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# Market reactions to acquisition announcements in the United States: The effects of private equity backing of acquirers

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# ABSTRACT

Changes in stock prices and trading volumes are common measures of market reactions that can occur following an acquisition announcement. Receiving private equity (PE) funding, known as PE backing, is associated with operational gains, improved efficiency but also superior acquisition performance. Whether market reactions are different for acquiring firms with and without PE backing, is the topic that this thesis tries to assess. Using a sample of publicly listed acquirers, I study whether PE backing has an effect on market reactions to acquisition announcements, measured by cumulative abnormal returns (CAR) and abnormal trading volume (ATV). I employ two Ordinary Least Squares (OLS) regression models to analyze CAR and ATV over a 10-day window around the announcement date. I use a dataset of 3488 acquisitions announced between January 2010 and December 2023 by acquirers listed on the New York Stock Exchange or NASDAQ. The results of my empirical analysis indicate that PE backed acquisitions are associated with significant negative CAR, implying market concerns over acquisitions made by firms with previous PE involvement. The second part of the analysis shows that PE backing has no effect on market reactions measured by ATV. These findings suggest that while PE backing explains some variation in acquirer's returns around acquisition announcements, it does not explain trading activity.



**Keywords:** Private Equity, Acquisitions, Market Reactions

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# CHAPTER 1 Introduction

In July 2015, Coty, a multinational beauty company, announced the acquisition of Procter & Gamble's 43 beauty brands, for a record-setting price in the beauty industry of nearly $13 billion. Prior to the announcement, in 2011, private equity firms, namely Berkshire Partners, and Rhone, had invested in Coty (Van Aalten, 2011). The highly anticipated acquisition deal, which was intended to double the size of Coty and make it one of the world's largest beauty companies, has been met with a positive market response. Just days after the acquisition announcement, the stock price of Coty rose by more than 3% (Debter, 2015). A different scenario unfolded after the announcement of an acquisition of Hess, an oil producer, by Chevron, a world-leading energy corporation, in October 2023. Chevron, who wanted to capitalise on Guyana oil reserves after their primary competitor Exxon Mobil discovered them first, decided to acquire Hess for $53 billion, and strengthen its position in the oil race. Despite the promising outlook, the days following the announcement were not bright for Chevron as their stock price fell by 3.7% (Forbes Magazine, 2023). Here, it is important to note that Chevron has not been funded by private equity firms, and is mainly owned by institutional investors, around 70% of shares (Yahoo! Finance, 2024). These two different outcomes point out that market responses to acquisition announcements may be attributed to different ownership structures. Therefore, this thesis tries to assess whether there is an underlying relationship between private equity (PE) backing of acquirers and market reactions following an acquisition announcement. PE backing occurs when a PE firm invests in, and therefore owns a stake in a company. In this analysis, the focus is put on PE backing of companies that later become acquirers in M&A transactions. Market reactions refer to the response of financial markets to new information often coming after corporate announcements or regulatory changes. These reactions can be measured in various ways e.g. by changes in stock prices, trading volumes, or volatility. In this analysis I focus on reactions that occur around acquisition announcements, measured with changes in stock prices and trading volumes.

Researchers have already dedicated significant efforts to unveil the complexities of PE backed acquisitions. Humphery-Jenner et al. (2016) stated that investors react positively to PE backed acquirers' deals, and their stock prices increase upon deal announcements, which perfectly matches the Coty example above. The results of Humphery-Jenner's research were derived using a regression analysis for a sample of 4452 deals between 1996 and 2008, with acquirers from 37 countries. They found that PE backing of an acquirer signals deal quality because PE firms usually have well developed networks, and therefore, the market tends to be optimistic about the transactions they are involved in. They claimed results as robust because of clustering by acquirers, and inclusion of various control variables.

Other researchers such as Kellner (2024) and Shah & Arora (2014) chose to study stock price reactions to M&A announcements but in the context of the European Union and the Asia-Pacific region. On the other hand, there is also research that tried to narrow down the sample to single countries or stock exchanges.

For example, Elad & Bongbee (2017) conducted their analysis for acquirers publicly traded on the London Stock Exchange. Therefore, while most studies focus on cross-border acquisitions, either entirely internationally or within certain regions like the EU or Asia-Pacific, there have been fewer attempts to evaluate market reactions in singular markets. The existing research seems to lack a thorough evaluation of market reactions to acquisition announcements in the context of the United States. The US context is important because it is the largest M&A market in the world in terms of deal volume, with 44% of all global M&A deals in 2022. (Dealogic, 2022).

This research tries to establish a relationship between PE-backing and market reactions only for the buy side, the acquirer, in the acquisition transaction. Therefore, the PE-backing or any other characteristics of the target companies are of no interest in this study. The market reactions only measure the changes regarding the stocks of the acquiring companies. The market reaction outcomes of the target companies are not measured or evaluated in this thesis. Therefore, considering the lack of studies about US based acquirers, the large size of the US M&A market, and the sole focus on the buyside in acquisition transactions, the research question that this study tries to answer is:

Does private equity backing of an acquirer affect market reactions to acquisition announcements in the United States?

In this thesis, I use data from LSEG Workspace consisting of acquisition deals by PE-backed and non-PE-backed publicly traded companies listed on US-based stock exchanges: New York Stock Exchange (NYSE), and National Association of Securities Dealers Automated Quotations (NASDAQ) between 2010 and 2023. I require that a deal is completed, for 100 percent ownership. In the analysis, PE-backing data is used to create the categorical dummy independent variable, which equals 1 if a PE firm has equity ownership stake in the acquiring firm, and 0 if it does not. I establish two OLS regression models to quantify the impact of PE-backing on market reactions which are explained by two proxies, cumulative abnormal returns (CAR), and abnormal trading volume (ATV).

I introduce ATV as the dependent variable in the second regression model because changes in trading activity around the announcement date can, as accurately as stock price changes, quantify market reactions and show reliable results. Secondly, ATV has not been used as a proxy for market reactions in previous literature when measuring the market reactions to acquisition announcements so creating a model that includes it can contribute to academic literature and provide new insights into acquisition market reactions.

In the first part of the study, I model the relationship between PE-backing and CAR of the acquirer calculated from stock price changes within the event window of 5 trading days prior to 5 trading days after an acquisition announcement. In the second part of the study, I model the relationship between PE-backing

and ATV over the same window as CAR. In both parts, I control for potential influencing deal-specific and acquirer-specific factors, and macroeconomic conditions, that may explain variations in market reactions.

In this thesis, I aim to reassess the relationship between PE backing of an acquirer and market reactions to acquisition announcements. Thus, I investigate the following hypotheses:

Hypothesis 1:

- $H_0$: Private equity backing of an acquirer has no effect on market reactions to acquisition announcements as measured by cumulative abnormal return
- $H_1$: Private equity backing of an acquirer has an effect on market reactions to acquisition announcements as measured by cumulative abnormal return

Hypothesis 2:

- $H_0$: Private equity backing of an acquirer has no effect on market reactions to acquisition announcements as measured by abnormal trading volume
- $H_1$: Private equity backing of an acquirer has an effect on market reactions to acquisition announcements as measured by abnormal trading volume

Considering the size of the US M&A market which accounts for nearly half of all global transactions, I anticipate finding results similar to previous research that has proven that PE backing of acquirers leads to favorable market reactions in bigger M&A markets as studied by Humphery-Jenner et al. (2016) or Kellner (2024). Therefore, I expect to find:

1. A positive effect of PE backing on cumulative abnormal returns of the acquirer following an acquisition announcement, and
2. A positive effect of PE backing on the abnormal trading volume of the acquirer's stock following an acquisition announcement.

