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Master Thesis

Wealth Creation in Mergers and Acquisitions in the United States

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1. Introduction

During the last two decades, mergers and acquisitions (M&As) grew to become an attractive business strategy for companies to engage in, aiming to benefit from revenue enhancement, cost reduction, tax gains or reduced capital requirements. With such transactions gaining popularity, many economists decided to assess the pre-transaction and actual post-transaction gains for both parties' shareholders.

While most authors focused on short term value creation, fewer also considered to research several years long post-transaction periods. According to existing literature, described in section 2, there is a general consensus that M&A activity does not provide same payoffs for the involved parties. More specifically, authors agree that target shareholders are in most cases rewarded with increase in their stock price in the period around the announcement date, while acquirers encounter wealth destruction through negative returns in both short- and long-term period.

 Nevertheless, this might not necessarily be a general rule for all acquirers and could rather be dependent on specific industry, deal or bidder characteristic. Therefore, the primary objective of this research is to analyze, understand and explain the effects of different scenario M&A deals on target and bidder's shareholders, which we measure in abnormal returns. Our focus lies in the less researched acquirer's post event performance and its possible industry effect, since according to results of Schiereck's study (2008), this might contradict the general theory. In general, we aim to reach a conclusion weather there is, on average, wealth created during M&A transactions, weather the benefits are only one sided, and if the wealth is created only in the short-run. We conduct our research on a sample of merger and acquisition transactions, which were realized in the United States between years 1997 and 2012.

The remainder of the paper is organized as follows: Section 2 presents the theory framework and literature review, Section 3 lays out the data and methodology employed in the analysis, Section 4 describes results and provides a discussion, and lastly, section 5 concludes the research with a summary and final thoughts.

2. Literature Review

In the following section, we review relevant existing research and provide a theoretical framework in order to set the foundation to our analysis. First, we briefly define the concept and recent activity of M&A, discuss main reasons behind it and then address academic findings regarding the added value M&A provides in both short and long term.

2.1 Theoretical framework

M&A is a general term, connected to transactions of two companies, which result in a formation of one legal entity. Referring firstly to acquisition, the parties involved are typically a buyer or the acquirer on one side and a seller or the target firm on the other side. The buyer acquires target firm by purchasing its stock or existing assets with cash or its shares, which is referred to as a takeover. With transaction in place, the acquirer has an absolute control over all of target's assets. Contrary to acquisition, merger is less hostile. Meaning, it involves two similar size firms, which freely integrate all of their assets in order to form a new legal entity with a new stock. (Berk & DeMarzo, 2017; Schoenberg, 2009)

2.1 Recent M&A activity

In the past decades, we have, on the global scale, witnessed to a growing number of companies engaging in M&A activities. Reviewing the worldwide numerical data over the past years, the transactions averaged to more than 1 trillion USD annually. And referring to year 2017 only, the global value of transactions amounted to more than 3.5 trillion USD, among which, 50% (1.8 trillion USD) occurred solely in the North America. (IMMA, 2018) Some of the biggest deals that marked that year include United Technologies takeover of Rockwell Collins (140 USD per share), Amazon's acquisition of Whole Foods (42 USD per share) and Gilead's purchase of Kite Pharma (180 USD per share).

Over the course of history, mergers and acquisitions repeatedly occurred in so called merger waves. Referring to the United States, which we focus on in our research, we identify the following. First increase in M&A activity arose between 1997 and 2000, which was a merger wave, commonly referred to as a "Dot Com Bubble". Kick-starting in the late 1990s, a fast expansion of the Internet sector

and internet related industries, intensified by the new Internet IPOs, led to an exceptional upswing of the main indices in the U.S. stock market. The Internet-heavy NASDAQ Composite Index initially increased from 775.20 in January 1995 to 2505.89 in January 1999 and then reached its highest point of 5048.62 on 10th of March 2000 (Scherbina, 2013), after which it plunged to a low of 1314.85 in August 2002 (Leone & de Medeiros, 2015). Increase in the number of mergers and acquisitions during this period was, therefore, driven by globalization and innovations in information technology (Sudi Sudarsanam, 2003). The burst of the Bubble led to an economic downturn and, consequently, to an end of the merger wave. Starting around year 2004 M&A activities began to rise, reaching new peak in 2007. However, an economic crisis led to a global market crash, causing a new reduction in M&A activities. After several years of the financial crisis and relatively low level of the activity, the number of M&A domestic transactions in the U.S. began to increase again. This rise was hindered by the United States debt-ceiling crisis in 2011. The effects of the debt-ceiling crisis were not of a long duration, and in 2012, fuelled by the momentum of corporate and economic activity, as well as the investor confidence, number of mergers and acquisitions increased again (Deloitte, 2015).

Figure 1: Number and value of domestic M&A transactions in the U.S. for the period 1997 – 2012. Graphical overview of M&A activity, where left and right y scale respectively portray number of transactions and sum of transaction value per year. Data is obtained from The Institute for Mergers, Acquisitions and Alliances (2018).
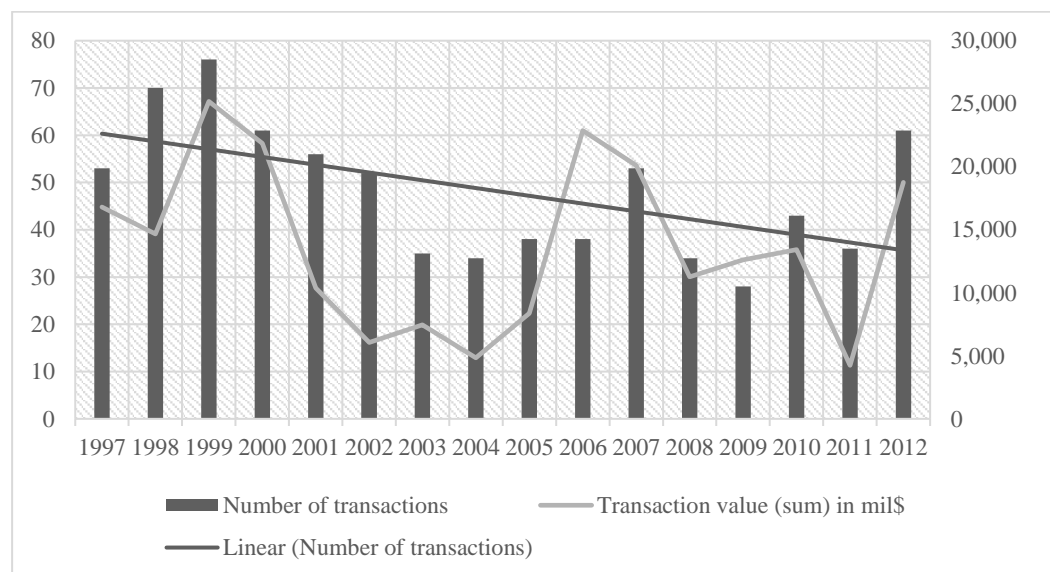
According to Berk and DeMarzo (2017), the reasons behind an active M&A market include potential economies of scale, cost reduction, tax advantage, diversification, increased liquidity and decreased risk by lowering the probability of bankruptcy. In general, M&A is company's strategic source of added value and growth.

Mergers, acquisitions and their value creations/destructions have been theorised about and tested on various samples by numerous researchers for many years now. In the following section we describe the authors' main findings, which are most relevant for our paper and our research topic.

2.3 M&A effect on shareholders

Existing literature distinguishes between short- and long-term effects M&A transactions have on both parties' shareholders. We first review the research, which analyses shorter periods and then continue with longer post-transaction spans.

2.3.1 Short-term horizon

When considering the short-term results of M&A activities, large portion of authors agrees and provides evidence of value destruction that arises from engagement in those activities for the shareholders of acquiring companies. They identify denoting positive abnormal returns – however, predominantly in favour of target's stockholders. Bradley, Desai and Kim (1988) analyse a sample of 236 tender offer contests between 1958 and 1984, within 5-day event window surrounding the announcement date. They find positive abnormal return for 95% of targets and significantly lower average abnormal return for only 0.97% of acquiring firms. Andrade, Mitchell and Stafford (2001) similarly review 1990s data within 3-day event window surrounding the announcement date and identify a negative -0.7% returns for the buying firms. Barnes Paul (1984) monitors 1974 -1976 post-merger share price movements immediately after, at the end of each of 10 months, and thenceforth at the end of every fifth month after the announcement has been made. He finds evidence of short-lived gain in form of share price increase in the time of the merger, and significant price decrease over the long term. Free rider problem and toehold theory also support the notation that mergers and acquisitions provide financial benefits to only one side of the transaction – shareholders of the target companies.

2.3.2 Long-term horizon

Reviewing the past research of long-term effects, most results appear to indicate poor performance of acquiring companies. However, findings are more vague than the ones from research investigating short-term impacts.

