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"The determinants of the method of payment in corporate takeovers"

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Abstract

This study examines the determinants which significantly affect the choice of payment method in Greek mergers and acquisitions. Using a sample of 321 deals, separated into stock and cash financed deals, and including a binary Probit model we reached the following results. When bidder and target are not in the same country, the probability of cash financing increases. Also the probability increases when the target is a subsidiary firm. Finally looking at the bidder firm we find that debt capacity, financial leverage and cash availability could significantly affect the method of payment. An increase in debt capacity of the bidder firm or an increase in financial leverage causes a decrease in the probability of cash financing and subsequently increases the probability of stock financing. While an increase in cash availability of the bidder firm increases the probability of cash financing.

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1.1 Corporate control

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 the compensation of top-level managers. When 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. So from another perspective, takeovers serve as an external control mechanism that limits major managerial departures from maximization of stockholder wealth. It is unlikely, however, that the threat of takeover ensures complete coherence of managerial actions and maximization of stockholder wealth. Because of the existence of other control mechanisms, the inability of the takeover market to eliminate all departures from maximization of stockholder wealth does not imply that these departures are prevalent in modern corporations. Some evidence on the costs of managerial departures from maximization of stockholder wealth can be obtained by focusing on changes in the rules that govern manager-stockholder interactions. Indicating that shareholders in successful takeover targets realize substantial wealth increases. Managers of potential targets, however, can suffer welfare losses in takeovers – for example, through their displacement as managers and the resulting loss of organization-specific human capital. In such situations, managers have incentives to take actions that reduce the probability of an outside takeover and thereby benefit themselves at the expense of shareholders.

1.2 Takeover motives

Various sources of gains to takeovers have been advanced. Potential reductions in production or distribution costs, often called synergies, could occur through realization of economies of scale, vertical integration, adoption of more efficient production or organizational technology, increased utilization of the bidder's management team, and reduction of agency costs by bringing organization-specific assets under common ownership. Financial motivations for acquisitions include the use of underutilized tax shields, avoidance of bankruptcy costs, increased leverage, and other types of tax advantages. Takeovers could increase market power in product markets. Finally, takeovers could eliminate inefficient target management. The benefits of mergers and tender offers are realized only when control of the target firm's assets is transferred to a bidding firm. This suggests that stockholders of potential target firms are harmed when target managers oppose takeover bids or take other actions that reduce the probability of a successful acquisition. Moreover, since target managers are replaced after takeovers lose power, prestige and the value of organization specific human capital, they have incentives to oppose a takeover bid even though shareholders might benefit substantially from acquisition. However, management opposition to a takeover bid will benefit stockholders if it leads to a higher takeover price or otherwise increased stock prices. Thus, the effect of management opposition on shareholder wealth is an empirical matter.

1.3 Brief summary of the evidence on Merger and Acquisition gains

Takeovers can occur through merger, tender offer, or proxy contest, and sometimes elements of all three are involved. In mergers or tender offers the bidding firm offers to buy the common stock of the target at a price in excess of the target's previous market value. Mergers are negotiated directly with target managers and approved by the target's board of directors before going to a vote of target shareholders for approval. Tender offers are offers to buy shares made directly to target shareholders who decide individually whether to tender their shares for sale to the bidding firm. Proxy contests occur when an insurgent group, often led by a dissatisfied former manager or large stockholder, attempts to gain controlling seats on the board of directors. The evidence indicates that corporate takeovers generate positive gains, that target firm shareholders benefit, and that bidding firm

shareholders do not lose. The gains created by corporate takeovers do not appear to come from the creation of market power. With the exception of actions that exclude potential bidders, it is difficult to find managerial actions related to corporate control that harms shareholders. Jensen argues the market for corporate control is best viewed as an arena in which managerial teams compete for the rights to manage corporate resources. But apart from managers, financiers and activist stockholders also compete, who alone or in coalition with others, buy control of a company and hire and fire management to achieve better resource utilization.

The evidence also indicates that targets of successful tender offers and mergers earn significantly positive abnormal returns on announcement of the offers and through completion of the offers. Targets of unsuccessful tender offers earn significantly positive abnormal returns on the offer announcement and through the realization of failure. However, those targets of unsuccessful tender offers that do not receive additional offers in the next two years lose all previous announcement gains, and those targets that do receive new offers earn even higher returns. Finally, targets of unsuccessful mergers appear to lose all positive returns earned in the offer announcement period by the time failure of the offer becomes known.

While the positive returns to successful bidders in tender offers and the generally negative returns to unsuccessful bidders in both mergers and tender offers are consistent with the hypothesis that mergers are positive net present value projects. The measurement of returns to bidders in mergers is difficult, and perhaps because of this the results are mixed.

1.4 History of takeover waves

We find that the patterns of takeover activity and their profitability vary significantly across takeover waves. Despite such diversity, all waves still have some common factors: they are preceded by technological or industrial shocks, and occur in a positive economic and political environment, amidst rapid credit expansion and stock market booms.

It is a well-known fact that mergers and acquisitions come in waves. Merger and acquisition is a general term used to refer to the consolidation of companies. A merger is a combination of two companies to form a new company, while an acquisition is the purchase of one company by another in which no new company is

formed. Thus until now we have faced five completed waves, those of the early 1900s, the 1920s, the 1960s, the 1980s, and the 1990s. Since mid-2003, merger and acquisition activity has been on the rise again since its abrupt decline in 2001, which could well indicate that a new takeover wave is in the making. According to the facts, takeover activity is usually disrupted by a steep decline in stock markets and a subsequent economic recession. It coincides, with rapid credit expansion, which in turn results from burgeoning external capital markets accompanied by stock market booms, with regulatory changes, with anti-trust legislation or deregulation of markets. Takeover waves are influenced not only by industrial and technological shocks, but also by managers' personal objectives.

Before we start our presentation about waves we remind the definition of the term takeover waves as the reflection of the wave pattern of the number and the total value of takeover deals over time. As we mentioned before the beginning of each takeover wave typically coincides with a number of economic, political, and regulatory changes. The first wave started in the late 1890s and finished around 1903–1905, due to the economic stagnation, beginning of First World War and the crash of stock market. During this period radical changes in technology, economic expansion and innovation in industrial processes, the introduction of new state legislation on incorporations, and the development of trading in industrial stocks on the NYSE had occurred. The wave called "Great Merger Wave", is characterized by horizontal consolidation of industrial production and it led to the creation of the principal steel, telephone, oil, mining, railroad and other giants of the basic manufacturing and transportation industries which grabbed the bulk of market power.

The second takeover wave emerged in the late 1910s and continued until the 1929 when the stock marked crashed and the Great economic depression began. This wave is characterized as a move towards oligopolies. This happened because by the end of the wave, industries were no longer dominated by one giant firm but by two or more corporations. Most of the mergers were between small companies left outside the monopolies created during the previous wave. This procedure intended to achieve economies of scale and build strength to compete with the dominant firm in their industries.

The third wave took off only in the 1950s, with the tightening of the antitrust regime, and lasted for nearly two decades. It peaked in 1968 and collapsed in 1973, when the oil crisis pushed the world economy into a recession. The main feature of

this wave was a very high number of diversifying takeovers that led to the development of large conglomerates. By building conglomerates, companies intended to benefit from growth opportunities in new product markets unrelated to their primary business. This allowed them to enhance value, reduce their earnings volatility, and to overcome imperfections in external capital markets.

The fourth takeover wave started in 1981, when the stock market had recovered from the preceding economic recession, and ended up 8 years later in 1989. The motive for this wave was that the conglomerate structures created during the 1960s had become inefficient by the 1980s such that companies were forced to reorganize their businesses. Before 1980, corporate governance meaning the mechanisms by which corporations and their managers are governed was relatively inactive. Then, the 1980s ushered in a large wave of merger, takeover and restructuring activity. This activity was distinguished by its use of leverage and hostility. In the 1990s, the pattern of corporate governance activity changed again. After a steep but brief drop in merger activity around 1990, takeovers rebounded to the levels of the 1980s. Leverage and hostility, however, declined substantially. At the same time, other corporate governance mechanisms began to play a larger role, particularly executive stock options and the greater involvement of boards of directors and shareholders.

Takeover activity began to accelerate in the early 1980s and boomed throughout much of the decade. By those measures, takeover activity in the 1980s is historically high and the activity in the late 1990s is extraordinary. Takeovers in the 1980s were characterized by heavy use of leverage as we mentioned before. Firms purchased other firms in leveraged takeovers by borrowing rather than by issuing new stock or using solely cash on hand. Other firms restructured themselves, borrowing to repurchase their own shares. Finally, some firms were taken private in leveraged buyouts. In leveraged buyouts, an investor group, often allied with incumbent management, borrows money to repurchase all of a company's publicly owned shares and takes the company private.

In the mid to late 1980s, more than 50 percent of the issues were related to takeovers or mergers. Almost half of all major U.S. companies received "hostile" takeover bids in the 1980s (note that hostility is defined as bids pursued without the acquiescence of target management). Jensen (1993) takes the view that the 1980s takeovers were ultimately caused by a failure in the internal governance mechanisms

of U.S. corporations. One of the big drawbacks of the corporation, according to Jensen, was that it could and did subsidize poorly performing divisions using the cash generated from successful ones, instead of returning the "free cash flow" to the investors. Leveraged acquisitions, leveraged buyouts, hostile takeovers, and stock buybacks were successful in eliminating free cash flow, because the debt service requirements that usually accompanied them prodded managers to find ways to generate cash to make interest payments. There is little doubt that the elimination of excess capacity played an important role in the takeovers of the 1980s, particularly in industries like oil. It is less clear, however, that excess capacity was the primary driver of the takeover wave. A second explanation of why takeovers appeared in the 1980s, offered by Shleifer and Vishny (1990), is that "the takeover wave of the 1980s was to a large extent a response to the disappointment with conglomerates" that had been assembled in the previous merger and acquisition wave in the 1960s. Finally, Mitchell and Mulherin (1996) find that takeover activity in the 1980s clustered in particular industries at particular points in time. In contrast, takeover activity in the 1960s and 1970s exhibited no such clustering. To them, the 1980s seem less about breaking up conglomerates than about restructuring certain industries. Overall, these results suggest that deconglomeration played a role in the 1980s takeovers, but was probably not the primary driver. During the 1980s the balance of power shifted from corporate stakeholders to shareholders, because of a rise in the number of institutional shareholders.

The fifth takeover wave started in 1993. It surged along with the increasing economic globalization, technological innovation, deregulation, privatization, and the economic and financial markets boom. As every wave up to now has some specific characteristics, its features are: first, its international nature, specifically the European takeover market was about as large as its United States counterpart. Second, a substantial proportion of takeovers was cross-border transactions. Previously domestically-oriented companies resorted to takeovers abroad as a means to survive the tough international competition created by global markets. The dominance of industry-related takeovers and the steady decline in the relative number of divestitures during the fifth wave, suggests that the main takeover motive was growth to participate in globalized markets. Compared to the takeover wave of the 1980s, the 1990s wave counted fewer hostile bids in the United Kingdom and United States. However, an unprecedented number of hostile takeovers were launched in Continental

Europe. The fifth wave halted as a consequence of the stock market collapse in 2000. Notice that nine out of the ten largest deals in history all took place in the three-year period 1998-2000, with the tenth in 2006. Most of the 1990s deals were strategic negotiated deals and a major part were stock deals.

Economists suggest that until today we probably had ridden a new takeover wave, the sixth wave. Since mid-2003, takeover activity which includes a large number of cross-border deals has again picked up in the United States, Europe, and Asia, continuing the international industry consolidation of the 1990s. The takeover boom also coincides with the gradual recovery of economic and financial markets after the downturn that began in 2000. Recent acquirers seem to prefer friendly negotiations to the aggressive bidding, as the number of hostile bids is at a modest level. Following we represent two diagrams of which the first one shows the worldwide total deals as the Thomson Financial Securities Data announced.

Figure 1 Worldwide merger waves

Worldwide merger waves since 1985 (total number of deals). Source: Thomson Financial Securities Data.
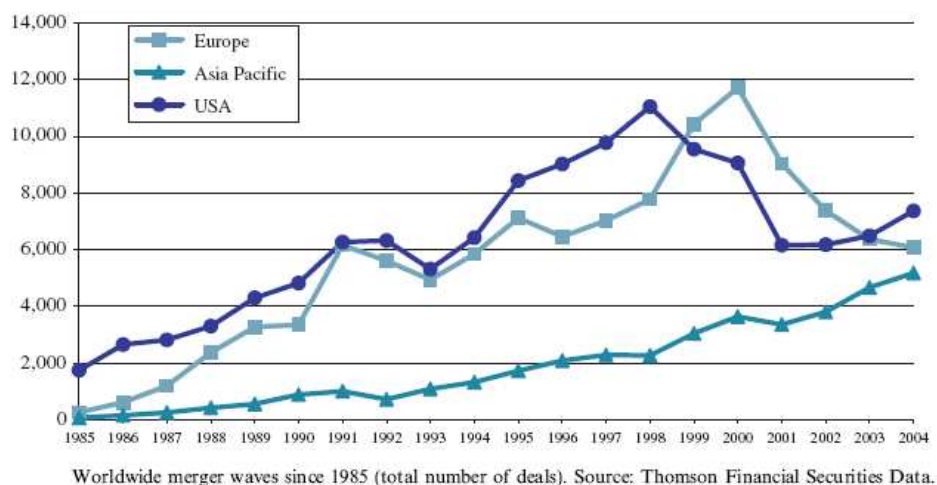
And the second one represents the number of deals which took place in the United States in each takeover wave from 1897 to 2002.

