Aalto University
School of Business

M&A Payment Method, Acquiror Returns, and Asymmetric Information

Evidence from Finland

Abstract

This bachelor's thesis studies the effect of the form of payment used in mergers and acquisitions on the acquiror's stock return and whether the effect can be attributed to asymmetric information. I examine a sample of Finnish public companies acquiring public and private companies. The sample size is 150 acquisitions announced in 2011–2020. This thesis offers a fresh view on the subject in Finland's corner market. In Finland, the stock payment portion has an adverse effect of -1.9% on abnormal return around the announcement day of an acquisition of a public company. However, the impact is significant only in a two-day event window and it is not robust to firm and deal characteristics. This result suggests that real factors drive the acquirors' returns in the Finnish market, not asymmetric information. Conversely, all-cash financing has a 1.7% abnormal announcement return in public acquisitions. Financing does not affect private acquisitions' returns.

Keywords: Acquisitions, Form of payment, Asymmetric information

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1. Introduction

As a field in finance research, corporate acquisitions are all but void of intricacies. Acquisitions tend to come in waves, transactions are done both with good and dubious reasons, corporate control may change drastically, major tax liabilities may be triggered, and sometimes huge amounts of shareholders' wealth is destroyed (Moeller et al., 2005). In addition, a plethora of variables affect companies' willingness to take the leap to M&A, for example, legal aspects, incentive problems, and market sentiment. The aforementioned makes the M&A market both a fruitful and a challenging subject to study, as it evolves constantly, and every transaction is unequal to one another.

This thesis aims to shed light on the effect of financing decisions in acquisitions on the corporate value of the acquiror and examine which factors drive this relation. Prior literature argues that abnormal returns, be it negative or positive, stem from the transaction's perceived synergies, over- or underpayment, financing decisions, and finally, revelation of asymmetric information. Considerations regarding financing decisions are inherently similar to any other capital structure decision. Paying with equity often leads to issuing new shares and paying with cash deploys internal funds or leads to growing debt. Thus, I use a well-cited theory explaining the order of preference of financing methods, pecking order theory (Myers and Majluf, 1984), as the framework for my research.

My sample consists of all M&A transactions, regardless of the final success of the bid, announced by public Finnish acquirors between 2011 and 2020. As the Finnish market is relatively small compared to the US or Europe, my final sample consists of 150 transactions. However, even significantly smaller sample sizes have been successfully used in prior M&A-related academic literature.[1] My research provides information on the relation of market characteristics and the effect of financing decisions on stock returns.

Stock financing has a negative mean effect ranging from -3.6% to -1.3% on bidder return in all four event windows when acquiring a public company. This adverse effect is statistically significant only in the shortest two-day event window with a mean of -1.9%. However, this effect disappears when I control for deal and firm characteristics. This disappearance suggests

[1] For example, Allen and Sirmans (1987) use a sample of 38 REIT acquisitions.

that in the Finnish market, asymmetric information does not have as prevalent an effect as in prior research conducted in the 1980s to 1990s in the US. Other more concrete factors seem to be better able to explain the result of the transaction. Additionally, using all cash financing in public acquisition leads to a statistically significant mean abnormal return of 1.7% in a two-day event window which is significantly higher than all stock financing with a negative mean. I find no relation between financing decisions and private acquisitions' returns.

A fully functional takeover market is vital for a well-functioning market. Allocational takeovers lead to an efficient allocation of financial as well as managerial capital. Even unsuccessful takeover bids insinuate that the market may not value some asset correctly or that the asset could be put to more efficient use, thus contributing to the allocational objective of the financial market (Dodd and Ruback, 1977). Like many other subjects in the finance literature, one key feature to be aware of in M&A studies is asymmetric information between parties (Akerlof, 1970). One might argue that in few fields, the effect of asymmetric information is as prevalent as in the M&A field. The premia paid in corporate acquisitions is an illustration of information asymmetry's consequences, and the vast monetary value of these premia underlines information's significance (Grossmann and Hart, 1981). More background on asymmetric information in section 2.1.

The main motivation for reasonable M&A is and should be the creation value that stems from synergies between the acquiror and the target. Thus, mergers and acquisitions should yield positive returns for both target and acquiror shareholders (Harford et al., 2012). However, at times acquiring firms may face huge losses, as in the aftermath of the dot-com bubble in the early 21st century (Moeller et al., 2005). Often the gains are captured mainly by the target's shareholders, but prior literature reports positive total wealth creation (e.g., Bradley et al., 1988). The fact that the bulk of the gain is captured by the target, can be partly explained by the dogma that acquirors tend to be significantly larger than the target and thus have lower relative gain. The target also often has leverage in the negotiations and can take advantage of that, especially in the scenario of multiple bidders.[2]

[2] Though causality may lie between the potential of assets (attracting multiple bidders) and abnormal returns, not between the existence of multiple bidders and abnormal returns.

M&A financing decisions are widely assumed to reveal insider information regarding the company's prospects. Seminal empirical studies build upon pecking order theory, in which overvalued companies issue and use equity while undervalued companies rely on cash and debt capacity. However, nowadays, it is reasonable to assume this information asymmetry is smaller than at the birth of pecking order theory because of greater market transparency stemming from regulatory reforms conducted, especially in the aftermath of the financial crisis. In this thesis, I examine whether the effect of financing decisions is present and whether the returns are driven by other factors affecting that financing decision. From this analysis, I can draw conclusions on asymmetric information's prevalence and effect in Finland.

The remainder of the paper proceeds as follows. Section 2 discusses previous literature on the basics of information asymmetry and some relevant studies on the effect of acquisition financing. Section 3 lays out relevant literature behind my control variables, my predictions and hypotheses. Sections 4 and 5 describe my methods and data, respectively. In section 6, I provide my results and considerations on the robustness. Section 7 includes discussion regarding methods and results, while section 8 concludes.

2. Literature Review

I divide the literature review into two parts. The first part examines research that relates to the effect of asymmetric information in the market and the basics of corporate finance decision-making to form a framework around all M&A-related studies. The majority of these relevant key findings, theories, and hypotheses in the field of M&A financing and returns come from the period of 1980–1990. In the second part, I investigate papers that are more empirical in nature, support the models presented in the first part and give empirical insight to real-world results.

2.1. Background on the effects of asymmetric information

In previous finance research, the pecking order theory popularized by Myers and Majluf in 1984 has become the prevalent theory explaining the empirical results of the effects of the decision on the form of payment in M&A transactions. This theory is based on asymmetric information between the company itself and the surrounding market, or "the market for lemons"

(Akerlof, 1970). The model explains market reactions to equity offerings in a frictionless market and is built upon the presence of asymmetric information in the market and traditional game theory in which company executives, old shareholders, and new shareholders take part. Myers and Majluf (1984) concluded that contingent on all participants being completely rational and the old investors being passive (i.e., they hold their shares and do not rebalance their portfolio when the company takes on investment opportunities), all stock issues reduce stock prices.[3] Myers and Majluf (1984) also conclude that risky debt issued by the company has a similar impact, but not to the same extent as an equity issue. Additionally, internal equity financing should not have an adverse effect on the share price. Hansen (1987) points out that considerations of the target's perceived value also affect the preference of the target's shareholders regarding payment method. If the target is undervalued in the perception of the target's owners, they will *prefer* equity payment to capitalize on the future re-evaluation of equity value.

All the assumptions certainly do not hold true in the real world; nonetheless, Myers and Majluf (1984) give insight on what kind of effects to look for. This relation with internal financing as the most favorable financing method, new equity issue as the least favorable, and debt issue somewhere in between is widely referred to as the pecking order theory.[4] Many studies back the pecking order theory after its introduction. For example, Mikkelson and Partch (1986) show statistically significant negative reaction to equity and convertible debt offerings and a small negative but not significant reaction to straight debt offerings. Empirical papers in section 2.2. also support the pecking order theory regarding public acquisitions.