Loughran and Vijh (1997) examine the post-acquisition returns of 947 firms and measure abnormal returns as the difference between five-year holding period returns of sample stocks and matching stocks (chosen to control for size and book-to-market effects). In five years post the acquisition, research showed an average negative long-term return of -6.5%. The authors proceed and discover that post-acquisition returns of acquirer's stock are affected by the mode of acquisition, as well as by the form of payment. In their sample, acquirers that make merger bids earn on average 15.9% less than matching firms, whereas acquirers that make tender offers earn 43.0% more than matching firms during a five-year period after acquisition. Similarly, stock acquirers earn 24.2% less than matching firms, while cash acquirers earn 18.5% more than matching firms. By combining both - the mode of acquisition and the form of payment - the authors discover that while stock mergers earn significantly negative excess returns of -25%, the cash tender offers earn significantly positive excess returns of 61.7%. They conclude therefore that the post-acquisition wealth gains are greater for tender offers which are usually hostile to incumbent managers as compared with mergers, and that managers of the acquiring company are more inclined to choose equity as a form of payment if their stock is overvalued and cash when the stock is undervalued. Further on, Savor and Lu (2009), similarly investigate value creation for the shareholders of the bidding company, when equity is used as a payment means. They, however, find that overvalued companies tend to create value for their shareholders when using stocks to pay for the acquisition. They also find that unsuccessful equity bidders significantly underperform successful ones and that failure of the transaction is costlier for richly priced companies. They conclude that none of these findings are relevant for cash bids.

Agrawal et al. (1992) examine post-merger performance of acquiring firms and find that shareholders of the acquiring companies face a significant loss of approximately 10 percent over the 5-year post-transaction period. They, however, fail to explain the source of the negative returns after the merger transaction.

2.3.3 Industry specific effects

In addition to two-time dimensions, we should also mention the industry specific synergy potentials that arise from M&A activity. An example is seen in Laabs and Schiereck (2010) research, which investigates long-term performance of mergers and acquisitions in the automotive supply industry. Authors analyse 1981 – 2007 horizontal takeovers, using both event-time and calendar-time approach. Contrary to existing research, the empirical results prove positive short-term returns to acquirers. Nevertheless, long-term performance models show a value destruction of approximately 16% to 20%, over the three-year period, which is consistent with Loughran and Vijh (1997) research. Authors conclude that international diversification negatively affects the long-term performance, but that larger transactions are more likely to have positive long-term effect due to higher probability of benefiting from economies of scale.

Faced with the inconclusive information about who really benefits from the transactions, we perform our own analysis and try to reach our own conclusion. We next present the description of the data used, as well as the methodology applied during our research.

3. Data and Methodology

3.1 Data overview

Our sample comprises of M&A transactions that took place between January 1997 and December 2012. We use Securities Data Company (SDC) database, Center for Research in Security Prices (CRSP), and Datastream as data sources. SDC Platinum database identifies 1003 U.S. domestic mergers and acquisitions during the observed period that fulfil the following requirements:

1. The transaction is classified either as a merger, an acquisition or a tender offer

2. The transaction is completed

3. The acquiring company controls less than 50% of target's shares prior the announcement date and 51-100% after the transaction.

4. Bidding company is listed on CRSP and Compustat during the event window (acquiror is a public company)

5. Transaction parties are from US

6. Acquirer and target are not in sector of regulated utilities (SIC 4900-4999), as their decisions and strategies might be affected by regulations (Alhenawi & Krishnaswami, 2015)

In case when the company individually made several transactions, i.e, if it was labelled as a "frequent acquirer"; each merger was treated as a separate transaction. However, if a firm was involved in more than one transaction within one year, only the first case was considered, as the following deal would be greatly exposed to the effects of the preceding transaction, which might amplify the returns and diverge the true effect of the event (Tarabay & Hammoud, 2017). We further exclude all cases with insufficient, unavailable or unreliable data, which leaves us with our final sample of 587 deals. Referring to our final sample, presented in the Table 1, year 1999 was the year with the highest number of completed transactions (merger wave), while the years 2006, 2008 and 2009 are periods with the lowest number of completed transactions (periods of pre-financial and financial crisis). Nevertheless, M&A deals were, on average, the largest in year 2006 and the lowest just a year before, in 2005. During the observed period, public bidders acquired slightly more private targets than public (236 public vs. 351 private), while the number of acquired targets operating in the high-tech industry was higher during the period of the Dot Com Bubble (1999 - 2003) than in other periods.

Table 1: Detailed sample overview

Year	Number of deals	% of Total	Transaction value per year (USD mil)	Average Transaction value per year (USD mil)	Number of deals financed by cash only	Number of Public targets	Number of Targets in Hi-Tech industry
1997	44	7%	14,536	330	34	29	13
1998	46	8%	9,070	197	40	22	9
1999	59	10%	23,408	397	55	44	14
2000	46	8%	20,479	445	41	25	20
2001	44	7%	9,147	208	39	14	15
2002	41	7%	5,677	138	38	14	22
2003	27	5%	6,628	245	25	10	14
2004	28	5%	4,713	168	23	8	10
2005	26	4%	3,247	125	24	3	5
2006	21	4%	13,694	652	21	4	9
2007	44	7%	19,129	435	39	18	16
2008	23	4%	7,108	309	21	10	13
2009	23	4%	7,831	340	21	11	15
2010	35	6%	12,274	351	31	12	12
2011	30	5%	4,011	134	25	2	8
2012	50	9%	17,359	347	42	10	13
Total	587	100%	178,310	304	519	236	208

Cash was used as a primary mean of payments. Among 587 mergers and acquisitions in our sample, we identify 223 financed purely with cash, 45 with equity, 201 with both cash and equity (we name them "mixed") and 118 where we do not have available information about the mean of payment (presented in the Figure 2).

Figure 2: Mergers and acquisitions in the U.S. between 1997 and 2012, based on the means of payment used in the transaction (only sample transactions)
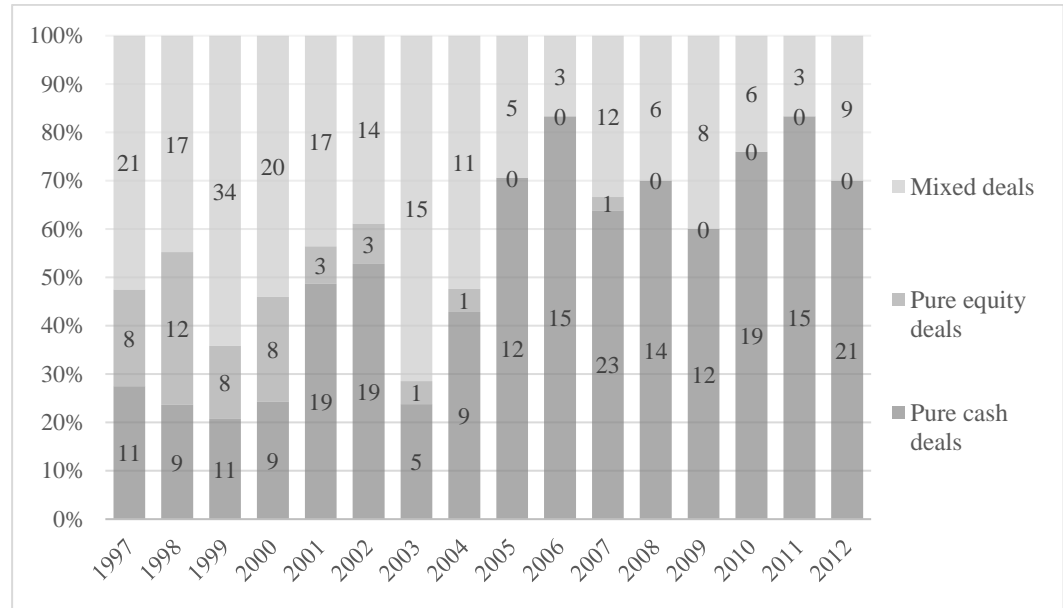
3.2 Methodology

In this section we make two types of evaluation. First, we evaluate deal parties' short-term cumulative abnormal returns using the event study, and then perform regression analyses to examine the variance in CARs. Next, we make a long-term evaluation based on the 3-year and the 5-year post transaction period using BHAR methodology.

3.2.1 The Event Study

We conduct an event study where we research the reaction of stock prices to M&A announcements in different event windows – from most researched ±1 and ±2 days surrounding the announcement day (0), all the way to ± 5 days. The time span prior to announcement event is analyzed to capture any information leakage (e.g. company representatives revealing deal information to third parties before its official announcement), while the post-event period on the other hand, might point

out any delays in investors' act upon new information (e.g. news released after trading hours).

The outcome of our event study is abnormal return (AR), which for firm i and event date τ equals

$$AR_{i,\tau} = R_{i,\tau} - E[R_{i,\tau}|X_\tau]$$

where $AR_{i,\tau}$, $R_{i,\tau}$, $E[R_{i,\tau}|X_\tau]$ and X_τ are firm's abnormal, actual, normal return and conditioning information factor for normal return model respectively (MacKinlay, 1997).