Figure 2   United States merger waves

US 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*.
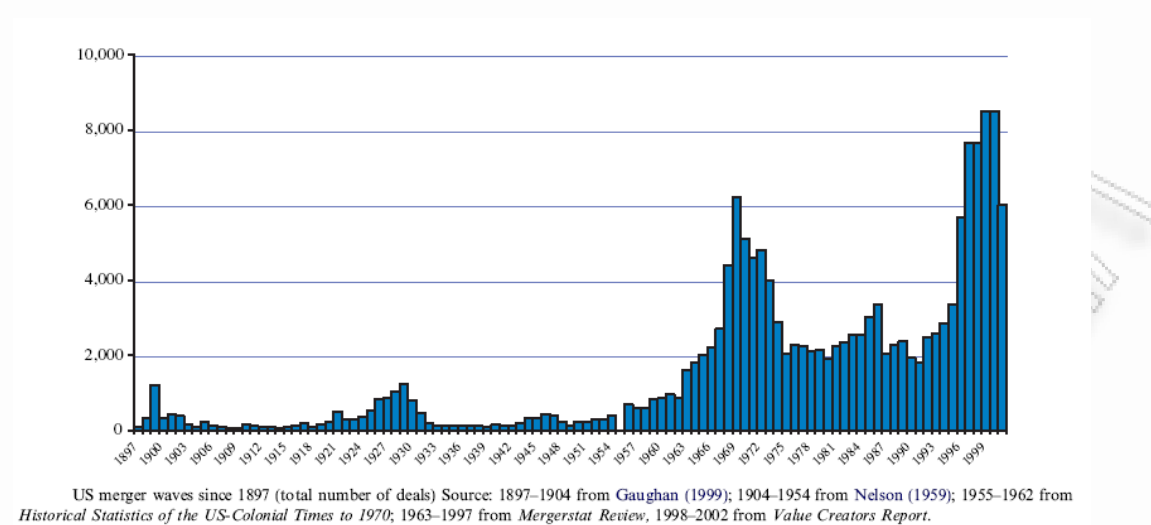
Summarizing we realize that each wave is quite different from its predecessors. All waves exhibit unique patterns and underlying motives but a number of common characteristics can nonetheless be found. To begin with all waves occur in periods of economic recovery (following a market crash and economic depression caused by war or an energy crisis). Moreover the waves coincide with periods of rapid credit expansion and booming stock markets. It is notable that all five waves ended with the collapse of stock markets. Hence, it seems that a burgeoning external capital market is an indispensable condition for a takeover wave to emerge. Takeover waves are preceded by industrial and technological shocks often in form of technological and financial innovations, supply shocks such as oil price shocks, deregulation, and increased foreign completion. And finally takeovers often occur in periods when regulatory changes take place.

The evidence that waves occur is clear. There are a number of reasons why a wave of mergers could occur but there are some specific features that characterize the waves, which derived from market misvaluation. To begin with, evidence suggests that, Market-wide misvaluation does not affect the equilibrium fraction that any firm is willing to offer, and therefore does not alter which firm offers the highest bid nor the amount they pay. Stock mergers are more likely to occur in overvalued markets than in undervalued markets. On average, overvalued firms or firms with large synergies win takeover battles and undervalued targets are purchased. Within-sector stock mergers are more likely to occur in overvalued sectors than in undervalued sectors. Furthermore, on average, overvalued sectors will purchase firms in relatively

undervalued sectors. If bidders are in an overvalued sector and targets are in an undervalued sector then targets will confuse high synergies with high sector valuation of bidders and accept mergers. If the synergies have a common component, then the bids of the losing firms are less informative about the synergies. The higher the expectation of the common synergy component, the less the market learns about market-wide misvaluation from a merger. The potential of a common synergy component extends the life of a merger wave that is caused by misvaluation.

Particular interest represents the research of Ming Dong, David Hirshleifer, Scott Richardson and Siew Hong Teoh (2003), about investor misvaluation, and how it drives the takeover market. They used the ratios of price to book value and price to residual income as Ohlson (1995) introduced in order to measure the misvaluation. Their findings are different among bidders and targets but still there are some independent results like bidder valuation ratios which are higher on average than those of their targets. The bidder-target difference in valuations is on average greater among equity than among cash offers, and among merger bids than among tender offers, moreover equity offers are associated with higher bidder and target valuations than cash offers. Then if we separate their findings between them as, the effects of target valuation and as the effects of bidder valuations, from the first one we get that: higher target valuation is associated with greater use of equity as a means of payment and consequently less use of cash. Higher target valuation is associated with a less combative offer, which means a lower probability of hostility, a lower probability of tender offer rather than merger, and a higher probability of offer success. Also higher target price to book ratio is associated with a lower bid premium, and a lower target announcement-period return. And finally higher target valuation is associated with a lower bidder announcement-period return. While from the second one we get that: higher bidder valuation is associated with greater use of equity, and less use of cash as a means of payment. Moreover higher bidder valuation increases the likelihood of a merger bid rather than a tender offer. High valuation acquirers pay higher bid premia, especially when the form of consideration is stock. Also they found out that that offers by high valuation bidders are associated with higher target announcement-period returns. And finally higher bidder valuation is associated with lower bidder announcement-period returns.

So under the misvaluation hypothesis, price to book and price to residual income ratios measure equity misvaluation. Misvaluation affects the ability of a

bidder to finance a bid at a favorable price. Furthermore, bidder and target misvaluation create different strategic incentives that affect not only the means of payment (as described above), but also the combativeness of the transaction, the premium paid, and the likelihood of offer success. Cash takeovers result from the efforts of bidders to acquire undervalued targets at prices below fundamental value. Stock takeovers result from the efforts of highly overvalued bidders to trade their assets for less overvalued target assets, thereby achieving a favorable real exchange ratio.

1.5 Mergers and acquisitions in Greece

The strategic dynamism and economic results achieved by businesses through mergers and acquisitions could not leave Greek businessmen untouched. By looking at the convergence and the development of large business regimens not only in Europe but also at their international competitors, Greek businessmen activate mechanisms to reform the corporate culture and accelerate functional integrations. So the first wave of takeover took place during the period of 1988-1999 and is characterized as the tangible efforts of domestic enterprises to respond and adapt to globalization of money markets, capital, goods and services. These takeovers were primarily intended to strengthen both the company sizes, and improve business productivity, making use of the best possible capital inflows of economic circuit. The problems for the smooth completion of the acquisitions are not only institutional, financial or operational. The human factor, the management teams of targets, the degree of relationship in philosophies between two or more enterprises, the conditions prevailing in the international economic environment, and finally the internal weaknesses that exist in the microeconomic environment of each company are aspects of crucial importance for the outcome of acquisitions. One characteristic of Greek firms is that they have high ownership concentration and they are mainly family firms or controlled by a group of stockholders. Usually, takeovers are completed through private negotiations and secondly, through public tender offer. The members of the controlling group are actively involved in management and normally, there is no distinction between management and ownership. So even Managers that are not members of the controlling group are closely connected to these groups and their decisions are subject to their control and monitoring. Concentrated ownership

mitigates the conflicts between managers and shareholders. Surprisingly investors have not actively been involved in management or in controlling and monitoring the decisions and actions of the controlling group. As a result when the cost of involvement with management and control was greater than the cost of exit, investors might easily choose to sell their stock. The Greek business model does not favor takeovers. Dominant shareholders are not willing to lose power and control over the firm by issuing new stock. This attribute is common in many European countries. Controlling the firm has been made a priority goal for the governing group. As long as ownership concentration remains high, there is no motive for any acquisition to take place.

There are several factors that may be cited as causes to merger activity in Greece. To begin with the structure of production and the quest for efficiency have induced entrepreneurs to merge. Moreover, declining demand seems to have forced companies with matching economies to combine their most productive assets in an effort to sustain or even raise their current capacity level, a situation which closely resembles the one reported by Dutz (1989). The buyer, on the one hand, is motivated chiefly by strategies aiming to strengthen market position through the upgrading of underdeveloped markets and the utilization of existing marketing networks. Business expansion strategies are not so much the cause for acquisitions of Greek firms. Basically, foreign firms aim to make a good investment either in terms of profitable firms with good managers or in firms with low priced stock and good prospects. On the other hand, the seller anticipates access to foreign markets and ability to deal with wrong firm structure and management succession in one-man rule companies. Looking at external factors favoring acquisitions, the White Paper issued in 1985 was a necessary but not sufficient condition to lure foreign investors to buy Greek firms, since only in 1987 did the Greek legislature pass a law which permits the acquirer to export profits and capital. Therefore enacted regulations were a strong factor in explaining acquisitions.

Summing up, we note that the trend of the takeover wave 1998-2004 which took place due to the growth of the capital market and the accumulation of capital, diminished significantly in the following years. Some of the main reasons are the lack of motives, significant legal obstacles, concentration of ownership and the policies to strengthen the small-medium size firms. M&As in Greece are usually completed through private negotiations and tender offers (public offers). From the point of

strategy selection, it seems that in Greece, firms that choose to be involved in takeovers are trying to maximize their influence, their position in the market or minimize the risk of competition. In other words, if they cannot fully control a firm, they are formulating alliances through the exchange of equity in order to exert more effective control over the market.

Now that we have shown some general features about mergers and acquisitions, takeover definitions, waves that occur in different time periods, causes and characteristics of these waves, characteristics of corporate control and misvaluation of hypothesis we will represent the next chapters of the study. In chapter 2 we represent some literature review on the determinants which affect the method of payment and we set the hypotheses that we will test in empirical section. In chapter 3 we analyze the data and the methodology that we use in our sample. And finally in chapter 4 we present and analyze the results of our research. We end the study with summary and conclusions and the references as well. Note that there are two appendix (A&B) in which someone can find more details.

Chapter 2   Literature from prior research

2.1 Determinants identified in prior research

In this chapter we will try to comprehend and analyze some of the main determinants which affect the method of payment in mergers and acquisitions. There are several factors that could doubtless influence the choice of payment but we will focus not only on the most important but also on these factors that some prior research has been done.

To begin with, we represent these determinants very briefly and later we will analyze them and explain how they can work in the choice of payment. Corporate control, dept capacity, collateral, financial leverage, cash availability, relative deal size, investment or growth opportunities, intra-industry deal, cross border deal, asymmetric information and taxation implication are some of these determinants. Moreover we must take into account the business cycle, stock performance and finally unlisted, subsidiary and public status firms.

2.1.1 Investment or growth opportunities

Firms with high investment opportunities should be more willing to use stock financing as a means of payment. This phenomenon has been explained by some possible reasons. Bidders with high growth are more reluctant to borrow (in order to use cash for payment) because an additional borrowing would increase monitoring by debtholders. In this case a conflict of interest would arise, as stockholders would be more willing to take risk in order to increase their wealth but on the other hand debtholders would be risk averse because high risk means high bankruptcy possibilities for the firm. Moreover borrowing usually leads to debt financing constraints in the future and some times in periods in which firm needs money to execute real investment opportunities or even worse for its survival. Also high growth bidders have no need to increase the debt tax shield by issuing new debt, as they have already high levels of Research and Development expenditures (these expenditures are tax-deductible, such as interest expenses) according to Faccio and Masulis (2005) research. A good measure for the investment opportunities is the market to book ratio. Dong et.al (2006) and Faccio and Masulis (2005) suggest that market to book value of

equity has a positive relationship with the use of stock as a method of payment. While Martin (2006) who was the first who analyzed the investment opportunities in method of payment found a positive relationship between Tobin's Q and the use of stock. The Q theory is a theory of investment behavior developed by the economist James Tobin. Commonly referred to as Tobin's Q theory, the formula is purported to relate the market value of shares issued by a company to the replacement cost associated with the company's assets. In an ideal situation the market value and the replacement cost would be more or less equal, creating a state of equilibrium. Finally we must keep in mind that cash financed tender acquisitions are faster to complete than stock financed, as Fishman (1989) stated, because targets are more willing to accept cash in hand that stock.

2.1.2 Corporate control

It is common sense that when a stock financing exists, it dilutes not only the fraction of voting rights held by both management and controlling shareholders but also increases the risk of losing control. According to Stulz (1988), control is valuable, so bidders with managerial ownership and bidders controlled by a major shareholder should be reluctant to use stock financing. Moreover he mentioned that if the fraction of target managerial control of voting rights is high, the probability of a hostile takeover is low since the target with a higher fraction of ownership will want more rights before the deal is completed. However, bidders with diffused or highly concentrated ownership are less concerned about voting control threats. For these reasons it is concluded that a nonlinear relationship exists between the ownership structure and the probability of cash financing. We could measure the corporate control by using the ultimate voting stake of the bidder's largest controlling shareholder or by using the fraction of closely-held shares, (but in this stage we have to define that the fraction of closely-held shares is calculated by dividing the number of closely-held shares by the number of common shares outstanding, while the term of closely-held shares is the shares held by officers, directors and their immediate families, shares held in trust, shares of the company held by any other corporation, shares held by pension/ benefit plans, and shares held by individuals who hold 5% or more of the outstanding shares as Faccio and Masulis (2005), mentioned). One more factor that affects the choice of payment is the structure of target firms. If the target

firm is closely held by the management or controlled by a major shareholder, bidding firms should be reluctant to offer stock, because a stock-financed acquisition can create a new large blockholder in the combined firm. So there are two opposite mainstreams. On the one hand the risk of losing control increases when the ownership structure of the target firm is highly concentrated and thus the larger the relative size of the deal is, the higher the creation of blockholders will become. On the other hand the creation of a new large blockholder in the combined firm can benefit the other shareholders, because this blockholder can effectively monitor the management, which reduces the agency costs of equity. This evidence is supported by Martin (1996) who documents a negative relationship between the likelihood of stock financing and managerial ownership only over the intermediate ownership range. It is also known that private and subsidiary targets are more likely to have a highly concentrated ownership structure and for this reason all the outstanding common shares of these firms are closely held. Amihud, Lev and Travlos (1990) indicated that managers with relatively higher share holdings in their firms prefer cash financing acquisitions. In order to explain this phenomenon, they point out that the reason for the use of cash rather than shares is because they do not want to increase the risk of losing control after the acquisition. Song and Walkling (1993) implied that one firm compared to another firm with a lower managerial ownership is more likely to be an acquisition target, which makes sense as bidders avoid the creation of blockholder in the combined firm. From a manager's perspective we can clearly apprehend that managers with large percentage of ownership in target firms prefer receiving share payment in order to maintain their job in the combined firm; while managers with large percentage ownership in acquiring firms are more preferable to use cash as means of payment in order not to dilute their ownership in the combined firm, as Ghosh and Ruland (1998) mentioned. Finally Faccio and Masulis (2005) found that when the bidder's voting stake is between 20% and 60%, the probability of cash financing is high.

2.1.3 Cash availability

Cash availability is a very important factor that determines the method of payment. We begin by explaining the term of free cash flow, which means the amount of cash that a company has left over, after it has paid all of its expenses, including

investments. A similar definition to that has been introduced by Jensen (1986) and it refers to the cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital. So firms with high levels of free cash flow are more likely to have sufficient internally generated funds to finance acquisitions with cash. According to Jensen (1996) shareholders benefit when managers buy the shares of the target firm, because the free cash flow is not wasted by self-interested managers, making an unprofitable investment. A good proxy for the bidder's free cash flow is the dividend payout ratio that was introduced by Zhang (2003). A higher dividend payout ratio is likely to signal the higher level of free cash flow.

2.1.4 Collateral

In lending agreements, collateral is a borrower's pledge of specific property to a lender, to secure repayment of a debt. The collateral serves as protection for a lender against a borrower's default. If a borrower does default on a loan that borrower forfeits the property pledged as collateral and the lender then becomes the owner of the collateral. So as Faccio and Masulis (2005) pointed out collateral measures in some way the ability to borrow and as a result debtholders in firms with collateral assets demand a lower return. A lower return for debtholders results in a lower cost of debt for the firm. These firms, with high collateral assets, have better access to debt markets, greater ability to issue debt and finally greater ability to pay cash in an acquisition. As we will see later, in some cases the value of the target is supposed to be one kind of collateral for the bidder who receives the benefit for extra borrowing.

