



Do Hidden Acquisitions Yield Greater Returns When Compared to Ordinary Acquisitions? An Event Study on American Firms

Elmer Jönsas

Department for finance and economics

Hanken School of Economics

Helsinki

2025

HANKEN SCHOOL OF ECONOMICS

Department of: Finance and economics	Type of work: Master's thesis
Author and student number: Elmer Jönsas, 204590	Date: 31.3.2025
Title of thesis: Do Hidden Acquisitions Yield Greater Returns When Compared to Ordinary Acquisitions? An Event Study on American Firms	
Abstract: <p>The aim of this study is to investigate whether hidden acquisitions yield greater returns when compared to ordinary acquisitions. The study comprises of public acquiring companies in the US under a time-period from 2010 to 2020.</p> <p>The event study methodology is used to investigate the short-term and long-term performance of acquiring firms. Cumulative abnormal returns (CARs) for event windows [0], [-1,0], [-2,2], [-3,3], [-5,5] are used to compute how the market reacts to the completion of an acquisition under a short time horizon. Buy-and-hold abnormal returns (BHARs) for event windows [-5, 252], [-5,504], [-5,756] are used to compute the market reaction to the completion of an acquisition under a long-time horizon.</p> <p>The initial sample consists of 3189 when CARs are considered and 3055 observations when BHARs are observed, from these samples hidden acquisitions comprise of 72 observations. The hidden acquisition observations are matched with ordinary acquisition observation based on firm size and book-to-market ratios.</p> <p>When the entire sample is considered there seems to be a significant underperformance in hidden acquisition when compared to ordinary acquisition means during the event window [-5,504] and medians during the event window [-5,756]. After the data was matched according to firm size and book-to-market ratios no significant under or overperformance was found.</p>	
Key words: Event study, hidden acquisitions, mergers and acquisitions, cumulative abnormal returns, buy-and-hold abnormal returns.	

SVENSKA HANDELSHÖGSKOLAN

Institution: Institutionen för finansiell ekonomi och nationalekonomi	Arbetets art: Magisteravhandling
Författare och studerandenummer: Elmer Jönsas 204590	Datum: 31.3.2025
Avhandlingens rubrik: Ger dolda förvärv högre avkastning jämfört med vanliga förvärv? En eventstudie på amerikanska företag	
Sammandrag: <p>Syftet med denna studie är att undersöka ifall dolda förvärv ger högre avkastning jämfört med vanliga förvärv. Studien omfattar börsnoterade förvärvande företag i USA under en tids period från 2010 till 2020.</p> <p>Eventstudie-metodologin används för att undersöka den kortsiktiga och långsiktiga prestationen hos förvärvande företag. Kumulativa abnormala avkastningar (CAR) för eventfönstren [0], [-1,0], [-2,2], [-3,3], [-5,5] används för att beräkna hur marknaden reagerar på slutförandet av ett förvärv på kort sikt. Buy-and-hold abnormala avkastningar (BHAR) för eventfönstren [-5,252], [-5,504], [-5,756] används för att beräkna marknadens reaktion på slutförandet av ett förvärv på lång sikt.</p> <p>Det initiala urvalet består av 3189 observationer när CAR används och 3055 observationer när BHAR analyseras. Av dessa urval utgör dolda förvärv 72 observationer. Observationerna för dolda förvärv matchas med observationer för vanliga förvärv baserat på företagsstorlek och bokförda värdet i förhållande till marknadsvärdet.</p> <p>När hela urvalet beaktas verkar det finnas en signifikant underprestation för dolda förvärv jämfört med vanliga förvärv, sett till medelvärden under eventfönstret [-5,504] och medianvärden under eventfönstret [-5,756]. Efter att data matchats hittades ingen statistiskt signifikant under- eller överprestation.</p>	
Nyckelord: Eventstudie, Dolda förvärv, Fusioner och förvärv, Kumulativa onorma avkastningar, Buy-and-hold onorma avkastningar	

The use of AI

This thesis has used artificial intelligence in the form of the language model ChatGPT 4 (OpenAI, 2023). Here AI has been used to gain the initial understanding in the relevant theoretical frameworks and methodologies used in the thesis. The author has then conducted individual research into the preliminary concepts provided by ChatGPT. The text has been provided fully by the author himself without the help of artificial intelligence. The use of AI has been conducted in line with Hanken's guidelines (Hanken, 2024).

Table of Contents

1. Introduction	1
1.1 Background Motivation.....	3
1.2 Purpose of the Study	3
1.3 Delimitations.....	3
1.4 Structure of the Study	3
2. M&A Regulation.....	4
3. Strategic Considerations and Value in M&A	7
3.1 M&A and Value Creation	7
3.2 Types of Acquisitions.....	9
3.2.1 Vertical Mergers	10
3.2.1 Horizontal Mergers	11
3.2.2 Conglomerate Mergers	11
3.3 Types of Payment	11
3.4 Taxes and M&A.....	12
4. Theory	15
4.1 Agency Theory.....	15
4.2 Theory on Size	16
4.3 Capture Theory on Regulation	17
4.4 Theory on Synergies	18
4.5 Information Asymmetry	18
5. Previous Literature	20
5.1 Dutta and Jog 2009	20
5.1.1 Data and Method	20
5.1.2 Result.....	21
5.2 Loughran & Vjih 1997	21
5.2.1 Data and method	21
5.2.1 Result.....	22
5.3 Bessembinder & Zhang 2008	22
5.3.1 Data and Method.....	22
5.3.2 Results.....	23
5.4 Moeller, Schlingemann & Stulz 2004.....	23
5.4.1 Data and Method.....	24
5.4.2 Results.....	24

5.5 Masulis & Simsir 2018	24
5.5.1 Data and Method	24
5.5.2 Result	25
5.6 Other Relevant Literature.....	25
6. Method	29
6.1 Event Study	29
6.2 Issues when Estimating Abnormal Returns	29
6.3 How Abnormal Returns are Estimated	30
6.4 T-Test.....	32
6.5 Multivariate Regression Analysis	33
6.5.1 Regression Model	33
6.6 Research Hypotheses	34
6.7 Model Diagnostics	35
6.7.1 Normality.....	35
6.7.2 Heteroskedasticity	36
6.7.3 Multicollinearity.....	37
7. Data	38
7.1 Sample.....	39
7.2 Variables	39
7.2.1 Dependent Variable.....	39
7.2.1.1 CAR & BHAR	39
7.2.2 Independent Variable	40
7.2.2.1 Hidden Acquisition Dummy	40
7.2.3 Control Variables	40
7.2.3.1 Size	40
7.2.3.2 Return on Assets.....	40
7.2.3.3 Tobin's Q.....	41
7.2.3.4 Altman Z Score	41
7.2.3.5 Current Ratio	41
7.2.3.6 SA-Index	41
7.2.3.7 Deal Value	42
7.2.3.8 GDP Increase	42

7.2.3.9 Herfindahl-Hirschman Index (HHI).....	42
7.2.4.10 Cash.....	43
7.2.4.11 State	43
7.2.5 Descriptive Statistics	43
8. Results.....	45
8.1 Event Study Results	45
8.2 Regression Results for the Full Sample.....	45
8.3 Matched Regression Results	49
8.4 Univariate Analysis	52
9. Discussion	55
9.1 Event Study	55
9.2 Regression	56
9.3 Suggestions for Future Research.....	57
10. Conclusion	58
References	59

TABLES

Table 1. Summary of relevant previous studies	27
Table 2. Sample Skewness and kurtosis	36
Table 3. Sample descriptive statistics	43
Table 4. Event study results.....	45
Table 5. Regression results for the full sample	46
Table 6. Regression results where BHARs are the dependent variable	49
Table 7. Matched sample regression results where CARs are the dependent variable.	50
Table 8. Matched sample regression results where BHARs are the dependent variable.....	51
Table 9. Univariate analysis results	53

FIGURES

Figure 1 The premerger notification and review process and the annual premerger notification thresholds from 2001 to 2019.	4
---	---

1. Introduction

M&A essentially describes a situation where two or more firms combine. Recently there has been growing interest in understanding how regulation affects the mergers and acquisitions (M&A) process in the U.S., especially in terms of how companies try to avoid anticompetition procedures. According to Kepler, Naiker and Stewart (2023) there is a relatively large concentration of M&A activity around a specific acquisition deal value. The authors found that there are around 40% more M&As with a specific acquisition deal value just below a certain deal value threshold which would otherwise cause the authorities to start investigating companies for potential antitrust activity. These so called “hidden acquisitions” generally involve specific contract terms which allows more leeway for negotiating and thus a lower deal value. After a hidden acquisition takes place, generally factors such as gross margins equity values, and prices of the acquirers and their competitors increase (Kepler et al., 2023). Additionally, when the dialysis industry was observed by Wollman (2020) he showed that hidden acquisitions caused local duopolies and even monopolies. Thus, if these results are generalizable across industries, firms may be motivated to engage in hidden acquisitions

This study will contribute to existing financial research on M&A transactions by quantifying the short-term and long-term benefits of engaging in hidden acquisitions. Essentially firms may be able to manipulate the acquisition deal values in ways that provide them with otherwise illegal advantages. Therefore, this study aims to shed light on the short-term performance of hidden acquisitions as well as the long-term performance. During this study hidden acquisitions will be defined as acquisitions where the M&A deal value is just below the deal value notification threshold defined by the Hart-Scott-Rodino (HSR) Act, which would trigger an anticompetition procedure (FTC, n.d.a). Following Kepler et al., (2023), hidden acquisition will be defined as acquisition where the deal value is a maximum of 10% lower than the notification threshold.

Mergers and acquisitions transactions have been used for various purposes such as gaining market share, increasing product range, acquiring product lines and increasing synergies. The main goal behind mergers and acquisitions is to secure the existence of a company and to generate above average returns for the owners (Kim, & Yang, 2020). Prior research has shown that a significant way to increase shareholder value comes in the form of merging companies. In markets with strong competition mergers become a quick way for a company to potentially increase its product offerings in rapid fashion in case the synergies arise from downstream and upstream compatibility. Firms also ought to differentiate themselves from other competitors and are therefore incentivised to acquire firms with different skills and technologies in order to increase the firms market power. (Hoberg, & Philips, 2010a).

Within industries where the product similarity is greater and when the industry can be described as concentrated, horizontal acquisitions (acquisitions of companies in the same industry) cause a positive return for the acquirer. On the other hand, these acquisitions tend to cause increases in industry prices which generally results in stock prices to react negatively. Additionally, acquisitions conducted in industries with high product similarity receive far more attention from the Federal Trade Commission (FTC) and the U.S. Department of Justice DOJ due to the potential reduction in competition after the merger (Fathollahi, Harford, & Klasa, 2022). Such a case happened in 2021 when the FTC filed a lawsuit against Nvidia when it was considering acquiring Arm Limited from SBG. The deal was deemed to give Nvidia too great of a control over specific chip architecture which is also used by Nvidia's competitors (Condorelli, Padilla, & Sohn, 2024).

The desired outcome for a company participating in M&A deals would be to become a leading player among the specific industry or even reaching the state of a monopoly. In order to combat reckless M&A activity that would disturb the market dynamics between different companies the DOJ and the FTC have published various policies and guidelines. These documents provide the framework for a business to evaluate the potential ramifications a merger may have on market competition. In case the authorities deem an acquisition to be out of line with the policies set in place the acquisition will be prevented (Angerhofer & Blair, 2021).

The foundation for the current anti-trust legislation was set in 1976. During 1976 the US premerger notification program was created, and the program was named the Hart-Scott-Rodino (HSR) Antitrust Improvements Act (FTC, n.d.a). On paper, the act gave exemptions to M&A deals on the basis of revenue levels, assets, how much control is transferred and the level of economic activity both of the parties were taking part in. In reality the Act came to exempt mainly deals where the target firm had assets worth less than \$10 million. Additionally, in case the target company's main business was manufacturing then the firm had to additionally have sales less than \$10 million. The act got a profound update in 2000's with the "notification threshold" where it was now possible to get exemptions in case the value of the transaction was under \$50 million. This threshold caused a substantial drop in the numbers of premerger notifications filed in the US. Still during the late 1990s the number of premerger notifications rose close to 4000 notifications in a year. After the amendment threshold the number of notification dropper by 70%. Meaning that the number of M&A details brought to authorities was slashed. (Wollmann, 2019).

Most mergers and acquisitions end up below the level that requires a firm to produce premerger reporting documentation. This becomes additionally problematic when an industry

is segmented, where even relatively minor mergers can result in large allocations of market power to a singular company. (Wollman, 2019).

1.1 Background Motivation

There have not been previous studies where the returns of hidden acquisitions have been considered and therefore this study aims to extrapolate the advantage a firm can receive when avoiding the anti-trust procedure. Monopoly is a profit maximizer (Stigler, 1964) and if firms are able to approach a monopolistic state using hidden acquisitions, then the firms' returns should also approach profit maximization. Additionally, if hidden acquisitions help firms approach oligopolistic developments by avoiding anti-competition authorities, then the firms' returns should also approach oligopolistic profit levels. This could in theory be seen in the performance where the firms take part in hidden acquisitions. Stigler (1950) mentions that after anti-trust laws were set in place mergers and acquisitions are a means for a firm to reach for monopolistic gains.

1.2 Purpose of the Study

The purpose of the study is to figure out if hidden acquisitions provide greater abnormal returns when compared to ordinary acquisitions.

1.3 Delimitations

The study will be investigating completed mergers and acquisitions where majority stake has been acquired. The study will also be limited into transactions that have been completed in The United States and the companies state of incorporation is the US. This study will be focusing on a time period from 2010 to 2020. Following previous studies within the field financial companies will not be included in the data collection process and only deals which have a value of 1 million dollars or more will be included. Companies with missing observations are removed and the deals must use either cash consideration, stock or a combination of both to be considered.

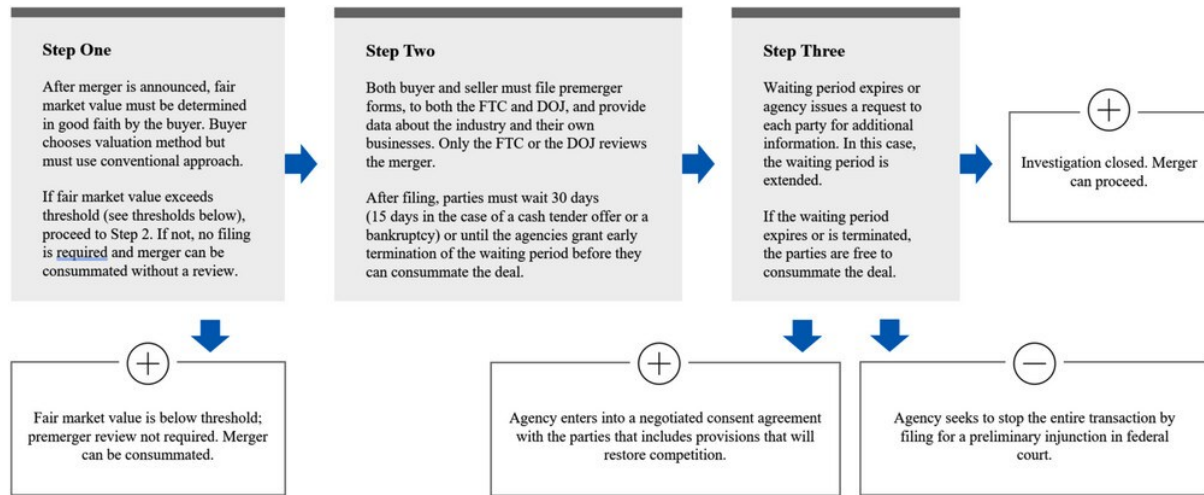
1.4 Structure of the Study

After the introduction chapter, chapter 2 will describe the essential regulation regarding hidden acquisitions. Chapter 3 describes the M&A process relative considerations regarding M&A. Chapter 4 describes relevant theories associated with M&A. Chapter 5 describes previous M&A literature. Chapter 6 describes the research method. Chapter 7 covers how the data has been collected. Chapters 8,9,10 describe the results, discussion and conclusions.