Contrary to what I hypothesize, empirical results show a negative effect of PE backing of an acquirer on market reaction measured by CAR. Therefore, PE backing negatively influences acquirer's announcement returns. The second finding is that PE backing has no effect on ATV, which means that trading volume changes cannot be explained by previous PE involvement in the acquiring company.

The remainder of this paper is structured as follows. Section 2 provides a discussion about previous studies that explored PE backing and market reactions. Section 3 explains the sample, data collection process and provides descriptive statistics. Section 4 discusses the methodology. Section 5 includes the results of the empirical analysis used to test the hypotheses. Section 6 discusses how the findings relate to previous studies, potential limitations, and suggestions for future research. Lastly, section 7 gives a brief conclusion. Appendix includes an additional table.

# CHAPTER 2 Theoretical Framework

This section explores previous literature about the impact of PE backing of acquirers on market reactions following an acquisition announcement. These studies provide a foundation to hypothesize and develop theories about PE involvement and market outcomes. Firstly, I review the existing literature on PE backing and market reactions separately, and later the studies that have combined the influence of PE backing on market reactions.

## 2.1 Private Equity (PE) Backing of Acquirers – Previous Literature

Previous literature has strongly highlighted the operational benefits of PE involvement. PE firms usually provide capital for restructuring which helps to promote efficiency and sets PE backed companies in an advantageous position to non-PE backed firms (Peacock and Cooper, 2000). There is also evidence of how beneficial PE investments are for improved governance, and strategic direction, that lead to value creation (Kaplan and Strömberg, 2009). Before the initial round of PE funding, firms usually show lower productivity growth driven by differences between inputs and output, but it changes once they receive funds and the added value provided by PE investors leads to a significant productivity growth (Croce & Martí, 2014). Others have highlighted the role of PE in improving innovation and strategic alignment within acquired firms, leading to improved long-term performance (Bruton et al., 2009). It is clear that PE funding does not only provide short term benefits such as improved efficiency or governance but has a lasting impact on the firm's financial performance (Levis, 2011). Firms backed by PE experience higher financial reporting quality, measured by the timeliness of loss recognition, because the investors bring improved governance (Beuselinck et al., 2009). However, PE involvement may not only be beneficial for the individual firms that receive the funding, but the industry as a whole also indirectly benefits. It has been proven that industries with PE investments grow quicker in terms of productivity and employment (Bernstein et al., 2010).

The benefits of PE backing do not only consider operational gains. Hammer et al (2021) research has been very transformative in understanding the role of PE involvement. Using difference-in-difference estimates, they observed a phenomenon that PE-backed acquirers show greater execution and speed in acquisitions that result in improved valuations and margins. It is now known as the "parenting advantage" of PE backed firms. Not only is PE involvement beneficial in acquisition deals, PE-backed IPOs also outperform non-PE-backed IPOs in the long run (Levis, 2011). Looking at value creation in mergers through buy-and-build strategies, which is a situation when PE firms acquire a platform and then make add-on acquisitions, PE backing in these transactions tends to enhance efficiency and profitability (Borell and Heger, 2013). Interestingly, companies do not have to already perform well to benefit from PE funding as managers usually seek PE investments when their firm is financially constrained, and if they successfully obtain

funding, the firms later deals tend to perform better compared to e.g. management buyouts (Fidrmuc et al., 2009).

Critically, these previous studies underline the superiority of PE backed firms in comparison to non-PE backed firms within the area of M&A, all highlighting the strategic and operational improvements brought by PE involvement that lead to improved long-term performance. This suggest that investors should rather have a positive attitude towards PE backed firms that announce an acquisition. Therefore, it is plausible for me to hypothesize that in my analysis, PE backed acquirers will exhibit higher positive market reactions than non-PE backed firms.

### 2.2 Market Reactions to Acquisition Announcements – Previous Literature

In previous studies, market reactions to acquisition announcement shave usually been measured by changes in the stock prices. In the short term, over a 10-day event window, CAR are usually significant and positive after an acquisition announcement, and this positive reaction has been attributed to anticipated synergies and strategic advantages of acquisitions (Elad and Bongbee, 2017). Market reaction can also be analyzed in an industry context, but it does not change the results in the short term as positive abnormal returns after M&A announcements have been found in the pharmaceutical industry. However, in the long-term the results depend on deal specific characteristics such as integration success and the absence of straightforward long-run results can be justified by the fact that initial market optimism may not always translate into long-term gains (Arora and Shah, 2014). Market reactions have also been analyzed with a focus on the strategic fit between the acquirer and target. In the software industry in the US, the market values strategic compatibility between the firms as acquisitions with high strategic fit had resulted in higher CAR. The acquirers benefit from better bargaining positions when their strategic fit is aligned with that of the target and can enhance their market value (Laamanen et al, 2014). When examining a larger EU market, strong positive CAR reactions for target firms, but little reaction for acquiring firms have been found. The strongest reaction is visible for merger transactions and the weakest for partial acquisitions (Kellner, 2024). Systematic changes also affect market reactions. Merger announcements under different economic conditions: strong economy or weak economy, yield different results. Those announced during the weak economy periods tend to have weaker 3-year post merger performance than those announced in the strong economy periods (Kilpi, 2020). Similar global market reactions to M&A activity and the value generated from these deals can be seen when comparing emerging and developed markets. Both target's and acquirer's 3-day CAR are higher in developed markets due to expectations of improved market efficiency and investor perceptions (Yılmaz and Tanyeri, 2016).

These studies explore the market reactions to acquisition announcements in different contexts using CAR and event study methodologies, consistently finding positive market reactions. The results of these studies

confirm that after acquisition announcements the investors usually act positively, therefore I can hypothesize to find positive short term market reactions measured by CAR.

While it is clear that most studies have employed CAR to analyze market reactions, there have been few attempts to quantify the reactions using changes in trading volumes of acquirer's or target's stock. While analyzing trading volumes it is important to consider insider trading. Half of the market reaction to M&A announcements measured by trading volume begins to occur before any public announcements are made. This pre-announcement trading happens due to insider information. The remaining market reaction takes place the day of the announcement and the market reaction is complete the day after (Keown & Pinkerton, 1981). The existing research on the trading volume reaction is not consistent. Draper and Paudyal (1999) claim that there is no change in the trading volume of the bidding firm's shares prior to the day of announcement. Then, a sharp increase is visible on the announcement day, and a slow decrease is observed until four days after. They have combined the increase in trading with a decline in share price and proposed the possibility of sell side pressure on the shares of the bidding firms (Draper & Paudyal, 1999). The trading activity of the target stock is the highest prior to announcements but ownership changes do not explain it, therefore it can again be tied to insider trading (Fich et al., 2018). Rapid short selling of acquirer's shares is said to occur prior to the public M&A announcement. Traders often obtain non-public information before a public announcement and with this informational advantage, they usually take simultaneous positions in the target and acquirer, going long on the target's shares, and short on the acquirer's shares (Dai et al., 2010).

