2021

Radboud Universiteit

Managerial entrenchment or shareholders' interest?

The effects of anti-takeover measures on acquisition targets: evidence from the Netherlands

Master's Thesis Corporate Finance and Control

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Abstract

Due to the possible implementation of a new ATM in the Netherlands, it is, again, a hot topic whether Dutch ATMs lead to a Dutch discount. This hypothesized Dutch discount would be a result of the supposedly entrenching effects that Dutch ATMs have. To examine whether the Dutch ATMs lead to the entrenchment of management or benefit the shareholders, this study looks into the effects of Dutch ATMs on target CARs and on takeover probabilities. Prior research has not examined the effects of ATMs on target CARs, nor did it explore the effects of ATMs on takeover probabilities in the most recent decade. A decreasing trend in the use of ATMs is found in this research. Only certificates are found to have a significant (positive) effect on target CARs. Takeover probabilities are not affected by the use of ATMs, which is in line with findings about the period from 1961 to 1985 in The Netherlands.

Keywords: Mergers and Acquisitions (M&A), managerial entrenchment theory, shareholder interest theory, shareholder wealth effects, takeover probabilities, Dutch Anti-Takeover Measures

Acknowledgments

In front of you lies my Master's Thesis, which you will hopefully enjoy reading. This Thesis marks the end of my 6 years in college. I look back at a very pleasant, interesting, and, sometimes challenging time as a student. I am grateful for all the valuable lessons I've learnt over these past years and I would like to thank my parents for supporting me throughout all these years. Additionally, I am very thankful to have a girlfriend, Mara, that supported me throughout the challenging two and a half years of finishing my Bachelor- and two master degrees. Finally, I thank all the teachers for teaching me countless lessons.

With regards to this Thesis, I want to thank a few people in particular. First of all my professor and supervisor dr. Dirk-Jan Janssen, who helped me to polish my research subject, gave me helpful comments throughout the process, and, gave me the reassurance I sometimes needed. Secondly, I would like to thank Maarten Gubbels for all the helpful and enjoyable sessions we had together in the data-gathering process. Finally, I am grateful to prof. dr. A. De Jong for helping me, a complete stranger, out with his research, and, sharing his data with me for which I also thank dr. P. Fliers.

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1. Introduction

In 2017, it was announced in the Netherlands that action from the government was needed to protect the valuable Dutch companies from foreign interference in the form of hostile takeovers. The attempts of PPG Industries and Kraft Heinz to takeover AkzoNobel and Unilever respectively were the reason for the Dutch minister of economic affairs to set in motion a process that should lead to better decision making by the board of a company, protected from shareholders targeting short-term profits (Kamp, 2017). In December 2019 the bill 'Wettelijke bedenktijd door het bestuur van een beursvennootschap' was submitted to the Dutch Lower House. This bill, if implemented, gives the board of a listed company the option to call in a 'legal reflection period' of 250 days when there is a hostile takeover attempt or when the dismissal of a board member is put on the agenda. In these 250 days, shareholders cannot use their rights to nominate, suspend or fire board members. As the 'Memorie van Toelichting' (hereafter: MvT) attached to the proposed bill states, the 250-day period is intended to give the board some time to weigh the different interests involved and to discourage the short-term thinking of shareholders (MvT, 2019).

As this proposed bill is effectively a new anti-takeover measure (hereafter: ATM), adding to the already wide array of legal protective options available to Dutch listed companies, it quickly received a lot of criticism from various stakeholders. Eumedion (2019), an organization that stands up for the corporate governance rights of Dutch institutional investors, reacted critically to the concept version of the bill and argued that the addition of another ATM could have a strong deterrent effect on foreign investors, leading them to invest their money elsewhere. Eumedion, among others, questioned whether it is really necessary to introduce another ATM, considering that there are already many ATMs available to Dutch companies. The Dutch institutional environment with all its ATMs is argued to lead to a so-called 'Dutch Discount', a discount on Dutch listed companies relative to foreign listed companies when comparing them in terms of things as a Price/Earnings ratio. This Dutch discount is something to take into account, as is shown by the departure of Unilever from the Netherlands due to the shareholders disliking the Dutch institutional environment and the new proposed bill (Visée, 2020). Extending the argument that there might exist a Dutch Discount due to the very protective nature of the Dutch ATMs, one would expect to see that takeovers involving Dutch target-companies are affected by the use of these protective ATMs.