2. M&A Regulation

In this chapter the underlying regulatory framework will be explained. Mainly the Hart-Scott-Rodino (HSR) Act will be discussed and how the premerger notification process works and the potential issues with the Hart-Scott-Rodino (HSR) Act will be discussed.

Figure 1 The premerger notification and review process and the annual premerger notification thresholds from 2001 to 2019.



Annual Premerger Notification Threshold from 2001 to 2019 (in \$ millions)

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Threshold	50.0	50.0	50.0	50.0	53.1	56.7	59.8	63.1	65.2	63.4	66.0	68.2	70.9	75.9	76.3	78.2	80.8	84.4	90.0

From *Kepler, J. D., Naiker, V., & Stewart, C. R. (2023). Stealth acquisitions and product market competition. The Journal of Finance, 78(5), 2837-2900.*

From the figure 1 above, one can inspect the Pre-merger notification and review process. As mentioned in the beginning competition laws set out the framework for parties to consider M&A deals in a lawful manner. For instance, Section 7 of the Clayton Act mentions that “in any line of commerce or in any activity affecting commerce in any section of the country, [where] the effect of such acquisition may be substantially to lessen competition or tend to create a monopoly” (FTC, n.d.b). Additionally, Section 5 of the FTC Act restricts partaking in competition in an unfair manner. The antitrust division utilises the HSR antitrust improvements act of 1976 to battle anticompetitive effects of M&A deals before completion (FTC, n,d,a). The premerger review process is described later in this chapter.

As mentioned before, under the Hart-Scott-Rodino (HSR) Act acquisitions with a deal value going over the annual premerger notification threshold force the parties to file a premerger notification and wait for the authorities’ review. After the notification is filed, the deal cannot

be closed before a specific waiting time defined by the HSR Act has passed or if early termination is granted (FTC, 2015). The merger review process can be divided into five steps and will be described below.

- Step number one is to file the notice of a proposed deal. Here a minimum value of the deal is disclosed. In case a transaction requires filing, both parties provide information on their businesses and industries. After waiting 30 days the parties can proceed with the acquisition or if cash tender offer is used or a bankruptcy takes place the wait is cut to 15 days (FTC, 2015).
- The second step involves clearance to an antitrust agency where the initial proposal if the merger is reviewed. When clearance is given, the agency is able to obtain information from non-public sources (FTC, 2015).
- Step three is the expiration of the waiting time or when a second request is issued. Here if the waiting period expires then the deal is free to be closed. In case the initial information has been insufficient, the agency can send out a second request which can consist of inquiries regarding market conditions, competitive effects, and services offered by the parties (FTC, 2015).
- Step four is when the parties comply with the second request. Here the agency is given 30 more days to go through the provided document and potentially intervene in the deal if need be. When cash tender offers are considered or a bankruptcy takes place, the review time is 10 days. The length of the review process may also be extended in order to resolve issues without litigation (FTC, 2015).
- The last step is when the waiting period ends, or the agency deems there to be an issue with the deal. Here it tends to be common for the parties to abandon the proposed merger in case the agency decides to challenge the proposed merger. It is relatively uncommon that competitive harm is found as the result of a merger investigation (FTC, 2015).

There is some evidence on how companies have adapted after the HSR act was put into place. Companies that perform several small-sized deals were able to outperform their competitors, especially when compared to large deals. Additionally, firms that pursued the strategy of acquiring several small-sized deals were able to achieve long-term value creation. Nearly every third company in the global 1000 largest companies worldwide over a ten-year period pursued a strategy of performing several small sized deals (Rudnicki, Siegel, and West 2019).

As with any legislations, a number of potential issues regarding Hart-Scott-Rodino (HSR) Act are present. The main issue is the fact that mergers that exceed the annual threshold need to provide the premerger notification. Thus, potentially impactful mergers can go through even if the anti-competitive impact is significant. Additionally, some mergers may be cancelled if the premerger notification threshold is exceeded due to high costs of FTC investigations. This can potentially incentivize managers to structure the deals in a way so that the HSR thresholds can be avoided (Wollman, 2019).

3. Strategic Considerations and Value in M&A

This chapter will describe which party gains from mergers and acquisitions and which factors have an effect on value creation in M&A. Mainly method of payment, tax implications will be discussed. Additionally, different methods of conducting mergers and acquisitions will be described.

Mergers and acquisitions transactions remain in a strong position when corporate development is considered. Globally during 2023 the global M&A deal value amounted to a transaction value of around 3,2 trillion dollars (Grass et al., 2024)

In statutory mergers the acquiring firm takes both the liabilities and the assets of the target company. Another option is a subsidiary merger. Here the target company is turned into a subsidiary for the acquiring firm. An acquisition can be completed through purchase of the other firm's asset or stock. Here the acquired firm is able to continue its operations as a legally owned subsidiary. Another option is to acquire a company as a whole or a product line using cash or securities as payment (DePamphilis, 2015).

3.1 M&A and Value Creation

Who then benefits from the value created by acquisitions? Generally large acquisitions struggle to bring value to the shareholders of the bidding firm. For example, Moeller, Schlingemann, & Stulz (2004) found that large firms destroy shareholder value on a statistically significant level. On the other hand, shareholders of the target company enjoy substantial value-creation. Typically, the shareholders are receiving 30% premiums for their stock's premarket announcement stock price. There are however factors that the acquirer should keep in mind during the acquiring process. Prior research has shown that acquirers who for the last three years managed to achieve higher earnings compared to industry peers before the acquisition managed to earn statistically positive returns on announcement. (Morck, Shleifer, & Vishny, 1990).

Another factor is that generally low transaction premiums are better. In the cases where acquirers have paid higher premiums the returns on announcement were negative. Prior research has also shown that being the only bidder is beneficial. Naturally, the more bidders there are the higher the price gets and thus negatively impacting the potential value created. Lastly, acquisitions of private companies and subsidiaries of larger companies have shown to yield higher returns when compared to acquiring public companies. (Morck, Shleifer, & Vishny, 1990).

Previous studies have also shown when acquiring firms have a stronger focus on antitakeover provisions, they generally experience lower abnormal returns during the announcement of the merger. This is in line with the assumption that the managers at these specific firms are not influenced in the same degree by the disciplinary mechanisms of the market for corporate control. This results in a greater likelihood for empire-building acquisitions where shareholder value is destroyed. On the other hand, the authors point out that bidding firms operating in very competitive industries find higher abnormal returns during the announcement of an acquisition. (Masulis, Wang, & Xie, 2007).

Harford, Humphery-Jenner, & Powell (2012) took a closer look on how value-destroying strategy takes place. These strategies are largely present when a company has entrenched managers, meaning that managers have built themselves a position in which they can benefit themselves on the behalf of shareholders. In order to maintain their entrenchment these managers tend to avoid private firms even though private firms are generally value-increasing. Even in situations where private firms are acquired, entrenched managers will use cash so that no block holders (owner of a large chunk of company shares) will be created. Regarding block holders, Chang (1998) mentions that in private firms the ownership is generally very concentrated which results in relatively larger block holders when a stock exchange is executed, thus encouraging entrenched managers to use cash as consideration. The author also mentions that on average cash acquisitions resulted in zero abnormal return while stock acquisitions resulted in positive abnormal returns when private firms are considered. Abnormal returns were negative when public companies were purchased with stock. Harford et al., (2012) noticed that after the merger the operating performance executed by entrenched managers was worse when compared to other acquisitions. This showcases poor managerial selection decisions rather than just overpaying for acquisitions.

On the other hand, defining value enhancing strategy is not as clear. According to Andrade, Mitchell, & Stafford (2001) the mean three day return for the acquirers was -0,7%. However, when the event window was increased to around 20 days the average returns dropped to -3.8%. Due to both results not being significant the authors cannot reliably say whether the acquisition is clearly creating value for shareholders. The authors note that managers will generally issue equity when they deem it to be undervalued by the market. Also, investors observe the equity issue they will lower the stock price, thus it's not clear what is causing the value effect for shareholders (Mithcell et al., 2001).

Even if there is always a potential for misalignment of interests between management and shareholders a potential solution to alleviate the possibility for value destruction can be found through executive compensation contracts in certain managerial ownership structures. As

shown by Datta, Iskandar-Datta, & Raman (2001) when the level of equity-based compensation for the highest level of executives in the acquiring firm was high, a positive relation between equity-based rewards and shareholder value in the acquiring firm was found as long as the degree of managerial ownership does not exceed 75%. The authors also point out that when comparing the premiums paid for the acquisition's companies with higher equity-based compensation paid a significantly lower acquisition premium compared to companies with lower equity-based compensation (Datta et al., 2001).

When the level of risk-taking is considered it was also concluded that companies with greater equity-based compensation tend to acquire companies with substantial growth potential, moreover the companies with greater levels of equity-based compensation experience higher changes in stock return volatility after the acquisition. Additionally, the acquiring firm experienced significant positive stock price reactions. On the other hand, acquirers with low equity-level compensation observed the opposite reaction. The results support the idea that stock option incentives generally function as a shareholder value enhancing strategy (Datta et al., 2001).

3.2 Types of Acquisitions

2023 was a lacklustre year for M&A. The institute of mergers, acquisitions and alliances (2024) showed that the global deal values were halved in a mere 2 years, where in 2021 M&A deals reached a peak of \$5 trillion and in 2023 \$2,5 trillion. Additionally, deal volumes decreased by 17% in 2 years from 65000 deals in 2021 to approximately 55000 in 2023. This represents M&A waves which are relatively common in M&A markets and thus well documented. An M&A wave is described as a period where M&A activity has increased, this period is then followed by decreased M&A activity. It is shown that shocks of an economic, regulatory, or technological nature can potentially cause merger wavers. These waves become especially prevalent in cases where an economic shock creates ample M&A opportunities. Merger waves have been explained through behavioural and neoclassical viewpoints. According to the behavioural hypothesis, waves occur due to managers' desire to use overvalued stock to acquire undervalued stock. On the other side, the neoclassical view says that once a previously mentioned shock happens a firm will rationally reallocate its assets through a merger. Thus, when a shock happens every firm should simultaneously reallocate their capital through mergers (Harford, 2005).

Acquisitions can be described in several ways depending on the nature of the acquisition. The most common ones are hostile, friendly, cross-border, domestic, and private and public acquisition. Hostile takeovers describe a situation where the bidder acquires the company

without the target firm's consent. One way to do this is to use a tender offer, where the acquirer pays a premium compared to the market price for the target shares. Conversely, in a friendly acquisition the bidding firm acquires the target firm in a situation where there is full approval by the target to proceed with the acquisition. Naturally, domestic acquisitions are completed acquisitions within a single country whilst cross-country acquisitions are conducted between companies in two different countries. Lastly, in private acquisitions, private companies are acquired and in public acquisitions, public companies are acquired (Martynova, & Renneboog, 2008).

3.2.1 Vertical Mergers

There are generally three types of mergers- horizontal, vertical, and conglomerate. Vertical mergers describe a situation where companies with different stages of distribution and production operations merge (Scoofi & Yugin, 2014 p16.). Vertical mergers enable companies to produce raw materials, components or services directly to products. Essentially, this means acquiring a specific phase of the target's operations, which in turn compliments the acquirer's business functions. Vertical mergers can additionally be divided into upstream integration where the company will focus on the early phases of the product cycle and downstream integration where the firm will focus on the later stages of the product cycle. The benefits of vertical integration are naturally cost advantages through skipping the phase of acquiring the specific products from another provider for a higher price. Additionally, potential excess recourses resulting from the merger can be allocated to other phases of the business cycle, resulting in cutting costs (Dringoli, 2011 p106).

Vertical mergers have been through periods where on one hand it was seen as harming competition through denying competitors' access to suppliers and buyers. On the other it was seen as being neutral or even strengthening competition. Vertical mergers generally lead to efficiency gains and collusive behaviour in horizontal competition depending on how much it costs to switch suppliers and how wide the variety of product selection for the firm is. In cases where it's easy to change supplier's, vertical mergers tend to benefit the consumers. Even if it is relative expensive to change suppliers, vertical mergers are still benefiting the consumers with the condition that there is a wide level of product differentiation. If this condition does not hold vertical integration becomes harmful for the competitor. In conclusion vertical mergers can raise downstream competitors' cost's because the merger changes the competitors' investives when choosing suppliers (Chen, 2001).

3.2.1 Horizontal Mergers

Horizontal mergers are generally more effective when resources need to be allocated to the production, marketing, or sales departments in order for the company to meet increased industry demand (Dringoli, 2011 p128). Horizontal mergers describe a situation where a company expands its business activity into the local existing market or into international markets. Expansion to different market segments also fall under this category. When expanding to emerging markets a company can extend its network and production capabilities to a new country while simultaneously maintaining its main business operations in the original location. Horizontal mergers can be the correct strategy in situations where a company tries to fulfil an increased demand which could be caused by a new successful product. Additionally, horizontal mergers tend to work in cases where the general aggregate market demand within the specified industry has increased. (Dringoli, 2011 p49).

Several merging firms seem to reduce the price of their sold goods after the merger takes place, while their supplier tends to experience reduced and significantly negative cashflows after a downstream merger. Especially if the supplier is highly reliant on the merging companies naturally the revenues experience a larger reduction in cash-flow margins after the merger. Fortunately, these problems caused for suppliers appear to be the worst for the first year after the merger. After the first year it is suggested that upstream firms can focus on strategic decisions such as consolidating the supplier industry (Fee, & Thomas, 2004).

3.2.2 Conglomerate Mergers

Conglomerate mergers describe a situation where two firms operating in different markets decide to merge (Gabrielsen, 2003). Conglomerate mergers took part largely in the 1980s where it is suggested conglomeration took part either to replace lacklustre managers or to work together with capable managers. Additionally, another reasoning for conglomerate merges was the earnings-per-share manipulation. Here a firm acquires a company with lower price to earnings ratios, causing its earnings per share (EPS) to increase. Hence, if the stock price is set at a constant multiple of EPS, a company can keep increasing its stock price through acquiring other firms with lower P/E ratios. (Matsusaka, 1993).

3.3 Types of Payment

For mergers and acquisitions, the method of payment becomes paramount when factors such as the company's future ownership structure and financial leverage. The most typical types of payments available for the acquirer are either cash, stock, or a combination of both as deal consideration. Since acquirers do not tend to have unlimited reserves of available cash or liquid assets, bidders tend to use either debt financing or equity financing when acquiring

another firm. This results in potential problems where the acquirer needs to deem the correct ratio of issues regarding corporate control when issuing equity and potential issues with increased interest expenses. On the other side, the seller enjoys the potential benefits of increased liquidity in form of cash and potential tax benefits when provided by stocks. Benefits of the stock payment method appear when sellers have low tax basis in the target stock. Here the seller can defer tax liabilities through agreeing to take bidder stock as a form of payment. (Faccio, & Masulis, 2005).

In addition, to the previously mentioned issues which the acquirer may face, corporate governance structures can face drastic changes. Since issuing stock can dilute voting power, companies with strong interests to maintain control of the firm are incentivized to go for cash financing. This issue is especially prevalent when a single shareholder owns around 20% to 60% of the shares. Naturally, if the core ownership is strongly dispersed the issue of diluted voting power diminishes (Faccio, & Masulis, 2005).

According to Heron and Lie (2002) acquiring firms would much rather use stock as a form of payment when the target firm is deemed to be too expensive and in cases when the target firm is undervalued, cash becomes the preferred option. Naturally, the higher the share price the acquirer has the fewer shares must be exchanged during the payment process. Therefore, a firm may be incentivised to artificially increase the stock price prior to the agreement of stock payment. Firms may manipulate the stock price for example with increasing the accounting earnings. Possible actions to achieve this manipulation are accelerating receipt of revenues, deferring expenses or manipulating accounting procedures (Erickson, & Wang, 1999).

