash. The independent variables they used were raised by their Hypothesis testing of the factors that determine the Method of Payment.

M. Faccio and R.W. Masulis made a classification to the regressed independent variables in order to ensure a sufficient conclusion for the factors that determine the Payment Method the categories that posed were the above:

- Dept Capacity/ Collateral/ Leverage
- Nonpublic Status Target
- Cross-Border Deals
- Corporate Control
- Deal Size/ Asymmetric Information
- Bidder Investment Deals
- Cross Industry Deals

All the previous variables concerned the acquirer and the target firm regressed with the Tobit regression model and E-views program.

The findings of the procedure above were that regarding the corporate control variable the cash as a mean of Exchange is preferable when the stockholders of the acquirer have under their control the 20% through 60% percent of the acquirer firm. Moreover, the probability of using Cash is rising mainly under the fear of losing the control of the major part of their firm, especially in case of corporate control voting. Also, concerning the matter of corporate control the evidence seems to agree that has strong influence on the Method of Payment of European M&A Deals. Concerning the ownership variable the findings consist that it is matter of high significance for European M&A Deals. Furthermore, concerning the liquidity and Dept Ratios of the firms such as Leverage, collateral, Dept Capacity authors found that have major statistical significance and specifically when the acquirer firm has wide access to leveraged capital the evidence indicates that the selected medium of Exchange is cash. In addition, another result is in case of existence of common owners in both parts of acquirer and Target firm the more likely is the Stock finance of the M&A Deal. Concerning the public Status of the target the findings suggest that if the target is unlisted the acquirer uses Stock payment Method instead of cash. Finally, the

research seems to reveal the statistical significance of variables such as Market-to-book value of the acquirer assets, the preemptive Stock performance of the acquirer and the cross-border Deals variable.

In addition to the previous thesis J. Swieringa and M.B.J Schauten tried to investigate the matter of the Payment Method in M&A Deals through a different sample. *J. Swieringa and M.B.J. Schauten (2007) in their study “ The Payment Method in Dutch Mergers and Acquisitions” published on Social Science Research Network (SSRN)* examined a sample consisted of Dutch Acquirers instead of previous researchers that the acquirers were originated from countries all around the European continent except Netherlands. More specific the criteria that used in order to exclude their sample were the above:

- The period that concerned the sample was 1996 to 2005.
- The acquirer was public firm originated from Netherlands.
- There are no restrictions relative to the status of Target or relative to crossborder deals
- The Deal Value had to be greater than 1 mil Euros.
- The acquired percentage of the target firm had to be greater than 50%.
- Concerning the Status of Deal has to be completed and friendly.

The final sample under these criteria consisted of 227 M&A Deals and the source that has been used by authors was Thomson One Banker Database.

J. Swieringa and M.B.J. Schauten distinguished three potential Methods of Payment in M&A Deal: by Stock only, by cash only or by a mix payment of cash and stock. The method of Payment was the dependent variable to their model and independent variables posed according to the Hypotheses that were being tested. The posed Hypotheses concerning the Determinants of the mean of Payment of the M&A Deals were the below:

- The percentage of the ownership.
- The ratios that has to do with the leveraged amount of the M&A Deal.
- The ratios concerning the liquidity and the amount of the Free Cash Flow available of the acquirer.
- The stock performance of the acquirer.

- The size of the target firm related to the acquirer.
- The variables that has to do with the investment opportunities of the acquirers.
- The hypotheses that deal with the status of the target.
- The hypothesis that concerns the kind of the Deal that means if the Deal is crossborder or cross industry deal.

After the testing of the previous variables authors delivered the relevant results as indicated below:

Cash is a potential Method of Payment in case of high percentage of the ownership of the acquirer's stockholders because of the worry of losing control.

Concerning the relevant size, the bigger the acquirer is, the more likely to use cash as medium of exchange, the exploration of this result is that because of the large size of the acquirer he is able to have access in large cash capital funds.

Another result is that the biggest the Market-to-Book Ratio is, the more likely to complete the deal with the usage of common shares.

The result concerning the size of the target suggests that the bigger the target is the more likely is a share financing deal, because of the potential inability of a huge leveraged cash amount from the part of the bidder.

As long as concerning the cross industry variable in case that belongs to the same industrial sector, is more likely to complete the M&A Deal through common share. The reason is obvious because the target firm is more likely to be aware of the financial situation of the acquirer since they belong to the same industrial sector.

Finally, if the acquired object is the assets of the target firm the evidence seem to indicate that the chosen Payment Method will be cash instead of Stocks.

As we mentioned above all the previous researchers tended to use independent variables to their models, which had to do particularly with ratios or sizes of the firms. In contrast with the researchers above *L. Feijo, J. Madura and T. Ngo. (2012) in their thesis " Impact of Industry Characteristics on the Method of Payment in Mergers" published, on Journal of Economics and Business* are

choosing to implement their model through the usage of independent variables raised from the industrial sector of each firm and contains particular characteristics of the sector that each firm belongs.

The researchers above examined a sample that consisted of tender offers and Mergers that were completed. The sample above referred on the period of January 1985 through December 2007. The sample rose from Securities Data Company's (SDC) Merger and Acquisitions database and there wasn't included the crossborder Deals. The industrial sectors that included and classified the sample were the below:

- Production of manufacturing goods (Trucks, machine etc.)
- Production of Durable goods (furniture, Cars, etc.)
- Production of Non-Durable (Nourishment, Clothes, etc.)
- Production of Chemicals
- Production of Energy
- Production of Business Equipment
- Production of Equipment for Communication Services
- Production of Medical Equipment and Drugs

All the above industrial sectors examined as independent variables on the testing Hypothesis regression model of the authors. Moreover, in their model, except the variables above included also the characteristic of each sector like its size, the Merger wave that occurred in every sector and the affects that had on the Payment Method. The dependent variable of their Tobit regression model describes the Payment method and consists on Stock or Cash either.

After the implementation of the regressions authors concluded that:

- The Medium of Exchange diversifies among the industrial sectors of the firm.
- Evidence seems to indicate that Merger Wave of 1993 through 1999 affected the M&A Deals of this period and addressed them to use Stock as a Payment Method instead of the waves of 1984 through 1988 and 2003 to 2008 that seem to be insignificant.

- Another finding is that firm specific variables which affect the Payment Method react different according to the industrial sector that firm belongs. For example, firms belonging to products of Chemicals and Durable goods products with increases Free Cash Flow Capitals it is more likely to complete on M&A Deal through Cash. Moreover, when we observe an augmentation on sales percentage of the whole industrial sector instead of cash the evidence seems to agree that the chosen Mean of Exchange turns to common Share Payment.
- Finally, the main result of this research, is that variables that are relevant to industrial sector seem to play a Key-role, on the choice of Payment Method in M&A Deals, according to the researchers.

Another recent study that is relevant to the Payment Method in M&A Deals is that one written by A. Giuli. *A.Giuli (2013) through her study “The effect of stock misevaluation and investment opportunities on the Method of Payment in mergers” published on the Journal of Corporate Finance* examines the factors of shares mispricing and investment opportunities and its effects on the Payment Method in M&A Deals. A.Giuli through her study tries to confirm the findings of previous authors that explored the factor of misevaluation, as we mentioned previously. As we reviewed to the previous chapter A. Shleifer and W. Vishny (2003) through their study “ Stock Market driven acquisitions” and M. Rhodes-Kroph, S. Viswanathan (2004) through their study “ Market Valuation and Merger Waves” examined the affect of the misevaluation on M&A Deals.

In order to investigate the factors of misevaluation and investment opportunities A.Giuli used a sample of Completed M&A Deals with public status and country of origin United States of America for both of Acquirer and Target firms. The sample consisted of 1187 Deals and included firms of positive Market-to- Book ratio. Also, the announcement date was January 1990 through December of 2005. A. Giuli used a Tobit regression model and defined as an independent variable of the model the method of Payment of the M&A Deal. She examined three potential medium of Exchange, by Cash only, by Stock only or a combination of them. The sample consisted of:

- A major percentage of 47% completed by Stock only
- A percentage of 31.8% completed by cash only
- And a percentage of 20.6% by a combination of the above Means Stock and Cash.

As long as concerning the independent variable of the model she introduced a mathematic formula that calculated the mispricing of the Acquirer and the Target in order to verify the effect that mispricing has as Determinant of Payment Method of M&A Deals. Moreover, she used also independent variables that concerned the investment opportunities of the acquirer and realize their reaction with the dependent variables of the sample.