The Dutch Discount is a theory that arose from the realm of corporate governance theories. Already in 1776, Adam Smith(1776) recognized that there is a fundamental problem when there is a division of ownership and control within a company. Building forth on these thoughts by Smith is the agency theory, for which Jensen and Meckling (1976) are probably the most well-known. This agency theory explains that managers of a firm do not necessarily pursue the interests of the shareholders but rather pursue their own interests. To ensure that managers act in the best interests of shareholders there are corporate governance mechanisms. Corporate governance mechanisms are ways in which suppliers of finance to corporations assure themselves of getting a return on their investment (Shleifer & Vishny, 1997). There are mechanisms internal to a firm such as managerial incentives and there are mechanisms external to a firm such as specific laws and corporate governance codes enforced by market regulators and courts (La Porta et al., 1999). Without effective corporate governance mechanisms protecting shareholder interest, management and controlling shareholders have no incentive to ensure returns on the investments made by creditors and shareholders (La Porta et al., 1999). An important corporate governance mechanism is the market for corporate control. The market for corporate control poses a threat to bad-functioning managers because these managers are aware that another party can take over the firm and fire them. This leaves them without a job and harms their managerial reputation, managers

therefore have an incentive to perform well. Managers, however, can be protected from the market for corporate control by ATMs. These ATMs reduce the effectiveness of the market for corporate control and a lot of research investigates how corporate value is affected by ATMs ((e.g. Comment & Schwert, 1995; Karpoff & Walkling, 1996; De Jong et al., 2005; Cohen & Wang, 2013). Also, ATMs installed by target firms make it harder for an acquirer to take over that firm, effectively lowering the probability that a firm is being taken over. This may result in the acquirer paying a higher premium to the target shareholders (Gillan, 2006), which unambiguously does not benefit the acquirer. What makes the Dutch institutional environment and its ATMs so interesting to study in this context are some of its specific characteristics. First of all, the Dutch stakeholder model pursues long-term value creation whereby the interests of all different stakeholders are weighted equally (Dutch Corporate Governance Code, 2016). La Porta et al. (1999) argue that this stakeholder model leads to weaker shareholder rights in the Netherlands relative to countries with a common law system such as the UK and US. Furthermore, the Dutch corporate law provides a wide set of ATMs to listed companies which are often deemed as very protective. The availability of various ATMs and the increasingly foreign shareholder base led in the 1990s to the discussion about the reduced attractiveness of Dutch companies and the accompanying existence of a Dutch Discount (Timmermans, 2018). It makes for an interesting research topic to investigate how takeovers are affected by ATMs installed by Dutch target-firms.

Due to the proposal of a new bill, it is again a hot topic in the news whether there exists a Dutch Discount and whether it is necessary to introduce a new ATM for Dutch firms (Molenaar, 2017). The existing empirical literature on the Dutch Discount (Cantrijn & Kabir, 1992; Van der Groot, 1995; Rijken, 2006) is quite dated, as Timmermans (2018) also acknowledges in his rather theoretical review of the Dutch Discount. Additionally, literature investigating the effects that Dutch ATMs have in takeovers is rather scarce. Furthermore, from the review of the relevant literature on the entrenchment effect and the shareholder interest theory it becomes clear that some findings provide evidence for entrenching effects and some findings provide evidence for the shareholder interest theory. It remains unclear which of these theories fits best. Especially in the Netherlands, it is claimed that ATMs and the governance system are particularly protective. The empirical research until now has not provided convincing evidence that Dutch ATMs have an entrenchment effect or are in the interest of shareholders, given that in the legal literature writers are still not convinced of a Dutch discount (Timmermans, 2018; Bulten et al., 2017; Van Solinge et al., 2016). Since it remains unclear whether the entrenchment theory or the shareholder interest theory prevails in the Netherlands, this research will investigate whether evidence for either of these theories can be found. This research will do so by investigating the relationship between ATMs and M&A outcomes. More specifically, this research will focus on the relationship between ATMs and target abnormal returns and the relationship between ATMs and the probability of a firm being taken over. Because ATMs give the board bargaining power to negotiate about a higher bid from the acquirer, as is described before, ATMs are expected to raise the price that target shareholders receive for their shares. This expected higher price to be earned should be, assuming efficient markets, reflected in the share price of a target's stocks around the announcement of a takeover. Hence, under shareholder interest theory, ATMs are expected to lead to abnormally high returns for target shareholders. On the other hand, since ATMs can be employed to frustrate an unwanted acquirer bid, ATMs can have a deterrent effect on possible acquirers because they might fear for the frustration of their bid. Because possible acquirers might be deterred, the probability of a firm being taken over is expected to be lowered by the installment of ATMs at target firms. Such a finding would provide evidence for the managerial entrenchment theory.