Additionally, Gossh & Ruland (1998) investigated how the managers' preferences for control rights in the bidding firm motivate the payment in acquisitions. The authors found that the reason for managers to prefer higher levels of control is due to higher impact on job retention after the acquisitions. In cases where the managers level of control was high in the target firm, acquisitions for stock were more common. Additionally, the level of job retention was greater for the target firm managers when stock was used for payment (Gossh, & Ruland, 1998).

3.4 Taxes and M&A

In the US, M&A tax implications revolve around federal and state taxes and this section will explain the implications further.

When considering taxes in US, M&A deals according to the Internal Revenue Code (IRC) shareholders pay capital gains taxes when cash is used, and when stock payment is used it may qualify for indefinite deferral. Mergers or acquisitions can be tax-free under IRC§368 or

taxable transactions under IRC §1001. Corporate reorganization is a term used for federal tax purposes and it can include acquisitions of assets or stock, readjustment of capital structure, or the division of a single corporation. When a corporation gets acquired, it pays no taxes in cases where it receives only stock, securities or a combination of both. On the other hand, if the acquired firm receives other property, then it recognizes a gain if the property is not distributed to shareholders. Generally, the acquiring firm recognizes no gain or loss when its stock is exchanged with the property of the acquired firm (Bloomberg Tax, 2024).

On an individual level non-taxable stock transactions can incur tax benefits through letting target firm shareholders to acquire portfolio with stronger diversification without realizing their shares and thus paying their income taxes. Cash transactions may give the shareholders a tax benefit only when they enable the transfer of cash out of the acquiring company to be taxed at capital gains tax. On a corporate level, the treatment of taxes depends on whether the target firm is treated as if it was absorbed into the bidding company with its tax attributes intact or if the target firm is first liquidated and received as the target's component assets (Auerbach, & Reishus, 1987).

When a firm receives the assets, it is allowed a stepped-up basis for the assets which refers to a tax policy where the market value of the assets is used at the time of the acquisition instead of the book value prior to the acquisition. On the other side if the acquiring firm takes over the target firms tax attributes, step up asset basis are prohibited. Any tax credits that are not used, tax losses that have been carried forward, or any previous tax losses that the target firm will incur later remaining from the target firm can be used by the acquiring firm. The acquiring company may also gain additional tax benefit in cases where the bidder has unused tax losses and credits through setting these against taxable income of the target company (Auerbach, & Reishus, 1987).

In cases where the bidding firm is acquiring other businesses assets the bidder may be held accountable for pre-transaction sales and any use of tax liabilities. As mentioned before an acquirer can generally expect not to be responsible for the seller's income tax liabilities, but when state taxation is considered the income tax purposes can be broader. Therefore, the bidder needs to consider if they can be liable for state income tax liabilities which had been generated before the final transaction. State statutory provisions and common law doctrines can sometimes result in the acquirer being liable for the target firm's liabilities. When bulk-sale procedures are used a US state may require the acquirer, the target firm or both to provide the authorities with, for example, transaction details, tax clearance certificates or to withhold money for unpaid taxes. If these procedures are not followed the state can impose successor liability for state income taxes and other taxes on the acquiring firm (Aguero et al., 2024)

Ayers et al., (2003) studied how the level of capital gains taxes affected the premiums paid in acquisitions that are taxable. The authors focused on taxable and tax-free acquisition under a time period from 1975 to 2000. The results showed that the estimated coefficients for capital gains were positive in all the applied models which support the notion that acquisition premiums for taxable acquisitions increase in relation the target shareholders capital gains tax. Additionally, the study showed a positive connection when premiums and capital gains taxes for tax-free acquisitions are considered. The authors motivated this association with the shareholders option not to defer the taxes on the acquisition due to the need for a reward for the cost of capital gains taxes which would later be deferred. Another potential reason that the authors bring forth is that the capital gains variable captures some factors that affect tax-free and taxable acquisition premiums (Ayers et al., 2003).

4. Theory

In this chapter the underlying theory supporting the research will be described. For the purpose of this study, agency theory, theory on size, capture theory on regulation, theory on synergies and information asymmetry will be explained.

4.1 Agency Theory

Agency theory focuses on various issues which appear as result of separation of owners and managers. Through this theory one can implement different governance related mechanisms that mitigate the potential damage caused by a misalignment of interests (Panda, & Leepsa, 2017). When these interests are misaligned, some managers may be incentivised to proceed with M&A deals in order to reach a certain level of prestige, influence or compensation (DePamphilis, 2015, p15)

Agency theory itself can generally be split into two problem categories. Here the first problem revolves around agency problems where the principal's ambitions and agent's goals do not align and when it is hard or too costly for the principal to be certain of how the agent is conducting their tasks. The issue here is that the principal is unable to assure that the agent conducts his work in such a way which aligns with the expectations of the principal and thus would be deemed appropriate. The second issue arises when the principal's and agent's attitude towards risk do not align. Due to varying risk preferences the parties may prefer different actions (Eisenhardt, 1989).

Principal-agent research focuses on figuring out the most optimal contract satisfying both the agent and the principal so that the outcome for the principal and agent are in relative balance (Eisenhardt, 1989). In cases where the firm is managed 100% by the owner then they will make decisions where their utility is maximized. These decisions will not only showcase financial utility but also non-financial utility in the forms of personal relations, level of staff attraction, employee discipline, and the purchase of fancier office equipment such as bigger computer screens. As the owner's level of equity diminishes, they become more incentivized to appropriate greater amounts of resources in forms of financial compensation, thus reducing the focus on non-financial utility maximization (Jensen, & Meckling, 2019).

According to Amihud, & Lev (1981) managers who are aiming to decrease their employment risk engage more in conglomerate acquisitions when compared to companies that are controlled by owners. Additionally, operations of manager-controlled firms are more diversified when compared to firms controlled by owners. Since the managers' income is

related to the firm's performance, managers will apply decisions that will reduce their employment risk based on their risk tolerance. The authors mention that managers who are risk-averse will take part in conglomerate mergers to stabilize the firm's cashflows. Thus, even if conglomerate mergers would be a potential value-destroying strategy for the investors, managers may have an incentive to use conglomerate mergers to maintain their level of salary and available future job prospects (Amihud, & Lev, 1981).

4.2 Theory on Size

Regarding mergers and acquisitions, the stock price of the acquirer has a tendency to decrease in general when the information about a merger is announced to the public (Gorton, Kahl, & Rosen, 2009). According to Moeller, Schlingemann, and Stulz, (2004), small acquirers in general tend to gain from acquisition while the average stock price decrease is driven by larger acquirers. Another typical fact regarding mergers and acquisitions is that mergers are concentrated in industries which have experienced vast regime shifts in for instance regulation or technology. In addition to firms' size is also considered as a significant factor in M&A. One reason for a firm to take part in a race for increasing its' size is that managers may have an incentive to do so to lower the risk of someone else taking over the firm. Although while being unprofitable, it allows managers to maintain their private benefits of control. Another viewpoint is that a firm intentionally engages in acquisitions for it to become a more attractive target for takeover (Gorton, Kahl, & Rosen, 2009).

There are also arguments that managers are engaging in acquisitions due to overconfidence rather than engaging in acquisitions due to economic incentives. Managers may be very trustful in their own skills to generate value from the target firms which tends to result in overpaying and diminished shareholder value for the acquiring firm. Especially when mergers are considered, larger bidding firms tend to perform worse. This could be a result of hubris where due to prior success managers have overconfidence in their abilities to generate value after the acquisition. This observation has been named the hubris hypothesis (Roll, 1986).

The size distribution within an industry also plays a substantial role when considering which mergers will occur. If the industry has several companies with similar sizes, they are prone to a defensive merger wave and in case the industry has a dominant firm the likelihood for defensive merger waves becomes less likely (Gorton, Kahl & Rosen 2009).

4.3 Capture Theory on Regulation

In short capture theory on regulation argues that regulations are “captured” either by the ones who implemented the regulation such as the regulators or the ones who the regulation is supposed to regulate such as industries and companies (Stigler, 1971). Scholars noticed a pattern in regulatory agencies where when regulations are issued, they tend to enter a “youth” period where the regulation is emphasising its function to work toward public interest. After this phase agencies enter a “maturity” phase where bureaucracy increases and the agencies tend to be drawn closer to the specific industry they are supposed regulate, thus replacing public interest with the interests of the specific industry (Etzioni, 2009). In the worst case, this means that regulation is unable to counter monopoly pricing and is used to sustain this pricing level. Additionally, even if the regulators try to focus on improving social welfare, they rarely manage to succeed in it, thus the result from governmental regulation tends to be subpar (Shleifer, 2005).

The more general cases where regulatory capture happens are the following.

1. Special Interests Shape Regulation is when lobbyists are representing industries and thus try to influence the drafting of a regulation or the rules that will implement the regulation (Etzioni, 2009).
2. Dilute Existing Regulations is a situation where regulatory authorities will eventually yield to the businesses lobbying for an easing change in the current regulation and therefore agencies end up taking into consideration the special interest of an industry (Etzioni, 2009).
3. Weaken Enforcement of Existing Regulations is a case when lobbying is used to potentially significantly reduce the penalties companies would face in a situation where they would go against the regulations (Etzioni, 2009).
4. Repeal Existing Regulations is a situation where especially after public interest towards a specific issue decreases, industries can lobby regulatory agencies to potentially completely eradicate specific regulations (Etzioni, 2009).
5. Switching or Manipulating the Regulators happens when industries are unable to persuade the regulators. In these cases, the companies may simply switch regulators. As an example, a commercial bank countrywide was under the jurisdiction of the Office of the comptroller and decided to which to the Office of Thrift Supervision to have more relaxed regulatory standards (Etzioni, 2009).

6. Set prices and rates describe a case where instead of hampering the profitability of an industry, the regulations strengthen the profitability of an industry through implementing set prices and rates that the market would otherwise not provide to the industry (Etzioni, 2009).

4.4 Theory on Synergies

As mentioned before the most important reason driving M&A's is value creation. This sub-chapter will explain in further detail the means of how value is created. The theory on synergies assumes that the targets and the acquirers' shareholders will take part in M&A only when there is a potential to maximize shareholder returns. Here it is assumed that due to synergies there will be gains to both parties. Thus, the absolute gains will be positive, and the acquirer's and target's gains will be positively correlated with each other (Berkovitch, & Narayanan, 1993).

Through acquisitions a firm can utilize economies of scale and economies of scope. Here larger companies can cut cost per unit by producing goods in high volume which would otherwise be unachievable for smaller firms. Additionally, economies of scope enable a firm to cut cost by combining the marketing and distribution of various products (Berk, DeMarzo, & Harford, 2012).

Acquisition of technical skills essentially describes the human capital that the acquiring firm can utilize to fill in potential gaps in the firm's technical skills. One natural example of this is when two companies are conducting similar R&D projects. By combining the efforts and knowledge of both companies and possible patents the companies have a greater possibility of a technological breakthrough (DePamphilis, 2018).

Financial synergy describes the decrease in the acquirer's cost of capital can be attributed to an acquisition. This could be seen for example in the form of cost savings from smaller transaction costs, improved matching of investment possibilities with available capital, and by having cash flows from uncorrelated sources. In cases where companies have uncorrelated cash flows, the firm can reduce its systematic risk (DePamphilis, 2018).

4.5 Information Asymmetry

The information available in an M&A deal becomes vital when the actual valuation of a company is considered. The issue of information asymmetry was brought up already decades ago when Akerlof (1970) brought forth his "market for lemons". Here the author essentially says that it is preferred for the buyer to offer lower prices for products when the buyer has insufficient information. The lower prices will cause disinterest among the selling side with

high quality products but maintain the selling side with products of poor quality. In M&A context, this essentially means that undervalued target companies would be hesitant to initiate a deal if they knew that the actual value of the firm is greater. On the other hand, if the target knows that it is currently overvalued it will jump at the decision of a merger. From this it can also be assumed that when the acquirer has private information regarding possible synergies the bid premium can be larger (Masulis, & Simsir, 2018).

There is proof that when a target is difficult to value, stock swaps become beneficial for the acquirers. In addition, significantly higher announcement returns could be seen when a hard-to-value target was acquired using stock swaps. The reasoning for these results was largely explained through information asymmetry. Here using stock as payment functions as a way to mitigate the risk of overpaying for the company. When the acquirer relies solely on cash it bears all the risk of overvaluation. On the other hand, when stock is used as payment for a public firm the risks are distributed amongst the owners. (Officer, & Poulsen, 2009).

This goes in line with previous research stating that the acquiring party will prefer to use stocks as payment due to its contingent pricing characteristics (Hansen, 1987). Information asymmetry is assumed to be more pronounced amongst the acquisition of private companies where the level of information asymmetry is the most pronounced (Officer, & Poulsen, 2009). The managers in the target firm should have superior knowledge of the company's valuation, various risks within the company, and financial projections (Masulis, & Simsir, 2018).

5. Previous Literature

In this chapter, the relevant literature regarding mergers and acquisitions performance will be described. Both long-term performance and short-term performance will be studied in this chapter. A relatively large deal of the studies on long-term performance of acquiring companies showed that the bidders receive significant negative abnormal returns when using a time-period of one to three years after the acquisition (Agrawal, Jaffe & Mandelker, 1992). However, these studies have been criticised for using several methodological approaches and different factors affecting the results and conclusions of previous research. Additionally, several studies have focused solely on US firms which may cause data mining biases (Dutta & Vijay, 2009).

5.1 Dutta and Jog 2009

The long-term performance of acquiring firms: A re-examination of an anomaly

In this study Dutta and Jog (2009) studied the long-term stock performance of Canadian acquiring firms post-event period. The authors find that when accounting for several factors such as type of acquisition, type of target, level of similarity with the target, method of payment, type of acquirer, board independence, managerial ownership, and the relative size of the deals. The authors summarize by stating that there are no significant long-term negative abnormal returns are found for the specific acquirers acquirers.

5.1.1 Data and Method

The authors aim to conduct an out-of-sample research by looking at 1300 acquisitions which met the criteria of the deal taking place from 1993 to 2002, finalized deal, and the acquirer is not defined as being a part of the financial industry. The companies were listed on TSX. The data was acquired from the SDC Thomson Financial Database, stock return data was from CFMRC, accounting data was gathered from StockGuide, and management information was gathered manually from firms' annual reports.

Dutta and Jog (2009) use an event-time approach when considering buy-and-hold abnormal returns (BHAR) and a calendar-time approach using the Fama French three-factor model. When the event-time approach was considered, the performance of long-term acquisitions was calculated by using a reference portfolio and using returns of various control firms. All together the following three benchmarks were created; TSX 300 index return, value-weighted CFMRC index returns, and a matching firm's portfolio. The portfolio was created

by matching companies on the basis of the closest firm size and price to book values. When the Fama-French 3 factor methodology is considered monthly calendar-time portfolio returns after these monthly abnormal returns are calculated.

5.1.2 Result

When matching firms were inspected in closer detail due to being the least subject to bias. When using the TSX index and the CFMRC index as benchmarks a statistically significant underperformance of -54% could be observed. This demonstrates the importance of using the correct benchmarks. When considering the Fama-French 3-factor method it results in an intercept of 0,4% and a t-statistic of 0,776 resulting in no evidence of long-term underperformance which is in line with the BHAR results. Additionally, positive Buy-and-Hold abnormal returns of 0,1% could be observed for matched firms on a significance level of 5%.

5.2 Loughran & Vijh 1997

Do long-term shareholders benefit from corporate acquisitions?

