



ERASMUS UNIVERSITEIT ROTTERDAM  
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**Master Thesis**  
**M&A Transactions and Financial Ratios**

**Student Name:** Ahmad Alassaad

**Student Number:** 448352

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**Supervisor:** Dr. Ying Gan

**Second Reader:** Dr. Michael Erkens

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## **Abstract**

This master thesis aims to investigate whether target firms manage their financial ratios during the negotiating stage of Mergers & Acquisitions deals targeting to influence the offer premium paid by the acquirer. I find that target firms do not manage their financial ratios during the negotiating phase. This behaviour can be explained in two possible ways: 1) target firms are aware of the risk of manipulating the financial data which might lead to a deal withdrawal 2) managers of target firms in friendly takeovers are secured about their positions and therefore they are not motivated to manage the financial ratios. In addition, I find that having two or more improvements in the financial ratios throughout the negotiating stage does not have an impact on the offer premium. Whilst, having one improvement or more positively affects the offer premium. A conceivable explanation of this result is that the acquirer interprets having two or more improvements as a potential data manipulation. However, it interprets having one improvement or more as steady growth of the financial position of the target firm and it adjusts its offer accordingly.

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# 1 Introduction

Mergers and acquisitions (hereafter M&A) deals are one of the most important and most costly decisions a firm has to take. M&A transactions coincide with the development of the global financial market (Chui & Ip, 2017). They have increased in the last decades in the US due to the changes in the international economy (Bianconi & Yoshino, 2015). Not all of M&A deals achieve their planned goals, many of them fail because of miscalculating target firms or overestimating the synergy (Chui & Ip, 2017). The failure of an M&A deal can have dire consequences on the acquiring firm. The decision making process of an M&A deal is a long process consisting of several steps (Ahammad & Glaister, 2013). These steps are as follows: acquisition planning, negotiating, evaluating, due diligence, deal announcement, and purchase contract (Caiazza & Volpe, 2015). In the negotiating phase, both parties discuss the possibilities of making an M&A deal and the offer premium made by the acquirer (Parola & Ellis, 2014). The premium offered by the acquirer depends on the evaluation of the target firm (Kim & Canina, 2013). During the due diligence process, the acquirer investigates whether there are hidden problems in the target firm and checks if the legal and the financial data are in order (Savovic & Pokrajcic, 2013). After all these steps, the M&A transaction is announced.

The most important step in evaluating target firms is determining the financial position, which indicates the future growth of the firm (Ahammad & Glaister, 2013). A commonly used method to evaluate firms is financial ratios analysis. It can be used as a tool to predict business performance. Furthermore, it enables the user to determine whether the firm is improving or deteriorating throughout a specific period (Adedeji, 2014). A major advantage of using financial ratios to evaluate companies' performance is that they cover different aspects of firms' performance, namely, liquidity, profitability, solvency, and operations (Daniel, 2015).

The aim of this master thesis is to investigate whether target firms influence their financial position by managing their financial ratios during the course of negotiation aiming to affect the offer premium.

**RQ:** *Do target firms manage their financial ratios before an M&A transaction?*

To test this relation between M&A transactions and financial ratios, I do an event study using the announcement date of an M&A deal. The response variable is the changes in a set of financial ratios that covers different aspects of target firms' performance. Thereafter, I check whether having improvements in the financial ratios has an impact on the offer premium by examining the association between the transaction value and the improvements that occur during the negotiating stage.

This master thesis contributes to the existing literature related to the importance of financial ratios and M&A transactions. To my knowledge, this research is the first study that links financial ratios of target firms to the offer premium paid by the acquirer. This master thesis shows how financial ratios can be used in M&A transactions to increase shareholders wealth. In addition, this research will enhance our understanding of the actions that target firms take before announcing an M&A transaction, and it shows the importance of financial ratios in valuating firms. Furthermore, this paper will highlight the cost that the acquirer incurs in M&A transactions.

## **2 Literature Review**

M&A deals are one of the most important and most risky strategic deals that firms make. This is driven by the unique characteristics of these transactions. Strategic decisions are considered risky in general because of the uncertainty of the outcome, in such context, M&A transactions are associated with a high level of uncertainty of the outcome. Furthermore, M&A deals do not occur frequently and they are accompanied with limited information of the counterparty. This M&A associated risk takes place in each step of the decision making process of M&A deals (Pablo, Sitkin, & Jemison, 1996).

### **2.1 Determinants of success and failure of M&A transactions**

M&A transactions have a high rate of failures (Gomes, Angwin, Weber & Yedidia Tarba, 2013). There are several reasons for an M&A deal failure, among them are misevaluating target firms and CEO overconfidence. The first one ends up by paying a too high premium to the target or performing poorly in the post-acquisition stage (Iankova, 2014). Excessive premiums are paid when the acquirer focuses only on the most recent financial data, or when managerial hubris is high since it has a positive impact on the offer premium (Hayward & Hambrick, 1997). The latter reason of M&A failures occurs when the CEO overestimates future returns and synergies resulted from combining two businesses as a result of failing with determining the risk associated with the M&A deal (Brown & Sarma, 2007).

Conversely, there are factors that play an important role in the success of M&A transactions. These factors are derived from the similarity hypothesis, which states that the more common factors between the target and the acquirer the better the performance in the post-acquisition stage. These factors take place on different levels, for instance, having similar favourable performance factors, similar activities and similar strategic goals have a positive impact on post-acquisition performance (Iankova, 2014).

## **2.2 Determinants of M&A transactions**

On the one side, M&A deals can be motivated by firms' specific factors where there are two fundamental motives, namely, maximizing shareholders' wealth by creating synergy and managerial hubris (Brown & Sarma, 2007). Synergy occurs when combining two firms results in higher value than the value that will be created by these two firms separately. This can be realized if the capabilities of the management of the acquiring firms exceed their peers in the target firms, which increases the efficiency of utilizing the resources. In other words, acquiring a target firm shows the confidence of the acquirer about improving the overall performance of the target firm (Kim & Canina, 2013).

The second firm's specific factor (managerial hubris) has a negative impact on the merged firm performance in the post-acquisition phase (Hayward & Hambrick, 1997). Hughes, Lang, Mester, Moon & Pagano (2003), found that when the management is entrenched, they make M&A transactions that are considered as value destroying and they are likely driven by empire building motive.

On the other hand, M&A transactions can be also driven by macroeconomic motives. These motives explain why M&A deals occur in waves. Thus, all M&A waves have a specific mutual aspect. Mariana, (2012) claims that there is a strong association between economic growth and technology evolution on one side and the intense of M&A deals on the other. This can explain the increasing trend in M&A deals in the US (Bianconi & Yoshino, 2015). Another determinant that is driving the US cross-border M&A deals nowadays is tax avoidance. According to Gan & Qiu (2018), US acquirers make an M&A deal aiming to shift their profit or to move their business abroad to take advantage of the tax competitiveness in other economies.

## **2.3 Evaluating Target firms and financial ratios analysis**

As mentioned above, mergers and acquisitions are risky investments by their nature because of the limited understanding of target firms. This drives the acquirer to intensify its analysis and evaluations of the target firm to alleviate this risk (Ahammad & Glaister,

2013). Jonshon (2001) claims that the acquirer makes an analysis of the historical and prospective financial statements of the target firm in order to determine its equity value, which will be used to determine the offer premium that will be paid by the acquirer. Hence, the price that the acquirer is willing to pay consists of the value of the target firm plus the expected synergy, which implicitly means that the offer premium should reflect the benefits that will be realized as a result of the M&A agreement (Kim & Canina, 2013).