After the regressions she implemented A. Giuli delivered interesting results. Concerning the factor of investment opportunities she noticed that has a vital role and determines the Medium of Exchange in M&A Deals. More specific in case that merger had many investment opportunities during the preemptive period the more likely is that M&A Deal will be completed by the usage of stock. Moreover, A. Giuli in accordance to the previous studies of Rhodes and Viswanathan (2004) and Shleifer and Vishny (2003) proved that mispricing is factor of significant importance in order to be implemented by acquirers share- financing M&A Deals. More specific, acquirers take advantage of their overvalued shares in order to finance a Deal with an undervalued target firm. Furthermore, the evidence seems to indicate that the Deal Value is a significant factor for Methods of Payment in M&A Deals and indicates that the favorable Method of Payment is Share. This finding is in contrast with the Shleifer and Vishny (2003) model. Another conclusion of the study is that target firms, that choose share as Payment Method in order the M&A Deal to be implemented consider acquirer as an overvalue firm and expect high future returns on their equity. This finding agrees with Rhodes-Kroph and Viswanathan (2004), but not with the findings of Shleifer and Vishny (2003).

2.2 Classification of the Determinants of Payment Method in M&A Deals

After a detailed Review of a major part of the Literature that has been written since 1958 on the field of the Determinants of the Payment Method we will try to categorize them according to the results that the authors brought and also according to the assumptions we will make in order to examine some of these Determinants.

The classification will take place according to the determinant that the authors above used in order to examine which of them influence the medium of exchange and which of them is statistically significant. The determinants that we are going to examine and also categorize the results of the authors are the below:

- a. **Cross country** determinant indicates that target firm located in different country than bidder firm.
- b. **Target public Status** determinant indicates that target firm is listed or unlisted firm.
- c. **Crossindustry** determinant indicates that bidder and target firm belongs or not in the same industrial sector.
- d. **Collateral** determinant.
- e. **Debt Capacity** determinant.
- f. **Financial Leverage** determinant.
- g. **Relative Deal Size** determinant.
- h. **Cash Availability** determinant.
- i. **Market Run Up** determinant.
- j. **Stock Run Up** determinant.

Furthermore, hereby we will categorize and four more variables that mentioned in the Literature Review, but we will not examine them in this study. Thus, we will analyze them shortly in order to give the incentive to other researchers to conduct further research on these variables:

- k. **Corporate Control** determinant.
- l. **Taxation** determinant.

- m. **Asymmetric Information** determinant.
- n. **Growth Opportunities** determinant.

2.2.1. Crosscountry Assumption

Regarding this determinant the authors that examine its influence on the selection of the medium of exchange on M&A Deals are M. Faccio and R.W. Masulis (2005) and J. Swieringa and M.B.J. Schauten (2007). J. Swieringa and M.B.J. Schauten found that crosscountry determinant is insignificant and has no impact on the selection of the medium of exchange on M&A Deals. On the other hand M. Faccio and R.W. Masulis through their thesis “*the Choice of Payment Method in European Mergers and Acquisitions*” found that crosscountry determinant is statistical significant. More specifically they found that in case that the acquirer and target firm aren’t belonging in the same country it is more likely the selection of cash payment as medium of exchange in the potential M&A Deal. This finding can be explained rationally by the lack of information from the part of the acquirer concerning the risks and the financial situation of the country of the target firm. Other factors that explain the choice of cash instead of stock payment is that acquirer doesn’t want to undertake the potential currency exchange risk or the requested time that the acquirer needs in order to have more accurate information regarding the detailed financial situation of the target firm. At this point we are going to make our assumption for this determinant.

Assumption (a) “The crosscountry assumption”

We assume that in case of acquirer and target firm located in different country, it is more likely that acquirer will choose cash as method of payment instead of stock.

2.2.2. Target public Status Assumption

Concerning this determinant the main point has to do with the acquirer firm control. This determinant has been explained by M. Faccio and R.W. Masulis

(2005) through their study that we mentioned previously. The authors above found that this determinant is statistically significant and a cash payment is more likely to occur. Moreover, this determinant exists also in the study of J. Swieringa and M.B.J. Schauten (2007), but in their study they found that this determinant is not statistically significant. Target firms with private status usually belongs o one individual or a small group of persons that tends to obtain the majority of the stocks. This reason drives the bidder to prefer cash payment than stock. This situation shows high concentration in target firms and bidder is not willing to fund a potential M&A Deal through stocks in order to avoid the loss of the corporate control. This is the first reason that explains the choice of cash rather than stock in private status firms. The second reason has to do with the preference of the manager of a private target firm. In case of private target firms is a common situation the manager of the firm to obtain the majority of the stocks, as we mentioned above private target firms are highly concentrated. In case of a potential M&A deal the managers above tend to retire. In this case they prefer a cash payment rather than stock payment.

Assumption (b) “target public status Assumption”

Since the target private status firms are more concentrated acquirers tend to obtain firms with public status through cash financing Deals. The cash financing takes place in order acquirers to prevent the potential concentration of the stocks in the hands of the individual who holds the majority of the stocks of the target firm with following the loss of the corporate control of the acquirer firm.

2.2.3. Crossindustry Assumption

This determinant has been examined by M. Faccio and R.W. Masulis (2005) and also by of J. Swieringa and M.B.J. Schauten (2007). Both of the authors found that the determinant is statistically significant and the selected medium of exchange is stock rather than cash because there is sufficient information regarding the financial situation of the target firm. The results above can be explained through the sufficiency of the information that the acquirer has in order to implement a Deal through a stock payment. Another factor is the willing of the

target firm to accept this payment since industries obtain much more information regarding the financial situation of each other when they belong to the same industrial sector.

Assumption (c) “Crossindustry Assumption”

We assume that if acquirers and targets belong to the same industrial sector, it is more likely that deal will take place through stock payment since they know the financial situation of each other.

2.2.4. Collateral Assumption

In order to make our assumption concerning collateral we have to explain the meaning of the term collateral. Basic substance of bilateral borrowing contracts is the Collateral. Collateral is the commitment of a borrower in terms of his own assets in order the lender to be secure in case of bankruptcy. In such a case borrower loses the collateral and lenders gains its ownership. The authors who examined this determinant were M. Faccio and R.W. Masulis (2005) and also J. Swieringa and M.B.J. Schauten (2007). M. Faccio and R.W. Masulis found that this determinant is statistically significant. Bidders with high collateral assets tend to have better access to borrowing capital due to low cost of debt they gain. In such case bidders choose cash as payment method of the Deal. On the other hand J. Swieringa and M.B.J. Schauten found that collateral determinant is statistically insignificant.

Assumption (d) “Collateral Assumption”

We assume that acquirers with high collateral have better access to borrowing capital so they prefer cash financing of the Deal instead of stock payment.

2.2.5. Debt capacity Assumption

This determinant describes also the capacity of the bidder to have access in borrowing capital. This determinant based on how large the asset size of the bidder is. This determinant is equal to the natural logarithm of Asset size. The authors who examined this determinant were M. Faccio and R.W. Masulis (2005) and J. Swieringa and M.B.J. Schauten (2007). In case that bidder has a number of Total Assets, he has a wide access to capital market and he prefers cash in order to implement an M&A deal. This assumption has been strongly supported by M. Faccio and R.W. Masulis and also that is statistically significant for the choice of the Method of payment in M&A Deals. On the other hand, J. Swieringa and M.B.J. Schauten found that this determinant is statistically insignificant and not relevant to cash payment.

Assumption (e) “Debt Capacity Assumption”

We assume that bidders with bigger debt capacity and Asset Size use cash payment instead of stock payment because they have wider access to capital market.

2.2.6. Financial Leverage Assumption

The Financial Leverage determinant resulting by the combination of the Debt and the Assets size. Comparing the capital coming from shareholders and lenders we can understand how much high is the Financial Leverage amount of the bidder. This determinant has been examined by M. Faccio and R.W. Masulis (2005) and J. Swieringa and M.B.J. Schauten (2007). In the study of M. Faccio and R.W. Masulis this determinant is statistically significant but on the other hand J. Swieringa and M.B.J. Schauten and Martin (1996), through their studies seem that are not agree with these results. Concerning the results of M. Faccio and R.W. Masulis the explanation is that bidders with high leverage tend to use stock instead of cash because they don't have the access to borrowing capital. Taking in mind the results of M. Faccio and R.W. Masulis the low financial leverage allow the bidder to have access in borrowing capital and to finance the Deal through

cash. Furthermore, another study that supports the M. Faccio and R.W. Masulis evidence appear to be L. Feijo, J. Madura and T. Ngo. (2012), but these results varies according the industrial sector.

Assumption (f) “Financial Leverage Assumption”

We assume that bidders with big amount of leverage have no ability to use cash and prefer stock financing of the Deal. On the other side, bidders with low amount of leverage have access to borrowing capital and tend to use cash instead of stock payment.