Hovakimian et al. (2001) analyze the repercussions of the choice between equity and debt financing companies face in their operations. They argue that companies tend to adjust their leverage to approach some *ideal* debt ratio. This means that the financing decisions are often intended to offset earnings-driven changes in capital structure. However, companies with recent run-up in their stock prices (i.e., increase in growth opportunities) tend to issue equity and retire debt. This, Hovakimian et al. argue, is in line with static capital structure trade-off models (e.g., Kraus and Litzenberger, 1973) that predict companies with high growth opportunities to have lower optimal leverage levels. It also supports the common view on the

[3] Myers and Majluf note that this assumes that firms cannot issue risk-free debt. If it were possible, there should not be any effect, as risk-free debt is equal to having enough financial slack for acquisitions.
[4] According to Hovakimian et al. (2001) "pecking order" term was already coined by Donaldson (1961).

pecking order theory that executives are reluctant (willing) to issue stock when perceived as undervalued (overvalued) (e.g., Brealey et al., 2020 pp. 495-501)[5]. Shleifer and Vishny (2003) support this idea with their model that explains how companies aim to be overvalued before conducting an equity offering or stock financed transaction, to lock-in real assets, benefitting from short-term equity overvaluation long-term.[6] In contrast, undervalued companies tend to be targets of these acquisitions. Market's knowledge of this incentive explains the negative reaction to stock financing in public transactions.

Even though the pecking order theory is the most prevalent theory around this subject, there are other theories that are used to explain the phenomenon that is corporate M&A. For example, the reference point theory (e.g., Baker et al., 2012) suggests that previous peak stock prices of public targets or reference companies of a private target are key drivers of the premiums, and thus transactions performance. Roll (1986) proposed a "hubris hypothesis" according to which target's gains are wealth transfers from acquiror's shareholders when managers are overconfident regarding their own abilities. I use the pecking order theory as a basis for this thesis for its ability to explain a wider range of corporate actions, not only acquisitions of public companies, compared to other theories that are narrower in scope.

2.2. Review on empirical research on corporate acquisitions

Bradley et al. (1988) report that in their US sample of 236 acquisitions, acquiror and target's shareholder receive a combined wealth growth of 7.4% in the immediate aftermath of the transaction's announcement. This is consistent with the suggestion of Harford et al. (2012) that acquisitions should result in a positive combined wealth effect. Also, Dodd and Ruback (1977) show that tender offers are wealth-increasing transactions.

Chang (1998) studies the public acquiror's abnormal returns in the case of a privately held target. He finds that stock financing in acquisitions of a privately held target has a statistically significant average abnormal return of 2.64 % at a 1% level. Conversely, he finds that stock financing has an average abnormal return of -2.46 % at a 1% level when acquiring another

[5] However, this is somewhat contrary to Myers and Majluf's (1984) model in which managers will avoid equity offering regardless of perceived over- or undervaluation as it always lowers existing shareholders' wealth.
[6] Gamestop and AMC's recent equity offerings to cash-in on their overvaluation mania, are good descriptions of Scleifer and Vishny's (2003) theory.

public company. The sign of the coefficients is also statistically significant to a 1% level. Cash financing did not have a statistically significant effect in either scenario. In his research, Chang (1998) uses a two-day event window (0:1). Fuller et al. (2002) also report a positive correlation with stock payment and the returns of a private acquisition and a negative correlation with the acquisition of a public company. The mean positive effect on private acquisitions is 2.43 %, and the mean negative effect on public acquisitions is -1.86 %. Both effects were statistically significant, and the impact grew with target size. Also, Martin (1996) reports an abnormal return of cash acquisition compared to equity financing when acquiring a public company. Hertzel and Smith (1993) report a positive abnormal return in private placements of equity. Loughran and Vijh (1997) report a positive mean effect in cash offers and a negative mean effect in equity offers over a five-year period after the announcement of the public transaction.

3. Predictions and Hypotheses

3.1. Considerations on relevant factors in M&A financing decisions

In this section, I present relevant literature and economic reasoning behind my control variables. These control variables are assumed to correlate with the share financing's portion and affect transaction returns. Thus, dropping them would lead to omitting variable bias, in which explanatory variable X_1 captures the effect of omitted variable X_2, which correlates with X_1 and explains dependent variable Y.

a. Corporate control

Incentives and possible incentive conflicts have been shown to have an important role in forming the financing policy of a company (e.g., Roberts and Sufi, 2009). Corporate control is a major part of these incentives and shown to drive decision-making in financing of corporate acquisitions (e.g., Amihud et al., 1990). Stulz (1988) shows that large ownership in the target or the acquiror may significantly affect the result, value, and financing of the transaction. For example, when a blockholder of the acquiror's stock has over 50 % of voting rights, he or she has an incentive to finance the transaction with cash or debt to avoid the possible loss of majority holding. Managerial entrenchment also destroys shareholder value in corporate

acquisitions (Harford et al., 2012). Managers may also be reluctant to use equity in financing to shield themselves from corporate raids. However, Stulz (1988) points out that even issuance of debt lowers the probability of staying in control as the excess debt lowers the value of equity and makes the company more susceptible to acquisitions. To capture the corporate control incentive in my analysis, I include an OWNER variable defined as the ownership percentage of the largest holder of acquiror's stock. Martin (1996) documents a negative relationship between managerial ownership and stock financing only in the intermediate ownership range (i.e., close to 50 % stake). Acquirors with diffused or very concentrated ownership are less likely to be affected by these corporate control issues.

The probability of forming a new blockholder also impacts the financing and return of the transaction (Shleifer and Vishny, 1986; Craninckx and Huyghebaert, 2014). When the target is closely held or a subsidiary of a larger conglomerate, it is more likely that the stock financed transaction will yield a new blockholder. The probability of the formation is also directly correlated to the deal size as the amount of shares outgoing grows with the deal size. The incumbent blockholders may see this as something to avoid and hence have a bias towards cash or debt financing (Faccio and Masulis 2005). This effect is captured in the CONTROL LOSS variable, defined as the ratio of deal size to acquiror's market capitalization plus deal size.

However, the formation of a new blockholder might also be viewed as a positive signal by the market due to growth in supervision over managerial action. Thus, influencing returns. Target's shareholders' supervision is hypothesized to be knowledgeable regarding the sector in which the acquiror operates because most transactions are done in the same industry, or at least in a similar industry, enlarging the positive effect (Craninckx and Huyghebaert, 2014). Obviously, these considerations are highly dependent on the characteristics of individual cases and individual executives.

b. Acquiror's financial leverage and leverage capacity

The common way to fulfill the cash portion of the transaction is to issue debt, either long-term or short-term, because cash reserves of the acquiring company rarely cover the cost of larger corporate takeovers. According to Myers (1977), when the company's tangible assets grow, the cost of debt goes down. This is due to the increase in capacity to use these tangible assets

as collateral for debt financing, reducing the loan's risk for the debtor, which leads to lower rates on these financing instruments. Similarly, Hovakimian et al. (2001) find that companies with higher ratios of tangible assets to total assets tend to have higher debt ratios as a result. Traditional trade-off theories also predict this to be the case as the point where the expected bankruptcy costs override debt's tax shield is closer to all-debt financing when tangible assets back the business. However, excess debt may lower corporate value (e.g., Kraus and Litzenberger, 1973). This effect is captured in the regression with the COLLATERAL variable defined as the ratio of property, plant, and equipment to total assets.

Total assets are also hypothesized to have an impact on the financing choices the company decides to make. The company size is assumed to positively correlate with the amount of cash used in the transaction, as larger companies tend to be more diversified and have better access to an efficient debt market. Both reasons should make the cash payment method more attractive and feasible. (e.g., Faccio and Masulis, 2005) I measure this factor by the TOTAL ASSETS variable, defined as the natural logarithm of total assets in the last financial year before the acquisition. The natural logarithm is used to lower the effect of outliers and thus make the result more robust.