We obtain first part of the equation by collecting sample firms' stock prices from WRDS data base and then calculate the returns (ln(Pt+1/Pt) for selected event date. When it comes to measuring normal returns, MacKinlay (1997) introduces two different models – the constant mean return model and the market model. While the first assumes security's, constant mean return over time, the second one implies a linear relationship between the market and security's return. In our research, we apply the market model, since it significantly reduces variance of abnormal return, and therefore is superior to constant mean return model. Stock's normal return (R_{it}) equals

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \varepsilon_{it}$$
$$E(\varepsilon_{it} = 0) \qquad var(\varepsilon_{it} = \sigma^2_{\varepsilon_{it}})$$

Where α_i, β_i, R_{mt} and ε_{it} represent model's two parameters, return on market portfolio and zero mean disturbance term respectively. There are many different market indexes that can be used as proxies for market portfolio and in our research, we employ the CRSP Value weighted Index (data obtained from WRDS data base). In order to capture stock's true normal performance, we estimate alpha and beta parameters over 200-days estimation window, from day -230 to day -30 prior the announcement date. We illustrate the timeline of event study in Figure 3.

Figure 3: Event study timeline

Once we calculate ARs, we then obtain average abnormal returns (AARs), cumulate ARs over time to obtain cumulative abnormal returns (CARs) and lastly average those to calculate the cumulative average abnormal returns (CAARs) over selected event windows. The appropriate equations are presented below:

$$AAR_\tau \ = \ \frac{1}{N} \sum_{i=1}^{N} AR_{i,\tau} \qquad CAR_i(\tau_1, \tau_2) = \ \sum_{\tau=\tau_1}^{\tau_2} AR_{i,\tau}$$

$$CAAR(\tau_1, \tau_2) = \ \frac{1}{N} \sum_{i=1}^{N} CAR_{\ i}(\tau_1, \tau_2)$$

Based on the calculated ARs and CARs for each of our 587 sample companies, we further calculate and test AARs and CAARs. We test CAARs of both bidder and target firms, and in accordance with inferential statistics state the following hypothesis:

$$H_0: \mu \ = \ 0$$
$$H_1: \mu \ \neq \ 0$$

We are testing the null hypothesis that there are no cumulative average abnormal returns within the selected event window (CAAR = 0), i.e., that the M&A deal announcements do not affect shareholders´ wealth.

Taking into account the central limit theorem, we assume a normal distribution and employ Student's two-tailed t test to test our hypothesis.

3.2.2 Regression Analysis

Since we expect variation in cumulative abnormal returns, we further proceed to attempt to explain its source, alongside with its magnitude, by performing a regression analysis. Our dependent variable is statistically significant CAR, obtained after performing the according testing in the previous section.

Behaviour of our dependent variable is explained by considering two factor groups: *bidder characteristics* and *deal characteristics*. We decide to adapt the methodology from Masulis et al. (2007) in the following way. For *bidder characteristics* group, we control for the size of the firm, Tobin´s q, leverage, free cash flow (all data assessed at the end of the fiscal year prior to announcement date) and pre-announcement stock price runup (assessed on the 200-day window,

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starting with 230 days before (t = - 230) and ending 30 days (t = - 30) before the announcement). All variables are presented in the Appendix B.

Bidder characteristics

We define firm size similarly to Masulis et al. (2007), as a log-transformation of acquirer's total assets - a widely used approach in order to normalize the data. On average, we expect larger bidders to pay larger premiums and to involve in transactions that yield negative dollar synergies. (Moeller, Schilingemann, Stulz, 2004). It is therefore to be expected, that acquirers of a larger size probably pursue value decreasing transactions.

Tobin's q is a literature's standard proxy for firm's investment opportunities, measured by dividing firm's market value by its total asset value. We define it by dividing bidder's market value of assets by its book value of assets. Research (Lang, Stulz, Walking (1991); Servaes (1991); Moeller Schlingemann, Stulz (2004)) finds that returns for all parties involved, are higher for acquisitions where targets have lower and bidders have higher Tobin´s q ratio. We expect a positive relationship between the q ratio and our dependent variable.

In theory, leverage and FCF are often interconnected. Referring to the Jensen´s free cash flow hypothesis (Jensen, 1986), leverage affects the level of FCF available to managers and limits their ability to spend on perks, invest in projects with negative NPV (including acquisitions) and incentivises them to improve their performance due to threat of takeover. Therefore, we include leverage as our control variable and expect its positive impact on the dependent CAR. According to the mentioned hypothesis, higher level of FCF would, on the other hand, imply that managers have more opportunities for overinvestments and perks. It follows then that the FCF would have negative effect on cumulative abnormal returns. However, as high level of FCF may be a consequence of manager´s good performance, it can also have a positive impact on the CAR. According to Masulis et al. (2007), we define leverage as the ratio between book value of total debt over the market value of total assets, and FCF as OIBDA reduced by the interest expense, income tax and CAPEX and scaled by book value of total assets.

The expectation of a M&A transaction attracts informed trading, that can lead to a higher run-up in the target stock price before an announced acquisition bid. According to the research, acquirers do not decrease their bid price to compensate

for a higher run-up, so a larger run-up increases the cost of the acquisition to bidders (Brigida & Madura, 2012). This is why we include pre-announcement stock price run-up as our control variable and predict its negative relationship with a dependent variable.

Deal characteristics

In the deal characteristics group, we control for the ownership status of the target company, method of payment, relative size of the transaction, industry relatedness of the M&A, and belonging of the acquirer and the target to the high-tech industries (Masulis et al., 2007)

Research by Fuller, Netter, and Stegemoller (2002) demonstrated significantly negative abnormal returns faced by acquirers when buying public companies and significantly positive abnormal returns when targets are private firms. They explain their findings by stating that acquiring companies get a liquidity discount when buying private firms. Therefore, we include two variables indicating private and public target companies.

Previous research also found that acquiring firms face significantly negative abnormal returns when they use pure stocks as a payment mean for the transaction, mostly due to the adverse selection problem related to the equity issuance. However, those returns tend to be positive or slightly negative if the target is a private company (Myers & Majluf (1984); Chang (1998); Fuller, Netter, Stegemoller (2002)). Furthermore, following further the paper by Masulis et al. (2007), we include a dummy variable, that will equal 1 for the companies in high tech industry and zero otherwise. As human capital and intellectual property are of a high importance in this industry, M&A deals make evaluation more complex and often lead to cost understatement and synergy overstatement.

Lastly, based on target's and bidder's first two digits SIC code match, we add an additional dummy variable that takes the value of one if the transaction is a diversifying deal and zero otherwise. According to existing research (Morck, et al., 1990), we expect unrelated deals to most likely destroy shareholder's value.

3.2.2 Long-term Valuation

To evaluate performance after the M&A transaction, we look at companies' long-term abnormal returns. However, different methodologies have been argued to be suitable for these computations. Fama (1998) supports usage of averages or sums of short-term abnormal returns (AARs/CARs) – calendar-time portfolio approach - when making formal inferences about long-run returns, instead of using buy-and-hold abnormal returns (BHARs) – event-time portfolio approach. Fama (1998) claims that the bad-model problems are most severe with long-term BHARs because the model multiplies those problems and neglects possible cross-sectional correlation of event-firm abnormal returns (Savor et al., 2009). Barber and Lyon (1997), on the other hand, advocate using buy-and-hold abnormal returns, as they claim cumulative abnormal returns to be biased predictors. Additionally, Loughran and Ritter (2000) claim the calendar-time methodology to be inappropriate when calculating abnormal returns of events clustered across time, including M&A announcements. While the traditional calendar-time approach solves an issue of the cross-correlation that BHARs approach is criticised for, it also raises a number of concerns for the researchers. One is that the traditional calendar-time approach does not accurately measure transaction effects on the long-term shareholders' wealth during the assumed holding period, which is typically between three and five years. Moreover, as the traditional calendar-time approach implies a monthly weight rebalancing of the event-firm portfolio, it not only counters the observed long-term holding period, but also induces additional liabilities for investors (transaction costs and capital gain tax) (Barber and Lyon (1997) and Lyon, Barber, and Tsai (1999)). It is therefore argued that buy-and-hold abnormal returns capture more accurately investor experience, and for these reasons, we employ buy-and-hold abnormal returns method in our analysis.

<u>BHAR</u>

Interested in the acquirers´ long-term post-deal performance, we continue our research by analysing the effect of M&A transactions on bidder stocks' in three- and five-years' time after the M&A announcement. Following the fundamental paper on long run stock performance by Barber and Lyon (1997), we calculate the long term buy-and-hold abnormal returns (BHAR). The corresponding equation is:

$$BHAR_{i\tau} = \prod_{t=1}^{\tau}[1 + R_{i\tau}] - \prod_{t=1}^{\tau}[1 + E(R_{i\tau})]$$

Where in time period τ, Riτ and E (Riτ) are firm's actual buy-and-hold return and appropriate expected buy-and-hold return on reference portfolio or a control firm, respectively. The abnormal returns are calculated on daily or monthly basis. (Barber & Lyon, 1997).

