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Master Thesis

Determinants of the Payment Methods in Mergers and Acquisitions

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ABSTRACT

The aim of this thesis is to investigate the determinants of mergers and acquisitions method of payment in the US in the 2003-2019 period. The relationships between firm and deal characteristics as well as macroeconomic variables and the method of payment in M&A deals in the US are analyzed. The results from Ordered Probit models and Tobit models show that excess cash of acquirer and firm size acquirer are positively related to cash payment and increase the likelihood of cash payment while public acquirer, acquirer's investment opportunity, acquirer's management control, stock performance, collateral assets, relative deal size and financial crisis decrease the likelihood of cash payment.

Keywords: Mergers and Acquisitions Payment method

1. Introduction

There is no doubt that nowadays we live in a time of significant changes due to development in foreign competition and increasing interdependence of markets for different goods and services. Thus, we can consider this as a reason that many firms are expanding and growing geographically. Either company decides to grow through various ways such as attracting new customers or taking an extra market share, or they are destined to fail and disappear. The growth today for many companies happens through mergers and acquisitions (M&A) (Tamosiuniene and Duksaite, 2010). When it comes to principal and essential activities in corporate finance, Mergers and Acquisitions are highlighted as crucial tools for developing and growing firms. The year 2017 is well known as the fifth most active year due to \$3.7 trillion in transaction volume in the M&A market, Ching (2019). The method of payment in Mergers and Acquisitions (M&A) - cash, stocks, or a combination of both can have a crucial influence on the successful conclusion of the M&A deal. The corporate world has observed a significant rise in the activity of M&A as it is a strategy that seeks to align itself with the rapid global competition and the evolution of the markers.

The worldwide growing attention to M&A motivated this thesis to investigate the determinant of M&A payment methods such as firm, deal, and macroeconomic determinants. The choice between payment methods is associated with the firm and deal's characterization that can impact the payment method, such as asymmetric information, managerial ownership, free cash flow, debt capacity or relative deal size, and cross-industry. We further consider macroeconomic parameters, including GDP per capita and the 2008 financial crisis, that has not been investigated thoroughly before and require more attention.

Payment is the last step in a merger and acquisition, and it is a critical component of the deal's success. The acquirer's benefit, potential cash flow, ownership and control structure, financial leverage, subsequent financial decisions, and so on are all affected by the payment decisions (Faccio and Masulis, 2005). As a result, choosing the right financing structure for M&A transactions is critical.

Faccio and Lang (2002) show the effect of the payment method on the corporate control between the US and Europe. They state that in Europe, where stock financing is the most used payment method, 63% of traded corporations have one shareholder with the leading corporate power and can control at least 20% of their votes (voting rights). In contrast, this number decreases to 28% for the US, where stock financing is not favorable. Thus, M&A settlement has a necessary implication on corporate control and governance.

Myers and Majluf (1984) argue that asymmetric information between the acquirer and the target on the value of the acquirer shares allows the acquirer to offer stock if the stock is overvalued and cash if undervalued. Asymmetric information means that one side of the transaction, either the acquirer or target firm, has access to more information than the other side. As a consequence of the asymmetric information, there might be a misvaluation between the two sides in the market. The misvaluation of the bidder's stock is the most analyzed misvaluation due to asymmetric information. Hansen (1987) also shows that bidders are motivated to pay by stock when the level of asymmetric information about the target is high. This doctrine is substantiated by a couple of other studies, such as Travlos (1987) and Fishman (1989).

According to Faccio and Masulis (2005), when it comes to M&A currency, a bidder must choose between using cash or stock as a deal consideration, all of which have opposing consequences. Cash deals usually require debt financing since most bidders have little cash and liquid assets. Bidders of M&A face the choice of debt or equity financing, which in reality translates as a tradeoff between diluted corporate control if issuing equity and increasing financial cost of issuing debt. While on the contrary, the target corporations focus on the tradeoff between the tax benefit of stock and the liquidity of cash payment.

The thesis proceeds as follows. Section 2 is related to literature review about the determinants of the payment methods in Mergers and Acquisitions categorized into three groups: firm, deal and macroeconomics variables. In section 3 we discuss variable definitions and hypotheses. The variables are mostly developed by Faccio and Masulis (2005). The methodology is also explained in section 3. Data is addressed in section 4. To interpret the payment method structure, the study uses the Tobit and Ordered Probit models. Section 4 provides a summary of the data and some descriptive statistics. The empirical findings of these two regression models, as well as the results of robustness check, are interpreted in section 5. Finally, Section 6 contains the conclusion.

1.1 Research method and Findings

I introduce firm, deal and macroeconomic variables to address some unknown questions regarding this topic, such as the determinants of the payment method choice in M&A transactions. After adding variables, the list of the thesis' hypotheses are as follows. The acquirer's management control capacity, excess cash, collateral assets, total assets, cross-industry deals and GDP growth rate are positively related to the cash payment. Acquirer's investment opportunity, the public acquirers, stock performance, financial leverage, the relative deal size and financial crisis are negatively related to a cash payment. After applying the Tobit model and the Ordered Probit model and checking the robustness, the result can be drawn. Acquirer's excess cash and firm size are positively and significantly related to a cash payment. Acquirer's investment opportunity, the public acquirers, collateral assets, stock performance, relative deal size and financial crisis are negatively and significantly related to a cash payment. No evidence is found on debt capacity, a run up situation in GDP growth and cross industry with payment method.

1.2 Contribution

Although there are studies before 2000 that focused on the determinants of payment methods in the US companies, this thesis collected the data from 2003 to 2019 which is more updated than previous ones. Moreover, besides the firm and deal determinants I also include financial crisis and GDP per capita growth rate as macroeconomic factors. The reason for choosing financial crisis is that the 2008 crisis influences the method of payment. For example, secondary market liquidity is declining, and bank lending policies are becoming more restrictive (Ivashina and Scharfstein, 2010). Moreover, it could be interesting to investigate the determinants of the decision of M&A payment structure in the updated period. Thus, the data in this paper is collected from all the M&A transactions in the USA between the periods 2003 to 2019 from the lenses of an acquirer.

1.3 Delimitation

The stock markets in the US are categorized into 11 main sectors and these sectors represent the main aspects of the economy. According to Sudarsanam (2003), There are 6 waves starting from 1890 that economics usually point out when focusing on these merger waves. The time interval of this study is limited to the sixth wave which started in 2003 when the U.S. Federal Reserve began to keep the interest rate at low level which led to the injection of dollars into the market and economic growth until 2019.

2. Literature Review

2.1 Background

Many studies related to M&A during the last four decades, have been done by focusing on the financial decision of the M&A which is determined by different elements of both target firms

and acquirers (Amihud, Lev, & Travlos, 1990; Schlingemann, 2004). One of the most important features for having a successful transaction in M&A is choosing the right payment method.

Modigliani and Miller (1958) use an example of the pie model to explain the concept of the capital structure. They propose that the firm's total value is not impacted by how the investment has been financed and the method of payment is unrelated to the firm's total value. Therefore, firms do not have any preferences when it comes to how to finance investment. However, in that theory, there are no taxes and capital markets are perfect, i.e. there are no imperfections such as illiquidity, asymmetric information, and agency problems. Modigliani and Miller (1963) focus on the corporate tax advantages of debt and define the interest tax shield. They show that companies choose to leverage more so that they can have the benefit of interest payment deductibility. When capital markets imperfections are considered, there is a trade-off between the tax advantages of debt and the disadvantages of financial distress costs. Based on the updated theory they propose that the payment method is an important element.

Myers (1977) focus on agency cost of debt and Leland and Pyle (1977) consider the use of debt as an antitakeover device. The benefit of debt in limiting managerial discretion is examined by Jensen (1989). If investors are unsure about the quality of management or the effectiveness of a business plan, he claims that debt can be used to generate information on these topics.

The free cash flow hypothesis developed by Jensen (1986) examines the relationship between the firm's excess cash and the payment method. It concludes that firms prefer cash financing when there is more excess cash in hand. Stulz (1988) states the asymmetric information theory and focuses on the manager's control and shows that the manager's control can grow through debt financing.

Martin (1996) and Amihud et al (1990) consider the determinants of payment in the US while Swieringa and Schauten (2008) and Faccio and Masulis (2005) study the European countries. Among all studies in this field, Martin (1996) and Faccio and Masulis (2005) are the main ones. Martin (1996) documents its finding to explain that corporations with higher growth prospects are mostly obliged to use shares instead of cash in M&A exchange deals. Martin (1996) examines a sample of 846 US acquisitions from 1979 to 1988 by applying 7 hypotheses related to the specific characteristics of the firm and the deal with regards to 2 payment methods, cash or stock. The findings show that the investment opportunity of acquirers is significantly correlated to the payment method. Faccio and Masulis (2005) investigate 13 European countries. They consider cash, stock and combination of both as different payment methods and used Tobit and Probit models. All in all, the determinants of M&A payment methods are classified into firm, deal and macroeconomic variables.