Since two theories are investigated the research question is twofold and formulated as follows:

To what extent are target abnormal returns, and, the probability of a target being acquired, affected by Dutch ATMs?

Previous research in the Netherlands has investigated primarily the relationship between ATMs and firm value. The study of De Jong et al. (2007) does investigate M&A returns and ATMs but they look at the acquirer returns when an acquirer has adopted ATMs. Furthermore, De Jong and Fliers (2020) find evidence, using a subsample of Dutch listed firms, that preference shares lower the probability of a firm being taken over. To the best of my knowledge, no study has been conducted that looks into the relationship between Dutch ATMs, target abnormal returns and, the probability of being taken over.

This research uses a sample consisting of 344 Dutch firms and 123 Dutch targets in the timeframe from 1997 to 2019. The market model is used to calculate the CARs for target shareholders for an event window of -42 to +126. The CARs are used as a dependent variable in an OLS regression to examine the effects that ATMs have on target shareholder wealth. Additionally, a Cox proportional hazard model is used to investigate the effects that ATMs have on the probability that a firm is being taken over. The Cox proportional hazard model is found to be better in modeling the relationship between independent variables and the takeover probability than the logit regression model.

With the focus of the first analysis on the CARs of target shareholders, a whole new domain is examined when it comes to the effects that Dutch ATMs have in takeovers. Until now, research has investigated the effects of Dutch ATMs on acquirer CARs, and, in the USA the effects of ATMs on target CARs have been examined. Due to the specifics of the Dutch ATMs, however, US-based research cannot be extrapolated to the effects of ATMs in the Netherlands, and therefore, this research provides valuable insights. Moreover, with the examination of the effects of ATMs on the probability of a firm being taken over in the period 1997 to 2019, this study extends the work by De Jong and Fliers (2020) and incorporates the most recent decade into the study. By examining the impact of Dutch ATMs on both target CARs and the probability of a firm being taken over, this study provides valuable evidence in the debate between the managerial entrenchment theory and the shareholder interest theory. Additionally, the results found in this study can be used as economic arguments in the discussion about the possible implementation of the Wettelijke Bedenktijd in The Netherlands.

ATMs are often thought of as having a significant influence on the outcome of takeovers for target shareholders. The findings of this study show that this line of thought is inaccurate. Certificates are shown to be the only ATM that have a significant (positive) effect on target CARs. Furthermore, takeover probabilities are not at all affected by the use of ATMs. It is brought to light in this study that the use of ATMs has declined over the past two decades and has become more or less equal to the use of ATMs from 1961 to 1985, which may be explained by the bad publicity Dutch ATMs got due to the rumors about a Dutch Discount in the end of the 1990's. It is concluded that generally speaking, ATMs have lost their importance in determining takeover outcomes for target shareholders.

The findings of this study could have serious implications for the discussion about ATMs in the Netherlands. The idea of a Dutch discount is based on the idea that the market for corporate control cannot function properly when firms are protected with these Dutch overly protective ATMs. This study shows that takeover probabilities are not affected by Dutch ATMs, and thus, the idea of a Dutch Discount is shown to be a misconception. The argument against the use of ATMs is thus countered. Therefore, with the elimination of the most important argument against ATMs,

nothing stands in the way of introducing the Wettelijke Bedenktijd. Finally, these results may bring about that firms will reconsider the use and usefulness of the examined ATMs as protective measures against a threatening takeover.