In this study the authors aimed to approach the long-term M&A performance by taking two new important factors into consideration. Prior studies recognized that abnormal returns after the acquisitions are not consistent with market efficiency. Additionally, previous studies took into consideration that the excess returns would mean that wealth gains from acquisitions will not be accurate if the wealth gains are measured over the acquisition period. Previous studies had not reported on the general wealth increases by considering both pre-acquisition and post-acquisition returns. The other development compared to previous studies regards the calculation of excess returns. The authors compute the abnormal returns by taking the difference holding period returns of matching companies and sample companies. The authors argue that monthly rebalancing returns do not function as the proper estimate of how buy-and-hold strategies perform over a long period of time. The reluctance to sell and incurring capital gain taxes makes rebalancing a less likely portfolio strategy especially when the acquirer uses stock as payment. Additionally, a rebalancing strategy compiles transaction costs. This strategy also takes money from overperforming stocks and allocates it to stocks with underperformance, which results in issues if the under- or overvaluation dissipates gradually over time.

5.2.1 Data and method

The authors searched through all NYSE, AMEX and Nasdaq companies which have been delisted during a time period from 1970 to 1989. The sample includes 947 acquisitions. The authors use the Wall Street Journal Index was used in order to define the type of acquisition.

Payment terms are gathered whereafter the sample is divided into three groups depending on the type of payment. Here the first group consists of acquirer where their stock was used as payment for the acquisition. The second group consist of cash payments. The third group is mixed payment where both common stock and cash was used to pay for acquisitions.

The authors run a regression of buy-and-hold returns on the natural logarithm of size and the natural logarithm of book to market. After this the acquiring firms are matched with control firms.

5.2.1 Result

The results show that the acquirers' stock returns are generally higher when compared to the matching stock returns in cases when tender offers were made and where cash was used to pay for the acquisition. However, the acquirers' stock returns are lower when compared to the matched stock returns when merger offers are made and common stock is used as payment. It was found that the returns ranged from -25% for stock mergers and to 61.7% for cash tender offers. Stock acquirers experience significantly negative BHARs on a 1% significance level and cash acquirers experience positive and non-significant BHARs. Additionally, the study found is shareholders who sell out relatively quick after the acquisitions' date effective gained the most, whereas ones holding the acquirers' stock gained diminishing returns.

5.3 Bessembinder & Zhang 2008

Firm characteristics and long-run stock returns after corporate events

The study by Bessembinder & Zhang (2008) studied the long-term stock performance of firms which are taking part in corporate events such as M&As, initial public offerings seasoned equity offerings, and dividend initiations. The authors summarize a large body of previous literature and argue that previous studies have not accounted for the differences between the event firms and their counterparts. The authors propose various firm characteristics to be controlled for, such as liquidity, volatility, momentum, and investment. The authors found that high abnormal returns for the event companies are not reflected by the individual events, but instead, they reflect the characteristics of the companies participating in events as well as the broader return patterns common for equities.

5.3.1 Data and Method

The study uses a time-period from 1980 to 2005 where monthly returns have been used. The data has been compiled from Thomson Financial's SDC database and the Center for

Research in Security Prices (CRSP). Firms which are undergoing a corporate event are matched based on size, and book-to-market ratios with control firms. All together the author compiles 3972 acquisitions, 5131 seasoned equity offerings 8966 initial public offerings and 887 dividend initiations.

In order to assess the long-term abnormal returns the author uses an OLS and a Fama-MacBeth regression-based approach. The authors use BHARs to compute the abnormal returns of event firms and the control firms under a three- to five-year period. The authors also employ the calendar time approach to potentially mitigate the biases caused by the BHARs. To further study firm characteristics for example beta, size, illiquidity, and investment were used to study the firm characteristics.

5.3.2 Results

When the mergers and acquisitions are observed, it shows that bidding firm BHARs are generally 24% lower when compared to the control firms. Additionally, the estimated intercept -0,46% is significant on a 1% level. When firm characteristics are observed it seems that illiquidity momentum are both positively correlated with abnormal returns. Most importantly the pooled OLS and Fama MacBeth regression found no long-term abnormal return when the bidding companies were considered during the time-period from 1980 to 2005. When the calendar time portfolio method was employed, the estimated alpha was statistically insignificant for all the four events studied. BHARs and calendar time portfolio methods tend to give contradicting results. When using BHARs negative long run abnormal returns could be detected while observing initial public offerings (IPOs), seasoned equity offerings (SEOs), and merger bids. On the other hand, positive long-run abnormal returns were present when dividend initiations were observed. No abnormal returns were present when the calendar time portfolio was considered.

5.4 Moeller, Schlingemann & Stulz 2004

Do shareholders of acquiring firms gain from acquisitions?

The authors of this study focused on acquiring public firms where the date of the merger is the when the announcement of acquiring a firm becomes public. The authors find that once the acquisition was announced the shareholders lose a total of 218 billion dollars during the time period of this study. Smaller firms are able to achieve profitable acquisitions through small acquisition. On the other hand, large firms complete bigger acquisitions, resulting in generally considerable losses.

5.4.1 Data and Method

The authors study 12023 acquisitions from year 1980 to 2001. The data has been collected from the Securities Data Company's (SDC) U.S. Mergers and Acquisitions Database. This sample comprises of 5583 private firms, 3798 subsidiaries and 2642 public firms.

The authors estimate cumulative abnormal returns, in addition the gain the shareholders is also computed based on how much was spent on the acquisition. Lastly the aggregate net present value is also computed. All these methods use an event window of three days around the event itself. The authors also study several firm and deal characteristics such as days to completion, transaction value in relation to total assets and market capitalization

5.4.2 Results

The authors found that the announcement of acquiring a public firm resulted in generally negative abnormal returns for the acquiring firms' shareholders with an abnormal return of 1,02%. On the other hand, when private firms and subsidiaries were acquired, shareholders gained positive abnormal returns of 1,50% for private firms and 2,00% for subsidiaries. The type of payment had a strong effect on the level of returns. The authors mention that when equity-financing was used to acquire public firms the returns were the worst. When cash acquisitions were present the acquisition on public firms became negative. Lastly, when subsidiaries and private firms were acquired with equity the returns were the highest when compared to public firms. The authors found no strong evidence that acquiring firms do not generally underperform in the long run when compared to their peers.

5.5 Masulis & Simsir 2018

Deal Initiation in Mergers and Acquisitions

The authors of this study studied the initiation process of an M&A deal. They found that in their sample which contains only companies from the United States, 35% of the deals were initiated by the target firms. The purpose of the study was to understand why target firms would want to initiate deals, and if a difference in takeover premiums and abnormal returns can be detected. Additionally, the authors want to study if target company managers have gathered any kind of negative information which would cause a decrease in the acquisition price.

5.5.1 Data and Method

The data was gathered from the SDC Platinum Mergers and Acquisitions database during a time period from 1997 to 2012. The authors used the following restrictions when collecting

the data: the deal value has to exceed 5 million dollars, the acquirer and the target firms are public and need to be based in the U.S. Additionally, majority interest has to be acquired after the acquisition. The event date is defined as the merger announcement date. The authors have manually gone through SEC files in order to determine whether it was the acquirer or the target firm initiating the deal.

One-factor market model is used to calculate the abnormal returns of the acquirer and the target. Days [-316, -64] are used as the estimation period relative to the event. The cumulative abnormal returns and the bid premia are calculated over the [-2, +2] and [-63,+2] days.

5.5.2 Result

The authors found that target-initiated deals have a 9,8% lower average bid premium when compared to bidder-initiated deals, which is significant at a 1% level. When the Cumulative abnormal returns were considered, under the five-day event window target-initiated deals showed a 7,3% lower CARs showing statistical significance on a 1% level. Additionally, when the longer event window was considered, target-initiated deals showed 7,4% lower CARs when compared to bidder-initiated deals. Additionally, the authors found negative acquirer CARs of -1.9% during an event window of [-2,2].

5.6 Other Relevant Literature

The study by Asquith (1982) focuses on NYSE firms that are taking part in merger bids. These firms were put into four groups based on if firm was bidding or if the firm was the target and whether the merger bid was successful or not.

The data consists of two groups, the one includes 211 target firms and 196 bidding firms which were defined as successful mergers and the second group includes 91 target firms and 89 bidding firms which were defined as unsuccessful mergers.

Target firms had generally negative cumulative excess returns before to the announcement and if the merger was successful the firm still experienced slightly negative cumulative excess returns during press day (-0,8%), while the firms failing to complete the merger had positive cumulative excess returns (CER) (1,2%). However, the interim period and the final outcome day showed positive CERs of (7,2%) and (8,5%) if the merger was successful and (-6,9%) and (-13,3%) if the merger was unsuccessful. When the bidding firms were considered both groups had positive CER regardless of whether the merger was completed or not. For bidding firms with successful mergers CERs were positive during all the dates and for unsuccessful mergers CERs were negative only during the interim period (-2,8%), outcome

day (-3,0%) and getting gradually worse after the outcome day. For target firms all the CERs were significant from day -480 to -20 and for bidding firms is the merger is successful CERs are significant from day -480 to -20, while none of the CERs were significant for unsuccessful merging firms.

In the study by Mitchell & Stafford (2000) the authors seek to investigate how reliable long-term abnormal returns are when significant corporate events take place. The authors argue that bootstrapped BHARs do not allow to price equity securities precisely when long time horizons are considered. The bootstrapping procedure assumes event-firm abnormal to be independent.

The data consists of mergers, SEOs and share repurchases which were completed during 1958 to 1993. The data consists of 4911 SEOs, 2421 tender offer share repurchases and 2193 M&As, the return data is collected from CRSP, NYSE, AMEX and NASDAQ stock files. The event window is defined as the end of the month when the event is finalized. Firms are assigned to portfolios on the basis of size and book-to-market values.

The authors calculate 3-year BHARs for each firm, additionally the authors also use a calendar-time abnormal returns approach. Here equal weight portfolios and value weight portfolios are constructed, containing all sample firms that took part in the specific events during the prior three years. These portfolios are rebalanced every month, and the excess returns are regressed on the Fama French 3 factors.

The corrected t-statistics for BHARs show that none of the three event samples show abnormal returns. The t-statistic of SEOs (-6.05) and repurchases (4.86) fall to (-1,49) and (1,91) when taking into consideration cross-correlations of BHARs. This shows that the traditional method of computing BHARs should not be used as a valid methodology, some corrections are required.

The calendar-time portfolio regressions and calendar-time-abnormal-returns were better when the portfolios were value weighted compared to equally weighted portfolios. The calendar time methodologies have sufficient power to find whether abnormal performance is present and when comparing to the BHAR approach the calendar time approach shows superior performance after accounting for cross-sectional dependence of abnormal returns.

Andre, Kooli & L'her (2004) Focused on Canadian M&A deal under a time period from 1980 to 2000, gathering 267 acquisitions. The authors use the calendar time approach in order to analyse the abnormal performance of acquiring Canadian firms after the M&A deal was finalized.

When the three-year long-term abnormal returns were inspected using equally weighted returns a statistically significant negative monthly performance of -0,523% was found. Contrary when a value-weighted approach was used the results yielded statistically insignificant positive returns 0,322% per month (Andre, Kooli & L'her, 2004).

Rau and Vermaelen (1998) studied the long-term performance of bidding firms of 3169 mergers and 248 tender offers. The time period chosen for the study was from 1980 to 1991 and the event date was chosen to be the date of deal completion. All the firms were required to have information on CRSP, NYSE, AMEX, Nasdaq and Compustat in order to control the firms for size and book-to-market ratios.

The authors found that once the firms were adjusted size and book-to-market ratios under a three-year period statistically significant -4% abnormal returns were shown for mergers, while a positive 8,56% significant abnormal returns were found for the tender offers.

Table 1. Summary of relevant previous studies

Authors	Method	Dependent variable	Independent variables	Key results
Dutta and Jog 2009	Event-Study Fama-French 3 Regression	BHAR [0, 36- Months] Cash Flow/Total Assets	(1) Type of acquisition (2) Public or Private) (3) Level of Deal relatedness (4) Type of Payment (5) Type of Acquirers (6) Board independence (7) Managerial ownership (8) Relative size	(1) Stock-Financed deals yield significantly negative BHARs (2) Positive Buy-and-Hold abnormal returns of 0,1% could be observed for matched firms on a significance level of 5%
Loughran & Vijh 1997	Event-Study	BHAR [-2 days, 60- Months]	(1) Type of Acquisition (2) Type of Payment (3) Relative Size	(1) Stock acquirers experience significantly negative BHARs on a 1% significance level (2) Cash acquirers experience positive and non-significant BHARs

Bessembinder & Zhang 2008	OLS Fama and MacBeth regression	Difference in monthly log returns	Change in: (1) Market beta (2) Size (3) Book-to-market ratio (4) Momentum (5) Illiquidity (6) Idiosyncratic volatility (7) Investment	(1) Acquisitions showed significant negative intercepts when size & BM were matched 0.35%
Moeller, Schlingemann & Stulz 2004	Event-Study	CAR [-1,1]	(1) Size (2) Type of target (3) Type of Payment (4) Deal characteristics	(1) Small firms experienced significantly positive CARs (+2.32%) (2) Large firms lose significant shareholder value CARs (-1.02%)
Masulis Simsir 2018	Event-Study	CAR [-2,2], CAR [-63,2]	(1) Party initiating the deal (2) Financial distress measures (3) Financial constraint measures (4) Financial performance measures (5) Information asymmetry (6) Industry and economic shock measures (7) Deal features	(1) Target firm CARs [-2,2] in target-initiated deals are 7,3% lower when compared to bidder-initiated deals. (2) Target firm CARs [-63,2] in target-initiated deals are 7,3% lower when compared to bidder-initiated deals. (3) Acquirer CARs [-2,2] showed negative results of -1.9%.

6. Method

This chapter will describe the event study methodology and its issues, and how abnormal returns are estimated. Additionally, the multivariate regression is described, the regression model is introduced, the research hypothesis is covered and the model diagnostics will be explained.

6.1 Event Study

As in previous studies, the chosen method will be an event study. MacKinlay (1997) describes event studies as a “study that measures the impact of a specific event on the value of a firm”. The first key point in an event study is to decide on the the event of interest and what kind of time period will be chosen to observe the change in stock prices. Next, the selection criteria should be defined. This could mean for example specific restrictions to the data set or restrictions on specific key firm metrics (P/B, market cap & debt proportion). To compute the level of effect the event has, abnormal returns will be calculated against some level of normal return. Next, the estimation window will be chosen. Depending on the specific event and potential circumstances surrounding the event the estimation window can vary substantially. The key takeaway is to estimate the normal level of performance prior to the event. After this the null hypothesis should be defined and the way to aggregate individual firm’s abnormal returns.

The event study functions as a test which interprets how efficiently the market is able to take into consideration new information. The efficient market hypothesis argues that new information should be observed in the security prices (Fama et al., 1969). In order to account for any potential price reaction lag, typically also wider event windows will be used to capture the potential slow responses. For the purpose of this study CARs will be used to analyse short term abnormal returns and BHARs to analyse long-term abnormal returns. The reasoning for this is to analyse the short term anticipated synergies created through the mergers with CARs. BHARs on the other hand will function as a way to analyse the actual materialized synergies. The value received from synergies can take years and after the companies merging receive the full value from the available synergies it might not reflect the synergies anticipated synergies. According to Borot, & Weihe (2018) it might sometimes take up to three years for companies to get the full value from the merger.

6.2 Issues when Estimating Abnormal Returns

While studying short-term abnormal returns the estimation window tends to be a couple of days around the event day itself. This gives a clear window to measure the level of the effect caused events such as CEO changes, spinoffs or mergers. The benefit of having a short event

window is that the doesn't strongly affect the results regarding abnormal returns, because the expected returns linger around the value zero. (Fama, 1998).