Failing in assessing the financial position of target firms leads to an inappropriate deal price, which has negative effects on the acquirer in the post-acquisition phase (Ahammad & Glaister, 2013). A beneficial method that can be used to evaluate target firms and to determine their ability to generate profits is financial ratios analysis since it enhances the understanding of the historical performance of firms (Jonshon, 2001).

Using financial ratios as a tool to evaluate companies performance started early in the US. They were mainly used to predict bankruptcy (Daniel, 2015). Using financial ratios analysis is developing because of its simplicity and its ease to calculate. Ratios analysis is a quantitative measure that does not require financial details (Arkan, 2016). An advantage of using financial ratios is that they can reflect the success and the failure of running the company by managers, they also provide a clear image of the company's capacity to generate future cash flow. Furthermore, Analysing financial ratios can help with the decision making process. This is because they can help with determining the value and evaluating the relevant risk of firms compared to their peers (Daniel, 2015).

According to Adedeji (2014), there is a significant association between the overall performance of firms and the analysis of financial ratios. Financial ratios provide valuable information about the weaknesses and the strengths of companies. Adedeji (2014) argues that analysing financial ratios reveals whether firms are making optimal and efficient utilization of resources. A major difference between financial ratios analysis and stock return analysis is that the first one is a firm-specific, whilst the latter one includes firm and market factors. This means that accounting-based measures outweigh market-based



measures in evaluating firms (Ak, Dechow, Sun & Wang, 2013). This makes analysing financial ratios crucial for the acquirer in M&A transactions (Jonshon, 2001).

## **2.4 Actions taken by target firms**

Jonshon (2001) claims that the management of target firms takes actions before selling their business aiming to show a better financial position of their firm, although these actions have a negative impact on the long run. To illustrate, Christie & Zimmerman (1991) show that managers choose accounting policies that make them better off in M&A transactions at the expense of the acquirer, these choices are considered as opportunistic choices. The main goal of these accounting policies selected by the managers is to improve the income of their firm before engaging in an M&A transaction, which can be achieved by selecting income-increasing inventory valuation method, investment tax credit, and depreciation method. These actions affect the evaluation of the target firm which will be made by the acquirer. Accordingly, the offer premium of the M&A transaction will also be affected.

Another action that might be taken by target firms before announcing M&A transaction is increasing stock prices by announcing abnormal earnings, especially in the last quarter before the announcement date of the M&A deal, because this kind of announcements is rapidly reflected in stock prices. This occurs particularly when the deal is a stock-for-stock merger where the main goal of affecting stock prices is to influence the exchange ratio (Erickson and Wang, 1999).

## **2.5 Factors motivating target firms to manipulate financial data**

Motives of management of target firms to manipulate the financial data in hostile takeovers differ from their motives in friendly takeovers. This difference occurs because in friendly takeovers the acquirer engages in an M&A deal to reach a synergy by integrating two businesses. Therefore, the management of the target firms is less likely to be replaced. On the other hand, in hostile takeovers, the probability of replacing the management is

higher, thus, managers of target firms have a higher incentive to resist this kind of takeovers. Hence, they defend the takeover by showing a better financial position of their firms which can persuade the shareholders that they are performing well, so they reject the hostile takeover (Easterwood, 1998).

The managerial defensive strategy against the hostile takeovers has two structures, namely, assets and ownership restructuring. The defensive strategy is made by the management to avoid an M&A deal and to make the target firm less attractive. This strategy has several effects on M&A transactions. Firstly, it results in an increase in the stock prices of the target firm which makes the target firm an expensive investment for the acquirer. This can be made by improving the financial performance of the target firm which can be reflected in stock prices, this aim can be achieved by assets restructuring. Therefore, shareholders of the target firm experience a wealth gain in the pre-acquisition stage. Secondly, it changes the vote ownership percentage by repurchasing stocks from the shareholders. This can create a veto against the takeover and might increase the difficulties of completing the deal. These goals can be obtained by restructuring the ownership. (Dann and DeAngelo, 1988).

Influencing the financial position of the target firm differs among the recent four quarters before the announcement date. These actions occur extensively in the most recent quarter, while they are the same in the second and in the third quarters, and they are least pronounced in the fourth one (Erickson and Wang, 1999). All the taken actions by target firms in the pre-acquisition stage that aim to affect the transaction price lower the financial reporting quality which is positively correlated with deals withdrawal (Joo-hyun & Jin-ho, 2017).

### **3 Hypotheses Development**

As aforementioned, evaluating target firms is a fundamental step of M&A transactions. Acquirers often have an idea of the expected synergy gain that will result from an M&A investment depending on the operations of the target firm. Ratios analysis helps the acquirer to have readily evidence of the expected synergy (Jonshon, 2001). According to Ahammad & Glaister (2013), there is a positive association between the detailed evaluation of the target firm and the financial performance in the post-acquisition stage.

Target firms are valued according to their ability to generate profit and cash flow and their ability to increase the leverage of the acquirer (Ang, Daher & Ismail, 2019). Therefore, analysing the historical operating result is fundamental for the acquirer. This analysis includes the calculation of several financial ratios, such as profitability ratios, market value ratios, financial leverage ratios, and liquidity ratios (Jonshon, 2001). According to Bennett & Dam (2018), firms with higher-growth are more subject to acquisition than firms with a lower-growth. In addition, the premium the acquirer is willing to pay is higher than the median of the public firms in general. This means that improving the financial position during the negotiating stage is a goal of the target firm which might result in a higher offer premium.

Jonshon (2001) argues that acquirers depend on the financial statements of target firms without detecting whether these projections are reasonable. This incentivizes target firms to improve their financial position during the negotiating stage aiming to get a higher premium.

In contrast, Ben-Amar & Missonier-Piera (2008) claim that the management of target firms manages earnings downward in the friendly takeovers in the pre-acquisition stage aiming to manage it upwards after the acquisition which helps them to maintain their positions after completing the deal.

On the other hand, Erickson and Wang (1999) argue that shareholders hold the management of the acquiring firm responsible for performing on behalf of them. This means that the management is subject to litigation if they do not perform in the interest of shareholders. Consequently, the management of the acquiring firms is highly intensified to assure that the target firm did not manipulate its financial data. This discourages target firms from taking any action that can be detected by the acquirer because detecting any manipulation is costly and might result in deal withdrawal.

Regarding the offer premium made by the acquirer, Easterwood (1998) argues that reporting higher earnings by target firms results in an increase in the premium paid by the acquirer because it positively affects the synergy expectations.

Conversely, Erickson and Wang (1999) claim that the anticipated actions of the target firms do not include fraud, but they include a purposeful selection of accounting policies that cannot be easily detected. Therefore, it is rational to suppose that the acquirer will expect that the target firm might manage earnings before the announcement of the M&A deal aiming to influence the transaction price, consequently, the acquirer might adjust its offer accordingly.