This paper proceeds with a thorough elaboration on the relevant literature, and, with the formulation of two hypotheses. In chapter 3, the methodology used to examine the hypotheses statistically is explained. Thereafter, the results of the analyses and the accompanying robustness checks are reported. The final chapter of this study interprets the results, compares this research to prior research, addresses the limitations of this study, and, discusses potential pathways for future research.

2. Literature Review

In this section, the relevant literature is discussed. First, agency theory and the market for corporate control are discussed. Thereafter, ATMs in general, shareholder interest theory and, entrenchment theory are discussed. The final section is dedicated to an elaboration on the specifics of the Dutch governance system and the most commonly used Dutch ATMs. In this final section the hypotheses that are investigated in this study are also discussed.

2.1 Agency theory and the market for corporate control

There is no better way to introduce the agency theory than, to begin with, a quote by famous economist Adam Smith (1776): "*The directors of such [joint-stock] companies, however, being the managers rather of other people's money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company"*(Smith, 1776, p. 311). This quote by Smith illustrates perfectly the core of the problem when a firm's ownership is separated from the management of the firm: people do not care as much about other people's money as they care about their own money. Jensen and Meckling (1976) extended this topic by developing the agency theory. According to them, an agency relationship is defined as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent". If both the principal and the agent are utility-maximizing, it might not be expected that the agent will act in the best interest of the principal. The agent will rather pursue his own personal benefits. In the case of a company with separation of ownership and control, the stockholders are the principals whereas the manager of the firm is the agent. For the shareholders to ensure that the manager acts in their interest, monitoring and incentivizing the manager is needed. This monitoring and incentivizing generally cannot go without a cost, hence agency costs must be made.

Corporate governance is often described as the set of mechanisms that influence the decisions made by managers when there is a separation of ownership and control (Larcker et al., 2007). Corporate governance mechanisms effectively help to ensure that investors get a return on their investments by controlling the manager in place. Usually, mechanisms are divided into mechanisms that are internal to the firm and mechanisms that are external to the firm (La Porta et al., 1997). Internal mechanisms are for instance managerial incentives, internal controls, and a supervisory board. External mechanisms are for example regulators, legislators, and the market for corporate control. Extensive literature exists on corporate governance mechanisms that are related to investor protection and the law (Shleifer and Vishny, 1997; La Porta et al., 1997; La Porta et al., 1998; La Porta et al., 1999). Especially of interest to this research, however, is the market for corporate control.

The market for corporate control can be seen as a last resort to discipline bad-functioning managers when internal controls are not enough (Kini et al., 2004). If there were efficient internal controls, the market for corporate control would be less needed. This disciplining of managers in the market of corporate controls is done by friendly takeovers, hostile takeovers and, proxy contests by shareholders (DePamphilis, 2019). The mechanism works as follows: managers that are inefficient invest the capital of a corporation sub-optimal, current shareholders that recognize this sub-optimal spending will look for better investment-options, the price of the firm's shares will lower and, this will lead other managers to buy the firm because they think they can manage the firm's assets more efficiently. Jensen and Ruback

(1984) view the market for corporate control as a market in which managerial teams compete for the rights to manage corporate resources. Thereby, Jensen and Ruback (1984), want to place less emphasis on the role of shareholders in the market for corporate control and instead, underscore that competing management teams are the main activist entities in the market for corporate control. Following this line of thinking, the market of corporate control can be seen as complementing the internal and external managerial labor market discussed by Fama (1970). It is widely accepted that the market of corporate control plays a big role in disciplining inefficient managers (Manne, 1965; Jensen & Ruback, 1983; Jarell et al., 1988; Morck et al., 1988). If there is a large institutional shareholder within a firm, the threat of a disciplining takeover is enlarged (Cremers & Nair, 2005). Larger firms have more chances to be the target of a disciplinary takeover (Offenberg, 2009). However, the disciplining effect of the market for corporate control could be reduced by the use of ATMs. The next section will discuss the role of ATMs and the role they might play in reducing the disciplining effect of the market for corporate control.