2.2.7. Relative Deal Size Assumption

Concerning this determinant the basic assumption is that bidders are more willing to select a stock payment when the Deal size, which is substantially the target size, is large comparing the size of the bidder, M. Faccio and R.W. Masulis (2005). The assumption above can be explained through three causes. The first cause is in case that target firm is large it is more possible that bidder haven't the ability to finance a large amount through cash and is more preferable the stock financing. The second cause, is that the manager of the target firm, in case that is large, prefers the stock finance because he can easily gain the control of the new firm that will come up after the deal, P. Zhang (2003). And finally, the third cause, is that a stock of the deal is more likely to take place, especially when target is aware of its value. The predictions above have been analyzed by many researchers. Some of them are Hansen (1987), Martin (1996), Grullon, G., Michaely, R., and Swary, I., (1997), Ghosh A., and Ruland, W., (1998), P. Zhang (2003), M. Faccio and R.W. Masulis (2005) and J. Swieringa and M.B.J. Schauten (2007). The results of each researcher are not exactly the same. Grullon, G., Michaely, R., and Swary, I. agree with the assumption above and found that this variable is statistically significant. The same results, brought also Hansen, Ghosh A., and Ruland, W., P. Zhang and M. Faccio and R.W. Masulis. On the other hand Martin found that this determinant is not statistically significant.

Assumption (g) “Relative Deal Size Assumption”

We assume that the greater the size of a target is relative to the bidder the more possible is the deal to take place through share financing.

2.2.8. Cash Availability Assumption

Cash Availability determinant is relevant to the ratio of Free Cash Flow (FCF). Free Cash Flow is the amount which is available if we exclude all the expenses and investments of the firm. The Free Cash Flow theory has been examined by M. Jensen (1986) through his study that we mentioned previously. M. Jensen in his study supports that firms with large available amount of free cash flow tends to finance more easily potential investments and acquisitions. Taking in mind all the above, Jensen’s study supports the opinion that firms with large amount of free cash flow tends to use cash as payment method. Also, the determinant of free cash flow has been examined by P. Zhang (2003), who found that the dividend Payout Ratio which is explanatory determinant for the cash availability is statistically significant. Additionally, indicates that firms with high dividend Payout Ratio tends to use cash as payment method instead of stock. Furthermore, M. Jensen (1986) reports that in case of high free cash flow it is favorable that the amount will be spent in useful investments that will prove to be of vital importance for the firm. This fact is more useful than the spending of the free cash flow amount for personal expenditures of the managers.

Assumption (h) “Cash availability Assumption”

We assume that firms with higher level of free cash flow, indicates high cash availability tend to finance their deal through cash offer. Furthermore, higher dividend payout ratio indicates high free cash flow which concludes to the fact of cash payment method. To sum up, the higher the free cash flow is the more likely to select cash payment method.

2.2.9. Market Run Up Assumption

Regarding this determinant the variable that we use in order to examine this determinant is market run up. The market run up determinant taking in mind the performance of the main stock price Index in the bidder 's country. Thus, for our sample we use Standard & Poor 500 price Index. The basic assumption is that whenever the stock market is on high level prices, it is more likely that an M&A Deal will take place through stock payment. This determinant examined in the studies of Martin (1996), P. Zhang (2003), M. Faccio and R.W. Masulis (2005) and J. Swieringa and M.B.J. Schauten (2007). The authors above found that this variable is statistically significant.

Assumption (i) “The Market Run Up Assumption”

We assume that in case of stock market rising and high performance of the overall Market, bidders are more willing to use stock financing.

2.2.10. The Stock Run Up Assumption

Concerning this determinant, we are taking in mind that firms finance their projects through new issued shares when these are less expensive than using borrowing capital. There are many authors that examined the stock run up determinant. Myers S., and Majluf, N., (1984) and Hansen, R., (1987) through their studies concluded that when the bidder's firm stock performance consider to be overvalued prefer stock as method of payment, on the other hand when the bidder's stock consider undervalued, bidder firms choose the cash as method of payment. These findings are the same with P. Zhang (2003) and M. Faccio and R.W. Masulis (2005). Furthermore, another author that examined the stock performance determinant is Travlos, N., (1987). He found that whenever an announcement of M&A Deal is taking place through share financing the shareholders of the bidder have negative returns, but when the Deal is taking place through cash the bidder 's shareholders have positive gains.

Assumption (j) “The Stock Run Up Assumption”

We assume that bidders believe in the overvaluation of their firm stock price, use stock as payment method. On the other side, when they think that the stock price is undervalued they use cash as method of payment.

2.2.11. The corporate control Assumption

Whenever a Deal is taking place through stock payment method it is more likely that the manager and the stockholders of the bidding firm to be anxious for the loss of the managerial control. Corporate control determinant has been examined by Stulz, R., (1988). Stulz supported that stockholders of bidding firm are not willing to use stock as payment method in order to ensure the managerial control of the firm. In addition, to the finding above he underlined that in case of high managerial ownership the target firm will be not willing to accept a hostile acquisition by the bidder, because the manager of the target will seek the opportunity to take over the corporate control of the bidder. Other authors that examined this determinant are Amihud Y., Lev, B., and Travlos, N., (1990). These authors concluded that managers that holding the majority of shares in their firm, it is likely to use cash instead of share in order to acquire a target firm. Another study that examined this determinant is the study of Song, M., and Walkling, R., (1993). These authors concluded that a firm with low managerial ownership it is more probably that will become a target firm. This can reasonably explained because the bidders avoid putting at stake their managerial ownership to the firm that will come up after the Deal. In addition to these findings Ghosh A., and Ruland, W., (1998) underlined that managers of the target firm with high managerial ownership have a clear motivation in order to accept and seek shares as method of payment. This motivation is the preservation of their position to the firm that will come up after the Deal.

2.2.12. Taxation Assumption

The variety of tax rates has an influence in the selection of method of payment. In case of cash selection as method of payment, the bidder undertakes

the taxation cost. Taking in mind the above, cash offers could be higher, due to taxation expenses, in comparison to share offers that don't include these expenses. The determinant of taxation has been examined by Franks, J., Harris, R., and Mayer, C., (1988). These authors concluded that cash offers ensure more profitable stock price returns for the stockholders of the target firm, the most common method of payment is stock payment or cash payment either and finally that taxation costs seem not to be the major concern for the selection of payment method. Another study that confirm the results above seems to be the Huang Y., and Walkiling, R., (1987) study that indicates also the high returns for the target firm shareholders.

2.2.13. Asymmetric Information Assumption

The meaning of the asymmetric information determinant is the existence of the information that obtains only the one part of the Deal and the other is not aware of this information. Authors that examined this determinant are Myers S., and Majluf, N., (1984). Myers and Majluf indicated that managers of the firms are aware of information that the rest of the agents of the market aren't aware. An example of this evidence is the valuation of the bidder's assets. In case of stock selection as method of payment the agents suppose that bidder's assets are overvalued, on the opposite case of cash financing the bidder's assets consider to be undervalued. As we mentioned previously, the asymmetric information determinant is the existence of the information that obtain only the one part of the Deal. This fact makes the target firm not willing to accept the stock as method of payment. The explanation for this fact is that targets are not aware of the true value of the bidder's share price, tend to avoid the share as method of payment. This evidence has been successfully analyzed through the study of Hansen, R., (1987). Moreover, Hansen indicates that this evidence seems to appear stronger in crosscountry Deals. Another author that examined this determinant was Fishman, M., (1989). Fishman used a preemptive example to investigate the asymmetric information determinant. Fishman through his model concluded that stock financing, shows negative valuation for the bidder's asset. The study of Travlos, N., (1987) also agree with this finding.

2.2.14 Growth Opportunities Assumption

Regarding this determinant the basic assumption is that acquirers who have bigger investment opportunities, probably they are going to choose stock as method of payment. This fact can be explained by the decisions of the managers of the bidders. Managers of bidding firms that have high growth rates are not willing to finance a Deal through cash because they have to use borrowing capital. This will lead debt holders to be stricter and to intervene more often to the decisions of the managers. Under this assumption additional borrowing capital prevent bidder from having wide access in capital market for the next years. This fact, will prevent bidder from undertake further successful deals as indicated in the study of Martin (1996). These findings also agree with the studies of M. Faccio and R.W. Masulis (2005) and J. Swieringa and M.B.J. Schauten (2007).

Chapter 3

3. Description of following Method and Data Analysis

3.1. Characteristics of the Data Sample

The database we use in order to extract our sample is Thomson Reuters Eikon. We posed some criteria to extract transactions with specific characteristics for our study. Hereby we are presenting these criteria according their specific characteristics.

In our sample is including Merger and Acquisitions with announcement year 2007 to 2014. The announcement date is defined as the date that bidder announcing to the public its intention to acquire the target firm, in our sample this date is 01/01/2007 between 31/12/2014.

We consider the eight year period sufficient time frame in order to conclude to a safe and valid conclusion. Another criterion we set is the status of the deal. In our sample we include only completed transactions.

Regarding the status of the acquirer we include firms with only public status in order to be listed and have access to all financial ratios. On the other hand concerning the target firm status we selected to be public or private, taking in mind the target public assumption.