2.1.5 Public status targets, unlisted and subsidiaries

Taking into account that most private targets and subsidiaries are highly concentrated, we can conclude that bidders acquiring these firms will be more willing to pay in cash than stock in order to avoid losing corporate control. To explain the previous statement we represent three arguments: 1) If bidders acquiring these targets prefer stock financing then they would create a large blockholder in the combined firm as targets have concentrated structure. 2) The selling of a private firm is usually motivated by forthcoming retirement of the manager with the highest ownership stake. So these managers prefer to accept cash as compensation and use this cash for

future consumption. 3) Last but not least the financial distress risk and the desire to restructure towards their core competency are important motives for firms to sell their subsidiaries. Moreover it has been proved that if the target is an unlisted firm (firm that is not listed in any stock exchange), the bidder would rather use cash as payment method, given the illiquid and concentrated nature of their portfolio holdings and the impending retirement of a controlling shareholder manager which often happens.

2.1.6 Intra-industry deal and cross border deal

According to Faccio and Masulis (2005) suggestion, intra-industry deals (which means target and bidders are in the same industry) have more possibilities to be achieved with stock financing. This happens because targets are well acquainted with industry risks and prospects. But if the target knows less about risks and prospects of the bidder's country, and that is the case of the cross border deal, cash financing is more potential to exist. That can be assumed as shareholders are exposed not only to exchange risk, lower liquidity and greater trading costs, but also to less time consuming and more limited access to firm information.

2.1.7 Asymmetric information

Information asymmetry deals with the study of decisions in transactions where one party has more or better information than the other. This creates an imbalance of power in transactions which can sometimes cause the transactions to go awry. So as a result, the more rising the asymmetric information problem is, the more reluctant are the targets to accept bidders' stocks as payment. That happens because it creates greater uncertainty about bidder equity value and future earnings, as stocks have contingent pricing characteristics (Hansen 1987). The asymmetric problem is greater first for conglomerate mergers (there are two types of conglomerate mergers: pure and mixed. Pure conglomerate mergers involve firms with nothing in common, while mixed conglomerate mergers involve firms that are looking for product development or market extensions) and second if target's and bidder's countries differ. There is some serious evidence about this phenomenon by researchers that we must represent: Myers and Majluf (1984) found out that, if asymmetric information exists between management and market participants then the different payment methods would signal different types of valuable information for the investors. To be more specific, when a

stock financing is announced it signals that the bidder's existing assets are overvalued, otherwise, if cash financing is announced the assets are generally considered to be undervalued. So market participants take the cash offer as good news instead of stock financing. Hansen (1987) showed that the bidders would prefer stock financing under the hypothesis of the target firm's asset undervaluation, and that because bidders are willing to participate in the gains from the post-merger revelation of the previous target undervaluation. Fishman (1989) argues that, when the fixed costs of collecting information about the target are high, cash financing is more likely than stock financing to be used as means to signal high valuation in order to deter competing offers for the target firm. Travlos (1990) figured out that stock financing as the method of payment results in significant losses to the shareholders of bidding firms. This evidence confirms the previous suggestion that stock exchange delivers negative information for the valuation of the bidding firm's assets. Cornett and De (1991) finds some results that are contrary to those obtained by other researchers and seems inconsistent with the asymmetric information proposition. Particularly in inter-state bank mergers the abnormal returns to the shareholders of bidding firms are positive and significant for cash, share and the combination of the two methods. This can be explained by the existence of less severe effect with the assets of banking firms than those of non-banking firms with regard to overvaluation or undervaluation and information asymmetry. Information asymmetry does not play an important role in banking undertakings as those of non-banking. Moreover stock financing may convey a positive signal that the bidding banks possess the soundness of asset management practice since, according to various regulatory rules, an inter-state bank merger requires approval by these regulatory bodies in this context, stock exchange in bank mergers signals positive information about the bidders. At this point we have to mention that if the market was complete, shareholders would be indifferent to the means of payment.

2.1.8 Dept capacity

Another measure of the ability to borrow is firm's asset size. Assuming that the bidder is a large firm, it would be more diversified compared to a small firm and as a result it would face lower probability risk of bankruptcy and thus lower cost of debt. Furthermore large firms have lower transaction costs and better access to

markets. As a consequence these firms have greater ability to issue debt and of course use cash as means of payment in acquisitions. This analysis has also been supported by Faccio and Masulis (2005).

2.1.9 Taxation implication proposition

There is a main theory in cash financing taxation proposition that has been addressed and confirmed by several researchers. This proposition is due to existence of different tax treatments and implies that in a cash offer the acquirer must pay a higher price in order to offset the tax burden of the target shareholder. Wansley, Lane and Yang (1983) suggest that when the acquisition is financed by cash, target shareholders face higher returns, and thus acquirers need to pay the additional tax burden for the targets. Harris, Franks and Mayer (1987) came to the conclusion that 1) all cash or all stock financing are most widely used payment methods in acquisitions. That happens because all stock is preferred by shareholders who care about the liability of paying the capital gain taxes, and all cash is preferred by those who are not interested in combining their portfolio with the bidder's stocks. 2) There is no strong linkage between the capital gain taxes and the use of cash as the medium of exchange. 3) Finally cash offer generates a better post- acquisition performance for acquirers than all share offers which signals overvaluation for acquirer's stock. While Huang and Walking (1987) just confirm all the previous outcomes.

2.1.10   Financial leverage and Interlocking directorships

Financial leverage results from utilizing debt to finance assets. The greater the ratio of funds contributed by creditors compared to funds contributed by stockholders, the greater a firm's financial leverage. We are able to make two assumptions in order to see how leverage works. First we assume that firms with low leverage have a debt level below their target debt level, acquirers should issue debt to finance acquisitions, advantaging the benefits of debt. And second, we assume that internally generated funds are insufficient and for this reason firms with low leverage have sufficient unused debt capacity and thus issue debt to finance acquisitions. For these two reasons we support that firms with low leverage have a greater ability to issue debt and therefore a greater ability to pay cash as a mean of payment. On the other hand firms with high leverage are constrained in their ability to issue debt and as a

consequence use stock financing more frequently. A conclusion that Hansen (1987) suggested about debt was that the probabilities of stock offers and stock trades decreased in target-firm debt and increased in acquiring-firm debt. In other words the larger the equity of the target relative to the equity of the acquirer is, the stronger the beneficial contingent-pricing effect. It is vital to represent one more factor that can influence the ability of firms to issue debt and even better the payment method. This is the Interlocking directorship. This term refers to the practice of members of corporate board of directors serving on the boards of multiple corporations. This phenomenon is very powerful when companies establish connections, through interlocking directorship or even through cross ownership of stock, with banks, creating an easier access to borrowing.

2.1.11 Business cycle proposition

There is a great relationship between the business cycle and the methods of payment used in acquisitions. The term business cycle refers to economy-wide fluctuations in production or economic activity over several months or years. Business cycles can be viewed as having four phases: the peak, the expansion, the recession, and the trough. The peak of a business cycle is represented by the upper turning point in a business cycle and is often referred to as a boom period. The expansion phase in which the economic activity is improving through declining unemployment and increasing output, sales, and capital formation. The recession phase is the counter of the expansion phase. In the recession phase, unemployment is rising and sales, income, and investments are all declining. And finally the trough represents the turning point of this phase and is characterized by sales, income, and investments being at their lowest points and unemployment being at its highest point. We mention that business cycle influenced by changes in stock markets, changes in Bonds spreads, changes in population growth rates and migration trends, new inventions and technological developments, the discovery of new mineral deposits and energy resources, and political events and social upheavals. As Martin (1996) found, the good performance in overall stock market gives rise to share financing more preferably, this happens through a boom period since output, income, sales, and capital formation are at their highest levels and unemployment is at its lowest level.

2.1.12 Relative deal size

It is true that the size of both the acquirer and the target should impact the choice of method of payment in takeovers. But let us explain how much and in what ways it can be affected. A firm with a high level of assets, especially tangible assets, should be able to borrow more. Furthermore, larger firms are usually more diversified, and hence should have a lower probability of bankruptcy at a given leverage ratio, and consequently greater debt capacity. So there is a positive correlation between acquirer size and use of cash in mergers. Moreover the previous is supported as a larger target can be seen as better collateral. Hence, target size should be positively correlated with the acquirer's ability to borrow. Furthermore, larger targets allow acquirers to achieve a higher level of diversification. Finally, acquiring a large target using stock, results in target shareholders controlling a large fraction of the combined equity. So at one point of view these are some reasons that stock financing acquisitions are avoided. According to Faccio and Masulis, the larger the relative deal size is, the more the likelihood that the deal is financed by stock. This evidence is based on several reasons. Firstly, when the target firm is relatively large, bidding firms are more likely to have insufficient unused debt capacity and liquid assets to finance the deal with cash. Secondly, relatively large targets have more bargaining power about the payment method than relatively small targets. The target's managers with an ownership stake demand a share exchange, if they want to retain their job and obtain influence in the combined firm. And thirdly, acquirers prefer to offer stock when the target knows its value better than the acquirer, because stocks have desirable contingent pricing characteristics. Grullon, Michaely and Swary (1997), figure out that the bigger the relative size of the target to the acquirer, the more likely the merger is to be financed by share or the combination but not cash only, there is a positive relation between the relative size of the target to the acquirer and the choice of share financing. Martin's (1996) results show that the target's relative size does not differ significantly between the methods of payment used in acquisitions. This result suggests that there is no clear and close association between relative size and acquisition financing in mergers and acquisitions. Ghosh and Ruland (1998) support that when target size is relatively large compared to the acquirer's, the target management would prefer negotiating for share financing in order to maintain their interest and influence in the combined company. Meanwhile, the acquiring

firm's managers prefer paying cash in order not to dilute their existing ownership in the firm. The payment alternatives are, therefore, offset by those two different motivations between the counterparts. As a result, there is no clear sign indicating the linkage between the relative size of the two parties and payment methods chosen. Hansen (1987) mentioned that when the relative deal size increases, the probability of stock financing increases. But on the other hand, in a stock-financed acquisition, the risk of creating a large blockholder in the combined firm is higher when the relative size of the deal is large. For this reason, bidders should be reluctant to acquire a relative large target with the use of share exchange, however, this is not absolute but it depends on the ownership structure of the target.

2.1.13 Market misvaluation and stock performance

The market misevaluation is a very important factor that determines the method of payment in acquisitions. Firms prefer to satisfy their financial need with external debt when it is less expensive than external equity. Several studies have presented serious evidence about this theory. Hansen (1987), Myers and Majluf (1984), Ming Dong, David Hirshleifer, Scott Richardson and Siew Hong Teoh (2003) and Mathew Rhodes-Kropf and Viswanathan (2004) predict that bidding firms prefer stock financing when they perceive their stock to be overvalued by the market and prefer cash financing when they consider their stock to be undervalued. As a result stock offers lead to negative stock price reactions while cash offers lead to positive stock price reactions. Travlos (1987) found that bidding firms that financed with share, stockholders experienced significant negative abnormal returns in the announcement period. While firms which financed with cash experienced normal returns around the announcement date. Graham and Harvey (2001) figured out that the amount by which the stock is undervalued or overvalued (sell it at higher price) by the market was an important factor that affected the firm's decisions. Baker and Wurgler (2002) state that firms are more likely to issue equity when the market value is high in relation to the past and also when they experience a sizeable stock price gain are more likely to use stock financing. But as we explained earlier stock financing dilutes the fraction of voting rights held by shareholders of the bidding firm and increases the risk of losing control creating new blockholders. However, after a sizeable stock price run-up, the dilution of this voting stake is smaller, because fewer

stocks are issued to pay the offer size. Faccio and Masulis (2005) mention that bidders are more likely to use stock financing, when the whole stock market in the bidder's country is booming.

Shleifer and Vishny (2003), at their study found that acquiring firms use their overvalued stock to buy targets that are either less overvalued or undervalued, and they use cash only if the target is undervalued. In a cash acquisition, target's undervaluation is necessary but not a sufficient condition. Two different perspectives for acquiring and target managers are that: bidder managers try to maximize long term shareholder value while target managers have short term goals and for this reason they are willing to sell their less-overvalued firms for stock to cash out quickly after the acquisition. Rhodes-Kropf and Viswanathan (2004) argue in contrast with Shleifer and Vishny that target managers care about long-term shareholder value. They may know that both the bidder and the target are overvalued, but they overestimate the synergies, because the error in valuing takeover synergies is correlated with overall valuation error. This is why target managers agree to sell their firms for stock even if their stock is less overvalued than the bidder's stock. Corporate synergy refers to a financial benefit that a corporation expects to realize when it merges with or acquires another corporation. So we can doubtless conclude that overvalued firms use stock to buy relatively undervalued firms when both firms are overvalued, cash targets are more undervalued than stock targets and finally cash acquirers are less overvalued than stock acquirers. Dong et al. (2006) document that, bidder valuation ratio (price-to-book) is higher on average than those of the target, bidder-target differences in valuation are on average greater among stock mergers than among cash mergers, stock mergers are characterized by higher bidder and target valuations than are cash mergers, stock is more likely to be used as a method of payment when the target has a higher valuation and finally bidders with higher valuations are more likely to use stock as the means of payment. Rhodes-Kropf, Robinson and Viswanathan (2005) at a more recent study test how market mispricing affects merger activity. They decompose the market-to-book ratio (M/B) into three components: 1) firm-specific pricing deviation from short-run industry pricing (firm specific misvaluation); 2) sector-wide, short-run deviations from firms' long-run pricing (sector misvaluation); and 3) long-run pricing to book (growth opportunities). The first component represents the difference between the market value of the firm and its time-t fundamental value; the second is the difference between the firm's time-t fundamental

value and its long run value; and the third component is the difference between the firm's long run value and its book value. So they find that acquirers in cash mergers are less overvalued than those involved in stock mergers. Targets are undervalued in cash mergers, while slightly overvalued in stock mergers. Moreover they figure out that the probability that an acquisition made with stock is positively correlated with the overvaluation of the firms involved in the merger, whether targets or acquirers. Finally Jensen (2004) suggest that managers should not let their stock price get too high at a level at which management will be unable to deliver the performance required to support the market's valuation. When a firm's stock price becomes substantially overvalued managers who wish to eliminate it are faced with disappointing the capital markets. This value resetting is not value destruction because the overvaluation would disappear anyway. But when boards and managers choose delayed to defend the overvaluation they end up destroying part or all of the core value of the firm.

