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The Method of Payment in M&A and Acquirer Stock Return

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ABSTRACT:

This study investigates the effect of payment methods in M&A transactions on the acquirer's returns. An event study analysis was performed first to obtain the acquirer's abnormal returns. The data consists of 2995 deals for a period of 2015-2021. The results showed that the cumulative abnormal returns for the acquirer are positive and significantly different from zero. Next to that an OLS regression was conducted using the acquirer's abnormal returns as dependent variable and the method of payments as independent variables. The findings from the regression show that on average the acquirer's abnormal returns are higher in cash financed deals compared to equity financed transactions. However, the results were not significant. In addition, the CARs for the acquirer are significantly higher in M&A transactions financed by a combination of cash and equity compared to equity financed transactions. To test the validity of these findings three different robustness checks were performed. Significant changes in the results have been observed only when private targets were excluded from the sample.

Keywords: Mergers and Acquisition, Acquirer, Target, Payment methods, Cumulative Abnormal returns

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1. INTRODUCTION

The term “Mergers and Acquisition” refers to corporate restructuring of a firm. A merger is a process of combination of 2 companies of similar size in which one of the firms ceases to exist. On the other hand, an acquisition is a process in which one company obtains a controlling interest in another company. However, both companies continue to exist (DePamphilis, 2018). Different theories have been discussed as the reason why mergers and acquisitions processes take place. However, the main reason is that mergers and acquisitions create synergies. According to DePamphilis (2018), a synergy is “the realized value from the incremental cash flow when two businesses combine.” Various papers have examined the effect that the announcement of M&A has on the abnormal returns on the acquirer and the target firms. For example, Wong & Cheung (2009) investigated the effect of M&A announcement on the abnormal returns of the target and the acquirer in different Asian countries and found a positive relationship. In a similar study, Dodd & Ruback (1977) examined the effect of the announcement on the stock price of the acquirer and the target in the US and concluded that there is a negative relationship. In addition, Adnan & Hossain (2016) found a negative effect of the M&A announcement on the acquirer’s stock price.

But what is the reason behind these abnormal returns? A number of authors have emphasized on the method of payment as a potential reason for these abnormal returns. Three different payment methods have been discussed in the literature. The acquirer could pay for the target either by cash, stocks, or a combination of cash and stocks. Several theories have been widely used in M&A literature to explain why companies chose one method over another. According to Harris et al. (1987), tax considerations might affect the choice of payment in M&A deals. When the method to finance an acquisition is an exchange of shares, the shareholders of the target company do not realize capital gains when they accept the shares of the acquiring company. Until the shares are sold, there is no immediate realization of capital gains liability. Another theory that affects the choice of payments in M&A deals is the so-called signaling theory. According to Wu et al. (2013), the decisions of investors are affected by managers and shareholders of the firms by providing them with internal information. Using specific payment methods sends a signal to the investors. Using equity as a method of payment sends a negative signal to the market participants that the share price of the firm is overvalued.

Contradictory results regarding the effect of payments on the bidders’ return have also been found in the prior literature. Travlos (1987) found that if equity is used as a payment method in transactions, acquirers experience significantly negative returns. If cash is used in the transactions, the returns were characterized as normal. On the other hand, Fuller et al. (2002) found that when equity is used to finance an acquisition,

acquirers experience positive returns. In addition, Masse et al. (1990) investigated the effect of payment methods on acquirer abnormal returns by looking at Canadian companies for a period from 1984-1987. The results show that both cash and equity payments result in positive returns for the acquirer.

It is clear, when looking at the results mentioned above that the findings in the literature are contradictory. Moreover, the theories stated above clearly contradict each other, indicating that the question regarding the effect of payment methods on the bidder returns has not been fully answered yet. Therefore, the objective of this paper is to investigate the effect of the method of financing in M&A on the acquirer's abnormal returns. Thus, the following research question will be asked:

What is the effect of the method of payments in M&A deals on the acquirer's abnormal returns?

The above-stated research question was answered using a quantitative approach. The following steps have been taken:

1. First, the abnormal returns of the acquirer companies were estimated using an event study analysis.
2. Second, an OLS regression model was run used to test the relationship between the method of financing and the abnormal returns.

The results from this study show that the financing method used in M&A transactions affects the bidders' cumulative abnormal returns. The findings further show that the bidders experience higher returns in cash and mixed deals compared to stocks financed transactions.

The paper continues as follows: First, in the literature section, some of the existing theories and relevant literature studies are presented. Second, the methodology and data section provide an explanation of the methods used in the paper and the characteristics of the data that will be used. In section 4, the results are discussed. Section 5 presents the findings from the robustness checks. Finally, a short conclusion is given, and limitations and recommendations for future research are discussed.

2. LITERATURE REVIEW

In this section, the previous literature on similar topics will be analyzed, and insights into the results that have been obtained will be provided. The section is organized as follows: First, the results related to the announcements of M&A transactions and bidders' abnormal returns are presented. Second, the theories explaining the choice of payment methods in M&A transactions are presented. Finally, results related to the effect of payment methods on bidders' abnormal returns are discussed.

2.1 M&A announcements and the bidder abnormal returns

A number of papers showed a positive relationship between the M&A announcement and the acquirer returns. For example, Wong & Cheung (2009) examined whether the announcement of mergers and acquisitions leads to abnormal returns for the bidder and the target firms in six Asian countries from 2000 to 2007. They found that acquirer firms experience positive cumulative abnormal returns in the period after the announcement. Goergen & Renneboog (2003) investigated the short-term wealth effect for the acquirer and target companies in Europe from 1993 to 2000. Their results showed that the target company's share price increased by 9 % after the announcement. The takeover announcement also increased the acquirer's share price, however, only by 0.7 %. In a similar study, Dodd & Ruback (1977) investigated the effect of a tender offer announcements on the bidder and target stock returns in the US from 1973 to 1976. Their conclusion was that during the announcement month, the target firm experience significantly positive returns of almost 21 % for successful offers and 19 % for offers that were unsuccessful. The acquirer returns also increased in the announcement month but only by 2.8%.

Several papers indicated negative effect of the M&A announcement on the acquirer returns. Among others, Firth (1980) analyzed the M&A activity on the shareholder returns in the United Kingdom and found negative abnormal returns for the acquirer firms one month after the announcement of the merger. Moreover, Akben-Selcuk & Altioek-Yilmaz (2011) focused on the Turkish market, looking at 62 M&A deals from 2003 to 2007. They found negative and significant abnormal returns for the acquirer companies for ten days and seven days event windows. In addition, Agrawal et al. (1992) found that the stock price for bidder firms decrease approximately 10% after the merger.