2.2 Firm Specific Determinants

2.2.1 Asymmetric Information Theory

Asymmetric information, i.e. asymmetric distribution of information between the acquirer and the target firm, is the main reason for misvaluation. One of the most common forms of misvaluation is the misvaluation of acquirer's stock. Hansen (1987) and Myers and Majluf (1984) show that in case of a run-up for acquirer's stock price within a certain time frame before M&A transaction, the preferred payment method will be stock payment because of the overvaluation. Korajczyk et al (1991) find result in agreement with this hypothesis. Using the US data from 1978 to 1983, they show that acquirers tend to pay by stock when their stock is overvalued. In line with studies mentioned above, Faccio and Masulis (2005) show the acquirer's stock run-up one year before the deal positively affect the likelihood of stock payment.

2.2.2 Managerial Ownership

Ownership structure often refers to the percentage of equity owned by managers/insiders of a corporation. If management equity ownership is high, managers prefer to use cash as payment instead of stock because they do not want to dilute their governance structure through M&A deals. Faccio and Masulis (2005), Martin (1996) and Amihud et al. (1990) examine the relationship between managerial ownership of the acquiring firm and the method of payment. Amihud et al. (1990) examine whether there is a connection between insider ownership and financing methods using a sample of 209 US acquisitions from 1981 to 1983. They discover that the top five officers and directors of the firm own about 11% of the company's shares in cash financing deals, but less than 7% in equity financing deals. They conclude that the managerial ownership and cash financing have a positive relationship. Faccio and Masulis (2005) also confirm these results and state that firms prefer cash financing rather than stock when the fraction of shares is large.

In conclusion, maintaining the control of the ownership with the company management appears to be a priority of the managers of the acquiring firm. They therefore prefer cash financing. So, the main benefit of cash payment for managers is that their ownership is not diluted. However, Huang and Walkling (1987) point out that there are drawbacks of cash financing in taxation.

2.2.3 Free Cash Flow Hypothesis

Martin (1996) and Jensen (1986) state that the availability of free cash flow by the bidding corporation affects determining the financial decision of M&A deals. Moreover, the more the acquirer has sufficient free cash flow at their disposal, the more it attracts management to nurse for an expansionary opportunity through an M&A deal with the expectation of an abnormal return. Further, Martin (1996), Jensen (1986), and Chaney et al. (1991) support the doctrine of free cash flow hypothesis and find that there is a direct relationship between cash offers and return on assets. Referring to the free cash flow hypothesis, shareholders would rather pay out this amount as dividends than losing it on non-profitable investment when there is a surplus cash in the firm. Ultimately, shareholders prefer to use cash payment when there is not a high possibility to invest

and there is a lot of cash in hand.. In other words, when there are higher investment opportunities the acquirer will prefer to pay M&A transactions by stock.

Other aspects of the free cash flow hypothesis are mentioned by Fishman (1989). In order to show the free cash flow, he uses the variable liquidity. He defines the liquidity variable as the difference between acquirer's free cash flow and the industry's average free cash flow. Hayn (1989) develops the liquidity measure and defines it as the acquirer's free cash flow divided by acquirer's equity. Both of these studies show a positive relationship between liquidity and a cash payment. In Faccio & Masulis (2005), cash holding, is measured as the ratio of the acquirer's cash plus tradable securities divided by the acquirer's total asset to indicate excess cash flow. Contrary to previous studies, they find that cash holding and cash payment have a negative relationship. They did not provide any reliable explanations for this counter-intuitive outcome because CASH_HOLDING is not an explanatory variable. The explanation for this could be that the company's size largely influences the proportion of cash divided by total asset. A larger firm has a lower free cash ratio, while a larger firm results in a cash payment. To avoid firm specific bias, CASH_HOLDING needs to be improved in this thesis.

2.2.4. Debt Capacity Theory

Acquirers would rather use cash financing for their deals to prevent costs associated with asymmetric information. , However, the firm may not have enough internal cash available. Thus, the capacity of firm's debt plays an important role in the possibility of cash financing. Faccio and Masulis (2005) consider a ratio of the firm's tangible assets over the firm's total assets as an indicator of debt capacity. Moreover, they also consider financial leverage as another indicator of this theory and define it as the ratio of the sum of the book value of debt plus the deal value over the sum of the book value of total assets plus deal value.

Companies with higher financial leverage use less cash financing – meaning they are likely to settle M&A deals with stock financing. On the other hand, when the financial leverage is moderate it does not affect the payment method. Hansen (1987) investigates another factor that is important to describe debt capacity theory. He argues that firm size has a positive relationship with the percentage of stock payment. Moreover, Faccio and Masulis (2005) also mention that financing choices are affected by bidder size. Larger companies are more diversified so it means that they have lower expected costs of financial distress. Relative flotation costs are smaller in large companies, so debt financing is more available due to better access to debt markets.

2.2.5 The public Acquirer

According to Schlingemann and Stulz (2008), Private equity transactions accounted for 15% of the overall transaction value of US mergers and acquisitions in 2005, and 18 of the top 100 deals were private equity deals. Using a selection of 453 completed deals by private bidders and 1,214 completed deals by public bidders from 1980 to 2005, they find the majority of public company acquisitions are stock financing. According to some of the firm variables that are only applicable

to listed companies, e.g.; stock performance, market-to-book (investment opportunity), relative deal size I decide to consider public variable to investigate the impact of public acquirers and the method of payment.

2.3 Deal Specific Determinants

2.3.1 Relative Deal Size

Another determinant that is vastly studied about asymmetric information is the relative deal size. This topic is debatable as different studies have different findings. In the work done by Hansen (1987) it is shown that in case of highly asymmetric information about the target's asset, the acquirer would rather pay by stock than cash. As the value of target assets rises compared to a bidder's, this information asymmetry is likely to grow. However, when stock is used in relatively larger transactions, it results in a greater dilution of a dominant shareholder's control status. Finally, as bidder equity capitalization increases, concern about its financing constraint drops, since the effect on its overall financial position is smaller. Grullon et al (1997) apply multinomial logistic model in their paper to investigate 146 US banks mergers from 1981 to 1990. It is also concluded in that paper that relative deal size positively increases the likelihood of stock payment. On the contrary, Martin (1996) and later on Ghosh and Ruland (1998) conclude in their studies using the same model as Grullon (1997) that there is no relation between the target-to-acquirer size and method of payment. More recent studies done by Swieringa and Schauten (2008) and Faccio and Masulis (2005) also support Hansen and Grullon's finding and conclude that bigger target firms' assets compared to the acquirer's, increase the chance of stock payment.

2.3.2 Cross-Industry

Hansen (1987) shows that asymmetric information about the acquirer's value makes the target firm uncertain and unwilling to receive stock payment. But Faccio & Masulis (2005) find that if both the target firm and the acquirer are coming from the same industry, it is more likely that they have access to the most recent information, decreasing the risk of asymmetric information. In this case paying by stock is more likely. To sum up, the effect of cross-industry M&A transactions on the cash payment is positive.

2.4 Macroeconomic determinants

2.4.1 Financial Crisis

Under the background of the 2008 financial crisis, the macroeconomic environment is more and more complicated. Also, macroeconomic factors have changed because of the economic policy published by the country. There is no existed literature which concludes the direct relationship between the payment choice and financial recession. However, there is some evidence that can prove that the financial depression does influence the payment choice. Gan (2007) analyzes the impact of bank operations on the financial economy. He finds that the decreased lending volume of the bank has a significant influence on the stock market. Cash and stock are two main payment methods of M&A so the bank's operation may influence the choice of payment structure.

Consistent with Gan (2007), Ivashina and Scharfstein (2010) conclude that the financial crisis impacts bank lending of M&A financing. Bank lending volume starts to decline since May 2007. In 2008, the total volume reduced by 79% of the total volume in the prior year. It makes the cash payment more difficult to be carried out.

2.4.2 GDP Growth

Another studied macroeconomic variable is the GDP growth rate. Faccio and Masulis (2005) show that the GDP growth rate has an insignificant effect on the choice of capital structure of the firm. De Jong et al. (2008) document different results. They analyze determinants of capital structure specific to firm and country in 42 countries and conclude that the GDP growth rate can strongly impact firms' selection of capital structure. They show that companies with a good and stable economy are likely to take more debt in a country with a good and stable economy.

3. Hypothesis development and Methodology

3.1 Testable hypotheses and variable definition

According to existing literature, some hypotheses can be tested. Different types of variables, such as Firm specific variables, Deal specific variables, and Macroeconomic variables and testable hypotheses, will be discussed in the following paragraphs. More details can also be found in appendix A.

3.1.1 Firm specific hypotheses and variables

The first set of hypotheses is involved with firm specific determinants.

According to asymmetric information theory, when the acquirer's stock is overvalued, the shareholders of the acquirer prefer to pay by stock because they can take advantage of the misvaluation. We consider variable **STOCK_PERFORMANCE** as a cumulative return of the bidder's stock price.

Hypothesis 1a: The acquirer's stock performance is positively related to the probability of stock payment.