We calculate firm's actual BHAR from monthly returns[1] following the announcement date of individual acquiring firm. When it comes to the reference portfolio or control firm, Barber and Lyon search for most appropriate matching firm per each observation, based on firm's size (defined as market value of equity 2 days before the deal announcement) and book-to-market ratio (book value of equity, divided with market value of equity as of thirty days prior to M&A announcement)[2]. In our paper, we modify the authors' approach by constructing an equally weighted portfolio of five matching firms per observation, which are identified based on their book-to-market ratio and industry. Book-to-market ratio is matched as close as possible, with reference portfolio firms staying in the maximum range of 50% to 150% of sample firm's book-to-market ratio value. Additionally, we also exclude all firms involved in M&A merger bid surrounding the initial announcement date within a 5-year time period and include only those sample firms, which have a complete reference portfolio (no missing data).

Construction of our reference portfolio resembles Savor and Lu's (2009) paper in terms of identifying more than 1 reference firm per observation and incorporating control for industry; yet differs in terms of controlling for firm's size. That is because we focus on finding the closest match for our sample, and incorporating third control variable, would significantly increase the book-to-market matching range. Once we calculate corresponding BHARs, we average them out by a sample size to arrive at average buy-and-hold abnormal return (ABHAR).

Our null hypothesis is that there are no statistically significant ABHARs in three- and five-years' period after the M&A announcement, which we test using two-tailed t test.

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[1] Obtained from WRDS Research Data services
[2] Also referred to as "control firm return approach" and adapted by many researchers, e.g. Savor et al. (2009), Dutta & Jogg (2009)

4. Results and discussion

Following the data and methodology description, we present our main results and findings, as well as possible explanations for the outcomes. We start with the results attained from the short-term valuation. Results are demonstrated in several subsections, each focusing on a different matter. Subsections include: short term abnormal returns for target shareholders and short-term abnormal returns for bidder shareholders. The bidders' abnormal returns are further investigated based on the transaction's mean of payment and the industry, the acquirer operates in.

Data obtained by performing the regression analyses is delivered thereafter, to provide more insight and give better explanation to why there is a presence of the short-term abnormal returns in the first place, and why they are positive (negative).

Results on the long-term abnormal returns are presented last, to provide us with a more complete understanding about what happens several years after the transaction is completed in terms of wealth creation / wealth destruction.

4.1 Short term valuation

4.1.1 Short term abnormal returns: targets

We perform the test on our subsample of 236 publicly traded target companies and obtain results presented in Table 2.

Our results indicate presence of up to 30% high significantly positive cumulative average abnormal returns for targets of M&A transactions across all event windows. Observing the average abnormal return figures – based on positive 0.77% return 2 days prior to event, increasing to its peak 21.4% on the announcement day; we confirm the presence of information leakage prior to announcement day at 1% level of significance. In the post-event period, we also attain positive results with same level of significance, which signals a delay in market's reaction to deal announcement. Since pre-event AAR (-1) and CAAR (-1,0) are positive, but still lower than post-event returns, we conclude that although there is evidence of insider information leakage, the investors predominantly reacted to announcement after it was officially made available to public. We illustrate AAR earned by target firm shareholders in Figure 4.

Table 2: Short term AAR and CAAR test results for target companies in various event windows

The table shows average abnormal returns and cumulative average abnormal returns for the target companies in the U.S. that were announced to be purchased by another U.S. company during different event windows. Sample contains transactions between 1997 and 2012 for which trading data was available between 230 days before and 10 days after the transaction. AARs and CAARs are calculated by applying the market model, where CRSP Value weighted index was taken as a market proxy. The shaded area presents narrowed and most important event window, enhancing market reactions closest to the announcement day. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Event day	AAR	t-statistic	p-value
5	0.12%**	2.221	0.027
4	-0.17%***	-4.026	0.000
3	0.27%***	4.718	0.000
2	0.20%***	3.447	0.000
1	6.76%***	9.631	0.000
0	21.40%***	25.627	0.000
-1	2.26%***	10.548	0.000
-2	0.77%***	5.966	0.000
-3	1.34%***	8.113	0.000
-4	0.77%***	5.039	0.000
-5	0.41%***	3.126	0.002
Event window	**CAAR**	**t-statistic**	**p-value**
(0,1)	28.16%***	18.449	0.000
(-1,0)	23.66%***	29.434	0.000
(-1,+1)	30.43%***	35.077	0.000
(-2,+2)	31.40%***	51.021	0.000
(-3,+3)	33.01%***	37.212	0.000
(-4,+4)	33.62%***	37.626	0.000
(-5,+5)	34.15%***	37.649	0.000

Figure 4: Graphical presentation of average abnormal returns for target firm shareholders.

Target shareholders benefit from positive abnormal returns in the short term, with highest level on the announcement date (0)

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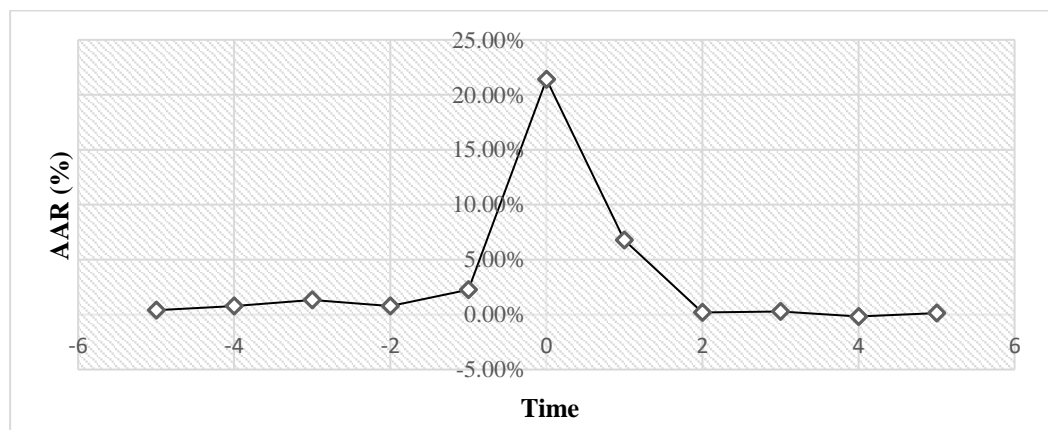
In accordance with our test results, we reject the null hypothesis at 1% level of significance and conclude that CAARs are significantly different from 0. Because of M&A deal announcement, target company shareholders experience wealth creation in the short term.

Presence of high positive abnormal returns for the target shareholders can be explained by the *free rider problem*. The free rider problem occurs when target shareholders believe that their decision to tender shares, does not affect the likelihood of takeover success or they believe that the profit would be higher if they wait (not tender their shares) and hold out for a higher premium. If more than 50 percent of shareholders decide to hold out, then the transaction will not go through. For deal to be successful, the acquiring company would need to tender a sizable premium and give up majority of its takeover gains (Strickland, D., Martin, D. R., & Cotter, J. F., 2010). We refer to such bidder's action as *leaving money on the* table, as well as *the winner's curse.* Another possible explanation for positive market reaction is also consistent with the theory, stating that mergers serve as means of making use of resources more efficient. Therefore, if the management of target companies are underperforming, acquisition of those, would likely be positively perceived by the public - resulting in positive abnormal returns for the targets on or around the announcement date. Our findings are in line with the existing research, reviewed in this paper.

4.1.2 Short term abnormal returns: bidders

Since we focus our research predominantly on M&A effect of bidders' shareholders, we perform short term testing on the main sample, as well as on multiple subsamples, aiming to understand and explain the outcomes of different deal scenarios.

We test our null hypothesis that in short term, shareholders of bidding companies are not affected by M&A announcements, i.e., that there are no CAARs in selected event window.

First, we perform test on all 587 M&A transactions, which generates results presented in Table 3. Reviewing pre-event test figures, the negative 0.26% average abnormal return two days prior to announcement event, with 10% level of significance indicates an average wealth destruction for shareholders of bidder companies. It also signals to market anticipation of deal occurrence and possible

leakage of private information. While additional two pre-event days (t = -3, -4) also point to similar conclusion, based on their too high p-value and low t-statistic figures, the results are statistically insignificant and are therefore attributed to chance.

