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Acquisition premium paid by different investors

Public strategic investor or private equity fund, who is paying more in an acquisition and for which factors is he paying more?

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Abstract

This research investigates who is paying more for acquisitions, a public strategic investor or a private equity buyout fund. Furthermore, it investigates for which factors the investor pays more. The data consist of 935 transactions in Europe. Using data from Europe is a main distinction between the often used data from America. It is found that a target shareholder selling its shares, gets on average a 64.49% higher price from a public strategic investor compared to a private equity fund. Furthermore, it is discovered that variables like the level of cash are a driver for a higher acquisition premium.

Keywords: acquisition premium, private equity, strategic investor, abnormal returns.

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1. Introduction

Much research is only focusing on mergers and acquisitions¹ of public operating companies (also called public strategic investors). Research about private equity firms (also known as private equity funds, private equity investors or financial sponsors) engaging in acquisitions is rare. As Bargeron, Schlingemann, Stulz and Zutter (2008) acknowledge it, although the press has devoted more attention to private acquirers, the academic research world has paid little attention to this type of acquire. One reason for this is likely the limited availability of information's since most private equity firms provide less information than public listed companies do.

However, private equity firms are a major player in the corporate control market, especially for mature firms (Wruck, 2008). Between 1970 and 2007 private equity firms have conducted 17,171 leverage buyouts worldwide which had a total enterprise value of more than \$3.6 trillion (in numbers: \$3,600,000,000,000) according to estimates done by Kaplan and Strömberg (2009). One aim of this work is to bring more light into the field of how private equity functions and what they look for in a target company. Especially research will be conducted about what acquisition premium private equity firms are paying in comparison to public strategic firms and private strategic firms. Furthermore, I want to investigate what makes an acquirer pay a higher premium. Thereby, the main research question to be investigated in this study is:

Public strategic investor or private equity fund, who is paying more in an acquisition and for which factors is he paying more?

One might argue that the operating companies are paying higher premiums due to the synergies they are, in contrast to private equity funds, able to gain. However, some research (e.g. Gorbenko and Malenko (2014)) suggest that this is not always the case. Also, Bergeron et al. (2008) show that synergies cannot be the only reason why operating companies should pay a

¹ A Merger is the process of combining two companies to one. In an acquisition one company acquires the other and holds control of the two companies (Koller, Goedhart and Wessels, 2010). This paper will investigate mainly acquisitions since the analysed transactions are 100% cash deals.

higher premium. Bergeron et al. (2008) investigate the paid premium difference between strategic public companies, strategic private companies and private equity funds using data from acquisitions in the United States in the time from 1980 until 2005.

This research will contribute to the existing literature in several ways. First of all, it will bring more research into the question about who is paying more in an acquisition. And since most research is done with acquisitions in the United States, the here used data about targets in Europe will additionally answer the question of if there are major differences between this two geographies regarding acquisition premium paid. Secondly, since private equity funds are often discussed in public as well as from policy maker (Kosman, 2009) the understanding of what private equity is looking for in a target can bring more facts to this discussions. Knowing what a private equity fund or a strategic company is looking for in an acquisition can help shareholders when they want to sell their business. What is more, when they know who is paying more in an acquisition it can help them when they prepare for a sale process of the company. Alternatively, viewed in the opposite direction, it can help company executive directors to know what an acquirer is looking for in a company when they want (need) to prepare for a takeover defense strategy (when they do not want to get acquired by a corporation).

The developed hypothesises will be analysed with different accounting figures from the target company (for example the EBITDA margin). The final sample of transactions consists of 935 acquisition events. A market model event study will be used to calculate the abnormal returns. The main regression will be performed with the ordinary least square (OLS) regression. As a robustness check, other regression and analyses will be calculated.

The structure of this research paper is as follows. Section 2 will present the literature review about mergers and acquisitions and acquisition premiums paid. Additionally, the hypothesises will be developed here. In section 3 the research design will be presented. Following section 3 the results will be presented in section 4. The results from section 4 will be discussed in section 5 and compared with the developed hypothesises in section 2. The last section, section 6 will conclude the study.

2. Literature review

2.1 Framework – What is meant by private equity?

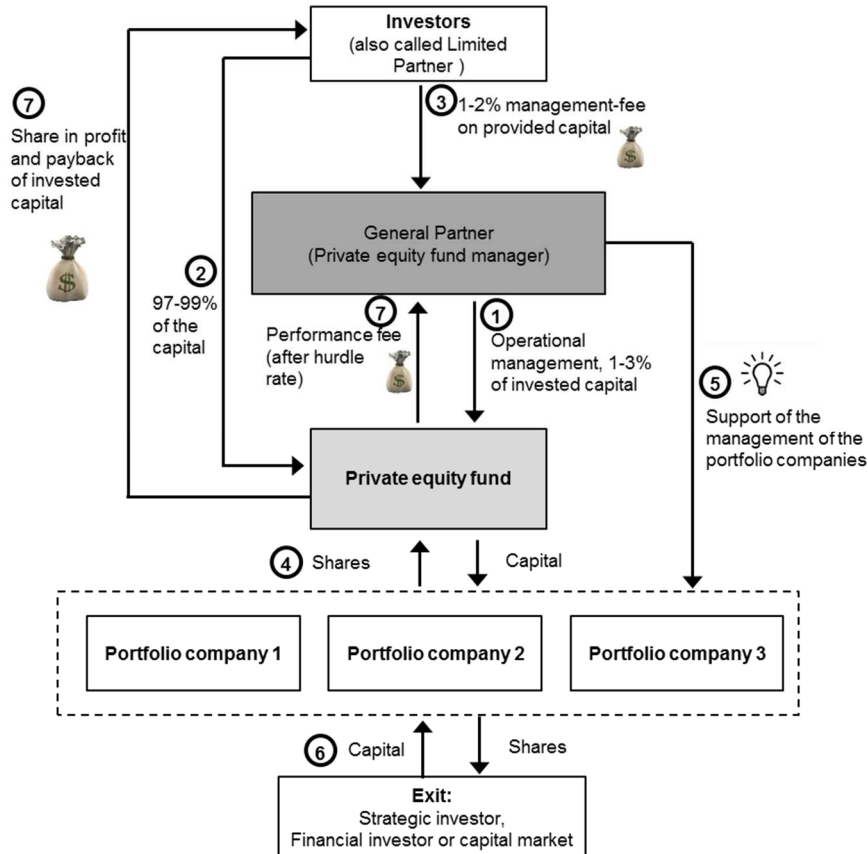
The concept of private equity² firms will be discussed in more detail here. In the literature there are some different definitions about private equity, depending on what exactly is investigated and in what economies this investigation takes place. In general, private equity can be described as an asset class that is not publicly traded on a stock exchange. In more detail, Leeds and Sunderland (2003) define private equity as the process of providing financing to *private* companies in early- and later stages. The financing thereby comes from third-party investors who are looking for high returns based on the near-term illiquidity and the risk profiles of the private companies. The near-term illiquidity is a result of the fact that the investors in private equity have to commit the money for a longer period than they are used to on the stock exchange, where they can buy and sell their stock nearly every second (depending on the liquidity of the market). Prowse (1998) defines private equity as professionals who invest equity into unregistered securities of private as well as public companies. Prowse (1998) adds that private equity managers acquire significant ownership stake and additionally take an active role in advising and monitoring the portfolio companies. These professionals are called general partners.

The following figure 1 shows the private equity environment:

² Throughout the research paper I mean private equity buyout funds when talking about private equity. Furthermore, I will use the terms private equity buyout funds, private equity funds and private equity investors interchangeably and always mean private equity buyout funds.