2.2 Key Papers

Having comprehended the main factors that influence the method of payment in acquisitions, we will try to represent the methodology which is used by Pinghshun Zhang, Alberta Di Giuli, Mara Faccio and Ronald Masulis, and the outcomes they reached as well.

Alberta Di Giuli (2009) studies the determinants of the method of payment using a sample of 2.602 mergers among United States public firms, completed between 1984 and 2005. At her sample she excluded financial and real estate companies and she required availability of the acquirer's assets. The empirical specification allows her to separately identify the effects of, the size of the acquirer and target, the possible market misvaluation of both firms, and the investment opportunities of the merged entity. In contrast with prior researches she used a continuous measure of the method of payment instead of dummy variables, such as cash, stock or combination of both of them. She run an Ordinery Least Square (OLS) regression as it takes into account different percentages of cash and stock used in combined deals. However as she mentioned, the multinomial Logit regression showed similar results. Her findings were that acquirers used on average 50.9% stock, 36.3% cash, and 12.8% some other payment method. Moreover she found that target

overvaluation was significantly positively correlated with the use of stock. When the market overvaluation of the target increased by 10%, the percentage of stock employed in the deal rose by roughly 15%. These results show her that target managers use their bargaining power to exchange shares only when their stock is overvalued. On the other hand she found that acquirer overvaluation has a weaker effect on the method of payment. Particularly she concluded that a 10% increase in the market overvaluation of the acquirer would increase the percentage of stock used in the acquisition by roughly 4%, and thus acquiring managers are relatively more willing to accept overvalued stock than target managers. She also found that firms with better growth opportunities were more inclined to use stock as a method of payment. According to her estimates, a 10% increase in the average capital expenditures increases the fraction of stock used by roughly 5%. Thus acquirers with high growth opportunities used less cash for a merger, so that they have more liquidity after the merger to finance new investments. Furthermore her research showed that the size between the acquirer and the target is positively correlated with the use of cash, and that because larger acquirers had a higher borrowing capacity and were more diversified and consequently faced lower bankruptcy costs. Finally she found no positive correlation between cash mergers and equity issues. On the other hand, there was a positive correlation between equity issues and the percentage of stock used as a method of payment by acquirers, indicating that these acquirers may be exploiting their overvalued stock.

Pinghshun Zhang applied factor analysis and determinant analysis in order to examine the relationship between payment methods and a number of financial measures of bidding firms as well as targets. His sample consisted of 103 acquisitions taking place in the United Kingdom at the period between 1990 and 1999. All takeovers for both the target and acquiring firms were listed on the London Stock Exchange during the sample period. By looking at the sample he mentioned that 37% of the data were cash financing deals, 41% were stock exchange deals and 22% were the combination of stock and cash deals. The empirical results from his research proposed that the larger the size of the target relative to the acquirer, the more likely the acquisition is financed by share. The higher the dividend payout of the acquirer is, the more likely the deal to be financed by cash. Moreover the higher the return on equity of acquirer's, the more likely cash is to be used as a payment. While the better performance of the acquirer's share on the stock market, the more likely is the deal to

be financed by stock. His factor and discriminant analysis confirmed that the relative size between target and acquirer, the acquirer's dividend payout, and its share performance on the stock exchange were relatively more important in explaining the variations. Meanwhile, these variables are the main factors in segregating cash from stock financing. Finally he found no clear evidence showing that the payment method was closely related to the fractions of ownership held by the two participants in merger and acquisitions activities.

Mara Faccio and Ronald Masulis (2005) studied the payment methods of European bidders. They used a sample of 3.667 deals, which is consisted of all acquisitions announced over the 4 years between January 1997 and December 2000 by bidders from 13 European countries. This database covered public and private corporate trans- actions involving acquisition of at least 5% ownership of a target company. Also bidders needed to be incorporated and listed on a stock market in one of the above listed major European countries. Their primary aim was to research the tradeoff between bidder corporate control threats, which discourage stock financing, and bidder financing constraints, which encourage stock financing. They found that corporate control incentives for cash financing were particularly strong when a bidder's controlling shareholder had an intermediate level of voting power in the range of 20-60%. Also when target shareholdings were highly concentrated, bidders preferred cash financing. Thus they concluded that European bidders choose stock financing with greater frequency as measures of their financial condition weaken. More specifically, they observed that collateral, financial leverage and asset size, which are measures of bidder financial strength, were always significant at the 1% level and their coefficients were all of the expected signs. They also found that when a bidder had special access to bank borrowing due to interlocking directors, cash financing was more likely. When the target was under bidder's control, they saw that stock financing was preferred. They observed that stock financing was less likely for unlisted targets and corporate subsidiaries, which supported bidder aversion to creating a new blockholder. Moreover, the impact of having a subsidiary target was larger and statistically more significant than having an unlisted target across the regressions. They found a different functional form for the relationship between method of payment and bidder corporate control, which was linear in continental Europe (with more concentrated control resulting in a higher likelihood of cash payments) and cubic in the U.K.-Irish sample (in which bidders only exhibit a

reluctance to employ stock financing over intermediate levels of voting control). They also found a significantly larger portion of cash financing when a bidder was on a bank's board of directors in continental Europe, which might reflected the greater importance of bank loans there and implied better access to debt financing. Finally they found out that among variables, stock price run up, market to book value of bidder assets, deal size divided by bidder equity capitalization, cross border and cross industry deals were significant according to their statistical models Tobit and Ordered Probit.

2.3 Testable hypotheses

Before we continue to our empirical analyses we have to define the main hypothesis that we will test in our empirical model. These hypotheses are vital in order to understand what are we looking for, what results are we waiting to get and how they influence, from a first sight the method of payment in acquisitions. So when we take the final results we will be able to see which of these hypotheses turned out to be correct, which false and which hypothesis would not give any interpretation at all.

Hypothesis No 1: The growth opportunities of acquirer hypothesis. We suggest that firms with high investment opportunities should be more willing to use stock financing as a means of payment than cash. Bidders are more reluctant to borrow because borrowing not only increases monitoring by debtholders but also it leads to debt financing constraints in the future. We measure the investment opportunities with the market to book ratio.

Hypothesis No 2: The debt capacity hypothesis. We suggest that bidders with higher debt capacity have greater ability to issue debt and subsequently they use cash as means of payment in acquisitions. This happens because bidders are large firms and more diversified compared to a small firm. As a result they have lower probability of bankruptcy and thus lower cost of debt. They could easily issue new debt. We expect positive relationship between debt capacity and cash financing.

Hypothesis No 3: The cash availability hypothesis. We suggest that sufficient free cash flow by acquiring firms (bidders) lead to the acquisition deal been financed by

cash. A proxy to measure the bidder's free cash flow is the dividend payout ratio. Higher dividend payout ratio signal higher level of free cash flow and thus more possibilities for a cash exchange. So cash availability and cash financing are expected to have positive relationship.

Hypothesis No 4:   The collateral hypothesis. We suggest that bidders with high collateral level prefer cash financing acquisitions. This happens because a greater collateral asset means lower cost of debt, better access to debt markets and generally greater ability to borrow cash. Sometimes debtholders could see the whole target firm after the acquisition as good collateral, increasing the acquirer's ability to borrow.

Hypothesis No 5:   The financial leverage hypothesis. We suggest that bidders with low leverage level have the ability to issue debt in order to finance acquisitions, and as we have already mentioned in this case is preferred cash financing. But firms with already high leverage level would be reluctant to create new debt to debthalders and for this reason they prefer stock financing. Summarizing we expect a negative relationship between financial leverage and cash financing.

Hypothesis No 6:   The relative deal size hypothesis. We suggest that when the target is a large firm, and subsequently the deal size, relative to the acquirer there are more possibilities to finance it in cash. So we expect a positive relationship between the relative deal size and the use of cash. As we mentioned before this relationship is caused because, large targets not only are better collaterals for the debtholders and thus acquirers can borrow more easily cash, but also acquirers do not want to create new blockholders (by using stock as a mean of payment) and dilute firm's control after the takeover. Also we expect that as great the size of the acquirer is, as common the cash financing would be, because these firms have higher debt capacity.

Hypothesis No 7:   The stock run up hypothesis. We suggest that when bidders consider their stock to be overvalued by the market, they prefer stock financing. While bidders that consider their stock to be undervalued by the market prefer cash financing. So market misevaluation calls the shots.

Hypothesis No 8: The market run up hypothesis. We suggest that when the business cycle, phases expansion, or when market is booming and generally the whole economy faces an upward trend, bidders prefer stock financing.

Hypothesis No 9: The cross border hypothesis. We suggest that if bidder and target are not in the same country, targets are more willing to accept cash financing as a payment method. This happens because targets are not aware of risks, prospects and economic difficulties of the bidder's country.

Hypothesis No 10: The intra industry hypothesis. We suggest that if bidders and targets are in the same industry, targets are more willing to accept stock payments as they are aware of the risks and prospects of the industry.

Hypothesis No 11: The subsidiary target hypothesis. Taking into consideration that subsidiary firms have more concentrated structure, bidders prefer to acquire subsidiary targets with cash financing. This happens in order bidders to avoid the creation of a new blockholder in the combined firm which arises from stock financing.

Chapter 3   Data and Methodology

3.1 Data analysis

The whole sample that we use for merger and acquisitions is extracted from M&A database of Thomson One Banker. The merger and acquisitions included in the initial data sample have to meet some very specific criteria that we set for searching. These criteria are presented below with the appropriate order and importance.

We use merger and acquisitions that are announced during the period 2000 through 2010. To be more specific we use acquisitions that announcement date, the date that the acquirer firm announced to public its intention to acquire the target firm, is among 01/01/2000 and 30/11/2010. We stop the search at this particular date because that date we downloaded the data from databases for our sample. Thus the sample period is ten years. Based on previous researches, like Pinghshun Zhang, Jorrit Swieringa we decided to search during the ten-year- period, last decade as it is a large period with enough acquisition activity and thus we would be able to end up with some serious results from our research.

We set the bidder to be a public firm, established in Greece. We accept only these bidders that are listed at the Greek stock exchange market, regardless the stock index that they belong, ftse20, ftse40. We do not use bidders that are unlisted but in our sample there are firms that at the announcement date were listed and few years later became unlisted. This happens because, either the bidder firm is dead, due to a bankruptcy, dissolution of the company or the bidder firm just decided to exit from the exchange stock market or even be acquired from an even larger firm. The most important point is that at the announcement date the bidder was listed.

On the other hand the target firm can infallibly be a public firm, a private or a subsidiary. There is no restriction on the target's country. Thus, both domestic and cross border deals are included in the initial data sample. For example a Greek and listed (as we analyzed above) bidder firm can acquire a Turkish, Albanian or European target firm without any border restriction.

We do not set any minimum or maximum limit about the deal size. The deal value that Thomson One Banker announces is measured in millions and uses the currency of Euro. At this point we represent the definition of deal value that Thomson

One Banker uses as the total value of consideration paid by the acquirer, excluding fees and expenses. The Euro value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt (debt refers to convertible debt that is acquired together with common stock), 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.

Also there is no restriction about the proportion that the bidder acquires from the target firm. In many previous studies, like Fuller et al (2002) demanded the bidder to acquire more than 50% of the target. For example bidders that hold 0% of the target before the acquisition must hold more than 50% after, bidders that hold 49% before the acquisition must hold 99% after. Thus, this method does not include in the data sample bidders that already hold 50% or more of the target firm. For this reason we have decided to include in our research bidders that tend or acquire any proportion of the target and not only these that own or acquire the majority stake.

Our initial sample includes deals that are characterized as friendly, hostile and neutral. So there is no restriction about the deal attitude in contrast to few papers that use only friendly deals. Moreover we accept mergers and acquisitions that deal status is named not only "completed" but also "pending" and intended". Simultaneously we exclude from the sample those deals which status is characterized with the definition "withdrawn". We do not include these M&As data because there is possibility to alter the results of our research, as the bidder had withdrawn his offer so neither acquisition happened nor an intention existed and thus data would be misleading.

Setting the criteria of the acquirer nation (Greece), the period of merger and acquisitions announcements (1/1/2000-30/11/ 2010) and the acquirer status (public) into the Thomson One Banker database, we received 1041 takeovers. But after the assumption we made in the method of payment our sample decreased to 459 mergers and acquisitions.

The method of payment is extracted from the M&As database of Thomson One Banker and following Faccio and Masulis (2005) we categorized it into cash, stock and a combination of cash and stocks. The definition which is used for "cash" according Thomson One Banker includes cash, earnout (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. And finally the definition for "combination" includes the combination of the above sub-accounts of cash and stock.

Apart from Thomson One Banker database that we used in order to extract data about the acquisitions such as the name of the bidder firm, the name of the target, the nationality of each firm, the date announcement, the industry, the public status (public, private, subsidiary), the listing status and finally the deal value, we used two more databases Datastream and Worldscope. These two bases were used in order to collect data about the stock price (index) of bidder firms, the market capitalization, the total property plant equipment, the total debt, the total assets, the market to book ratio, the common dividends and the net income after preferred dividends. In order to be as much as possible close to reality we divided the year into four quarters and we kept the values of the last quarter prior to the announcement date (according to Datastream and Worldscope interim values). We used this method for data that referred to market capitalization and market to book ratio. And we used the values at the year end prior to the announcement date for total assets, total debt, total property plant and equipment, common dividends and net income after preferred dividend data.

Finally 129 merger and acquisition transactions are excluded because of missing data items either due to not available data from Datastrem and Worldscope or because of not sufficient information from Thomson One Banker. So our final sample consists of 330 takeovers. In this sample there are 7 transactions that their deal status is characterized from Thomson One Banker as withdrawn and for this reason we excluded them. At the sample of 323 transactions we had only two transactions that the payment method was a combination of cash and stock. Thinking that the combination method corresponds to 0.62% of the whole sample we decided to exclude them and use a binary model (as we will explain later) with two possible payment methods, stock and cash.