Table 3: Short term AAR and CAAR test results for bidder companies in various event windows.
Table presents average abnormal returns and cumulative average abnormal returns for the acquiring companies in the U.S. announcing domestic acquisitions during different event windows. Sample contains transactions that were labelled either as a merger, acquisition or a tender offer from 1997 until 2012 for which trading data was available between 230 days before and 10 days after the transaction. AARs and CAARs are calculated by applying the market model, where CRSP Value weighted index was taken as a market proxy. The shaded area presents narrowed and most important event window, enhancing market reactions closest to the announcement day. ***p < 0.01, **p < 0.05, *p < 0.1

Event day	AAR	t-statistic	p-value
5	-0.07%	-0.484	0.628
4	-0.04%	-0.273	0.785
3	-0.45%*	-1.773	0.076
2	0.00%	0.004	0.996
1	0.35%*	1.757	0.079
0	0.14%	0.730	0.465
-1	0.06%	0.324	0.746
-2	-0.28%*	-1.722	0.085
-3	-0.07%	-0.350	0.726
-4	-0.07%	-0.592	0.554
-5	0.24%*	1.962	0.050
Event window	CAAR	t-statistic	p-value
(0,1)	0.50%*	1.786	0.074
(-1,0)	0.20%	0.765	0.444
(-1,+1)	0.56%*	1.672	0.095
(-2,+2)	0.28%	0.724	0.469
(-3,+3)	-0.24%	-0.496	0.619
(-4,+4)	-0.36%	-0.664	0.506
(-5,+5)	-0.18%	-0.332	0.739

In post-event period, at 10% level of significance, results reveal positive 0.35% average abnormal return one day after the announcement and negative 0.45% return 3 days after the new information was publicly available. The positive market reaction on a day following the announcement is also enhanced in statistically significant CAAR figures of 0.5% and 0.56% in (0,1) and (-1,+1) event windows respectively. Research shows (Keown and Pinkerton, 1981) that there can be a leakage of inside information occurring at a significant level up to

12 trading days prior to the public announcement of a proposed merger, which could be an explanation for presence of the abnormal returns on the day -1.

According to test results, we reject the null hypothesis at 10% level of significance and confirm that the CAARs of bidding firms' shareholders are statistically different from 0. Based on the whole sample, we conclude that bidder's shareholders suffer from wealth distortion in pre-event period but are later on rewarded with slightly positive returns. Positive abnormal returns contradict earlier mentioned theory revolving around the free rider problem, according to which gains to bidder shareholders from the acquisition deal should be consumed by the premiums paid to target shareholders. Nevertheless, since some of the deals involved acquisitions of larger companies, making the deals more complex, it would make sense for the bidders to make less generous offers and, therefore, realize some short-term gain from the transaction (Alexandridis, G., Fuller, K. P., Terhaar, L., & Travlos, N. G., 2013).

Bearing in mind the test results of our whole sample, we continue with more detailed analysis. In particular, we question whether different means of payment, acquirer's industry or type of the deal (diversifying, related) could change the outcome for bidder's shareholders in the short term.

    A. <u>Mean of payment</u>

Among 587 M&A transactions forming our sample, we identify 223 financed purely with cash, 45 with pure equity, 201 with both cash and equity (we name them "mixed") and 118 where we do not have available information about the mean of payment.

The main findings are presented in Table 4, while detailed results are attached in the appendix (Appendix Table 1).

Table 4: Short term AAR and CAAR test results for bidder's companies for M&A transactions financed only with cash and equity. The table shows average abnormal returns and cumulative average abnormal returns for the acquiring companies in the U.S. during different event windows distinguished based on the means of payment in the acquisition (pure cash & pure equity). Sample contain transactions financed by either only cash or only equity for which trading data was available (223 transactions financed by cash and 45 by equity) between 230 days before and 10 days after the transaction. AARs and CAARs are calculated by applying the market model, where CRSP Value weighted index was taken as a market proxy. ***p<0.01, **p<0.05, *p<0.1

Panel A: Cash transactions			
Event day	AAR	t-statistic	p-value
2	0.03%	0.182	0.856
1	0.17%	0.689	0.492
0	0.55%*	1.782	0.076
-1	0.41%**	2.206	0.028
-2	0.07%	-0.394	0.694
Event window	CAAR	t-statistic	p-value
(0,1)	0.72%	1.042	0.299
(-1,0)	0.96%**	2.555	0.011
(-1,+1)	1.13%***	2.627	0.009
(-2,+2)	1.10%	1.111	0.268
Panel B: Equity transactions			
Event day	AAR	t-statistic	p-value
2	-0.73%	-0.839	0.406
1	0.46%	0.480	0.634
0	1.32%	1.511	0.138
-1	-1.19%**	-2.266	0.028
-2	-0.43%	-0.944	0.350
Event window	CAAR	t-statistic	p-value
(0,1)	1.78%	1.236	0.223
(-1,0)	0.13%	0.130	0.897
(-1,+1)	0.59%	0.342	0.734
(-2,+2)	-0.57%	-0.600	0.552

Results once again prove existence of abnormal returns, and, therefore, confirm the rejection of null hypothesis (CAAR = 0) at 1%, 5% and 10% level of significance. Based on statistically significant results only, we make an observation that transaction's form of payment affects the bidder's shareholders in M&A deals in the short term. Specifically, shareholders are on average rewarded with positive abnormal returns of 0.55% on announcement day and 0.41% on a day prior to event when using cash as a means of payment, which is also reflected in positive CAAR over three days event window. Transactions

financed with pure equity on the other hand, yield negative abnormal returns (-1.19% AAR on t=-1) at 5 % level of significance.

Our findings are consistent with research from Huang, Y. S., & Walkling, R. A. (1987), stating that abnormal returns associated with cash offers are significantly higher than those associated with equity offers. When cash is used as a mean of payment, shareholders that sold their stocks are obligated to pay personal taxes, so in order to reimburse target shareholders for facing an immediate tax liability, cash offers ought to have higher returns when compared to equity offers. Our findings are also consistent with an observation provided by Wansley, Lane and Yang (1983) – offers that use equity as a means of payment are obligated to attain approval from the SEC (Securities and Exchange Commission) in order for the shareholders of the target companies to be able to tender their shares. Prolonged processing time when equity payments are in question could give other companies sufficient amount of time to join the bidding and create a bidding competition. This is why equity financed offers are less likely to go through and more likely to have negative abnormal returns prior to the announcement (also linked with the information leakage) when comparing to deals financed by cash.

<u>Acquirer's industry</u>

In order to test the effects of different industries and later type of transaction, we divide the acquirers and targets in 10 different tranches. The tranches are defined according to entity's first two codes of Standard Industrial Classification (SIC) (Appendix, Table 2). We present main results in Table 5 and detailed results in Appendix Table 3.

After the analysis of 10 different industry tranches, we obtain statistically significant cumulative average abnormal returns only for the following 3 industry segments – Retail trade, Services and Finance, Insurance and Real Estate. The abnormal returns are calculated for the acquirers only, as their returns are less clear.

Table 5: Short term AAR and CAAR test results for bidder's companies, classified according to their industry. The table shows average abnormal returns and cumulative average abnormal returns for the acquiring companies operating in finance, insurance and real estate; services industry; and retail trade in the U.S. during different event windows. Sample contains transactions in those industries for which trading data was available between 230 days before and 10 days after the transaction. AARs and CAARs are calculated by applying the market model, where CRSP Value weighted index was taken as a market proxy. ***p<0.01, **p<0.05, *p<0.1

Panel A: Finance, Insurance & Real Estate			
Event window	CAAR	t-statistic	p-value
(0,1)	0.47%*	1.848	0.067
(-1,0)	0.43%*	1.878	0.063
(-1,+1)	0.60%**	2.087	0.039
(-2,+2)	0.72%***	4.411	0.000
Panel B: Services			
Event window	CAAR	t-statistic	p-value
(0,1)	1.20%**	2.267	0.025
(-1,0)	1.38%*	1.878	0.062
(-1,+1)	2.05%***	2.709	0.008
(-2,+2)	1.61%*	1.883	0.062
Panel C: Retail trade			
Event window	CAAR	t-statistic	p-value
(0,1)	0.50%***	17.866	0.000
(-1,0)	-0.37%***	20.075	0.000
(-1,+1)	0.25%***	17.125	0.000
(-2,+2)	-0.03%***	17.922	0.000

Positive and statistically significant cumulative abnormal returns for the shareholders of the acquiring companies in services and retail trade industries are not surprising, as in those industries, the most valuable asset is the brand. For a larger retail trade company or service provider, it is not impossible, and not even too complex, to replicate the ingredients of a product or acquire skills of that particular service and start trading on it. However, by that time, there are likely other companies in the market, trying to replicate that same product, on top of the already established players in the market. Brand, and customers´ brand loyalty that comes with that brand, are impossible to replicate, and therefore acquisitions in such industries are positively perceived by the market (reflected in positive CAARs). Explanation for low but positive and statistically significant CAARs in Finance, insurance and real estate might be in the fact that those industry segments are characterised by high barriers to entry but relatively low product/service differentiation, so the most convenient way to grow in those industry segments might be through mergers and acquisitions. Those transactions are therefore, as demonstrated in the Table 5, welcomed by the public.

<u>Deal type</u>

We proceed with our analysis by separating our sample in two subsamples: related transactions and diversifying transactions. We make a distinction based of the first two numbers of SIC codes of bidders and corresponding targets and identify 436 related and 151 diversifying deals. Results of the related transactions are presented in Table 6, while the results of the diversifying transactions are statistically insignificant.