Figure 1
Private equity

The figure shows the typical environment of a private equity leveraged buyout fund. Source: Own illustration closely following my book: “Private Equity. Wie das Geschäft der Finanzinvestoren funktioniert” (Burmester, 2016)



Further explanations to the figure (the numbers refer to the circled numbers in the figure):

(1) The general partner of the private equity fund is responsible for operating the fund, he is the fund manager and meant when talking about a private equity firm or fund. The fund has a typical length of 10 years, with often a possible extension of 3 years (Phalippou and Gottschalg, 2009). Among others the general partner is responsible for fundraising, valuation and acquisition of target, planning of value creation initiatives, selling of the target (often with the help of consultants) (Brettel, Kauffmann, Kühn and Sobczak, 2008).

(2) Most of the capital comes from the limited partners who are institutional investors like insurance companies, pension funds, endowments and also wealthy individuals. At least 1% is provided by the general partner in order to have a higher alignment of interest (see for example Kaplan et al. (2009) and Sahlman (1990)). (3) As researched by Metrick and Yasuda (2010),

the general partner charges a management fee of around 2% annually. This fee is not dependent on the success of the fund. **(4)** After due diligence from the general partner the fund acquires target companies. Thereby the fund uses in general a substantial amount of debt, as Kaplan et al. (2009) write, a transaction is often executed with around 60 to 90 percent of debt. However, Kaplan et al. (2009) mainly talk about the market in the United States. Achleitner, Braun, Engel, Figge and Tappeiner (2010) investigate a data sample from European transactions and find that the level of debt is in the beginning at around 56.5% to 61.5% and is reduced during the holding period to around 44.4% to 50%. **(5)** As mentioned in “(1)” the General Partner often supports the target management with the planning of value creation initiatives or advises them during the execution of an add-on acquisition (Brettel et al., 2008). **(6)** When the target company gets sold to, for example a public strategic investor, the private equity fund gets the realised proceeds. **(7)** After the ten years (with maybe around 3 extra years) when the target companies are successfully sold the money is returned to the investors. Often the so called waterfall is agreed on and used in order to distribute the money. Thereby, the limited partners will first of all receive their invested money back. Following this the limited partners regularly get an annually preferred return (also called hurdle rate) of 8%. If after this there is still money left, the general partner will get its profit share (also called carry) of mostly around 20% of the capital left. The remaining 80% is for the limited partners (see for example Robinson and Sensoy (2013)).

2.2 What do we know? – A review of the literature

2.2.1 Review of the acquisition premium literature

Most of the research done about the acquisition premium is made with acquisitions data from the American market (at least the target is from America). That is the result of the extensive literature study I made. The acquisitions data used in this research paper are from the European market and thereby will help to understand the possible difference between the American market and the European market.

Starting the literature review with research done in 1989 Nathan and O’Keefe (1989) find that the mean cash merger premium rose from the 1963-1973 period from 29% to 70% in the 1974-

1985 period. The premiums are measured by dividing the offered share price minus the target's share price (60 days prior the announcement day) by the target's share price (again 60 days before the announcement day). They control for a structural shift and business cycles and find that there is a definite positive time trend in takeover premiums. The sample size counts 681 takeovers. The takeovers are from the period 1963-1985. The target as well as the acquirer are from the United States.

The results of the acquisition premium will depend on the method about how the premium is calculated. Research done by Sudarsanam and Sorwar (2010) uses thereby a different method than the often used calculation of the CARs (cumulative abnormal returns)³. They argue that the target shareholder reevaluates the company as a standalone company when they receive an offer for their shares (from the acquiring company). This, as Sudarsanam et al. (2010) call it, intrinsic value accounts for 14.4% of the premium. The value of the put option contributes 8.2% to the offered premium. The put is calculated with the Black-Scholes option pricing model and represents the option of the target shareholders to sell their stock to the acquiring company. The sample represents 181 successful acquisitions. The sample period is 1990-2004 and only represents acquisitions in cash done in the United Kingdom. Graham, Lemmon and Wolf (2002) find by using an event window of only -1 to +1 a CAR of 22.51% (significant at the 1% level) for a sample size of 356 acquisitions. The sample period spans the years from 1980 until 1995. The targets are all located in the United States.

2.2.2 Review of literature about strategic and financial investors and the premium paid

In the prior section I showed some example research done about the acquisition premium paid by strategic investors. This section shows the research done which includes financial investors in the investigations about acquisition premium paid. Again, as in the prior section, the review of an extensive amount of research reveals that most of the research is done with using acquisition targets in the United States.

³ For an explanation about how the CAR is calculated, see appendix 2

The fact that the strategic investor can gain, different to the financial investor, synergies with an acquisition, can lead to a too early conclusion that the premium paid by a strategic investor is higher than the premium paid by a financial investor. However, Gorbenko et al. (2014) find that this is not true in general. They use a sample of 349 acquisitions which occurred in between January 1, 2000 and September 6, 2008. The acquisition processes were all done via an auction, meaning that there were multiple bidders for one specific target company. 211 auctions were won by a strategic investor and 138 by a financial investor. However, they find that the average financial investor is valuing 22.4% of the target higher than an average strategic investor. Interestingly, they discover that the financial investor value the targets with substantial negative cash flows higher than a strategic investor. They argue that this can come from the financial investors having higher expertise in restructuring a company or better access to debt financing compared to the strategic investors. The argument of better access to debt financing can be supported by the findings of Ivashina and Kovner (2011) who find that the repeated interaction between banks and financial investors leads to favorable loan terms. Additionally, Demirogullu and James (2010) find that reputable financial investors pay narrower institutional and bank loan spreads.

Another study investigating acquisitions in the United States is done by Bargaron et al. (2008). They use a sample of 1,667 deals whereby 1,214 of this acquisitions are done by a strategic investor and 453 by a private company (combining a private operating company and a private equity firm). They argue that the premium difference paid between private equity and public strategic investor is lowest when the managerial ownership in the public company is high and highest when the managerial ownership is low. The investigated acquisitions occurred between 1980 and 2005 in the United States. Bargaron et al. (2008) find with an event window of -1 to +1 (0 being the announcement day) that a private equity bidder offers a premium of 20.6%, a private operating firm 23.6% and a strategic investor 29.5%. Bargaron et al. (2008) also calculate a Fama-French size and book-to-market portfolio-adjusted buy-and-hold return from -42 days to the completion date. Here the private equity, private operating firm and strategic

investor offer 28.5%, 40.9% and 46.5% respectively. This shows the sensitivity of the premium paid, depending on how it is calculated.

Investigating the sale of assets, Hege, Lovo, Slovin and Sushka (2013) find that Private equity firms pay on average a premium of 3.8% at a two-day CAR (-1,0) event window. The sample size consist of 146 acquisitions by private equity, 287 strategic investor and 48 private operating investor acquisitions. The acquisitions are reported assets sales with a value of \$100 million or more from public traded companies on the NYSE, ASE or Nasdaq. The strategic investors pay a premium of 1.3% and the private operating investor only pay a 1.0% premium.

2.3 What is the investor paying for?

In order to answer this question, it is important to know the economic theories which suggest under what conditions an investor should pay a higher premium. The hypotheses to test will be developed based on the literature review and economic theories.

Operating free cash flow

In general operating free cash flow is an important figure to be considered in the valuation of a company. It determines how much money a company is earning with its operations.

Companies with high operating free cash flows but only a few profitable investment opportunity are particularly attractive to private equity funds. This is due to agency cost of free cash flow, as described by Jensen (1986). When the management of the company has access to high free cash flows but not enough obviously profitable investment opportunities the management might rather invest it in unprofitable opportunities than return it back to its shareholders. The reasoning behind this is that the management wants to increase the resources under its control to increase its compensation. Private equity investors can, as Bargerion et al. (2008) describes it, provide an organisational structure (e.g. alignment of interest) were these problems are less likely. Therefore the first hypothesis is:

Hypothesis 1: A high operating cash flow of the target leads to a high premium paid by the acquirer

Thereby the operating free cash flow is calculated as: Net Income + Depreciation & Amortization + Other Noncash Adjustments + Changes in Non-cash Working Capital

Market-to-book ratio and Tobin's q

The market-to-book ratio puts the value of the company, calculated by the market (market value) in comparison to the book value of equity of the company. Among others, Piotroski and So (2012) describe firms with a high market-to-book value as “glamour” firms. Firms with a low market-to-book value are called “value” firms. Rau and Vermaelen (1998) for example use the market-to-book ratio (they calculate it as a book-to-market ratio) to investigate the bidder's performance after a merger. They find evidence that glamour acquirers underperform after an acquisition. Additionally, Fidrmuc, Roosenboom, Paap and Teunissen (2012) find that private equity investors pursue targets that have a lower market-to-book ratio relative to targets acquired by strategic investors.