If the acquirer has a concentrated ownership structure of the acquirer's equity then a stock payment is not preferred. The reason behind this is the controlling shareholders fear losing the control which can be a consequence of a stock payment. We consider variable **CONTROL** defined as the ratio of acquirer's closely held shares divided by its common shares outstanding.

Hypothesis 1b: The fraction of shares held by the acquirer firm's insider management is positively related to the possibility of cash payment.

Target shareholders might prefer stock payment if the bidder has substantial growth opportunities. The variable **MARKET-TO-BOOK**, specified as the market value of equity plus

book value of debt divided by book value of equity plus book value of debt prior to the bid, proxies a bidder's growth opportunities. Moreover, Large **CASH_HOLDING** might be a sign of free cash flow problems. It is defined as the ratio of the acquirer's cash plus securities available for sale divided by deal value.

Hypothesis 1c: The acquirer's future growth opportunity is positively related to the possibility of stock payment.

Hypothesis 1d: The free cash in hand is positively related to cash payment.

To consider debt capacity theory, we define two variables that show a firm's ability to increase debt and pay it back. These variables are **COLLATERAL**, which is defined as the acquirer's tangible assets over the acquirer's total assets and **FIRM_SIZE**, which is defined as the natural logarithm acquirer's total assets. In addition, we also define the variable **FINANCIAL_LEVERAGE**. It is defined as the debt of the acquirer plus the value of the deal over total assets of the acquirer plus the deal value.

Hypothesis 1e: Acquirer collateral assets are positively related to cash payment.

Hypothesis 1f: The acquirer firm size is positively related to the possibility of cash payment.

Hypothesis 1g: Acquirer's financial leverage is positively related to the possibility of stock payment.

If the acquirer is public, the payment method is more likely to be stock. This claim is stated by Schlingemann and Stulz (2008). Variable **PUBLIC** is a dummy variable equals to 1 if acquirer status is public, 0 otherwise.

Hypothesis 1h: the public acquirer is positively related to stock payment.

3.1.2 Deal specific hypotheses and variables

Relative deal size is another determinant that has been studied in relation to asymmetric information. While Martin (1996) finds no evidence of a connection between relative deal size and payment method choice, Grullon et al (1997) find a positive relationship between relative deal size and stock payment. Similarly to Grullon et al., this thesis expects the same outcome. Variable **RELATIVE_DEAL_SIZE** is measured as the deal value over the deal value plus acquirer's market capitalization. Variable **DEAL_VALUE** is measured as the natural logarithm of deal value.

Hypothesis 2a: : Relative Deal Size is positively related to the probability of stock payment.

Faccio and Masulis (2005) show that the resistance of the target firm to accept a stock payment is due to asymmetric information problems that bring doubt about the buyer's equity value and future earnings. For conglomerate mergers this issue can be even more severe. In an interindustry

merger the sellers are more familiar with the risks associated with that industry and are more willing to accept a continuing equity position. Thus, in this thesis we consider **CROSS_INDUSTRY**, as a dummy that equals 1 if the bidder and target are in different industries and 0 otherwise.

Hypothesis 2b: The cross-industry transactions are positively related to the possibility of a cash payment.

3.1.3 Macroeconomic hypotheses and variables

De Jong et al (2008) show that firm's capital structure is significantly affected by the GDP growth rate. They show that companies with a good and stable economy are likely to take more debt in a country with a good and stable economy. The choice of M&A payment method can be affected with the capital structure of the acquirer. The variable **GDP_GROWTH** is the GDP per capita growth rate. It is collected from the World Bank database.

Hypothesis 3a: the GDP growth rate is positively related to the possibility of a cash payment.

There is no existing literature that directly analyzes the impacts of the financial crisis. However, the evidence can be found that it can be related to the choice of payment method in M&A. Ivashina and Scharfstein (2010) find that the lending volume decreased 79% in 2008. As the bank loan is an essential source of cash financing, it is harder for the acquirer to finance their cash from the bank after the financial crisis. **FINANCIAL_CRISIS** is a dummy variable equals 1 if the announcement date is later than October 2008 and 0 otherwise.

Hypothesis 3b: the financial crisis is positively related to the stock payment.

3.1.4 Summary of the hypotheses

CONTROL
CASH_HOLDING
COLLATERAL
FIRM_SIZE
CROSS_INDUSTRY
GDP_GROWTH



CASH PAYMENT

MARKET_TO_BOOK
PUBLIC
STOCK_PERFORMANCE
FINANCIAL_LEVERAGE
RELATIVE_DEAL_SIZE
FINANCIAL_CRISIS



STOCK PAYMENT

3.1.5 The Dependent variables

We are going to run two regression methods. First, we consider the percentage of cash in the total deal and define our dependent variable **CASH_PERCENTAGE**. For this we will use Tobit

regressions. Another way is to classify the methods of payment into cash, stock and the combination of both. For this purpose, we define PAYMNT_METHOD and use Ordered Probit regressions.

$$PAYMEN_METHOD = \begin{cases} 2 & \text{by cash} \\ 1 & \text{mix} \\ 0 & \text{by stock} \end{cases}$$

Cash contains items such as: nonconvertible bond and earn out.

Stock contains items such as: common shares, warrants and convertible bonds.

3.2 Methodology

We are going to use two regression methods, Ordered Probit regression and Tobit regression, to test our hypotheses. Faccio and Masulis (2005) also used Ordered Probit and Tobit regressions.

3.2.1 Tobit regression

The percentage of cash is considered as the dependent variable in Faccio and Masuli's (2005) model in the whole payment. There is an interval for the dependent variable which is between 0 and 100 and a two-boundary Tobit estimator is used. The general model introduces as following equation:

$$y_i^* = \alpha + \beta * X_i + \mu_i$$

$$\text{Where } y_i = \begin{cases} 100 & \text{if } y_i^* \geq 100 \\ y_i^* & \text{if } 100 > y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases}$$

x_i is a k-vector that belongs to the independent variables contains firm, deal and macroeconomic determinants, μ_i is an error terms which is normally distributed- $N(0, \delta^2)$.

3.2.2 Ordered Probit regression

Probit estimation allows you to concentrate on the qualitative decision of whether to finance with stock, cash, or a combination of both. In a mixed deal, target shareholders have a choice of cash or a stock payment and therefore it is not always possible for the buyer to decide on the percentage of cash financing. Consequently, the decision is defined as selecting stock, cash or a mixture.

PAYMENT_METHOD is described as the dependent variable which has value 0 for stock only, 1 for the combination of both-cash and stock- and value2 for cash only payment. For analyzing the qualitative of the payment methods, we use Ordered Probit regression. The model below is the general form of this model:

$$y_i^* = \alpha + \beta * X_i + \mu_i$$

$$\text{Where } y_i^* = \begin{cases} 2 & \text{paying by cash} \\ 1 & \text{paying by combination} \\ 0 & \text{paying by stock} \end{cases}$$

x_i is a k-vector that belongs to the independent variables containing firm, deal and macroeconomic determinants. We expect the same dependent variables as those that tested in the Tobit regression. μ_i is an error terms which is normally distributed- $N(0, \delta^2)$.

4. Data and Descriptive Statistics

4.1 Data Sample

The sample of investigation is drawn by identifying mergers and acquisitions (M&A) announced in the United States between 2003 and 2019. The data relating to deal and firm specific characteristics of the bidder and target are collected from Thomson Financial database. In collecting M&As transaction data from Thomson Financial database, some data are needed to be considered such as: date announced, deal value, target nation, the percentage of cash and the description of structure of payment.

Moreover, some of the factors that should be considered have been mentioned below.

1-As we are considering payment methods to be either cash, stock, or combination, the unknown payment should be eliminated from the sample.

2- The period of data is from 01.01.2003 to 31.12.2019. This means that only deals that have been completed in this period of time and their status is "completed" should be considered.

3- We also consider the value of total transactions greater than 100 million dollars.

4- The acquirer must be a U.S. listed or private firm while targets can be U.S. or foreign firms listed, subsidiaries, or private.

5- The financial industry is excluded from the data sample. This decision is that the balance sheets of financial institutions are very different from other firms.

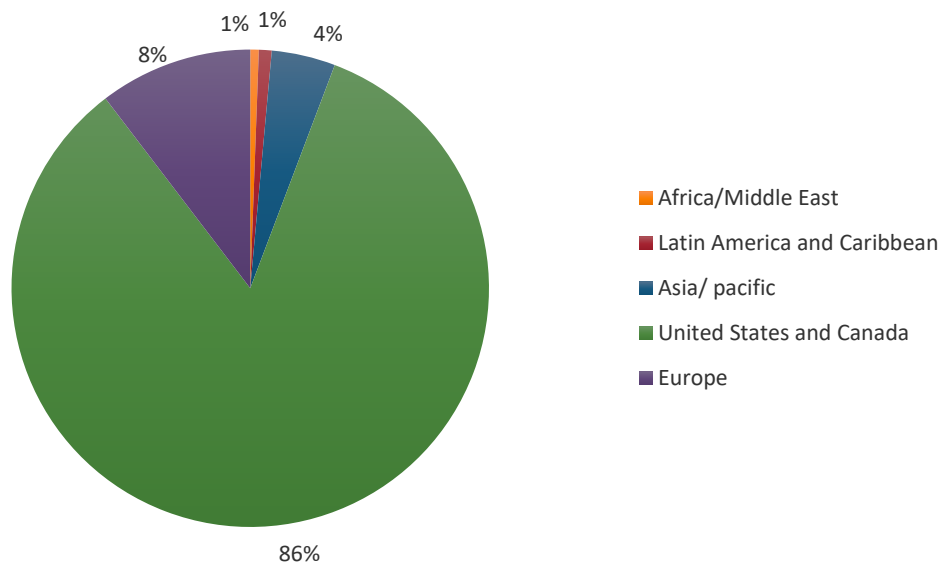
Based on the above conditions some deals are excluded and in total there are 418 M&A transactions in the sample.