Table 6: Short term AAR and CAAR test results for bidder's companies, classified according to their industry The table shows average abnormal returns and cumulative average abnormal returns for the acquiring companies distinguished based on whether they engaged into related or diversifying transaction during different event windows. Sample consists of M&A transactions undertaken by the U.S. companies during the period from 1997 until 2012 for acquirers which trading data was available between 230 days before and 10 days after the transaction. AARs and CAARs are calculated by applying the market model, where CRSP Value weighted index was taken as a market proxy. ***p<0.01, **p<0.05, *p<0.1

Panel A: Related			
Event day	AAR	t-statistic	p-value
5	-0.12%	-1.28118	0.201
4	-0.01%	-0.13089	0.896
3	-0.42%***	-4.84596	0.000
2	0.12%	1.02383	0.306
1	0.51%***	3.25174	0.001
0	0.16%	0.85118	0.395
-1	0.02%	0.11543	0.908
-2	-0.28%*	-1.68809	0.092
-3	-0.07%	-0.31126	0.756
-4	-0.11%	-0.93521	0.350
-5	0.10%	1.01262	0.312
Event window	CAAR	t-statistic	p-value
(0,1)	0.67%***	3.384	0.001
(-1,0)	0.18%	1.328	0.185
(-1,+1)	0.69%***	3.048	0.002
(-2,+2)	0.53%	1.490	0.137
(-3,+3)	0.04%	0.276	0.783
(-4,+4)	-0.08%	-0.210	0.834
(-5,+5)	-0.10%	-0.788	0.431

Positive CAARs for the (0,1) and (-1+1), both statistically significant at 1 percent and presented in the Table 6, are consistent with Jensen (1986) and Agrawal et al.

(1992) claiming that market perceives related M&A transactions more favourably than unrelated. That is because shareholders believe that in unrelated mergers, the managers of the bidding companies are recklessly spending free cash flow on the companies, operating in industries for which they do not have sufficient knowledge or competences.

So far we demonstrated that, on average, target shareholders earn a positive CAARs of about 30% (-1,+1 event window), while shareholders of bidding companies earn positive but significantly lower CAARs of around 0.5% (-1,+1 event window). Our findings are consistent with both research done by Bradley, Desai and Kim (1988), and by Andrade, Mitchell and Stafford (2001). When we continued with the analyses focusing more on the means of payment, we concluded that cash payments are more favoured by investors than equity payments. This conclusion is consistent with the theory presented in our paper. Additionally, we looked at mergers and acquisitions in different industries and found statistically significant CAARs for only 3 industry sectors: Services, that had the highest positive CAARs for the shareholders of the bidding companies; retail trade; and finance, insurance and real estate. We continue our research by performing regression analysis, presented in the following section.

4.1.3 Regression Analysis

Table 7: Summary statistics for regression analysis. Regression is based on 587 M&A transactions between 1997 and 2012, the definitions of variables are in the Appendix B.

Variable	Mean	Standard deviation
CAR (0,1) in %	0.50	0.07
CAR (-1,1) in %	0.56	0.08
Bidder characteristics		
Total assets (mil USD)	11,784	45,552
Firm size	3.11	0.89
Tobin's q	1.14	1.36
Market value of equity (mil USD)	11,467	35,237
Leverage	0.25	0.19
Free cash flow (FCF)	0.02	0.13
Stock price run-up	-0.001	0.03
Deal characteristics		
Public target	0.4	0.49
Cash deal	0.38	0.48
Equity deal	0.08	0.27
Mixed deal	0.34	0.47
Diversification	0.26	0.44
High tech	0.35	0.48

Relative deal size	0.39	2.26

We progress with our analysis by performing different regressions, trying to explain the variation in previously detected statistically significant cumulative abnormal returns. Those were CARs at (0,1) and (-1,1) for the sample as a whole. Table 7 presents our summary statistics.

When we perform the regression for selected periods, most significant regression coefficient estimates are calculated for event window (0,1), while second regression for period (-1,1) does not provide any significant statistical explanation. The results are presented in Table 8.

Table 8: Regression of bidder's short-term abnormal returns for two statistically significant event windows. (1) represents the event window between t = 0 and 1, while (2) represents the period between t = -1 and 1. Number of observations is 587 and adjusted R square equals 2% and 0.1% respectively. Results are presented with mark for 10% (*) and 5% (**) level of significance.

	(1)	(2)
Constant	0.0178	0.0268*
Firm size	-0.0061*	-0.0066
Tobin's q	0.0002	-0.0001
Leverage	0.0026	-0.0111
FCF	-0.0306	-0.0330
Stock price run-up	0.0309	0.1380
Public Target	0.0049	0.0084
Cash deal	0.0140*	0.0123
Equity deal	-0.0220*	0.0034
Mixed deal	0.0109	0.0013
Diversification	-0.0057	-0.0044
High tech	-0.0115*	-0.0113
Relative deal size	-0.0030**	-0.0020

Although (1) regression does not generate high adjusted R-square (2%), in terms of explanatory value, it does not differ substantially from previous research by Masulis et al. (2007), where the adjusted R-square takes value around 5% or research by Moeller et al. (2005), where the explanatory power lies between 2.4% and 5.6%.

Also, we still obtain following statistically significant coefficient estimates. Referring to bidder's characteristics of regression (1), the coefficient estimate of acquirer's size (-1.79 t-statistics) is statistically significant at 10%. It implies a

negative relationship between the abnormal return and a firm's size, meaning that a 1% increase of acquirer's firm size, will lead to an average 0.00006% decrease in CAR, while keeping all other variables constant. Our result is in line with previous research and also with so called managerial hubris hypothesis, which states that larger firm's management tends to overpay for deals that do not justify its price (Roll,1986). Furthermore, with firm's size, there is a larger likelihood of revealing private information, which could affect acquirer's market positioning and consequently its shareholder's wealth.

Among deal specific coefficient estimates, all cash, all equity deal, transaction between parties involved in high tech industry, as well as relative deal size, show evidence of statistical significance at 10% (and 5%) level. The relationships among these with the dependent variable, confirm our expectations and existing literature from section 2. Based on regression results, choosing equity as a deal's mean of payment, on average has negative effect on CAR, with 1.5 times larger magnitude than all cash financing (, which with 1.71 t-statistic generates positive abnormal return).

Having identified other statistically significant short term CARs in other subsamples (in previous subsection), we further proceed with their regressions. The significant CARs were predominantly in (-1,+1) event window for all cash transactions, related deals and for those deals where bidder's industry was one among finance, insurance and real estate; services or retail trade. The results are in table 9.

Based on the results, we can say that firm size in general has a negative effect on bidder's CAR (Table X – sample as a whole), which is especially significant (5% level) when deals are financed purely with cash and when M&As are non-diversifying. The latter group in addition, exhibits a strong negative relationship between 3 day CARs and high-tech / relative deal size variable. When it comes to industries, we conclude that increase in bidder's free cash flows has a high positive effect (average 0.25% increase at 1% level of significance, ceteris paribus) on acquirers in the industry of finance, insurance and real estate; while it negatively affects the shareholders of bidders in service industry. A possible explanation is that in the financial industry, managers do not have an incentive to overinvest or decide for projects with negative NPV value. Referring to Ferreira and Vilela (2004) research, firms that exhibit strong relationship with banks and those that

practice according to investor protection, on average keep lower levels of cash. Therefore, our industry results contradict what we expected according to the Jensen's free cash flow hypothesis. Lastly, we identify statistically significant regression coefficient estimates for acquirers in retail trade, where we make an observation, that CARs are mostly affected by the transaction's mean of payment. More specifically, the coefficient estimates signal positive returns for shareholder's of bidding companies, when firms make payment involving equity.

Table 9: Regressions results of previously determined subsamples with significant CARs (-1,+1).
Number of observations from left to right are: 223, 436, 135 and 40 where (1) stands for cash sample, (2) for related deal, (3) for finance, insurance and real estate, (4) for services and (5) for retail trade. (-) marks the coefficient estimate which is not observed in a regression. Results are presented with mark for 10% (*), 5% (**) and 1% (***) level of significance.

	(1)	(2)	(3)	(4)	(5)
Constant	0.0507**	0.0488**	0.0238*	0.0657	-0.0243
Firm size	-0.0136**	-0.0119**	-0.0030	-0.0058	-0.0148
Tobin's q	0.0002	0.0000	-0.0004	0.0036	0.0000
Leverage	0.0095	-0.0272	-0.0238	-0.0544	0.0549
FCF	-0.0246	-0.0237	0.2531***	-0.0884*	-0.0989
Stock price run-up	0.2396	0.0508	0.1282	0.4306*	0.0795
Public Target	0.0052	0.0051	-0.0064	-0.0020	-0.0734
Cash deal	-	0.0137	-0.0003	-0.0148	0.0757
Equity deal	-	0.0136	-0.0160	0.0235	0.2429*
Mixed deal	-	0.0089	-0.0007	-0.0302	0.1620*
Diversification	0.0091	-	-0.0051	-0.0119	-0.0798
High tech	-0.0021	-0.0192**	0.0207	-0.0144	-0.0674
Relative deal size	-0.0053	-0.0057**	0.0033	0.0041	0.0035

4.2 Long term valuation

At this stage of research, we include only those acquirers, which have up to five years available stock price data and those that have an adequate reference portfolio, consisting of 5 equally weighted buy-and-hold returns of control firms. Therefore, our initial sample of 587 transactions decreases to 394. Among 193 acquirers that were taken out of the sample, 166 lack their stock price data, which can mean that those companies either failed or were simply delisted.