This leads to the following two hypotheses stated in the alternative form:

***H01: Target firms manage their financial ratios in the course of negotiation.***

***H02: Improving financial ratios of target firm affects the offer premium paid by the acquirer.***

## 4 Research Design

To examine the association between financial ratios of target firms and the announcement of M&A transactions, I do an event study. The announcement date of the M&A transaction is the event of this research. I use a dummy variable for M&A transaction, which I give value 1 if a firm made an M&A deal and 0 otherwise. Since the main aim of this thesis is to investigate whether the management of the target firms improves the financial ratios during the negotiating stage, I assume that the negotiating stage between the acquirer and the target is one year on average. Therefore, I calculate the changes in the financial ratios one year before the announcement date depending on the quarterly financial statements. Changes in the financial ratios will be calculated for each quarter separately using the following formula:

$$Change = \frac{\text{the ratio of the current quarter} - \text{the ratio of the past quarter}}{\text{the ratio of the past quarter}}$$

The financial ratios that will be examined in this research have been selected for two reasons. Firstly, they cover different aspects of target firms' performance, namely, profitability, leverage, liquidity, and market evaluation. Secondly, these ratios can be managed by the management in the short run. The financial ratios that will be used are as follows: Return-on-Asset, Debt/Equity, Current Ratio, and Price-to-Earnings Ratio. In order to isolate the effect of the M&A announcement on the changes in the financial ratio of target firms, I include several control variables. These control variables are correlated with the changes in the financial ratios (the dependent variable) as they control for the growth, the risk, the industry characteristics of target firms, and the deal characteristics (Wu, 2014; Joo-hyun & Jin-ho, 2017; Gan & Qiu, 2018; Bennett & Dam, 2018; Ang, Daher & Ismail, 2019). The included control variables are as follows: size, industry, earnings-per-Share ratio, sales, dividends pay-out ratio, industry-relatedness, all cash, all stock, diversifying, and relative size.

## 4.1 Regression Models

To examine the first hypothesis, I run four regression models, each model covers one of the above-mentioned financial ratios. The independent variable is a dummy variable of the deal announcement and the dependent variable is the change in the financial ratio during the course of negotiation. The first regression model examines the changes in profitability ratios before an M&A announcement using Return-on-Asset ratio. Profitability ratios show the overall profitability of the company, they also present the ability of the company to meet its short and long term obligations while maintaining optimum return (Adedeji, 2014). In addition, they show the sensitivity to fluctuations in revenues (Jonshon, 2001). Many studies show that target firms manage their earnings before M&A transactions aiming to affect the offer premium (Dann and DeAngelo, 1988; Easterwood, 1998). Hence, it is expected that managing earnings by the management of the target firms will have a positive impact on Return-on-Assets ratio. I calculate Return-on-Assets by dividing the net income by the average total assets. Changes in the Return-on-Asset ratio are measured as:

$$\Delta ROA = \alpha + \beta_1 M\&A + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 EPS + \beta_5 DIVOUT + \beta_6 SALES + \beta_7 M\_INDUSTRY + \beta_8 ALLCASH + \beta_9 ALLSTOCK + \beta_{10} DIVERSIFYING + \beta_{11} RELSIZE + \varepsilon$$

Whereas  $\Delta ROA$  is the change in Return-on-Assets ratio, M&A is a dummy variable for the mergers and acquisitions transactions, SIZE is the size of the target firm, INDUSTRY is the industry fixed effect variable, EPS is earnings-per-share ratio, DIVOUT is the dividends pay-out ratio, SALES is the sales of the target firm, M\_INDUSTRY is the industry-relatedness dummy variable, ALLCASH is all cash deals, ALLSTOCK is all stock deals, DIVERSSIFYING is the hybrid deals, RELSIZE is the relative size of the deal.

The second regression model examines the changes in leverage ratios before an M&A announcement using the debt to equity ratio. Improving debt capacity is one of the motives of the acquirer in M&A transactions, thus, acquirers aim to gain financing benefits from engaging in an M&A transaction. This implicitly means that the leverage of the target firm plays an important role in making an M&A deal. This is because the capital structure of

the merged firms is based on the leverage of both the target and the acquirer, besides the payment method. Therefore, acquiring a lowly levered target firm creates value to the acquirer and reduces the cost of debt. As a result, the acquirer will be willing to pay a higher premium to the target if the M&A deal will increase the combined firm debt capacity (Ang, Daher & Ismail, 2019). In addition, this ratio measures the ability of the target firm to meet its long and short term obligations (Adedeji, 2014). Debt/Equity ratio has also an impact on the acquirer's cost of capital (Jonshon, 2001). Changes in the Debt/Equity ratio are estimated by:

$$\Delta D/E = \alpha + \beta_1 M\&A + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 EPS + \beta_5 DIVOUT + \beta_6 SALES + \beta_7 M\_INDUSTRY + \beta_8 ALLCASH + \beta_9 ALLSTOCK + \beta_{10} DIVERSIFYING + \beta_{11} RELSIZE + \varepsilon$$

Whereas  $\Delta D/E$  is the change in the Debt/Equity ratio.

The third regression model examines the changes in liquidity ratios before an M&A announcement using the current ratio. Liquidity ratios illustrate the ability of companies to meet their short and long term obligation (Adedeji, 2014). They also measure the financial strength of the company in the short run (Jonshon, 2001). The current ratio is calculated by dividing the current assets by current liabilities. Changes in liquidity are measured as:

$$\Delta Current = \alpha + \beta_1 M\&A + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 EPS + \beta_5 DIVOUT + \beta_6 SALES + \beta_7 M\_INDUSTRY + \beta_8 ALLCASH + \beta_9 ALLSTOCK + \beta_{10} DIVERSIFYING + \beta_{11} RELSIZE + \varepsilon$$

Whereas  $\Delta Current$  is the change in the current ratio.

The fourth regression model examines the changes in market evaluation ratios before an M&A announcement using the Price-to-Earnings ratio. This ratio is used to explain the current stock prices and to give a prediction of future growth. Different researches show diverse outcomes about the association between P/E ratio and earnings growth.

According to Wu (2014), the P/E ratio is positively correlated with earnings growth in the short run whilst it is negatively correlated with it in the long run. On the other hand, Thomas & Zhang (2006) claim that the P/E ratio is an effective tool that can be used to estimate the earnings growth for both short and long terms. Another aspect that can be explained by P/E ratio is the firm risk. Wu (2014) argues that there is a negative association between risk and P/E ratio, in other words, having a low P/E ratio is interpreted as being highly risky firm. A potential way to improve this ratio in the short run is announcing abnormal earnings which can be rapidly reflected in the stock prices. Therefore, the P/E ratio is an important ratio to use in order to determine the financial position of firms. This ratio is calculated by dividing the stock price by the earnings per share. Changes in the book-to-market ratio are given by:

$$\Delta P/E = \alpha + \beta_1 \text{ M\&A} + \beta_2 \text{ SIZE} + \beta_3 \text{ INDUSTRY} + \beta_4 \text{ EPS} + \beta_5 \text{ DIVOUT} + \beta_6 \text{ SALES} + \beta_7 \text{ M\_INDUSTRY} + \beta_8 \text{ ALLCASH} + \beta_9 \text{ ALLSTOCK} + \beta_{10} \text{ DIVERSIFYING} + \beta_{11} \text{ RELSIZE} + \varepsilon$$

Whereas  $\Delta P/E$  is the change in the Price-to-Earnings ratio.