On the other hand, the study of long-term returns while using BHARs pose a number of issues. BHARs may falsely show how quickly the stock price adjusts to an event. There is a possibility that BHARs grow along the return period even in cases where there are no abnormal returns post-first period (Mitchell, & Stafford 2000). Also, Lyon et al., (1997) mention that analysing long term returns may be problematic due to test statistics often being misspecified in non-random samples. Additionally, when using BHARs over long time periods they tend to fail in correcting for correlations of returns for events which aren't accounted for by the model (Brav, 2000).

Some proposed remedies for the problems have been recommended such as bootstrapping recommended by Ikenberry, Lakonishok, and Vermaelen, (1995). On the other hand, the calendar-time portfolio approach is often recommended, which argues that monthly returns do not suffer as much from models which do not perfectly describe expected returns. The calendar-time portfolio approach accounts for cross-correlations of event-firm abnormal returns in the portfolio variances. The distribution in calendar-time portfolio is better approximated by the normal distribution (Fama, 1998). Despite this Loughran, & Ritter (2000) argue that the calendar-time approach can potentially fail to show significant abnormal returns in cases where during certain months where very negative or positive activity would be present. Lyon, Barber, and Tsai (1999) mention that BHARs "accurately represents investor experience". Taking these arguments into consideration this study will use CARs to analyse short term abnormal returns and BHARs to analyse long-term abnormal returns.

6.3 How Abnormal Returns are Estimated

Abnormal returns are calculated by taking the return of security during the event window minus the expected return for the firm without any event taking place. For the purpose of this study abnormal returns are calculated as cumulative abnormal returns (CARs), and as buy-and-hold abnormal returns (BHARs). Other methods for calculating abnormal returns consist of average abnormal returns (AARs), cumulative average abnormal returns (CAARs), and the calendar-time portfolio approach (MacKinlay, 1997).

BHARs have been common when measuring long-term M&A performance. The buy-and-hold abnormal returns essentially calculates the mean multi-year return when an investor invests in every firm that completes an event. After a pre-specified holding period the

investor would sell. These returns are compared to a similar investment strategy where non-companies would be invested in (Mitchell, & Stafford, 2000).

The method starts off by calculating the abnormal returns using the following equation (1):

Equation 1.

$$AR_{it} = R_{it} - E(R_{it}) \quad (1)$$

Here the abnormal returns of firm i equals the returns of the firm i at time t minus the expected return of firm i at time t . The daily returns are gathered from the CRSP database. Daily returns are calculated using equation (2):

Equation 2.

$$R_{it} = \frac{(P_{it} - P_{it-1}) + D_i}{P_{it-1}} \quad (2)$$

Here R_{it} depicts the return of firm i at time t , P_{it} final sale price or closing bid/ask average of stock i at time t and P_{it-1} is the prior sale price or closing bid/ask average of stock i . D_i shows the cash adjustment for firm i .

In the following section we will go through the most popular common ways of estimating abnormal returns, starting with the mean adjusted approach in equation (3):

Equation 3.

$$AR_{it} = R_{it} - \bar{R}_i \quad (3)$$

R_{it} depicts the return of firm i at time t and \bar{R}_i is the average return of stock i which has been estimated during a specific period before the event date itself. According to Warner & Brown (1985) other models perform better than the mean adjusted return model, especially when event date clustering is present.

Another common method of estimating abnormal returns is to use the market adjusted return model in equation (4):

Equation 4.

$$AR_{it} = R_{it} - R_{mt} \quad (4)$$

In this model R_{it} is the share return of firm i at time t and R_{mt} is the market return at time t . Compared to the mean adjusted model the market adjusted has superior statistical power

Warner & Brown (1985). The S&P 500 index will be the chosen market index which is commonly used in previous literature.

Next the market model will be introduced in equation (5):

Equation 5.

$$AR_{it} = R_{it} - (\alpha_i + \beta_i \cdot R_{mt}) \quad (5)$$

In this model is the share return of firm i at time t and is the return of the market at time t . α_i and β_i depict the ordinary least squares values from the estimation period. The market model offers a significant benefits through removing the part of the return which is dependent on market return's variance. Especially when compared to the mean adjusted model, the market model is able to detect event effects in a more efficient manner (MacKinley, 1997). Lastly the BHAR will be introduced in equation (6):

Equation 6.

$$BHAR_{ih} = \prod_{t=1}^h (1 + R_{it}) - \prod_{t=1}^h (1 + R_{it}) \quad (6)$$

Here $BHAR_{ih}$ is the buy-and-hold abnormal returns for company i over the time period h . R_{it} is the share return of firm i at time t and R_{mt} is the return of either a benchmark portfolio or an index. Generally, BHARs have been used when long term returns have been of interest.

To calculate the compute the abnormal returns, abnormal returns will be summed according to equation (7):

Equation 7.

$$CAR_i(t_{-1}, t_n) = \sum_{t=t_{-1}}^{t_n} AR_{it} \quad (7)$$

6.4 T-Test

To establish whether the CARs and BHARs are statistically significant, a t-test will be used, giving the hypotheses below:

Equation 8 & 9.

$$H_0: CAR = 0 \quad (8)$$

$$H_1: CAR \neq 0 \quad (9)$$

And;

Equation 10 & 11.

$$H_0: BHAR = 0 \quad (10)$$

$$H_1: BHAR \neq 0 \quad (11)$$

The results of these statistical tests will show whether the abnormal returns deviate from zero on a statistically significant level.

6.5 Multivariate Regression Analysis

This study will also be analysing the level of effect which different variables will have on the market through a multivariate regression analysis. The multivariate regression focuses on the relation between the dependent variable and various independent variables (Allison, 1999). The multivariate regression generally looks as depicted in equation (12):

Equation 12.

$$y = \beta_0 + \beta_1x_1 + \dots + \beta_nx_n + \varepsilon \quad (12)$$

Here y is the dependent variable, β stands for the regression estimator, x denotes the the independent variables and ε is the error term. The statistical hypotheses are depicted according to equation (13) and (14):

Equation 13 & 14.

$$H_0: \beta_n = 0 \quad (13)$$

$$H_1: \beta_n \neq 0 \quad (14)$$

When the regression analysis is conducted R squared will be used to interpret the results. The beta coefficient shows to which extent the dependent variable changes in response to changes in the independent or control variables (Djurfeldt et al., 2003, p.165). R-squared shows the proportion of variance in the dependent variable which can be explained by the model, meaning the R-squared value functions as a value for explanatory power. The study additionally uses the adjusted R squared. If the model contains irrelevant variables the adjusted R squared will give a lower score as penalty for the irrelevant variables (Wahlin, 2015, p.259).

6.5.1 Regression Model

The regression models are expressed as following formula (15) and (16):

Equation 15.

$$CAR_i = \beta_0 + \beta_1 Hidden_i + \beta_2 Size_i + \beta_3 ROA_i + \beta_4 TQ_i + \beta_5 AZ_i + \beta_6 CR_i + \beta_7 GDP_i + \beta_8 HHI_i + \beta_9 Cash_i + \beta_{10} SA_i + \beta_{11} State_i + \beta_{12} DV_i + \varepsilon_i \quad (15)$$

Equation 16.

$$BHAR_i = \beta_0 + \beta_1 Hidden_i + \beta_2 Size_i + \beta_3 ROA_i + \beta_4 TQ_i + \beta_5 AZ_i + \beta_6 CR_i + \beta_7 GDP_i + \beta_8 HHI_i + \beta_9 Cash_i + \beta_{10} SA_i + \beta_{11} State_i + \beta_{12} DV_i + \varepsilon_i \quad (16)$$

Here i represents the specific company in question, β_0 represents the constant in the regression model, β_1 signifies the independent variable, β_2 to β_{12} depict the control variables and lastly ε_i is the error term.

6.6 Research Hypotheses

Following previous studies and theory, this chapter will examine the main research hypotheses.

H1: Statistically significant positive CARs around the completion of a merger

Following previous studies such as Moeller, Schlingemann & Stulz's (2004) mention that the CARs are positive with an average of 1.103% and a statistical significance of 1% during an event window of [-1+1]. Similar results have been presented by Masulis, Wang, and Xie (2007) where during an event window of [-2,2] the average CARs was 0,215% with a 5% significance. However, when Masulis, & Simsir (2018) studied the acquirer CARs they found negative results of -1.9% during an event window of (-2,2). Judging by these numbers the assumption is that the CARs will be positive statistically significant.

H2: Statistically significant negative BHARs years after the completion of a merger

When BHARs are considered Dutta and Jog (2009) found that during a three-year period after adjusting for skewness and cross-sectional dependence positive abnormal returns of 0,1% could be observed on a significance level of 5% when the whole sample was considered. On the other hand, when non-overlapping cases were considered, no statistical significance was found. Additionally, Bessembinder & Zhang (2008) report negative average BHARs during a 60-month long time period. Mitchell & Stafford (2000) also found negative but statistically insignificant abnormal returns when equal-weight BHARs were considered. Value weighted BHARs were also negative but statistically significant on a 5% level. Judging by these results the assumption is to see negative but insignificant results when BHARs are considered.

H3: Statistically significant positive estimator for the hidden acquisition dummy variable

Based on the theory mentioned in the previous chapters the assumption is to experience statistically significant and positive return for observations defined as hidden acquisitions. As mentioned in the previous chapters if firms are able to approach a monopolistic state using hidden acquisitions, then the firms' returns should also approach profit maximization. Thus, the assumption is that firms engaging in hidden acquisitions should show statistically significant and positive numbers.

6.7 Model diagnostics

In this chapter potential statistical issues are addressed and explained. Normality, heteroskedasticity and autocorrelation will be looked at in detail.

6.7.1 Normality

The first assumption is that the sample used in the study is normally distributed, this assumption is studied through analysing skewness and kurtosis. Skewness describes the situation where the variables distribution is either skewed to the right or the left, rather than being normally distributed. Kurtosis describes a situation where the sample distribution has fat tails. High kurtosis values could indicate that in addition to the observations being concentrated around the mean the sample also contains outliers. In order for a normal distribution to be present a skewness value of 0 is needed and the kurtosis value should not exceed 3. Despite these requirements, according to (Brooks, 2019, p.161-170) normality can still be assumed when the sample size exceeds 30.

The values for kurtosis and skewness have been provided in table 1, the values for CARs seem to in general meet the assumptions of normality. BHARs on the other hand do not meet the requirements. This can partly be explained with the longer time period used and as Mitchell & Stafford (2000) mentioned there is a possibility that BHARs grow with the return horizon even in cases where there are no abnormal returns after the first period, resulting in potential outliers.

Other relevant variables which show signs of skewness and kurtosis are ROA, Tobin's Q, Altman Z score and current ratio and GDP increase. ROA can cause high kurtosis because some firms have very high profitability while others have low or negative ROA. High kurtosis in Tobin's Q may be explained through investor sentiment or economic cycles. Regarding current ratio firms that are highly liquid could be seen as outliers and therefore cause the

kurtosis. Lastly, the high kurtosis in the variable GDP increase can be a reason of economic shocks such as the Covid-19 pandemic which took place during the chosen time period.

All in all, financial data tends to generally inhibit issues with skewness and kurtosis depending on factors such as industry and macro-economic performance.

Table 2. Sample Skewness and kurtosis

Variable	Skewness	Kurtosis
[-5,252]	1,416	4,111
[-5, 504]	2,952	12,164
[-5,756]	2,749	11,143
[0]	0,491	2,692
[-1,0]	0,512	3,894
[-2,2]	0,371	3,539
[-3,3]	- 0,001	1,911
[-5,5]	- 0,260	1,683
Size	0,121	- 0,321
ROA	- 1,889	7,193
TQ	1,969	4,531
AZ	2,845	10,175
CR	2,311	6,567
GDP	- 6,334	48,555
HHI	1,532	1,616
Cash	- 1,389	- 0,072
SA	- 1,073	0,879
State	0,354	- 1,736
DV	4,996	27,171
Hidden	6,608	41,693

6.7.2 Heteroskedasticity

Homoskedasticity is also assumed. If heteroscedasticity is present in the sample, it means that the variance of the error terms is not constant. When heteroskedasticity is present the R^2 statistics may not be reliable due to the variance of the residuals is not constant. In this study White's test is used to detect heteroskedasticity. The results show strong heteroskedasticity and therefore heteroskedasticity-robust standard errors will be employed.

6.7.3 Multicollinearity

Lastly multicollinearity will be analysed, here the assumption is that there is no multicollinearity present. Multicollinearity describes the case when there is strong correlation between the explanatory variables. In order to test this VIF values will be used. When this test is used the value -1 depicts perfect negative correlation and 1 means perfect positive correlation. Following Baumgartner et al. (2004), if there is a correlation between the variables which shows a value greater than $0,8$ or lower than $-0,8$, multicollinearity is likely present in the data. Additionally, if the VIF value is greater than 10 multicollinearity is present. For the data used in this study none of the variables show strong correlation or VIF values exceeding 10 .

7. Data

The data collection process will be described. Additionally, the dependent, independent and control variables chosen will be introduced and further described. Lastly the sample descriptive statistics will also be introduced.

The M&A deal specific data such as the deal value and merger completion dates have been gathered from the LSEG/Refinitiv database. Individual stock and index returns have been acquired from the CRSP database. Fundamental data such as net income and total liabilities have been gathered from Compustat – Capital IQ database. Additionally, the HHI value has been obtained from Hoberg and Phillips data library. The M&A data ranges from 2010 to 2020, and the stock and index returns range from 2009 to 2020 in order to have sufficient days to use the market model. This time period gives a sufficient time horizon to inspect both long – and short-term developments in abnormal returns. The annual premerger notification thresholds have been acquired from the Federal Trade Commission website.

This paper focuses on two groups where **group 1** focuses on short-term anticipated synergies and thus consists of cumulative abnormal returns and **group 2** focuses on long-term realized synergies and thus consists of buy-and-hold abnormal returns.

Certain restrictions have been set based on previous literature and the requirements set by the scope of the study.

1. The acquisition must have a completion date during the time-period of 2010 to 2020, known as date effective.
2. As done in previous studies only deals which have a value of 1 million dollars or more will be considered.
3. The acquiring companies must be public US companies where the acquirer's state of incorporation is in the US.
4. The target company must be a US company whose state of incorporation is in the US.
5. Following previous studies financial acquirers and targets will be excluded from the data.
6. The data consists of M&A deals where after the acquisition the acquirer owns at least 50% of the target firm.
7. The deals must use either cash consideration, stock or a combination of to be included in the data.

8. Observations missing the ticker, date of effect or the announcement will not be included in the data.

7.1 Sample

With these restrictions, the initial companies have been matched with the returns acquired from CRSP database and consequently, the individual companies have been matched with the fundamental data from Compustat – Capital IQ database. In case a company has gone bankrupt or is no longer public, when calculating buy-and-hold abnormal returns the observation will be removed. The data has been winsorized at a one percent level. With all these considerations, group 1 has 3189 observations and group 2 has 3055 observations. In addition to dividing the abnormal returns into different groups, group one and two will have subgroups of hidden and ordinary acquisitions. 72 hidden acquisitions were gathered.

First, the sample as a whole will be observed, after this a second sample will be created where hidden acquisition companies will be matched with the most similar ordinary acquisition companies based on their company size and book-to-market ratios. This follows the study by Bessembinder & Zhang (2013).

7.2 Variables

This subchapter will explain the dependent, independent and control variables employed in the study.

7.2.1 Dependent Variable

Since there are no studies where the hidden acquisitions are solely studied, various variables have been incorporated which appear to best fit the purpose of this paper. A large part of the variables in this follows the variables used in previous studies such as Masulis & Simsir (2018), Bessembinder & Zhang (2013), and Masulis, Wang & Xie (2007).

7.2.1.1 CAR & BHAR

Traditionally event studies have been focusing on short event windows where the anticipated synergies can be studied. For the purposes of this study focusing on short event windows will not be sufficient, therefore longer time periods will also be studied. Even if two firms complete a merger it is not certain that all the value of the potential synergies will be realized instantly after the merger. Thus, it is essential to study the realized synergies that are achieved years after the merger.