2.2 ATMs, shareholder interest theory and, entrenchment theory

This section starts by defining what an ATM is by the use of a citation (Chen, 2020): "*An anti-takeover measure is any action that is taken on a continual or sporadic basis by a firm's management to prevent or deter unwanted takeovers by another firm or group of investors. The attempts of an acquiring company are usually known as a hostile takeover, as it is unwanted by the target company, and so the target company must employ defensive measures to prevent the takeover from happening*" (Chen, 2020). Summarizing, we can conclude that an ATM is being put in place to defend a company from unwanted hostile acquisitions. ATMs are usually divided into measures that are already installed before an acquirer makes a bid, so-called pre-offer defenses and, post-offer defense measures that are installed after an acquirer makes a bid (DePamphilis, 2019). In the literature, there are two different views when it comes to the question of why managers install ATMs.

The first theory concerning this subject is the shareholder interest theory (DeAngelo & Rice, 1983; Mahoney & Mahoney, 1993). This theory predicts that the installment of ATMs would increase shareholder wealth. This increase in shareholder wealth would come from the advantage that an ATM gives to shareholders collectively when negotiating a deal price in case of a takeover. Individually, a shareholder has an incentive to sell his shares at a lower price due to the lack of bargaining power than the price at which he could have sold the shares if the bargaining was done collectively. ATMs increase the incentive for an individual shareholder to hold out longer and wait for a better price to sell the share for, because an individual shareholder knows that, due to the ATMs, the board has more bargaining power to negotiate about a higher bid price. This is the case because, when ATMs are in place, the board has ways to frustrate an unwanted takeover and can threaten to use them if the acquirer's bid is too low. This could effectively lead to higher bid prices and individual shareholders are aware of this (Grossman & Hart, 1980; Linn & McConnell, 1983; DeAngelo & Rice, 1983; Stulz, 1988).

The second theory, opposing the first theory, is the managerial entrenchment theory (Gillan, 2006; Jarrell et al., 1988). This theory argues that ATMs are primarily installed to protect the manager from losing his job and decision-making power, at the expense of current shareholders (DeAngelo & Rice, 1983). This theory builds on agency theory by acknowledging that, in the case of a separation of ownership and control, a manager needs to be disciplined or incentivized to ensure that he will act in the interest of the capital providers. The market for corporate control is such a threatening incentive to ensure the manager will act in line with the interests of shareholders. When there are ATMs in place, however, according to entrenchment theory this disciplining mechanism cannot function that

well (Gillan, 2006). This would effectively lead to more inefficient management, which would be reflected in the share price and, thus leads to lower shareholder wealth.

For both theories, the evidence is found in the literature. It has been found by Ryngaert (1988) and Malatesta and Walkling (1988) that the announcement of a poison pill adoption leads to negative abnormal stock returns. Jarell and Poulsen (1987) document that supermajority, staggered board, and blank check amendments have significant negative effects on stock value. Mahoney and Mahoney (1993) show that the adoption of a staggered board leads to negative abnormal returns. Sokolyk (2011) provides evidence that a staggered board reduces the probability of a firm being taken over and that poison pills increase the takeover premiums to target shareholders. This is all evidence that confirms the entrenchment theory. Linn and McConnel (1983) and McWilliams (1990) show however that ATM-adoption leads to positive stock price reactions. DeAngelo and Rice (1983) find that the announcement of staggered boards and supermajority amendments lead to negative, statistically insignificant, abnormal stock returns. These studies thus provide evidence against the entrenchment theory and overall the literature is contradictory on this topic. Comment and Schwert (1995) provide evidence for the shareholder interest theory by showing that in the 1980s ATMs have increased takeover premiums for target shareholders. The installment of a golden parachute as an ATM has been found to lead to a positive stock price reaction (Lambert & Larcker, 1985) and higher takeover premiums (Machlin et al., 1993).

Overall it can be said that there is quite some literature on managerial entrenchment and shareholder interest theory. There are studies that investigate the abnormal return related to the announcement of ATMs and there are studies that investigate the abnormal return of target shareholders in a takeover. The next section will explain the specifics of the Dutch governance system with its ATMs and the research into the Dutch discount.