Concerning the Deal Value criterion we include transactions with Deal value bigger than 100 million Euros. In the Thomson Reuters Eikon database the Deal Value is expressed in millions and the using currency is the Euro. In order to calculate the Deal Value Thomson Eikon follow a specific definition as indicated below: Deal Value is total value of consideration paid by the acquirer, excluding fees and expense. The Euro Value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt, options, assets, warrants and stake purchases made within six months of the announcement date of the

transaction. Liabilities assumed are included in the value if they are publicly disclosed.

Another criterion that we posed is the percentage of shares Acquired to be 100% in order to have the total percentage of the target firm. Concerning the form of the Deal we include Mergers and Acquisitions.

Regarding the industrial sector of the Acquirer and the target we excluded the firms that belong to financial sector, such as banks, insurance firms, real estate firms etc. because of the specific characteristics they have which demand further examination. The exception above concerns the bidder and the target firm. Also, this criterion is useful for the crossindustry Assumption.

The country of the acquirer firm is United States of America and regarding the target firm country we have no restriction. This criterion is useful for the crosscountry Assumption.

Concerning the consideration structure criterion (method of payment) we include two methods, stock only or cash only. This variable is the dependent on our model. This criterion has been used also by M. Faccio and R.W. Masulis (2005). The Thomson Eikon database defines as cash payment cash, earn out (an amount of cash to be paid in the future, over time, if the target company meets certain financial performance criteria), non-convertible debt and assumption of liabilities. The definition for stock includes common shares, ordinary shares, preferred shares, warrants, options and convertible debt.

All the above criteria have been posed in order to collect the transactions we want in order to define our sample. Afterwards, in order to collect data for the independent variables of our model we use the DataStream and Worldscope databases. From these databases we extract data for the ratios of Total Assets, the Net income after preferred dividends, the property plant and equipment, the total Debt and the common dividends. The combination of these ratios will give us the variables we want to examine and accept or reject the Assumption we made in chapter 2.2.

In order to collect the ratios above from DataStream we must have available the ISIN code in order to make a shortlist for the bidder firms we concern for. The

deal screener platform of the Thomson Eikon doesn't appear as criterion the ISIN code, for this reason we extracted another identifier for the bidding firms the CUSIP code, which we used it in order to extract the ISIN code from the ordinary screener of the Thomson Eikon.

After the implementation of these criteria we got back as output 565 transactions. In the sample of 565 transactions we met many missing data that weren't available on the Thomson Eikon concerning the ISIN code or the ratios from the DataStream and Worldscope databases.

Afterwards, we excluded the above transactions with the missing data, the final sample included **389** transactions. Finally, we have 389 transactions refer to an eight years period between 01/01/2007 and 31/12/2014. The transactions above took place by **268** bidder firms from the United States of America through cash or stock payment. From the **268** bidders only 1 bidder made 10 Deals, 1 bidder made 9 Deals, 1 bidder made 8 Deals, 2 bidders made 6 Deals, 2 bidders made 5 Deals, 4 bidders made 4 Deals, 14 bidders made 3 Deals, 39 bidders made 2 Deals and 204 bidders made 1 Deal as indicated to the table below:

Number of Deals per Bidder	1	2	3	4	5	6	8	9	10	
Number of Bidders	204	39	14	4	2	2	1	1	1	268
Total Transactions	204	78	42	16	10	12	8	9	10	389

Table 3.1. *Distribution of Frequency of the Deals of the final sample*

Taking in mind the consideration structure criterion we set, we have two possible methods of payment in order to finance an M&A Deal. After a detailed

observation of our sample, we have to mention that these methods of payment consist of stock only and cash only. More specific, our final sample consists of 389. From these Deals **58** deals took place through stock financing and **331** Deals through cash financing. The stock financing consists of the **14,91%** of the sample and the cash financing consists of the **85,09%** of the sample. As we clearly observe the majority of the sample, **85,09%** took place through cash financing. The stock financing seems that is not popular among the investors as a method of payment.

Method of Payment	Stock	Cash	Total
Deals	58	331	389
Percentage of Deals	14,91%	85,09%	100%

Table 3.2. *Consideration Structure (Method of Payment)*

Hereby, to the table below we classified the Deals according their announcement year and the method of payment for each year that took place. From the table below, we can conclude that stock as method of payment isn't preferable among the investors. According to the percentage that we calculated for the change of the percentage of the number of the Deals that took place YoY, we have to mention that from the year **2009** to **2010** we observe a major increase about **82,35%**. These results can be explained through the introductive literature Review from chapter 1.3. More specific Martynova, M. and L. Renneboog (2008) through their study "*A century of corporate takeovers: What have we learned and where do we stand?*" concluded that "*Takeovers usually occur in periods of economic recovery (following a market crash and economic depression caused by a war, an energy crisis, etc.)*". This conclusion explains this major increase of the number of M&A Deals from **2009** to **2010** due to post crisis period of **2008**. This is clearly appeared through the Diagram III. Furthermore, Diagram IV presents the percentage of Method of Payment for each year.

Year	Stock	Cash	Total	Percentage Of Stock	Percentage Of Cash
2007	8	57	65	12,31%	87,69%
2008	6	28	34	17,65%	82,35%
2009	8	26	34	23,53%	76,47%
2010	13	49	62	20,97%	79,03%
2011	6	43	49	12,24%	87,76%
2012	5	42	47	10,64%	89,36%
2013	5	48	53	9,43%	90,57%
2014	7	38	45	15,56%	84,44%
Total	58	331	389	14,91%	85,09%