For CARs five different event windows will be employed, [0], [-1,0], [-2,2], [-3,3] and [-5,5] to further study how rapidly the market reacts to the information of a merger being

completed. The market model was used throughout this study. For BHARs, three different event windows will be employed, [-5,252], [-5,504] and [-5,756]. Through using these chosen event windows, it is expected that the individual firms will have sufficient time to realize the synergies brought forward by the merger.

7.2.2 Independent Variable

One independent variable has been chosen to be included in the regression model. Based on previous studies and the underlying theory the following variable is expected to have a relative effect on the dependent variable.

7.2.2.1 Hidden acquisition dummy

Since the goal of this study is to compare hidden acquisitions to ordinary acquisitions a dummy variable will be used to describe whether the acquisition is hidden or not. As mentioned by Wollman (2020) within the dialysis industry hidden acquisitions were able to cause local duopolies and even monopolies. If similar results take place in this study the results should be reflected in the abnormal returns and the hidden acquisition dummy should capture it.

7.2.3 Control Variables

Here the following control variables will be introduced. The chosen control variables have been picked from the previous relevant studies which were mentioned in the chapter previous literature.

7.2.3.1 Size

Several studies such as Bessembinder & Zhang (2013) and Masulis, Wang & Xie (2007) have used size as a control variable. In this study the size variable is calculated through taking the natural logarithm of the company's total assets at the end of the quarter prior to the merger being completed.

7.2.3.2 Return on Assets

Return on assets has been used in several studies as a control variable such as Masulis & Simsir (2018). The variable is calculated as the acquirer's net income divided by total assets at the end of the previous quarter before the acquisition has been completed. The assumption is that a higher return on assets would indicate stronger financial performance and thus it is expected to have a positive impact on the abnormal returns.

7.2.3.3 Tobin's Q

Tobin's Q has been used by Tunyi (2021), Masulis, Wang, Xie (2007) and Masulis & Simsir (2018) as a control variable. Tobin's Q is calculated as the acquirer's market value of total assets divided by the book value of its assets. Tunyi (2021) mentions that firms with higher Tobin's Q values have a greater likelihood of taking part in acquisitions. Thus, these firms are perceived to have to be more profitable and stable which would in this study it is expected that Tobin's Q will have a positive effect on the abnormal returns.

7.2.3.4 Altman Z Score

It becomes important to address the level of financial distress the acquirors are experiencing. Following Masulis & Simsir (2018) Altman z score will be used to assess the financial distress. The variable has been calculated through using the following equation (17):

Equation 17.

$$1,2 \cdot \left(\frac{\text{Working Capital}}{\text{Total Assets}} \right) + 1,4 \cdot \frac{\text{Retained Earnings}}{\text{Total Assets}} + 3,3 \cdot \left(\frac{\text{EBIT}}{\text{Total Assets}} \right) + 0,6 \cdot \left(\frac{\text{Market Value of Equity}}{\text{Total Liabilities}} \right) + 1 \cdot \left(\frac{\text{Sales}}{\text{Total Assets}} \right) \quad (17)$$

The higher the score, the lower the level of financial distress of a firm. Thus, it is expected that firms with higher scores are stable financially and this could positively affect the market reaction of the complete merger.

7.2.3.5 Current Ratio

Previous studies have used various liquidity measures such as the ratio of cash and short-term investments divided by total assets used by Tunyi (2021), liquidity ratio and current ratio used by Masulis, & Simsir (2018). This study will be employing the current ratio to assess the acquirer's ratio of current assets. The reasoning behind this variable is that firms with low current ratios may have trouble handling their short-term liabilities, thus a low liquidity value could have a negative effect on abnormal returns.

7.2.3.6 SA-Index

SA-index was first derived by Hadlock and Pierce (2010) and later on used by Masulis and Simsir (2018) to assess financial constraint. The SA-index is calculated using the following equation (18):

Equation 18.

$$(-0,737 \cdot Size) + (0,043 \cdot Size^2) - (0,040 \cdot Age) \quad (18)$$

Here size is the natural logarithm of inflation adjusted total assets, and age is defined as the number of years the company has been public. According to Hadlock and Pierce (2010) once small firms start to mature the financial constraints fall drastically. Thus, a higher SA-index value indicates stronger financial constraints and therefore, greater values would cause likely cause negative effects on abnormal returns.

7.2.3.7 Deal Value

The deal value variable will show the amount the acquirer paid for the acquisition. Higher deal values could be a result of several bidders, various defensive strategies used by the target or simply resistance to sell. The higher deal value would leave less capital to be allocated elsewhere in the company's functions and thus is expected to negatively affect the abnormal returns.

7.2.3.8 GDP Increase

As the macroeconomic variable the change in GDP will function as the indicator for general economic performance in the US. The GDP variable is calculated by taking the quarterly change in GDP. As mentioned by Harford (2005) it is typical for companies to engage in M&A activity during times of positive economic phases. The expectation is that during positive economic times investors can have higher confidence and thus react more positively when a merger is completed.

7.2.3.9 Herfindahl-Hirschman Index (HHI)

HHI index used by Masulis & Simsir (2018) measures how concentrated a specific industry is. The HHI index is calculated through squaring the market share of each firm competing in the market and summing the results. The HHI index value which was available prior to the merger being completed, was used. High HHI values indicate an industry with low competition and high concentration, thus if a company completes a merger in these industries it is expected to strengthen its market position and thus the market reaction should be positive. The HHI values have been gathered from the Hoberg-Phillips Data Library.

7.2.4.10 Cash

The cash variable describes a dummy variable which indicates whether cash consideration was used solely as the form of payment, the variable will be zero otherwise.

7.2.4.11 State

Lastly, the state variable describes the target's state tax rate prior to the acquisition. The thought behind this variable is that when the acquirer requires to pay higher taxes the company has less available capital to allocate to its business functions and thus the market reaction would be negative.

7.2.5 Descriptive Statistics

The following sections describes the statistics for the variables used in the study. Compared to the initial observations the BHAR has less observations due to missing data points when matching returns and firm characteristics.

The CAR for the whole sample seems to be on slightly positive depending on the event window and ranging from a maximum from 20,9% to a minimum of -23,3%. The cumulative abnormal returns seem to increase when the event window is wider meaning the market may react to the news with slight lag. The assumption is that the news of the merger being completed reaches investors at different times and processing the news does not happen instantly.

When analysing the BHARs the average appears to be slightly negative during the first and third year and slightly positive, ranging from a minimum of -98,4% to a maximum of 485,4%. The assumption is that companies would have been able to realize a significant part of the available synergies during the three-year time period.

Judging by the financial constraint variables firms that engage in M&A have decent financial figures, judging by median Altman Z score of 5,338 meaning that these firms are in a very low risk of declaring bankruptcy. Current ratio of 1,909 meaning that the median firm has almost double the amount of current assets compared to current assets.

Table 3. Sample descriptive statistics

Variable	N	Median	Average	SD	Max	Min
[-5,252]	3055	- 0,112	- 0,066	0,451	1,898	- 0,899
[-5, 504]	3055	- 0,218	- 0,019	0,875	4,854	- 0,984
[-5,756]	3055	- 0,194	- 0,033	0,766	4,207	- 0,969
[0]	3189	0,001	0,002	0,022	0,080	- 0,064

[-1,0]	3189	0,002	0,004	0,036	0,147	-	0,117
[-2,2]	3189	0,003	0,004	0,042	0,166	-	0,138
[-3,3]	3189	0,003	0,003	0,057	0,183	-	0,180
[-5,5]	3189	0,003	0,001	0,071	0,209	-	0,233
Size	3189	7,597	7,659	1,896	12,049		3,328
ROA	3189	0,011	0,008	0,027	0,074	-	0,119
TQ	3189	1,260	1,616	1,299	7,121		0,176
AZ	3189	5,309	7,642	8,016	50,121	-	1,399
CR	3189	1,907	2,439	1,878	11,294		0,428
GDP	3189	2,500	2,045	3,686	5,300	-	28,100
HHI	3189	0,174	0,271	0,252	1,000		0,022
Cash	3189	1,000	0,785	0,411	1,000		0,000
SA	3189	- 3,835	- 4,049	0,914	- 2,504	-	6,902
State	3189	0,000	0,027	0,031	0,075		0,000
DV	3189	75,000	541,912	1536,888	10 842,358		1,452
Hidden	3189	0,000	0,021	0,145	1,000		0,000

8. Results

This chapter will cover the event study results, regression results and univariate tests. Both short term and long turn performance will be observed in the form of CARs and BHARs around the date of effective.

8.1 Event Study Results

An event study aims to show how a specific event affects the CARs during the chosen time-period. The table below show that for the ordinary acquisitions the CARs are significant during all the chosen event windows except event window [-5,5]. During the three first event windows all the CARs are statistically significant on a 1% level and the fourth event window shows a statistical significance of 5% for CARs. When BHARs are observed the only statistically significant BHARs can be found during the event window [-5,252] with a statistical significance of 1%.

When hidden acquisitions are considered none of the event windows are statistically significant for CARs while BHARs are statistically significant only during the event window -5, 504 with a statistical significance of 5%.

Table 4. Event study results

Ordinary Acquisitions								
	CAR					BHAR		
	[0]	[-1,0]	[-2,2]	[-3,3]	[-5,5]	[-5,252]	[-5,504]	[-5,756]
T-Value	3,039	4,357	4,185	2,476	0,824	-5,331	1,064	0,149
Significance	***	***	***	**		***		
P-Value	0,002	0,000	0,000	0,013	0,410	0,000	0,287	0,881
Hidden Acquisitions								
	CAR					BHAR		
	[0]	[-1,0]	[-2,2]	[-3,3]	[-5,5]	[-5,252]	[-5,504]	[-5,756]
T-Value	0,847	0,188	0,574	-0,336	0,544	-1,568	-2,373	-1,069
Significance							**	
P-Value	0,400	0,852	0,568	0,738	0,589	0,122	0,021	0,289

Note. Significance levels 10 %, 5 %, and 1% are depicted with the following symbols *, **, *.**

8.2 Regression Results for the Full Sample

In this subchapter the results for the whole data will be analysed.

The table 4 shows the regression results when the chosen variables are regressed on the dependent variable. Depending on the event window chosen the adjusted R squared ranges

from 0,004 to 0,008. Previous studies depict also relatively low adjusted squared values of adjuster R squared. For example, Masulis, Wang and Xie (2007) report adjusted R squared values ranging from 0,051 to 0,053 during a 5-day cumulative abnormal return period. Additionally, Nguyen and Phan (2017) report an adjusted R squared value of 0,03.

Judging the variable estimates themselves, the intercepts is statistically significant in all the event windows, where during event windows [0], [-1,0] and [-2,2] the incepts are statistically significant on a 1% percent level. The remaining event windows [-3,3] and [-5,5] show statistical significance for the intercept on a 5% and a 10% level which is in line with study by Masulis, Wang and Xie (2007). Other significant variable estimates were size for all the events windows, ROA which shows statistical significance for all the event windows except [0], Tobin's Q for event windows [-2,2], Current ratio for event window [0], HHI for the event window [0] and [-5,5], and Deal value was significant for event window [-1,0].

The size variable shows negative values ranging from -0,001 to -0,002 which is in line with the studies by Masulis & Simsir (2018) and Masulis, Wang & Xie (2017) which also exhibit negative values for size. As mentioned earlier Moeller, Schlingemann, & Stulz (2004) mention that bigger firms generally suffer more from hubris, thus the values should be negative.

The ROA estimate can be seen to be significant on 5% and 1% levels for the event windows [-1,0], [-5,5] and [-2,2], [-3,3]. The generally negative values go against the notion that previous performance should indicate stronger potential for continuous performance.

When analysing Almans Z score, current ratio and GDP growth all yield statistically insignificant results. These variables showed relatively high standard deviations when descriptive statistics were analysed, thus it can function as one reason for the insignificant results. Additionally, these variables may generally have low power when explaining the result.

Table 5. Regression results for the full sample

Variable	[0]		[-1,0]		[-2,2]		[-3,3]		[-5,5]	
(Intercept)	0,009	***	0,025	***	0,028	***	0,020	**	0,020	*
	2,663		3,053		3,285		2,055		1,820	
Size	- 0,001	**	- 0,002	***	- 0,002	***	- 0,002	*	- 0,002	**
	- 2,335		- 2,847		- 3,002		- 1,909		- 2,046	
ROA	- 0,000		- 0,001	**	- 0,002	***	- 0,003	***	- 0,003	**
	- 0,918		- 2,111		- 2,848		- 2,999		- 2,533	
TQ	0,010		0,026		0,050	***	- 0,005		0,062	

	0,468	1,454	2,728	-	0,067	0,756
AZ	0,000	0,000	0,000	0,000	-	0,000
	0,470	0,309	0,544	0,254	-	0,113
CR	- 0,000 *	- 0,001	- 0,001	- 0,001	-	0,001
	- 1,711	- 1,429	- 1,239	- 0,735	-	1,046
GDP	- 0,000	- 0,000	- 0,000	0,000	-	0,000
	- 1,634	- 1,302	- 1,096	0,172	-	0,666
HHI	0,004 **	0,005	0,005	0,010	0,014	*
	2,153	0,980	0,865	1,464	1,955	
Cash	- 0,001	- 0,003	- 0,002	- 0,001	-	0,002
	- 0,742	- 0,976	- 0,648	- 0,296	-	0,344
SA	0,000	- 0,000	0,000	- 0,000	-	0,000
	0,095	- 0,122	0,036	- 0,008	-	0,204
State	- 0,005	0,005	- 0,008	0,030	0,038	
	- 0,336	0,177	- 0,251	0,774	0,812	
DV	0,000	0,000 *	0,000	0,000	0,000	0,000
	0,717	1,807	0,512	0,874	1,616	
Hidden	- 0,000	- 0,004	- 0,003	- 0,005	0,002	
	- 0,077	- 0,822	- 0,578	- 0,825	0,280	
R²	0,009	0,011	0,012	0,008	0,011	
Adjusted R²	0,005	0,007	0,008	0,004	0,007	

Note. Significance levels 10 %, 5 %, and 1% are depicted with the following symbols *, **, ***.

Surprisingly the HHI estimate is statistically significant only for the estimation window [0] and [-5,5]. As expected, the estimate shows positive values, potentially when a firm completes a merger in a very concentrated market which should significantly enhance the market position of the firm, additionally it could mean a new player has been able to breach to the market, which would be positively interpreted by the general market.

Cash, SA-index and state estimates are all insignificant, meaning there is no significant effect. Differing from the study by Masulis & Simsir (2018) where the SA-index appeared to be statistically significant in a 1% level.

Lastly the hidden dummy was not statistically significant during any event windows and shows negative values for all the estimators. This goes against the initial expectation that firms that engage in hidden acquisitions would potentially have the ability to achieve higher returns compared to their peers.

Depending on the event window in focus the adjusted R squared ranges from 0,004 to 0,008. Generally, the adjusted R squared values are low for M&A studies such as Moeller, Schlingemann and Stulz's study (2004) where the adjusted R-squared value ranges from 0,035 to 0,068.

When judging the long-term results company size is now positive and statistically insignificant for all the event windows. This is in line with Bessembinder and Zhang (2013) where during the analysis of mergers and acquisitions the regression results showed insignificant results for company size.

Also as in the previous regression results, when BHARs are considered, ROA is statistically significant during the second and third year. Tobin's Q, Altman Z Score, Current ratio and GDP increase are all statistically significant during all the event windows. Out of these estimators ROA Tobin's Q, Altman Z Score and GDP increase show negative estimators, while the estimator for current ratio is positive. Additionally, the cash dummy is now statistically significant on a 10% level and positive during the first and third year.