Highly levered companies may be constrained in their capacity to receive more debt financing. Acquirors that are financially constrained are expected to lean towards stock financing. Both Faccio and Masulis (2005) and Martin (1996) control for this effect; however, their methods differ slightly. Faccio and Masulis (2005) use the post-merger ratio for leverage, which takes account of the possibility of additional debt. This addition intuitively correlates with deal size. In contrast, Martin (1996) uses pre-merger leverage ratios, which are contingent only on financial statement data of the previous financial year. I take on the method of Faccio and Masulis (2005) in my LEVERAGE variable as post-merger leverage is clearly more relevant for the decision-making of the acquiror’s executives.

c. Cross-industry and cross-border transactions and asymmetric information

I include dummy variables INTRA-INDUSTRY and CROSS-BORDER to account for the idiosyncratic effect of both cross-border and intra-industry transactions affecting the portion of shares used in the transaction. In the presence of asymmetric information, a seller is more likely

to prefer cash payment to avoid the risk of uncertain future revenues and, thus, uncertain equity values. Asymmetric information is assumed to be smaller among individuals with similar knowledge of the subject in question. This is evident in an example like the traditional layout of "lemons problem" (Akerlof 1970): a seller of used cars may well be able to trick a layman into buying a "lemon-car," but this is intuitively significantly harder when the other side is another used car salesman. A similar effect is assumed to be present in transactions crossing borders both in relation to industry and nation. Grinblatt and Keloharju (2001) report a home country bias in the decision-making of private investors. It seems reasonable to assume this to be the case also for corporate acquirors.[7] Companies tend to be more inclined to acquire companies from nearby countries (Erel et al., 2012). These biases are also apparent in the distribution of target's home countries in my sample (Appendix 1): over 40% of the targets are Finnish, and over 60% of the targets are Nordic.

d. The relative size and perceived growth opportunities

In a situation of great uncertainty over the future value of the target's assets, acquirors are hypothesized to have an incentive to finance the transaction with stock instead of cash, because then target's shareholders share this risk and the problem of asymmetric information of what the future holds is alleviated (Hansen, 1987; Luypaert and Caneghem, 2017). The acquiror's growth in relation to the target lessens this incentive to finance acquisitions with stock as the concern of financing decisions' effect falls because the risk is smaller in relation to the total asset base of the acquiror. This effect is captured in my model by the RELATIVE SIZE variable, which is defined as the ratio of the deal size to the size of the acquiror pre-bid.

Companies with larger potential in the future are valued with high market-to-book multiples in the market, as the present value of perceived future growth opportunities is larger. Jung et al. (1996) argue that shareholders in a target company which is subject to an acquisition by a company with a high ratio of market-to-book should be prone to accept equity as a payment method. Unless there are other reasons to prioritize cash, as for example, in the scenario of the divestiture of a subsidiary. This is consistent with Shleifer and Vishny (2003). In my multivariate regression, this effect is captured by the MARKET-TO-BOOK variable defined

[7] Faccio and Masulis (2005) suggest that this home country bias may stem from foreign stock's greater trading costs, lower liquidity, exposure to exchange risk and limited access to company information.

as a ratio of market value of equity plus book value of debt divided by book value of total assets. Recent growth in stock price has a similar effect as the market-to-book value. Following the argumentation, the run-up in stock price could indicate overvaluation and a tendency to finance the acquisition with stock. This effect is measured with the RUN-UP variable, defined as in Martin (1996), to account for 250 trading days before the announcement, excluding the start of the longest event window. Thus, the variable includes the return of days $T = -250$ to $T = -5$ in relation to the transaction's announcement ($T = 0$).

3.2. Hypotheses

Due to the differences between the cases of public target and privately held target discussed in the prior literature -section, I divide the hypothesis into two parts. The first part covers situations where the acquisition of a public company is announced. Conversely, the second part covers acquisition announcements of privately held targets. Next, I will elaborate more on both hypotheses.

a. Hypothesis on public targets

Previous finance literature has consistently indicated that stock payment has an adverse effect on bidder returns when the target company is public (e.g., Chang, 1998; Mikkelson and Partch, 1986; Fuller et al., 2002). These effects are mostly explained using the pecking order theory described earlier, which suggests that equity financing should have a negative effect on the share price in the presence of asymmetric information. In this scenario, capital gain tax considerations and blockholder formation should not have an impact as public companies tend to have dispersed ownership. Additionally, companies aim to be overvalued when they negotiate a stock financed transaction (Shleifer and Vishny 2003). Thus, the decision of financing is seen as the key driver of bidder return. From this, I form the hypothesis on the public sample as follows:

H1: Equity financing is expected to have a negative effect on the bidder's abnormal return in an acquisition of a public target.

b. Hypothesis on private targets

In contrast, equity financing has been shown to have a positive effect on the bidders' abnormal return when the target is privately held (e.g., Chang, 1998; Fuller et al., 2002; Hertzel and Smith, 1993). Two factors are proposed as an explanation for the finding. Both factors rely on the assumption that corporate control of privately held companies is not as disperse as the ownership in public companies.

In the *monitoring hypothesis* (Chang, 1998), it is assumed that the acquisition of a private company with stock is more likely to lead to the formation of a new blockholder in the acquiring company, because fewer individuals receive the shares in question. This leads to the market valuing the growth in oversight on the actions of the acquiror's management (Shleifer and Vishny, 1986; Craninckx and Huyghebaert, 2014). Conversely, this could, in some cases, lead to managerial entrenchment, and thus worse future prospects and transactions (Morck et al., 1990).

According to the *tax hypothesis*, a private acquisition is more likely to trigger significant tax liabilities to the shareholders of the target. As the cash payment leads to immediate payment of this liability, the target is assumed to opt for equity financing. This could, in turn, lead to a lower premium paid for the target as the owners would be willing to accept less, basically sharing the benefit of postponing tax payment. Prior research finds a positive correlation between the target's capital gain taxation and the acquisition premium (Ayers et al., 2003). For the aforementioned reasons, the hypothesis on M&A of private companies is formed as follows:

H2: Equity financing is expected to have a positive effect on the bidder's abnormal return in an acquisition of a private target.

4. Methodology

4.1. Overview on the methods

The methods of this thesis are based on MacKinlay (1997), Bradley et al. (1988), and Faccio and Masulis (2005). MacKinlay's paper lays the basics of conducting event studies in the finance field. In addition, Bradley et al. (1988) examine very similar questions in their study of corporate acquisition synergies and wealth creation. A European viewpoint is considered by Faccio and Masulis (2005), and they provide an extensive analysis of the factors affecting financing decisions in corporate takeovers. Thus, most of my control variables are derived from Faccio and Masulis (2005).

Since this bachelor's thesis is an event study, the methodology is based on calculating the cumulative abnormal return (CAR) of the sample around the respective event found in the data. The CAR is based on a simple CAPM abnormal return and calculated within four event windows, and each is regressed individually to examine how efficiently the market captures the effects. The two-day (0:1) window is the main event window I use, with three-day (1:1), seven-day (3:3), and eleven-day (5:5) windows provided as a robustness check.[8] After these CAR calculations, the dataset is divided into three parts: public targets, private targets, and the whole sample.

I perform the final study on the bidder's abnormal returns around the announcement of the transaction by running a number of standard univariate and multivariate OLS regressions. The univariate regression, in section 6.1., only includes the share payment method’s impact on acquiror’s abnormal return. The purpose of the multivariate regressions, in section 6.2., is to control for the deal and firm characteristics. In the multivariate regressions, I include the following variables: (1) portion of stock in payment, (2) largest shareholder’s ownership, (3) control loss of stock payment, (4) collateral value, (5) intra-industry dummy, (6) cross-border dummy, (7) the relative size of the deal, (8) ratio of market value to book value of the buyer, and (9) total assets of the buyer. I exclude variables relating to legal, accounting, and other country-specific factors, as I assume these to be homogenous when working with a sample of

[8] If market is efficient the 2-day window should be sufficient. However, I shall accommodate the possibility that some market inefficiencies exist. Further discussion on market inefficiencies see e.g., Fama and French (2008).

only Finnish acquirors in the same exchange.[9] This differs from Faccio and Masulis (2005), who control for country-specific factors as their study includes the whole of Europe.