The World Bank database is used for collecting GDP growth rate. The description of the variables can be found in the Appendix A.

The tables 1 and 2 display the distribution of variate kinds of M&A transaction and also the descriptive statistics for the total sample is shown in table 3 in Appendix B.

Figure 1 shows the distribution of M&A transactions and target regions. The largest number of M&A transactions belongs to the United States and Canada with the percentage of 86%. Europe with the percentage of 8% is the next region. The percentages of distributions of the other regions are below 5%. The detailed information related to the target regions- country- distribution shows in the table 1.

Figure1.Target Regions distribution of M&A transactions



In table 2, the transaction of M&A deals is categorized by payment method. The sample contains 386 only cash payment (92.34%), 19 combination payment (4.55%) and 13 stock payment (3.11%). Thus, cash only payments are the most used payment method. Andrade, Mitchell, and Stafford (2001) report that in the 1990s stock financing was the most frequently used payment method by U.S. firms and includes 70% of M&A transactions with 58% of them being completely stock financed.

Figure 2 shows the difference in the number of M&A transactions between different years starting from 2003 up till 2019. In 2007, the number of M&A transactions paying by cash, reached a peak. Before and after this year there is a fluctuation trend in the distribution. However, the total

number of M&A transactions paying by cash begins to fall after 2015. Most of the transactions in all years are cash only financing. More detailed information has been provided in table 2.1.

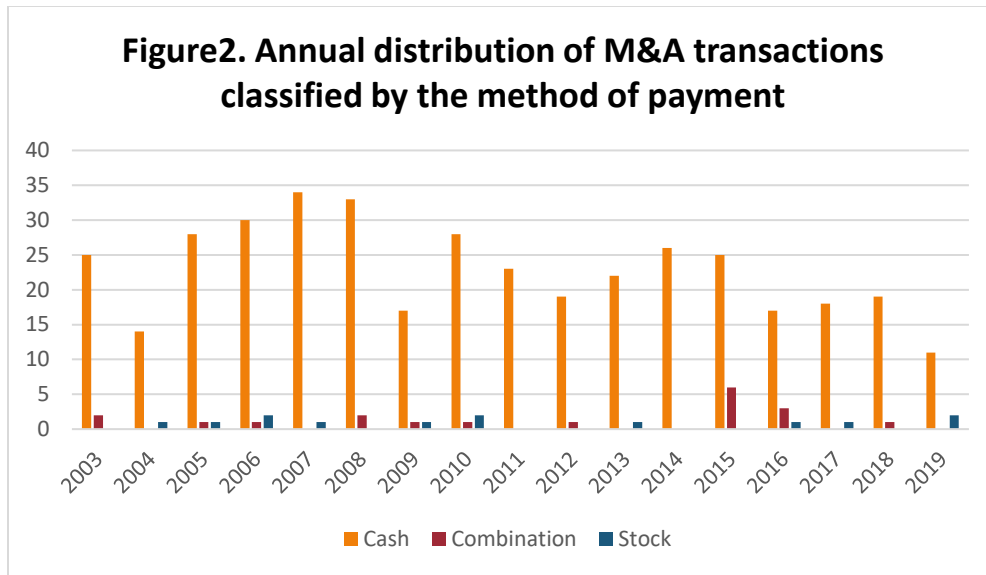
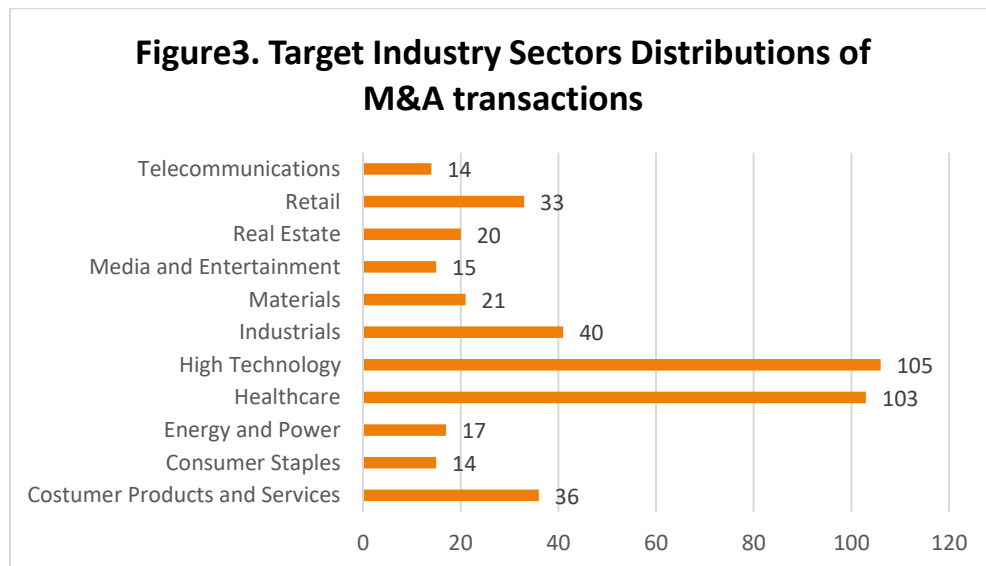


Figure 3 shows the distribution of M&A transactions by different industry sectors. Most of the transactions are occurred in the High Technology and Healthcare sectors. The number of transactions regarding each are 105 and 103 numbers respectively. More details are explained in table2.2.



4.2 Descriptive Statistics

Table 3. represents the descriptive statistics for the independent variables used in our empirical analysis. It reports the data for M&A deals in the United States from 2003 to 2019 by mergers and acquisitions payment methods. As shown in the table 3., for each payment method we report the observations (N), mean and standard deviation (Sd). Based on the information from the table, the mean of CASH_HOLDING (4.602) for M&A transactions that are paid by cash considerably higher than the other two payment methods. It can be interpreted that the acquirer with more cash in hand is more desire to pay cash in M&A deals. I expect that the sign of this variable in the regressions is positive. I have the same expectation for the variable MARKET_TO_BOOK due to the mean of 15.10.

Another variable that is good to mention is COLLATERAL. The mean of this variable in stock payment is more and less ten times greater than it's mean in cash payment. According to the definition of this variable, the ratio of acquirer's tangible assets over the acquirer's total assets, acquirer firms with more collateral assets have more desire to pay by stock. Thus, it is expected that this variable is negatively related with cash payment. The same expectation is for STOCK_PERFORMANC.

5. Results and Analysis

5.1 Correlation analysis of independent variables

A correlation matrix is shown in Appendix C. The two most correlated variables are DEAL_VALUE and FIRM_SIZE. Correlation rate is 0.549 which is considered high and can be an indication of a multicollinearity problem. Moreover, variable DEAL_VALUE also correlated with RELATIVE_DEAL_SIZE with the correlation rate of -0.428. However, the variable DEAL_VALUE is not an essential variable of the model and is related to two important variables and therefore is eliminated. The correlation matrix also represents that variable RELATIVE_DEAL_SIZE is highly related to FINANCIAL_LEVERAGE, STOCK_PERFORMANCE and FIRM SIZE with the correlation rates of 0.430, 0.312 and -0.534 respectively. The macroeconomic factor, GDP_GROWTH is highly related to FINANCIAL_CRISIS and the rate is -0.483. All the 6 variables are essential variables in the model and cannot be excluded. Separate regressions are run in both models to solve the multicollinearity problem of these variables. The correlation rates for all the remaining variables are below 0.3.

5.2 The results of Tobit regressions

Table 4 demonstrates the results of Tobit regressions. To avoid the multicollinearity issue, Tobit regressions are run 6 times separately with one independent variable that has a high correlation rate with other variables. The percentage of cash used in the payment method is the dependent variable. The results in table 4 show the relationship between the independent variables

and the cash used in the payment structure. CASH HOLDING is positively related to cash percentage in payment and significant at 1% in all 6 regressions. CASH HOLDING is a variable that equals the cash and marketable securities divided by the deal value. It means that if the acquirer has more available cash, the chances of a cash payment increase. The outcome is in line with Martin (1996) and also is consistent with the hypothesis 1d. The variable FIRM_SIZE that equals the total assets of the acquirer firm is positively related to the cash percentage at 1% level. It means that larger acquirers prefer more cash as payment. However, this result is not in line with Hansen (1987) but is consistent with the hypothesis 1f. Moreover, MARKET_TO_BOOK is positively related with the cash percentage in payment, but it is insignificant.