Building on these studies, I hypothesize to find a positive abnormal trading volume reaction following an acquisition announcement. Although there is no universal response in the studies above, I suppose that if there is a sharp increase in trading volume on the announcement day (Draper and Paudyal, 1999), and this increase is not followed by a decline of the same magnitude, I can expect positive ATV. Similarly, it appears that short selling of acquirer's stock occurs before the announcement (Dai et al., 2010), and therefore, after the announcement traders usually switch positions and go long on the acquirers stock, which might create positive ATV.

### 2.3 Combined Influence of PE Backing and Market Reactions – Previous Literature

The research about the impact of PE backing on market reactions to M&A announcements is not extensive. In a sample of firms from 86 different countries, those under PE ownership that already have acquisition experience tend to make more add-on acquisitions than non-PE backed firms due to PE involvement's benefits such as improved deal negotiations, pricing and post-acquisition performance (Hammer et al, 2017). PE ownership of acquirers can be interpreted as a signal of deal quality in cross-border takeovers. PE-backed firms show higher announcement returns, with a stronger effect when targets operate in poor

information environments. This confirms that PE backing is viewed positively by investors due to anticipated good execution (Humphery-Jenner et al., 2016). PE-backed acquirers tend to take part in more transformative acquisitions that result in significant positive long-term stock returns unlike VC-backed acquirers. Additionally, PE-backed newly public firms undertake nearly three times more acquisitions than VC-backed firms and twice as many acquisitions as non-backed firms (Kaufmann et al., 2024). Acquirers without financial backing experience negative long-run returns from first-year acquisitions but acquirers with continued PE backing perform significantly better when making acquisitions within the first year after going public. On top of that, US PE-backed IPOs long-run aftermarket performance exceeds the negative long-run abnormal returns of non-backed IPOs (Matanova et al., 2022). There has only been one study conducted that combines trading volumes and stock price reactions for acquirers, but it considers PE backed targets. Post-announcement returns in Canada are said to typically be negative for high Tobin's q acquirers, stock transactions, and foreign targets, but positive for PE backed private targets (Cumming et al., 2011). The impact of PE acquisitions on the targets has also been studied. The target in PE acquisitions experience higher announcement returns than the targets in non-PE acquisitions, showing that operational and governance improvements brought by PE result in a positive market reaction (Chen et al., 2012). Acquisitions made by PE backed financial institutions perform better around the announcement date and have shown higher abnormal stock returns than acquisitions without PE backing. Additionally, the acquirer's stock returns post-acquisition show lower variability suggesting lower uncertainty surrounding the acquirer's stock value (Brodmann et al., 2021).

Previous research universally uses CAR as a proxy for market reactions when analyzing PE backed M&A, and consistently shows superiority of PE backed acquirers over non-PE backed ones. There seems to be consensus that PE backed transactions yield positive abnormal returns for acquirers. Based on these findings, I expect to find a positive effect of PE backing on market reactions measured by CAR. Despite no research about trading volume reactions to acquisitions by PE backed firms, I include ATV as a second proxy for market reactions. It has been shown that trading volume changes are an accurate measure of market reactions and can often show different results that stock price changes (Dai et al., 2010; Draper & Paudyal, 1999). Therefore, I introduce ATV as a new measure of market reactions after PE backed acquisitions and contribute to academic literature. I expect to find a positive effect of PE backing on market reaction measured by ATV based on the benefits brought to the acquirers by PE involvement (Hammer et al, 2021; Borell and Heger, 2013; Borell and Heger, 2013), and the trading behavior associated with acquisition announcements (Draper and Paudyal, 1999; Dai et al., 2010). Another way in which I contribute to the academic literature is through analyzing the market reactions to acquisitions made by acquirers listed on US based stock exchanges. Most studies consider cross border deals, or withing larger geographic areas, and there has not been enough research solely focusing on US based acquirers.

# CHAPTER 3 Data

### 3.1 Sample description

This study explores the impact of PE backing of the acquirer on the market reactions to acquisition announcements. Two models are employed to analyze this relationship. The first model examines the effect of PE backing on market reactions using cumulative abnormal returns (CAR). The second model uses abnormal trading volume (ATV) as a proxy for market reactions and assesses its relationship with PE backing. The sample for both models comes from the same observations to ensure that models consider the same set of acquirers.

The sample consists of publicly traded firms that announced an acquisition between January 1, 2010, and December 31, 2023. This data was obtained from LSEG Workspace database. For both models, the acquirers had to meet the following criteria:

- The acquirer is listed on the New York Stock Exchange (NYSE) or NASDAQ.
- The acquisition deal is completed.
- The dollar deal value of the acquisition is disclosed.
- The headquarters of the acquirer are in the United States.

The initial data collection process consisted of identifying companies that fulfilled these requirements within the period from January 1, 2010, to December 31, 2023. This filtering gave a preliminary dataset of 13332 acquirers that met the requirements.

Later, the data collection involved finding the CAR and ATV for the preliminary set of acquirers. For the first model, I obtained the CAR values from the Wharton Research Data Services (WRDS) U.S Daily Event Study tool. For the second model, I collected the acquirer's trading volumes data from The Center for Research in Security Prices (CRSP) accessed through the WRDS, and the stock exchange trading volumes from Yahoo Finance (Yahoo! Finance, ^NYA NYSE Composite historical data) (Yahoo! Finance, ^IXIC Nasdaq Composite historical data). Then, I matched the CAR and trading volumes datasets to the companies filtered from the LSEG Workspace database.

### 3.2 Variables

This section describes the variables used in the two models of this study. The primary focus is on the operationalization of the dependent and independent variables, and event windows for CAR and ATV.

Both models established in this study use a binary explanatory variable, PE backing. It is equal to 1 if a PE firm has equity ownership stake in the acquiring firm, and 0 if it does not. It is sourced from LSEG Workspace with 13332 observations. It measures the influence of PE backing of the acquirer on market reactions to acquisition announcements.

In the first model, the dependent variable is CAR. It measures the acquirer's stock price changes around the acquisition announcement, calculated using a market-adjusted model for a 10-day event window, from 5 trading days prior to 5 trading days after the acquisition announcement date. CAR is established in the Event Study tool in WRDS. The formula for abnormal return on any given day t is:

$$ARt = Rt - \alpha - \beta Rmt$$

Where:

- $ARt$ is the abnormal return on day t
- $Rt$ is the actual return of the stock on day t
- $Rmt$ is the return of the market portfolio on day t
- $\alpha$ and $\beta$ are the parameters estimated from a regression of the stock's returns on the market's returns during the estimation window

The CAR over the event window, from day $T_{-5}$ to day $T_5$, is a sum of the abnormal returns over the event window:

$$CAR(T_{-5,}T_5) = \sum_{t=T_{-5}}^{T_5} AR_t$$

The CAR values are estimated based on an estimation window of 210 trading days. The estimation period is the time before the event window. I obtained 5542 CAR observations that show market reactions to acquisition announcements. Positive CAR values indicate favorable market reactions, while negative CAR values indicate adverse reactions.