2.3 Characteristics of the Dutch governance system and ATMs

In the light of entrenchment theory and shareholder interest theory, it is especially interesting to investigate Dutch listed companies. This is particularly so because of the governance system in the Netherlands that is characterized by its stakeholder model. This stakeholder model aims at long-term value-creation whilst taking into account the interests of all stakeholders involved in the company (Dutch corporate governance code, 2016). Stakeholders in this sense include not only the shareholders but also employees, customers, suppliers, and other parties involved in the firm. This is quite the opposite of the Anglo-Saxon shareholder model which strives to create shareholder value. According to de Brauw (2017), the main pillars of the Dutch stakeholder model concerning the firm's strategy and a possible takeover, in particular, are the management-centered division of power concerning the firm's strategy, the task of management and supervisory board to act in the firm's best interest, the freedom in choosing a governance system and, the possibility to install ATMs for the management to be able to perform their tasks. That the possibility of installing ATMs is considered as a pillar, goes to show how centered the Dutch governance system is around protecting the listed companies. Another fundamental aspect concerning Dutch ATMs is the discretionary freedom that the management of a Dutch company has to invoke and maintain an ATM. The 2007 Dutch Supreme Court judgment ABN AMRO rules that only the board can decide whether or not to support a public takeover or not. This is in line with the Dutch corporate governance code that dictates that the strategy of a firm should be determined by the board alone. Furthermore, as De Brauw (2019) argues, a board can maintain ATMs as long as it deems necessary to protect the interest of the firm and its stakeholders. Thus, this shows that also in the case of a takeover, there is no special

place reserved for the interest of shareholders, the corporate interest is always the prevailing interest. The most important about the Dutch governance system, however, might be the wide range of specific ATMs available to Dutch listed companies. Voogd (1989) classifies three Dutch anti-takeover measures.

The first ATM that can be used by Dutch firms is the option to issue preferred shares. 24 out of 41 Dutch companies listed on the AEX or AMX exchange make use of these preferred shares (Eumedion, 2020). To use preferred shares as an ATM, normally a trust is founded. Such a trust has the task to protect the interests of the company and its stakeholders in times of hostility. After a trust is founded, the board of a company usually issues a call option to the trust to buy preferred shares. The board needs to be authorized by the shareholders to do so, such authorization is usually provided by the shareholders for 5 years. If such a call option is issued, the trust can exercise whenever it deems necessary to protect the interests of the company and its stakeholders (Van Solinge & Nieuwe Weme, 2019). The major advantages of issuing preferred shares are that the issuance ignores the pre-emptive rights of existing shareholders and that only 25% of the nominal value of the shares has to be paid up whilst these shares do possess full voting rights (De Jong et al., 2007). If the call option is exercised, it sorts the effect that the existing shares are diluted up to 50%, effectively diminishing the control rights of a hostile acquirer.

A second important ATM, which is similar to preferred shares, is the use of certificates of shares. This is only used by 3 out of 41 companies listed on the AEX or AMX (Eumedion, 2020). Certificates of shares need to be issued to a trust. When certificates are issued, the ownership of the share is divided into legal ownership which includes things such as voting rights, and economic ownership which includes the rights to obtain dividends. The trust will then hold the shares and issue certificates to the economic owners. Such certificate-holders can trade their certificates and also attend shareholder-meetings. In times where there is no hostile threat, the certificate-holders of a listed company have the right to be authorized to vote in shareholder-meetings. In ‘wartime’, this authorization request can be denied by the trust. It is said to be wartime when there is a hostile bid, or when there is a concentration of voting rights, or whenever the company’s interests are harmed (article 2:118a section 2 of the Dutch Civil Code; Van Solinge & Nieuwe Weme, 2019). The board of the trust is normally friendly to the board of the company and will thus provide a form of defense against unwanted acquirers (De Jong et al., 2007).

The third and final ATM that is specific to the Dutch corporate governance system is the use of priority shares. In 2020 this was used by 4 out of 41 companies listed on the AEX or AMX (Eumedion, 2020). Priority shares are shares that have been given special control rights in the statutes. These priority shares are mostly issued to befriended parties. Priority shareholders can be given the right that they must approve of statutory changes, or the right to nominate members of the board. They can also be classified as the party in charge of issuing shares. Especially combined with for instance the issuance of preferred shares these priority shares can thus be a very strong ATM.