Additionally, in section 6.3., I examine the effect of all-cash and all-equity and their difference on abnormal returns using standard OLS regression to account for the fact that even a small portion of stock in the deal may insinuate overvaluation nearly as much as using all-stock financing, and the share portion's effect is not stable through 0-100%. More details regarding test values on differences between payment methods are provided in the appropriate regression table.

4.2. CAPM and CAR calculation

I calculate the parameters of the CAPM for each acquiror using a 240-day window starting 300 days before the announcement and ending 60 days before *the announcement*.[10] Bradley et al. (1988) use a similar method of a 240-day window starting from *the first tender offer* and excluding the 60 days before the announcement. In the CAPM calculation, I use the monthly yield of the 10-year Finnish government bond to approximate the risk-free rate, because all subjects in the sample are public Finnish companies. Then expected return is calculated for each event window in every acquisition. I calculate CAR for each individual event window by subtracting company-specific CAPM-expected market return from the realized return over the appropriate event window.

Event window -methodology on announced, but not yet completed, transactions subjects estimate of abnormal returns to two biases. As the transaction is not yet completed at the end of the event window, it is still possible that the transaction fails, and thus the estimate of abnormal return may be downwardly biased. On the target side, positive probability of higher bid leads to overestimating the abnormal return (Bradley et al. 1988). I study the acquiror's stock return, and thus estimates may be downwardly biased.

[9] This may result in a minor distortion of the results as factors may differ in the countries where targets are resided. However, these questions are outside the scope of this study but could be addressed in future research.

[10] On a few cases where the acquiring company had not had long enough history in the exchange, before the acquisition, to accommodate this 240-day window, a shorter window was used. The window was set to start five trading days after the IPO, to exclude idiosyncratic variations around that event. However, cases where this method would lead to shorter than 150-day window were discarded.

Table 1
Descriptions and Sources of Data for All Control Factors

Variable	Description
Owner	The portion of shares outstanding held by the acquiror's ultimate parent's largest shareholder at the end of the previous financial year. Source: Eikon
Control loss	Deal size divided by acquiror's ultimate parent's market capitalization at time of the transaction plus deal size. Source: Datastream and SDC
Collateral	The ratio of acquiror's ultimate parent's property, plant, and equipment to total book value of assets at the end of previous financial year. Source: Eikon
Leverage	The ratio of book value of debt at the end of previous fiscal year plus deal size divided by total book value of assets at the end of previous fiscal year plus deal size. Source Eikon and SDC
Ln (total assets)	Natural logarigthm of acquiror's total assets at the end of previous financial year. Source: Eikon
Relative size	Deal size divided by the total asset of the acquiror at the end of previous financial year. Source: Eikon and SDC
Market to book	Ratio of acquiror's ultimate parent's book value of debt plus market value of debt divided by total assets. Source: Eikon.
Run up	Acquiror's ultimate parent's stock return starting 250 trading days before and ending 5 days before the transaction. Source: Datastream
Intra-industry	1 if the target has the same industry code as the acquiror, 0 otherwise. Source: SDC
Cross-border	1 if the target's home country is something else than Finland, 0 otherwise. Source: SDC

5. Data and descriptive statistics

5.1. Selection criteria

The initial sample is collected through SDC Platinum. It contains all M&A transactions announced during the ten-year period from the 1st of January 2011 to the 31st of December 2020, where the buyer's ultimate parent is a listed public company on the main list of Nasdaq Helsinki. Additionally, transactions are filtered to exclude all share repurchases and to include only cases where the buyer is seeking to own at least 50% of stock after the transaction, as one key subject in this study is corporate control. I include transactions that were not completed, because they still have the same market reaction at the announcement. Also, the acquiror's fundamental data must be available in Eikon and the stock return data in Datastream. This criterion of fundamental and stock return data availability did not lead to any exclusions of

datapoints. Faccio and Masulis (2005) use the same criterion with a few study-specific additions. These criteria led to an initial sample of 764.

In summary, the initial dataset has the following criteria:

- Announcement date between 1/1/2011 and 31/12/2020
- Buyer's ultimate parent is a Finnish company listed on the Nasdaq OMX Helsinki
- Transaction is not a repurchase
- The buyer is seeking to own at least 50% of the target after the transaction
- Acquiror's fundamental data is available in Eikon
- Acquiror's stock return data is available in Datastream

5.2. Alteration of the data

The raw data is altered to address problems arising from the differences between the synopsis of the transaction in SDC and the SDC stat for the percentage of cash, stock, or other forms of financing used in the transaction. For example, some cases are stated to consist wholly of "other" financing when the synopsis clearly states the form of financing as cash or stock payment. In addition, many synopses include the value of the transaction but not the form of payment. I use the initial announcements made by the acquiring companies found in LexisNexis, and in some cases, the official websites of the acquiror, to fill in these numbers regarding transactions where the data was publicly available but not found in the SDC. Some acquirors had changed their names during the period, and these changes were also accounted for using LexisNexis.

I fill in missing enterprise values for targets and deal values using the transaction synopsis. It provides the most accurate information compared to values that are inconsistent with the synopsis. In this stage, I remove the transactions which, even after the alterations, do not include the form of payment. I also remove the datapoints which are listed as containing "other" form of payment, as it significantly distorts the relationship between cash and equity financing, distorts some values of control variables, and includes some huge outliers. Faccio and Masulis (2005) have the same approach towards the exclusion of datapoints and usage of transaction synopsis as a form of information. The alterations lead to a final sample of 150 transactions.

5.3. Data description

As noted, the final sample size is 150 transactions, including 19 public targets and 131 private targets, announced by public Finnish companies in 2011–2020, out of which 110 are completed, with a total transaction value of 56.7 billion USD and total estimated abnormal loss of 3.4 billion USD during the announcement day[11]. Acquirors' equally weighted abnormal return on the two-day event window is -0.1% during the sample. In this section, I include tables of relevant summary statistics and properties of the underlying data. Additionally, I provide frequencies of the target nations in Appendix 1, transactions per acquiror in Appendix 2, yearly transaction frequencies for all samples in Appendix 3, and sources for different data types in Appendix 4.

Table 2
Summary of Acquisition Result Targets and Share Ownership Before and After Transaction

Descriptive statistics of the percentage of target shares acquired, owned after, sought, seeking to own after, and held before the transaction by the public acquiring firms in 150 announced transactions over the period of 2011-2020 in Finland. Shares acquired and shares owned after is adjusted to include only completed transactions.

	Shares acquired	Shares owned after	Shares sought	Seeking to own after	Shares held before
Mean	93,2 %	96,6 %	93,5 %	97,8 %	4,2 %
Median	100,0 %	100,0 %	100,0 %	100,0 %	0,0 %
Min	7,8 %	25,2 %	10,0 %	50,0 %	0,0 %
Max	100,0 %	100,0 %	100,0 %	100,0 %	90,0 %
Std	18,9 %	11,6 %	17,5 %	8,1 %	15,1 %

[11] The loss in market value is estimated by multiplying abnormal return on the announcement day, the share price at the announcement, and the shares outstanding at the end of prior fiscal year. This loss would be near zero if I exclude three worst-performing transactions, two conducted by Nokia Oyj and one by Neste Oyj.