Table 3.3. Method of Payment for each year

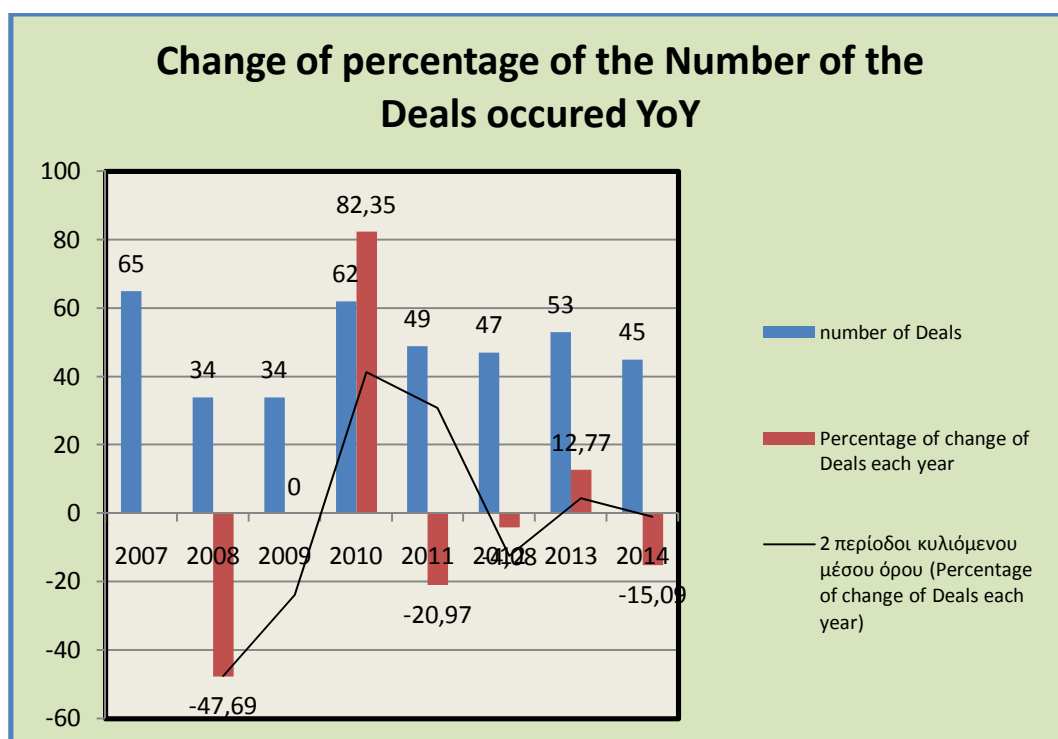


Diagram III. Change of Percentage of the Number of the Deals YoY

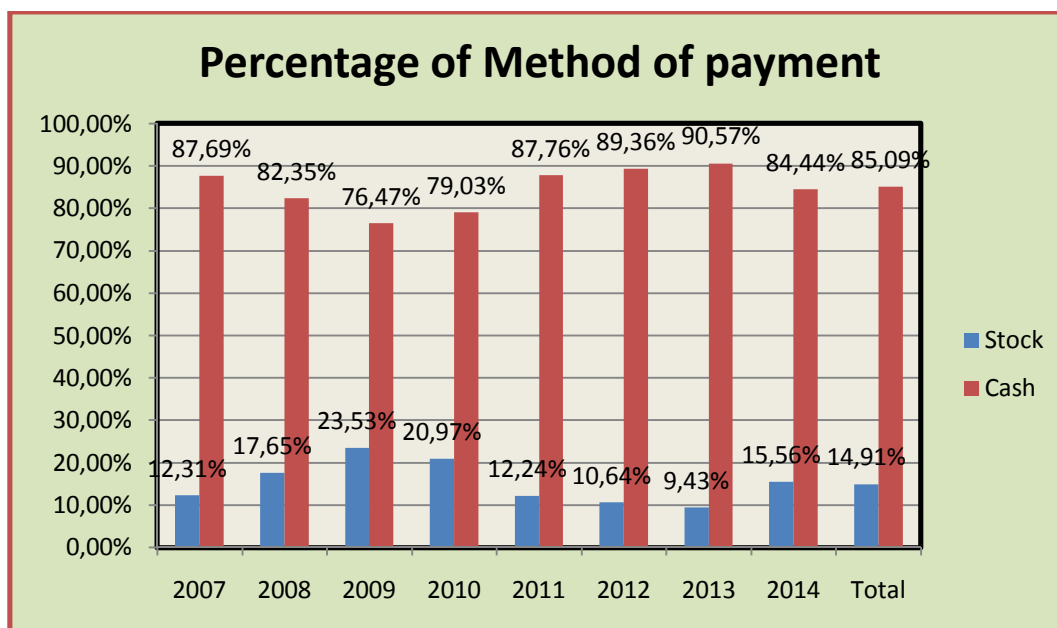


Diagram IV. Percentage of Method of Payment for each year

To the table below we classified the crosscountry variable according to the distribution of frequency of methods of Payment.

Method of Payment	Deal Within the country	Deal to the Abroad	Total
Stock	16.15	8.96	14.91%
Cash	83.85	91.04	85.09%
Total	100.00%	100.00%	100.00
Count			
Stock	52	6	58
Cash	270	61	331
Total	322	67	389

Table 3.4. *Distribution of frequency of methods of Payment for crosscountry variable.*

In the first column of the table concerning the Deals, which taking place within the country, we observe **52** Deals concerning stock and **270** cash payment, the relevant percentage is **16, 15%** through **stock** and **83, 85%** through **cash**.

When the Deal is taking place to the abroad we observe changing to the numbers above. Thus, **6** Deals concerning stock and **61** cash payment, the relevant percentage is **8, 96%** through **stock** and **91, 04%** through **cash**. Overall, we observe that the majority of Deals taking place within the country and not to the Abroad. Also, the reduction of the percentage of the Stock payment method from **16,15%** , for deals within the country, to **8,96%** , for deals to the abroad can be reasonably explained because bidders have lack of information regarding the true financial situation of the target firm belonging to a foreign country, M. Faccio and R.W. Masulis (2005).

We applied the above classification for the target public status variable also.

Method of Payment	Public Target Firm	Private Target Firm	Total
Stock	18.32	7.87	14.91%
Cash	81.68	92.13	85.09%
Total	100.00%	100.00%	100.00
Count			
Stock	48	10	58
Cash	214	117	331
Total	262	127	389

Table 3.5. *Distribution of frequency of methods of Payment for target public status variable.*

In the first column of the table concerning the Deals, which taking place with Public Target Firm, we observe **48** Deals concerning stock and **214** cash

payment, the relevant percentage is **18, 32%** through **stock** and **81, 68%** through **cash**.

When the Deal is taking place with Private Target Firm we observe changing to the numbers above. Thus, **10** Deals concerning stock and **117** cash payment, the relevant percentage is **7, 87%** through **stock** and **92, 13%** through **cash**. Overall, we observe that the majority of Deals taking place with public status target firm and not with private status target firm. Also, the reduction of the percentage of the Stock payment method from **18,32%** , for deals participating target firms with public status, to **7,87%**, for deals participating target firms with private status can be reasonably explained through the studies of M. Faccio and R.W. Masulis (2005) and J. Swieringa and M.B.J. Schauten (2007). These reasons have been mentioned previously in 2.2.2. Chapter with title: “Target public Status Assumption”.

The next table we attached is the classification of the crossindustry variable according to the distribution of frequency of methods of Payment.

Method of Payment	Target firm in the same Industrial Sector	Target firm in different Industrial Sector	Total
Stock	18.59	12.45	14.91%
Cash	81.41	87.55	85.09%
Total	100.00%	100.00%	100.00
Count			
Stock	29	29	58
Cash	127	204	331
Total	156	233	389


Table 3.6. *Distribution of frequency of methods of Payment for crossindustry variable.*

In the first column of the table concerning the Deals, in which are participating Target firms in the same Industrial Sector, we observe **29** Deals concerning stock and **127** cash payment, the relevant percentage is **18,59%** through **stock** and **81,41%** through **cash**.

When the Deal is taking place with the participation of Target firms in different Industrial Sector we observe changing to the numbers above. Thus, **29** Deals concerning stock and **204** cash payment, the relevant percentage is **12, 45%** through **stock** and **87, 55%** through **cash**. Overall, we observe that the majority of Deals taking place within the country and not to the Abroad. Also, the reduction of the percentage of the Stock payment method from **18, 59%**, for deals participating target firms in the same Industrial Sector, to **12, 45%**, for deals participating target firms in different Industrial Sector can be reasonably explained because bidders have lack of information regarding the true financial situation of the target firm belonging to a different industrial sector, M. Faccio and R.W. Masulis (2005).

3.2. Definitions of our Variables and Descriptive Statistics

Through this subchapter we intend to give the definition of the variables that we use in order to examine our Assumptions. Moreover, we will present the variables that we used in order to compose the examined determinants of payment Method and as well as the source that we found them. Hereby we briefly present the determinants that we use: Cross country, Target public Status, Crossindustry, Collateral, Debt Capacity, Financial Leverage, Relative Deal Size, Cash Availability, Market Run Up, and Stock Run Up. Afterwards, we intent to present the descriptive statistics of the above determinants.

 **Cross country**: This is a dummy variable equals 0 in case that bidder and target belongs in the same country and equals 1 in case that bidder and target belongs in different country. The source for this variable is Thomson Reuters Eikon Database.

- ✚ **Target public Status:** This is a dummy variable equals 0 in case that target is a firm with public Status and equals 1 in case that target is a firm with private Status. The source for this variable is Thomson Reuters Eikon Database.

- ✚ **Crossindustry:** This is a dummy variable equals 0 in case that bidder and target belongs in the same industrial sector and equals 1 in case that bidder and target belongs in different industrial sector. The source for this variable is Thomson Reuters Eikon Database.

- ✚ **Collateral:** It is a fraction of collateral assets which is calculated by dividing the book value of property, plant and equipment by the book value of total assets, at the year- end prior to the bid. The source for these data is Worldscope Database.

- ✚ **Debt Capacity:** It is bidder's asset size which is measured by the natural logarithm of the book value of total assets at the year-end prior to the announcement date. The source for these data is Worldscope Database.

- ✚ **Financial Leverage:** Bidder's financial leverage is computed by dividing the sum of the deal value (including assumed liabilities) and the book value of total Debt at the year- end prior to the bid by the sum of the deal value (including assumed liabilities) and the book value of total assets at the year- end prior to the bid. The sources for these data are Worldscope Database and Thomson Reuters Eikon.

- ✚ **Relative Deal Size:** Relative Deal Size is computed by the deal value (after excluding assumed liabilities) divided by the sum of the deal value (after excluding assumed liabilities) and the market capitalization of the bidder at the quarter- end prior to the bid. The sources for these data are Worldscope Database and Thomson Reuters Eikon.

- ✚ **Cash Availability:** Bidder's cash availability is measured by the dividend payout ratio which is used as a proxy for the bidder's free cash flow. The dividend

payout ratio is computed by dividing common dividends (cash) by the net income after preferred dividends. The source for these data is Worldscope Database.

✚ **Market Run Up:** Bidder's market run-up is used as a proxy for the effects of business cycles. Bidder's market run up is calculated by a buy and hold cumulative return of the major stock price index in the bidder's country over the year preceding the announcement month. As bidder's country is United States of America we use the Standard and Poor 500 (S&P 500) price Index. The source for these data is Datastream Database.

✚ **Stock Run Up:** Bidder's stock price run up is used as a proxy for the overvaluation or undervaluation of bidder's stock. Stock price run up is computed by a buy and hold cumulative stock price return of the bidder over the year prior to the announcement month. The source for these data is Datastream Database.

For the definition of the buy and hold (BHR) cumulative return formula we have to mention that is this as indicated below:

$$BHR_{im} = \prod_{i=1}^m (1 + R_{im})$$

Equation (3.1.)

Where Π means multiplier and R the return for stock or index i over the month m .

For the calculation of the above variables we have to mention that we used some initial variables as indicated below:

✚ **Deal value:** Value of transaction is total value of consideration paid by the acquirer, excluding fees and expense. The Euro Value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt, options, assets, warrants and stake purchases made within six months of the announcement date of the transaction. Liabilities assumed are included in the value if they are publicly disclosed. The source for this variable is Thomson Reuters Eikon Database.