ROA ranges from -0,376 to 2,877, meaning that firms with higher profitability tend to underperform during longer time-periods. Tobin's Q ranges from -0,027 to -0,056 which could indicate that the market is adjusting potentially overvalued firms downwards after the acquisitions is completed during a long time period. Altman Z Score ranges from -0,005 to -0,011. A higher Altman Z Score indicates lower bankruptcy risk; thus, one possibility is that financially more stable firms take part in acquisitions that are conservative and therefore yield lower long-term returns.

GDP increase ranges from -0,010 to -0,020, which could indicate that when acquisitions are made during stronger economical periods firms may generally overpay for target companies in acquisitions. The current ratio ranges from 0,016 to 0,036 which indicates that firms with stronger short-term liquidity generally perform better during longer time periods. A possible reason for this could be that investors deem these firms to have stronger operative efficiency. The last statistically significant estimator is the cash dummy, which shows a statistical significance during the initial year and the third year. All remaining estimators were statistically insignificant.

The hidden acquisition dummy is also insignificant during all the event windows. This suggests that the market has not rewarded these companies for engaging in hidden acquisitions.

These results indicate that when BHARs are considered there is a greater focus on firm fundamentals rather than short term market reactions. The chosen variables seem to be more relevant when long-term firm results are compared to the short-term regression results.

Table 6. Regression results where BHARs are the dependent variable

Variable	[-5, 252]		[-5,504]		[-5,756]				
Intercept	-	0,143 0,052	**	-	0,012 0,097	-	0,045 0,083		
Size		0,009 0,005			0,007 0,009		0,008 0,008		
ROA	-	0,376 0,420		-	2,877 0,833	***	-	2,153 0,704	**
TQ	-	0,027 0,007	***	-	0,056 0,013	***	-	0,052 0,012	***
AZ	-	0,005 0,001	***	-	0,011 0,003	***	-	0,009 0,002	***
CR		0,016 0,006	**		0,036 0,012	**		0,031 0,010	**
GDP	-	0,010 0,003	***	-	0,020 0,007	**	-	0,016 0,005	**
HHI		0,039 0,031			0,016 0,056			0,026 0,050	
Cash		0,052 0,021	*		0,051 0,038			0,064 0,033	*
SA	-	0,008 0,009		-	0,013 0,017		-	0,006 0,014	
State	-	0,286 0,248		-	0,252 0,456		-	0,422 0,393	
DV		0,000 0,000			0,000 0,000			0,000 0,000	
Hidden	-	0,003 0,048		-	0,102 0,071		-	0,079 0,099	
R^2		0,035			0,051			0,047	
Adjusted R^2		0,032			0,047			0,043	

Note. Significance levels 10 %, 5 %, and 1% are depicted with the following symbols *, **, ***.

8.3 Matched Regression Results

In this chapter the results for the matched observations are studied. Here short-term results will be observed. Companies which are defined as ordinary acquisitions are matched with companies defined as hidden acquisitions based on company size and book-to-market ratios.

When the firms are matched several key differences can be found when compared to the regression results where the whole sample was used. First, when the event window is wider the adjusted R squared values range from 0,061 to 0,000. These values are still relatively close to the adjusted R squared values mentioned in the prior regression results where the entire sample was used. Additionally, none of the intercepts are no longer statistically significant. The reasoning can be that the intercept was initially picking up differences in

firm sizes before matching the observations, once matched this characteristic was controlled for.

Further comparing to the initial results, the size estimates are statistically significant and negative during the event window [-1,0] and statistically significant and positive during the event window [-5,5], ranging altogether from -0,004 to 0,005. Additionally, the deal value estimate is statistically significant on a one percent level during the event window [-3,3]. The remaining estimators are statistically insignificant. One possible explanation for this is the more homogenous data. Since there is a significantly lower amount of hidden acquisitions data compared to ordinary acquisitions there is potentially less variation and thus a weaker statistical signal.

Potentially the major variation in Tobin's Q and size in the initial sample was driven by the large differences across firms rather than through an economic relationship. Additionally, HHI and estimates are no longer statistically significant. The dummy variable for hidden acquisitions is also no longer statistically significant. This suggests that the observations defined as hidden acquisitions do not play a significant role when CARs are estimated.

Table 7. Matched sample regression results where CARs are the dependent variable.

(Intercept)	- 0,004	0,015	0,012	0,008	0,012
	- 0,166	0,527	0,317	0,216	0,243
Size	- 0,002	0,004 *	-0,004	- 0,001	0,005 *
	- 1,488	-1,653	-0,722	-0,256	1,838
ROA	0,153	0,059	0,233	0,187	-0,008
	1,545	0,483	1,091	0,905	- 0,038
TQ	- 0,002	- 0,001	- 0,005	- 0,005	-0,004
	- 1,219	- 0,404	- 0,862	- 1,064	- 0,631
AZ	- 0,000	0,000	0,001	-0,000	0,001
	- 0,105	0,246	1,157	- 0,012	0,374
CR	- 0,001	-0,003	-0,003	-0,003	-0,003
	- 0,287	- 1,518	-0,809	- 0,693	- 0,496
GDP	0,001	0,002	0,001	0,002	-0,003
	0,883	0,728	0,172	0,776	- 0,751
HHI	0,009	-0,003	- 0,014	0,011	0,011
	1,456	- 0,211	- 0,686	0,615	0,477
Cash	- 0,006	0,004	0,000	0,006	- 0,015
	- 1,015	0,346	0,010	0,406	- 0,645

SA	- 0,005 - 0,736	- 0,005 - 0,723	- 0,007 - 0,793	0,001 0,075	0,006 0,620
State	0,007 0,121	-0,060 - 0,588	- 0,044 - 0,338	0,089 0,625	0,147 0,857
DV	- 0,000 - 0,759	-0,000 - 1,322	-0,000 - 0,632	-0,000 - 3,608	*** -0,000 - 0,886
Hidden	0,006 1,046	0,001 0,140	0,002 0,146	- 0,007 - 0,550	- 0,005 - 0,338
R^2	0,153	0,110	0,099	0,099	0,104
<i>Adjusted R²</i>	0,061	0,013	0,000	0,001	0,006

Note. Significance levels 10 %, 5 %, and 1% are depicted with the following symbols *, **, ***.

When the matched long-term regression results are observed, a couple significant differences can be observed. Starting from the adjusted R squared, when matched BHARs are considered, this value is significantly higher compared to the prior regression results. By observing solely, the adjusted R squared values these results are the most trustworthy.

As well as in the matched CAR regression results the intercept is no longer statistically significant. This suggests that after the firms were matched based on firm size and book to market ratios the intercept's significance was actually driven by the differences in these specific firm characteristics. In a relatively similar fashion, return on assets estimate yield statistically significant during the three-year event window. Similarly, the estimators for Tobin's Q are statistically significant in the first year and the third year. Altman Z score and the current ratio estimates are also significant when the initial year is considered. Different from the initial long term regression results is that GDP increase, and cash estimators are no longer statistically significant.

Hidden acquisition estimator is still statistically insignificant, showing that hidden acquisitions have not experienced realized synergies which would have yielded greater returns compared to ordinary acquisitions.

Table 8. Matched sample regression results where BHARs are the dependent variable.

Variable	[-5,252]	[-5,504]	[-5,756]
(Intercept)	0,254 0,636	0,954 1,370	0,900 1,277
Size	0,011 0,512	0,010 0,206	0,017 0,311

ROA	-	3,024		-	8,611		-	9,326	*
	-	1,357		-	1,703		-	2,013	
TQ	-	0,084	*	-	0,137		-	0,202	*
	-	2,032		-	1,587		-	2,026	
AZ		0,017	**		0,028			0,050	
		2,728			1,837			1,550	
CR	-	0,055	*	-	0,100		-	0,168	
	-	2,419		-	1,890		-	1,562	
GDP	-	0,065		-	0,179		-	0,143	
	-	1,402		-	1,270		-	1,638	
HHI		0,086			0,105			0,035	
		0,706			0,478			0,152	
Cash		0,112			0,334			0,392	
		0,699			1,305			1,597	
SA		0,058			0,171			0,171	
		0,787			1,300			1,443	
State	-	0,942			0,141		-	0,949	
	-	0,801			0,064		-	0,456	
DV	-	0,000		-	0,000		-	0,000	
	-	0,513		-	0,666		-	0,280	
Hidden		0,000		-	0,248		-	0,150	
		0,002		-	1,191		-	0,799	
R^2		0,306			0,506			0,420	
<i>Adjusted R²</i>		0,233			0,454			0,359	

Note. Significance levels 10 %, 5 %, and 1% are depicted with the following symbols *, **, ***.

8.4 Univariate Analysis

Table 9 below shows the results on the univariate tests. Here one can observe that when CARs are considered none of the differences in means and medians between ordinary acquisitions and hidden acquisitions are statistically significant. It seems that even after matching no statistical significance is present. Both for the hidden acquisitions and ordinary acquisitions means range from -0,002 to 0,004 depending on the event window in focus. Additionally, the median ranges from -0,001 to 0,009. In both cases the mean and median values deviate the most when the event window is stretched from -5 to 5 days.

The difference column shows the absolute difference between mean and median values, as well as the p-values for means and medians. When the means are considered, the largest differences appear during the event window [-3,3] where for the entire sample the difference equals 0,005 and 0,004 for the matched data. When medians are observed it appears that the largest differences can be found in event window [-2,2] for the matched data with an absolute

difference of 0,007. For the entire sample the largest difference is observed in event window [-5,5].

When BHARs are considered, clear differences can be observed. For example, when the entire sample is considered statistically significant differences in means and medians can be found in the event window [-5, 504] for differences in means. Here the absolute difference is 0,236 which results in a p-value of 0,049. The difference in medians can be observed in the [-5, 756] event window where the absolute difference equals to 0,177 resulting in a p-value of 0,026.

After the data was matched however the differences in means and medians are no longer significant. For the matched sample the differences in mean values range from 0,008 to 0,115 with a p-value ranging from 0,475 to 0,959. For the median values the absolute differences range from 0,094 0,127 where the p-value ranges from 0,094 to 0,127

Event window [0]	Hidden acquisition			Ordinary acquisition			Difference			
	N	Mean	Median	N	Mean	Median	Mean	P-Value	Median	P-Value
54										
Entire sample	3189	0,002	0,000	3189	0,002	0,001	0,000	0,430	0,000	0,633
Matched sample	144	0,002	0,000	144	-0,001	0,001	0,002	0,614	0,000	0,825
Event window [-1,0]										
Entire sample	3189	0,001	-0,001	3189	0,004	0,001	0,003	0,478	0,003	0,389
Matched sample	144	0,001	-0,001	144	0,001	-0,003	0,000	0,495	0,002	0,384
Event window [-2,2]										
Entire sample	3189	0,002	0,005	3189	0,004	0,001	0,001	0,739	0,004	0,772
Matched sample	144	0,002	0,005	144	0,003	-0,002	0,001	0,470	0,007	0,947
Event window [-3,3]										
Entire sample	3189	-0,002	0,000	3189	0,003	0,002	0,005	0,438	0,002	0,292
Matched sample	144	-0,002	0,000	144	0,002	0,000	0,004	0,353	0,000	0,461
Event window [-5,5]										
Entire sample	3189	0,004	0,009	3189	0,001	0,001	0,004	0,679	0,008	0,290
Matched sample	144	0,004	0,009	144	0,003	0,008	0,001	0,471	0,001	0,796
Hidden acquisition Ordinary acquisition Difference										
Event window [-5,252]	N	Mean	Median	N	Mean	Median	Mean	p-value	Median	P-Value
Entire sample	3055	-0,071	-0,078	3055	-0,029	-0,105	0,041	0,807	0,027	0,910
Matched sample	144	-0,071	-0,078	144	-0,120	-0,205	0,049	0,526	0,127	0,207
Event window [-5,504]										
Entire sample	3055	-0,152	-0,188	3055	0,084	-0,192	0,236	0,049**	0,005	0,371
Matched sample	144	-0,152	-0,188	144	-0,037	-0,282	0,115	0,475	0,094	0,785
Event window [-5,756]										
Entire sample	3055	-0,131	-0,348	3055	0,041	-0,171	0,173	0,307	0,177	0,026**
Matched sample	144	-0,113	-0,348	144	-0,105	-0,232	0,008	0,959	0,116	0,581

Note. Significance levels 10 %, 5 %, and 1 % are depicted with the following symbols *, **, ***.

9. Discussion

In this chapter, the event study results, and the regression results will be discussed and tied to previously mentioned studies and theories.

9.1 Event Study

The aim of this study was to investigate whether hidden acquisitions do in fact yield greater returns when compared to ordinary acquisitions. The results show that in general when the entire sample was considered CARs of ordinary acquisitions deviated for the most part from zero on a statistically significant level. When hidden acquisitions were considered, none of the CARs deviated from zero on a statistically significant level. The results suggest that the market reacts more predictably to ordinary acquisitions. These results also suggest that hidden acquisitions do not function as a strategy to achieve higher abnormal returns when compared to ordinary acquisitions when short time periods are considered.

The average CARs for ordinary acquisitions in this study range from 0,1289% to 0,4102%. Comparatively, the average CARs for hidden acquisitions range from -0,2103% to 0,4089%. Masulis & Simsir (2018) report average CARs of -1,9% while Moeller, Schlingermann & Stulz (2004) report average CARs of 1,103%. Thus, it can be concluded that the average CARs are generally in line with previous research. This shows that results will always deviate based on different sample sizes and time periods.

Potential reasons for the deviating results between these answers can be found in the significantly smaller sample size for hidden acquisitions. In the ordinary acquisitions group, statistical power will be greater and thus it becomes easier to detect small but also statistically significant effects. Since only 74 hidden acquisitions were compiled, it is possible that certain effects are not picked up due to lower statistical power in smaller samples.

When BHARs are considered, ordinary acquisitions deviate from zero on a statistically significant level only during the event window -5 to 252 and for the hidden acquisitions statistically significant deviation from zero could be observed during the time period from -5 to 504. The average BHARs for ordinary acquisitions range from: -2,066% to -5,946% while the average BHARs for hidden acquisitions range from -7,070% to -15,19%. Previous studies such as Bessembinder & Zhang (2013) show that BHARs range around -7,9%. Which indicates that the means are in line with previous studies.

The univariate tests show that when means and medians are compared there is no significant difference in CARs regardless of if the sample or the matched sample is used. These results suggest that during a short time-horizon, a strategy of engaging in hidden acquisitions will not

yield significantly higher returns. On the other hand, when BHARs are observed there appears to be significant differences when the entire sample is considered. During the event window [-5, 504] a statistically significant difference in means is observed and in the event window [-5, 756] a statistically significant difference in the sample medians can be observed. These results suggest that there is either no significant difference in the abnormal returns between ordinary and hidden acquisitions or that hidden acquisitions perform worse than ordinary acquisitions.

9.2 Regression

From the regression results one can observe that the estimators for size are generally negative when CARs are considered which could be interpreted as the market initially reacting pessimistically to larger mergers. This goes in line with the hubris theory by Roll (1986) which states that larger firms tend to overpay for target firms due to the managers overconfidence in generating value.

When BHARs are considered, on the other hand, the size estimators turn positive which would indicate that in the long run managers have been able to generate value from the merger when synergies have been materialized. This goes against the hubris hypothesis by Roll (1986) since larger acquiring firms may eventually generate shareholder value.

When the estimates for the hidden acquisition dummy are observed the estimates are generally negative and insignificant. The lack of statistical significance of these results indicates that hidden acquisitions do not create shareholder value either in the short-term or long term. These results are in line with agency theory in the sense that the hidden acquisitions could in fact be motivated by the manager's self-interest to grow their influence through empire building or the managers could be motivated to gain personal benefits such as private compensation rather than creating shareholder value.

Regarding information asymmetry theory, if managers have agreed upon specific contract terms to lower the M&A deal value to bypass the premerger notification process, the market could react negatively to any information pointing to this fact.