Based on the literature stated above, it becomes clear that the announcement of the M&A deals does affect the bidder's stock prices.

2.2 Theories related to the choice of payments in M&A deals

Numerous studies have focused on the method of payments as the main factor affecting the abnormal returns of the bidder. To get a better understanding of why investors prefer one method of payment, it is important to first look at the Efficient Market Hypothesis.

'A market in which prices always "fully reflect" all available information is called "efficient" (Fama,1970).

According to Fama (1970), three efficient market forms exist: weak, semi-strong, and strong. In weak markets, only the past information is incorporated into the price of securities. In semi-strong markets, all

historical and new publicly available information is embodied in the securities price. And finally, the strong form suggests that all public and inside information is incorporated into the price of the securities. In a more recent study, Malkiel (2003) provided a new definition of efficient markets:

'Prices fully reflect all known information, and even uninformed investors buying a diversified portfolio at the tableau of prices given by the market will obtain a rate of return as generous as that achieved by the experts' (Malkiel, 2003).

In efficient markets where all new information is embodied in the share price, with symmetric information and without the need to pay taxes, market participants will make no difference whether they use cash or equity to finance their acquisition. In such a world, the change in the share price will reflect only the changes in the fundamental values induced by the merger. But in reality, investors do pay taxes, and other market aspects motivate market participants in M&A transactions to choose a specific method of payment method (Harris et al., 1987).

The first theory that has been widely discussed in the literature is the tax consideration theory. The tax considerations might affect the choice of payment in M&A deals. When the method to finance an acquisition is an exchange of shares, the target company's shareholders do not realize capital gains when they accept the acquiring company's shares. Until the shares are sold, there is no immediate realization of capital gains liability. On the other hand, using cash as a method of payment will impose immediate tax capital gain liability on the target's investors, and they must pay the capital gain tax rate after the cash has been received. Thus, target shareholders would prefer equity payment. In some cases, the acquired shareholders can decrease the capital tax rate if they have allowances or tax exempt. In this case, the target shareholders would be indifferent to the method of financing (Harris et al., 1987). Under different situations, the target investors might postpone the tax liability or realize it immediately if the payment method is a combination of cash and shares. Acquisitions, where the method of financing is cash, have higher returns than equity-financed deals because target investors require a higher premium to compensate them for the tax liability that they must pay (Huang & Walking, 1987).

Another theory that has been discussed in the literature is the Information asymmetry theory, often discussed as part of the signaling theory. According to the signaling theory, the decisions of investors are affected by managers and shareholders of the firms by providing them with an internal information. Therefore, having information about the payment method, investors can evaluate the firm's price. Using equity as a financing method sends a negative signal to the market participants that the firm's share price is overvalued. Investors would not buy these shares, which will result in a higher cost of financing and a lower performance for the firm (Wu et al., 2013). Information asymmetry in M&A transactions might have

a direct effect on the method of payment. Opportunistic behavior in M&A deals might be observed if one of the parties in the transaction has superior information about the valuation of their company. For example, target companies will accept offers knowing that their shares are overvalued. On the other hand, when the acquirer company knows that their shares are overvalued, they will most likely choose the exchange of shares as a method to finance the deal (Harris et al., 1987). In their paper, Mayers and Majluf (1984) showed that the equity payment would be less preferred if the acquirer had superior information about the valuation of the company. Similarly, the acquirer will not engage in equity deals if the target has superior information about the valuation of their company. In addition, they showed that the equity offers send a negative signal to the market, while cash offers are perceived as good news by the market.

2.3 Method of payments and acquirer returns

After discussing the relevant theories that influence the choice of payment methods in an acquisition, it is important to look at the results documented in the previous literature and see if they support the theories stated above.

A considerable amount of research has focused on the method of payments as the main factor affecting the abnormal returns of the bidder. Among others, Travlos (1987) focused on the method of payment in determining the acquirer's stock return. The method of payment was divided into stock offers, if the acquirer pays for the target solely by stocks, cash offer if it pays only with cash, and a combination between cash and stocks. He found that if the bidder firms offer to pay entirely by stocks, their return decreases on the announcement day. A negative signal is sent to investors that the bidder's share price is overvalued if the merger is financed by an exchange of stocks. If the transaction was financed entirely by cash, the shareholders' return was characterized as "normal."

Similarly, Asquith et al. (1990) examined the effect that the payment method and the deal size have on the target and acquirer stock returns. The authors used a sample of 343 merger deals from 1975-1983. They found that equity offers are associated with significant negative returns for the bidder firms, while deals financed by cash lead to positive but insignificant returns for the acquirers. When a company decides to issue new equity, a negative signal that the company stock price is overvalued is sent to the market participants. Market participants react in a similar manner to the news of issuing new equity and to the news of financing acquisitions using stocks. Therefore, a negative signal is sent to investors that the company stock price is overvalued when they choose to finance an acquisition by exchange of shares. This negative effect is not present in acquisitions financed by cash. The findings reported by the authors support the relationship stated in the signaling theory.

Trifts (1991) investigated the effect of the leverage and method of payment on the acquirer's abnormal returns. He used a sample of 122 acquisitions in the US from 1970-1985. The results indicated that cash-financed offers yield positive but not significant abnormal returns, while stock offers were associated with significantly negative abnormal returns of -2.30% during the announcement period.

In a related study, Draper & Paudyal (1999) focused on UK companies from 1988 to 1996. According to the authors, equity will be used as a payment method for the merger when the company believes their shares are overvalued or does not expect any synergies from the deal. On the other hand, cash mergers suggest that the acquirer company does not have private information, and they expect positive synergies from the deal. They found that the acquirer return on the announcement day decreases if the method of payment is stocks or a combination of shares and cash, and no significant returns were observed if the method of payment was cash.

The opposite results have also been observed. For example, Masse et al. (1990) looked at the effect of the method of financing on the firm's return in tender offers and mergers. The authors stated that the method of payment would affect the prices of the acquirer and the target company. When the acquirer company believes that its shares are undervalued, it will most likely choose a cash merger (rather than an equity merger), sending a positive signal to investors that the company's share prices, and profitability are increasing. The opposite effect would be observed in an equity merger. They looked at acquirer and target firms in Canada between 1984-1987. The sample consisted of 1471 firms. The results showed that both cash and stock offers lead to positive returns for the acquirer. However, if the financing method is cash, returns are higher.