This seemingly strong corporate governance system with a wide variety of ATMs can have implications for the firm- and shareholder value. Due to this protective corporate governance system with all its ATMs, in the literature and the news often is spoken of a Dutch Discount theory (e.g. Bartjens, 2019; Van Solinge, 2018; Van Poll, 2018). Several empirical pieces of research have been done that look into the effect of Dutch ATMs on firm value. Cantrijn and Kabir (1992) find an abnormal negative share return of 10% when preferred shares are issued. Van der Groot (1995) documented that ATMs have a significant negative correlation with the share price/equity ratio in the case of an initial public offering. Rijken (2006) found that the use of ATMs leads to a significant decline in the price/earnings ratio. In 1997, Kabir et al. find a positive abnormal return for the announcement of preferred shares

being adopted and a negative abnormal return when the shares are issued. These findings could provide evidence for both the shareholder interest theory and the entrenchment theory. The positive abnormal return at the announcement date indicates that shareholders expect to receive higher takeover premiums in the future and the negative abnormal return may indicate that the shareholders value the share lower due to the declined chance of the firm being taken over after the preferred shares are issued. Furthermore, De Jong et al. (2005) document that all 3 ATMs that are discussed here are negatively related to firm performance measured by Tobin's q. This finding might be due to the reduced influence that shareholders have when ATMs are in place. De Jong et al. (2007) look into the wealth effects of acquirers that installed ATMs and find that only the supervisory board has a significant negative impact on acquirer returns. Their results indicate that governance improves acquisition decisions. De Jong and Fliers (2020) find evidence that Dutch ATMs successfully reduce the probability of a firm being taken over, especially for the period 1986-2008.

2.4 Hypotheses

Until now, there has been done no research that looks into the effects of Dutch ATMs on the CARs of target shareholders. This study will look into these effects that may provide evidence for the managerial entrenchment theory or the shareholder interest theory. As mentioned earlier, Sokolyk (2011) investigated this for a sample of U.S. firms and found that poison pills increase the premium that target shareholders receive in a takeover. Although there are mixed findings for the managerial entrenchment theory and the shareholder interest theory, it is decided to take the finding of Sokolyk (2011) as a starting point for the expected effects of Dutch ATMs on target CARs. Accordingly, the first hypothesis is as follows:

Hypothesis 1: *ATMs have a positive effect on the takeover cumulative abnormal returns of target shareholders.*

To examine the managerial entrenchment theory and the shareholder interest theory further, this study investigates the relationship between ATMs and the probability of a firm being taken over. Sokolyk (2011) finds that poison pills have a negative effect on the probability of a firm being taken over. De Jong and Fliers (2020) find for the period 1961-1985 no significant results of ATMs on the probability of a firm being taken over. They do however find significant negative effects of ATMs on the probability of a firm being taken over for the period 1986-2008. Because of the latter finding, it is expected that for the period 1997-2019 ATMs have a negative effect on the probability of a firm being taken over as well. This would provide evidence for the managerial entrenchment theory. The second hypothesis is thus formulated as:

Hypothesis 2: *ATMs have a negative effect on the probability that a firm is being taken over.*

Since there has been no research into the effects of ATMs on target shareholders abnormal returns in the Netherlands, this study can provide new evidence in favor of either the managerial entrenchment theory or the shareholders interest theory. Furthermore, since De Jong and Fliers (2020) find different results for different timeframes, it is interesting to examine what the effects of ATMs are on the probability of a firm being taken over in a very recent timeframe, which has not been examined before. In the next chapter it is described how both these hypotheses will be investigated empirically.

3. Research Method

The methodology of this study is explained in this chapter. The data-collection procedure, the sample, and its criteria are documented in section 3.1. Section 3.2 elaborates on the dependent variables, section 3.3 describes the independent variables and, section 3.4 discusses the control variables. Finally, in section 3,5 the used analysis is specified.