According to the efficient market hypothesis, all public information is reflected in the stock prices. As a result, all the changes in stock prices prior to an M&A announcement are not related to this announcement. Therefore, to test whether changes in the financial ratios have an effect on the offer premium paid by the acquirer, I run a regression whereby I use the premium paid by the acquirer as a dependent variable. The independent variables will be the changes in the financial ratios during the course of the negotiation. For these independent variables, I use a binary variable and there will be two scenarios. In the first scenario, I give a value 1 if an improvement in the financial ratios occurred twice or more during the negotiating stage, and value 0 otherwise. In the second scenario, I give a value 1 if an improvement in the financial ratios occurred once or more during the negotiating stage, and value 0 otherwise. The regression model used to examine the effect of the changes in the financial ratios of target firms on the offer premium paid by the acquirer is:



$$P_T = \alpha + \beta_1 \text{DROA} + \beta_2 \text{DD/E} + \beta_3 \text{DCurrent} + \beta_4 \text{DP/E} + \beta_5 \text{SIZE} + \beta_6 \text{INDUSTRY} + \beta_7 \text{EPS} + \beta_8 \text{DIVOUT} + \beta_9 \text{SALES} + \beta_{10} \text{M\_INDUSTRY} + \beta_{11} \text{HML} + \beta_{12} \text{SMB} + \beta_{13} \text{ALLCASH} + \beta_{14} \text{ALLSTOCK} + \beta_{15} \text{DIVERSIFYING} + \beta_{16} \text{RELSIZE} + \varepsilon$$

Whereas  $P_T$  is the premium paid by the acquirer, DROA is a dummy variable for the changes in the Return-on-Assets ratio, DD/E is a dummy variable for the improvement of the Debt/Equity ratio, DCurrent is a dummy variable for the improvement of the current ratio, DP/E is a dummy variable for the improvement of the Price-to-Earnings ratio, HML is known as high-minus-low variable, and SMB is small-minus-big variable.

A potential problem of this research design is the assumption of the one year period of the negotiating stage. This problem might occur if the negotiations lasted less than one year between the two parties. Using the quarterly financial statements helps to rule out this concern, because if the negotiation period was shorter than one year then the changes in the financial ratios will still be captured using quarterly data.

## 4.2 Control variables

To isolate the impact of the M&A transactions on the changes in the financial ratios and the impact of the improvements in the financial ratios on the premium paid by the acquirer, I include control variables that have a correlation with the dependent variable of the regression models. The included control variables have been used in other researches that studied the impact of the actions taken by target firms' management prior to M&A deals and the financial performance of the target firms.

The used variables control for three levels of characteristics, namely, firm-level characteristics, economy-level characteristics, and deal-level characteristics. Regarding the firm-level characteristics, I use three variables to control for the growth of the target firm and they are as follows: dividends pay-out ratio, earnings-per-share ratio (Wu, 2014), and sales (Joo-hyun & Jin-ho, 2017). In addition, I control for the risk of the target firm by including two control variables, namely, size (Gan & Qiu, 2018), and industry (Bennett &

Dam, 2018). The variable size will be calculated as the natural logarithm of the total assets of the target firm. The last firm-level control variable that will be used is industry-relatedness which is a dummy variable that takes value 1 if both target firm and the acquirer are in the same industry and 0 otherwise (Ang, Daher & Ismail, 2019).

In regard to economy-level characteristics, I use three control variables, two of them are Fama & French (2013) variables which are associated with stock prices and they are as follows: HML(high minus low) for Book-to-Market value and SMB(small minus big) for market capitalization. The third variable will be used is a year dummy. Including this variable will help to control for M&A waves and impact of the financial crisis (Brown & Sarma, 2007).

Concerning the deal-level characteristics, I include four variables that control for the method of payment and the size of the deal following (Gan & Qiu, 2018). To control for the method of payment, I include three dummy variables, namely, all cash, all stock, and diversifying. For all cash variable, I give value 1 if the deal was made in cash and 0 otherwise. I do the same for all stock variable by giving value 1 if the deal is a stock swap deal and giving value 0 otherwise. If the deal was a combination of both cash and stock, I give value 1 for diversifying variable, if not I give value 0. The last control variable I include to control for the deal characteristics is the relative size. This variable is calculated by dividing the deal value by the total assets of the acquirer.

## **5 Sample Selection and Data**

### **5.1 Sample Selection**

To be included in this research, a firm should satisfy a set of criteria. These criteria were used by Mulherin & Aziz Simsir (2015) and they are as follows: 1) The target firm is a public firm situated in the US, 2) The form of merger is “merger”, “acquisition”, “acquisition of majority interest” or “acquisition of assets”, 3) The M&A announcements were completed, 4) The M&A transaction is not categorized as “bankruptcy acquisition”, “joint venture” or “spin-off”. The sample period of this research is from 1990 to 2017, however, in order to calculate the changes in the financial ratios, I gathered data starting from 1989. Therefore, the downloaded data can be used to calculate the average total assets used for the Return on Assets ratio and the changes in the ratios for the first quarter of 1990. All data related to the year 1989 were dropped before running the regression.

### **5.2 Data Resources**

All the data needed to do this research were downloaded from two resources. The data related to M&A transactions were gathered from Securities Data Corporation (SDC) platinum database, a resource that is commonly used by researchers in M&A studies. The other resource of the data of this research is gathered from the COMPUSTAT database. This resource was used to download data related to stock prices of target firms and the relevant accounting data related to the financial statements.

### **5.3 Merging of Database**

The two databases (M&A database and firm-related database) used in this research were merged based on the target firm SEDOL, year and quarter. SEDOL was created using the CUSIP of the target firm downloaded from COMPUSTAT by taking the first six digit of the CUSIP. Since, the CUSIP used in SDC platinum consists of only six digits, while the CUSIP of COMPUSTAT consists of nine digits. After merging the databases, I keep the

merged rows and the firm related unmerged rows since I need these rows to examine the changes in the financial ratios. This is because the merged data contain the M&A transaction only and do not contain the data of the four quarters before the announcement. Both databases were sorted according to SEDOL, year, and quarter before merging.

## **5.4 Data Sorting**

The data used in this research are panel data, therefore, I define the panel data so I can run the regression. To sort the data, I dropped all the observations that include missing values for some variables. This was done in order to avoid any biased outcome caused by the missing values. Furthermore, I identified and removed duplicate data. Hence, all the observations included in this research are unparalleled. In addition, I dropped the extreme data of the total assets and the total liability by applying a commonly used method to deal with outliers known as “winsorize”. This method used to drop 1% of the extreme observations which helps to avoid the impact of these observations on the outcome of the research. After all the aforementioned steps, I left with a sample of 1730 observations that includes quarterly financial data for 453 M&A transactions.

Since the M&A transactions do not necessarily occur at the end of each quarter, I categorized the transaction in one of four categories that represent four quarters of the year. To illustrate, If the M&A transaction took place in the first three months of the year, then the transaction is categorized in the first quarter category, and if the M&A transaction took place in the fourth, fifth, or the sixth month of the year, then the transaction will be categorized in the second quarter category, and so on and so forth. This is required because I used quarterly data for the firm-related data and one of the variables used to merge the two databases was “quarter” variable.

**Table 1** Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CHANGE ROA	1,730	-0.496	15.451	-469.705	225.178
CHANGE P/E	1,730	655.148	27220.67	-1089.293	1132195
CHANGE Current ratio	1,730	0.253	8.351	-0.910	342.875
CHANGE D/E ratio	1,730	-1.849	78.569	-3267.572	20.599
CHANGE M/B	1,730	1.021	106.004	-2276.686	3773.107
CHANGE ROE	1,730	0.227	47.484	-977.434	1368.88
Size	1,730	6.659	2.072	-2.442	11.097
Industry	1,730	34.819	17.503	1	69
EPS	1,730	0.218	2.104	-13.816	53.794
Dividends-Payout ratio	1,730	-4.704	213.778	-8890.5	29.287
Sales	1,730	705.340	1694.549	-26.071	17073.9
Value of transaction	453	4968.577	10839.47	0.77	84197.03
Relative Size	453	0.954	3.490	0.000	63.298

## 6 Data Analysis

In this section I present the main result of my thesis. The result is structured by hypotheses. Each hypothesis' result is presented separately.