In a similar manner, Fuller et al. (2002) investigate the effect of payment type, the target type, and the target's size on the acquirers' abnormal returns. They used a sample of 539 acquirer firms making 3135 bids from 1990-2000. They conclude that the acquirer shareholders' return increases if the acquirer purchases a private or a subsidiary of a public firm and decreases if the bidder acquires a public target firm. In addition, the results indicated that the return is even bigger if the target is a large company and if stocks are used as a method of payment. Tax considerations were the reason for the observed higher returns in an equity merger. In an equity merger, the target company might accept a lower price because it might delay paying taxes until the shares are sold.

Chang (1998) investigates the effect of payment methods on the acquirer returns if they acquire private targets. He used a sample of 281 deals from 1981 to 1992. The bidder returns were estimated for a period of 2 days, one day before the event and on the day of the event. The method of payments was divided into cash offers, equity offers, and mixed deals where the combination of cash and equity is used (the results for

equity and mixed deals were not presented separately). To compare the results, the author also used a sample where the bidders acquired public targets. The results showed that acquirers experience positive cumulative abnormal returns for equity and cash deals when they acquire a private target. However, the returns associated with cash acquisitions are not significant. The opposite relationship was observed when the target was publicly listed. The bidders experience negative cumulative abnormal returns for both cash and equity acquisitions, again in cash deals, the returns were not significant.

In a related study, Ang (2001) examined the relationship between payment methods and abnormal returns for both privately and publicly held targets. The method of financing was divided into stock, cash, and mixed deals. The results showed that two days' cumulative abnormal returns (the day of the event and the day after) for bidders acquiring private targets are significantly positive for each of the payment methods. In contrast, the two days' cumulative abnormal returns for bidders acquiring public targets are significantly negative when the method of financing is equity. Cash-financed and mixed-financed acquisitions result in positive returns for the bidders acquiring public targets. However, the returns are again not significant.

Based on the literature stated above, it becomes clear that the results are not conclusive and somewhat contradictory therefore, the following hypothesis will be created:

H1: The acquirer's abnormal return is higher for cash mergers than for equity mergers.

H2: The acquirer's abnormal return is higher for mix deals than for equity mergers.

3. METHODOLOGY AND DATA

The data set for this paper is obtained from Zephyr and Eikon. The announcement date for M&A deals will be obtained from Zephyr, and the stock prices will be obtained from Yahoo finance and Eikon. The data sample consists of 2 995 M&A deals between 2015-2021 for US companies listed on the New York stock exchange. The time span in this paper is chosen in order the results to be as recent as possible.

A transaction needs to meet the following criteria in order to be included in the sample:

1. The acquirer should be a publicly listed US company.

2. The announcement should have taken place between 2015 and 2021.
3. The method of payment used should be cash, shares, or a combination of both.
4. The deal should be complete.

In order to find the effect of M&A announcements on the abnormal return of the acquirer firm, an event study analysis will be performed. Event study analysis measures the effect of an event on firm performance. It has been widely used in merger and acquisition research, and is often applied in events specific to the firm and market-based events (MacKinlay,1997). According to MacKinlay (1997), an event study analysis begins by identifying the event of interest and the period for which the returns of a particular company will be analyzed, the so-called event window. The next step will be to calculate the abnormal returns, defined as the actual return of the security during the event window minus the expected return. The expected return, in this case, is defined as the return if the event had not happened.

The first step will be to calculate the expected return of the acquirer. Different approaches have been used to calculate the return. In this paper, I will use the market model, which relates the return of a security to the return of the market. This method is often preferred since it decreases the variance of the abnormal returns compared to other methods (MacKinlay,1997). The market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \quad (1)$$

Where:

R_{it} = the return of a security i in period t

R_{mt} = return of the market

α and β = the parameters of the model

e = zero mean disturbance term

The next step in the analysis will be to estimate the actual daily returns. Following Wong & Cheung (2009), the returns are calculated as follows:

$$R_{it} = \left[\frac{P_t - P_{t-1} + D_{it}}{P_{t-1}} \right] \times 100\% \quad (2)$$

Where:

R_{it} = daily return of security i in period t

P_{it} = the closing price of security i in a period t

P_{t-1} = the closing price of security i in a period t-1

D_{it} = dividend payment on security i in period t

In a similar manner, the market daily returns will be estimated:

$$R_{mt} = \left[\frac{P_{mt} - P_{mt-1}}{P_{mt-1}} \right] \times 100\% \quad (3)$$

Where:

R_{mt} = the return of the market

P_{mt} = closing market price in time t

P_{t-1} = closing market price in time t-1

In addition, we can estimate the abnormal returns, again following the model implied by (Wong & Cheung, 2009). Using the following formula:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \quad (4)$$

Where:

AR_{it} - The abnormal return of security I a time t

R_{it} = the actual return

$(a + bR_m)$ = the expected return

However, we need to examine the average abnormal returns for all securities during each day of the estimation window. The following formula implied by Wong & Cheung (2009) is used:

$$AAR_t = \frac{1}{N_t} \sum_{i=1}^N AR_{it} \quad (5)$$

Where:

N = number of observations in the sample

An important step in the event analysis will be to check if the abnormal returns are significantly different from zero. If the returns are significantly different from zero during the event window, we can conclude that the event caused this difference. Following Brown & Warner (1985), a t-test will be performed:

$$t = \sqrt{N}(AAR_t/SE) \quad (6)$$

Where AARs are the average abnormal returns, SE is the standard deviation of the average abnormal returns, and N represents the number of observations.

Furthermore, based on MacKinlay (1997), we must combine the sum of all abnormal returns to draw an overall conclusion about our event. The cumulative abnormal returns represent the sum of all abnormal returns. CARs are calculated as follows:

$$CAR[-2, +2] = \sum_{t+2}^{t-2} AR_{it} \quad (7)$$

Finally, the event window and estimation window must be defined. The event window refers to the period that includes the event that we are looking at. In this paper, the event will be the announcement date which is usually denoted as day 0. The period of the event window is chosen to assure that the abnormal returns were caused by the announcement and to reduce the likelihood of other events affecting the returns (McWilliams & Siegel, 1997). Therefore, the event window used in this study ranges from [-2,+2], representing two days before the announcement date and two days after. This is line with (Barbopoulos et al., 2017). The estimation window represents the time before the event period. It is important for the estimation period and event window to not overlap because that might affect the results, (MacKinlay, 1997). Therefore, the estimation period for this paper ranges from [-120,-3].