A high Tobin's q is regularly associated with companies with strong growth opportunities whereas companies with low growth opportunities are mostly companies with a low Tobin's q. However, generally speaking, empirical research shows that the value firms outperform the market (Graham and Dodd, 1934; Rosenberg, Reid and Lanstein, 1985; Lakonishok, Shleifer and Vishny, 1994). Regarding the acquisition premium paid, there is for example Servaes (1991) who finds that the premium paid to the target is higher when the target has a low Tobin's q. Lang, Stulz and Walkling (1989) come to the same conclusion. One explanation available in the literature for this findings is that the acquirer can create more value (increase Tobin's q) when Tobin's q is low at the time of the acquisition and therefore he can pay a higher price (Lang et al., 1989).

To investigate these findings further, the second hypothesis is:

Hypothesis 2: A low market to book value of the target explains a high acquisition premium paid

Hypothesis 2 is measured with the market value of equity divided by the book value of equity and additionally measured with Tobin's q ratio.

Tobin's q is computed as: (Market Capitalisation + Total Liabilities + Preferred Equity + Minority Interest) / Total Assets.

Debt-to-capital ratio

The level of debt (also called leverage ratio or leverage) of the target is a major factor for the acquiring firm when valuing the target. As already mentioned, a high free cash flow can increase the agency cost since the management might invest the money in unprofitable businesses (Jensen, 1986). A high level of debt, by contrast, is reducing the free cash flow due to the higher interest and principal payments. However, a greater level of debt increases risk since the interest and principals need to be paid.

For a strategic acquirer who wants to buy a company to gain synergies, Slusky and Caves (1991) found that the possibility to provide a target, which currently has a high level of debt, with an equity infusion can realise more value creation than the realisation of operational synergies can. A low leverage ratio can also be attractive for a private equity investor. First of all, the investor can increase the level of debt and therefore use cheap debt instead of expensive equity to finance the operations of the business. By doing this, the private equity investor makes use of the leverage effect (Nissim and Penman (2003) for example). Second of all, he can use the mentioned problem of having high free cash flows and align the interest between the management and the investors. Obviously, the value creation opportunities are greater if the debt was low before the acquisition. Therefore the third hypothesis is:

Hypothesis 3: A low debt-to-capital ratio of the target explains a high acquisition premium paid

The debt-to-capital ratio is calculated as: $\text{Debt (as short- and long-term debt)} / (\text{Debt} + \text{Market Value of Equity})$ as well as with: $\text{Debt} / (\text{Debt} + \text{Book Value of Equity})$

Level of cash

Private equity investors use the level of cash as one regulating screw to create value. As Pozen (2007) describes it, it is one of the hallmarks of private equity to keep the level of cash at the minimum. A target with a high level of cash can therefore be attractive for the private equity

investor due to the following reasons. First of all, as described by Lehn and Poulsen (1989), the private equity investor can make the acquired company pay out the cash. This will lead to an increase in the performance measure IRR (internal rate of return). Since the IRR is one of the most used measures for the performance of a private equity fund (e.g. Harris, Jenkinson and Kaplan, 2014) the private equity investor will most likely use this opportunity.

In order to investigate the attractiveness of a high level of cash further, the fourth hypothesis is:

Hypothesis 4: A high level of cash on the balance sheet explains a high acquisition premium paid by the acquirer

The level of cash is calculated as: $\text{Cash and near cash items} / \text{Total Assets}$

EBITDA margin

The EBITDA (earnings before interest, taxes, depreciation and amortisation) margin is an important ratio to determine the performance and profitability of a company. Furthermore, in the multiple valuation method the EBITDA-multiple plays an important role. Especially private equity investor rely to a certain extent on the EBITDA-multiple when valuing a target company (see for example Pearl and Rosenbaum (2013), Pignataro (2013) as well as Ernst and Häcker (2012)). A survey done by Gompers, Kaplan and Mukharlyamov (2015) also reveals that 70% of the surveyed private equity investor use the EBITDA-multiple valuation to value a target.

Therefore, the fifth hypothesis is:

Hypothesis 5: A high EBITDA margin explains a high acquisition premium paid by the acquirer

The EBITDA margin is calculated as: $\text{EBITDA} / \text{Revenue}$

Interest rates in the economy

Haddad, Loualiche and Plosser (2011) find that the number of leverage buyouts are positively correlated to the risk-free rate and high when the risk premium is low. Axelson, Jenkinson, Strömberg and Weisbach (2013) also find that the economy-wide credit conditions is a main driver of the level of leverage in a private equity transaction. This means, when credit is widely available (cheap) private equity investor use a lot of debt. Furthermore, they find that the

premium paid is higher when leverage is elevated in a transaction. They suggest that private equity investors overpay when debt is cheap since the return decreases in such transactions. Similar results are found by Demiroglu and James (2010), they find that reputable private equity investors are more active when credit risk spreads are low and lending standards are lax. In order to investigate if low interest rates in the debt market lead to higher acquisition premium the sixth hypothesis is:

Hypothesis 6: An acquirer pays a higher premium when the interest rates in the economy are low

The interest rate in the economy is measured as: LIBOR (London Interbank Offered Rate) 3-month prior the acquisition announcement

Size of the target

The size of the acquired target is obviously an important factor when considering to acquire a company. For the strategic investor a larger company could mean more synergies but it also means that the effort to gain the synergies could be higher. Research done by Asquith, Bruner and Mullins (1983) showed that the strategic investor had an abnormal return which is positively correlated to the size of the target, meaning as larger the target, as larger the abnormal return to the strategic investor. Additional research is done by Servaes (1991) and Jarrell and Poulsen (1989) who all find that the value created for the acquirer is larger if the target is relative larger. This research might inspire strategic investor to acquire relative large companies and thereby increase the premium paid. The seventh hypothesis is:

Hypothesis 7: An acquirer pays a higher premium when the target is larger

The size of the target is measured as: natural log of the total announce transaction value of the target three months before the acquisition announcement.

All these hypotheses will be tested by using public takeovers. This obviously leads to a limitation of the result found since many takeovers are done where the target is not a public listed company. However, the information needed to test the hypotheses are best available for public takeovers. This is also consistent with other research, e.g. Barger et al. (2008).

3. Research Design

This sections purpose is to describe the data gathering process and the data sample. At the beginning, I will give an overview of where I got the data from and what criteria were used to get the acquisition events. Furthermore, the data gathering of the individual variables will be explained.

3.1 Data Sample

The full and cleaned sample size consist of 534 acquisition events done by a strategic public investor, 254 acquisition events done by a strategic private investor and 147 events done by a private equity investor. The overall sample size is therefore 935 acquisition events which occurred in the time from 06th of January 1998 until 23rd of December 2015.

The acquisition events come from the Bloomberg M&A database. For completeness and as cross check, the M&A database Zephyr from Bureau van Dijk was also checked. The events had to meet the following criteria to be included in the data sample:

- Europe as the targets location
- Target need to be a public listed company (to get all necessary informations)
- Transaction need to be completed until the end of 2015 (to make sure the premium is paid)
- Cash-only transactions (for comparability, this is consistent with Barger et al. (2008))
- 100% of the company need to be acquired and the acquirer need to hold 0% before the acquisition (again to make the premiums paid comparable)
- Deals which have a target which is not an operating company are excluded

Appendix 1 provides an exemplary breakdown of the steps undertaken to end up with the final private equity investor data sample.