In the second model, the dependent variable is ATV that measures changes in the trading volumes of the acquirer's stock around the acquisition announcement. It is calculated over the same event window as CAR, from 5 trading days prior to 5 trading days after the acquisition announcement. To calculate the ATV, I used the following formulas:

$$Trading\ Volume\ Change_{Aquirer} = \frac{TV_{T+5} - TV_{T-5}}{TV_{T-5}}$$

Where:

- $TV_{T+5}$ is the trading volume of the acquirer's stock 5 days after the announcement.
- $TV_{T-5}$ the trading volume of the acquirer's stock 5 days before the announcement.

$$Trading\ Volume\ Change_{Benchmark} = \frac{BTV_{T+5} - BTV_{T-5}}{BTV_{T-5}}$$

Where:

- $BTV_{T+5}$ is the trading volume of the stock exchange on which the acquirer's stock is trading, 5 days after the acquisition announcement.
- $BTV_{T-5}$ is the trading volume of the stock exchange on which the acquirer's stock is trading, 5 days before the acquisition announcement.

$$ATV_{Aquirer} = Trading\ Volume\ Change_{Aquirer} - Trading\ Volume\ Change_{Benchmark}$$

The values for the trading volumes of acquirers' stocks are derived from CRSP and the trading volumes of the stock exchanges, benchmarks, they trade on: New York Stock Exchange and Nasdaq are derived from Yahoo Finance (Yahoo! Finance, ^NYA NYSE Composite historical data) (Yahoo! Finance, ^IXIC Nasdaq Composite historical data). I derived 11040 observations of ATV. The ATV shows changes in investor interest and trading behavior following an acquisition announcement. Positive ATV suggests higher investor activity and interest and indicates a positive market reaction whereas negative ATV implies a negative market reaction.

### 3.2 Control Variables

In each model I include a set of control variables chosen based on academic literature. Every control variable has a studied impact on the dependent variable and therefore needs to be included in one or both models to avoid omitted variable bias. The first 3 variables account for deal-specific characteristics and are obtained from LSEG Workspace database.

***Deal value.*** It controls for the size of the transaction. As found by Bhagat et al. (2011), deal value significantly negatively influences post announcement market reaction. Therefore, this variable is used in both models because it can impact CAR as well as ATV. This variable has 13332 observations.

***Number of bidders.*** Including how many bidders were interested in the acquisition transaction allows to isolate the impact of competition for the target. It has been proven that target industry takeover competition which means more bidders in an acquisition transaction, negatively affects the final bidder's announcement returns (Hussain and Loureiro, 2023). Similarly, as it has been found by Lund (2020) that greater pre-public competition among bidders leads to higher takeover premiums for targets and translates into lower market reactions for the winning bidders (Lund, 2020). The number of bidders is used as a control variable in both models. All deals must have at least one bidder if a transaction occurred so this variable has 13332 observations.

***Financing via Common Stock.*** This variable controls whether the method of payment is equity, through issuing stock, or not. If it is not common stock, it is a debt financed payment with cash. Al-Sabri et al. (2019) have shown that debt financing results in significantly higher returns in different multiday event

windows around the announcement day, whereas stock financing shows negative return. Additionally, in a study about the trading volume around M&A announcements, Jansen (2015) concluded that the method of payment acts as an important determinant of the volume reaction. Due to payment method's influence on both CAR and ATV, I include the Financing via Common Stock variable in both models. This variable has 13332 observations.

The next 5 control variables account for acquirer-specific characteristics and are obtained from LSEG Workspace database.

***Market value.*** This variable controls for firm size, specifically 4 weeks prior to announcement. Past market value of the acquirer has been shown to influence abnormal returns. The announcement returns for acquiring firm's shareholders are 2% higher for small acquirers irrespective of the form of financing (Moeller et al., 2004). Market value also impacts trading volume. Schneible and Stevens (2005) have shown that abnormal volume, independent of absolute price changes, decreases with firm size. This variable has 9619 observations.

***Cash flow.*** I include this variable because it can affect a firm's ability to finance acquisitions without external financing. Oler (2005) claims that high levels of acquirer cash can predict negative post-acquisition return, therefore, cash flow is only used in the model with CAR. This variable has 10811 observations.

***Intangible assets.*** This variable is only included in the second model testing the impact of PE backing on ATV. Increased asset intangibility, such as patents and trademarks, can result in better market reactions to M&A announcements (Bhattacharya and Li, 2019). This variable has 10700 observations.

***Net Assets.*** This variable is a measure of acquirer's net assets in the last 12 months, and it controls for acquirer's past financial performance. Humphery-Jenner et al. (2016) have shown that assets negatively and significantly influence acquirer's announcement returns. With 12369 observations, I include net assets in the first model with CAR.

***Net Income.*** This variable is measured 12 months prior to an acquisition announcement and is included in both models because acquirer's recent profitability, that can be measured by net income, has a positive effect on performance following an acquisition (Galavotti, 2018). Similarly, Humphery-Jenner et al. (2016) have shown that income has a significant positive effect on acquirer's announcement returns. This variable has 9690 observations.

***Total Assets.*** I include total assets in the last 12 months as one of the controls while modelling ATV. Chow et al. (2023) pointed out the importance of assessing the acquiring company's financial health and stability

to determine whether the merger or acquisition will produce the desired outcome, which can be interpreted as e.g. favorable market reaction. This variable has 12794 observations.

***Interest Rate and Inflation Rate.*** These variables account for macroeconomic factors that affect the cost of capital and investment returns. As proven by Kiymaz (2004), macroeconomic variables accounting for US economic conditions play a significant role in explaining acquirer's short-term post-acquisition gains. Market conditions such as inflation rate and interest rate have also been found to negatively influence the stock trading volume (Chege and Kirika,2021). Therefore, they are included in both models, and were obtained from Federal Reserve Bank of St. Louis (FRED, *Daily inflation tags*) (FRED, *Federal funds effective rate*). Interest rate has 13332 observations and inflation rate has 12924.

### 3.4 Descriptive Statistics

Table 1 shows the summary statistics for all variables included in the analysis: the dependent variables of the two models: CAR and ATV, the independent variable - PE backing, and the control variables.