### 6.1 First Hypothesis

Table 2 reveals the result of the first regression model. It shows the association between the changes in the Return-on-Assets ratio of target firms during the negotiating stage and the occurrence of M&A deals. The coefficient of M&A dummy is negative and insignificant. This means that the existence of an M&A deal does not have an impact on the changes in the Return-on-Asset ratio. In other words, the changes in the Return-on-Assets ratio that occurred during the negotiating stage are not directly related to the M&A transaction, but they are ordinary changes that occur as a reflection of the financial performance of target firms. This finding is in line with Erickson and Wang (1999) finding, who claimed that target firms are encouraged to manipulate their financial data before announcing the deal because this manipulation is costly and might result in a deal withdrawal. The

negative sign of the variable of interest coincides the finding of Ben-Amar & Missonier-Piera (2008) that argued that target firms manage their earnings downwards before friendly M&A transactions so that they can manage it upwards after the deal takes place which helps the management to maintain their positions.

**Table 2** The estimated coefficient and t-statistics from the regression models of the changes in the financial ratios

	$\Delta$ ROA	$\Delta$ P/E	$\Delta$ current	$\Delta$ D/E	(Robustness) $\Delta$ M/B	(Robustness) $\Delta$ ROE
MA	-1.149 (-0.96)	-957.6 (-0.98)	-0.13 (-0.49)	2.802 -1	-0.854 (-0.22)	-3.425 (-1.95)
SIZE	-0.354 (-1.58)	399.4 -0.99	0.009 -0.11	0.787 -0.95	1.878 -1.28	0.435 -0.89
INDUSTRY	-0.023 (-0.71)	17.42 -0.96	0.020 -1.12	-0.168 (-1.01)	-0.061 (-0.47)	-0.001 (-0.02)
EPS	0.971* -2.14	-103.8 (-0.81)	0.010 -0.92	0.476 -0.85	-0.022 (-0.03)	-6.858 (-1.38)
DIVOUT	-0.000 (-0.60)	-0.164 (-0.57)	-0.000 (-0.19)	-0.000 (-0.86)	-0.001 (-1.19)	-0.000 (-0.90)
Sales	0.000 -0.7	-0.204 (-0.92)	-0.000 (-0.69)	-0.000 (-0.15)	-0.000 (-0.90)	0.000 -0.42
M_INDUSTRY	0.924 -1.06	1901.1 -1.01	-0.48 (-1.01)	1.926 -0.95	7.763 -1.21	-0.06 (-0.03)
ALLCASH	2.508 -1.14	1546.6 -0.99	0.056 -0.55	-3.943 (-0.96)	2.31 -0.39	1.046 -0.21
ALLSTOCKS	2.506 -1.09	-70.72 (-0.19)	1.263 -1.01	-0.665 (-0.51)	-0.87 (-0.51)	-0.914 (-0.19)
Diversifying	2.415 -0.97	-384.6 (-0.75)	0.078 -0.59	-1.548 (-0.80)	-2.255 (-1.00)	1.946 -0.4

Relative Size	-0.091 (-1.15)	-17.46 (-0.32)	0.012 -0.74	0.023 -0.34	-0.056 (-0.30)	-0.143 (-0.94)
_cons	0.866 -0.46	-5459.4 (-1.00)	-1.351 (-0.88)	-4.14 (-0.86)	-21.05 (-1.12)	-9.682 (-1.08)
R-Squared	0.034	0.007	0.009	0.006	0.007	0.094
F- Statistics	0.000	0.995	0.972	0.998	0.993	0.000
Observations	1730	1730	1730	1730	1730	1730

t statistics in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

The result of the regression model can also be explained by the attitude of the M&A transactions included in this study. Table 3 shows that 99.12% of the deals are friendly, therefore, the likelihood of replacing the management of target firms is very low. Thus, it is unexpected that the management manipulates the financial data during the negotiating stage.

**Table 3 Deal attitude**

Attitude	Freq.	Percent.	Cum.
Friendly	449	99.12	99.12
Not Applicable	1	0.22	99.34
Unsolicited, but not Hostile	3	0.66	100
<b>Total</b>	<b>453</b>	<b>100</b>	

Table 2 also shows that only one of the included control variables is significant that is Earnings-Per-Share ratio. EPS ratio has a positive and significant coefficient. This means that for each one unit increase in Earnings-Per-Share ratio, Return-on-Assets ratio increases by 0.971. Furthermore, the remaining included control variables related to firm-level characteristics are insignificant since the coefficient of variables SIZE, INDUSTRY, SALES, and DIVOUT are insignificant. The same table reveals that the method of payment does not have an impact on the changes in the Return-on-Assets ratio since variables ALLCASH, ALLSTOCK, and DIVERSIFYING are insignificant. In addition, having the same industry for both parties does not affect the changes in the ROA ratio as this control variable is insignificant.

**Table 4** Pearson correlation matrix

	$\Delta$ ROA	$\Delta$ P/E	$\Delta$ current	$\Delta$ D/E	$\Delta$ M/B	$\Delta$ ROE	MA
MA	-0.034	-0.014	-0.010	0.014	-0.003	-0.023	1
SIZE	-0.029	0.013	-0.008	0.021	0.022	-0.011	-0.010
INDUSTRY	-0.025	0.006	0.036	-0.035	-0.014	-0.003	0.002
EPS	0.130	-0.001	0.001	0.016	0.007	-0.300	-0.036
DIVOUT	0.001	0.002	0.000	0.000	0.000	0.001	-0.041
saleq	-0.014	-0.007	-0.012	0.009	-0.002	-0.010	-0.002
M_INDUSTRY	0.024	0.030	-0.021	0.019	0.036	-0.007	-0.002
ALLCASH	0.023	0.024	-0.021	-0.025	0.007	0.002	-0.003
ALLSTOCKS	0.008	-0.011	0.051	0.012	-0.004	-0.008	0.001
Diversifying	0.008	-0.012	-0.014	0.012	-0.003	0.003	0.006
Relsize	-0.020	-0.005	-0.004	0.006	-0.001	-0.010	-0.003

	SIZE	INDUSTRY	EPS	DIVOUT	sales	M_INDUSTRY	ALLCASH	ALLSTOCKS
MA								
SIZE	1							
INDUSTRY	-0.068	1						
EPS	0.110	0.003	1					
DIVOUT	0.024	-0.034	0.003	1				
saleq	0.493	0.038	0.067	0.010	1			
M_INDUSTRY	0.095	-0.079	0.030	0.020	-0.008	1		
ALLCASH	-0.159	0.031	0.000	0.024	-0.159	-0.167	1	
ALLSTOCKS	-0.021	-0.034	-0.033	0.012	-0.036	0.092	-0.458	1
Diversifying	0.191	-0.029	0.043	-0.047	0.185	0.076	-0.512	-0.235
Relsize	0.275	-0.023	0.040	0.007	0.552	-0.011	-0.075	-0.072

	Diversifying	Relsize
Diversifying	1	
Relsize	0.140	1

This finding holds for the other financial ratios included in this study. Table 2 also reveals the result of the second, third, and the fourth regression models. These models show the association between the changes in the Price-to-Earnings ratio, current ratio, and Debt-to-Equity ratio, respectively, with the existence of M&A deals. From the table we see that the coefficients of the M&A dummy variables are insignificant for the three studied financial



ratios. This means that target firms do not make changes to any of these ratios intentionally in the negotiating phase before announcing an M&A deal, and that all the changes occurred are not related to the announcement of the M&A transaction.

In conclusion, the first hypothesis is false, target firms do not make improvements related to the M&A transaction to their financial ratios in the most recent quarters before announcing the deal. This can be explained by two reasons. Firstly, target firms are aware of the risk of manipulating the financial data during the negotiating stage, which might result in a deal withdrawal. Secondly, managers of target firms in friendly takeovers are secured about their positions in the post period of the deal, and therefore, they are not motivated to manage the financial ratios during the negotiating stage.