Table 3
Summary Statistics of Non-dummy Control Variables

	Collateral	Leverage	*ln*(total assets)	Relative size	Market to book	Control loss	Owner	Run Up
Whole sample N = 150								
Max	0.66	2.17	10.81	3.12	51.33	92.5 %	78.9 %	7.3 %
Min	0.00	0.04	1.78	0.00	0.30	0.0 %	0.3 %	-25.3 %
Mean	0.16	0.41	6,04	0.21	2.69	15.1 %	19.0 %	-0.4 %
Median	0.10	0.38	5.71	0.05	1.20	6.7 %	15.2 %	-0.3 %
Private sample N = 131								
Max	0.66	2.17	10.81	3.12	51.33	92.5 %	78.9 %	7.3 %
Min	0.00	0.04	1.78	0.00	0.30	0.0 %	0.3 %	-25.3 %
Mean	0.16	0.38	5.96	0.16	2.38	12.1 %	17.5 %	-0.6 %
Median	0.11	0.35	6.12	0.05	0.12	5.3 %	14.9 %	-0.2 %
Public sample N = 19								
Max	0.49	1.45	10.71	2.62	50.05	72.4 %	50.8 %	5.2 %
Min	0.00	0.10	2.44	0.01	0.58	0.9 %	4.0 %	-4.7 %
Mean	0.16	0.60	7.00	0.50	6.51	31.3 %	22.9 %	0.4 %
Median	0.10	0.58	7.30	0.41	1.09	33.8 %	15.5 %	-0.2 %

6. Empirical Results

6.1. Univariate regressions

Based on hypothesis H1, equity financing should have a negative effect on the bidder's abnormal returns of public M&A transactions, ceteris paribus. Regression results of Finnish acquisitions without control variables (table 4) suggest that this is indeed the case in Finland, as all event windows result in negative means for the effect of equity financing. However, of the four event windows, only the shortest two-day window yields a statistically significant negative coefficient at a 10% significance level with a mean abnormal return of -1.9%. The range of the mean is from -3.6% to -1.3%. The p-value range is from 0.084 to 0.347. The negative mean of effect on the abnormal return across the board and the relatively low p-values suggest that hypothesis H1 holds in the Finnish market.

In contrast, based on hypothesis H2, equity financing should have a positive effect on the bidder's abnormal returns of private M&A transaction, ceteris paribus. Even though the private sample has a significantly larger sample size than the public sample, the results of the univariate

regression are not as descriptive. None of the coefficients is statistically significant. Moreover, there is no clear sign for the coefficient either. The two-day and three-day windows yield approximately zero impact when seven-day and eleven-day windows yield negative impact. Univariate regression of private targets with no control factors is unlikely to yield any solid result from the get-go, as minuscule transactions have the same weight as larger transactions since no relative size variable is used in the model.

Table 4
Univariate Regressions of Share Portion on Cumulative Abnormal Return by Status of Target

Cumulative abnormal returns are calculated for two (0,1), three (-1,1), seven (-3:3), and eleven (-5:5) days around the announcement (day 0) of a takeover. Abnormal returns are estimated using a CAPM market model:

$$AR_i = r_i - r_m$$

The estimation period for CAPM parameters is 240 days starting 300 days before the announcement. All acquirors are listed on the Nasdaq Helsinki stock exchange. The table excludes transactions that use other methods of payment than stock or cash. Share portion is defined as a 1 – cash portion. Hence, cash is excluded from the model as it is perfectly correlated with the share portion. The sample sizes for the public and private targets are 19 and 131, respectively. The p-values are provided in parentheses, with the appropriate symbol of statistical significance.

	Event window				
	2-day	3-day	7-day	11-day	Number of observations
Public targets	-1.9 % (0.084)"	-1.3 % (0.315)	-2.7 % (0.347)	-3.6 % (0.205)	19
Private targets	0.5 % (0.547)	0.0 % (0.993)	-1.2 % (0.349)	-0.9 % (0.622)	131

** = 1%-significance, * = 5%-significance, " = 10%-significance

6.2. Multivariate regressions

Tables 5 and 6 provide further information on the results discussed previously in section 6.1. After I control the results of the univariate regression for the deal and firm characteristics, it becomes apparent that the negative effect of share financing in the M&A transactions of public companies vanishes. The effect of the share portion is not statistically significant for either private or public companies in any event window. Additionally, the sign of the share portion beta coefficient is also inconclusive and does not give reason to believe any significant causality to exist. The main conclusion that one can draw from the result is that in the Finnish

market, other firm and deal characteristics drive the abnormal return of announcement returns during the period of 2011 to 2020. The small negative effect of stock financing on acquisitions of public companies is most likely a result of some other variable that drives negative performance and correlates with the share portion.

This study only examines the stable period of 2011 to 2020, after the financial crisis and before the covid-19 pandemic. Results might change if the sample period changes. This is discussed in section 7. The robustness of this multivariate regression is discussed in section 6.4.

Of the control variables, the run-up in prices is the best predictor of abnormal returns of the acquisitions of private companies during all the event windows. In the three shortest event windows, the effect of the run-up is positive for the acquisitions of private companies with 5%, 10%, and 1% levels for the two-, three-, and seven-day windows, respectively. This may reflect some form of positive momentum-factor of previous performance explaining the future abnormal return.[12] Also, the owner variable predicts negative performance in the two-day event window, with statistically significant negative values in the whole and private samples.

Prior research reports a negative *size effect* in corporate acquisitions, according to which larger acquirors tend to have worse abnormal returns after the announcement of the transaction than small acquirors (Moeller et al. 2004). My results are in line with this finding to a certain extent. In public acquisitions the effect of total asset is negative in all event windows, and the effect is statistically significant in the three- and seven-day windows with 1% and 5% levels, respectively. The whole and private sample are inconclusive in relation to the size effect.

The post-transaction leverage has an adverse effect on the abnormal return. The effect is negative in all samples and event windows, excluding the whole sample at the two-day event window with near zero effect. The effect is most evident in the public sample: the negative result is statistically significant in the three- and seven-day event windows at 1% and 5% levels, respectively. This effect could stem from factors in line with standard trade-off theories where the addition of debt might grow the excepted bankruptcy costs and thus also the value of the acquiror (Kraus and Litzenberger, 1973).

[12] I checked whether this effect was driven by any outlier, and it was not. This is also apparent from table 3, where the maximum of run-up variable in the sample is only 7.3 %. Also, the minimum of -25.3% did not cause this effect. Further analysis of momentum related considerations is outside the scope of this study

Table 5
Two and Three-day Multivariate Regression of Share Portion and Control Variables on Cumulative Abnormal Return by Status of Target

Cumulative abnormal returns are calculated for two (0,1) and three (-1,1) days around the announcement (day 0) of a takeover. Abnormal returns are estimated using a CAPM market model:

$$AR_i = r_i - r_m$$

The estimation period for CAPM parameters is 240 days starting 300 days before the announcement. All acquirors are listed on the on Nasdaq Helsinki stock exchange. The table excludes transactions that use other methods of payment than stock or cash. Share portion is defined as a 1 – cash portion. Hence, cash is excluded from the model as it is perfectly correlated with the share portion. Technical definitions of the control variables can be found in table 1. The sample sizes for the public and private targets are 19 and 131, respectively. The p-values are provided in parentheses, with the appropriate symbol of statistical significance.

	Event window (0:1)			Event Window (1:1)		
	All	Private	Public	All	Private	Public
Intercept	0.0021	-0.0067	0.0620	0.0049	-0.0156	0.1365
	(0.873)	(0.704)	(0.185)	(0.804)	(0.543)	(0.001)**
Share portion	0.33 %	1.10 %	-0.49 %	0.33 %	0.99 %	1.00 %
	(0.655)	(0.218)	(0.854)	(0.765)	(0.447)	(0.534)
Owner	-0.0005	-0.0006	-0.0003	-0.0000	-0.0004	0.0009
	(0.017)*	(0.034)*	(0.709)	(0.935)	(0.288)	(0.139)
Control loss	0.0419	0.0578	-0.0277	0.0904	0.1198	-0.0520
	(0.231)	(0.183)	(0.790)	(0.083)"	(0.059)"	(0.416)
Collateral	0.0136	0.0121	0.0170	0.0314	0.0152	0.0288
	(0.450)	(0.541)	(0.812)	(0.240)	(0.596)	(0.511)
Leverage	0.0007	-0.0030	-0.0126	-0.0102	-0.0185	-0.1136
	(0.954)	(0.841)	(0.785)	(0.606)	(0.395)	(0.004)**
ln(total assets)	-0.0006	0.0000	-0.050	-0.0005	0.0015	-0.0123
	(0.727)	(0.984)	(0.292)	(0.840)	(0.596)	(0.002)**
Relative size	-0.0110	-0.0081	-0.0123	-0.0224	-0.0181	0.0125
	(0.416)	(0.619)	(0.690)	(0.262)	(0.448)	(0.506)
Market to book	-0.0000	0.0005	-0.0004	-0.0000	0.0010	-0.0015
	(0.921)	(0.500)	(0.534)	(0.9615)	(0.304)	(0.029)*
Run up	0.1592	0.1762	0.3646	0.3102	0.2055	0.2325
	(0.021)*	(0.029)*	(0.288)	(0.003)**	(0.0783)"	(0.264)
Intra-industry	-0.0013	0.0009	-0.0004	0.0039	0.0007	0.0363
	(0.829)	(0.881)	(0.987)	(0.646)	(0.940)	(0.033)*
Cross-border	0.0087	0.0104	0.0070	0.0056	0.0047	-0.0246
	(0.157)	(0.127)	(0.698)	(0.533)	(0.636)	(0.053)"
R^2	0.10	0.13	0.54	0.12	0.10	0.88