COLLATERAL is defined in this thesis as a ratio of tangible assets to total assets. This variable is significant at 5% level and negatively related to the percentage of cash. It demonstrates that the acquirer firm that has more collateral assets is less likely to pay more cash. It is not in line with the hypothesis 1e. Moreover, PUBLIC, FINANCIAL_CRISIS, RELATIVE_DEAL_SIZE and STOCK_PERFORMANCE are negatively related to the cash percentage and significant. PUBLIC and FINANCIAL_CRISIS are significant at 5% and the other two variables are significant at level 10%. Firstly, PUBLIC provides evidence that a public firm as an acquirer has a lower possibility to use cash. This result is in line with hypothesis 1h. Secondly, FINANCIAL_CRISIS is a dummy variable that equals to 1 if the M&A deals occur after the financial crisis. Thus, it shows acquirers are likely to use less cash financing after the crisis. This is in line with hypothesis 3b. Thirdly, the ratio of deal value to deal value plus the acquirer's market capitalization defines the variable RELATIVE DEAL SIZE. The Tobit regression results show that the fraction of target-to-acquirer assets and the fraction of cash in the payment structure are negatively related. This is in line with hypothesis 2a. In consistency with hypothesis 1a, STOCK_PERFORMANCE is calculated as the acquirer's cumulative stock price return in the year before the deal announcement. It is negatively related to the percentage of cash at 10% level based on the Tobit model results. This indicates a positive relationship between acquirer's stock run-up and the probability of stock payment due to overvaluation. Finally, CROSS_INDUSTRY, GDP_GROWTH, FINANCIAL_LEVERAGE and CONTROL are negatively related to the cash payment method and all of them are insignificant.

5.3 The results of Order Probit regressions

To avoid multicollinearity, the Ordered Probit regressions are run six times, and the results are shown in table 5. For stock only payment, combination payment, and cash only payment, the dependent variables are 0, 1, and 2. Consequently, the table's results show the relationship between the independent variables and the three payment methods. Similar to the Tobit model's results, CASH_HOLDING and FIRM_SIZE are positively correlated to the choice of cash payment method. The significant level for each is 5% and 1% respectively. The significant level of FIRM_SIZE does not change while CASH HOLDING is less significant than the Tobit model results. Variables CROSS_INDUSTRY, GDP_GROWTH and FINANCIAL_LEVERAGE are the same as Tobit regression.

Some variables have a positive relationship with the stock payment option. Similarly to the Tobit regression results, variables PUBLIC, RELATIVE_DEAL_SIZE, STOCK_PERFORMANCE and FINANCIAL_CRISIS show a positive relation with the choice of a stock payment and are significant at 5%, 5%, 1% and 10% level respectively. Except variable PUBLIC, other variables have a few minor differences. The variable RELATIVE_DEAL_SIZE and STOCK_PERFORMANCE are more significant than the Tobit regression results while the variable FINANCIAL_CRISIS is less significant. These variables are still aligned with the hypotheses in this thesis. The Ordered Probit regression shows new findings. There is a positive relation between CONTROL and MARKET_TO_BOOK and the stock payment option. It is in contrast with the results of Tobit regression. CONTROL and MARKET_TO_BOOK are significant at the 10% and 5% level in the Ordered Probit regression while insignificant in Tobit regression. This result shows that the management of the acquirer with more control power prefers to pay in stock. It is contrary to hypothesis 1b. Also it indicates that, there is a positive relationship between the acquirer's future growth opportunity and the stock payment methods which is in line with hypothesis 1c.

Finally, the Tobit and Ordered Probit models provide evidence for the hypotheses established in the hypotheses development and methodology section. The majority of firm, deal and macroeconomic specific variables are significantly related to the payment method choice. Hypotheses 1d and 1f are also supported by both models, which show a positive and significant relationship between CASH_HOLDING, FIRM_SIZE and the choice of a cash payment. Consistent with hypotheses 1h, 1a, 2a, and 3b, variables PUBLIC, STOCK_PERFORMANCE, RELATIVE_DELA_SIZE and FINANCIAL_CRISIS have a positive relationship with stock payment methods. Hypothesis 1e, is not supported by both models. COLLATERAL is positively related to the stock payment method in both Tobit and Ordered Probit models. Based on the Ordered Probit model results, variables CONTROL and MARKET_TO_BOOK are positively related to the stock payment method with a significant level of 10% and 5%.

In contrast, the Tobit model shows that MARKET_TO_BOOK is positive but insignificant with the probability of cash payment and CONTROL is negative and insignificant with the probability of cash payment.. Finally, variables FINANCIAL_LEVERAGE, CROSS_INDUSTRY and GDP_GROWTH are insignificant in both models. Thus, there is no evidence for hypotheses 1g, 2b and 3a.

5.4 The results of robustness check by adding control variables

Two control variables are used to check the robustness of the Tobit and Ordered Probit models. The two-control variables are TARGET_BANKRUPT and HIGH_TECH. TARGET_BANKRUPT is a dummy variable that equals 1 if the target firm goes bankrupt during the M&A transaction time and 0 otherwise. This is a good control variable for checking robustness as the world of economics is faced many unpredictable events, for example 2008 financial crisis. So, it is interesting to consider this variable to see the effect of it in our model. HIGH_TECH is a Dummy variable that equals 1 if the acquirer or the target is the High-tech firm and 0 otherwise. The reason

for choosing this variable is according to table 2.2 most of the transactions are occurred in the High Technology. Moreover, Faccio and Masulis (2005) clarify that bidding activity increases when firms are being in a high-tech industry or have relatively larger capital expenditures plus R&D. The results of robustness check are found in the table 6 and 6.1.

The coefficient and significant level of Tobit regression are shown in table 6. According to this table, the TARGET_BANKRUPT and HIGH_TECH variables are positive but not significantly related to the dependent variable. Adding control variables has no effect on the sign of the other independent variables' coefficient or the significance level. However, small changes in the size of the coefficients occur. The sign before the coefficients and the significant level on the other hand, remain unchanged.

Coefficient and significant level of Ordered Probit regression are shown in table 6.1. TARGET_BANKRUPTCY and HIGH_TECH are not significantly related to the dependent variable, consistent with the Tobit model's robustness check results. The results in the table show that there is no improvement in the sign of the coefficients, similar to the robustness check for Tobit regression. The significant level of the independent variable CASH_HOLDING and CONTROL appears to have changed slightly. The significant level increases from 5% to 1% for variable CASH_HOLDING and 10% to 5% for variable CONTROL after two control variables are added.

Moreover, the significant level of MARKET_TO_BOOK decreases to 10% level. Other independent variables' significant levels remain unchanged. In conclusion, the Tobit and Ordered Probit models' outcomes do not change when TARGET_BANKRUPTCY and HIGH_TECH are added.

6. Conclusions and Limitation

6.1 Conclusion of the results

This thesis examines the determinants of mergers and acquisitions payment methods in the US in the 2003-2019 period by applying the Tobit and Ordered Probit models. The results show that most of the considered determinants such as firm, deal and macroeconomic impact the choice of payment method in M&A deals. Cash-holding and firm-size are positively and significantly related to a cash payment method that increase the possibility of cash payment in mergers and acquisition deals while public acquirer, acquirer's investment opportunity, stock performance, collateral assets, relative deal size and financial crisis decrease the possibility of cash payment. There is no evidence for the relationship between the methods of payment and left variables, financial-leverage, cross-industry and GDP-growth. After adding high-tech and target-bankrupt as control variables for checking the robustness of our models, the results show that the sign and the significance of the considered variables stay unchanged. Overall, the results in this thesis regarding variables acquirer's stock run-up, relative-deal-size, acquirer's excess cash, firm-size, acquirer's investment opportunity and GDP-growth are consistent with the findings in Faccio and Masulis's (2005) paper.

6.2. Limitations and future suggestions

This thesis has some limitations that need to be addressed. First, by selecting the US we are facing the disadvantage of having many institutional elements considerably fixed. This means that there is no variation in market conditions, corporate laws, securities regulations, and corporate governance rules. Therefore, the results of this study cannot be used for any other stock markets. Second, some determinants are related to firm, deal and macroeconomic that are not included in this thesis. Wansley et al. (1987) find that the attitude of M&A transactions is an important determinant of payment method choice. Moreover, by adding more macroeconomic determinants the model becomes more solid. Future analysis suggests focusing more on developing countries such as the Chinese market or the Indian market as the number of studies is very limited compared to developed economic countries.