We test our null hypothesis (ABHAR = 0) with two tail t-test and obtain the results presented in Table 10 (detailed results are in the Appendix Table 4).

Table 10: Long term BHAR t test results for sample as a whole. The table shows the average buy-and-hold abnormal returns to acquiring companies in mergers and acquisitions in the United States. In the sample were included all the acquiring companies that made a transaction between 1997 and 2012, for which the relevant data was available. Abnormal returns are calculated by constructing an equally weighted portfolio of five matching firms per observation, which are identified based on their book-to-market ratio and industry. The table differentiates between a 36- and 60 months holding period. ***p<0.01, **p<0.05, *p<0.1;

Panel A: Whole sample			
Event window	ABHAR	t-statistic	p-value
(0,36)	-1.28%*	-1,919	0.056
(0,60)	1.79%***	4.328	0.000

Observing the 3 years post announcement test results, we notice a negative 1.28% ABHAR, which is with p-value of 0.056, significant at 10%. Similarly, 5 years post announcement t-test statistic of negative 4.33 result lies in the rejection area, at 1% level of significance. Therefore, we reject the null hypothesis and acknowledge that the shareholders of bidders' firms are exposed to abnormal returns in 5 years following the M&A announcement.

Negative 3-year ABHAR indicates that the initial post-announcement short-term over-performance cannot be preserved in a long run, i.e., that long-term returns underperform the matching portfolio and that acquiring companies actually destroy value for their shareholders by engaging into M&A activities. Nevertheless, positive and statistically significant at 1% level 5-year ABHAR claims the opposite. It supports the assumption that mergers and acquisitions, on average, create value for the shareholders of the acquiring companies. Our findings contradict Loughran and Vijh (1997) and Agrawal et al. (1992) but provide more logical explanation to why so many companies choose the growth through M&As. The reason why we arrive to a different conclusion than Loughran and Vijh (1997) and Agrawal et al. (1992) might be in the sample difference, as their papers included periods of conglomerate merger waves of late 1960s when differentiation strategies were more popular than during our period of observation. Additionally, it could be argued that it takes, on average, approximately 5 years for the acquiring shareholders to capture the benefits of the undertaken transaction.

5. Conclusion

The purpose of this research was to measure and examine the short- and long term effect mergers and acquisitions have on shareholders, who are indirectly a part of such transaction.

We were interested in weather mergers and acquisitions create or destroye value, and if, as theory generally suggests, those transactions benefit only one side – the bidding companies. We further investigate if different characteristics of the deal, like means of payment or industry, can influence the performance of acquirers and/or targets. We therefore identify a sample of 587 domestic mergers, acquisitions and tender offers in the United States that occurred between January 1997 and December 2012. The sample was then used to apply a corresponding methodology – an event study using market model for the evaluation of the short-term performance, and constructing a matching reference portfolio with buy-and-hold abnormal returns, for evaluating the long term performance.

The results of the short-term performance suggest that targets do, on average, benefit from M&A transactions, with cumulative abnormal return of around 30% (event window -1,1). Contrary to many researches demonstrating value destruction for the bidders, our results indicate that some value is created, on average, also for the acquirers. For the latter, CAARs are considerably lower that for the targets (0.56% during the event window -1,1), but they are nevertheless positive. These suggest that value is created on both sides of the transaction, however those benefits are not equal for both parties. We also found that acquirers benefit more from the transaction when using cash as a mean of payment, and identified 2 industries (finance, insurance and real estate, and services) for which CAARs are higher than the sample average. Consistent with Jensen (1986) and Agrawal et al. (1992), our results confirmed that market perceives related M&A transactions more favourably than unrelated transactions. Based on our findings, it can be concluded that short term effects of the transaction are positive both for the bidders and targets, but the magnitude of those effects does indeed depend on certain characteristics of both the deal and/or the bidder.

Result of our long-term performance analysis suggests value destruction in 3 years' time after the announcement, which is consistent with findings of Loughran and Vijh (1997) and Agrawal et al. (1992). However, our results also indicate

value creation for the shareholders of the acquiring companies, 5 years after the announcement. From our research it is not clear why the long-term returns underperform the matching portfolio when referring to 3 years post event timeframe, but overperform the matching portfolio in 5 years after the M&A announcement. Therefore, an additional research should be conducted in order to get a better insight under which circumstances do mergers and acquisitions benefit the shareholders of the acquiring companies in the long-run.

6. References

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7. Appendix A

Appendix Table 1: Detailed short-term AAR and CAAR test results for bidder's companies for M&A transactions financed only with cash and equity. The table shows average abnormal returns and cumulative average abnormal returns for the acquiring companies in the U.S. during different event windows distinguished based on the means of payment in the acquisition (pure cash & pure equity). Sample contain transactions financed by either only cash or only equity for which trading data was available (223 transactions financed by cash and 45 by equity) between 230 days before and 10 days after the transaction. AARs and CAARs are calculated by applying the market model, where CRSP Value weighted index was taken as a market proxy. ***$p<0.01$, **$p<0.05$, *$p<0.1$

Panel A: Cash transactions			
Event day	AAR	t-statistic	p-value
5	-0.01%	-0.063	0.950
4	-0.18%	-1.055	0.292
3	-0.53%	-1.074	0.284
2	0.03%	0.182	0.856
1	0.17%	0.689	0.492
0	0.55%*	1.782	0.076
-1	0.41%**	2.206	0.028
-2	-0.07%	-0.394	0.694
-3	-0.08%	-0.272	0.786
-4	-0.10%	-0.457	0.648
-5	0.24%	1.350	0.178
Event window	CAAR	t-statistic	p-value
(0,1)	0.72%	1.042	0.299
(-1,0)	0.96%**	2.555	0.011
(-1,+1)	1.13%***	2.627	0.009
(-2,+2)	1.10%	1.111	0.268
(-3,+3)	0.48%	0.662	0.509
(-4,+4)	0.20%	0.115	0.908
(-5,+5)	0.42%	0.202	0.840
Panel B: Equity transactions			
Event day	AAR	t-statistic	p-value
5	0.19%	0.425	0.673
4	0.11%	0.188	0.852
3	-0.67%	-1.544	0.130
2	-0.73%	-0.839	0.406
1	0.46%	0.480	0.634
0	1.32%	1.511	0.138
-1	-1.19%**	-2.266	0.028
-2	-0.43%	-0.944	0.350
-3	0.36%	0.821	0.416
-4	0.50%	1.393	0.171
-5	1.27%***	2.955	0.005
Event window	CAAR	t-statistic	p-value
(0,1)	1.78%	1.236	0.223
(-1,0)	0.13%	0.130	0.897
(-1,+1)	0.59%	0.342	0.734
(-2,+2)	-0.57%	-0.600	0.552
(-3,+3)	-0.87%	-0.702	0.486
(-4,+4)	-0.26%	-0.738	0.465
(-5,+5)	1.19%	0.975	0.335

Panel C: Mixed transactions			
Event day	AAR	t-statistic	p-value
5	-0.21%	-0.841	0.401
4	-0.03%	-0.085	0.932
3	-0.48%	-1.017	0.311
2	-0.05%	-0.170	0.865
1	0.62%	1.421	0.157
0	-0.12%	-0.376	0.707
-1	-0.25%	-1.260	0.209
-2	-0.23%	-1.108	0.269
-3	-0.42%	-1.041	0.299
-4	-0.11%	-0.608	0.544
-5	0.13%	0.588	0.557
Event window	CAAR	t-statistic	p-value
(0,1)	0.50%	0.903	0.368
(-1,0)	-0.37%	-1.053	0.294
(-1,+1)	0.25%	0.423	0.673
(-2,+2)	-0.03%	-0.030	0.976
(-3,+3)	-0.93%	-1.127	0.261
(-4,+4)	-1.07%	-1.130	0.260
(-5,+5)	-1.15%	-1.412	0.159

Appendix Table 2: Sample division in industry tranches. Segmentation is performed based on first two digits of SIC classification code. Data obtained from SDC Platinum Financial Securities Data and NAICS Association.