## **6.2 Second Hypothesis**

The result of this hypothesis is structured by the two aforementioned scenarios. The result of each scenario is presented separately.

### **6.2.1 First scenario**

In this scenario I check whether having two or more improvements in the financial ratio during the negotiating stage have an impact on the offer premium paid by the acquirer.

Table 5 presents the result of the first scenario. The regression model shows that having two improvements on the financial ratios in the negotiating stage does not have an impact on the offer premium since the coefficient of the four studied financial ratios are insignificant. This result can be explained in two possible ways.

Firstly, the acquirer values the target firm by making a financial analysis using the financial data of the target firm that covers a long period of time (more than four years) before the deal announcement. Therefore, these changes lose their importance when they are combined with old data. In this way the acquirer avoids paying an excessive premium to the target firm. This is in line with the finding of Hayward & Hambrick (1997), who found

that relying only on the most recent financial data leads to paying an exaggerated premium.

Secondly, having two improvements or more in the financial ratios during the negotiating stage might be interpreted by the acquirer as a potential data manipulation, and therefore, the acquirer does not take these improvements into account while valuating the target firm. This is because the management of the acquirer is held accountable for performing on behalf of the shareholders. Hence, they suspect these improvements and they do not adjust the offer premium according to these changes to avoid any legal action that might be taken by the shareholder. This reinforces the finding of Erickson and Wang (1999).

**Table 5** The estimated coefficient and t-statistics from the regression models of the offer premium

	<b>Scenario 1</b>	<b>Scenario 2</b>	(Robustness) <b>Scenario 1</b>	(Robustness) <b>Scenario 2</b>
	Value of Transaction	Value of Transaction	Value of Transaction	Value of Transaction
Improvements in ROA	290.7 -0.36	-243.9 (-0.25)		
Improvements in P/E	191.6 -0.25	1462.1* -2.12		
Improvements in current	-655.5 (-0.65)	-196.1 (-0.15)		
Improvements in D/E	1040.2 -1.11	2233.2** -2.97		
Improvements in M/B			-562.1 (-0.81)	260 -0.31
Improvements in ROE			-413.1 (-0.55)	-658.2 (-0.70)

Dividends payout	0.165 -0.88	0.254 -1.28	0.226 -1.18	0.207 -1.05
Industry-relatedness	-3.055 (-0.00)	-20.81 (-0.03)	0.613 0	-23.7 (-0.03)
Sales	2.984** -3.27	2.928** -3.19	2.980** -3.26	2.953** -3.23
EPS	493.6 -1.59	445.1 -1.45	519.1 -1.58	524.7 -1.59
SIZE	1324.4*** -4.79	1303.6*** -4.8	1328.5*** -4.76	1342.2*** -4.81
INDUSTRY	-39.60* (-2.07)	-42.81* (-2.14)	-39.50* (-2.04)	-39.39* (-2.03)
Small-minus-Big	-8856.9 (-0.50)	-7102.4 (-0.40)	-9668.1 (-0.55)	-10423.4 (-0.59)
High-minus-Low	7222.6 -0.41	1788.6 -0.1	8166.9 -0.48	7056.1 -0.41
ALLCASH	-686.4 (-0.45)	-855.6 (-0.54)	-735.2 (-0.47)	-819.5 (-0.52)
ALLSTOCKS	-1729.4 (-0.96)	-1686.4 (-0.92)	-1879.3 (-1.03)	-1939.6 (-1.06)
Diversifying	1221.9 -0.6	991.4 -0.48	1234.4 -0.59	1104.7 -0.53
Relative Size	203.4 -0.39	226.7 -0.45	205.6 -0.4	206.7 -0.4
_cons	-10167.7*** (-3.71)	-10868.0*** (-3.39)	-8850.8** (-3.17)	-9471.0** (-3.04)
R-Squared	0.525	0.530	0.524	0.523

F-statistics	0.000	0.000	0.000	0.000
Observations	453	453	453	453

t statistics in parentheses

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

From the same table we observe that the offer premium is positively correlated with the sales and the size of the target firm. Whilst it is negatively correlated with the industry fixed effect. On the other hand, table 5 reveals that the method of payment, the relative size of the offer, and the industry relatedness do not have any effect on the premium paid by the acquirer. Thus, the deal characteristics do not affect the offer premium. This also applies to the economy characteristics. Hence, the acquirer focuses on the firm characteristics in determining the premium will be paid to the target, and it considers deal characteristics and economy characteristics irrelevant in valuating target firms.

**Table 6** shows the number of firms that made at least two improvements (First Scenario) to the Return-on-Assets ratio three quarters before announcing an M&A transaction:

Improvements in ROA	Freq.	Percent	Cum.
One improvement or less	258	56.95	56.95
Two improvements or more	195	43.05	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 7** shows the number of firms that made at least two improvements (First Scenario) to the Price-to-Earnings ratio three quarters before announcing an M&A transaction:

Improvements in P/E	Freq.	Percent	Cum.
One improvement or less	256	56.51	56.51
Two improvements or more	197	43.49	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 8** shows the number of firms that made at least two improvements (First Scenario) to the current ratio three quarters before announcing an M&A transaction:

Improvements in Current ratio	Freq.	Percent	Cum.
One improvement or less	219	48.34	48.34
Two improvements or more	234	51.66	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 9** shows the number of firms that made at least two improvements (First Scenario) to the Debt-to-Equity ratio three quarters before announcing an M&A transaction:

Improvements in D/E	Freq.	Percent	Cum.
One improvement or less	201	44.37	44.37
Two improvements or more	252	55.63	100
<b>Total</b>	<b>453</b>	<b>100</b>	

### 6.2.2 Second Scenario

In this scenario I check whether having one improvement or more of the financial ratio during the negotiating stage have an impact on the offer premium paid by the acquirer.

Table 5 presents the result of the second scenario. From the table, we observe that the regression shows a positive and significant coefficient for the improvements in the Price-to-Earnings ratio and Debt-to-Equity ratio. While the result is insignificant for the improvements in the Return-on-Assets ratio and Current ratio. This result indicates that having one improvement or more in Price-to-Earnings and Debt-to-Equity ratio results in receiving a higher offer premium from the acquirer. This finding is in line with the finding of Ang, Daher & Ismail (2019) who concluded that the acquirer is willing to pay a higher premium if the takeover increases the debt capacity of the combined firm and reduces the cost of capital of the acquirer. In addition, this result illustrates the importance of Price-to-Earnings ratio in determining the riskiness of firms which coincides the findings of Wu (2014). On the other hand, table 5 reveals that improving Return-on-Assets ratio and Current ratio does not affect the offer premium. This result contradicts with the finding of Dann and DeAngelo (1988) who concluded that target firms aim to affect the offer premium by managing their earnings before M&A transactions. A possible explanation of this result is that the takeovers included in this study are driven by managerial hubris motive. Thus, creating synergy and improving the profitability of the combined firm are not priorities of engaging in M&A deals, while improving the debt capacity is a priority to the management to expand their investments and to build their empire.

In conclusion, improving the financial ratios during the negotiating stage might be interpreted by the acquirer in different ways. On the one extreme, having more than two improvements in the last year before announcing an M&A deal might be suspected and considered as a potential manipulation which results in ignoring these improvements in the offer made by the acquirer. On the other extreme, having one improvement or more can be interpreted as stable growth in the financial position of the target firm, and therefore, it positively affects the value of the M&A transaction.