3.2 Dependent and independent variables

The data for the dependent and independent variables are mainly from Bloomberg but also from sources like Datastream. The data sources and individual data are examined carefully to get the right data. In the following the calculation and source of each independent variable is explained:

Dependent variable: The dependent variable will be the cumulative abnormal return from 63-trading days prior the announcement to the announcement day (CAR -63 ; 0). The CAR will be

calculated with an event study. The stock returns are from Bloomberg. Other event windows, e.g. 42 days prior (CAR -42 ; 0) acquisition announcement are also computed and investigated.

Operating free cash flow: The operating free cash flow is obtained from Bloomberg. Bloomberg obtained the numbers from the annual report of the specific target. The annual report one year prior the acquisition announcement is used. As an example: when the acquisition was announced at the beginning of July 2012, the annual report of 2011 (with financial year ending in December 2011) is used. However, the numbers need to be published at least three months before the acquisition announcement. This means, if the announcement is made right after the annual report is published, the annual report used is one before this recently released report. The argumentation for this is that the performed due diligence of the acquirer is done some month before the announcement. This means that the acquirer can only use the numbers available at that time (although he will probably get access to non-publicly information later in the acquisition process).

Market-to-book ratio: The numbers for the market to book ratio are also obtained from Bloomberg. The market value of equity is calculated by the current shares outstanding times the last price of the day. As with the operating free cash flow, Bloomberg obtains the numbers of shares outstanding from the annual report prior the announcement. The stock price is from the same day as the number of current shares outstanding. The market value of equity is divided by the book value of equity.

Tobin's q: It is obtained from Bloomberg. Again with numbers from one annual report prior the announcement.

Debt-to-capital ratio: The debt-to-capital ratio is also obtained from Bloomberg.

Level of cash: Cash and near cash items divided by total assets determine the level of cash. The numbers are obtained from Bloomberg.

EBITDA margin: The EBITDA margin is calculated as EBITDA divided by revenue and from Bloomberg at the same point in time as the other numbers.

Interest rates in the economy: The interest rate in the economy are measured by the three month LIBOR (London Interbank Offered Rate) three month prior the acquisition announcement. The LIBOR is obtained from Bloomberg.

Size of the target: The size of the target is measured as the natural log market value three months prior the acquisition announcement. The three month (63 trading days) before the acquisition announcement are chosen to make sure that the market value is not affected by any

anticipation (e.g. insider trading) of the acquisition. This is consistent with Bargeron et al. (2008) for example.

In the main regression are two dummy variables included. One is a dummy variable which equals one if it is a private equity investor and zero otherwise. The other dummy variable indicates if it is a private strategic (operating) investor with a one and zero otherwise. Additionally, there are dummies for the first four years after the financial crisis 2008.

3.3 Event Study

In order to measure the premium paid (which will be the dependent variable) an event study is performed. The event study is necessary to incorporate any possible pre-bid runup due to, for example, insider trading or other anticipation of the acquisition announcement. What is meant by this is that insiders or other investors might get informed about the upcoming acquisition announcement and therefore trade the stock of the target only based on that information. As Schwert (1996) showed, before an acquisition announcement of a public traded company, the stock price increases abnormal which he calls pre-bid runup. In order to get the “real” premium, the investor is willing to pay, the cumulative abnormal returns are calculated. This is consistent with many other studies like Bargeron et al. (2008), Graham et al. (2002) and Boone and Mulherin (2011).

Similar to Brown and Warner (1980) an event day needs to be defined. In this study the event day will be the day of the announcement of an acquisition by an investor. A detailed explanation of the calculations behind the performed event study and the test for significance in the difference is provided in appendix 2.

4. Results

4.1 Descriptive statistic about the dependent variables

Table 1 below shows the returns which the shareholders of the acquired target got when they were acquired either by a private equity fund, a private strategic investor or a public strategic investor. These returns are a measure of the acquisition premium paid by the respective acquirer. As can be seen in Panel A in the first row the average CAR63 (cumulative abnormal return 63 days before and until acquisition announcement) is 25.01% for the shareholder of a target who is acquired by a private equity fund. Compared to that, if a public strategic investor acquires a target the average CAR63 is 41.14%. This finding is fascinating. It means that a target shareholder who gets an offer for its shares, gets on average a 64.49% (calculated as: $41.14\% / 25.01\% - 1$) higher price for them if the offer comes from a public strategic investor compared to a private equity fund.

Table 1
Premium paid by different acquirers

This table presents the calculated average and median abnormal returns using different event windows and methods. The CAR63 is the cumulative abnormal return from 63-trading days prior the acquisition announcement to the announcement day. The CAR42 is the cumulative abnormal return from 42-trading days prior the acquisition announcement to the announcement day. The DP3 is the stock price of the target on the announcement day divided by the stock price three trading days before (without any other adjustments). The DP63 is the stock price of the target on the announcement day divided by the stock price 63 trading days before. The average and median is calculated for all results. The p-value states the significance level which is calculated by a t-test for the average and by the Wilcoxon method for the median.

Panel A: Return measured by private equity, private strategic- and public strategic investor								
	Private Equity		Private strategic investor		Public strategic investor		Row number	
	p-value		p-value		p-value			
CAR63								
Average	0.2501	0.0000	0.3036	0.0000	0.4114	0.0000		1
Median	0.2459	0.0000	0.2623	0.0000	0.3620	0.0000		2
CAR42								
Average	0.2315	0.0000	0.2879	0.0000	0.3813	0.0000		3
Median	0.2121	0.0000	0.2464	0.0000	0.3350	0.0000		4
DP3								
Average	0.1204	0.0000	0.1600	0.0000	0.2540	0.0000		5
Median	0.0621	0.0000	0.1017	0.0000	0.1817	0.0000		6
DP63								
Average	0.3150	0.0000	0.3840	0.0000	0.5100	0.0000		7
Median	0.2704	0.0000	0.3083	0.0000	0.4379	0.0000		8

Panel B: Return measured by private and public investor and the difference								
	All		Private investor		Public investor		Private acquirer - Public acquirer	
	p-value		p-value		p-value		Difference	p-value
CAR63								
Average	0.3568	0.0000	0.2840	0.0000	0.4114	0.0000	-0.1274	0.0000
Median	0.3132	0.0000	0.2575	0.0000	0.3620	0.0000	-0.1045	0.0000
CAR42								
Average	0.3324	0.0000	0.2672	0.0000	0.3813	0.0000	-0.1141	0.0000
Median	0.2845	0.0000	0.2322	0.0000	0.3350	0.0000	-0.1028	0.0000
DP3								
Average	0.2079	0.0000	0.1450	0.0000	0.2540	0.0000	-0.1090	0.0000
Median	0.1339	0.0000	0.0828	0.0000	0.1817	0.0000	-0.0989	0.0000
DP63								
Average	0.4455	0.0000	0.3590	0.0000	0.5100	0.0000	-0.1510	0.0000
Median	0.3622	0.0000	0.2903	0.0000	0.4379	0.0000	-0.1476	0.0000

Panel C: Return difference between the different investors								
	Private Equity		Private Equity		Private strategic		Public strategic	
	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value
CAR63								
Average	-0.0535	0.1455	-0.1613	0.0000	-0.1078	0.0001		1
Median	-0.0164	0.2042	-0.1161	0.0000	-0.0997	0.0000		2
CAR42								
Average	-0.0564	0.0837	-0.1498	0.0000	-0.0934	0.0002		3
Median	-0.0343	0.1164	-0.1229	0.0000	-0.0886	0.0000		4
DP3								
Average	-0.0396	0.0852	-0.1336	0.0000	-0.0940	0.0000		5
Median	-0.0396	0.0246	-0.1196	0.0000	-0.0800	0.0000		6
DP63								
Average	-0.0690	0.0985	-0.1950	0.0000	-0.1260	0.0000		7
Median	-0.0379	0.2210	-0.1675	0.0000	-0.1296	0.0000		8

The CAR42 in table 1 shows a similar picture. The premium paid by the private strategic investor (middle column of Panel A) is interestingly for all measured premiums higher than the premium paid by the private equity fund but lower than the premium paid by the public strategic investor. This leads to the conjecture that the explanation that, a public strategic investor is paying a higher premium compared to a private equity fund because he can gain synergies, can't be the only reason. This is because a private strategic investor is paying a lower price, despite the fact that he can also gain synergies. Further analysis regarding DP3 and DP63 can be found in appendix 3.