- ✚ **Net income after preferred dividends:** Net income after preferred dividends represents the net income after preferred dividends that the company uses to calculate the basic earnings per share. The source for these data is Worldscope Database and its code is WC01706.

- ✚ **Total Assets:** Total Assets represent the sum of total current assets, long term receivable, investments in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets. The source for these data is Worldscope Database and its code is WC02999.

- ✚ **Property plant and equipment:** Property plant and equipment represents the gross property plant and equipment less accumulated reserves for depreciation, depletion and amortization. The source for these data is Worldscope Database and its code is WC02501.

- ✚ **Market capitalization:** Market capitalization represents the total market value of the company based on year and price and number of shares outstanding. If common shares outstanding are not available for the current year or prior year, then common shares outstanding-current is used. For companies with more than one type of common share, Market capitalization represents the total market value of the company. The source for these data is Worldscope Database and its code is WC08001.

- ✚ **Total Debt:** Total Debt represents all interest bearing and capitalized lease obligations. It is the sum of long and short term debt. The source for these data is Worldscope Database and its code is WC03255.

- ✚ **Common dividends:** Common dividends cash represent the total cash common dividends paid on the company's common stock during the fiscal year including extra and special dividends. The source for these data is Worldscope Database and its code is WC05376.

To the next table we present the descriptive statistics for the variables that we are going to use in order to examine our Assumption. The statistics that we are going to show is the mean, median and the standard for each variable.

	Mean	Median	Std. Dev.	Observations
STOCK RUN UP	1.054022	1.051624	0.170134	389
MARKET RUN UP	1.038690	1.053010	0.079469	389
COLLATERAL	0.197834	0.120234	0.198692	389
DEBT CAPACITY	6.625631	6.623652	0.930653	389
RELATIVE DEAL SIZE	0.000620	0.000102	0.005405	389
CASH AVAILABILITY	0.439112	0.000000	5.146904	389
FINANCIAL LEVERAGE	0.220269	0.197372	0.224095	389

Table 3.7. *Descriptive Statistics for the explanatory continuous variables*

	Mean	Median	Std. Dev.	Observations
MARKET CAPITALIZATION	25946742	4746538	53927389	381
NET INCOME BASIC	1275505	173175	2965196	374
COMMON DIVIDENDS	421091	0	1251677	386
TOTAL DEBT	3844978	708933	8665053	372
PLANT EQUIP PROPERTY	4054762	507167	13162097	375
TOTAL ASSET	18002487	3740761	38658619	375

Table 3.8. *Descriptive Statistics for the primary variables*

To the table above we present the basic economic ratios of that we used as primary variables for the calculation of our explanatory variables. Regarding the

observations that we used they vary because of the existence of the same economic values of the firms, such as market cap over the same economic year. Thus, we excluded the values of the bidders that repeated more than once over the year, because of the participation of one bidder in more than one Deal. The repetition of the same value for each one bidder over the same year could depict a wrong result regarding the Descriptive statistics.

3.3. Following Methodology

For the examination of the assumptions that we assume we are using a binary probit model. The reasons that we are using this model are that the dependent variable concerning our model is a qualitative variable which have two possible inputs. Our dependent variable consists on the payment method of the Deals which are through stock only and through cash only. Thus, method of payment is dummy variable, which taking 0 for stock method payment and 1 for cash payment. When we are saying that probit is binary model we mean that the dependent variable has two possible prices as we indicated above. The equation of the model is this:

$$y_i = \chi_i\beta + \varepsilon_i$$

Equation 3.2. Probit binary model

Y is the dependent dummy variable and takes its prices as indicated below, χ_i is the independent explanatory variables, β are the coefficients and ε is the residuals of the model, and we assume that $\varepsilon_i \sim N(0, \sigma^2)$, 0 is for the mean of ε_i and σ^2 its variance. Concerning the dependent dummy variable its prices are:

$$y_i = \begin{cases} 0 \\ 1 \end{cases}$$

Chapter 4

4. Empirical Results and Interpretations

4.1. Analysis of the Probit Regression Model

To this subchapter we are presenting the statistical significant signs and the exact interpretation of them. Thus, for the checking of the statistical significance of the variables we taking in mind the probability result for each explanatory independent variable of our sample. We are checking two potential hypotheses regarding the coefficients of our explanatory variables as indicated below:

$$H_0: \beta_i = 0$$

$$H_1: \beta_i \neq 0$$

Concerning this checking Hypothesis above we have three levels of confidence.

- ✓ At the confidence level of 10%, the variable is significant if the probability is less than 0.1 (prob. <0.1) and we have rejection the H_0 Hypothesis.
- ✓ At the confidence level of 5%, the variable is significant if the probability is less than 0.05 (prob. <0.05) and we have rejection the H_0 Hypothesis.
- ✓ At the confidence level of 1%, the variable is significant if the probability is less than 0.01 (prob. <0.01) and we have rejection the H_0 Hypothesis.

The coefficient measures the marginal contribution of the independent variable to the dependent variable, *ceteris paribus* for the rest variables. The sign of coefficient means the change in the probability of depending variable, particularly $\text{prob}(y=1)$ moves at the same direction of sign. If a variable is significant and has positive coefficient, it means that there is significant positive relationship between the independent variable and the probability of cash financing (dependent variable). And when a variable has significant and negative

coefficient means that there is significant negative relationship between the independent variable and the probability of cash financing.

4.2. Probit Regression Result

Explanatory Variables	Coefficient	Std. Error	z-Statistic	Prob.
CROSSCOUNTRY	0.395992	0.314546	1.258934	0.2081
TARGET PUBLIC STATUS	0.977896	0.244727	3.995861	0.0001
CROSSINDUSTRY	-0.114563	0.195584	-0.585747	0.5580
COLLATERAL	-2.332346	0.459399	-5.076952	0.0000
DEBT CAPACITY	0.794657	0.129642	6.129634	0.0000
FINANCIAL LEVERAGE	-0.411834	0.425111	-0.968768	0.3327
RELATIVE DEAL SIZE	15.06357	32.60255	0.462037	0.6441
CASH AVAILABILITY	-0.007586	0.027658	-0.274273	0.7839
MARKET RUN UP	3.275781	1.217758	2.690009	0.0071
STOCK RUN UP	0.398516	0.538324	0.740290	0.4591
<i>The bold sign explanatory variables resulting significance at the 1% level</i>				

Table 4.1. Regression of the payment method on our variables

In the table 4.1. above we observe four variables are statistically significant at level of 1%. These are: the dummy variable target public status, the collateral, the Debt Capacity and the Market Run Up. Hereby we will examine our assumptions that we had initially assumed.

- The explanatory dummy variable *crosscountry* is statistically **insignificant**. Thus, there is no significant relationship between the probability of cash financing method that we assumed and the country that the target firm is located. So, we **reject the assumption (a) “The crosscountry assumption”** as we mentioned in subchapter 2.2.1.

- The explanatory dummy variable *target public status* is statistically **significant** at level of 1%. Thus, there is significant positive relationship between the probability of cash financing method that we assumed and the possibility the target firm to be a firm with public or private status. So, we **accept the assumption (b) “The target public status assumption”** as we mentioned in subchapter 2.2.2.
- The explanatory dummy variable *crossindustry* is statistically **insignificant**. Thus, there is no significant relationship between the probability of stock financing method that we assumed and the industrial sector that the target firm belongs. So, we **reject the assumption (c) “The crosscountry assumption”** as we mentioned in subchapter 2.2.3.
- The explanatory variable *collateral* is statistically **significant** at level of 1%. Thus, there is significant negative relationship between the probability of cash financing method that we assumed and the bidder’s fraction of collateral assets the target firm to be a firm with public or private status. The variable shows statistical significance, but fails to bring the predicted sign. So, we **reject the assumption (d) “Collateral assumption”** as we mentioned in subchapter 2.2.4.
- The explanatory variable *Debt Capacity* is statistically **significant** at level of 1%. Thus, there is significant positive relationship between the probability of cash financing method that we assumed and the increasing level of debt capacity. So, we **accept the assumption (e) “Debt Capacity assumption”** as we mentioned in subchapter 2.2.5.
- The explanatory variable *financial leverage* is statistically **insignificant**. Thus, there is no significant relationship between the probability of stock financing method that we assumed and the bidder’s financial leverage. So, we **reject the assumption (f) “Financial Leverage assumption”** as we mentioned in subchapter 2.2.6.
- The explanatory variable *relative deal size* is statistically **insignificant**. Thus, there is no significant relationship between the probability of stock financing method that we assumed and the relative Deal size. So, we

reject the assumption (g) “Relative Deal Size assumption” as we mentioned in subchapter 2.2.7.