**Table 10** shows the number of firms that made at least one improvement (second scenario) to the Return-on-Assets ratio three quarters before announcing an M&A transaction:

Improvements in ROA	Freq.	Percent	Cum.
No improvements	65	14.35	14.35
One improvement or more	388	85.65	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 11** shows the number of firms that made at least one improvement (second scenario) to the Price-to-Earnings ratio three quarters before announcing an M&A transaction:

Improvements in P/E	Freq.	Percent	Cum.
No improvements	89	19.65	19.65
One improvement or more	364	80.35	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 12** shows the number of firms that made at least one improvement (second scenario) to the current ratio three quarters before announcing an M&A transaction:

Improvements in Current ratio	Freq.	Percent	Cum.
No improvements	53	11.7	11.7
One improvement or more	400	88.3	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 13** shows the number of firms that made at least one improvement (second scenario) to the Debt-to-Equity ratio three quarters before announcing an M&A transaction:

Improvements in D/E	Freq.	Percent	Cum.
No improvements	61	13.47	13.47
One improvement or more	392	86.53	100
Total	453	100	

## 7 Robustness test

In order to check whether the outcome of this research differs by changing one of the used financial ratio, I do a robustness test where I examine the impact of M&A deals on the changes on two different financial ratios. In addition, I examine the effect of the changes in these ratios on the premium paid by the acquirer. The two financial ratios will be used in the robustness test are Market-to-Book ratio (M/B) and Return-on-assets ratio (ROE).

Market-to-Book ratio is used to compare the market value and the book value, and shows whether the share is overvalued or undervalued. A high Market-to-Book ratio is interpreted as an increase in the expectation of creating value by the management (Bianconi & Yoshino, 2015). This ratio shows the market valuation of the stocks. The regression model used to examine the changes in the Market-to-Book ratio before M&A announcement is:

$$\Delta M/B = \alpha + \beta_1 M\&A + \beta_2 SIZE + \beta_3 INDUSTRY + \beta_4 EPS + \beta_5 DIVOUT + \beta_6 SALES + \beta_7 M\_INDUSTRY + \varepsilon$$

Whereas  $\Delta M/B$  is the change in Market-to-Book ratio.

Return-on-Equity ratio is one of the profitability ratios used to reflect the ability of firms to generate profits and shows the percentage of the made profit for each monetary unit invested in equity. This ratio cannot be used to determine the amount of cash will be received by the investors since this depends on the dividends policy of the firm. However, it shows the ability of firms to efficiently use the invested money to generate profit (Berman & Knight, 2013). Return-on-Equity ratio is calculated by dividing the net income by the average total equity. The regression model used to show the impact of an M&A announcement on the changes in the Return-on-Equity ratio is:

$$\Delta \text{ROE} = \alpha + \beta_1 \text{M\&A} + \beta_2 \text{SIZE} + \beta_3 \text{INDUSTRY} + \beta_4 \text{EPS} + \beta_5 \text{DIVOUT} + \beta_6 \text{SALES} + \beta_7 \text{M\_INDUSTRY} + \varepsilon$$

Whereas  $\Delta \text{ROE}$  is the change in Return-on-Equity ratio.

After examining the impact of the M&A transactions of the aforementioned financial ratios, I check whether the changes in these ratios have an effect on the premium paid by the acquirer by running the following regression:

$$P_T = \alpha + \beta_1 \text{DROE} + \beta_2 \text{DM/B} + \beta_3 \text{SIZE} + \beta_4 \text{INDUSTRY} + \beta_5 \text{EPS} + \beta_6 \text{DIVOUT} + \beta_7 \text{SALES} + \beta_8 \text{M\_INDUSTRY} + \beta_9 \text{HML} + \beta_{10} \text{SMB} + \varepsilon$$

Whereas DROE is a dummy variable for the changes in the Return-on-Equity ratio, DM/B is a dummy variable for the improvement of Market-to-Book ratio.

The result of the robustness test is in line with the result of the main study of this master thesis. Table 2 presents the result of the first hypothesis of this test. From the table we observe that the coefficient of the Market-to-Book ratio and Return-on-Equity ratio are insignificant. This result indicates that the changes in these two financial ratios occurred during the negotiating stage are unrelated to the M&A deal. This means that the first hypothesis does not hold for these two financial ratios. In other words, the finding of this study is not restricted to the four financial ratios I included in the regression models.

In like manner, table 5 shows that offer premium is not correlated with the improvements in the Market-to-Book ratio nor with Return-on Assets ratio in both scenarios. This result indicates that the acquirer does not adjust its offer premium according to the improvements in these two financial ratios that take place in the negotiating stage. In addition, table 5 reveals that the significant result of the control variables does not differ in the robustness test from the main research of this master thesis. Since variables



SALES, SIZE, and INDUSTRY are significant and the variables related to the economy characteristics and the deal characteristics are insignificant.

**Table 14** shows the number of firms that made at least two improvements (First Scenario) to the Return-on-Equity ratio three quarters before announcing an M&A transaction (Robustness test):

Improvements in ROE	Freq.	Percent	Cum.
One improvement or less	260	57.4	57.4
Two improvements or more	193	42.6	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 15** shows the number of firms that made at least two improvements (First Scenario) to the Market-to-Book ratio three quarters before announcing an M&A transaction (Robustness test):

Improvements in M/B	Freq.	Percent	Cum.
One improvement or less	186	41.06	41.06
Two improvements or more	267	58.94	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 16** shows the number of firms that made at least one improvement (second scenario) to the Return-on-Equity ratio three quarters before announcing an M&A transaction (Robustness test):

Improvements in ROE	Freq.	Percent	Cum.
No improvements	70	15.45	15.45
One improvement or more	383	84.55	100
<b>Total</b>	<b>453</b>	<b>100</b>	

**Table 17** shows the number of firms that made at least one improvement (second scenario) to the Market-to-Book ratio three quarters before announcing an M&A transaction (Robustness test):

Improvements in M/B	Freq.	Percent	Cum.
No improvements	46	10.15	10.15
One improvement or more	407	89.85	100
<b>Total</b>	<b>453</b>	<b>100</b>	

## 8 Conclusion

This master thesis pursues to investigate whether target firms improve their financial ratios before announcing an M&A deal aiming to influence the premium paid by the acquirer. In the first part of my research, I find that target firms do not make changes to their financial ratios during the negotiation phase. This is likely to be driven by the attitude of the M&A deals included in this research since more than 99% of the deals are friendly ones. Thus, the management of target firms is motivated by maintaining their positions after the deal completion. Moreover, they want to avoid any action that might be interpreted by the acquirer as data manipulation which can result in deal withdrawal. To be able to conclude that target firms do not manage their financial ratios before M&A transactions, I investigate four financial ratios that cover different aspects of the financial positions of the target firm. In addition, these financial ratios can be managed in the short run. I also do a robustness test to check whether this finding holds for other financial ratios or not. The robustness test shows the same result I find in the main research.

In the second part of the research, I conclude that having two or more improvements in the financial ratios does not have an impact on the offer premium paid by the acquirer. Whilst, having one improvement or more of Price-to-Earnings ratio and Debt-to-Equity ratio affects positively the value of the transaction. In addition, having one improvement or more of Current ratio and Return-on-Assets ratio does not have an impact on the deal value. The potential explanation of this result is as follows: having two or more improvements might be seen by the acquirer as a potential manipulation and therefore these improvements are excluded from the valuation of the target firm. While having one improvement or more is considered as steady growth in the financial performance of the target firm and this growth is taken into account while valuating target firms.