Summarizing the results seen in Table 1 the public strategic investors definitely pay the highest premium whereas the private equity funds pay the lowest premium. When a shareholder with a significant shareholding (up to 100%) in a public listed company thinks about selling his shares, the results presented above have a clear suggestion. The shareholder should approach a public strategic investor as the buyer of his shares.

4.2 Descriptive statistics about the independent variables

After discussing the descriptive statistic of the acquisition premium paid (dependent variables) in the previews section, the descriptive statistic of the independent variable will be the topic of this section.

As can be seen in table 2 in panel A the *TOBINS_Q* for targets acquired by public acquirer is higher (average of 1.6428, median of 1.3731) than the one for the targets acquired by private acquirer (average of 1.3120, median of 1.1236). This means that public acquirers are more attractive to “glamour” companies as compared to private acquirers which acquirer more “value” firms. This is also found in the sample investigated by Barger et al. (2008).

The variable *Ofcf/BV_of_Assets* (calculated as explained in section “2.3 What is the investor paying for?”) provides information about the targets cash flow. Panel A shows that private acquirer buy companies with a higher cash flow than public acquirer (private acquirer: average of 0.0653, median of 0.0693 and public acquirer: average of 0.0594, median of 0.0525). Panel B shows that private equity investors look for companies with higher cash flow than private

strategic acquirer do (private equity investor: average of 0.0743, median of 0.0798 compared to private strategic acquirer: average of 0.0601, median of 0.0618). This finding provides evidence for the findings mentioned before. Private equity acquirer can create value by an alignment of interest (decreasing the agency cost as explained by Jensen (1986)) between the owner of the company and the CEO. By doing so, they return the cash flow to the owners of the company.

Table 2
Descriptive statistics about the independent variables

This table shows the average and the median [in brackets] of selected independent variables. The variables are calculated as explained in section 2.3. The p-value states the significance level which is calculated by a t-test for the average and by the Wilcoxon method for the median.

Panel A: Average and Median of independent variables for all investors, private investors and public investors					
	All	Private investor	Public investor	Private investor - Public investor	
				Difference	p-value
TOBINS_Q	1.5009 [1.2630]	1.3120 [1.1236]	1.6428 [1.3731]	-0.3309 -[0.2495]	0.0000 0.0000
EBITDA_margin	0.0849 [0.1119]	0.1297 [0.1207]	0.0678 [0.1079]	0.0619 [0.0128]	0.5761 0.1527
Debt/MV_of_Eq+D	0.2400 [0.1826]	0.2867 [0.2443]	0.2049 [0.1430]	0.0818 [0.1013]	0.0000 0.0000
Debt/BV_of_Eq+D	0.2985 [0.2756]	0.3244 [0.3106]	0.2791 [0.2381]	0.0452 [0.0725]	0.0831 0.0000
Ofcf/BV_of_Assets	0.0620 [0.0722]	0.0653 [0.0693]	0.0594 [0.0525]	0.0059 [0.0168]	0.5403 0.9052
MB_ratio	2.2500 [1.5150]	2.0178 [1.2558]	3.7846 [1.8076]	-1.7668 -[0.5518]	0.3444 0.0000
Cash/Assets	0.1217 [0.0693]	0.0980 [0.0485]	0.1396 [0.0829]	-0.0416 -[0.0344]	0.0000 0.0000
Size	736.1521 [154.6200]	478.1793 [134.6000]	882.6921 [170.4100]	-404.5128 -[35.8100]	0.0133 0.0001

Panel B: Average and Median of independent variables of private equity investors and private strategic investors								
	Private Equity	Private Equity - Public strategic investor	Public strategic investor	Private strategic investor - Public strategic investor	Private strategic investor			
		Difference	p-value	Difference	p-value	Difference	p-value	
TOBINS_Q	1.4067 [1.2489]	-0.2362 -0.1242	0.0047 0.0715	1.2572 [1.0587]	-0.3856 -[0.3144]	0.0000 0.0000	0.1495 [0.1902]	0.0665 0.0002
EBITDA_margin	0.1560 [0.1268]	0.0882 0.0188	0.2096 0.1971	0.1065 [0.1102]	0.0387 [0.0023]	0.2381 0.3412	0.0495 [0.0166]	0.2269 0.0099
Debt/MV_of_Eq+D	0.2728 [0.2427]	0.0679 0.0997	0.0009 0.0000	0.2948 [0.2464]	0.0899 [0.1034]	0.0000 0.0000	-0.0220 -[0.0037]	0.3661 0.7600
Debt/BV_of_Eq+D	0.3455 [0.3184]	0.0664 0.0803	0.1056 0.0001	0.3121 [0.3022]	0.0330 [0.0641]	0.2958 0.0000	0.0334 [0.0162]	0.1941 0.1840
Ofcf/BV_of_Assets	0.0743 [0.0798]	0.0149 0.0273	0.3031 0.4234	0.0601 [0.0618]	0.0007 [0.0093]	0.9507 0.8348	0.0142 [0.0180]	0.2796 0.0329
MB_ratio	2.7845 [1.4686]	-1.0001 -0.3390	0.3438 0.0515	1.9478 [1.0885]	-1.8368 -[0.7191]	0.3639 0.0000	0.8367 [0.3802]	0.9008 0.0095
Cash/Assets	0.0889 [0.0473]	-0.0507 -0.0356	0.0003 0.0000	0.1032 [0.0503]	-0.0364 -[0.0326]	0.0023 0.0000	-0.0144 -[0.0029]	0.3005 0.3614
Size	791.4649 [164.7800]	-91.2272 -5.6300	0.6638 0.1055	287.5589 [66.4750]	-595.1332 -[103.9350]	0.0001 0.0000	503.9060 [98.3050]	0.0001 0.0000

The $Debt/MV_of_Eq+D$ and the $Debt/MV_of_Eq+D$ in Panel B for the targets acquired by private equity investors is relatively high. An explanation for this could be provided by Ivashina et al. (2011). As already mentioned, they find evidence that private equity funds get more favourable loan terms at banks since they have a repeating interaction. Therefore, a way for a private equity fund to create value for the acquired company might be to exchange the old loans for new loans with better terms.

As can be seen in the table when looking at the variable *size* (which here is measured as the total value of the target 63 days prior the acquisition announcement), private acquirer takeover smaller firms than public acquirer.

4.3 Regression models

Four main models are used for the regression analyses. Model (1) is the standard model and includes the independent variables discussed in section 2.3 and also a dummy which indicates a private equity fund and a dummy which indicates a private operating acquirer. Model (2) additionally includes a dummy variable for the years 2008 until 2015. Model (3) includes dummies for the years 2007, 2008 and 2009 whereas model (4) includes dummies for the years 2010, 2011 and 2012. This is done in order to investigate if there are major difference in the years doing and after the financial crisis. In order to make sure that the models are statistically working without any mistake I investigated some assumption of the OLS (ordinary least square) regressions. Thereby I followed Brooks (2014). I checked for multicollinearity by calculating correlation coefficients as well as the variance inflation factors. There is no multicollinearity in the models and therefore no adjustments for this are needed.