- The explanatory variable *cash availability* is statistically **insignificant**. Thus, there is no significant relationship between the probability of cash financing method that we assumed and the bidder’s free cash flow. So, we **reject the Assumption (h) “Cash availability assumption”** as we mentioned in subchapter 2.2.8.
- The explanatory variable *market run up* is statistically **significant** at level of 1%. Thus, there is significant relationship between the rising stock market performance and the method of payment. The variable shows statistical significance, but fails to bring the predicted sign. So, we **reject the assumption (i) “The Market Run Up Assumption”** as we mentioned in subchapter 2.2.9.
- The explanatory variable *stock run up* is statistically **insignificant**. Thus, there is no significant relationship between the probability of stock financing method that we assumed and the bidder’s stock market performance. So, we **reject the assumption (f) “Financial Leverage assumption”** as we mentioned in subchapter 2.2.10.

After the presenting of our Assumptions we will present in a table only the statistically significant explanatory variables. This method calling general to specific method.

Explanatory Variables	Coefficient	Std. Error	z-Statistic	Prob.
TARGET PUBLIC STATUS	0.964067	0.237037	4.067156	0.0000
COLLATERAL	-2.405683	0.426834	-5.636109	0.0000
DEBT CAPACITY	0.777008	0.123534	6.289818	0.0000
MARKET RUN UP	3.597165	1.066474	3.372950	0.0007

Table 4.2. *Regression of the payment method on our variables (General to Specific method)*

4.3. Liability and adjustment of our sample

4.3.1. Correlation matrix and Mc Fadden R-Squared measure

	CROSSCOUNTRY	TARGET_PUBLIC_STATUS	CROSSINDUSTRY	COLLATERAL	DEBT_CAPACITY	FINANCIAL_LEVERAGE	RELATIVE_DEAL_SIZE	CASH_AVAILABILITY	MARKET_RUN_UP	STOCK_RUN_UP
CROSSCOUNTRY	1	0.0889	0.026	-0.065	0.0109	-0.0733	-0.0305	-0.0259	0.0143	0.0197
TARGET_PUBLIC_STATUS	0.0889	1	0.145	-0.0638	-0.238	0.0238	0.0826	0.0663	0.0221	0.0144
CROSSINDUSTRY	0.026	0.145	1	-0.161	0.117	-0.0578	-0.0676	-0.0675	-0.105	-0.0506
COLLATERAL	-0.065	-0.0638	-0.161	1	0.00772	0.305	-0.02	-0.0105	0.095	0.114
DEBT_CAPACITY	0.0109	-0.238	0.117	0.00772	1	-0.124	-0.199	0.0344	-0.105	0.0499
FINANCIAL_LEVERAGE	-0.0733	0.0238	-0.0578	0.305	-0.124	1	0.114	0.0108	0.0606	0.101
RELATIVE_DEAL_SIZE	-0.0305	0.0826	-0.0676	-0.02	-0.199	0.114	1	-0.00864	-0.0286	-0.131
CASH_AVAILABILITY	-0.0259	0.0663	-0.0675	-0.0105	0.0344	0.0108	-0.00864	1	0.0366	0.0298
MARKET_RUN_UP	0.0143	0.0221	-0.105	0.095	-0.105	0.0606	-0.0286	0.0366	1	0.507
STOCK_RUN_UP	0.0197	0.0144	-0.0506	0.114	0.0499	0.101	-0.131	0.0298	0.507	1

Table 4.3. *Correlation matrix*

After the testing of our assumption, hereby we attach the correlation matrix of our explanatory variables. Through the correlation matrix we attempt to test the existence of linear correlation between our explanatory variables. The econometric theory indicates that the correlation coefficient (ρ) takes these prices:

$$-1 \leq \rho \leq 1$$

- If $-1 \leq \rho < 0$ we have negative correlation
- If $\rho=0$ we have no correlation
- If $0 < \rho \leq 1$ we have positive correlation

The econometric theory suggests that when existing two variables with value of correlation greater than 0.75, ($\rho > 0.75$) the variable should be erased and implement the regression by excluding this variable. Concerning our matrix we observe that there is no such correlation coefficient in our sample. So we don't have to exclude any of our explanatory variables.

At this point we have to mention the **Mc Fadden R-Squared** measure. The interpretation of Mc Fadden R-Squared measure indicates how the variance of dependent variables of our sample could be interpreted from the total of independent variables we have in our sample. Generally, this measure gets values between 0 and 1. Our sample has value **0.298021**, the higher is the value, and the better is the interpretation for our sample. Our value considers being almost high and this consider successful interpretation for our dependent variables.

4.3.2. Heteroskedasticity Test

At this point, we have to check our model for the existence of heteroskedasticity. The potential existence of Heteroskedasticity has influence on our sample. In order to apply the test of Heteroskedasticity we have to define the following hypotheses:

H_0 : *Homoskedasticity (no Heteroskedasticity)*

H_1 : *Heteroskedasticity*

We carried out the above test through the guidance of Eviews 9 Users Guide II, Chapter 28, page 315, estimating the auxiliary regression with OLS regression method:

$$\begin{aligned}
\widehat{Std Res}_i = & 3.9495 \times q_i + 0.3933 \times q_i \times Target Public Status_i + 1.0227 \times q_i \\
& \times Collateral_i - 0.2500 \times q_i \times Debt Capacity_i - 2.9526 \times q_i \\
& \times Market Run up_i - 0.7437 \times q_i \\
& \times \widehat{Z}_i \times Target Public Status_i + 0.0934 \times q_i \times \widehat{Z}_i \\
& \times Collateral_i - 0.1391 \times q_i \times \widehat{Z}_i \times Debt Capacity_i + 1.4529 \\
& \times q_i \times \widehat{Z}_i \times Market Run Up_i
\end{aligned}$$

Where $\widehat{Std Res}_i$ is the standardized Residuals from the Probit Model

$$q_i = \frac{\varphi(-\widehat{Z}_i)}{\sqrt{\widehat{p}_i(1 - \widehat{p}_i)}}$$

Where \widehat{p}_i are the fitted values (probabilities) of the probit model.

From the above auxiliary regression calculate the explained Sum of Squares Regression (SSR), where **SSR=6.2994**.

According to the Lagrange Multiplier (LM) test $LM = SSR \sim X_4^2$

So that corresponding p-value is $pv= 0.1779$.

Since $pv= 0.1779 > 0.10$ we cannot reject H_0 Assumption as we indicated above, so our Probit Model presents Homoskedastisity.

4.4. Average Marginal effects of the sample

The studies that we mentioned previously presented in which way the explanatory variables have influence on the dependent variables of payment method. More specific they mention the probability to take place through cash or stock either. In this subchapter we attend to calculate this probability in order to have more complete results regarding the determinants of payment method.

The slope parameter of the linear regression model measures directly the marginal effect of the explanatory variables on the dependent variable.

In our case of the Probit regression, the marginal effect (ME) of an explanatory variable is the effect of a unit change of this variable on the probability $P(Y=I | X=x)$, given that ceteris paribus the rest explanatory variables.

The marginal effect depends on the value of the explanatory variable (j). Therefore, there exists an individual marginal effect for each observation (i) of the sample. So, we have:

$$ME_{j,i} = \hat{\beta}_j \times \varphi(\hat{Z}_i), \quad \text{where } j=1,2,3,4 \text{ and } i=1,2,3,\dots,389$$

Where $\hat{\beta}_j$ the parameters estimate, the $\varphi(\cdot)$ the standard Normal density function, and

$$\begin{aligned} \hat{Z}_i = & -7.3405 + 0.9641 \times \text{Target public Status}_i - 2.4057 \times \text{Collateral}_i \\ & + 0.7770 \times \text{Debt Capacity}_i + 3.5972 \times \text{Market Run Up}_i \end{aligned}$$

4.4.1. Average of individual marginal Effects

Calculation of Average Marginal Effects (AME) depends on type of explanatory:

For continuous variables like Collateral, Debt Capacity and Market Run Up the Average Marginal Effect (AME) are given from:

$$AME_i = \frac{1}{N} \hat{\beta}_j \times \sum_{i=1}^N \varphi(\hat{Z}_i), \quad \text{where } j=2,3,4$$

For dummy variable like Target Public Status (x_1) the Average Marginal Effect (AME) is given from:

$$AME = \frac{1}{N} \sum_{i=1}^N [\Phi(\hat{Z}_i | x_1 = 1) - \Phi(\hat{Z}_i | x_1 = 0)]$$

The interpretation of average marginal effects (AME) is the following:

- **Continuous variables:** An infinitesimal change of the explanatory variable changes the probability that the dependent variable takes the value 1, by AME percentage points.

- **Dummy variables:** A change of the explanatory dummy variable from zero to one changes the probability that the depended variable takes the value one, by AME percentage points.