When the entire sample was observed positive and statistically significant CARs were present. This indicates that the market is anticipating value creation and therefore the potential synergies have been recognized by the market. However, after controlling for company size and book-to-market ratios significant anticipated value creation ceases to show.

To conclude, since the results didn't show statistically significant positive CARs around the completion of a merger for all the groups, generally statistically significant negative BHARs

years after the completion of a merger, nor statistically significant positive estimator for the hidden acquisition dummy variable all of the research hypotheses are rejected.

9.3 Suggestions for Future Research

This paper takes an initial step toward research in hidden acquisitions. For future studies one could use a longer time period try to ensure the materialisation of potential synergies. Additionally, the calendar time approach could be used when assessing the performance of hidden acquisitions. Additionally, it would be interesting to see whether there is any sort of legislation in the EU or Asia which also enables companies to engage in hidden acquisitions. Additionally, for future research, bid premiums could be considered and a greater focus could be laid upon the target company. This study mainly focuses on the acquirer's perspective. Therefore, factors such as the target firm characteristics and board characteristics could be inspected.

Future studies could also take a closer look at which industries are commonplace for hidden acquisitions and if there are some commonalities between the firms engaging in hidden acquisitions. Additionally, the firms could be matched in a more sophisticated manner, for example industry matching or matching on multiple dimensions could be a plausible option in future research. When the returns are estimated a Fama-French factor model could also be employed. An even longer time-period could also be used, potentially a time period of 5 years, to ensure that the potential synergies are truly realized after the merger is completed.

10. Conclusion

This study observed whether hidden acquisitions yield greater returns when compared to ordinary acquisitions. Public US acquiring companies were observed during a time period from 2010 to 2020 where over 3000 acquisitions were observed. This study used event windows [0], [-1,0], [-2,2], [-3,3], [-5,5] for cumulative abnormal returns and event windows [-5,252], [-5,504], [-5,756] are used when buy-and-hold abnormal returns are considered. This study showed that when short-term performance is observed hidden acquisitions do not statistically deviate from zero and when long term performance is observed hidden acquisitions deviate statistically from zero during the two-year event window. On the other hand, when ordinary acquisitions were observed short-term performance showed generally positive and statistically significant results and for long-term results during the initial year negative and statistically significant results were observed.

When the entire sample is considered there seems to be a significant underperformance in hidden acquisition when compared to ordinary acquisition means during the event window [-5,504] and medians during the event window [-5,756]. After the data was matched according to firm size and book-to-market ratios no significant under or overperformance was found. In this study the regression results incorporated variables such as Hidden acquisition dummy, size, return on assets, Tobin's Q, Altman Z score, Current ratio, SA-index, deal value, GDP increase, Herfindahl-Hirschman Index, Cash dummy and target state tax rate. From these variables such as size, deal value, return on assets, Tobin's Q, Altman z score, current ratio were generally statistically significant.

In conclusion, this study contributes to the existing literature by showing evidence that hidden acquisitions do not provide superior returns when compared to ordinary acquisitions.

References

- Agrawal, A., Jaffe, J. F., & Mandelker, G. N. (1992). The post-merger performance of acquiring firms: a re-examination of an anomaly. *The Journal of Finance*, 47(4), 1605-1621.
- Aguero, J., Greaves, T., & Taylor, G. (2024). State Mergers and Acquisitions, Part 1: Successor Liability. *Tax notes state*, 112(2), 139-144. Available from: <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/Tax/us-tax-april-2024-inside-deloitte-state-mergers-and-acquisitions.pdf>. Accessed 18.10.2024
- Amihud, Y., & Lev, B. (2002). Risk reduction as a managerial motive for conglomerate mergers. *Mergers and Acquisitions: Motivaton*, 2, 228.
- Andrade, G., Mitchell, M., & Stafford, E. (2001). New evidence and perspectives on mergers. *Journal of economic perspectives*, 15(2), 103-120.
- Andre, P., Kooli, M., & L'her, J. F. (2004). The long-run performance of mergers and acquisitions: Evidence from the Canadian stock market. *Financial Management*, 27-43.
- Angerhofer, T. J., & Blair, R. D. (2021). Successive Monopoly, Bilateral Monopoly and Vertical Mergers. *Review of Industrial Organization*, 59(2), 343–361. <https://doi-org.proxy.shh.fi/10.1007/s11151-021-09825-y> Accessed 19.11.2024.
- Auerbach, A. J., & Reishus, D. (1987). The impact of taxation on mergers and acquisitions. In *Mergers and acquisitions* (pp. 69-86). University of Chicago Press.
- Barber, B. M., & Lyon, J. D. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of financial economics*, 43(3), 341-372.
- Berk, J., DeMarzo, P., & Harford, J. (2012). *Fundamentals of corporate finance* (Second edition. Global edition.). Pearson.
- Berkovitch, E., & Narayanan, M. P. (1993). Motives for Takeovers: An Empirical Investigation. *Journal of Financial & Quantitative Analysis*, 28(3), 347–362. <https://doi-org.proxy.shh.fi/10.2307/2331418> Accessed 22.10.2024.
- Bessembinder, H., & Zhang, F. (2013). Firm characteristics and long-run stock returns after corporate events. *Journal of Financial Economics*, 109(1), 83-102.

- Bloomberg Tax. (2024). *Tax Implications of Mergers and Acquisitions*
<https://pro.bloombergtax.com/insights/federal-tax/tax-considerations-in-ma-and-restructuring/#federal-tax-treatment-of-a-merger-o> accessed 17.10.2024
- Brav, A. (2000). Inference in long-horizon event studies: a Bayesian approach with application to initial public offerings. *The Journal of Finance*, 55(5), 1979-2016.
- Brown, S. J., & Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of financial economics*, 14(1), 3-31.
- Chang, S. (1998). Takeovers of privately held targets, methods of payment, and bidder returns. *The Journal of Finance*, 53(2), 773-784.
- Chen, Y. (2001). On vertical mergers and their competitive effects. *RAND Journal of Economics*, 667-685.
- Condorelli, D., Padilla, J., & Sohn, Y. (2024). Vertical Mergers in Ecosystems with Consumer Hold-Up. *The Journal of Industrial Economics*, 72(2), 909-939.
- Datta, S., Iskandar-Datta, M., & Raman, K. (2001). Executive compensation and corporate acquisition decisions. *The Journal of Finance*, 56(6), 2299-2336.
- DePamphilis, Donald. *Mergers, Acquisitions, and Other Restructuring Activities*, Elsevier Science & Technology, 2015. *ProQuest Ebook Central*. Available from:
<https://ebookcentral.proquest.com/lib/hanken-ebooks/detail.action?docID=5754519>. Accessed 12.10.2024
- Devos, E., Kadapakkam, P. R., & Krishnamurthy, S. (2009). How do mergers create value? A comparison of taxes, market power, and efficiency improvements as explanations for synergies. *The review of financial studies*, 22(3), 1179-1211
- Djurfeldt, G., Larsson, R. & Stjärnhagen, O. (2003). *Statistisk verktygslåda - samhällsvetenskaplig orsaksanalys med kvantitativa metoder*. Lund: Studentlitteratur
- Eckbo, B. E. (1983). Horizontal mergers, collusion, and stockholder wealth. *Journal of financial Economics*, 11(1-4), 241-273.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of management review*, 14(1), 57-74.
- Erickson, M., & Wang, S. (1999). Earnings Management by Acquiring Firms in Stock for Stock Mergers. *Journal of Accounting and Economics*, 27(2), 149-176.

- Etzioni, A. (2009). The capture theory of regulations—revisited. *Society*, 46, 319-323.
- Faccio, M., & Masulis, R. W. (2005). The choice of payment method in European mergers and acquisitions. *The Journal of Finance*, 60(3), 1345-1388.
- Fama, E. F. (1970). Efficient capital markets. *Journal of finance*, 25(2), 383-417.
- Fathollahi, M., Harford, J., & Klasa, S. (2022). Anticompetitive effects of horizontal acquisitions: The impact of within-industry product similarity. *Journal of Financial Economics*, 144(2), 645-669.
- Federal Trade Commission. (2015). *Premerger notification and the merger review process*. Available from: <https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/mergers/premerger-notification-merger-review-process>. Accessed 10.10.2024
- Federal Trade Commission. (u.a). *Clayton Act*. Available from: <https://uscode.house.gov/view.xhtml?req=granuleid%3AUSC-prelim-title15-section12&edition=prelim>. Accessed 18.10.2024
- Federal Trade Commission. (u.a). *Hart-Scott-Rodino Antitrust Improvements Act of 1976*. Available from: <https://uscode.house.gov/view.xhtml?req=granuleid%3AUSC-prelim-title15-section18a&edition=prelim>. Accessed 16.10.2024.
- Fee, C. E., & Thomas, S. (2004). Sources of gains in horizontal mergers: evidence from customer, supplier, and rival firms. *Journal of financial Economics*, 74(3), 423-460.
- Gabrielsen, T. S. (2003). Conglomerate mergers: Vertical mergers in disguise?. *International Journal of the Economics of Business*, 10(1), 1-16.
- Gaughan, P. A. (2015). *Mergers, acquisitions, and corporate restructurings*. John Wiley & Sons, Incorporated.
- Ghosh, A., & Ruland, W. (1998). Managerial ownership, the method of payment for acquisitions, and executive job retention. *The journal of finance*, 53(2), 785-798.
- Harding, D., Stafford, D., Grass, K., Kumar, S., & White, L., (2024). Looking Back at M&A in 2023: Who Wins in a Down Year? *Bain & Company*. Available from: <https://www.bain.com/insights/looking-back-m-and-a-report-2024/> Accessed 12.12.2024.

- Grossman, S. J., & Hart, O. D. (1986). The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of political economy*, 94(4), 691-719.
- Gorton, G., Kahl, M., & Rosen, R. J. (2009). Eat or be eaten: A theory of mergers and firm size. *The Journal of Finance*, 64(3), 1291-1344.
- Hadlock, C. J., & Pierce, J. R. (2010). New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index. *Review of Financial Studies*, 23(5), 1909–1940.
<https://doi.org/10.1093/rfs/hhq009>
- Haleblian, J. (John), McNamara, G., Kolev, K., & Dykes, B. J. (2012). Exploring firm characteristics that differentiate leaders from followers in industry merger waves: a competitive dynamics perspective. *Strategic Management Journal (John Wiley & Sons, Inc.)*, 33(9), 1037–1052. Available from:
<https://doi-org.proxy.shh.fi/10.1002/smj.1961> Accessed 16.10.2024
- Hanken (2024). Användning av artificiell intelligens i studier och undervisning. Available:
<https://www.hanken.fi/sv/studerande/learning-lab/artificiell-intelligens-i-studierochundervisning>. Accessed 30.03.2025.
- Harford, J. (2005). What drives merger waves?. *Journal of financial economics*, 77(3), 529-560.
- Harford, J., Humphery-Jenner, M., & Powell, R. (2012). The sources of value destruction in acquisitions by entrenched managers. *Journal of financial economics*, 106(2), 247-261
- Hassan, I., Ghauri, P. N., & Mayrhofer, U. (2018). Merger and acquisition motives and outcome assessment. *Thunderbird International Business Review*, 60(4), 709–718. Available from: <https://doi-org.proxy.shh.fi/10.1002/tie.21967>. Accessed 18.11.2024
- Heron, R., & Lie, E. (2002). Operating Performance and the Method of Payment in Takeovers. *Journal of Financial & Quantitative Analysis*, 37(1), 137–155. Available from: <https://doi-org.proxy.shh.fi/10.2307/3594998> Accessed 16.10.2024
- Hoberg-Phillips Data Library. (n.d.). *Welcome to the Hoberg-Phillips Data Library*. Available from: https://hobergphillips.tuck.dartmouth.edu/tnic_competition.html. Accessed 9.01.2025
- Hou, K., & Robinson, D. T. (2006). Industry concentration and average stock returns. *The journal of finance*, 61(4), 1927-1956.

- Ikenberry, D., Lakonishok, J., & Vermaelen, T. (1995). Market underreaction to open market share repurchases. *Journal of financial economics*, 39(2-3), 181-208.
- Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs and ownership structure. In *Corporate governance* (pp. 77-132). Gower.
- Kim, S., Ko, H., & Yang, H.-K. (2020). Telicity and Mode of Merge in L2 Acquisition of Resultatives. *Language Acquisition: A Journal of Developmental Linguistics*, 27(2), 117–159. Available from: <https://doi-org.proxy.shh.fi/10.1080/10489223.2019.1659275> Accessed 10.10.2024
- Kwoka, J., & Valletti, T. (2021). Unscrambling the Eggs: Breaking Up Consummated Mergers and Dominant Firms. *Industrial and Corporate Change*, 30(5), 1286–1306.
- Loughran, T., & Ritter, J. R. (2000). Uniformly least powerful tests of market efficiency. *Journal of financial economics*, 55(3), 361-389.
- Lyon, J. D., Barber, B. M., & Tsai, C. L. (1999). Improved methods for tests of long-run abnormal stock returns. *The Journal of Finance*, 54(1), 165-201.
- MacKinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, 35(1), 13–39.
- Masulis, R. W., & Simsir, S. A. (2018). Deal initiation in mergers and acquisitions. *Journal of Financial and Quantitative Analysis*, 53(6), 2389-2430.
- Masulis, R. W., Wang, C., & Xie, F. (2007). Corporate governance and acquirer returns. *the Journal of Finance*, 62(4), 1851-1889.
- Matsusaka, J. G. (1993). Takeover motives during the conglomerate merger wave. *The Rand journal of economics*, 357-379.
- Mitchell, M. L., & Stafford, E. (2000). Managerial decisions and long-term stock price performance. *The Journal of Business*, 73(3), 287-329.
- Moeller, S. B., Schlingemann, F. P., & Stulz, R. M. (2004). Firm size and the gains from acquisitions. *Journal of financial economics*, 73(2), 201-228.
- Morck, R., Shleifer, A., & Vishny, R. W. (1990). Do managerial objectives drive bad acquisitions?. *The journal of finance*, 45(1), 31-48.
- OpenAI. (2023). *ChatGPT* (Mar 14 version) [Large language model]. Available: <https://chat.openai.com/chat>

- Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian journal of corporate governance*, 10(1), 74-95.
- Rau, P. R., & Vermaelen, T. (1998). Glamour, value and the post-acquisition performance of acquiring firms. *Journal of financial economics*, 49(2), 223-253
- Roll, R. (1986). The hubris hypothesis of corporate takeovers. *Journal of business*, 197-216.
- Shleifer, A. (2005). Understanding regulation. *European Financial Management*, 11(4), 439-451.
- Soofi, A. S., & Zhang, Y. (2014). *Global mergers and acquisitions: Combining companies across borders* (First edition.). Business Expert Press.
- Stigler, G. J. (1950). Monopoly and Oligopoly by Merger. *American Economic Review*, 40(2), 23.
- Stigler, G. J. (1964). A theory of oligopoly. *Journal of political Economy*, 72(1), 44-61.
- Stigler, G. J. (1971). The theory of economic regulation. *Bell Journal of Economics & Management Science*, 2(1), 3. Available from: <https://doi-org.proxy.shh.fi/10.2307/3003160>. Accessed 6.12.2024
- Wahlin, K. (2015). *Tillämpad statistik: en grundkurs*. Stockholm: Sanoma Utbildning
- Wollmann, T. G. (2019). Stealth consolidation: Evidence from an amendment to the Hart-Scott-Rodino Act. *American Economic Review: Insights*, 1(1), 77-94.
- Wollmann, T. G. (2020). *How to get away with merger: stealth consolidation and its effects on US healthcare* (No. w27274). National Bureau of Economic Research.
- 2023 M&A Year-End Analysis (13.1.2024). *Institute for Mergers, Acquisitions and Alliances*. Available from: <https://imaa-institute.org/publications/2023-m-and-a-year-end-analysis/>. Accessed 2.2.2025