4.4 Research results

This section will present the results of the models. Purpose of the performed regressions is to understand in more detail for what factors or accounting numbers the acquirers are paying a premium. Multiple regressions were conducted to get a good understanding of this factors.

Results in table 3

As can be seen in table 3 the dummy variable for the acquisitions by private equity funds, *PE_dummy* and the dummy variable for the acquisitions by private strategic investors, *Private_str._dummy* are significant (at 1% level, indicated by three “***”) and negative for all models. This means that there is a difference between private equity fund, private operating investor and public operating investor in terms of acquisition premium paid. As with the results discussed in Section 4.1 this results provide evidence that private acquirer pay a lower premium. According to model (1), holding everything else constant, private equity funds pay a 15.64% lower premium compared to public acquirer (as can be read from the coefficient *PE_dummy* in model (1)). Including the *Y2008-2015_dummy* variable in model (2) reveals that the financial crisis led to a change in the results. The variable is statistically significant at the 5% level and the coefficient is 0.08151, meaning that the premium paid doing and after 2008 are 8.15% higher than before 2008. Dummy variable *Y2008_dummy* and *Y2009_dummy* in model (3) are both positive and significant at the 10% level (*Y2008_dummy*) and 1% level (*Y2009_dummy*). Especially *Y2009_dummy* is with a coefficient of 0.24708 pretty high and reveals that the premium paid in 2009 was the main driver for higher premiums post financial crisis. An explanation for this results could be that the price the acquirers paid for a company was not that high when considering the price the company was traded at some years before. However, the acquisition premiums were high because stock prices in 2008 and 2009 were low.

Furthermore, for all models (1 to 8) the independent variable *TOBINS_Q* is significant at the 1% level. What is more, the coefficient is always negative leading to the conclusion that an increase in the *TOBINS_Q* leads to a decrease in the acquisition premium paid. An explanation for this might be that an acquirer is not willing to pay an even higher price for a company that has already a high market value compared to its fundamental asset value.

Table 3
Multiple regression analysis with CAR63 and CAR42

This table shows eight ordinary least square (OLS) regression models. The dependent variable in model (1) to model (4) is the CAR63 (cumulative abnormal return from 63-trading days prior the acquisition announcement to the announcement day). The dependent variable for model (5) to model (8) is the CAR42 (cumulative abnormal return from 42-trading days prior the acquisition announcement to the announcement day). The other variables are calculated as explained in section 2.3. All dummies are equal to one if the acquisition occurred in the respective year e.g. *Y2007_dummy* is one in 2007. Coefficients denoted with ***, ** or *, are significant at the 1%, 5% or 10% level, respectively.

	CAR63				CAR42			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TOBINS_Q	-0.05566	-0.05636	-0.05331	-0.05530	-0.03598	-0.03670	-0.03353	-0.03589
	-3.82***	-3.88***	-3.69***	-3.79***	-2.74***	-2.80***	-2.57***	-2.72***
EBITDA_margin	-0.00006	-0.00006	-0.00007	-0.00006	-0.00004	-0.00004	-0.00005	-0.00004
	-1.28	-1.23	-1.42	-1.11	-0.96	-0.89	-1.12	-0.88
Debt/MV_of_Eq+D	0.12166	0.13115	0.13186	0.12224	0.14803	0.15783	0.15973	0.14825
	1.81*	1.96**	1.98**	1.82*	2.44**	2.61***	2.66***	2.44**
Debt/BV_of_Eq+D	-0.07111	-0.07463	-0.07922	-0.07063	-0.01448	-0.01812	-0.02288	-0.01429
	-2.06**	-2.17**	-2.31**	-2.04**	-0.46	-0.58	-0.74	-0.46
Ofcf/BV_of_Assets	-0.30706	-0.30117	-0.31815	-0.30733	-0.31333	-0.30724	-0.32319	-0.31271
	-3.74***	-3.68***	-3.88***	-3.73***	-4.23***	-4.16***	-4.37***	-4.21***
MB_ratio	0.00020	0.00020	0.00019	0.00020	0.00015	0.00014	0.00014	0.00015
	1.40	1.38	1.35	1.40	1.14	1.12	1.08	1.14
Cash/Assets	0.25992	0.24114	0.23318	0.26408	0.31343	0.29400	0.28433	0.31553
	2.87***	2.66***	2.58***	2.90***	3.83***	3.60***	3.49***	3.83***
LIBOR	-0.00024	0.01072	0.00366	0.00134	-0.00431	0.00702	-0.00100	-0.00442
	-0.05	1.58	0.68	0.23	-0.93	1.14	-0.21	-0.83
Log_size	-0.00829	-0.00836	-0.00647	-0.00814	-0.00954	-0.00960	-0.00792	-0.00954
	-1.16	-1.18	-0.91	-1.14	-1.48	-1.50	-1.24	-1.48
PE_dummy	-0.15643	-0.15428	-0.15440	-0.15648	-0.14317	-0.14095	-0.14180	-0.14350
	-4.71***	-4.66***	-4.68***	-4.70***	-4.78***	-4.72***	-4.77***	-4.77***
Private_str_dummy	-0.13858	-0.13414	-0.13821	-0.13775	-0.11815	-0.11355	-0.11692	-0.11824
	-4.89***	-4.73***	-4.90***	-4.84***	-4.62***	-4.44***	-4.60***	-4.60***
Y2008-2015_dummy		0.08151				0.08426		
		2.44**				2.80***		
Y2007_dummy			-0.06076				-0.04380	
			-1.33				-1.06	
Y2008_dummy			0.09083				0.09846	
			1.91*				2.30**	
Y2009_dummy			0.24708				0.25036	
			3.48***				3.92***	
Y2010_dummy				0.03651				0.00330
				0.69				0.07
Y2011_dummy				-0.00538				-0.01163
				-0.09				-0.22
Y2012_dummy				0.03178				0.00479
				0.47				0.08
Constant	0.52332	0.46161	0.49338	0.51299	0.45222	0.38843	0.42299	0.45231
	10.24***	8.11***	9.63***	9.53***	9.80***	7.57***	9.16***	9.30***
Adjusted_R ²	0.08340	0.08830	0.09790	0.08110	0.08870	0.09540	0.10700	0.08580
Observation	935	935	935	935	935	935	935	935

Interestingly, as can be seen in table 3, the *EBITDA_margin* is statistically insignificant for all models. Neither with the CAR63 or with the CAR42 investor seem to react much differently to a higher or lower EBITDA margin. Different to what was expected, the *Ofcf/BV_to_Assets* variable provides statistically significant evidence that a high operating free cash flow leads to a reduction in the premium paid (all models significant at the 1% level).

The *Cash/Asset* variable also shows interesting results. All models return statistically significant results at the 1% level. For model (1) the coefficient is 0.25992 meaning that acquirers pay a 25.99% higher premium. That a high level of cash attracts acquirer and makes them pay high premiums is also found by other research studies (e.g. Gorbenko et al., 2014 and Fidrmuc et al., 2012). The *adjusted_R²* in table 3 is in all models above 8.00%, and is the highest in model (7) with 10.70%.

Results in table 4

As can be seen in table 4 the *PE_dummy* and the *Private_str._dummy* are statistically significant at the 1% level for all eight models. This leads to the conclusion that the premium paid by a private company (no matter if operating investor or private equity fund) is different from the premium paid by a public company even when calculating “normal” 3-days and 63-days premium without any adjustments. The premium paid by a private equity fund is again lower than the premium paid by a private operating investor in all eight models. Including the dummy variable *Y2008-2015_dummy* again reveals that the financial crisis had an impact on the premium paid. The dummy is significant at the 1% level and has a coefficient of 0.11938.

Looking at *TOBINS_Q* in table 4 the results are similar as in table 3. For all models, the coefficients are negative confirming that an increase in Tobin’s q leads to a lower premium paid by an acquirer.