In our model we have the following results about the Average Marginal Effects (AME):

Variable	Estimated Average Marginal Effect	Interpretation
Target Public Status	0,0508	If the dummy variable Target Public Status changes from zero to one, the probability for the variable Method of Payment taking the value one (cash) risers by 5,08%
Collateral	-0,4011	If the average Collateral goes up by an infinitesimal amount, the probability for the variable Method of Payment taking the value one (cash) decreases by 40,11%
Debt Capacity	0,1296	If the average Debt Capacity goes up by an infinitesimal amount, the probability for the variable Method of Payment taking the value one (cash) increases by 12,96%

Market Run Up	0,5998	If the average Market Run Up goes up by an infinitesimal amount, the probability for the variable Method of Payment taking the value one (cash) increases by 59,98%
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Table 4.4. *Interpretation of Average Marginal Effects*

Chapter 5

5. Conclusions and results

There are studies that analyzed determinants of payment method in M&A Deals. In our study we attend to analyze few of them. Our study intends to examine the influence that the explanatory variables have, which is the determinant, on the selection of method of payment, which is stock or cash either. Furthermore, we proceeded in the exact calculation of this influence through the **Average Marginal Effects (AME)** method.

More specific our final sample consists of **389** Deals announced during an eight year period between 01/01/2007 and 31/12/2014. Our sample include only completed Deals, with public Status bidder from United States of America. Our sample has no restrictions regarding the nation, the status and the industrial sector of the target firm. Thus, we have a sample of **389** Deals which includes **331** cash deals which are **85, 09%** of the sample and **58** stock Deals which are **14, and 91%** of the sample.

The method that we used in order to examine the determinants which affect the payment method was the binary probit model. Our results indicate that the determinants having significance influence on the payment of method are Target Public Status, Collateral, Debt Capacity and Market Run Up. More specific, if the target firm has private status it is more likely that the Deal will take place through cash financing. This probability rises by 5, 08% as we calculated through the Average Marginal Effect (AME) Method. This finding agrees with M. Faccio and R.W. Masulis (2005). Another variable that appears statistical significance is collateral but fails to bring the predicted sign. So, if the average **Collateral** goes up by an infinitesimal amount, the probability for the variable Method of Payment taking the value one (cash) **decreases** by **40,11%**. This finding is contradicted with M. Faccio and R.W. Masulis (2005). The Debt Capacity variable appears statistical significance and more specific it is more likely that the Deal will take place through cash financing. Furthermore, we have to mention that if the average **Debt Capacity** goes up by an infinitesimal amount, the probability for the

variable Method of Payment taking the value one (cash) **increases** by **12,96%**. This finding agrees with M. Faccio and R.W. Masulis (2005) study. And the fourth variable that found to be statistically significant is Market Run Up, but fails to bring the predicted sign. So, if the average **Market Run Up** goes up by an infinitesimal amount, the probability for the variable **Method of Payment** taking the value one (cash) **increases** by **59,98%**. This finding is contradicting with M. Faccio and R.W. Masulis (2005) study.

Annex

Dependent Variable: METHOD_OF_PAYMENT
 Method: ML - Binary Probit (Quadratic hill climbing / EViews legacy)
 Date: 07/30/16 Time: 17:39
 Sample: 1 389
 Included observations: 389
 Convergence achieved after 5 iterations
 Coefficient covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-7.453887	1.537989	-4.846514	0.0000
CROSSCOUNTRY	0.395992	0.314546	1.258934	0.2081
TARGET_PUBLIC_STATUS	0.977896	0.244727	3.995861	0.0001
CROSSINDUSTRY	-0.114563	0.195584	-0.585747	0.5580
COLLATERAL	-2.332346	0.459399	-5.076952	0.0000
DEBT_CAPACITY	0.794657	0.129642	6.129634	0.0000
FINANCIAL_LEVERADGE	-0.411834	0.425111	-0.968768	0.3327
RELATIVE_DEAL_SIZE	15.06357	32.60255	0.462037	0.6441
CASH_AVAILABILITY	-0.007586	0.027658	-0.274273	0.7839
MARKET_RUN_UP	3.275781	1.217758	2.690009	0.0071
STOCK_RUN_UP	0.398516	0.538324	0.740290	0.4591
McFadden R-squared	0.298021	Mean dependent var		0.850900
S.D. dependent var	0.356646	S.E. of regression		0.301624
Akaike info criterion	0.647825	Sum squared resid		34.38942
Schwarz criterion	0.759906	Log likelihood		-115.0020
Hannan-Quinn criter.	0.692259	Deviance		230.0040
Restr. deviance	327.6510	Restr. log likelihood		-163.8255
LR statistic	97.64697	Avg. log likelihood		-0.295635
Prob(LR statistic)	0.000000			
Obs with Dep=0	58	Total obs		389
Obs with Dep=1	331			

Table 5.1. *Probit Regression*

Dependent Variable: METHOD_OF_PAYMENT
 Method: ML - Binary Probit (Quadratic hill climbing / EViews legacy)
 Date: 07/30/16 Time: 18:23
 Sample: 1 389
 Included observations: 389
 Convergence achieved after 5 iterations
 Coefficient covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-7.340505	1.492130	-4.919480	0.0000
TARGET_PUBLIC_STATUS	0.964067	0.237037	4.067156	0.0000
COLLATERAL	-2.405683	0.426834	-5.636109	0.0000
DEBT_CAPACITY	0.777008	0.123534	6.289818	0.0000
MARKET_RUN_UP	3.597165	1.066474	3.372950	0.0007
McFadden R-squared	0.286192	Mean dependent var		0.850900
S.D. dependent var	0.356646	S.E. of regression		0.302016
Akaike info criterion	0.626941	Sum squared resid		35.02616
Schwarz criterion	0.677886	Log likelihood		-116.9399
Hannan-Quinn criter.	0.647138	Deviance		233.8799
Restr. deviance	327.6510	Restr. log likelihood		-163.8255
LR statistic	93.77109	Avg. log likelihood		-0.300617
Prob(LR statistic)	0.000000			
Obs with Dep=0	58	Total obs		389
Obs with Dep=1	331			

Table 5.2. *Probit Regression (From General to Specific)*

```

**** Individual Marginal Effects for Probit Model
"
' Forecast Index (x'b)
eq_probit_02.forecast(i) eq_probit_02_i
"
' Individual Marginal Effects for continuous variables
series me0_P_Const      = eq_probit_02.@coefs(1)*@dnorm(-eq_probit_02_i)
series me2_P_Collateral = eq_probit_02.@coefs(3)*@dnorm(-eq_probit_02_i)
series me3_P_Debt_Capacity = eq_probit_02.@coefs(4)*@dnorm(-eq_probit_02_i)
series me4_P_Market_Run_Up = eq_probit_02.@coefs(5)*@dnorm(-eq_probit_02_i)
"
' Individual Marginal Effects for Dummy variables
series z1 = eq_probit_02.@coefs(1) + Target_Public_Status + eq_probit_02.@coefs(3)*Collateral +
eq_probit_02.@coefs(4)*Debt_Capacity + eq_probit_02.@coefs(5)*Market_Run_Up
series z0 = eq_probit_02.@coefs(1) + eq_probit_02.@coefs(3)*Collateral +
eq_probit_02.@coefs(4)*Debt_Capacity + eq_probit_02.@coefs(5)*Market_Run_Up
'
series me1_P_Target_Pub_St = @cnorm(z1) - @cnorm(z0)
'
delete z0 z1
"

```

Table 5.3. *Individual Marginal Effects for Probit Model (E-views supplementary program).*

```

' **** Testing for Heteroskedasticity in Probit Models
' H0: Homoskedasticity
' H1: No Homoskedasticity (Heteroskedasticity)
"
' Standardized Residuals Calculation
eq_probit_02.makesresid res_Probit_02
eq_probit_02.makesresid(s) res_Probit_02_sd
'series res_Probit_02_sd = (res_Probit_02-@mean(res_Probit_02))/@stdev(res_Probit_02)
' Forecast Index Calculation
eq_probit_02.forecast(i) eq_probit_02_i
' Forecast Probability Calculation
eq_probit_02.forecast(p) eq_probit_02_p
"
' Υπολογισμός της στάθμησης Qi
series q=@dnorm(-eq_probit_02_i)/@sqrt(eq_probit_02_p*(1-eq_probit_02_p))
"
' Auxiliary Regression Estimation
equation eq_probit_02_auxreg.ls res_Probit_02_sd q q*Target_Public_Status q*Collateral
q*Debt_Capacity q*Market_Run_Up q*(eq_probit_02_i)*Target_Public_Status
q*(eq_probit_02_i)*Collateral q*(eq_probit_02_i)*Debt_Capacity
q*(eq_probit_02_i)*Market_Run_Up
"
' Auxiliary Regression Fitted Values Calculation
eq_probit_02_auxreg.forecast aux_Probit_02_f
"
' LM test calculation
scalar lm_test_Probit_02_Het = @sumsq(aux_Probit_02_f)
' LM test p-value
scalar lm_test_Probit_02_Het_pv = 1-@cchisq(lm_test_Probit_02_Het,4)
'or
scalar lm_test_Probit_02_Het_pv = @chisq(lm_test_Probit_02_Het,4)

```

Table. 5.4. Testing for Heteroskedasticity in Probit Models (E-views supplementary program).

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