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Appendix A: List of Variable's Description

| <i>Firm variables</i> | <i>Description</i> | <i>Sources</i> |
|--------------------------------|---|-------------------------------|
| <i>Cash holding</i> | $\frac{\text{Acquirer's cash} + \text{acquirer's tradable securities}}{\text{deal value}}$, all measured at the year-end prior to the M&A announcement date. | World scope |
| <i>Stock Performance</i> | Cumulative return of the stock price in the bidder's country over the year preceding the announcement month. | Data stream |
| <i>Collateral</i> | $\frac{\text{acquirer's tangible assts}}{\text{acquirer's total assets}}$, all measured at the year-end prior to the M&A announcement date. | World scope |
| <i>Firm size</i> | In (acquirer's total assets) | World Scope |
| <i>Control</i> | $\frac{\text{Numbers of closely held shares}}{\text{Numbers of common shares outstanding}}$, all measured at the year-end prior to the M&A announcement date. | World Scope |
| <i>Investment opportunity</i> | Acquirer's market-to-book ratio is measured at the year-end prior to the M&A announcement date. | World Scope |
| <i>Financial Leverage</i> | $\frac{\text{Book value of acquirer's debt} + \text{deal value}}{\text{Book value of acquirer's total assets} + \text{deal value}}$, debt and total assets data are calculated at the year-end prior to M&A announcement date. | World Scope & Thomson Reuters |
| <i>Public</i> | Dummy variable that equals to 1 if the acquirer firm is a public company and 0 otherwise. | Thomson Reuters |
| <i>Deal variables</i> | <i>Description</i> | <i>Sources</i> |
| <i>Deal Value</i> | Total value of the Transactions, measured at the year-end prior to the M&A announcement date. | Thomson Reuters |
| <i>Relative deal size</i> | $\frac{\text{deal value}}{\text{deal value} + \text{acquirer's market capitalization}}$, measured at the year-end prior to the M&A announcement date. | Thomson Reuters |
| <i>Cross-industry</i> | Dummy variable that equals to 1 if acquirer and target are not in the same industry 0 otherwise | Thomson Reuters |
| <i>Macroeconomic variables</i> | <i>Description</i> | <i>Sources</i> |

| | | |
|---|---|--|
| <i>GDP per capita growth rate</i> | GDP per capita growth rate, measured at the year-end prior to announcement date. | World bank |
| <i>Financial Crisis</i> | is a dummy variable equals to 1 if the announcement date is later than October 2008 and 0 otherwise. | Eropa.eu |
| <i>Dependent variables</i> | <i>Description</i> | <i>Sources</i> |
| <i>Payment method (for Ordered Probit regression)</i> | Equals to 0, when it's a stock only payment; equals to 1 if it's a combination payment; equals to 2 if it's a cash only payment. | Thomson Reuters |
| <i>Percentage of cash (for Tobit regression)</i> | The percentage of cash of the total payment | Thomson Reuters |
| <i>Control variables</i> | <i>Description</i> | <i>Sources</i> |
| <i>Target bankrupt</i> | <i>Dummy variable that equals to 1 if the target firm is bankrupt or goes bankrupt during the M&A transaction 0 otherwise.</i> | Thomson Reuters |
| <i>HIGH_TECH</i> | <i>Dummy variable that equals to 1 if the acquirer or the target is the High-tech firm 0 otherwise. Which means the primary SIC code equals 3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3674, 3812, 3823, 3825, 3826, 3827, 3829, 7370, 7371, 7372, 7374, 7375, 7379.</i> | Thomson Reuters, Ljungqvist & Wilhelm(2003),Loughran & Ritter (2004) |

Appendix B: Data and descriptive statistics

Table 1. Distribution of M&A transactions classified by Target nation

The information regarding the number of transactions regarding the targets nation and the percentage of the whole sample are shown in the table below.

| <i>Target Nation</i> | <i>Number</i> | <i>Percentage</i> |
|-----------------------|---------------|-------------------|
| <i>Australia</i> | 5 | 1.19% |
| <i>Belgium</i> | 1 | 0.24% |
| <i>Canada</i> | 10 | 2.39% |
| <i>Chile</i> | 1 | 0.24% |
| <i>China</i> | 1 | 0.24% |
| <i>Croatia</i> | 1 | 0.24% |
| <i>Denmark</i> | 1 | 0.24% |
| <i>Egypt</i> | 1 | 0.24% |
| <i>Finland</i> | 1 | 0.24% |
| <i>France</i> | 3 | 0.72% |
| <i>Germany</i> | 4 | 0.96% |
| <i>Hong Kong</i> | 1 | 0.24% |
| <i>India</i> | 3 | 0.72% |
| <i>Israel</i> | 1 | 0.24% |
| <i>Italy</i> | 1 | 0.24% |
| <i>Japan</i> | 1 | 0.24% |
| <i>Luxembourg</i> | 1 | 0.24% |
| <i>Mexico</i> | 1 | 0.24% |
| <i>Netherlands</i> | 1 | 0.24% |
| <i>Norway</i> | 3 | 0.72% |
| <i>Peru</i> | 1 | 0.24% |
| <i>Sweden</i> | 2 | 0.48% |
| <i>Switzerland</i> | 4 | 0.96% |
| <i>Taiwan</i> | 2 | 0.48% |
| <i>United Kingdom</i> | 5 | 1.20% |
| <i>United States</i> | 363 | 86.84% |
| <i>Total</i> | 418 | 100% |

Table 2. Distribution of M&A transactions classified by payment methods

This table includes the distribution of M&A transactions in the USA divided into three different payment methods: cash, stock and combination. The number of transactions in each category and the percentage of the whole sample are provided in this table.

| <i>Country</i> | <i>Cash</i> | | <i>Combination</i> | | <i>Stock</i> | | <i>Total</i> | |
|----------------|---------------|-------------------|--------------------|-------------------|---------------|-------------------|---------------|-------------------|
| | <i>Number</i> | <i>Percentage</i> | <i>Number</i> | <i>Percentage</i> | <i>Number</i> | <i>Percentage</i> | <i>Number</i> | <i>Percentage</i> |
| <i>USA</i> | 386 | 92.34% | 19 | 4.55% | 13 | 3.11% | 418 | 100% |

Table 2.1 Annual Distributions of M&A transactions classified by payment methods

In this table the annual number of transactions for each way of method of payment (cash, stock and combination) is shown. The data is collected from 2003 to 2019.

| Year | Cash | Combination | Stock | Total |
|--------------|-------------|--------------------|--------------|--------------|
| 2003 | 25 | 2 | 0 | 27 |
| 2004 | 12 | 0 | 1 | 13 |
| 2005 | 28 | 1 | 1 | 30 |
| 2006 | 29 | 1 | 2 | 32 |
| 2007 | 34 | 0 | 1 | 35 |
| 2008 | 33 | 2 | 0 | 35 |
| 2009 | 17 | 1 | 1 | 19 |
| 2010 | 28 | 1 | 2 | 31 |
| 2011 | 23 | 0 | 0 | 23 |
| 2012 | 19 | 1 | 0 | 20 |
| 2013 | 22 | 0 | 1 | 23 |
| 2014 | 26 | 0 | 0 | 26 |
| 2015 | 25 | 6 | 0 | 31 |
| 2016 | 17 | 3 | 1 | 21 |
| 2017 | 18 | 0 | 1 | 19 |
| 2018 | 19 | 1 | 0 | 20 |
| 2019 | 11 | 0 | 2 | 13 |
| Total | 386 | 19 | 13 | 418 |

Table 2.2 Target Industry Sectors distribution of M&A transactions

This table contains the numbers of distributions of M&A transactions categorized by different target industry sectors.

| Target Macro Industry | Number | Percentage |
|---------------------------------------|---------------|-------------------|
| <i>Customer Products and Services</i> | 36 | 8.61% |
| <i>Consumer Staples</i> | 14 | 3.35% |
| <i>Energy and Power</i> | 17 | 4.07% |
| <i>Healthcare</i> | 103 | 24.64% |
| <i>High Technology</i> | 105 | 25.12% |
| <i>Industrials</i> | 40 | 9.57% |
| <i>Materials</i> | 21 | 5.02% |
| <i>Media and Entertainment</i> | 15 | 3.59% |
| <i>Real Estate</i> | 20 | 4.78% |
| <i>Retail</i> | 33 | 7.89% |
| <i>Telecommunications</i> | 14 | 3.35% |
| <i>Total</i> | 418 | 100% |

Table 3. Descriptive statistics of the complete sample categorized by payment method.