Code	Industry	# Deals	% of Total
01-09	Agriculture, Forestry & Fishing	1	0%
10-14	Mining	17	3%
15-17	Construction	2	0%
20-39	Manufacturing	199	34%
40-49	Transportation, Communications, Electric, Gas & Sanitary Services	40	7%
50-51	Wholesale Trade	16	3%
52-59	Retail Trade	40	7%
60-67	Finance, Insurance & Real Estate	135	23%
70-89	Services	137	23%
90-99	Public Administration	0	0%
Total		**587**	**100%**

Appendix Table 3: Detailed short-term AAR and CAAR test results for bidder's companies, classified according to their industry. The table shows statistically significant average abnormal returns and cumulative average abnormal returns for the acquiring companies operating in finance, insurance and real estate; services industry; and retail trade in the U.S. during different event windows. Other t statistics are insignificant. Sample contains transactions in those industries for which trading data was available between 230 days before and 10 days after the transaction. AARs and CAARs are calculated by applying the market model, where CRSP Value weighted index was taken as a market proxy. ***p<0.01, **p<0.05, *p<0.1

Panel A: Finance, Insurance & Real Estate			
Event window	CAAR	t-statistic	p-value
(0,1)	0.47%*	1.848	0.067
(-1,0)	0.43%*	1.878	0.063
(-1,+1)	0.60%**	2.087	0.039
(-2,+2)	0.72%***	4.411	0.000
(-3,+3)	1.13%**	2.412	0.017
(-4,+4)	0.95%*	1.705	0.090
(-5,+5)	1.37%**	2.391	0.018
Panel B: Services			
Event window	CAAR	t-statistic	p-value
(0,1)	1.20%**	2.267	0.025
(-1,0)	1.38%*	1.878	0.062
(-1,+1)	2.05%***	2.709	0.008
(-2,+2)	1.61%*	1.883	0.062
(-3,+3)	1.15%**	2.240	0.027
(-4,+4)	1.36%**	2.240	0.027
(-5,+5)	1.58%***	2.911	0.004
Panel C: Retail trade			
Event window	CAAR	t-statistic	p-value
(0,1)	0.50%***	17.866	0.000
(-1,0)	-0.37%***	20.075	0.000
(-1,+1)	0.25%***	17.125	0.000
(-2,+2)	-0.03%***	17.922	0.000
(-3,+3)	-0.93%***	12.021	0.000
(-4,+4)	-1.07%***	12.788	0.000
(-5,+5)	-1.15%***	12.886	0.000
Panel D: Mining			
Event window	CAAR	t-statistic	p-value
(0,1)	0.47%	0.295	0.772
(-1,0)	0.85%	0.585	0.567
(-1,+1)	0.38%	0.463	0.650
(-2,+2)	-1.61%	-0.815	0.427
(-3,+3)	-1.11%	-0.485	0.634
(-4,+4)	-1.42%	-0.575	0.573
(-5,+5)	-1.63%	-0.700	0.494

Panel E: Construction			
(0,1)	1.35%	0.431	0.741
(-1,0)	1.11%	2.422	0.249
(-1,+1)	1.91%	0.675	0.622
(-2,+2)	7.04%	2.534	0.239
(-3,+3)	9.97%	3.806	0.164
(-4,+4)	5.88% *	6.898	0.092
(-5,+5)	4.38%	3.153	0.196
Panel F: Manufacturing			
(0,1)	-0.24%	-0.437	0.662
(-1,0)	-0.37%	-0.808	0.420
(-1,+1)	-0.46%	-0.756	0.450
(-2,+2)	-0.64%	-0.891	0.374
(-3,+3)	-1.13%	-1.398	0.164
(-4,+4)	-1.40%	-1.605	0.110
(-5,+5)	-1.40%	-1.502	0.135
Panel G: Transportation, Communications, Electric, Gas & Sanitary Services			
(0,1)	-0.10%	-0.079	0.937
(-1,0)	-0.50%	-0.492	0.626
(-1,+1)	0.14%	0.089	0.929
(-2,+2)	-0.76%	-0.445	0.659
(-3,+3)	-2.95%	-1.259	0.215
(-4,+4)	-3.31%	-1.353	0.184
(-5,+5)	-3.74%	-1.534	0.133
Panel H: Wholesale trade			
(0,1)	0.85%	0.306	0.764
(-1,0)	-1.58%	-1.007	0.329
(-1,+1)	0.35%	0.133	0.896
(-2,+2)	-2.71%	-0.691	0.499
(-3,+3)	-4.05%	-0.861	0.402
(-4,+4)	-3.08%	-0.838	0.414
(-5,+5)	-1.91%	-0.641	0.530

Appendix Table 4: Detailed Long term BHAR t-test results for various subsamples. The sample consists of 394 acquirers and is tested for 3 and 5 years after announcement performance. ***p<0.01, **p<0.05, *p<0.1. In this part of analysis, we test for many different subsamples of various acquirers, in order to obtain some statistical explanation for their long term performance. The results are statistically significant for BHAR of a whole sample and for transactions, where the deal's target is private.

Panel A: Whole sample		
Event window	ABHAR	t-statistic	p-value
(0,36)	-1.28%	-1.919	0.056
(0,60)	1.79%	4.328	0.000

Panel B: Cash		
Event window	ABHAR	t-statistic	p-value
(0,36)	1.75%	0.931	0.353
(0,60)	9.33%	0.999	0.319

Panel C: Equity		
Event window	ABHAR	t-statistic	p-value
(0,36)	5.29%	1.000	0.326
(0,60)	2.52%	1.000	0.326

Panel D: Public target		
Event window	ABHAR	t-statistic	p-value
(0,36)	-2.90%	-0.607	0.544
(0,60)	4.07%	1.03	0.304

Panel E: Private target		
Event window	ABHAR	t-statistic	p-value
(0,36)	**4.27%**	1.656	**0.099**
(0,60)	1.04%	1.004	0.316

Panel F: Acquirer in Finance		
Event window	ABHAR	t-statistic	p-value
(0,36)	2.07%	1.028	0.305
(0,60)	1.00%	0.921	0.358

Panel G: Acquirer in Manufacturing		
Event window	ABHAR	t-statistic	p-value
(0,36)	-3.40%	-0.604	0.546
(0,60)	1.65%	1.417	0.158

Panel H: Acquirer in Mining		
Event window	ABHAR	t-statistic	p-value
(0,36)	4.60%	0.816	0.438
(0,60)	-1.31%	-1.001	0.346

Panel I: Acquirer in Retail trade		
Event window	ABHAR	t-statistic	p-value
(0,36)	-8.39%	-0.831	0.427
(0,60)	4.78%	1	0.343

Panel J: Acquirer in Services			
Event window	ABHAR	t-statistic	p-value
(0,36)	3.41%	1.033	0.305
(0,60)	2.74%	0.999	0.320
Panel K: Acquirer in Transport			
Event window	ABHAR	t-statistic	p-value
(0,36)	1.99%	1.446	0.162
(0,60)	-2.39%	-1	0.328
Panel L: Acquirer in Wholesale trade			
Event window	ABHAR	t-statistic	p-value
(0,36)	-3.71%	-0.999	0.339
(0,60)	1.79%	0.989	0.344
Panel M: Parties involved in High tech			
Event window	ABHAR	t-statistic	p-value
(0,36)	9.78%	1.002	0.318
(0,60)	1.53%	1.006	0.316

8. Appendix B

Main and supporting variables in short-term regression analysis

Variable	Definition	Source
	Panel A: Dependent variable	
CAR(0,1)	Return we identified as significant in first section of short-term analysis. Defined in percentage points and calculated using the market model (estimation window between -230 and -30, with CRSP equal weighted return as market index)	Raw stock and index prices obtained from WRDS Research Data Services, then calculated in our independent research
CAR(-1,1)	Three-day cumulative abnormal return we identified as significant in first section of short-term analysis. Return is defined as for CAR(0,1).	Raw stock and index prices obtained from WRDS Research Data Services, then calculated n our independent research
	Panel B: Bidder Characteristics	
Firm size	Logarithm of total assets' book value, generated at the end of a fiscal year prior to announcement date	WRDS Research Data Services
Tobin's q	Market value of assets divided with book value of assets at the end of a fiscal year prior to announcement date	WRDS Research Data Services
Market value of assets	Total assets minus common equity plus market value of equity	WRDS Research Data Services
Market value of equity	Stock price multiplied by number of outstanding shares 30 days prior to announcement date	WRDS Research Data Services
Leverage	Book value of current and long-term liabilities, divided with market value of total assets at the end of a fiscal year prior to announcement date	WRDS Research Data Services
Free cash flow (FCF)	(Operating income before depreciation minus interest expense less income tax less capital expenditures) divided with book value of total assets	WRDS Research Data Services
Stock price run-up	Acquirer's BHAR in period between -230 and -30 days prior to announcement date. The expected return is obtained with a market model, with CRSP equal weighted return as market index	WRDS Research Data Services
	Panel C: Deal Characteristics	
Public target	Dummy variable, where 1 identifies a public target and 0 otherwise (private)	SDC Platinum Financial Securities Data
Cash deal	Dummy variable, where 1 identifies all cash deal and 0 otherwise	SDC Platinum Financial Securities Data
Equity deal	Dummy variable, where 1 identifies all equity deal and 0 otherwise	SDC Platinum Financial Securities Data
Mixed deal	Dummy variable, where 1 identifies all deals that include payment with both cash and equity, 0 otherwise	
Diversification	Dummy variable, where 1 identifies a diversifying deal, where bidder and target share same first two digits of SIC code; and 0 otherwise	Independent research, SDC Platinum Financial Securities Data and NAICS Association database
High tech	Dummy variable, where 1 identifies that both parties of the deal are somehow involved in Hi Tech industry, and 0 otherwise	SDC Platinum Financial Securities Data
Relative deal size	Transaction's deal value divided by Market value of equity 30 days prior to announcement date	SDC Platinum Financial Securities Data and WRDS Research Data Services