Table 1. *Descriptive statistics*

| Variable | Mean | Std. dev. | Min | 25$^{th}$ percentile | Median | 75$^{th}$ percentile | Max |
|---|---|---|---|---|---|---|---|
| CAR | 0.012 | 0.129 | -1.821 | -0.039 | 0.007 | 0.055 | 3.871 |
| ATV | 27.11 | 1718.861 | -6.648 | -0.226 | 0.142 | 0.774 | 155710.6 |
| PE Backing | 0.104 | 0.306 | 0.0 | 0 | 0 | 0 | 1.0 |
| Deal Value (USD, mil) | 751.756 | 3459.378 | 0.001 | 28 | 105.1083 | 400 | 130298.3 |
| Number of Bidders | 1.005 | 0.076 | 1.0 | 1 | 1 | 1 | 3.0 |
| Common Stock Financing | 0.052 | 0.221 | 0.0 | 0 | 0 | 0 | 1.0 |
| Market Value (USD, mil) | 246342.5 | 8750785 | .002 | 462.091 | 1722.304 | 6667.193 | 610000000 |
| Cash Flow (USD, mil) | 1179.794 | 5399.607 | -353634 | 32.428 | 151.829 | 615.8 | 91616 |
| Intangible Assets (USD, mil) | 3090.984 | 10962.23 | -282.473 | 54.57 | 310.409 | 1698.976 | 223473 |
| Net Assets (USD, mil) | 4361.851 | 15863.57 | -9658 | 217.867 | 708.92 | 2203.416 | 514930 |
| Net Income (USD, mil) | 584.076 | 2841.247 | -22058 | 0.354 | 45.105 | 230.833 | 127161 |
| Total Assets (USD, mil) | 15940.72 | 91629.34 | .002 | 542.442 | 1944.436 | 6862.6 | 3744305 |
| Interest Rate | 0.007 | 0.012 | 0 | 0.001 | 0.002 | 0.009 | 0.053 |
| Inflation Rate | 0.021 | 0.003 | 0.006 | 0.018 | 0.021 | 0.023 | 0.03 |

The mean CAR is 0.012, with a standard deviation of 0.129. This indicates that, on average, the acquirers in the sample experienced slightly positive CAR of around 1.2% around the announcement date. The

slightly higher mean value of 0.012 than the median value of 0.007, suggests that the distribution is positively skewed but the difference is not big enough to raise concerns about outliers.

The mean ATV is 27.11, with a standard deviation of 1718.861. The high standard deviation and a wide range of minimum and maximum values suggest that firms experience significant fluctuations in trading volume around the announcement dates. The mean value of 27.11 is much larger than the median value of 0.142 which means that there are some very high values increasing the mean and skewing the distribution positively. The large difference between the median and mean suggests that there are outliers in the distribution that need to be removed before proceeding with the empirical analysis.

The mean value of the binary PE backing variable is 0.104, with a standard deviation of 0.306. This means that around 10.4% of the acquirers in the sample were backed by private equity firms. Since less than 50% of acquirers are PE backed, the median value is 0.

The average acquirer in the sample had a market value of 246342.5 mil USD in the last 4 weeks prior to announcing an acquisition, and their last recorded cash flow was 1179.794 mil USD. Additionally had 3090.984 mil USD in intangible assets, 4361.851 mil USD in net assets, 15940.72 mil USD in total assets, with a net income of 584.076 mil USD, all in the 12 months before the acquisition announcement. The average acquisition deal in the sample is valued at 751.756 million USD with 1.005 bidders and is financed through issuing common stock by 5.2% of acquirers. Most deals in the sample had one bidder, with a few exceptions where multiple bidders were involved. The standard deviation is the smallest for the inflation rate on the announcement day (0.003), indicating low variability and the largest for market value (8750785), reflecting significant variability in acquirer's size.

The number of bidders, financing via common stock, interest rate and inflation rate variables do not have a significant difference between their mean and median values. This suggests that these distributions are not skewed and there are no outliers. The deal value and all acquirer-specific variables: market value, cash flow, intangible assets, net assets, net income and total assets, have mean values that are significantly larger than the median values suggesting that there are extreme positive numbers, outliers, in the distributions of those variables making them significantly right skewed. Additionally, all have very large standard deviations. Therefore, all these variables need to be logarithmically transformed. Taking natural logarithms addresses the skewness, stabilizes the variance of the variables, and improves the linearity between the control variables and the dependent variables in my models. The descriptive statistics of all variables after logarithmic transformations is shown in Table 12 in Appendix A. After taking the logarithms the mean and median values of the variables are no longer significantly different, so I can proceed with the empirical analysis of the data.

# CHAPTER 4 Methodology

This study applies multiple regression techniques to analyze the collected data and find the impact of PE backing on CAR and ATV. Firstly, I summarized all variables in descriptive statistics, transformed the control variables with skewed distributions into logarithms, and removed outliers in ATV. Then I identified and dropped observations with missing values in any variable to ensure that both models have the same number of observations before proceeding with the development of the two models. The final sample size is 3488 unique observations. This way both models are based on the same set of acquisition events.

In both models, the first empirical analysis step is a t-test for mean differences that compares the mean outcomes of CAR and ATV between PE backed and non-PE backed acquirers. This test shows whether there are significant differences in the means of CAR and ATV based on PE backing of the acquirer.

Next, I performed the Ordinary Least Squares (OLS) regression for each model. The regression equation employed to test hypothesis 1, and examine the relationship between CAR and PE backing controlling for various factors can be written as:

$$CAR_i = \beta_0 + \beta_1 PE\ backing_i + \beta_2 \log(Deal\ Value)_i + \beta_3 Number\ of\ Bidders_i$$
$$+\beta_4 Financing\ via\ Common\ Stock_i + \beta_5 \log(Market\ Value)_i + \beta_6 \log(Cash\ Flow)_i$$
$$+\beta_7 \log(Net\ Income)_i + \beta_8 \log(Net\ Assets)_i + \beta_9 Interest\ Rate_i + \beta_{10} Inflation\ Rate_i + \varepsilon_i$$

Where:

- $CAR_i$ is the cumulative abnormal return for acquisition i
- $PE\ backing_i$ indicates whether the acquirer in the transaction was backed by private equity
- $\beta$ are the coefficients of predictors
- $\varepsilon_i$ is the error term

The regression equation employed to test hypothesis 2, and examine the relationship between ATV and PE backing controlling for various factors can be written as:

$$ATV_i = \beta_0 + \beta_1 PE\ backing_i + \beta_2 \log(Deal\ Value)_i + \beta_3 \log(Market\ Value)_i$$
$$+\beta_4 Financing\ via\ Common\ Stock_i + \beta_5 Number\ of\ Bidders_i + \beta_6 \log(Total\ Assets)_i$$
$$+\beta_7 \log(Intangible\ Assets)_i + \beta_8 \log(Net\ Income)_i + \beta_9 Interest\ Rate_i + \beta_{10} Inflation\ Rate_i + \varepsilon_i$$

Where:

- $ATV_i$ is the abnormal trading volume for acquisition i
- $PE\ backing_i$ indicates whether the acquirer in the transaction was backed by private equity

- $\beta$ are the coefficients of predictors
- $\varepsilon_i$ is the error term

Next, I perform multiple diagnostic tests on both models. I perform the Variance Inflation Factor (VIF) analysis for the independent and all control variables of each model to detect multicollinearity. This step is necessary to ensure that multicollinearity is not present. Another test I conduct is the Ramsey RESET test for omitted variables. This test shows any potential misspecification in the models that could lead to omitted variable bias. To check for heteroskedasticity, I employ the Breusch-Pagan test which shows whether the variance of the error terms is constant across observations. When heteroscedasticity is detected, the models need robust regression techniques to minimize the heteroscedasticity, therefore robust standard errors.