The mean value and standard deviation of the Independent variables of the total sample categorized by payment methods are shown in the table below.

| <i>VARIABLES</i> | Combination Obs:19 | | Cash Obs:386 | | Stock Obs:13 | |
|---------------------------|-------------------------------|-----------|-------------------------|-----------|-------------------------|-----------|
| | mean | sd | mean | sd | mean | sd |
| <i>FINANCIAL_CRISIS</i> | 0.684 | 0.478 | 0.601 | 0.490 | 0.615 | 0.506 |
| <i>CASH_HOLDING</i> | 0.451 | 0.396 | 4.602 | 15.71 | 1.757 | 2.718 |
| <i>COLLATERAL</i> | 0.0885 | 0.398 | 0.131 | 0.992 | 1.362 | 2.162 |
| <i>CONTROL</i> | 2.925 | 3.293 | 3.144 | 9.555 | 2.326 | 1.149 |
| <i>FINANCIAL_LEVERAGE</i> | 0.345 | 0.208 | 0.165 | 0.207 | 0.432 | 0.461 |
| <i>FIRM_SIZE</i> | 7.943 | 1.376 | 8.944 | 1.712 | 6.895 | 4.582 |
| <i>MARKET_TO_BOOK</i> | 4.974 | 3.966 | 15.10 | 162.5 | 3.325 | 2.309 |
| <i>STOCK_PERFORMANCE</i> | 0.194 | 0.315 | 0.0354 | 0.349 | 0.194 | 0.128 |
| <i>RELATIVE_DEAL_SIZE</i> | 0.261 | 0.0957 | 0.120 | 0.135 | 0.296 | 0.389 |
| <i>DEAL_VALUE</i> | 7.340 | 1.326 | 6.445 | 1.236 | 7.201 | 1.992 |
| <i>GDP_GROWTH</i> | 1.272 | 1.535 | 1.241 | 1.371 | 1.326 | 1.520 |
| <i>Public</i> | 0.895 | 0.315 | 0.707 | 0.456 | 0.615 | 0.506 |
| <i>Cross industry</i> | 0.263 | 0.452 | 0.140 | 0.347 | 0 | 0 |

Appendix C. Correlation of Independent variables

| <i>Variables</i> | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|---------|--------|---------|-------|
| <i>(1) Payment method</i> | 1.000 | | | | | | | | | | | | | | |
| <i>(2) CASH_PERCENTAGE</i> | 0.87* | 1.000 | | | | | | | | | | | | | |
| <i>(3) CASH_HOLDING</i> | -0.14 | 0.078 | 1.000 | | | | | | | | | | | | |
| <i>(4) COLLATERAL</i> | 0.074 | 0.082 | -0.19* | 1.000 | | | | | | | | | | | |
| <i>(5) CONTROL</i> | -0.085 | -0.095* | -0.015 | -0.059 | 1.000 | | | | | | | | | | |
| <i>(6) FINANCIAL_LEVERAGE</i> | -0.223* | -0.199* | 0.062 | -0.006 | 0.123 | 1.000 | | | | | | | | | |
| <i>(7) FIRM_SIZE</i> | 0.133 | 0.272* | -0.247* | 0.140* | -0.202* | -0.179* | 1.000 | | | | | | | | |
| <i>(8) MARKET_TO_BOOK</i> | -0.023 | -0.095 | 0.134* | 0.013 | -0.016 | 0.025 | -0.097* | 1.000 | | | | | | | |
| <i>(9) STOCK_PERFORMANCE</i> | -0.166* | -0.021 | 0.091 | 0.028 | 0.206* | -0.012 | -0.052 | -0.018 | 1.000 | | | | | | |
| <i>(10) PUBLIC</i> | 0.182* | 0.005 | -0.015 | -0.132* | 0.080 | -0.026 | 0.137 | 0.049 | 0.061 | 1.000 | | | | | |
| <i>(11) CROSS_INDUSTRY</i> | 0.045 | 0.088 | 0.047 | -0.016 | -0.079 | -0.036 | 0.030 | 0.064 | 0.010 | 0.031 | 1.000 | | | | |
| <i>(12) RELATIVE_DEAL_SIZE</i> | -0.271* | -0.278* | -0.200 | 0.234* | -0.041 | 0.430* | -0.534* | -0.007 | -0.312* | -0.088* | -0.030 | 1.000 | | | |
| <i>(13) DEAL_VALUE</i> | 0.123 | 0.156* | -0.136 | -0.097 | -0.078 | 0.129 | 0.549* | -0.040 | 0.064 | -0.002 | -0.019 | -0.426* | 1.000 | | |
| <i>(14) FINANCIAL_CRISIS</i> | -0.059 | -0.026 | -0.033 | -0.013 | 0.059 | -0.008 | 0.199* | -0.095* | 0.146 | 0.117 | 0.024 | -0.094 | 0.121 | 1.000 | |
| <i>(15) GDP_GROWTH</i> | 0.068 | 0.050 | -0.061 | 0.054 | 0.007 | 0.191* | -0.068 | 0.030 | 0.228* | -0.012 | -0.032 | 0.156* | -0.053 | -0.483* | 1.000 |

Appendix D. Empirical Results Tables

Table 4. presents Tobit regressions that describe the percentage of cash in the payment structure.

The Tobit model's results are presented in this table. To avoid the multicollinearity problem, the regression is repeated six times. (indicated the number 1 to 6 in the table). The dependent variable is the cash percentage in the payment structure, which ranges from 0 (for a stock-only payment) to 100 (for a cash-only payment). ***, **, and * denote significance at the 1%, 5%, and 10% rate, respectively. The sign before the coefficient shows whether the Independent variable has a positive or negative impact on the dependent variable. The t-statistic size indicates whether or not the effect is significant.

| <i>Variables</i> | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
|-----------------------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic |
| <i>CASH_HOLDING</i> | 70.747** | 2.61 | 72.839*** | 2.84 | 60.039** | 2.49 | 78.91*** | 3.22 | 72.997*** | 3.19 | 73.98*** | 3.20 |
| <i>COLLATERAL</i> | -48.382** | -2.18 | -48.821** | -2.25 | -33.798 | -1.55 | -61.901*** | -2.80 | -48.83** | -2.33 | -57.149** | -2.19 |
| <i>CONTROL</i> | -0.852 | -1.24 | -1.58 | -0.50 | -0.835 | -1.39 | -0.583 | -0.98 | -0.856 | -1.19 | -0.737 | -0.88 |
| <i>MARKET_TO_BOOK</i> | 0.692 | 0.27 | 2.574 | 0.91 | -0.664 | -0.25 | 0.439 | 0.17 | 0.57 | 0.24 | 0.632 | 0.26 |
| <i>Public</i> | -51.277** | -2.08 | -72.592** | -2.24 | -54.065** | -2.16 | -54.989** | -2.23 | -51.278** | -2.07 | -50.976** | -2.08 |
| <i>Cross industry</i> | -11.563 | -0.51 | -3.849 | -0.13 | -17.617 | -0.75 | -21.393 | -0.98 | -10.756 | -0.47 | -11.237 | -0.50 |
| <i>FINANCIAL_LEVERAGE</i> | -9.141 | -0.17 | | | | | | | | | | |
| <i>STOCK_PERFORMANCE</i> | | | -84.039* | -1.92 | | | | | | | | |
| <i>RELATIVE_DEAL_SIZE</i> | | | | | -99.118* | -1.69 | | | | | | |
| <i>FINANCIAL_CRISIS</i> | | | | | | | -49.522** | -2.14 | | | | |
| <i>GDP_GROWTH</i> | | | | | | | | | -0.495 | -0.09 | | |
| <i>FIRM_SIZE</i> | | | | | | | | | | | 3.989*** | 7.19 |
| <i>Cons</i> | 145.585*** | 4.51 | 164.849*** | 4.15 | 177.619*** | 4.38 | 180.454*** | 5.14 | 142.579*** | 4.72 | 176.19*** | 2.82 |
| <i>Observations</i> | 418 | | 418 | | 418 | | 418 | | 418 | | 418 | |
| <i>Pseudo R²</i> | 13.7% | | 15.5% | | 14.4% | | 15.2% | | 13.7% | | 13.8% | |
| <i>Log Likelihood</i> | -140.66 | | -115.24 | | -139.74 | | -138.34 | | -140.64 | | -140.37 | |

Table 5. presents Ordered Probit regressions that describe the choice of cash only, the combination and stock only payments

The Ordered Probit model's results are presented in this table. To avoid the multicollinearity problem, the regression is repeated six times (indicated the number 1 to 6 in the table). If it is a stock-only payment, the dependent variable is 0; a mix payment, it is 1; and a cash-only payment, it is 2. ***, **, and * denote significance at the 1%, 5%, and 10% rate, respectively. The sign before the coefficient shows whether the Independent variable has a positive or negative impact on the dependent variable. The t-statistic size indicates whether or not the effect is significant.