Summarizing, we have 321 transactions announced during the 10-year-period between January 2000 and November 2010 by 112 public bidders from Greece who paid either in cash or stock. Of these 112 bidders, 52 bidders made only one deal, 20 bidders made two deals, 14 bidders made 3 deals, 3 bidders made 4 deals, 8 bidders made 5 deals, 5 bidders made 6 deals, 2 bidders made 7 deals, 3 bidders made 8 deals, 1 bidder made 9 deals, 1 bidder made 11 deals, 1 bidder made 12 deals, 1 bidder 15 deals and 1 bidder made 20 deals. The results are presented at the table below:

Number of bidders	52	20	14	3	8	5	2	3	1	1	1	1	1	112 bidders
Number of deals per bidder	1	2	3	4	5	6	7	8	9	11	12	15	20	
Total transactions	**52**	**40**	**42**	**12**	**40**	**30**	**14**	**24**	**9**	**11**	**12**	**15**	**20**	321 transactions
Transaction as % of the whole sample	16.19%	12.46%	13%	3.7%	12.46%	9.34%	4.36%	7.47%	2.8%	3.42%	3.7%	4.6%	6.2%	100%

Table 3.1   Frequency of deals

Considering the method of payment that we had set between stock and cash, the sample consists of 21 deals with stock financing and 300 deals in cash financing. The cash financing holds 93.45% and stock holds 6.55%. For this reason we conclude that most Greek merger and acquisitions are entirely cash financing. This phenomenon is very common in European countries such as United Kingdom with cash financing 80.20%, Belgium 87.5%, Finland 65.69%, France 78.97%, Germany 84.89%, Ireland 83.84%, Italy 86.11%, Norway 68.97% , Portugal 90%, Spain 79.17%, Sweden 83.25%, Switzerland 82.35% and the highest level of cash financing holds Austria with 100% according to Faccio and Masulis research in the period 1997-2000. Greece follows this mainstream as it holds a huge proportion of cash financing. Some economic conditions or the fundamentals and regulations could be appropriate to enhance cash financing in these countries.

Table 3.2   The method of payment in our sample

Method of Payment	Cash	stock	
Number of deals	300	21	321 transactions
Deals as %	93.45%	6.55%	100%

The final data sample contains 221 completed transactions, 84 pending transactions and 16 intended transactions.

Table 3.3 Deal status		
Completed	221 deals	68.84%
Pending	84 deals	26.16%
Intended	16 deals	5%
TOTAL	**321 deals**	**100%**

As we can see the majority of the takeovers, which we collect from Thomson One Banker are completed deals, about 221 transactions in which 206 are financed in cash (93.21%) and 15 are financed with stock (6.78%). It is obvious that bidders not only prefer to pay in cash for the acquisition, but also targets are willing to accept it and for this reason the deal is completed successfully. In the other two categories we have of the 84 pending deals, 6 are stock financing (7.14%) and 78 are cash financing (92.85%) while of the 16 intended deals all are cash financing (100%). Thus the most common payment method is cash regardless the status of the deal.

Table 3.4 Proportion of share acquired			
% of share acquired	**Number of deals**	**Deals as % of whole sample**	**More detailed**
$x < 20\%$	28 deals	8.72%	16 **completed**
			1 intended
			11 pending
$20 \leq x < 50$	68 deals	21.18%	50 **completed**
			2 intended
			16 pending
$50 \leq x < 70$	41 deals	12.77%	27 **completed**
			2 intended
			12 pending
$x \geq 70$	82 deals	25.54%	62 **completed**
			3 intended
			17 pending
Not defined	102 deals	31.79%	
TOTAL	**321**	**100%**	

So for the deals with sufficient information, bidders prefer to acquire more than 70 percent of the target in order to own the whole firm or the majority stake. The table below presents some statistics about the majority stake.

Table 3.5 **Majority stake after transaction**		
% of share acquired	**Bidders hold the majority stake(>50%) after the transaction**	**Bidders hold the minority stake(<50%) after the transaction**
$x < 20\%$	9 deals	19 deals
$20\% \leq x < 50\%$	31 deals	37 deals
$50\% \leq x < 70\%$	39 deals	-
$x \geq 70\%$	82 deals	-
TOTAL	161	56

By all the bidders that acquire less than 20% percent of the target's shares, 32% (9 deals) finally hold more than 50% of the target, as they already owned a proportion before the bid, while 68% (19 deals) hold less than 50%. We assume that bidders who intend to acquire a small share are unlike to take control of the target at this moment. Bidders that acquire between 20% and 50%, hold the proportion of 45.5% (31 deals) of them who acquire more than 50%, and 54.5% (37 deals) of them who acquire less than 50%. At this scale things are almost equally divided so we can not draw conclusions about the bidders' intentions. 100% of the bidders who acquire more than 50% (39 and 82 deals respectively) hold the majority stake after the transaction. When a bidder acquires more than 50% of the target it is clear that he wants to take control of the firm and as we saw in table 3.4 they prefer to finance these transactions in cash.

It presents particular interest to see the proportion that bidders own after transaction when we separate our sample into two scales. The first includes deals that acquire less than 50% of the target and the second includes deals that acquire more than 50% of the target. Furthermore there are 102 observations that Thomson One Banker does not give us information about the shares acquired or owned after transaction. The table below cites these findings

Table 3.6 Shares held bidders after transaction separated into two scales		
Scale	**Number of deals**	**As proportion**
$x \leq 50\%$	61 deals	19%
$x > 50\%$	158 deals	49.22%
Not defined	102 deals	31.78%
TOTAL	**321**	**100%**

Data verify our assumption that most deals undergo in order to acquire the target as much stake as possible in order to keep the majority stake after the transaction and control the target firm.

Moreover we can see from our sample that deals which acquire more than 70% of the target firm (majority stake), 59 of them acquire 100% of the target. To be more specific 42 deals are characterized as completed, 2 deals as intended and 15 deals as pending. Completed transactions hold the overwhelming majority, achieving the proportion of 71.19%.

Table 3.7 Bidder acquired/intended to acquire 100% of target's share		
Status	**Number**	**Percentage**
Completed	42 deals	71.19%
Intended	2 deals	3.39%
Pending	15 deals	25.42%
TOTAL	**59**	**100%**

Next table represent the frequency distribution of Payment methods classified by target's and bidder's country.

Table 3.8 Frequency distribution of Payment methods classified by target's and bidder's country			
Payment method	Bidder and target are in the same country	Bidder and target are not in the same country	TOTAL
Cash	184	116	300
stock	21	0	21
TOTAL	205	116	321
	(%)	(%)	
Cash	89.75%	100%	
Stock	10.25%	0%	
TOTAL	100%	100%	

When bidder and target are in the same country deals are preferred to be financed in cash 89.75% in contrast to stock financing 10.25%. On the other hand when bidder and target are not in the same country all the deals are financed in cash, as bidder faces more difficulties such as less limited access to firm information, exchange risk, greater trading costs, to mention but a few, and more than 74% are characterized as completed.

Table 3.9 Frequency distribution of Payment methods classified by target's and bidder's industry			
Payment method	Bidder and target are in the same industry	Bidder and target are not in the same industry	TOTAL
Cash	176	124	300
stock	14	7	21
TOTAL	190	131	321
	(%)	(%)	
Cash	92.63%	94.65%	
Stock	7.37%	5.35%	
TOTAL	100%	100%	

When bidder and target are in the same industry more deals are financed in cash 92.63% of which more than half and specifically 68.42% are completed. This evidence conflicts with Facio and Masulis statement that intra industry deals have more possibilities to be achieved with stock financing. The same pattern follows

bidders that are not in the same industry with the targets and yet they also prefer cash financing 94.65% than stock. It is worth mentioning that only 16.7% of them are completed.

Table 3.10 Frequency distribution of Payment methods classified by target's subsidiary or private/public firm status			
Payment method	**Target is subsidiary firm**	**Target is private or Public firm**	**TOTAL**
Cash	88	212	300
stock	1	20	21
TOTAL	**89**	**232**	**321**
	(%)	(%)	
Cash	92.63%	94.65%	
Stock	7.37%	5.35%	
TOTAL	**100%**	**100%**	

If a target is subsidiary then it belongs to the first category regardless of its listed or unlisted status in the exchange market. So if targets are subsidiaries the bidders preffer to pay the acquisition with cash (92.63%), in which 77.5% of them are completed. This happens because a subsidiary firm is more concentrated and when bidder pays with stock he would create a new blockholder. Moreover acquisitions of private targets are also financed in cash (94.65%) than stock, of which 65.51% are completed, as statistics show. In Greece takeovers are primarily financed in cash and probably this is the characteristic of this market.

Our evidence is fully consistent with the findings of Facio and Masulis (2005), and Hansen (2002) about the subsidiary target and its high level of cash payment. In sharp contrast, the proportion of cash and stock deals in the final data sample of Zhang (2003) is opposite to ours proportions (Zhang found higher level of stock financing). This deviation in results may probably be occurred because Zhang analyzed only merger and acquisitions among public firms.

Table 3.11 Payment method per year				
Year	Cash	Stock	TOTAL	GDP growth
2000	23 deals	4 deals	27 deals	3.8%
2001	47 deals	3 deals	50 deals	4.2%
2002	29 deals	1 deals	30 deals	5.2%
2003	19 deals	3 deals	22 deals	5.8%
2004	7 deals	1 deals	8 deals	3.9%
2005	19 deals	5 deals	24 deals	2.9%
2006	37 deals	0 deals	37 deals	4.3%
2007	33 deals	0 deals	33 deals	3.1%
2008	38 deals	0 deals	38 deals	-0.1%
2009	27 deals	1 deals	28 deals	-2.9%
2010	21 deals	3 deals	24 deals	-4.3%
TOTAL	300	21	**321**	

Finally we represent a table which shows how many acquisitions took place each year in our final sample of 321 takeovers, and what method of payment is applied. As we find out the stock payment method is not attractive at all, and in some periods like 2006 to 2008 there is no stock deal. While years 2001, 2002, 2006, 2007 and 2008 (due to the previous years' tendency) appear greater frequency than the others and that because these years the economy was in development (by looking the GDP growths) and thus acquisitions had more possibilities to happen. The diagram below shows the GDP change as National Statistical Service of Greece stated over the last ten years.

Figure 3   GDP changes for Greece

3.2 Descriptive statistics and variable definitions

In this subsection we will represent some descriptive statistics about our explanatory variables classified firstly by payment methods and then as they are represented by e-views for the whole data sample. But before we go on with the statistics we must give the definitions of the variables and how we have composed them. Briefly variables are: Cross Country, Intra Industry, Subsidiary, Market run up, Stock run up, Debt capacity, Collateral, Financial leverage, Cash availability, Relative deal size and Growth opportunities, and analyzed as

3.2.1 Definitions of the determinants used

➢ Cross Country: It is a dummy variable equals 1 if bidder and target are not in the same country and equals 0 if bidder and target are in the same country. The source for these data is Thomson One Banker.

➢ Intra Industry: It is a dummy variable equals 1 if bidder and target are in the same industry and equals 0 if bidder and target are not in the same industry. The source for these data is Thomson One Banker.

- Subsidiary: It is a dummy variable equals 1 when the target is a subsidiary firm and equals 0 when the target is a private firm regardless if it is listed or unlisted in the exchange stock market. The source for these data is Thomson One Banker and extracted from synopsis.

- 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 Greece we used the index of ftse 20. The source for these data is Datastream data base.

- 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 cold cumulative stock price return of the bidder over the year prior to the announcement month. The source for these data is Datastream data base.

- 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 data base.

- 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 data base.

- 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 data base and Thomson One Banker.

➢ <u>Cash availability</u>: 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 data base.

➢ <u>Relative deal size</u>: 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 data base and Thomson One Banker.

➢ <u>Growth opportunities</u>: It is measured by the bidder's market to book ratio and it is used as a measure of bidder's investment opportunities. It attempts to identify undervalued or overvalued securities and through it, the investment movements. It is defined as the market value of the ordinary equity divided by the balance sheet value of the ordinary equity in the company. The source for these data is Worldscope data base and we used interim observations of the quarter-end prior to the bid (for example if an announcement date is 17/5/2005 we took the interim value as Worldacore suggests for Q1 quarter of 2005).

In order to compose these variables we used some primary variables such as: Common dividends, Total debt, Total assets, Market capitalization, Net income after preferred dividends, Property plant and equipment, Deal value. Below we represent their definitions as mentioned in Worldscope, Datastream and Thomson One Banker:

❖ <u>Common dividends</u>: 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.

❖ <u>Total debt</u>: Total debt represents all interest bearing and capitalized lease obligations. It is the sum of long and short term debt.

- ❖ <u>Total assets</u>: 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.

- ❖ <u>Market capitalization</u>: Market capitalization represents the total market value of the company based on year end 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.

- ❖ <u>Net income after preferred dividends</u>: Net income after preferred dividends represents the net income after preferred dividends that the company uses to calculate the basic earnings per share.

- ❖ <u>Property plant and equipment</u>: Property plant and equipment represents the gross property plant and equipment less accumulated reserves for depreciation, depletion and amortization

- ❖ <u>Deal value</u>: Value of transaction is total value of consideration paid by the acquirer, excluding fees and expenses. 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.

Finally we represent the definition for the term of "buy and hold cumulative return" for a stock and respectively works for an index as:

The buy-and-hold return (BHR) for a stock i over a period of τ months (in our case, for the 12 months preceding the deal announcement, i.e. $\tau = 12$) is given by:

$$\text{BHR}_{i\tau} = \prod_{t=1}^{\tau} (1+R_{it})$$

where:

Π denotes product and R_{it} is the actual return for stock i over the month t

3.2.2 Descriptive statistics regarding the determinants used in the analysis

Having given the definitions with the variables we are able to describe the table with the descriptive statistics between the explanatory variables and the method of payment. This table includes the averages and the value of variables as proportions in each category.

Table 3.12 Descriptive statistics by method of payment					
Variable	Average		Weights of Avg		Average of sample
	Cash	Stock	Cash	Stock	
Market run up	0.8864	0.9612	0.9945	1.0782	**0.8913**
Stock run up	0.9201	0.9418	0.9984	1.022	**0.9215**
Debt capacity	13.687	15.483	0.9914	1.1216	**13.804**
Collateral	0.2628	0.2222	1.0101	0.8544	**0.2601**
Financial leverage	0.8593	0.9101	0.9961	1.0551	**0.8626**
Cash availability	2.3778	0.3568	1.0588	0.1588	**2.2453**
Relative deal size	0.8838	0.9580	0.9945	1.0780	**0.8886**
Growth opportunities	2.1802	2.6733	0.9853	1.2082	**2.2126**

We use the weights of average in order to perceive how many times the average of each variable in cash or stock financing is above or under the average of the whole data sample. We created the weights by dividing the average of a variable in cash or stock financing to the average of the sample. Values that are above 1 means that variable's average is greater than this of the sample, and below 1 means that is lower than sample's.

This table shows that averages of the explanatory variables differ across the payment methods. Even though differences between prices are very small in some variables, we must not ignore them but rather analyze them. Different prices are an indication that bidder, target and deal characteristics influence the choice of payment method in Greece merger and acquisitions.

Bidders using cash financing have highest average of Collateral (0.26), while bidders using stock financing have lower average of Collateral (0.22). Looking at the

weights in the table we observe that the value for cash financing is greater than 1 and thus high Collateral is more common in cash financing. This finding supports our hypothesis that bidders with high level of collateral assets have better access to borrowing and thus greater ability to pay the acquisitions in cash. While, financially constrained bidders choose stock financing deals more frequently.