After obtaining the results from the event study analysis, we can answer the research question of this paper: what is the effect of the method of payments used in M&A deals on the abnormal returns of the acquirer company? In order to answer the research question, an OLS regression model will be run with CAR as a dependent variable, two independent variables representing the method of payments, and a few other control variables. This is in line with (Fuller et al., 2002).

$$CAR[-2, +2] = \beta_0 + \beta_1 CashDummy + \beta_2 MixedDummy + \beta_3 DomesticDummy + \beta_4 Size + \beta_5 RelatedIndustry + \beta_6 MultipleContenders + \beta_7 logMarketCap + \beta_8 Fixed Industry effects + \beta_9 Year Fixed effects + e_{it}$$

The dependent variable used in the regression represents the five days cumulative abnormal returns for the bidders, ranging from day -2 to day 2 (the event window).

Two independent variables will be used in the regression analysis. The first is a dummy variable for the method of payment which equals 1 if the acquirer pays with cash or 0 otherwise. The second is a dummy variable for method of payment which equals 1 if the acquirer pays with combination of cash and equity and 0 otherwise. This is in line with (Fuller et al., 2002).

The rest of the variables in the regression are added as controls. The first control variable in the regression is a dummy indicating whether the acquisition is domestic or foreign. The dummy variable equals 1 if the acquirer acquires a foreign target and 0 otherwise. When a company acquires a foreign target, they can diversify their routines and therefore improve their performance. Several papers have emphasized on the impact that domestic versus foreign acquisitions have on the acquirer return. Among others Morosini (1998) found that the foreign acquisitions lead to higher returns than domestic acquisitions. Therefore, we expect positive relationship between variable Domestic dummy and the acquirers' cumulative abnormal returns.

Variables "Size" and "Market Cap" are the only controls in the model which are not dummy variables. A natural log is added to variable Market Cap to be normally distributed. Since this paper looks at both private and public target companies it is important to control for the size of the target firm. Private target firms are usually smaller than public firms and thus, their effect on the acquirer stock return might be different. Because large target companies usually negotiate better deals for themselves the acquirer return is expected to be lower, (Fuller et al., 2002). The variable size is obtained by dividing the market value of the target company by the market value of the acquirer, this is in line with (Fuller et al., 2002). Therefore, a negative relationship is expected.

The next control variable indicates whether the acquirer and the target are in a related business industry. Several authors have shown that the acquirer returns are higher if the acquirer is in a related industry with the target. Among others, Maquieira et al. (1998) found that the returns for the acquirer are higher when the target is in a related industry. Similarly, Chang (1998) examined negative returns for acquirers that purchase target companies in unrelated industry, however these results were insignificant. Therefore, a dummy variable will be used which equals 1 if the first two digits of the acquirer's SIC code and the target's SIC code are the same, and 0 otherwise. This is in line with (Chang, 1998). Based on previous literature, a positive relationship is expected.

Variable 'Multiple bidders' is a dummy for the number of bidders that a target has, which equals 1 if the target has multiple bidders and 0 otherwise. The acquirer return can differ depending on the number of bidders that the target has. Several papers have examined the effect of multiple bidders on the acquirer abnormal return. For example, De et al. (1996) found that the returns for acquirer firms that try to purchase a target with multiple bidders are significantly negative, while the returns for the acquirer that is the only bidder for a target, were positive. In addition, Sung (1993) found that the returns for a bidder that acquires a target with multiple bidders are negative, however, not significant. Therefore, a negative relationship is expected.

Next to that is a dummy variable Hostile dummy, which shows whether the deal is a friendly or hostile. The variable equals 1 if the bid is a hostile and 0 otherwise. In a hostile deal the bidder make direct offer to the target shareholders to acquire their shares without the agreement of the target management. In the case of a hostile takeover the target might require higher premium and thus lower abnormal returns for the acquirer are expected (Tuch & O'Sullivan,2007). However, this variable was dropped from the model due to insufficient number of observations for hostile deals.

Since the aim of this study is to find what is the effect of the method of payment in M&A on the acquirer abnormal returns and since the companies are from different industries, it is important to control for the differences that different industries might have on the abnormal returns. Thus, a dummy variable "Industry Fixed Effects" will be added. In their paper, Cakici et al. (1996) found that takeovers in manufacturing and oil industries yield higher abnormal returns than other industries. In addition, Goergen & Renneboog (2003) found that during the announcement period the manufacturing and retail industry firms yield higher abnormal returns than firms from other industries. In order to control for those differences dummy variables for each industry will be added.

Lastly, the Year fixed effects dummy is added to the regression. As economic, political and financial conditions vary over time it is important to control for the effects that each year might have on the acquirers' returns (Morosini, 1998). Thus, a dummy variable for each year will be created.

4. RESULTS

This section presents the results of this paper. First, the descriptive statistics of the results are explained. Second, the results from the event study are presented. Finally, the findings from the OLS regression are explained.

4.1 Descriptive statistics

Table 4 in appendix A depicts descriptive statistics of the variables used in the model. The total number of observations is 2 995. The mean of the dependent variable CAR is 1.39%, with a standard deviation of 87.6. The minimum and the maximum values are -3437 and 2042, respectively. In order to make sure that the dependent variable does not have outliers that significantly affect the results, a box plot graph, which visualizes the highest and the lowest observations in the data, was run in STATA. The graph showed significantly lower and higher observations. In order to correct for these outliers, the variable was winsorized at levels 5% and 95%. After winsorizing the variable, an additional box plot graph was run. The graph indicated significantly high and low observations below and above the value of 10. Hence the observations below and above ten were dropped. After dropping the outliers, the mean of the dependent variable CAR changed from 1.39% and a standard deviation of 87.6 to 0.22% and a standard deviation of

4.06. Next, the normal distribution of the dependent variable was tested by performing a Skewness/Kurtosis test (results in Table 3 in Appendix A). The results show a p value of 0.56 (higher than 0.05), suggesting that the variable is normally distributed. Table 4 further shows that the independent variable Cash Dummy has a mean of 0.33, which indicates that 33% of the deals used in the sample are paid by cash. The mean coefficient of the independent variable Mixed Dummy is 0.5, suggesting that 50% of all deals were paid by a combination of cash and shares. The control variables Size and InMarket Cap have mean values of 0.7 and 7.2, respectively. The mean of the control variable Multiple contenders is 0.42. This means that 42 % of the targets in the data set had more than one bidder. The mean of the variable Related industry is 0.57, indicating that for 57 % of the deals, the target and the acquirer companies were in the same industry. Finally, variable Domestic dummy has a mean of 0.22, which implies that 22% of the deals are foreign.