** = 1%-significance, * = 5%-significance, " = 10%-significance

Table 6
Seven and Eleven-day Multivariate Regression of Share Portion and Control Variables on Cumulative Abnormal Return by Status of Target

Cumulative abnormal returns are calculated for seven (-3,3) and eleven (-5,5) days around the announcement (day 0) of a takeover. Abnormal returns are estimated using a CAPM market model:

$$AR_i = r_i - r_m$$

The estimation period for CAPM parameters is 240 days starting 300 days before the announcement. All acquirors are listed on the Nasdaq Helsinki stock exchange. The table excludes transactions that use other methods of payment than stock or cash. The share portion is defined as a 1 – cash portion. Hence, cash is excluded from the model as it is perfectly correlated with the share portion. The definitions of the control variables can be found in table 1. The sample sizes for the public and private targets are 19 and 131, respectively. The p-values are provided in parentheses, with the appropriate symbol of statistical significance.

	Event window (3:3)			Event Window (5:5)		
	All	Private	Public	All	Private	Public
Intercept	-0.0011	0.0077	0.1623	-0.0606	-0.0873	0.0659
	(0.960)	(0.787)	(0.065)"	(0.076)"	(0.057)"	(0.360)
Share portion	-0.97 %	-1.14 %	1.07 %	-0.69 %	0.57 %	2.97 %
	(0.436)	(0.430)	(0.817)	(0.7133)	(0.805)	(0.486)
Owner	0.0003	-0.0002	0.0024	0.0005	0.0006	0.0028
	(0.506)	(0.590)	(0.150)	(0.351)	(0.4379)	(0.080)"
Control loss	0.0496	0.0088	0.2127	0.1037	0.1222	0.1749
	(0.400)	(0.900)	(0.265)	(0.246)	(0.276)	(0.308)
Collateral	0.0079	-0.0127	-0.0022	0.0185	0.0142	0.0179
	(0.794)	(0.690)	(0.9857)	(0.688)	(0.781)	(0.875)
Leverage	-0.0172	-0.0222	-0.2387	-0.0051	-0.0049	-0.2139
	(0.443)	(0.358)	(0.018)*	(0.881)	(0.899)	(0.019)*
ln(total assets)	0.0021	0.0031	-0.0198	0.0081	0.0107	-0.0082
	(0.429)	(0.339)	(0.036)*	(0.046)*	(0.041)*	(0.277)
Relative size	-0.0010	0.0284	-0.0909	-0.0115	0.0057	-0.0946
	(0.965)	(0.283)	(0.125)	(0.737)	(0.893)	(0.085)"
Market to book	-0.0007	-0.0003	-0.0015	0.0003	0.0016	-0.0001
	(0.339)	(0.779)	(0.368)	(0.819)	(0.370)	(0.923)
Run up	0.4867	0.3891	0.9103	0.0025	0.0157	1.1124
	(0.000)***	(0.003)**	(0.146)	(0.989)	(0.939)	(0.064)"
Intra-industry	-0.0096	-0.0122	0.0758	-0.0038	-0.0024	0.0630
	(0.326)	(0.234)	(0.100)"	(0.795)	(0.886)	(0.126)
Cross-border	-0.0108	-0.0139	-0.0119	-0.0151	-0.0131	-0.0289
	(0.295)	(0.205)	(0.7107)	(0.332)	(0.456)	(0.336)
R-squared	0.21	0.21	0.77	0.06	0.07	0.82

*** = 0.1%-significance, ** = 1%-significance, * = 5%-significance, " = 10%-significance

6.3. Effect of all cash and all equity financing

In addition to running univariate and multivariate regressions on the effect of share portion to abnormal return, I conduct an analysis to examine whether the effect is different in situations of *all cash* or *all stock* financing. The analysis is like the one conducted by Moeller et al. (2004) regarding differences in size effect between samples and financing decisions. I present the results in Table 7.

All-cash has a mean positive effect of 1.72% on abnormal return in acquisitions of public targets at a 10% significance level (Panel A). Conversely, combo and all-stock financing have negative effect on abnormal return. However, only the negative effect of combo financing is statistically significant at a 10% level with a mean of -1.72% (inverse of all-cash due to its definition). Differences of both all-stock and combo financing compared to all-cash option's mean is statistically significant at 5% and 10% levels, respectively. This finding is in line with my hypothesis H1 on public targets. As is the case with univariate and multivariate regressions, results on private acquisitions (Panel B) do not have statistical significance, and the directions of coefficients are inconclusive. This provides no evidence to back hypothesis H2

Table 7

Regression on All Cash, All Stock and Combo financing's Effect on Two-Day Abnormal Return and Significance of Differences

Cumulative abnormal returns are calculated for a two-day event window (0,1) around the announcement (day 0) of an M&A transaction following Chang (1998). Abnormal returns are estimated using a CAPM market model. The estimation period for CAPM parameters is 240 days starting 300 days before the announcement. All acquirors are listed on the Nasdaq Helsinki stock exchange. The table excludes transactions that use other methods of payment than stock or cash. *Combo* financing is defined as a transaction where both cash and equity are used. Test statistic is normal OLS regression t-statistic for *all cash, all stock,* and *combo.* Test statistic and p-values for sub-sample differences follow a statistical test for comparing betas of two subsamples in the same model following Clogg et al. (1995). This standardized test statistic is provided below. *a* and *b* correspond to subsamples.

$$t = \frac{\hat{\beta}_a - \hat{\beta}_b}{\sqrt{SE(\hat{\beta}_a)^2 + SE(\hat{\beta}_b)^2}}$$

	Number of observations	Average abnormal return	t-statistic	p-value
Panel A: Public targets				
(1) All cash	10	1.72 %	1.771	(0.095)"
(2) All stock	6	-1.04 %	0.937	(0.362)
(3) Combo	3	-1.72 %	1.771	(0.095)"
Difference (1) - (2)		2,76 %	1.872	(0.078)"
Difference (1) - (3)		3,44 %	2.504	(0.022)*
Panel B: Private targets				
(1) All cash	73	0.22 %	0.356	(0.723)
(2) All stock	26	0.79 %	1.034	(0.333)
(3) Combo	32	-0.06 %	0.210	(0.834)
Difference (1) - (2)		-0,57 %	0.578	(0.564)
Difference (1) - (3)		0,28 %	0.250	(0.803)

* = 5%-significance, " = 10%-significance

6.4. Explanatory power of control variables and other robustness considerations

All analyzed control variables are based on factors that may affect choosing either stock or cash financing, other than asymmetric information about the company prospects and drive abnormal returns. This reasoning aims to lessen the effect of underfitting bias. Table 8 (provided below) summarizes an OLS regression of these variables on the share portion used to analyze their validity.[13] Control variables seem to have more explanatory power in the private sample than in the public sample. This may be due to the small sample size of the public dataset. Next, I analyze how these variables explain the share portion used, and predictions laid down in section 3.1.

a. Explanatory power of control variables

I hypothesized that growth in the ownership of the acquiror's largest shareholder creates a bias towards cash payment (e.g., Stulz, 1988). This seems to apply to my Finnish sample, as the *owner* variable has a negative effect on share financing used. Although, the negative effect is statistically significant only in the private sample at a 5% level. The other corporate-control-related variable, *control loss*, also has negative coefficients both in the whole sample and in the private sample, where the regression is also statistically significant at a 5% level. Control loss seems to have a positive correlation with the share portion in the public sample, contrary to predictions. However, this is because the largest acquisitions tend to be large mergers with large control loss, which are usually financed with stock for practical reasons that shun the effect of only corporate control incentives.