# CHAPTER 5 Results

This section describes the empirical results of the analysis trying to quantify the impact of PE backing on market reactions and assess the hypotheses of this study. Firstly, I show the analysis conducted to test Hypothesis 1 about whether PE backing of an acquirer has an effect on market reactions to acquisition announcements, measured by CAR. After, I show the analysis testing Hypothesis 2 about whether PE backing of an acquirer has an effect on market reactions to acquisition announcements, measured by ATV. While analyzing the models I take the following steps: t-tests for mean differences, variance inflation factor (VIF) analysis, Ramsey RESET test, Breusch-Pagan test for heteroskedasticity, and robust regression analysis.

### 5.1 The impact of PE backing on CAR

Firstly, I utilized a t-test for mean differences which compares the mean CAR values between PE backed and non-PE backed acquisitions. Table 2 shows the results of the test.

Table 2. *T-test examining for mean differences in CAR*

| | Mean |
|---|---|
| Non-PE Backed | 0.0141 |
| PE Backed | -0.0198 |
| Difference | 0.0339 |
| | |
| T-statistic | 5.4440 |
| Prob (\|T\| > \|t\|) | 0.0000*** |

The t-statistic is 5.4440 with a p-value equal to 0.0000 is statistically significant at the 1% level. Therefore, I reject the null hypothesis of no difference in the mean CAR between PE backed and non-PE backed acquisitions. I conclude that there is a statistically significant difference in the mean CAR between PE backed and non-PE backed acquirers.

I proceeded with a VIF test to make sure that there is no multicollinearity present between the variables. Table 3. Shows the VIF for all explanatory variables included in the model.

Table 3. *VIF between PE backing and control variables*

| | VIF |
|---|---|
| PE Backing | 1.01 |
| Log (Deal Value) | 1.59 |
| Number of Bidders | 1.01 |

| | |
|---|---|
| Financing via Common Stock | 1.04 |
| Log (Market Value) | 7.48 |
| Log (Cash Flow Last) | 12.91 |
| Log (Net Income) | 7.66 |
| Log (Net Assets) | 7.17 |
| Interest Rate | 1.08 |
| Inflation Rate | 1.07 |
| Mean VIF | 4.20 |

The mean VIF equals 4.15 which implies a moderate correlation between the variables. According to Kutner et al. (2005) "a maximum VIF value in excess of l0 is frequently taken as an indication that multicollinearity may be unduly influencing the least squares estimates". I take on this rule that the VIF values are acceptable if they fall inside a range that is typically acceptable VIF < 10. Therefore, I conclude that multicollinearity is generally not a concern in my model because the mean VIF is well below 10. The only variable that raises concern is the cash flow with a VIF value of 12.81 which suggests that this variable is highly correlated with other variables in the model, and it is better to remove it from further analysis.

Therefore, as multicollinearity is generally not an issue, after the removal of the cash flow variable, I check for potential omitted variables with the Ramsey RESET test. The results of the test are shown in Table 4.

Table 4. *Ramsey RESET test for the CAR model*

| | F-statistic | Prob > F |
|---|---|---|
| F-Test | 4.44 | 0.0040*** |

The F-statistic of the Ramsey test is equal to 4.44 and has a statistically significant at 1% p-value of 0.0040. This suggests that I reject the null hypothesis of no omitted variables and conclude that the model specification is not entirely correct and there are omitted variables. Therefore, I can no longer claim a causal effect in my analysis, however the results can still show an effect.

The next test I perform checks for heteroskedasticity. The Breusch–Pagan test assesses whether the variance of the error terms is constant. The results of the test are displayed in Table 5.

Table 5. *Breusch–Pagan test for the CAR model*

| | Chi-Squared | Prob > chi2 |
|---|---|---|
| Breusch–Pagan | 145.91 | 0.0000*** |

The Chi-Squared value is equal to 145.91 and is statistically significant at the 1% level with a p-value of 0.0000. This result suggests that I need to reject the null hypothesis of constant variance and conclude that heteroskedasticity is present in my model. Therefore, it is necessary to apply robust standard errors.

Due to the heteroscedasticity found in the Breusch–Pagan test, I use a robust regression to model the relationship between PE backing and CAR. Table 6 shows the results of the robust OLS regression model estimating the determinants of Cumulative Abnormal Returns (CAR).

Table 6. *Robust OLS regression model for CAR*

| | Dependent variable: | |
|---|---|---|
| | Cumulative abnormal returns (CAR) | |
| | OLS | |
| | (1) | (2) |
| Constant | 0.014*** | 0.069*** |
| | (0.002) | (0.029) |
| PE Backing | -0.034*** | -0.032*** |
| | (0.007) | (0.007) |
| Log (Deal Value) | | -0.001 |
| | | (0.001) |
| Number of Bidders | | 0.005 |
| | | (0.018) |
| Financing via Common Stock | | -0.002 |
| | | (0.010) |
| Log (Market Value) | | -0.001 |
| | | (0.002) |
| Log (Net Income) | | 0.004 |
| | | (0.003) |
| Log (Net Assets) | | -0.014*** |
| | | (0.003) |
| Interest Rate | | -0.375 |
| | | (0.501) |
| Inflation Rate | | 0.863 |
| | | (0.605) |
| Observations | 2840 | 2840 |
| $R^2$ | 0.010 | 0.041 |

*Note: The above table shows the estimations of a regression model on the variable 'Cumulative Abnormal Returns' rounded to three decimal places. The columns show the coefficients for each of the listed variables, ceteris paribus. The data was processed in STATA. Under the coefficient, the standard error of the variable is reported in brackets. Significance levels of a two-sided t-test are represented by asterisk as follows:*
**Significant at the 10 percent level ** Significant at the 5 percent level *** Significant at the 1 percent level*

Regression (1) models the relationship between PE backing and CAR without any control variables. Regression (2) models that same relationship but utilizes a set of control variables. The R-squared values of the regressions are 0.010 and 0.041, for the first and second one respectively. These values indicate that the regressions explain 1% and 4.1% of the variation of CAR. Despite the large remaining unexplained variability in the dependent variable, the regressions show some statistical significance.

The variable of interest, PE backing, has consistent negative coefficients. In the first regression the coefficient is equal to -0.034, meaning that an increase of 1 in PE backing which is a shift from non-PE backed to PE backed results in a decrease in CAR by 3.4%. In the second regression the PE backing coefficient is equal to -0.032, which means that a shift from non-PE backed to PE backed results in a decrease in CAR of 3.2%. The PE backing coefficients are statistically significant at the 1% level, with a p-value of 0.0000, in both regressions. In regression 2 which additionally uses control variables, I observed statistical significance in one control variable.

The only significant control variable is the logarithm of acquirer's net assets in the last 12 months. The coefficient of the variable is equal to -0.013 and is statistically significant at 1%. It is negative and shows that CAR decreases by 0.013% when net assets grow by 1%.

With the results from this comprehensive analysis, I reject the null hypothesis of no effect of PE backing and accept the alternative hypothesis that PE backing of an acquirer has an effect on market reactions to acquisition announcements, as measured by CAR. Opposite to what I expected, the results consistently show a negative but significant effect of PE backing on CAR across different regressions. The robustness of the effect is partially confirmed by the robust regression analysis but omitted variable bias is present. Although the model explains a small portion of the variance in CAR, and some variables are consistently insignificant, it provides evidence for the negative effect of PE backing on market reactions measured by CAR.