The Financing leverage variable is 0.85 for cash financing and 0.91 for stock financing. So the weight is above 1 for stock payments and it means that the average value is greater than the average of the whole sample. This finding is fully consistent with our hypothesis that bidders who have high level of financial leverage are unwilling to issue more debt and thus they finance the acquisition with stock.

The Debt capacity variable has average of 13.68 for cash financing and 15.48 for stock financing. The stock payment has weight above 1 which means that its average value is greater than sample's. We are little surprised by these findings as we know that large firms like bidders have greater ability to issue debt and thus pay acquisitions in cash. According to the table bidders with high debt capacity prefer stock financing deals.

For the variable of Cash availability, bidders in cash deals have average of 2.37 while bidders in stock deals have average 0.35. It is logical to have these statistics as cash availability is used as a proxy for the level of cash flow which is available for investment. So firms with higher value for the cash availability variable prefer cash financing.

Stock run up variable is on average higher for stock bidders than for cash bidders. The buy and hold cumulative stock price return over the year prior to the announcement month is 0.94 and 0.92 respectively. Stock run up is used as a proxy for overvaluation or undervaluation of bidder's stock. This result indicates that stock bidders consider their stock as overvalued by the market.

Market run up, the buy and hold cumulative stock price return of the ftse 20 over the year preceding the announcement month, has average value higher for stock bidders 0.96 or weight above 1, than cash deals 0.88.

Bidders in stock deals have larger average of the variable Relative deal size 0.95 than in cash deals 0.88. The weight average for stock is above 1. This result appears that, on an average, cash bidders acquire relative small targets. We are driven to this conclusion because market capitalization is relatively large compared to the deal value. So the denominator is relatively larger than the numerator for cash deals.

Bidders in stock deals have higher Growth opportunities and thus higher market to book ratio than bidders in stock deals. The value of the variable is 2.67 and 2.18 respectively. As market to book ratio defines investments opportunities, bidders with high market to book ratio prefer stock financing because they are reluctant to borrow. Borrowing leads not only to debt financing constraints in the future, but also to higher levels of monitoring by debtholders.

Table 3.13 Descriptive statistics for dummy variables by method of payment			
Averages for dummy variables			
	Cash	Stock	Average of sample
Cross Country	0.3866	0	0.3613
Intra Industry	0.5866	0.6666	0.5919
Subsidiary	0.2933	0.0476	0.2772

Cross Country is a proxy variable that equals to 0 if bidder and target are in the same country or equals 1 if they are not in the same. As we see in the table the average value of cash financing is 0.38 and the average value for stock is 0. This means that when a bidder acquires a target from another country it is certain that he will pay in cash.

Intra Industry is a proxy variable that equals to 1 if bidder and target are in the same industry or equals 0 if they are not in the same. The value is 0.58 for cash bidders and 0.66 for stock bidders. Comparing the two averages between cash and stock we conclude that there are more possibilities a bidder to finance the acquisition with stock if bidder and target are in the same industry. Moreover we have to mention that in Greece bidders acquire more targets that they are in the same industry and in the same country, according to the frequencies.

Finally subsidiary is a proxy variable that equals to 1 if the targets are subsidiary industries or equals 0 if they are not. According to the table more cash bidders prefer subsidiary targets (0.29) than stock bidders (0.04). This is due to the fact that, if bidders finance in cash they avoid creating a large block holder to the combined firm, as subsidiaries have concentrated structure

Bellow we represent some descriptive statistics for each variable separately as it is demonstrated in the whole sample. The table contains the values of mean, median, and standard deviation.

Table 3.14 Descriptive statistics for the whole sample			
	Mean	**Median**	**Std. Dev.**
Cash availability	2.2456	0.2921	2.995459
Relative deal size	0.8886	0.9626	0.178629
Growth opportunities	2.2082	1.6600	2.043760
Market run up	0.8913	0.7910	0.340058
Stock run up	0.9215	0.8394	0.532200
Debt capacity	13.804	13.3597	2.246286
Collateral	0.2601	0.2230	0.211203
Financial leverage	0.8626	0.9464	0.180973
Cross Country	0.3613	0	0.4811
Intra Industry	0.5919	1	0.4922
Subsidiary	0.2772	0	0.4483
Observation	**321**	**321**	**321**

Figure 4   Descriptive statistics for the whole sample
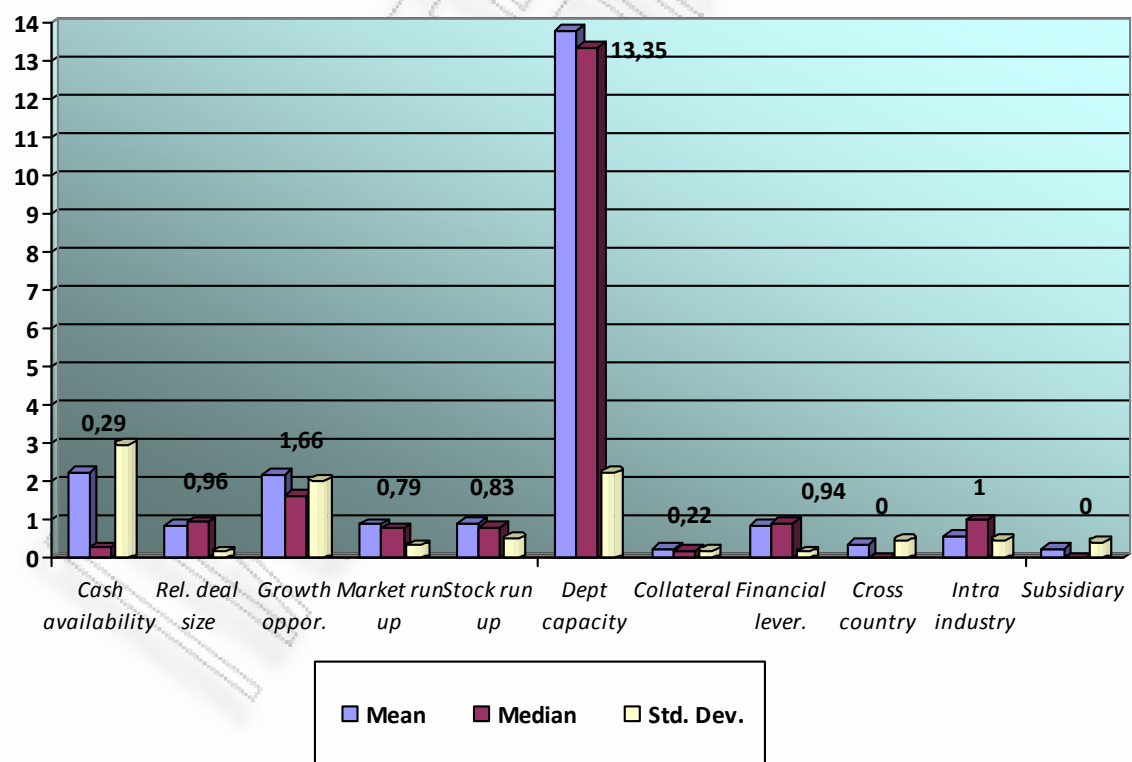
3.3 Methodology

We will use a binary model to our sample in order to determine which explanatory variables influence the choice of payment method. In our sample the dependent variable, "method of payment" takes only two outcomes, cash and stock, as we have excluded the combination method. As we mentioned before we exclude it because we had only two observations in a total of 323. In other words combination method holds only 0.6% of the whole sample and for this reason it could not alter our results if we do not include them at all, considering of course that we will use another statistical model. So having left out the combination method, we have outcome 1 for cash deals and outcome 0 for stock deals. Now due to these outcomes we are able to use a probit model. Probit estimation allows us to focus on the qualitative decisions of the method of financing. Following we represent the function of this model and some important characteristics that we use.

3.3.1. Theoretical background for Probit

Probit is a binary model. This means that it takes on a value of one or zero depending on which of two possible results occur. We observe some variable y that takes on one of two values, 0 and 1. Define a latent variable y* as:

$$y_i^* = x_i \beta + \varepsilon_i \tag{3.1}$$

We do not observe y^*, but rather y, which takes on values of 0 or 1 according to the following rule:

$$y_i = \begin{cases} 1 & \text{if } y_i > 0 \\ 0 & \text{otherwise} \end{cases} \tag{3.2}$$

We also assume that $\varepsilon_i \sim N(0, \sigma^2)$, where 0 is the mean and σ^2 is the variance of ε. In contrast with the linear probability model, y_i^* is contributed normally in the probit model, although its realization y_i is not. It is straightforward to show that the rule expressed in equation (3.2) generates a probit. First we note that:

$$prob(y_i = 1) = prob\left(\frac{\varepsilon_i}{\sigma} > -x_i\frac{\beta}{\sigma}\right) \quad (3.3)$$

Dividing by σ in equation (3.3) is helpful because the quantity $\frac{\varepsilon}{\sigma}$ is distributed as standar normal (mean zero and unit variance). The quantity $\frac{\varepsilon}{\sigma}$ is standard normal because ε has been transformed by subtracting its mean zero, and then dividing by its standard deviation, σ. For the probit model the distribution is symmetric, so that equation (3.3) can be written as:

$$prob(y_i = 1) = \Phi\left(x_i\frac{\beta}{\sigma}\right) \quad (3.4)$$

It follows that

$$prob(y_i = 0) = 1 - prob(y_i = 1) = 1 - \Phi\left(x_i\frac{\beta}{\sigma}\right) \quad (3.5)$$

So if we have iid sample the likelihood for the sample is:

$$L = \prod_{i=1}^{n}\Phi\left(x_i\frac{\beta}{\sigma}\right)^{y_i}\left[1 - \Phi\left(x_i\frac{\beta}{\sigma}\right)\right]^{1-y_i} \quad (3.6)$$

So typically we can work with the log-likelihood function which is,

$$l\left(\frac{\beta}{\sigma}\right) = \ln(L) = \sum_i\left\{y_i \cdot \ln\left[\Phi\left(x_i\frac{\beta}{\sigma}\right)\right] + (1-y_i) \cdot \ln\left[1 - \Phi\left(x_i\frac{\beta}{\sigma}\right)\right]\right\} \quad (3.7)$$

Notice that the log-likelihood is bounded above by 0, because $0 \le \Phi(\cdot) \le 1$ implies that

$$\ln\left[\Phi(\cdot)\right] \le 0 \qquad \text{and} \qquad \ln\left[1 - \Phi(\cdot)\right] \le 0 \quad (3.8)$$

Another important aspect of the likelihood function is that the parameters β and σ always appear together. Therefore, they are not separately identified: only the ratio β/σ matters. It is thus convenient to normalize σ to be one, so we can just talk about β.

Finally we define $\Phi(\cdot)$ as:
$$\Phi(z) = \frac{1}{2\pi}\exp\left(-\frac{1}{2}z^2\right) \qquad (3.9)$$

Now that we have represented the theoretical background for the probit model we are able to demonstrate the tables and the results from e-views and discuss these findings. But before we move on at this step, we must give one more definition that influences our models, and this is heteroskedasticity.

Heteroskedasticity is the case where the skedastic fuction depends on the values of the conditioning variable.

$$\mathrm{var}(Y|X = x) = g(x), \quad x \in R_x \qquad (3.10)$$

Where, skedastic function is defined to be the conditional variance interpreted as a function of x.

We can perform maximum likelihood estimation under a number of alternatives distributional assumptions. The difficulty with the probit is that any misspecification of the likelihood will result in inconsistency.

As our model faces the problem of heteroskedasticity ($\sigma_i = \sigma g(x_i)$), we have to compute the quasi-maximum likelihood (QML) covariance and standard errors. These quasi-maximum likelihood estimators are robust in the sense that they produce consistent estimates of the parameters of a correctly specified conditional mean. The estimated standard errors computed using the inverse of the information matrix will not be consistent unless the conditional distribution of y is correctly specified. However, it is possible to estimate the standard errors in a robust fashion so that we can conduct valid inference, even if the distribution is incorrectly specified. So one way to reconcile the similarity of different estimates from what are almost certainly incorrect specifications is to consider each of them as QML estimates of some other true models. In e-views the Huber/White option computes QML standard errors.

3.3.2   Advantages and disadvantages of Probit model

As every econometric model and consequently probit has some advantages and disadvantages to count. To begin with, probit is a binary model and thus it gets the values of zero and one to describe qualitative information. In a sense, these values are arbitrary, any two different values would do. The real benefit of capturing qualitative information using zero-one variables is that it leads to regression models where the parameters have very natural interpretations. Binary response models apply with little modification to independently pooled cross sections or to other data sets where the observations are independent but not necessarily identically distributed. Often year or other time period dummy variables are included to account for aggregate time effects.

Considering that the probit is a nonlinear binary model, in order to estimate it we use the maximum likelihood (ML) function. The advantage is that this estimation method is not more difficult than the ordinary least square method (OLS) which is used for linear models. Nevertheless, the general theory of maximum likelihood estimation for random samples implies that, under very general conditions, the maximum likelihood estimation is consistent, asymptotically normal, and asymptotically efficient. While the linear probability model can be applied with panel data; typically, it would be estimated by fixed effects. Probit model with unobserved effects has recently become popular. This model is complicated by the nonlinear nature of the response probabilities, and thus it is difficult to be estimated and interpreted. Given modern computers, from a practical perspective, the most difficult aspect of probit model is the presentation and interpretation of the results that occur. Finally economists tend to favor the normality assumption for e, which is why the probit model is more popular (than logit) in econometrics. On the contrary when e does not have a standard normal distribution, the response probability will not have the probit form.

Chapter 4   Results from variable analysis

4.1 Probit Regressions

Now that we know how to control the heteroskedasticity problem we will run the regression and derive to some results. It is not generally useful merely to report the coefficients from a probit unless the sign and significance of the coefficients are of interest. The probability gives us a quick view for the significance of the independent variable. At the confidence level of 5%, variable is statistically significant if the probability is less than 0.05 or prob<0.05 and thus we reject the null hypothesis of a zero coefficient. At the confidence level of 10%, the variable is significant if the probability is less than 0.1 or prob<0.1 and finally at the confidence level of 1%, the variable is significant if the probability is less than 0.01 or prob<0.01. A more formal test for the significance of the independent variables is z-statistic. At the 5% level the variable is significant if the absolute value of z-statistic is greater than 1.96 or $|z - stat| > 1.96$. At the level of 10%, the variable is significant if the absolute value of z-statistic is greater than 1.645 or $|z - stat| > 1.645$ and at 1% level the independent variable is significant if the absolute value of z-statistic is greater than 2.576 or $|z - stat| > 2.576$.

The coefficient measures the marginal contribution of the independent variable to the dependent variable, holding all other variables fixed. The sign of coefficient shows the change in the probability of depending variable, particularly 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 (depended variable). And when a variable has significant and negative coefficient means that there is significant and negative relationship between the variable and the probability of cash financing. Finally standard errors measure the statistical reliability of the coefficient estimates. The larger the standard errors are, the more statistical noise in the estimate.