4.2 Regression results

The first step in answering the research question of this paper was to perform an event study analysis. This is done to investigate the effects (if any) of the announcement of the acquisitions on the acquirers' abnormal returns. After performing the event study analysis and obtaining the CAR (cumulative abnormal returns) two days before and two days after the announcement, it can be concluded that the announcements did affect the returns. A t test was performed to check whether the returns were significantly different from 0. With a coefficient of 33 %, the null hypothesis is rejected (results presented in Table 7 in appendix B). Thus, it can be concluded that the CARs are significantly different from 0.

In order to estimate the effect of the method of payment used in M&A deals on the acquirer's abnormal returns and to answer the research question of this paper, an OLS regression was performed. The variables in the model were checked for multicollinearity and heteroskedasticity before running the regression. First, the correlation coefficients between variables were compared to identify multicollinearity (Table 5 in appendix A). In addition, a VIF (variance inflation factor) test was performed. No multicollinearity has been identified. Next to that, a Braun Pagan test was performed to check for heteroskedasticity. The F statistics coefficient was 4.5%, which is below 5 % and thus, it was concluded that heteroskedasticity is present in the data (the results are presented in Table 6 in appendix B). To go around this problem, the regression was run with robust standard errors. In addition, no significant changes have been observed between the regression coefficients with and without robust standard errors.

After identifying the problems affecting the data, the first regression was performed between the dependent variable CAR (acquirer abnormal returns) and the independent variables (Cash dummy), and (Mixed dummy). Variable Stock dummy will serve as a reference category, and it will not be included in the regression. The rest of the variables in regression are added as controls. Variable Size shows the relative size of the target. Variable InMarket Cap is a natural log of the acquirer's Market Capitalization. Variable

Multiple Contenders indicates whether the target has more than one bidder. Variable Related Industry indicates whether the target and the acquirer are in a related industry. Variable Domestic indicates whether the deal is domestic or foreign. Finally, Industry and Year fixed effects are added to the regression.

The regression results are presented in Table 8. The R-squared for the model is 0.0197, indicating that the independent variables can explain almost 2 % of the variance in the dependent variable. The results from the regression show a positive but insignificant coefficient of 0.37 for the variable Cash dummy with a t value of 1.6 and a p value of 0.11. The results suggest that the acquirer's returns in transactions financed with cash are not significantly different from the acquirer's return in stock-based acquisitions. This is in line with the findings presented by Asquith et al. (1990), Travlos (1987), and Trifts (1991) for positive but not significant abnormal returns for the bidders when the acquisition is financed by cash. The results also support the statements of the signaling theory, which assumes that a positive signal is sent to market participants when bidders use cash to finance transactions. These findings do not support the first hypothesis, which states that the acquirer's abnormal returns are higher in cash-based transactions than the returns in stock-based transactions because the coefficient for variable Cash dummy is not significant. Therefore, hypothesis 1 is rejected. The coefficient for variable Mixed dummy is 0.52, significant at 5 % level with a t value of 2.35 and p value of 0.018. The findings indicate that the acquirer's returns are on average 0.52 % higher in M&A transactions financed by a combination of cash and equity than the acquirer's return in M&A deals financed by equity. The results support the findings documented by Ang (2001) for positive and significant abnormal returns for bidders in mixed transactions. On the other hand, the results contradict the findings obtained by Draper & Paydal (1999) for negative cumulative abnormal returns in mixed deals. The results also support the signaling theory assuming that no negative signal is sent to investors. Moreover, the findings are in line with the second hypothesis, which states that the abnormal returns for the acquirer will be higher in M&A transactions financed by a combination of cash and shares than the acquirer's returns in equity-financed deals. Thus, I fail to reject the second hypothesis.

In addition, the control variables coefficients show the following results: First, the relationship between variable size and cumulative abnormal returns is negative. This implies that the larger size of the target relative to the bidder size, the lower the cumulative abnormal returns for the bidder. However, the coefficient is not significant. Second, variable Ln Market cap has a negative coefficient. This indicates that the larger the market capitalization of the bidder in a deal, the lower the bidder's cumulative abnormal returns. Again, the coefficient is not significant. Next, a negative coefficient, significant at 1 % level, is observed for the dummy variable Multiple contenders. This implies that cumulative abnormal returns for the bidder are on average negative in deals where multiple bidders are trying to acquire one target. This is in line with the findings presented by De et al. (1996) and Sung (1993), who found a negative cumulative

return for the acquirer when the target has multiple bidders. Variable related industry has a negative coefficient, which indicates that the cumulative abnormal returns for the bidders are, on average lower when the target is in a related industry. However, this coefficient is not significant. The final control variable Domestic dummy, which indicates whether the acquisition is domestic or foreign, has a negative coefficient, significant at 5 % level. The negative relationship between variable Domestic dummy and dependent variable CAR illustrates that the acquirer's cumulative abnormal returns are on average negative when they acquire a foreign target. This result contradicts the findings documented by (Morosini, 1998). He finds that the foreign acquisitions result in positive cumulative abnormal returns for the bidder because it can diversify their routines and improve their performance.