The *collateral* variable does not seem to forecast equity financing in M&A transactions with no clear direction of coefficient and no statistical significance in any sample. Growth in *leverage* of the acquiring company elevates the likelihood that the transaction is financed with equity in both the whole sample and private sample with statistical significance at a 5% level. The coefficient on public targets is also positive. This is in line with Hovakimian et al. (2001) and my predictions.

[13] Only the share portion is examined, because it is defined as (1 – cash portion) and thus has perfect negative correlation with cash amount. All values yield inverse result if variables effect on the cash portion were studied.

Total assets are assumed to have a negative correlation with equity financing as larger companies are expected to have better access to efficient debt markets. The results support this prediction as total assets have negative coefficients in the whole sample and the private sample with a 5% and a 0.1% level, respectively. This variable yields inconclusive results in the public sample for the same reason as in the control loss variable, i.e., the hypothesized effect is disturbed by the largest corporate acquisitions, often financed with equity regardless of other considerations.

When the deal is large compared to the acquiror's total assets, the risk stemming from asymmetric information between the target and acquiror can be alleviated with equity financing (e.g., Luypaert and Caneghem, 2017). This impact is seen in the positive mean effect of the *relative size* of the deal on equity financing in every sample, although the coefficients are not statistically significant.[14]

The effect of the *market-to-book* values, the *run-up* in acquiror's share price, and the *intra-industry* dummy run against my predictions. According to predictions, the market-to-book value should have a positive correlation with equity financing. However, the effect does not have an apparent impact on the whole sample. Furthermore, the effect is negative with statistical significance at a 5% level in the private sample. The run-up in the acquiror's stock price should incentivize usage of stock due to possible overvaluation and signaling of good investment opportunities in the future. In my data, this does not seem to be the case. Transactions in the same industry should diminish asymmetric information, and blockholding of an industry expert should have a positive impact on market value. Thus, the mean of the share portion is expected to be higher. However, the impact is positive only in the public sample, and the negative effect in the private sample is statistically significant at a 5% level. Sampling error might affect the result, as the period of 2011–2020 may have had macroeconomic circumstances or technological development that could have incentivized cashing out in certain industries prominent in Finland.

The *cross-border* dummy yields results that are in line with the predictions. Target's shareholders are assumed to prefer cash over stock of a not-so-familiar company outside the

[14] This lack of statistical significance may reflect the use of other methods to alleviate problems arising from asymmetric information, for example extensive disclosure of information or other contractual terms. However, analysis of these factors is outside the scope of this thesis.

home nation (*home country bias* (Grinblatt and Keloharju, 2001)). In both the whole sample and the private sample, this negative effect on the share portion is statistically significant at a 1% level. The positive coefficient in the public sample most likely represents lower asymmetric information in public companies with harmonized regulations and reporting standards, for example, IFRS or GAAP, even cross-border.

Table 8
OLS Regression of Control Variables on Share Portion
by Public Status of Target

Examination of how well the firm and transaction characteristics explain changes in the financing of the transaction. All acquirors are listed on the Nasdaq Helsinki stock exchange. The table excludes transactions that use other methods of payment than stock or cash. Definitions of control variables can be found in table 1 below section 4.2. Sample sizes for public and private targets are 19 and 131, respectively. The p-values are provided in parentheses, with the appropriate symbol of statistical significance.

	All targets	Private targets	Public targets
Variable / N	150	131	19
Owner	-0.004	-0.057	-0.014
	(0.114)	(0.005)*	(0.224)
Control loss	-0.278	-0.992	0.710
	(0.494)	(0.025)*	(0.617)
Collateral	0.129	0.158	-0.114
	(0.539)	(0.443)	(0.908)
Leverage	0.332	0.317	0.651
	(0.029)*	(0.040)*	(0.290)
Ln(total assets)	-0.045	-0.077	0.040
	(0.012)*	(0.0001)***	(0.517)
Relative size	0.155	0.227	0.135
	(0.323)	(0.183)	(0.751)
Market to book	-0.006	-0.014	0.000
	(0.244)	(0.042)*	(0.983)
Run up	0.196	-0.059	-6.764
	(0.804)	(0.943)	(0.106)
Intra-industry	-0.091	-0.161	0.396
	(0.173)	(0.013)*	(0.201)
Cross-border	-0.208	-0.207	0.028
	(0.003)**	(0.003)**	(0.911)
R-squared	0.23	0.33	0.78

*** = 0.1%-significance ** = 1%-significance, * = 5%-significance, " = 10%-significance

b. Other robustness considerations

Using control variables to combat underfitting bias, I make my model vulnerable to *overfitting bias*, in which unrelated variables lessen the efficiency of other explanatory variables. This can be addressed by trying different combinations of variables by dropping the worst-performing variables[15] and conducting sensitivity analysis on the regression. I perform this analysis on my multivariate regression by dropping one to five variables and using different combinations. The dropped variables included in order of priority: (1) intra-industry dummy, (2) collateral, (3) market-to-book, (4) leverage, and (5) relative size. None of the combinations used seemed to improve the performance of the share portion variable by any significant amount, suggesting that overfitting was not an issue. Thus, I provide the multivariate model with all the control variables.

To further improve robustness, I use the natural logarithm of total assets in the multivariate regression to diminish the effect of outliers and provide results over three additional event windows, besides the main two-day window in both univariate and multivariate regressions. The results are most prominent in the two-day window, as I expect, in an efficient market. Moreover, the general direction does not differ in other windows, but the estimations just appear less efficient and prominent.

7. Discussion

7.1. Reflection on the results

My study provides similar results as prior research about financing decisions' effect on the abnormal announcement day returns in public corporate acquisitions. However, earlier literature from the 1980s and 1990s argues that a large portion of this stems from asymmetric information between the acquiror and the market. My result suggests that this is not necessarily the case, at least in Finland during the period of 2011-2020, as the adverse effect of stock financing on public acquisitions vanishes after introducing control factors into the model. Thus, deal-specific factors are assumed to drive the abnormal returns. An increase in market

[15] I determine the variables to drop using results from multivariate regressions and explanatory power of variables.

transparency, better access to information globally, and trust in regulation after the writing of the seminal papers are reasons that might drive this finding. These factors may also explain why my rudimentary results signal smaller effect overall. Better access to information partly explains the lack of significant results in the private sample: the private acquisition market is more competitive and efficient than during the sample periods of prior research.

7.2. Limitations of the study and the methods

a. Conceptual limitations

Noise: The multifaceted nature of corporate acquisitions makes M&A a complicated subject to study. Not only do the announcement returns include reactions to financing choices, but they also encase expectations of synergies, division of synergies between the target and the acquiror's shareholders, overpayment, market news, and other industry or market-related noise. Hietala et al. (2003) even suggest that implications on profitability are theoretically impossible to measure from stock price reactions apart from two cases: an unsuccessful bid and a bidding contest of exactly two bidders. Examination of whether my results differ in competed bids versus non-competed bids in the Nordic market warrants future research.

Capital asset pricing model: The usage of Sharpe's CAPM as an estimate for the systematic risk of an equity instrument has been widely scorned in the financial literature (e.g., Fama and French, 2004). However, even though many have tried, no perfect model for asset pricing exists. Due to CAPM's usage in reference papers (e.g., Fuller et al., 2002; Bradley et al., 1988; Chang, 1998; Martin, 1996) and small difference between models in the context of high volatility M&A field, I used CAPM as a sufficient estimation of market risk, but it is certainly not a comprehensive method.

b. Technical limitations

Event window: The definition and calculation of the event window are at the center of my analysis. I have calculated the main window following Chang (1998) and provided three other previously used windows for extra analysis and robustness. However, regardless of citations, the definition is flexible, and seemingly arbitrary judgment calls on which previously cited

window to use can make a huge difference in the results. These differences are mostly just noise disguised as statistical results.