Also as in table 3 all models return that the *EBITDA_margin* is statistically not significant. Proving further that investors do not pay high attention to a targets EBITDA margin when determining what premium to pay. Interesting results are found when looking at the *Ofcf/BV_to_Assets* variable. When regressing it on the DP3 the results are statistically insignificant. This is different to the significant results found when using the CAR63, CAR42 or the DP63 as the dependent variable. It should be noted that the coefficients for *Ofcf/BV_to_Assets* within the DP3 models are all negative. This is also found in the other models.

Table 4
Multiple regression analysis with DP3 and DP63

This table shows eight ordinary least square (OLS) regression models. The dependent variable in model (1) to model (4) is the DP3 (normal return from 3-trading days prior the acquisition announcement to the announcement day). The dependent variable for model (5) to model (8) is the DP63 (normal return from 63-trading days prior the acquisition announcement to the announcement day). The other variables are calculated as explained in section 2.3. All dummies are equal to one if the acquisition occurred in the respective year e.g. *Y2007_dummy* is one in 2007. Coefficients denoted with ***, ** or *, are significant at the 1%, 5% or 10% level, respectively.

	DP3				DP63			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TOBINS_Q	-0.02969	-0.03071	-0.02851	-0.02944	-0.04062	-0.04183	-0.03917	-0.04129
	-2.57***	-2.69***	-2.47***	-2.55***	-2.23**	-2.31**	-2.16**	-2.28**
EBITDA_margin	-0.00003	-0.00002	-0.00003	-0.00003	-0.00008	-0.00008	-0.00009	-0.00010
	-0.72	-0.62	-0.81	-0.62	-1.31	-1.23	-1.38	-1.48
Debt/MV_of_Eq+D	0.03003	0.01613	0.02371	0.03014	0.19380	0.21023	0.20147	0.19044
	-0.56	-0.31	-0.45	-0.57	2.31**	2.52***	2.40**	2.28**
Debt/BV_of_Eq+D	-0.03992	-0.04508	-0.04357	-0.04043	-0.04197	-0.04807	-0.04546	-0.04225
	-1.46	-1.66*	-1.59	-1.48	-0.97	-1.12	-1.05	-0.98
Ofcf/BV_of_Assets	-0.09310	-0.08448	-0.09369	-0.09786	-0.28095	-0.27075	-0.27274	-0.29060
	-1.43	-1.31	-1.43	-1.50	-2.74***	-2.65***	-2.65***	-2.84***
MB_ratio	-0.00001	-0.00002	-0.00002	-0.00001	0.00016	0.00016	0.00015	0.00016
	-0.13	-0.18	-0.19	-0.11	0.92	0.88	0.82	0.91
Cash/Assets	0.15869	0.13117	0.14161	0.15217	0.40152	0.36899	0.37371	0.38716
	2.21**	1.84*	1.97**	2.11*	3.55***	3.27***	3.3***	3.42***
LIBOR	-0.01262	0.00343	-0.01152	-0.00913	-0.01381	0.00516	-0.01238	-0.00487
	-3.11***	0.64	-2.69***	-1.96**	-2.16**	0.61	-1.84*	-0.67
Log_size	-0.00586	-0.00596	-0.00525	-0.00567	0.00089	0.00077	0.00172	0.00231
	-1.04	-1.07	-0.93	-1.00	0.10	0.09	0.19	0.26
PE_dummy	-0.12568	-0.12253	-0.12577	-0.12319	-0.19227	-0.18854	-0.19309	-0.19022
	-4.77***	-4.7***	-4.78***	-4.67***	-4.64***	-4.57***	-4.66***	-4.60***
Private_str_dummy	-0.09803	-0.09152	-0.09662	-0.09601	-0.14071	-0.13302	-0.13828	-0.13466
	-4.36***	-4.1***	-4.29***	-4.26***	-3.97***	-3.77***	-3.91***	-3.81***
Y2008-2015_dummy		0.11938				0.14112		
		4.54***				3.39***		
Y2007_dummy			-0.01403				-0.03637	
			-0.38				-0.63	
Y2008_dummy			0.06916				0.14268	
			1.83*				2.40**	
Y2009_dummy			0.11307				0.13250	
			2.00**				1.49	
Y2010_dummy				0.03257				0.18786
				0.77				2.84***
Y2011_dummy				0.07103				0.13158
				1.54				1.82*
Y2012_dummy				0.03814				-0.02198
				0.71				-0.26
Constant	0.37472	0.28435	0.36112	0.35592	0.54780	0.44097	0.52829	0.49783
	9.24***	6.35***	8.83***	8.34***	8.58***	6.22***	8.21***	7.45***
Adjusted R ²	0.06760	0.08700	0.07210	0.06750	0.06860	0.07910	0.07420	0.07620
Observation	935	935	935	935	935	935	935	935

Furthermore, having significant results at the 1% level in all DP63 models it can be concluded that an increase in the operating free cash flow has negative impact on the premium paid. Different to what was found in table 3 the independent variable *LIBOR* is significant in five out of the eight models in table 4. In model (1) in table 4 the *LIBOR* coefficient is -0.01262 implying that an increase in the LIBOR leads to a 1.26% reduction in the acquisition premium paid. This is consistent with the research found by, for example at al. (2013) and Demiroglu et al. (2010)

(mentioned already in section 2.3) who find especially for the private equity investor's that they increase their acquisition activity in a time of low interest rates. This means that during periods of high interest rates private equity investors decrease acquisition activity which leads to lower acquisition premiums due to lower demand. The adjusted R²'s for all the models (apart from model (2) which has an adjusted R² of 8.70%) are lower than any model in the previously discussed results (table 3). Which indicates that it is advisable to take abnormal returns instead of non-adjusted "normal" returns as dependent variables. This will result in better fitted models. Additionally, to the presented results in this section I perform robustness checks (appendix 4 to appendix 7) to strengthen the results. I use a winsorized regression (Wilcox, 2009) and thereby follow for example, Huang (2009) and Minton, Schrand and Walther (2002) by winsorizing at the 1st and 99th percentile. Furthermore, I perform a quantile regression, using the 50th quantile. The method was first developed by Koenker and Bassett (1978). By using the quantile regression as a robustness check of the results I follow Barger et al. (2008). Overall, the robustness checks confirm the previously described results.

5. Discussion

In section „2.3 What is the investor paying for?“ I developed seven hypotheses based on an extensive literature review. These hypotheses were further investigated in chapter “4. Results”. The aim of this section is to relate the findings of the performed regressions in chapter four to the hypotheses and to decide if a hypothesis is to be confirmed, contradicted or if there is no statement possible due to the insignificance of the variable in the performed regression models.

Hypothesis 1: A high operating cash flow of the target leads to a high premium paid by the acquirer.

The performed regressions provide a pretty clear statement regarding the operating free cash flow of the target. For CAR63 and CAR42 all performed regression contradict the hypothesis with strong significance. For the DP3 there is no significance in the results. For DP63 all but the quantile regression (robustness check) provide proof, with a significance level of 1%, for contradicting the hypothesis. The results are interesting and mean that an acquirer pays a lower

premium for a company with high cash flows. Furthermore, the findings from Barger et al. (2008), who find that private equity investors acquire targets with higher cash flows compared to the targets pursued by public strategic acquirers, were confirmed. Private equity investors however, acquire targets with a higher operating cash flow than public strategic investors do, as can be seen in table 2. This strengthens the results found by researchers who argue that private equity investors can create value by reducing the agency cost of free cash flow.

Hypothesis 2: A low market to book value of the target explains a high acquisition premium paid

For the TOBINS_Q there is a clear statement possible for CAR63, CAR42, DP3 and DP63. The hypothesis can be confirmed. For the market-to-book ratio there were mostly not significant results found, which means there is no clear statement possible. However, the strong results for the TOBINS_Q lead to the overall conclusion that the hypothesis can be confirmed. Additionally, the results from table 2 show that private equity investors acquire targets with a lower TOBINS_Q and market-to-book ratio than the public strategic investors.