Table 8: OLS regression with robust standard errors

VARIABLES	(1) CAR
Cashonlydummy	0.373 (0.233)
Mixeddummy	0.529** (0.224)
Size	-0.000351 (0.000260)
lnMarketcap	-0.0325 (0.0352)
Multiplecontendersdummy	-0.617*** (0.155)
Relatedindustrydummy	-0.190 (0.157)
Domesticdummy	-0.402** (0.177)
Constant	0.872 (0.604)
Observations	2,995
R-squared	0.020
Industry Fixed effects	YES
Year Fixed effects	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5. ROBUSTNESS CHECKS

Additional OLS regressions are performed to investigate whether the results are reliable. First, all missing observations from variable (Target cap) will be dropped. Variable target cap shows the market capitalization of the targets. Variable ‘‘Size’’ was obtained by dividing the target’s market capitalization to the acquirer’s market capitalization. However, not all targets in the data set were publicly listed companies and hence, there was no available data for their market value. Therefore, the robustness check is performed by dropping the missing observations for privately held companies of variable Target cap and running the regression with the remaining observations of publicly listed firms. The results are presented in Table 9 in appendix C. The following changes in the regression results can be observed. First, the R-squared for the model increased from 0.0197 to 0.061. Second, the coefficient for variable Cash dummy remains positive but increased from 0.37 to 1.45, significant at 5% level, with t value of 2.86 and p value of 0.04. Suggesting that on average, the bidder’s abnormal returns are 1.45 % higher for cash-financed deals than the returns in equity-based deals, it is important to note that these results are obtained when the targets are publicly listed. Next, it can be seen that the coefficient for variable Mixed dummy changed from positive 0.52 to negative – 0.21, and is no longer significant. This shows that bidders experience on average 0.21 % lower returns in mixed transactions compared to equity deals, when acquiring public targets. Moreover, control variables did not change significantly. These results contradict most of the findings presented in the literature. For example, Chang (1998) found that acquirers experience negative returns when the payment method is cash and when the target is publicly listed. Similar results were presented by (Fuller et al., 2002). In addition, the results are not in line with the results presented by (Ang, 2001). He investigates the effect of payment methods on bidders’ abnormal returns when they acquire public and private targets. The results show that bidders experience positive returns for both cash and mixed transactions when the target is public. However, the returns were not significant. A possible reason explaining the differences could be the lower number of observations in the papers stated above. Another possible reason is that the authors calculated the CARs for a different event window. For instance, Ang (2001) and Chang (1998) used two-day cumulative abnormal returns.

Second, the dependent variable CAR has been calculated for an event window of 11 days, ranging from -5 days before the announcement to 5 days after. In comparison, variable CAR in the main model was calculated for 5 days event window, ranging from 2 days before the announcement to 2 days after. Before running the regression, the dependent variable was checked for outliers by running a box plot graph, which visualizes the data’s highest and lowest observations. The graph showed significantly lower and higher observations. In order to get rid of the outliers, the following steps were performed. First, winsorizing

method (at levels 5% and 95%) was used. Second, upon an inspection of the graph, it was concluded that there are still significantly higher and lower observations. Therefore, the observations below and above the value of fifteen were additionally dropped. Finally, Skewness/Kurtosis test was run to check whether the dependent variable is normally distributed (the results are presented in Table 12 in Appendix D). The results show a p value of 0.63 (higher than 0.05), suggesting that the variable is normally distributed. In addition, the variables were checked for heteroskedasticity and multicollinearity (the results can be found in Table 11 in appendix D). Variance inflation factor test (VIF) was performed to detect if there is multicollinearity in the model. All values were below 5. Therefore, it was concluded that there is no multicollinearity in the model. In order to test the model for heteroscedasticity, Breusch Pagan test was performed. The coefficient for the F statistics was 0.27 (which is above the 5%), suggesting that heteroskedasticity is not present in the model. The regression with dependent variable CAR (5 days before and 5 days after the event) did not cause a significant change in the coefficients of the variables. The R squared increased from 0.0197 to 0.0242, suggesting that this model can explain more in the variation of the dependent variable. The coefficient for the independent variable Cash dummy decreases from 0.37 to 0.32. This result suggests that on average, the bidders experience 0.32 % higher returns in cash financed acquisitions than in equity-based acquisitions. However, the result is insignificant. The findings support the results documented by (Draper & Paydal,1999). In their paper, they find that acquirer cumulative abnormal returns 5 days before and five days after the event are positive but not significant for cash acquisitions. The Mixed dummy coefficient increases from 0.52 to 0.6 and remains significant at 5% level, indicating that bidder returns are on average 0.6% higher when they use a combination of cash and stocks to finance acquisitions as opposed to acquisitions financed only with stocks. The results are not consistent with the findings presented by (Draper & Paydal,1999). They show that the bidder returns are negative if the payment method is a combination of cash and shares. A possible reason explaining the differences between the results found in the literature and these results could be the time period used in the paper. The authors use deals that took place between 1988 and 1996. Another reason might be that the authors used only UK-based companies in their sample. Looking at the control variables, no significant changes have been observed except for variables log of Market cap and Related industry which are now significant. The results can be seen in Table 10 in appendix D.

Finally, the cumulative abnormal returns have been calculated for an event window of 21 days, ranging from 10 days before to 10 days after the announcement. The results from the regression with the dependent variable CAR [-10 +10] can be seen in Table 10 in the appendix D. Again, the dependent variable was checked for outliers by running a box plot graph, which visualizes the data's highest and lowest observations. The graph showed significantly lower and higher observations. Winsorizing method (at levels 5% and 95%) was performed to remove the outliers. An additional scatter plot was performed to see the

distribution of the variable after the correction for outliers, the graph showed outliers below 20 and above 20. Therefore, those observations were additionally removed. Finally, a Skewness/Kurtosis test was performed to test the normality of the dependent variable. The test shows a p value coefficient of 0.68, indicating that the variable is normally distributed (results presented in Table 14 in appendix D). Additionally, all variables in the model were tested for heteroskedasticity and multicollinearity (the results can be found in Table 13 in appendix D). Again, Breusch Pagan test was performed to check for heteroskedasticity in the model. The coefficient for the F statistics was 0.97 (which is above the 5%), suggesting that heteroskedasticity is not present in the model. Similar to the previous robustness check, variance inflation factor (VIF) test was performed to check for multicollinearity, all values were below 5, indicating that multicollinearity is not present in the model. As can be seen from Table 9 in appendix D, no significant differences have been observed in the coefficients when the regression was run with dependent variable CAR [-10+10]. The R squared decreased from 0.0197 to 0.0157, which shows that now the independent variables can explain less of the variance in the dependent variable. The coefficient for the independent variable Cash dummy decreases from 0.37 to 0.11 and again remains insignificant. The findings show that the acquirer's abnormal returns are on average 0.11% higher but not significant in cash-based deals as opposed to equity-based acquisitions. This is in line with the results documented by (Travlos,1987). He found that the bidders experience positive cumulative abnormal returns 10 days before and 10 days after the announcement when the payment method is cash. However, the returns were not significant. Next to that, the independent variable Mix dummy changed its coefficient from 0.52 to 0.38, suggesting that bidders generate on average 0.38% higher (but not significant) return in mixed financed acquisitions compared to equity financed deals. The findings contradict with the results documented by (Travlos,1987). The author concluded that equity deals and deals financed by a combination of cash and equity result in negative cumulative abnormal returns for the bidder. These differences could be explained by the fact that Travlos, (1987) divided the full sample of the study by type of acquisitions. He looked separately into mergers and tender offers. On the other hand, the results for the mixed dummy variable in this regression support the findings presented by (And, 2001). The coefficients for control variables did not change significantly except for variables ln Market cap, Related industry and Domestic dummy. The coefficients of variables log Market cap and Related industry remained negative and are now significant at 10 and 5 %, respectively. The coefficient of variable Domestic dummy remained negative, however no longer significant.