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## Appendix

**Table 18** Variable definitions

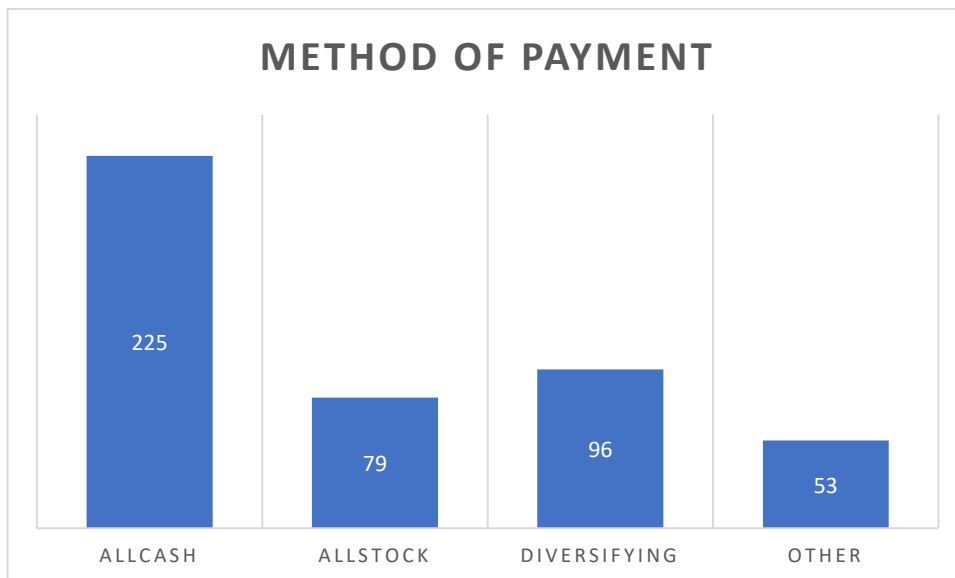
<b>Variable</b>	<b>Definition</b>
$\Delta$ ROA	The changes in the Return-on-Assets ratio, changes are calculated using quarterly data
$\Delta$ D/E	The changes in the Debt-to-Equity ratio, changes are calculated using quarterly data
$\Delta$ Current	The changes in the Current ratio, changes are calculated using quarterly data
$\Delta$ P/E	The changes in the Price-to-Earnings ratio, changes are calculated using quarterly data
$\Delta$ M/B	The changes in the Market-to-Book ratio, changes are calculated using quarterly data
$\Delta$ ROE	The changes in the Return-on-Equity ratio, changes are calculated using quarterly data
M&A	A dummy variable that takes value one if there is an M&A deal, and zero otherwise
SIZE	Size of the target firm. Calculated as the natural logarithm of the total assets of the target firm
INDUSTRY	Indicator variable for the target firm's industry according to the SIC-Code
EPS	Earnings-Per-Share ratio. Calculated as net income divided by common shares outstanding
DIVOUT	Dividends payout ratio. Calculated as dividends paid divided by net income
SALES	Sales of the target firm
M_INDUSTRY	Industry-relatedness dummy. It indicates whether both parties have the same industry

<b>Variable</b>	<b>Definition</b>
ALLCASH	An indicator of the method of payment. It takes value one if the deal was made only in cash, and zero otherwise
ALLSTOCK	An indicator of the method of payment. It takes value one if the deal was a stock swap, and zero otherwise
DIVERSIFYING	An indicator of the method of payment. It takes value one if the deal was a combination of cash and stock swap, and zero otherwise
RELSIZE	The relative size of the transaction. It is calculated as the deal value divided by total assets of the acquirer
DROA	An indicator of the improvements in the Return-on-Assets ratio. It takes value one if the target firm made two or more improvements (first scenario) or one or more improvement (second scenario), and zero otherwise.
DD/E	An indicator of the improvements in the Debt-to-Equity ratio. It takes value one if the target firm made two or more improvements (first scenario) or one or more improvement (second scenario), and zero otherwise.
DCurrent	An indicator of the improvements in the Current ratio. It takes value one if the target firm made two or more improvements (first scenario) or one or more improvement (second scenario), and zero otherwise.
DP/E	An indicator of the improvements in the Price-to-Earnings ratio. It takes value one if the target firm made two or more improvements (first scenario) or one or more improvement (second scenario), and zero otherwise.
DM/B	An indicator of the improvements in the Market-to-Book ratio. It takes value one if the target firm made two or more improvements (first scenario) or one or more improvement (second scenario), and zero otherwise.

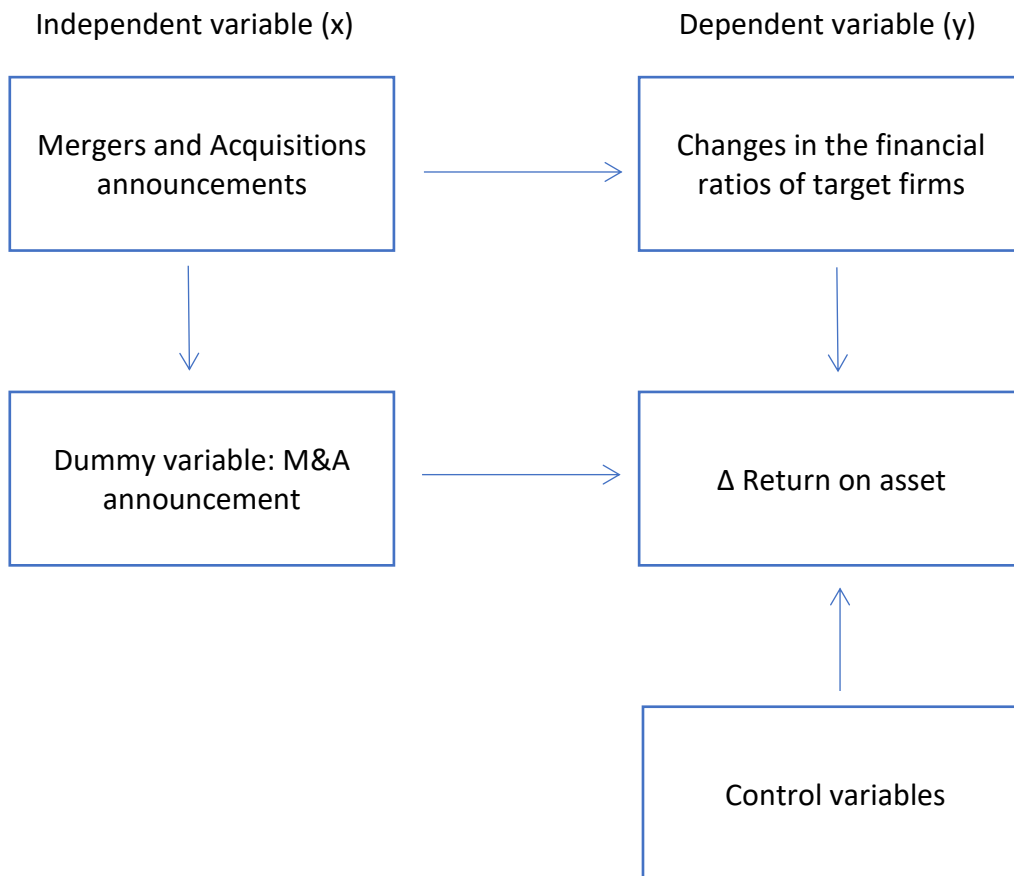


Variable	Definition
DROE	An indicator of the improvements in the Return-on-Equity ratio. It takes value one if the target firm made two or more improvements (first scenario) or one or more improvement (second scenario), and zero otherwise.
HML	High minus low for Book-to-Market value
SMB	Small minus big for market capitalization

**Chart 1** Method of payment



## Libby boxes: (First regression model)



## Libby boxes: (Fifth regression model)