| <i>Variables</i> | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
|-----------------------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic |
| <i>CASH_HOLDING</i> | 0.981** | 2.33 | 0.878** | 2.25 | 0.676 | 1.55 | 1.146** | 2.35 | 0.961** | 2.37 | 0.949** | 2.30 |
| <i>COLLATERAL</i> | -0.941*** | -2.86 | -1.003** | -2.18 | -0.621* | -1.74 | -1.204*** | -3.12 | -0.964*** | -2.92 | -0.781*** | -2.47 |
| <i>CONTROL</i> | -0.016 | -1.38 | -0.057 | -0.90 | -0.17* | -1.72 | -0.019* | -1.77 | -0.17 | -1.54 | -0.019** | -1.97 |
| <i>MARKET_TO_BOOK</i> | -0.053 | -1.31 | -0.011 | -0.24 | -0.082** | -1.99 | -0.07** | -1.30 | -0.054 | -1.36 | -0.056 | -1.47 |
| <i>Public</i> | -1.076** | -2.07 | -5.557*** | -12.15 | -1.258** | -2.39 | -1.236** | -2.45 | -1.087** | -2.08 | -1.104** | -2.12 |
| <i>Cross Industry</i> | -0.38 | -1.04 | 0.118 | 0.21 | -0.542 | -1.42 | -0.552 | -1.43 | -0.441 | -1.18 | -0.393 | -1.08 |
| <i>FINANCIAL_LEVERAGE</i> | -0.054 | -0.05 | | | | | | | | | | |
| <i>STOCK_PERFORMANCE</i> | | | -2.248*** | -3.33 | | | | | | | | |
| <i>RELATIVE_DEAL_SIZE</i> | | | | | -2.482** | -2.14 | | | | | | |
| <i>FINANCIAL_CRISIS</i> | | | | | | | -0.858* | -1.84 | | | | |
| <i>GDP_GROWTH</i> | | | | | | | | | -0.077 | -0.109 | | |
| <i>FIRM_SIZE</i> | | | | | | | | | | | 5.86*** | 5.65 |
| <i>cut1</i> | -3.239*** | | -7.931*** | | -4.324*** | | -4.09*** | | -3.197*** | | -2.564*** | |
| <i>cut2</i> | -1.775*** | | -6.429*** | | -2.803*** | | -2.54** | | -1.729*** | | -1.109 | |
| <i>Observations</i> | 418 | | 418 | | 418 | | 418 | | 418 | | 418 | |
| <i>Pseudo R²</i> | 33.9% | | 45.7% | | 37.1% | | 37.6% | | 34.1% | | 34.3% | |
| <i>Log Likelihood</i> | -33.688 | | -23.094 | | -32.050 | | -31.765 | | -33.541 | | -33.447 | |

Table 6. Robustness check for the Tobit model by adding control variables

The results of the Tobit model's robustness check, which includes two control variables, TARGET_BANKRUPT and HIGH_TECH is reported in this table. The regression is repeated six times (indicated the number 1 to 6 in the table). The dependent variable is the cash percentage in the payment structure, which ranges from 0 (for a stock-only payment) to 100 (for a cash-only payment). ***, **, and * denote significance at the 1%, 5%, and 10% rate, respectively. The sign before the coefficient shows whether the Independent variable has a positive or negative impact on the dependent variable. The t-statistic size indicates whether or not the effect is significant.

| <i>Variables</i> | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
|-----------------------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic |
| <i>TARGET_BANKRUPT</i> | 2.806 | 0.09 | 3.643 | 0.12 | 3.255 | 0.11 | 4.259 | 0.14 | 2.503 | 0.08 | 4.85 | -0.15 |
| <i>HIGH_TECH</i> | 2.547 | 0.11 | -1.597 | -0.06 | 7.214 | 0.33 | 20.219 | 0.96 | 2.937 | 0.13 | -0.05 | -0.01 |
| <i>CASH_HOLDING</i> | 70.978*** | 2.62 | 72.658*** | 2.70 | 59.492** | 2.47 | 80.539*** | 3.34 | 73.067*** | 3.17 | 74.619*** | 3.19 |
| <i>COLLATERAL</i> | -48.814** | -2.21 | -48.411** | -2.28 | -34.435 | -1.55 | -68.365*** | -2.69 | -49.277** | -2.36 | -57.424** | -2.23 |
| <i>CONTROL</i> | -0.868 | -1.34 | -1.491 | -0.47 | -0.858 | -1.55 | -1.09** | -2.22 | -0.873 | -1.30 | -0.747 | -0.91 |
| <i>MARKET_TO_BOOK</i> | 0.596 | 0.25 | 2.662 | 0.98 | -0.91 | -0.36 | -0.082 | -0.03 | 0.473 | 0.21 | 0.596 | 0.26 |
| <i>Public</i> | -51.562** | -2.07 | -72.522** | -2.26 | -55.006** | -2.17 | -58.602** | -2.35 | -51.593** | -2.07 | -50.974** | -2.06 |
| <i>Cross Industry</i> | -12.445 | -0.52 | -3.551 | -0.12 | -20.301 | -0.79 | -29.665 | -1.21 | -11.738 | -0.48 | -11.36 | -0.46 |
| <i>FINANCIAL_LEVERAGE</i> | -8.739 | -0.16 | | | | | | | | | | |
| <i>STOCK_PERFORMANCE</i> | | | -85.009* | -1.91 | | | | | | | | |
| <i>RELATIVE_DEAL_SIZE</i> | | | | | -102.323* | -1.73 | | | | | | |
| <i>FINANCIAL_CRISIS</i> | | | | | | | -56.095** | -2.58 | | | | |
| <i>GDP_GROWTH</i> | | | | | | | | | -0.546 | -0.09 | | |
| <i>FIRM_SIZE</i> | | | | | | | | | | | 5.233*** | 6.76 |
| <i>Cons</i> | 145.772*** | 4.54 | 164.235*** | 4.21 | 179.289*** | 4.38 | 187.302*** | 5.28 | 142.966*** | 4.74 | 177.639** | 2.77 |
| <i>Observations</i> | 418 | | 418 | | 418 | | 418 | | 418 | | 418 | |
| <i>Pseudo R²</i> | 13.7% | | 15.5% | | 14.4% | | 15.4% | | 13.7% | | 13.8% | |
| <i>Log Likelihood</i> | -139.147 | | -113.231 | | -138.014 | | -136.362 | | -139.153 | | -140.373 | |

Table 6.1 Robustness check for the Ordered Probit model by adding control variables

The results of the Ordered Probit model's robustness check, which included two control variables, TARGET_BANKRUPT and HIGH_TECH is reported in this table. The regression is repeated six times (indicated the number 1 to 6 in the table). If it is a stock-only payment, the dependent variable is 0; a mix payment, it is 1; and a cash-only payment, it is 2. ***, **, and * denote significance at the 1%, 5%, and 10% rate, respectively. The sign before the coefficient shows whether the Independent variable has a positive or negative impact on the dependent variable. The t-statistic size indicates whether or not the effect is significant.

| <i>Variables</i> | (1) | | (2) | | (3) | | (4) | | (5) | | (6) | |
|-----------------------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic | Coeff | t-statistic |
| <i>TARGET_BANKRUPT</i> | 0.664 | 1.39 | 0.667 | 1.51 | 0.721 | 1.57 | 0.738 | 0.95 | 1.59 | 0.99 | 0.64 | 1.35 |
| <i>HIGH_TECH</i> | 0.352 | 0.92 | -0.665 | -1.48 | 0.283 | 0.70 | 0.205 | 0.28 | 0.368 | 0.95 | 0.316 | 0.75 |
| <i>CASH_HOLDING</i> | 1.121*** | 2.57 | 1.171*** | 2.94 | 0.837* | 1.87 | 1.342*** | 3.18 | 1.143*** | 2.76 | 1.119*** | 2.66 |
| <i>COLLATERAL</i> | -0.918*** | -2.91 | -0.922** | -2.52 | -0.607* | -1.82 | -1.227*** | -2.91 | -0.955*** | -3.06 | -0.825*** | -2.62 |
| <i>CONTROL</i> | -0.018 | -1.19 | -0.029 | -0.44 | -0.02** | -2.02 | -0.023** | -2.09 | -0.02 | -1.39 | -0.021* | -1.78 |
| <i>MARKET_TO_BOOK</i> | -0.052 | -1.40 | -0.013 | -0.28 | -0.086** | -2.15 | -0.061* | -1.87 | -0.055* | -1.76 | -0.057* | -1.60 |
| <i>Public</i> | -1.112** | -2.10 | -6.274*** | -11.17 | -1.297** | -2.46 | -1.325** | -2.39 | -1.137** | -2.11 | -1.13** | -2.13 |
| <i>Cross Industry</i> | -0.334 | -0.85 | 0.115 | 0.21 | -0.523 | -1.19 | -0.584 | -1.36 | -0.4 | -0.99 | -0.351 | -0.87 |
| <i>FINANCIAL_LEVERAGE</i> | -0.087 | -0.09 | | | | | | | | | | |
| <i>STOCK_PERFORMANCE</i> | | | -2.591*** | -3.94 | | | | | | | | |
| <i>RELATIVE_DEAL_SIZE</i> | | | | | -2.545** | -2.15 | | | | | | |
| <i>FINANCIAL_CRISIS</i> | | | | | | | -0.875* | -1.76 | | | | |
| <i>GDP_GROWTH</i> | | | | | | | | | -0.094 | -0.81 | | |
| <i>FIRM_SIZE</i> | | | | | | | | | | | 3.36*** | 4.53 |
| <i>Cut1</i> | -3.476*** | | -8.864*** | | -4.545*** | | -4.299*** | | -3.383*** | | -2.974** | |
| <i>Cut2</i> | -1.986*** | | -7.277*** | | -2.995*** | | -2.725*** | | -1.889*** | | -1.493 | |
| <i>Observations</i> | 418 | | 418 | | 418 | | 418 | | 418 | | 418 | |
| <i>Pseudo R²</i> | 36% | | 48.6% | | 39.1% | | 39.3% | | 36.4% | | 36.2% | |
| <i>Log Likelihood</i> | -32.603 | | -21.873 | | -31.949 | | -31.912 | | -32.393 | | -32.508 | |