6. CONCLUSION, LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

To conclude, this paper investigates the effect of payment methods used in M&A transactions on the acquirer's abnormal returns. From the literature review, it becomes clear that there are no conclusive results on whether the relationship between the method of payments and abnormal returns is positive or negative. Therefore, the following research question was created "*what is the effect of method of payment on the acquirer abnormal returns*"? A quantitative approach is used to answer the research question.

First, an event study analysis was performed to estimate the abnormal returns of the acquirer companies in the US between 2015-2021. The final sample comprises of 2 995 M&A deals. The results from the event study showed that the mean of the dependent variable CAR is 1.39% with a standard deviation of 87.6. The minimum and the maximum values are -3437 and 2042, respectively. Next to that, a t test was performed to test the returns for significance. The results from the test show a coefficient of 33 %. Thus, the null hypothesis was rejected, concluding that the acquirer's returns are significantly different from 0. After dropping the outliers from the variable CAR, the mean on the dependent variable changed from 1.39% to 0.22% with a standard deviation of 4.06.

In the second part of this paper, an OLS regression was run to investigate the effect of the form of financing on the acquirer's abnormal returns. Prior to running the regression, the data was checked for problems such as multicollinearity and heteroskedasticity. The results indicated heteroskedasticity in the model. To correct that problem, the regression was run with robust standard errors. The regression results show a positive coefficient of 0.37 for variable Cash dummy. However, the coefficient was insignificant. This indicates that the acquirer's returns in cash-based transactions are not different than the acquirer's return in stock-based acquisitions. This is in line with the results presented by (Asquith et al.,1990). Similar results were documented by Trifts (1991) and (Travlos,1987). The results also support the signaling theory, which states that a positive signal will be sent to investors when the bidders finance acquisitions using cash. However, these findings do not support the first hypothesis. Therefore, hypothesis 1 was rejected. The result for the variable Mixed dummy was significant with a coefficient of 0.52, indicating that the CARs for the acquirer are on average 0.52% higher in mixed deals compared to equity transactions. The findings are in line with the results presented by Ang (2001), but contradict the results presented by Draper & Paudyal (1999) for a negative relationship. In addition, the findings are in line with signaling theory, assuming that no negative signal will be sent to market participants if the acquisition is financed by methods different than equity. These results support the second hypothesis. Thus, I fail to reject the second hypothesis. In addition,

robustness checks were performed to test the validity of the results. Significant changes have been observed only when the observations for private targets were dropped from the model.

Following these results, the research question of this paper can be answered. The results of this study show that the method of financing affects the bidder's stock returns. Higher returns are observed in transactions financed by cash, or a combination of cash and stocks compared to equity-based transactions.

This paper has contributed empirically to the existing literature on M&A by adding more insights into the relationship between payment methods used in M&A transactions and their effect on the bidders' abnormal returns. In addition, the results of this paper have strengthened the reasoning of signaling theory showing that the cash and mix financed acquisition generate higher cumulative abnormal returns than equity-based transactions.

This study has several limitations. First, this paper focuses only on the acquirer's abnormal returns over short event windows. However, the returns might differ significantly when looking at longer event windows. Second, this paper focuses on US-based acquirers. However, cultural differences might yield different results. Another shortcoming of this paper is that it considers only successful bids. Different results might be observed if unsuccessful bids are also taken into account. Lastly, this research investigates M&A transactions that took place between 2015 and 2021. However, a global pandemic started in 2019, which significantly affected the world economy. In their paper, Kooly & Son (2021) presented different ways in which Covid 19 affects M&A. First, a high percentage of businesses went into bankruptcy which significantly affected the number of deals that took place during this period. Moreover, the Covid pandemic has also affected the targets' valuation since the traditional method that uses historical data does not reflect the effect of the pandemic. In addition, some industries, such as transportation and industrials, were more affected by Covid 19 than others, which reflected on the method of payments in those industries. A higher percentage of equity-based deals has been observed in those industries since it was difficult for companies from these industries to obtain financing (Kooly & Son,2021).

Therefore, the recommendations for future research are based on the abovementioned shortcomings. The first recommendation is to estimate the acquirers' cumulative abnormal returns for longer event windows. For example, researchers can estimate the CARs for event window (-50+50). The second recommendation is to add more control variables to increase the explanatory power of the model. For instance, researchers could include variables that control for the attitude of the deal showing whether the takeover is friendly or hostile. An additional recommendation for future research is to look at transactions in which the acquirer is not a US company. As a final suggestion, researchers could account for the effect of the pandemic. For

example, the effects of payment methods on acquirer CARs could be investigated before and after the Covid-19 outbreak.

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APPENDIX A: Descriptive statistics and correlation matrix

Table 1: Descriptive statistics variable CAR (without outliers)

Variable	Obs	Mean	Std.Dev.	Min	Max
CAR	2995	.228	4.059	-9.967	9.99

Table 2: Descriptive Statistics variable CAR (outliers included)

Variable	Obs	Mean	Std.Dev.	Min	Max
CAR	3663	1.393	87.622	-3437.992	2042.535

Table 3: Skewness and kurtosis tests for normality

----- Joint test -----

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Adj chi2(2)	Prob>chi2
CAR	2,995	0.379	0.544	1.150	0.564

Table 4: Descriptive Statistics all variables

Variable	Obs	Mean	Std.Dev.	Min	Max
CAR	2995	.228	4.059	-9.967	9.99
Cashonlydu~	2995	.338	.473	0	1
Mixeddummy	2995	.503	.5	0	1
Size	2995	.72	33.318	0	1818.364
Lnmarketcap	2995	7.548	2.37	-2.996	14.232
Multipleco~y	2995	.423	.494	0	1
Relatedind~y	2995	.574	.495	0	1
Domesticduy	2995	.226	.418	0	1