Period: My sample consists only of acquisitions announced during the period of 2011–2020. During this period financial market has seen relatively stable growth, excluding the uncertainty of the European debt crisis in the early 2010s. This limits the scope of the study to only stable market conditions. Global disruptions can have a significant effect on the stability of results seen in the financial market and market for corporate control (Moeller et al., 2005). These effects were experienced in the dot-com bubble, financial crisis, and most recently in the covid-19 pandemic. Hence the results of similar research may differ if a different period is chosen.

Data collection: The SDC Platinum database is not error-free. During the data collection phase of this thesis, a myriad of datapoints was either filled in using SDC provided synopsis or searched manually using original acquiror announcements. The same approach has been used in prior academic literature relating to M&A (e.g., Faccio and Masulis 2005). However, I cannot rule out the possibility of human error during this procedure. Moreover, even the SDC dataset may still include datapoints that have biased or faulty values.

7.3. Suggestions for future research

This study does not cover transactions outside the period of 2011 to 2020. This warrants future research in Finland and in the Nordics using different time periods to examine financing decisions' effect on the bidder's return during a financial crisis. Comparable study between Nordic countries could also provide insights on the market characteristics and the effectiveness of variables used.

Acquiror characteristics, such as acquiror size, seem to be better able to explain abnormal returns around M&A transaction's announcement than financing decisions. Thus, a more in-depth analysis of the *size effect* (e.g., Moeller et al., 2004), and its repercussions in the Finnish and Nordic takeover market, is warranted.

8. Conclusion

In this bachelor's thesis, I examine the effect of payment method on the acquiror's abnormal return around the transaction's announcement in the Finnish takeover market during 2011-2020. I use cumulative abnormal return as a measure of this effect, and I measure it I over four different event windows to capture the immediate market reaction and to provide a robustness analysis on a possible spillage or expectation of information, and market inefficiencies. My findings regarding public targets are in line with prior research and my hypothesis before controlling for firm and deal characteristics. No clear effect was found in the private sample using the univariate regression.

The main findings are the following. (1) Stock financing has a negative effect on public acquisitions abnormal returns ranging from -3.6 % to -1.3 % across two-, three-, seven-, and eleven-day windows. However, the effect is statistically significant only in the shortest, two-day, windows yielding an effect of -1.9 % at 10 % level. Controlling for the firm and deal characteristics used in prior research of M&A transactions, the effect vanishes. (2) All-cash financing has a positive 1.7 % effect on acquisitions of public companies. (3) This effect is significantly different from the negative effect of all-stock financing and combo financing. No clear effect was found in the private sample using the univariate regression. Controlling for the firm and deal characteristics used in prior research of M&A transactions, the effect vanishes from both samples.

This lack of significant effect in the Finnish market might be a result of Finnish market characteristics as other factors drive the abnormal returns. After the financial crisis, market transparency has grown significantly, stemming from, e.g., new regulatory practices or IFRS standards. Increased transparency in the market lessens the implicit effect of asymmetric information that may be one driver of the statistically significant negative effect of stock payment on public transactions and vice versa on private transactions, seen in the seminal papers of the 1980s to 1990s.

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10. Appendices

Appendix 1
Number of Transactions Announced Per Target Nation
Including Other Financing Method

	Targets	
Country	*N*	*%*
Finland	85	43,37 %
Sweden	22	11,22 %
United States	15	7,65 %
Norway	11	5,61 %
Germany	9	4,59 %
Denmark	9	4,59 %
United Kingdom	7	3,57 %
Italy	5	2,55 %
Netherlands	5	2,55 %
Estonia	3	1,53 %
France	3	1,53 %
Czech Republic	2	1,02 %
Poland	2	1,02 %
South Africa	2	1,02 %
China	2	1,02 %
Brazil	2	1,02 %
Switzerland	1	0,51 %
South Korea	1	0,51 %
Belgium	1	0,51 %
Slovak Rep	1	0,51 %
New Zealand	1	0,51 %
Malaysia	1	0,51 %
Ireland-Rep	1	0,51 %
India	1	0,51 %
Lithuania	1	0,51 %
Canada	1	0,51 %
Singapore	1	0,51 %
Spain	1	0,51 %
Total	196	100 %

Appendix 2
Acquisitions in Research Sample by Company
Including Other Financing Method

Acquiror	N	Acquiror	N	Acquiror	N
Huhtamaki Oyj	8	Valmet Oyj	3	Digia Oyj	2
Elisa Oyj	7	Amer Sports Oyj	3	QPR Software Oyj	1
eQ Oyj	6	Konecranes Abp	3	Suominen Oyj	1
NoHo Partners Oyj	6	Pihlajalinna Oyj	3	PKC Group Oyj	1
Talenom Oyj	6	Evli Pankki Oyj	3	Apetit Oyj	1
Solteq Oyj	5	Cargotec Oyj	3	Biohit Oyj	1
Innofactor Oyj	5	Enento Group Oyj	3	Stora Enso Oyj	1
CapMan Oyj	5	Sanoma Oyj	3	Sponda Oyj	1
Kesko Oyj	5	Cramo Oyj	2	Lehto Group Oyj	1
Citycon Oyj	4	Aspocomp Group Oyj	2	Affecto Oyj	1
Wartsila Oyj Abp	4	Metso Outotec Oyj	2	YIT Oyj	1
Nokia Oyj	4	Outokumpu Oyj	2	Lassila & Tikanoja Oyj	1
TietoEvry Oyj	4	Neles Oyj	2	Uponor Oyj	1
Fortum Oyj	4	Plc Uutechnic Group	2	EAB Group Oyj	1
Biotie Therapies Oyj	3	Panostaja Oyj	2	Wulff-Yhtiot Oyj	1
Raisio Oyj	3	Kemira Oyj	2	Vaisala Oyj	1
Alma Media Oyj	3	Enedo Oyj	2	Enersense International Oyj	1
BasWare Oyj	3	Aktia Bank Abp	2	Glaston Oyj Abp	1
Valoe Oyj	3	Aspo Plc	2	Caverion Oyj	1
Sampo Oyj	3	Ovaro Kiinteistösijoitus Oyj	2	Revenio Group Oyj	1
Fiskars Oyj Abp	3	F-Secure Corp	2	Terveystalo Oyj	1
Soprano Oyj	3	Investors House Oyj	2	DNA Oyj	1
Teleste Oyj	3	Technopolis Oyj	2	Incap Oyj	1
Atria Oyj	3	Afarak Group PLC	2	Anora Oyj	1
Scanfil Oyj	3	Ahlstrom-Munksjo Oyj	2	Neste Oyj	1
Bittium Oyj	3	Ramirent Oyj	2	Trainers' House Oyj	1
				Total	196

Appendix 3
Yearly Acquisition Frequencies by Sample Type

	Whole sample		Public sample		Private sample	
Year	Number of acquisitions	Percentage	Number of acquisitions	Percentage	Number of acquisitions	Percentage
2011	12	8 %	1	5 %	11	8 %
2012	14	9 %	0	0 %	13	10 %
2013	12	8 %	0	0 %	12	9 %
2014	13	9 %	1	5 %	12	9 %
2015	20	13 %	5	26 %	15	11 %
2016	19	13 %	3	16 %	16	12 %
2017	12	8 %	5	26 %	7	5 %
2018	16	11 %	0	0 %	16	12 %
2019	21	14 %	2	11 %	19	15 %
2020	11	7 %	2	11 %	10	8 %
	150	100 %	19	100 %	131	100 %

Appendix 4
Sources of Data Used in Thesis

	Source of the information
Fundamental data	
Total assets	Eikon
Property, plant and equipment	Eikon
Total debt	Eikon
Book value of equity	Eikon
Shares outstanding	Eikon
Stock price	Datastream
Return index	Datastream
10-year finnish gov. bond return	Datastream
Voting share of largest owner	Eikon
Deal characteristics	
Basic dataset	SDC Platinum
Missing information	LexisNexis, Company websites