Last but not least, we observe the value of McFadden R-squared. Generally this value gets constant prices which lie between 0 and 1. This value shows how the variance of dependent variable can be interpreted by the total of independent

variables. The higher price for McFadden , the better for our model. But there is no rule about the accurate price and which is considered to be high or low. Our model has McFadden R-squared value equal to 0.39 which is considered a high price. For this reason the regression is successful in predicting the values of the dependent variable within the sample.

4.2 Results from the statistical analysis for the whole sample

Looking at the table 4.15 below we notice that one independent variable, Financial leverage is significant at confidence level of 10%. At level of 5%, two variables, Subsidiary and Cash availability are significant. While at the level of 1% we have also two variables, Cross country and Debt capacity which are statistically significant. Then we will represent in tables the a) variables with their significance and coefficiences, and b) the correlation of variables, which present particular interest (as e-views reported) and then we will analyze the findings. Note that variables defined as in chapter 3.2.2

Table 4.15 Regression of the method of payment on the selected determinants			
Variable	**Coefficient**	**z-statistic**	**Probability**
Cash availability	0.8828**	2.2044	0.0275
Relative deal size	0.5332	0.2716	0.7859
Growth opportunities	-0.0875	-1.4890	0.1365
Market run up	-0.4973	-1.0185	0.3084
Stock run up	0.3895	1.4529	0.1462
Debt capacity	-0.4086***	-3.9624	0.0001
Collateral	-0.0054	-0.0083	0.9934
Financial leverage	-3.7793*	-1.8032	0.0714
Cross Country	8.8088***	20.9803	0.0000
Intra Industry	-0.1178	-0.4065	0.6843
Subsidiary	0.9533**	2.1729	0.0298

> * Denotes significance at the 10% level
> ** Denotes significance at the 5% level
> *** Denotes significance at the 1% level

A more detailed table directly from the e-views program is presented in Appendix B page 68

Table 4.16 Probit correlation matrix			
	Debt capacity	**Financial leverage**	**Stock run up**
Collateral	-0.3332	0.3381	-0.0025
Debt capacity	1	-0.4773	0.1487
Relative deal size	-0.2158	**0.7792**	-0.0738
Market run up	0.1587	0.0228	0.5710

The variable Collateral is insignificant. So there is no significant relationship between the bidder's fraction of collateral assets and the probability of cash financing. These results do not support the argument that bidders with a large fraction of collateral assets have better access to debt markets and as a result we do not verify our initial hypothesis No 4. Also looking at the correlation matrix we see that this variable is negative correlated with the variable Debt capacity and positive correlated with financial leverage. A high level of correlation shows that variables are strongly depended on each other.

The variable Cash availability is significant at 5% level and thus there is significant positive relationship between the bidder's dividend payout ratio, which is a proxy we used for free cash flow, and the probability of cash financing. This evidence totally agrees with our hypothesis No 3, as bidders with more free cash flow prefer cash financing acquisitions than stock financing.

The variable Financial leverage is significant at 10% level. Thus there is significant negative ration between the bidder's financial leverage and the probability of cash financing. That means as the financial leverage increases the probability of cash financing decreases and thus the probability of stock financing increases. These findings enhance our initial hypothesis No 5 which suggests that bidders with high level of leverage are unwilling to issue new dept and consequently they prefer stock financing. Furthermore for the correlation matrix we note that this variable is highly correlated with the relative deal size. Probably one of these two independent variables should be deleted from our sample, but we will discuss later how we will confront this problem.

The variable Debt capacity is significant at 1% level. Thus there is a significant and negative relation between the capacity of debt and the probability of

cash financing. This means that as debt capacity increases, the probability of cash financing decreases and thus the probability of stock financing increases. This evidence contradicts with our hypothesis No 2 which suggests that bidders with high unused debt capacity and subsequently high ability to issue debt, would prefer cash financing.

The variable Stock run up is insignificant. Thus there is no significant relation between the bidder's stock price run up and the probability of cash financing. This result could not support the hypothesis No 7 which predicts that bidders prefer stock financing when they perceive their stock to be overvalued by the market and prefer cash financing when they consider their stock to be undervalued by the market. Moreover we are not surprised by the fact that the variables stock run up and market run up are highly correlated.

The variable Market run up is insignificant. Thus there is no relationship between the bidder's country market run up and the probability of cash financing. The results could not support, as the variable is insignificant, the hypothesis No8 which predicts that bidders are more willing to use stock financing when market is booming.

The variable Growth opportunities is insignificant. Thus there is no significant relationship between the bidder's market to book ratio, which is used as a proxy, and the probability of cash financing. Cause to the insignificance this evidence could not support hypothesis No1 which suggests that bidders with growth opportunities are unwilling to borrow as borrowing leads to financial constraints in the future and increasing monitoring by debtholders. The variable does have the predicted sign but fails to exhibit any statistical significant.

The variable Relative deal size is non significant. Thus there is no significant relationship between the relative deal size and the probability of cash financing. These findings do not support the initial hypothesis No6 which suggests that bidders prefer to use cash as the deal size relative to the acquirer increases.

The variable Cross Country is significant at 1% level and positive. Thus the probability of cash financing is significant higher when bidder and target is not in the same country. The results are consistent with our hypothesis No 9 which argues that targets are more likely to accept cash as payment, if they know less about risks, prospects and economic fundamentals of the bidder's country.

The variable Intra industry is insignificant. Thus the probability of cash financing is not significant related with the status that bidder and target are not in the

same industry. These evidence cause to insignificance could not support hypothesis No10 which states that targets are more likely to accept stock payments if they are in the same industry with bidders as they know more about the risks and prospects.

The variable Subsidiary is significant and positive at 5% level. Thus the probability of cash financing is significant higher when the target is a subsidiary firm. These findings enhance our hypothesis No11 which declares that as subsidiary targets are more concentrated bidders avoiding stock financing and prefer cash in order to avoid the creation of a new blockholder.

4.3 Repairing the model

As we have already mentioned some of our independent variables are strongly correlated. This situation probably creates problems to the results that we get. One possible solution is to eliminate one or more variables which cause the problem. So looking at the table below with the pairwise correlation matrix we decide about our variables.

Table 4.17 Pairwise correlation matrix										
	CASH AVAILAB	*COLLATER*	*CROSS COUNTRY*	*DEPT CAPAC*	*FINAN LEVER*	*GROWTH OPPOR*	*INTRA INDUSTRY*	*MARK RUN UP*	*REL DEAL SIZE*	*STOCK RUN UP*	*SUBSIDIAR*
CASH AVAILAB	**1.000**	0.004	-0.035	0.054	0.008	-0.0404	-0.062	-0.079	0.018	0.003	-0.028
COLLATER	0.004	**1.000**	-0.097	-0.333	0.338	-0.232	0.092	-0.027	0.140	-0.002	0.0003
CROSS COUNTRY	-0.035	-0.097	**1.000**	0.162	-0.098	0.165	0.004	0.050	-0.083	0.027	0.099
DEPT CAPAC	0.054	-0.333	0.162	**1.000**	-0.477	0.076	0.131	0.158	-0.215	0.148	0.161
FINAN LEVER	0.008	0.338	-0.098	-0.477	**1.000**	0.039	-0.005	0.022	**0.779**	-0.001	-0.069
GROWTH OPPOR	-0.040	-0.232	0.165	0.076	0.039	**1.000**	-0.032	0.124	-0.083	0.083	-0.052
INTRA INDUSTRY	-0.062	0.092	0.004	0.131	-0.005	-0.032	**1.000**	0.024	0.049	0.047	0.047
MARK RUN UP	-0.079	-0.027	0.050	0.158	0.022	0.124	0.024	**1.000**	-0.020	0.571	0.033
REL DEAL SIZE	0.018	0.1403	-0.083	-0.215	0.779	-0.083	0.049	-0.020	**1.000**	-0.073	-0.003
STOCK RUN UP	0.003	-0.002	0.027	0.148	-0.001	0.083	0.047	0.571	-0.073	**1.000**	-0.045
SUBSIDIAR	-0.0286	0.0003	0.099	0.161	-0.069	-0.052	0.0470	0.033	-0.003	-0.0454	**1.000**

Econometrics suggest that when there are two variables with the absolute value of correlation greater than 0.75 or $corr > |0.75|$, then one of these two must be

eliminated from the sample. In our sample the variables Relative deal size and Financial leverage have correlation equal to 0.77, greater than 0.75 which is set as limit point. For this reason we will delete one of them. We decided to exclude first Financial leverage because on average comparing to the Relative deal size has greater correlation with the other independent variables (for example Financial leverage and Debt capacity have correlation value -0.45). The correlation between Relative deal size and the other variables is significantly lower. Then we excluded the variable Relative deal size as the variable Financial leverage is statistically significant.

Case 1 Coefficient table without Financial leverage variable

Table 4.18 Regression of the method of payment on the selected determinants (excluding Financial leverage variable)			
Variable	**Coefficient**	**z-Statistic**	**Probability**
Cross Country	8.3240 ***	21.4149	0.0000
Intra Industry	-0.1667	-0.5999	0.5485
Subsidiary	1.0192 **	2.2491	0.0245
Relative deal size	-3.5248 *	-1.8226	0.0684
Stock run up	0.2540	1.0116	0.3117
Market run up	-0.4247	-0.8753	0.3814
Growth opportunities	-0.1157 **	-2.0247	0.0429
Debt capacity	-0.3315 ***	-4.2901	0.0000
Collateral	-0.3988	-0.6313	0.5278
Cash availability	0.7405 **	2.0829	0.0373

```
*      Denotes significance at the 10% level
**     Denotes significance at the 5% level
***    Denotes significance at the 1% level
```

As we can see by excluding the highly correlated but significant at 10% level variable, the model generates two new significant variables. The Relative deal size from insignificant variable becomes significant and negative at level 10%. Now these findings could not support the initial hypothesis No6 which previously was accepted and suggests that bidders prefer to finance in cash as deal size increases. So the variable has negative relation with the probability of cash financing. As the relative deal size increases bidders prefer stock financing. A possible explanation for these findings is that bidders have a limited point of debt capacity. Thus if the deal size

exceeds this limit point bidders are unable to issue more debt and for this reason they probably have a preference for stock financing.

Moreover the variable Growth opportunities becomes from insignificant to significant and negative (the sign of coefficient does not change) at 5% level of confidence. Thus these evidence supports our hypothesis No1 which suggests that bidders with growth opportunities are unwilling to borrow. Following we test the results if we delete the independent variable Relative deal size

Case 2 Coefficient table without Relative deal size variable

Table 4.19 Regression of the method of payment on the selected determinants (excluding the Relative deal size variable)			
Variable	**Coefficient**	**z-Statistic**	**Probability**
Cross Country	8.612096 ***	22.44331	0.0000
Intra Industry	-0.117522	-0.407361	0.6837
Subsidiary	0.956104 **	2.174192	0.0297
Stock run up	0.372894	1.382986	0.1667
Market run up	-0.495843	-1.015481	0.3099
Growth opportunities	-0.090334	-1.566569	0.1172
Financial leverage	-3.395639 ***	-2.804518	0.0050
Debt capacity	-0.401657 ***	-4.169167	0.0000
Collateral	-0.038027	-0.058827	0.9531
Cash availability	0.870764 **	2.234476	0.0255
* Denotes significance at the 10% level ** Denotes significance at the 5% level *** Denotes significance at the 1% level			

Excluding the insignificant and highly correlated variable Relative deal size from our sample, the model does not generate more significant variables but instead enhance the significance of Financial leverage from 10% level to 1% level of confidence. All the other variables remain unchanged in sign and significance.

In order to conclude in a probit model in which all variables would be statistically significant, and thus to keep only these variables that influence the method of payment, we apply the econometric method " General to specific". According to this method we exclude from the regression all variables one by one that are insignificant beginning with the variable with the greater probability. This step is

completed when we have only statistically significant variables. Then we put forward each variable that we had previously excluded and check its significance. If it is significant we let the variable in the regression, if it is not significant we delete it. So applying this method we conclude to the following variables.

Table 4.20 Regression of the method of payment on the selected determinants (General to specific Method)			
Variable	**Coefficient**	**z-Statistic**	**Probability**
Cross Country	8.1136 ***	22.3447	0.0000
Subsidiary	0.8781 **	2.0180	0.0436
Growth opportunities	-0.0970 *	-1.7787	0.0753
Financial leverage	-3.5768 ***	-2.9113	0.0036
Debt capacity	-0.3931 ***	-4.5332	0.0000
Cash availability	0.7011 **	2.0385	0.0415
* Denotes significance at the 10% level ** Denotes significance at the 5% level *** Denotes significance at the 1% level			

A more detailed table directly from the e-views program is presented in Appendix B page 69

The variables Cross country, Financial leverage and Debt capacity are significant at 1% level of confidence. The variables Subsidiary and Cash availability are significant at 5% level and finally the variable Growth opportunity is significant at 10% level. We note that with this method one more variable, Growth opportunities, became from not significant to statistical significant. The signs of coefficients are not changed by applying this method.

4.4 Results from the statistical analysis for the completed deals only

Up to this point we have represented the probit model with deals that their status was characterized by completed, intended and pending. Now we will briefly represent the model only with the deals that were completed. As we analyzed in descriptive statistics in chapter 3.1 and particularly in table 3.3, there are 221 observations for this status so we get the following results from the regression. Concentrating on the results that we are interested in, we represent the next table in which we observe the significance of independent variables.

Table 4.21 Regression of the method of payment on the selected determinants (completed status only)			
Variable	Coefficient	z-Statistic	Probability
Cash availability	1.6222 **	2.1530	0.0313
Collateral	-1.1255	-0.8032	0.4218
Cross Country	9.2502 ***	14.908	0.0000
Debt capacity	-0.8223 ***	-4.4041	0.0000
Financial leverage	-10.8650 **	-2.0097	0.0445
Growth opportunities	-0.1963 *	-1.7166	0.0860
Intra Industry	0.07347	0.1415	0.8875
Market run up	-1.5313 **	-2.3468	0.0189
Relative deal size	2.7897	0.5721	0.5672
Stock run up	0.9918 **	2.0623	0.0392
Subsidiary	7.9623 ***	16.419	0.0000
* Denotes significance at the 10% level ** Denotes significance at the 5% level *** Denotes significance at the 1% level			

A more detailed table directly from the e-views program is presented in Appendix B page 70

Looking at the above table we observe that the variables Cross Country, Debt capacity and Subsidiary are significant at 1% level. Compared to the initial sample (included intended and pending deals), the "completed deal" model appears to raise the significance of Subsidiary variable from 5% to 1% level. The signs of the coefficients remain the same. The variables Cash availability, Financial leverage, Market run up and Stock run up are significant at 5% level. The new element in this regression is that Market run up and Stock run up have become statistically significant and thus they can now support our hypothesis No7-8. And like before the sign of coefficients remains unchanged. Finally the variable Growth opportunities is significant at 10% level. While the Collateral, Intra Industry and Relative deal size are not significant at any level. In the completed deal status there are only tree insignificant values, while in the combined deal status there are 6 insignificant variables.