Table 5: Correlation matrix all variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) CAR	1.000							
(2) Cashonlydummy	0.008	1.000						
(3) mixeddummy	0.028	-0.718	1.000					
(4) size	-0.002	0.023	-0.017	1.000				
(5) Lnmarketcap	-0.042	0.207	-0.068	-0.074	1.000			
(6) multipleconten~y	-0.088	-0.098	0.062	0.025	0.259	1.000		
(7) relatedindustr~y	-0.017	-0.032	0.014	0.015	-0.027	0.052	1.000	
(8) domesticdummy	-0.038	0.090	-0.073	-0.008	0.144	0.001	-0.095	1.000

APPENDIX B: Analysis**Table 6: Variance inflation factor and Breusch Pagan/Cook Weisberg test for heteroskedasticity**

	VIF	1/VIF
Cashonlydummy	2.23	.448
Mixeddummy	2.1	.476
Lnmarketcap	1.19	.84
multiplecontenders~y	1.111	.9
Domesticdummy	1.035	.966
Relatedindustrydummy	1.013	.987
Size	1.01	.99
Mean VIF	1.384	.

Breusch Pagan/Cook Weisberg test for heteroskedasticity

Assumption: i.i.d. error terms

Variable: resdit

H0: Constant variance

F(1, 2993) = 3.99

Prob > F = 0.0457

Table 7: One-sample t test for CAR

	obs	Mean	St_Err	t_value	p_value
CAR	3663	1.393	1.448	.95	.336

APPENDIX C: Robustness check (1)**Table 9: Robustness check regression**

VARIABLES	(1) CAR
Cashonlydummy	1.451*** (0.508)
Mixeddummy	-0.212 (0.449)
Size	-0.00107* (0.000629)
Lnmarketcap	-0.0346 (0.0843)
multiplecontendersdummy	-0.735 (0.540)
relatedindustrydummy	-1.056*** (0.389)
domesticdummy	-0.905* (0.466)
2016.year	-0.990** (0.497)
2017.year	-0.161 (0.579)
2018.year	0.211 (0.571)
2019.year	-0.685 (0.616)
2020.year	-0.975 (0.748)
2021.year	-0.285 (0.705)
3.ind	1.449 (0.896)
4.ind	0.647 (0.879)
5.ind	-0.00549

	(0.996)
6.ind	0.684 (1.164)
7.ind	0.519 (0.805)
8.ind	1.698* (0.929)
9.ind	1.277 (1.159)
10.ind	1.376 (0.891)
Constant	0.662 (1.317)
Observations	657
R-squared	0.061

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

APPENDIX D: Robustness checks (2) and (3)

Table 10: Robustness check regressions

VARIABLES	(1) CAR[-5+5]	(2) CAR[10+10]
Cashonlydummy	0.324 (0.335)	0.110 (0.443)
mixeddummy	0.605** (0.304)	0.378 (0.401)
Size	-0.00119 (0.00316)	-0.000502 (0.00420)
lnmarketcap	-0.181*** (0.0504)	-0.112* (0.0671)
multiplecontendersdummy	-0.545** (0.219)	-0.701** (0.290)
relatedindustrydummy	-0.532** (0.219)	-0.620** (0.289)
domesticdummy	-0.448* (0.219)	-0.162 (0.289)

	(0.254)	(0.340)
2016.year	-0.778**	-0.760*
	(0.334)	(0.444)
2017.year	-0.324	-0.638
	(0.345)	(0.457)
2018.year	-0.283	-0.857*
	(0.376)	(0.499)
2019.year	-0.960***	-1.623***
	(0.370)	(0.487)
2020.year	-1.142***	-0.783
	(0.424)	(0.563)
2021.year	-0.358	-0.184
	(0.364)	(0.480)
2.ind	0.365	5.306*
	(2.412)	(3.198)
3.ind	0.730	5.984*
	(2.382)	(3.158)
4.ind	1.295	6.103*
	(2.371)	(3.143)
5.ind	0.416	4.458
	(2.405)	(3.190)
6.ind	1.620	6.385**
	(2.403)	(3.187)
7.ind	0.268	5.519*
	(2.370)	(3.143)
8.ind	1.113	6.139*
	(2.375)	(3.149)
9.ind	1.254	6.262**
	(2.387)	(3.166)
10.ind	-0.297	3.286
	(3.721)	(4.942)
Constant	1.620	-3.724
	(2.363)	(3.149)
Observations	3,104	3,139
R-squared	0.024	0.016

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Variance inflation factor and Breusch Pagan/Cook Weisberg test for heteroskedasticity CAR [-5+5]

	VIF	1/VIF
Cashonlydummy	2.262	.442
Mixeddummy	2.148	.466
Lnmarketcap	1.157	.864

multiplecontenders~y	1.099	.91
Domesticdummy	1.032	.969
relatedindustrydummy	1.011	.989
Size	1.01	.99
Mean VIF	1.388	.

Breusch “Pagan/Cook “Weisberg test for heteroskedasticity
 Assumption: Normal error terms
 Variable: resdit
 H0: Constant variance
 chi2(1) = 1.26
 Prob > chi2 = 0.2610

Table 12: Skewness and kurtosis tests for normality

----- Joint test ----

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Adj	chi2(2)	Prob>chi2
CAR[-5+5]	3,104	0.553	0.451		0.920	0.630

Table 13: Variance inflation factor and Breusch Pagan/Cook Weisberg test for heteroskedasticity CAR [-10+10]

	VIF	1/VIF
Cashonlydummy	2.261	.442
mixeddummy	2.144	.466
lnmarketcap	1.161	.861
multiplecontenders~y	1.103	.907
domesticdummy	1.032	.969
relatedindustrydummy	1.013	.987
Size	1.01	.99
Mean VIF	1.389	.

Breusch “Pagan/Cook “Weisberg test for heteroskedasticity
 Assumption: Normal error terms
 Variable: resdit
 H0: Constant variance
 chi2(1) = 0.00
 Prob > chi2 = 0.9715

Table 14:Skewness and kurtosis tests for normality

Variable	Obs	----- Joint test -----				
		Pr(skewness)	Pr(kurtosis)	Adj	chi2(2)	Prob>chi2
CAR[-10+10]	3,139	0.455	0.646		0.770	0.679