Hypothesis 3: A low debt-to-capital ratio of the target explains a high acquisition premium paid

This hypothesis can only be confirmed with limitations. The *Debt/BV_of_Eq+D* variable confirms the hypothesis for CAR63. For CAR42 there is no significance in the results. The *Debt/MV_of_Eq+D* uses, as explained, the market value of equity instead of the book value of equity as the *Debt/BV_of_Eq+D* does. According to the results provided by *Debt/MV_of_Eq+D* the hypothesis needs to be contradicted for CAR63, CAR42 and DP63 with significant results. DP3 is insignificant. However, the nature of the variable is such that, if the market value of equity is relatively low, it is more likely that the premium paid is higher than if the market value of equity is already high. A low market value of equity increases the level of debt in this variable and likely also the premium paid. Therefore, the variable could be more driven by the market value of equity than the level of debt. As such, I relate more weight to the variable *Debt/BV_of_Eq+D* to answer if this hypothesis can be confirmed. It follows, that the hypothesis can only be confirmed without limitation for CAR63.

Private equity investors acquire targets with a higher level of debt than public strategic investor do. A reason for this is provided by Ivashina et al. (2011) who argues that private equity investors get more favourable loan terms than public strategic investors get and therefore can create some value.

Hypothesis 4: A high level of cash on the balance sheet explains a high acquisition premium paid by the acquirer

A high level of cash on the balance sheet definitely increases the acquisition premium paid. This is confirmed by all main regressions for CAR63, CAR42, DP3 and DP63 with mostly statistically significance at the 1% level. The hypothesis can therefore be confirmed. Additionally, table 2 shows that public strategic acquirer takeover targets with a higher level of cash than private equity investor do. Manager who don't want that there company gets acquired by an investor should therefore keep the level of cash on the balance sheet as low as possible.

Hypothesis 5: A high EBITDA margin explains a high acquisition premium paid by the acquirer

The main regressions for this hypothesis provided no significant results. Only for both robustness checks the results are significant (for all four ways of premium calculated), but the coefficients are only slightly different from zero. Since the coefficients from the robustness checks are negative the hypothesis needs to be contradicted. However, as said, the coefficients are so small negative that an increase in the EBITDA margin will only decrease the premium paid slightly.

The EBITDA margin of the targets acquired by private equity investors is much higher than the margin of the targets acquired by public strategic investors (as can be seen in table 2).

Hypothesis 6: An acquirer pays a higher premium when the interest rates in the economy are low

In order to investigate this hypothesis the LIBOR was used. For the main regression with the premium calculated with CAR63 and CAR42 there are only insignificant results. Using the robustness check the outcome changes in the way that there is some significance providing evidence that the premium paid decreases when the LIBOR increases (also the coefficients are

only slightly below zero). For the premium calculated with DP3 and DP63 there is some evidence in the main models and in the robustness checks that an increase in the LIBOR decreases the premium paid. Overall it can be concluded that the premium paid is lower when the interest rates in the economy (here measured as LIBOR) are high. The hypothesis is therefore confirmed. This findings also provide more evidence to research like Axelson et al. (2013) who find that private equity investors pay a higher premium when debt is cheap (interests are low).

Hypothesis 7: An acquirer pays a higher premium when the target is larger

The variable *log_size* was regressed to investigate this hypothesis. For all main models with CAR63, CAR42, DP3 and DP63 the results are insignificant. Therefore this hypothesis cannot be confirmed or contradicted.

Table 2 provides information about who is acquiring larger companies. Public strategic investors acquire targets which are much larger than the companies acquired by private equity investors. As already mentioned when the regression results were presented, all models find that the financial crisis in 2008 had an impact on the acquisition premium paid. The premium paid in the time from 2008 until 2015 are higher than the one paid before 2008.

Table 11
Overview of expected and realised Signs

This table shows the expected and realised sign of the coefficients of the explanatory variables. The expected sign therefore incorporates the stated hypothesis whereas the realised sign incorporates the result of the regression analyses. Signs in the “Realised sign” column denoted with ***, ** or *, indicate the significance level of the results at the 1%, 5% or 10% level, respectively.

Variable	Expected sign	Realised sign
Operating free cash flow	+	- (***)
Market-to-book ratio	-	Not significant
Tobin’s q	-	- (***, for DP63 **)
Debt-to-capital ratio (Market value of equity)	-	+ (CAR63 **, CAR42 mainly ***, DP3 insignificant, DP63 mainly **)
Debt-to-capital ratio (Book value of equity)	-	- (CAR63 **, CAR42 insignificant, DP3 and DP63 insignificant in the main reg.)
Level of cash	+	+ (mostly *** in all regressions)
EBITDA margin	+	- (Insignificant in main regressions, mainly ** in robustness checks)
Interest rates in the economy	-	- (Insignificant in CAR63 and CAR42, mainly ** in DP3 and DP63 in robustness check)
Size of the target	+	Mainly not significant

6. Concluding remarks

6.1 Limitations of the presented research

The first limitation of the presented research lies in the used data sample. All acquisitions investigated here are done with public listed companies as a target. However, obviously there are plenty of acquisitions done where the target is a private company. As Kaplan et al. (2009) estimates, of the transactions done between 1970 and 2007 by private equity firms, only 27% are public-to-private transactions (which are mostly used in this data sample). Additionally, as Officer (2007) find and Cooney, Moeller and Stegemoller (2009) acknowledges, private companies are valued at a discount compared to public companies (liquidity discount). This could mean that the results found in this work could change when using a sample of private acquisitions. Another limitation is that this research only investigates successful and completed transactions, so there is some selection bias.

Additionally, in this research are only independent variables included which describe characteristics of the targets. Including characteristics from the acquirer like the size of the private equity fund or, for the public acquire the stakes hold in the company by the management (insider ownership) could possibly increase the discoveries made in this research. However, due to the limited information available, which is especially because the data are about the European market, this information's could not be included and investigated.

6.2 Conclusion

The research done by Bargeron et al. (2008) where they use transactions from the United States to investigate the premium difference paid between public strategic investors and private equity investors showed clear results. Private equity investors pay a lower premium in their investigated data. The here presented research uses transactions where the target is located in Europe. The overall result is similar to the one found by Bargeron et al. (2008), private equity investors pay a lower premium compared to public strategic investors. More specifically, a target shareholder who gets and offer for its shares, gets on average a 64.49% higher price (median 47.21% higher) if the offer comes from a public strategic investor compared to a

private equity fund (using the CAR63). The argument that the strategic acquirer can gain synergies and is therefore paying a higher price is not a sufficient explanation. This is due to the fact that I found that private strategic investors are not paying an as high premium as public strategic investor do (35.51% lower on average when measured with CAR63).

Acquirers pay a much higher premium when the level of cash on the balance sheet is high. For managers who do not want to get acquired by an investor this finding makes the clear suggestion to keep the level of cash on the balance sheet as low as possible. A further interesting finding is that private equity investors are acquiring companies with a much lower TOBINS_Q than public strategic investor do. What is more, the EBITDA margin does not look to play a major role when determining the premium paid. Also, private equity investors acquire targets with a much higher EBITDA margin than public strategic investors do. Future research could investigate the reasons for this in more detail. The next section will present further avenues for future research.

6.3 Avenues for further research

Also the presented research covers multiple fields within acquisition research and reasons for why acquirers pay a higher premium, further research can bring even more interesting results. The section “6.1 Limitations of the presented research” touch already on some avenues for further studies. Investigating if the results are changing when one looks at private acquisitions instead of only public transaction could at least strengthen the here presented results but might also lead to new interesting findings.

What is more, there may be variables which could be relevant in explaining even more what makes an acquirer (either public or private investor) pay a lower or higher premium. It would also be interesting to know what makes a shareholder sell its company to a private equity fund instead of to a public strategic company where he can get likely a higher premium.

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