Finally completing our analysis for this model we have to mention that this model perfectly fits with our data sample. By testing the "Goodness of fit", e-views

show us the results of prob $x^2=0.73$ for Hosmer-Lemeshow statistic, when we used completed, intended and pending deal status in our sample. And prob $x^2=0.84$ for Hosmer-Lemeshow statistic when we used only completed deal status in our sample. Note that if prob $x^2>0.05$ for H-L statistic, the Ho hypothesis is accepted. The hypothesis Ho shows if the model fits with our data in order to investigate this phenomenon. In other words, if the independent variables can credibly describe the dependent variable.

Note

Supportively to the probit model we could use a two boundary tobit model in order to estimate the cash financing. The tobit model is a censored regression model with the depended variable be in the interval [0, 100]. It means that the percentage of stock financing is 0% and the percentage of cash deal is 100%. But we avoid using it as the dependent variable gets only distinct values 0 for stock financing and 100 for cash financing. The tobit model is applied to outcome variables that are roughly continuous over positive values but have a positive probability of equaling zero. In contrast with previous researches like Faccio and Masulis (2005) we decided to not include this model in our study as its use is very ambiguous in our case. Note that Faccio and Masulis used as a payment method not only cash or stock but also a combination of these two. For this reason the independent variable, cash financing gets continuous values. On the other hand if we tricky had used this model, and that's because theoretically it would be correct in a way, we would find that the significant explanatory variables are the same with the probit model. Particularly, the variable Cross Country is statistically significant at 1% level with positive coefficient. The same result we get from the probit model with the difference that the second one had greater coefficient value. Subsidiary is also significant and positive with the probit model but in another confidence level. The variable Financial leverage is significant and negative at 5% level. This variable at probit was significant at 10%. And finally the variables Debt capacity and Cash availability are significant at 1% level. At the probit model Cash availability was significant at the level of 5%. Of course the coefficients as values between these two models are different but the sign does not change apart from Collateral variable. More details about the theoretical background and the use of this model are represented at Appendix A.

Summary and Conclusions

There are several factors that affect the method of payment in mergers and acquisitions. In this empirical study, the determinants of payment method are analyzed across a sample of Greek takeovers. Having excluded, due to insufficient quantity of data, the mixed method of payment from the sample, we ended up with deals that are either stock or cash financed. The final data sample of this study consists of 321 deals announced during the 10-year-period, between January of 2000 and November of 2010 by 112 public bidders from Greece. In this sample we include not only completed but also intended and pending status deals. There are no restrictions about the target's nation, industry, and we use subsidiary, private or public targets as well. So the final data sample contains 300 cash deals which are 93.45% of the total deals, and 21 stock deals or 6.55% of the total. For this reason we can undoubtetly conclude that most Greek takeovers are entirely cash financed.

In order to determine which bidder, target and deal characteristics significantly affect the payment method we used a binary probit model. According to this model we found that the variables Cross Country deals, Subsidiary targets, bidder's Debt Capacity, Financial Leverage and Cash Availability could significantly affect the payment method in Greece. Particularly when bidder and target are not in the same country targets are more willing to accept cash financing as they are not informed about the risks, prospects and other economic difficulties of bidder's country. Moreover when the target is a subsidiary firm, there are more possibilities for cash financing because subsidiary firms have more concentrated structure and thus bidders avoid creating a new blockholder in the combined firm. If bidders have a higher level of debt capacity which means their ability to issue new debt, they would probably prefer to finance the deal with stock. This evidence contradicts with the hypothesis that an increase in debt capacity of the bidder's firm increases the probability for cash financing. Furthermore as the financial leverage of a firm increases, the probability for cash financing decreases. This happens because firms with high leverage would be reluctant to create new debt and thus they prefer stock financing. Finally the bigger cash availability and free cash flow for a bidder firm leads to more possibilities in

cash financing. The other determinants that we used in our model were statistically insignificant and for this reason we could not derive any conclusive results.

To sum up, we note that the bidder, target and deal characteristics in this empirical study explain up to approximately 39% of the variance in the choice of payment method in takeovers by public bidders from Greece. It is proposed for new researches to examine new determinants that we do not include in this study such as asymmetric information, corporate control, interlocking directorship and taxation.

Appendix A

Theoretical background for Tobit

The tobit is an extension of the probit, but it is one approach to dealing with the problem of censored data, and it is given by the following:

$$y_i = \begin{cases} y_i^* & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \le 0 \end{cases} \quad (1)$$

Where y^* is defined as $\quad y_i^* = x_i \beta + \varepsilon_i \; , \quad \varepsilon_i \sim N(0, \sigma^2) \quad$ and

$$y_i = \begin{cases} 1 & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \le 0 \end{cases} \quad (2)$$

This model is called a censored regression model because it is possible to view the problem as one where observations of y^* at or below zero are censored. In other words, all negative values of y^* are coded as 0. We say that these data are left censored at 0. That is, we could write the model as:

$$y_i = \max(0, x_i \beta + \varepsilon_i) \quad (3)$$

The likelihood function for the tobit is instructive. For all observation such that $y_i^* \le 0$ the contribution to the likelihood will be given by $prob(y^* < 0)$, which is :

$$prob(-x_i \beta \le \varepsilon_i) = 1 - \Phi\left(x_i \frac{\beta}{\sigma} \right) \quad (4)$$

For an observation $y_i^* > 0$, the contribution to the likelihood is:

$$prob(\mathrm{y}^* > 0) = \Phi\left(x_i \frac{\beta}{\sigma}\right) \frac{1}{\sigma} \frac{\Phi\left[(y_i - x_i\beta)/\sigma\right]}{\Phi(x_i\beta/\sigma)} \qquad (5)$$

Putting both parts together, we get the likelihood function:

$$L = \prod_{y_i|y_i=0}\left[1-\Phi\left(x_i\frac{\beta}{\sigma}\right)\right] \cdot \prod_{y_i|y_i>0} \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left[-\frac{1}{2}\frac{(y_i-x_i\beta)^2}{\sigma^2}\right] \qquad (6)$$

And the log-likelihood is:

$$l = \sum_{y_i|y_i=0} \ln\left[1-\Phi\left(x_i\frac{\beta}{\sigma}\right)\right] + \sum_{y_i|y_i=0}\left[\ln\frac{1}{\sqrt{2\pi\sigma^2}} - \frac{1}{2}\frac{(y_i-x_i\beta)^2}{\sigma^2}\right] \qquad (7)$$

Tobit Regression

We use supplementary the censored tobit model in order to support our finding of the probit model. This model is appropriate because some of our data may be censored. It occurs when the value of a measurement or observation is only partially known or missing. With censoring, observations result either in knowing the exact value that applies, or in knowing that the value lies within the interval. We apply tobit regression to troubleshooting incorrect data from databases or even missing. So setting the independent variables, and adjusting all the others parameters such as intervals, Huber/White QML estimates, we get the following results.

Table 1 Tobit Regression of the method of payment on the selected determinants			
Variable	**Coefficient**	**z-Statistic**	**Probability**
Cross Country	0.1274 ***	4.6888	0.0000
Intra Industry	-0.0025	-0.0927	0.9261
Subsidiary	0.0941***	3.7315	0.0002
Relative deal size	-0.0020	-0.0254	0.9797
Stock run up	0.0355	1.2494	0.2115
Market run up	-0.0312	-0.5144	0.6069
Growth opportunities	-0.0067	-0.8545	0.3928
Financial leverage	-0.3012 **	-2.3415	0.0192
Debt capacity	-0.0423 ***	-4.2790	0.0000
Collateral	0.0095	0.1283	0.8979
Cash availability	0.0003 ***	3.5293	0.0004
* Denotes significance at the 10% level ** Denotes significance at the 5% level *** Denotes significance at the 1% level			

The variable Cross Country is statistically significant at 1% level with positive coefficient. The same result we get from the probit model with the difference that the second one had greater coefficient value. Subsidiary is also significant and positive with the probit model but in another confidence level. The variable Financial leverage is significant and negative at 5% level. This variable at probit was significant at 10%. And finally the variables Debt capacity and Cash availability are significant at 1% level. At the probit model Cash availability was significant at the level of 5%. Of course the coefficients as values between these two models are different but the sign does not change apart from Collateral variable. Consequently we note that the explanatory variables in the probit model are also significant in the tobit model. Finally we represent the table with coefficients when the deal status is completed.

Table 2 Tobit Regression of the method of payment on the selected determinants (completed status)			
Variable	**Coefficient**	**z-Statistic**	**Probability**
Cash availability	0.0003 ***	2.792876	0.0052
Intra Industry	-0.0164	-0.513277	0.6078
Cross Country	0.1622 ***	4.353181	0.0000
Debt capacity	-0.0511 ***	-4.158672	0.0000
Financial leverage	-0.4453 ***	-2.768183	0.0056
Growth opportunities	-0.0202 *	-1.715178	0.0863
Market run up	-0.0771	-0.976291	0.3289
Stock run up	0.0807 **	2.218494	0.0265
Subsidiary	0.1211 ***	4.109792	0.0000
Collateral	-0.0445	-0.453259	0.6504
Relative deal size	0.0460	0.485138	0.6276
* Denotes significance at the 10% level ** Denotes significance at the 5% level *** Denotes significance at the 1% level			

If we use only the completed deals for our data sample the tobit model gives us five significant variables at 1% level. These variables are Cash availability, Debt capacity, Cross Country, Financial leverage and Subsidiary. While the variables Stock run up and Growth opportunities are significant at levels 5% and 10% respectively. The signs of coefficients do not differ apart from that of Intra Industry's.

Appendix B

Tables with results directly from E-views

Table 4.15   Regression of the method of payment on the selected determinants

Dependent Variable: Y
Method: ML - Binary **Probit** (Quadratic hill climbing)
Date: 01/06/11   Time: 03:17
Sample: 1 321
Included observations: 321
Convergence achieved after 23 iterations
QML (Huber/White) standard errors & covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	9.892848	2.213010	4.470314	0.0000
CROSSCOUNTRY	8.088067	0.385507	20.98031	0.0000
INTRAINDUS	-0.117803	0.289771	-0.406537	0.6843
SUBS	0.953310	0.438723	2.172921	0.0298
RELDEAL	0.533281	1.963316	0.271623	0.7859
STOCKRUN	0.389529	0.268102	1.452913	0.1462
MARKRUN	-0.497328	0.488250	-1.018593	0.3084
GROWTH	-0.087559	0.058800	-1.489096	0.1365
FINLEV	-3.779374	2.095889	-1.803232	0.0714
DEPTCAP	-0.408612	0.103121	-3.962458	0.0001
COLLATER	-0.005406	0.650797	-0.008307	0.9934
CASHAVAIL	0.882818	0.400474	2.204431	0.0275

Mean dependent var	0.934579	S.D. dependent var		0.247653
S.E. of regression	0.215264	Akaike info criterion		0.366511
Sum squared resid	14.31869	Schwarz criterion		0.507499
Log likelihood	-46.82499	Hannan-Quinn criter.		0.422804
Restr. log likelihood	-77.56289	Avg. log likelihood		-0.145872
LR statistic (11 df)	61.47579	McFadden R-squared		0.396296
Probability(LR stat)	4.93E-09			

Obs with Dep=0	21	Total obs		321
Obs with Dep=1	300			

Table 4.21   Regression of the method of payment on the selected determinants
(General to specific Method)

Dependent Variable: Y
Method: ML - Binary **Probit** (Quadratic hill climbing)
Date: 01/06/11   Time: 21:27
Sample: 1 321
Included observations: 321
Convergence achieved after 24 iterations
QML (Huber/White) standard errors & covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	9.921356	2.097777	4.729461	0.0000
CROSSCOUNTRY	8.113645	0.363110	22.34487	0.0000
SUBS	0.878121	0.435136	2.018038	0.0436
GROWTH	-0.097000	0.054533	-1.778750	0.0753
FINLEV	-3.576829	1.228575	-2.911365	0.0036
DEPTCAP	-0.393153	0.086727	-4.533245	0.0000
CASHAVAIL	0.701171	0.343948	2.038596	0.0415

Mean dependent var	0.934579	S.D. dependent var		0.247653
S.E. of regression	0.217593	Akaike info criterion		0.340709
Sum squared resid	14.86690	Schwarz criterion		0.422953
Log likelihood	-47.68384	Hannan-Quinn criter.		0.373547
Restr. log likelihood	-77.56289	Avg. log likelihood		-0.148548
LR statistic (6 df)	59.75809	McFadden R-squared		0.385223
Probability(LR stat)	5.04E-11			

Obs with Dep=0	21	Total obs		321
Obs with Dep=1	300			

Table 4.21   Regression of the method of payment on the selected determinants

(completed status only)

Dependent Variable: Y
Method: ML - Binary **Probit** (Quadratic hill climbing)
Date: 01/06/11   Time: 22:54
Sample: 1 221
Included observations: 221
Convergence achieved after 31 iterations
QML (Huber/White) standard errors & covariance

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	20.98989	4.290725	4.891922	0.0000
CASHAVAIL	1.622242	0.753451	2.153083	0.0313
COLLATER	-1.125551	1.401270	-0.803237	0.4218
CROSSCOUNTRY	9.250223	0.620452	14.90885	0.0000
DEPTCAP	-0.822385	0.186728	-4.404188	0.0000
FINLEV	-10.86505	5.406111	-2.009771	0.0445
GROWTH	-0.196348	0.114377	-1.716669	0.0860
INTRAINDUS	0.073473	0.519163	0.141521	0.8875
MARKRUN	-1.531314	0.652510	-2.346804	0.0189
RELDEAL	2.789729	4.875460	0.572198	0.5672
STOCKRUN	0.991840	0.480933	2.062325	0.0392
SUBS	7.962336	0.484944	16.41908	0.0000

Mean dependent var	0.932127	S.D. dependent var	0.252099
S.E. of regression	0.172725	Akaike info criterion	0.277132
Sum squared resid	6.235255	Schwarz criterion	0.461648
Log likelihood	-18.62308	Hannan-Quinn criter.	0.351636
Restr. log likelihood	-54.83071	Avg. log likelihood	-0.084267
LR statistic (11 df)	72.41527	McFadden R-squared	0.660353
Probability(LR stat)	4.23E-11		

Obs with Dep=0	15	Total obs	221
Obs with Dep=1	206		

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