### 5.2 The impact of PE backing on ATV

To establish the impact of PE backing of an acquirer on their abnormal trading volume, I started with a t-test for mean differences to compare the mean ATV values between PE backed and non-PE backed acquisitions. The results of the test are in Table 7.

Table 7. *T-test for mean differences in ATV*

| | Mean |
|---|---|
| Non-PE Backed | 0.5239 |
| PE Backed | 0.6350 |
| Difference | -0.1111 |
| | |
| T-statistic | -0.831 |
| Prob (\|T\| > \|t\|) | 0.406 |

The t-statistic is -0.831 with a p-value equal to 0.406, showing no statistical significance. Therefore, I cannot reject the null hypothesis of no difference in the mean of ATV between PE backed and non-PE backed acquisitions. This result suggests that the mean ATV for PE backed acquirers and non-PE backed acquirers is not statistically different, but I still proceed with the empirical analysis because this t-test only considers the mean differences between two groups and no other factors that may affect the relationship between PE backing and ATV. Therefore, I perform the robustness checks.

I employ a VIF test to make sure that there is no multicollinearity. Table 8 shows the VIF for all explanatory variables included in the model.

Table 8. *VIF between PE backing and control variables*

| | VIF |
|---|---|
| PE Backing | 1.02 |
| Log (Deal Value) | 1.58 |
| Log (Market Value) | 5.57 |
| Financing via Common Stock | 1.04 |
| Number of Bidders | 1.01 |
| Log (Total Assets) | 4.18 |
| Log (Intangible Assets) | 2.79 |
| Log (Net Income) | 5.18 |
| Interest Rate | 1.08 |
| Inflation Rate | 1.07 |
| Mean VIF | 2.43 |

The mean VIF equals 2.43, and all individual VIF values do not exceed 5.57. Here, similarly to the previous CAR model, I use the rule set by Kutner et al. (2005) that VIF values below 10 are considered acceptable.

Therefore, as the mean and all individual values do not exceed 10, I conclude that multicollinearity is not a concern in my model, and I can exclude its presence.

Therefore, I check for potential omitted variables with the Ramsey RESET test. The results are in Table 9.

Table 9. *Ramsey RESET test for the ATV model*

| | F-statistic | Prob > F |
|---|---|---|
| F-Test | 13.58 | 0.0000*** |

The F-statistic of the Ramsey test is equal to 5.31 and has a statistically significant p-value of 0.0012. This result means that I reject the null hypothesis of no omitted variables and conclude that the model has omitted variables. Despite this result, I proceed with the analysis because I can still establish an effect.

The next test I perform is the Breusch–Pagan test for heteroskedasticity which assesses whether the variance of the error terms is constant. Table 10 shows the test's results.

Table 10. *Breusch–Pagan test for the ATV model*

| | Chi-Squared | Prob > chi2 |
|---|---|---|
| Breusch–Pagan | 1361.76 | 0.0000*** |

The obtained Chi-Squared value is 1528.16. It is statistically significant at the 1% level with a p-value of 0.0000. This means that I reject the null hypothesis of constant variance and accept that heteroskedasticity is present in my model.

Due to the results of the Breusch–Pagan test, I need to apply robust standard errors to ensure no heteroskedasticity. Therefore, I use a robust regression to model the relationship between PE backing and ATV. Table 11 shows the results.

Table 11. *Robust OLS regression model for ATV*

| | Dependent Variable: | |
|---|---|---|
| | Abnormal Trading Volume (ATV) | |
| | OLS | |
| | (1) | (2) |
| Constant | 0.524*** | 1.308*** |
| | (0.038) | (0.440) |
| PE Backing | 0.111 | 0.157 |
| | (0.108) | (0.105) |

| | | |
|---|---|---|
| Log (Deal Value) | | 0.070*** |
| | | (0.028) |
| Log (Market Value) | | -0.178*** |
| | | (0.056) |
| Financing via Common Stock | | 0.167 |
| | | (0.158) |
| Number of Bidders | | 0.028 |
| | | (0.271) |
| Log (Total Assets) | | 0.025 |
| | | (0.045) |
| Log (Intangible Assets) | | -0.020 |
| | | (0.030) |
| Log (Net Income) | | -0.012 |
| | | (0.044) |
| Interest Rate | | 21.261 |
| | | (18.157) |
| Inflation Rate | | 6.785 |
| | | (12.614) |
| Observations | 2840 | 2840 |
| $R^2$ | 0.0002 | 0.024 |

*Note: The above table shows the estimations of a regression model on the variable 'Abnormal Trading Volume' rounded to three decimal places. The columns show the coefficients for each of the listed variables, ceteris paribus. The data was processed in STATA. Under the coefficient, the standard error of the variable is reported in brackets. Significance levels of a two-sided t-test are represented by asterisk as follows:*

**Significant at the 10 percent level ** Significant at the 5 percent level *** Significant at the 1 percent level*

I employ two robust regression models. Regression (1) models the relationship between PE backing and ATV without any control variables. Regression (2) models that same relationship but with a set of control variables. The R-squared values of the regressions are 0.0002 and 0.024, for the first and second one respectively. These values indicate that the regressions explain 0.02% and 2.4% which is very little to no variation in ATV.

In the first regression, PE backing has a positive coefficient of 0.111 but it is statistically insignificant. This coefficient suggests that an increase of 1 in PE backing, which means switching from non-PE backing to PE backing is associated with a increase in ATV of 11.1%. In the second regression PE backing has a coefficient equal to 0.157, which is positive and statistically insignificant. However, this suggests that switching from no PE backing to PE backing is associated with a increase in ATV of 15.7%. Although these

coefficients are statistically insignificant, both point into a positive direction of the effect of PE backing on ATV.

There are 2 control variables that show statistical significance and can explain ATV. The coefficient of the logarithm of acquirer's market value in the last 4 weeks is -0.178. It is negative and significant at the 1% level which means that an increase in the market value prior to an acquisition by 1% leads to a decrease in ATV by 0.178%. The other variable that can explain ATV is the logarithm of deal value. It has a positive coefficient statistically significant at the 1% level equal to 0.070 which suggests that a 1% increase in deal value results in an increase in trading volume of 0.07%.

After considering the results of the robust regressions, I cannot reject the null hypothesis of no effect of PE backing on ATV. The effect of PE backing is insignificant in both models, with and without control variables. The t-test also suggested that PE backing is not a suitable predictor of ATV. Therefore, PE backing is not a useful variable in the analysis of market reactions measured by ATV.

# CHAPTER 6 Discussion

## 6.1 The impact of PE backing on CAR

The empirical results of this thesis showed a negative and significant effect of PE backing on CAR, contradicting the previous studies which claimed a positive impact. For example, Kaplan and Strömberg (2009) and Bruton et al. (2009) proved PE backing benefits such as improved governance and efficiency that should translate into positive market reactions to acquisition announcements. Similarly, Fidrmuc et al. (2008), Borell and Heger (2013) and Brodmann et al. (2021) highlighted that acquisitions made by PE backed firms tend to outperform the acquisitions by non-PE backed firms, attributing this finding to the strategic and operational improvements that come from PE involvement.

My PE backing results do not align with these findings, however, the discrepancy between my results and previous research adds a new perspective to the understanding of PE backing in M&A transactions. My findings may show that the PE backing benefits might not always be recognized or valued by the market in the short term. Instead, underlying factors, such as perceived financial risk or market skepticism towards highly leveraged deals may play a larger role and influence market reactions negatively. It is important to realize that most acquisitions in my sample are financed through debt, around 95%. Therefore, the negative effect I found might imply that in the short run, when the acquirer incurs debt due to a premium payment for the target, the share price can drop and result in negative CAR. This shows that despite the potential long-term benefits shown in previous studies by Borell and Heger (2013) or Hammer et al. (2021), the immediate market reactions might not reflect the superiority of PE backed acquirers. This perspective provides an alternative explanation and understanding of PE backing showing that under certain conditions, the market can react negatively to PE backed acquisitions.

Although my CAR results do not find justification in the previous literature, the significant negative effect of acquirer's past assets on CAR that I found perfectly align with the findings of Humphery-Jenner et al. (2016) who also claimed that past assets negatively impact announcement returns.

## 6.2 The impact of PE backing on ATV

The empirical results of the analysis I conducted to find the effect of PE backing on ATV first showed no significant difference in the means of ATV between PE backed and non-PE-backed acquirers. Despite this finding I still conducted further regression analysis. The robust regression accounting for heteroskedasticity, indicated no effect of PE backing on ATV. This suggests that PE backing does not influence trading activity around acquisition announcements.

Despite no previous research about trading volume reactions to PE backed acquisitions, I tried to hypothesize based on the known benefits of PE involvement in acquisitions and the trading dynamics observed around acquisition announcements. Even though the coefficient I obtained for the impact of PE backing on ATV is not significant, it is positive which means that it points in the hypothesized direction. However, I cannot claim statistical significance, therefore no conclusions about the impact of PE backing on ATV after an acquisition announcement can be drawn from my analysis.

My results that point out a significant negative effect of acquirer's market value on ATV are in line with Schneible and Steven's (2005) research as they have also shown that abnormal volume decreases with acquirer firm size. However, the second significant effect I found, the positive effect of deal value on ATV, contradicts the argument of Bhagat et al. (2011) that increased deal value causes negative market reactions.

### 6.3 Limitations

A potential limitation of my study is the possibility to only consider publicly listed acquirers in order to obtain the stock market data needed to calculate CAR and ATV. This choice of dependent variables excludes private acquirers from the analysis, which means the findings may not fully capture the impact of PE backing in all acquisitions. Since not all PE backed acquirers are publicly listed, the sample is limited to those that are, potentially overlooking significant variations in market reactions that could occur with private acquirers.

Additionally, my study does not account for behavioral factors due to the difficulty in obtaining that data. Behavioral factors such as investor psychology, sentiment, over- and under-reaction or herding behavior could significantly influence and help to understand how markets respond to acquisition announcements.

### 6.4 Recommendations for Future Research

Future research could incorporate measures of behavioral biases such as those mentioned above to check whether the observed market reactions to PE-backed acquisitions can be attributed to these mechanisms.

Moreover, the results of my study that are different from previous research, underline the important role of context when analyzing the impact of PE backing. This shows that CAR can be majorly influenced by the timing, industry, or macroeconomic conditions in which the acquiring firms are operating. I have included inflation and interest rate variables, but they turned out to be statistically insignificant in explaining market reactions, but future studies should consider adding other macroeconomic factors as it could give new explanations of the effect of PE backing on market reactions.

# CHAPTER 7 Conclusion

In this thesis, I examined whether PE backing has an effect on market reactions to acquisition announcements, focusing on CAR and ATV. Previous literature consistently highlighted the benefits of PE backing, such as better governance or efficiency, that resulted in positive market reactions after acquisition announcements. However, it remained unclear whether these advantages also apply to the context of acquirers in the United States. Therefore, the research question of this thesis was: Does private equity backing of an acquirer affect market reactions to acquisition announcements in the United States?

To answer this question, I analyzed acquisitions announced between January 1, 2010, and December 30, 2023 by companies listed on NYSE or NASDAQ. In the analysis, firstly I conducted a t-test to compare the mean differences in CAR and ATV between PE backed and non-PE backed acquirers, which was followed by several robustness checks and finally a robust OLS regression that controls for potential influencing factors. My empirical results showed a significant negative effect of PE backing on CAR, contrary to expectations based on previous studies, and no effect of PE backing on ATV. These results suggest that while PE backing leads to negative immediate stock price reactions, it does not explain the trading activity around the announcement date.

This thesis therefore questions the common view in previous literature that PE backing universally leads to positive market reactions. My findings indicate that market participants might perceive PE backed acquisitions as riskier, which leads to negative CAR. Additionally, my results show that controlling for acquirer-specific characteristics is not useful while analyzing market reactions. This highlights the need for future research to explore macroeconomic and behavioral factors that could influence market reactions following acquisition announcements. There are some implications for investors that can be drawn from my study. Investors can anticipate negative short-term returns and to mitigate losses, change their portfolio compositions when a PE firm announces an acquisition. To conclude, this thesis shows that PE backing affects the acquirer’s announcement returns negatively but does not affect trading activity. To establish other conclusions, further investigation of the impact of PE backing on market reactions is needed.

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# APPENDIX A

Table 12. *Descriptive statistics with logarithmic transformations*

| Variable | Mean | Std. dev. | Min | 25th percentile | Median | 75th percentile | Max |
|---|---|---|---|---|---|---|---|
| CAR | 0.012 | 0.129 | -1.821 | -0.039 | 0.007 | 0.055 | 3.871 |
| ATV | 27.11 | 1718.861 | -6.648 | -0.226 | 0.142 | 0.774 | 155710.6 |
| PE Backing | 0.104 | 0.306 | 0.0 | 0 | 0 | 0 | 1.0 |
| Log (Deal Value) | 4.654 | 2.021 | -6.908 | 3.332 | 4.655 | 5.992 | 11.778 |
| Number of Bidders | 1.005 | 0.076 | 1.0 | 1 | 1 | 1 | 3.0 |
| Common Stock Financing | 0.052 | 0.221 | 0.0 | 0 | 0 | 0 | 1.0 |
| Log (Market Value) | 7.506 | 2.068 | -6.215 | 6.136 | 7.451 | 8.805 | 20.229 |
| Log (Cash Flow) | 5.352 | 1.979 | -4.711 | 4.125 | 5.311 | 6.622 | 11.425 |
| Log (Intangible Assets) | 5.619 | 2.493 | -5.809 | 4.003 | 5.741 | 7.438 | 12.317 |
| Log (Net Assets) | 6.638 | 1.934 | -5.298 | 5.525 | 6.629 | 7.75 | 13.152 |
| Log (Net Income) | 4.646 | 2.089 | -5.298 | 3.303 | 4.617 | 6.004 | 11.753 |
| Log (Total Assets) | 7.511 | 2.122 | -6.215 | 6.296 | 7.573 | 8.834 | 15.136 |
| Interest Rate | 0.007 | 0.012 | 0 | 0.001 | 0.002 | 0.009 | 0.053 |
| Inflation Rate | 0.021 | 0.003 | 0.006 | 0.018 | 0.021 | 0.023 | 0.03 |