3.1 Data sample description

To provide an answer to the research question, a quantitative empirical research methodology will be adopted. Data regarding M&A deals will be retrieved from the Zephyr database. Zephyr covers deals of smaller value relative to the SDC database and, Zephyr also has more extensive coverage of European transactions (Huyghebaert & Luypaert, 2010; Bollaert & Delanghe, 2015). Since the focus of this research is on Dutch target firms, the latter feature is of distinctive use. The database of Zephyr contains data on M&As, initial public offerings (henceforth: IPOs), private equity, and venture capital deals. For a deal to be included in Zephyr, the deal value should be at least 1 million GBP or the stake involved in the deal is at least 2%. Zephyr uses numerous sources to gather data and the number of sources is constantly growing. Four types of sources can be distinguished: (1) official sources; (2) news services; (3) official company filings and sources and (4) advisor data submissions (Bollaert & Delanghe, 2015). This results in a database with more than 1.8 million deals and rumors, with over 100,000 being added annually. Zephyr provides extensive information on the specifics of a deal: the form of payment, the size of the deal, the form of the acquisition (tender-offer or merger) and, the nature of the acquisition (hostile or friendly) are all included in the information about a deal. The data retrieved from Zephyr is used to analyze the deals where a Dutch firm was the target of an acquisition. The sample that is selected and obtained from Zephyr for this research meets certain requirements. First of all, a timeframe from 1997-2019 is chosen. The begin-year of 1997 is chosen because Zephyr does not have data available before that period. It is chosen to include 2019 as the final year so that data on stock returns is also available for 6 months after a deal, to examine the target CARs. The target companies are required to be from the Netherlands. The targets are also required to be either listed or delisted as of this moment to ensure the availability of stock returns for these firms. Delisted firms are included because Zephyr considers firms that were listed at the time of the takeover, but, delisted now, at the time of extraction, as delisted (Bollaert & Delanghe, 2015). Furthermore, this research is focused on mergers and acquisitions, so the takeover has to be considered either a merger or an acquisition. Finally, the percentage of the final stake to be held after the takeover is required to be at least 50%, since this research focuses on deals that bring about a change in control (Faccio, McConnell, & Stoli, 2006). This yields a sample of 345 deals. It is argued in the literature that the inclusion of financial firms with US SIC-codes of 6000-6999, as acquirers or targets in the sample, could lead to biased results because these firms have a different regulatory framework, capital structure, and operating activities (Bliss & Rosen, 2001; Vafeas & Theodorou, 1998). After filtering out target firms without an ISIN code or without country indicator NL, there remain 334 deals and 202 unique target firms. The specifics of each deal are included in this sample from Zephyr. After filtering out deals that were duplicate, deals that did not achieve the required stake of 50% after completion, and, deals which were not completed, there were 186 deals remaining.

The data from Zephyr will be complemented with data from Thomson Reuters' Eikon database. From Eikon, stock-return data and firm-specific (financial) data can be retrieved. The same timeframe as before, 1997-2019, is used for all data gathered from Eikon. For the examination of target CARs, the stock returns of the targets that were found through Zephyr have been obtained. Furthermore, firm-specific data on all listed and delisted firms is retrieved from

this database. This allows for the examination of the differences between targets and non-targets in explaining the probability that a firm is being taken over. An elaboration on the various variables obtained from Eikon is given in the sections about the variables included in the models.

Lastly, data about ATMs installed by Dutch firms were gathered. This is relatively specific data that is not readily available from databases. However, Prof. dr. A. de Jong and dr. P. Fliers have been so kind to make available their dataset on ATMs installed by Dutch firms from 1957-2008. This dataset was used in their paper 'Predicting Takeover Targets: Long-Run Evidence from the Netherlands' (de Jong & Fliers, 2020) and. The dataset of de Jong and Fliers was checked extensively. With the use of annual reports that were obtained through Eikon, for every firm in the dataset of De Jong and Fliers it was checked how the installment of ATMs developed from 2008 towards 2019. In some cases corrections to the dataset of De Jong and Fliers were made if there was a discrepancy between their dataset and annual reports. Furthermore, their dataset did not contain data of firms that became listed after 2008. All such firms were found with the use of Eikon and data on ATMs was gathered manually through annual reports, year by year. The final dataset on ATMs contains 344 unique Dutch firms that are listed or have been listed.

The final dataset after merging all three different datasets contains 124 deals. In the first analysis, one observation is dropped so that there are 123 target observations remaining. For the second analysis three observations have been dropped, the dataset for that analysis contains therefore 121 targets. It is important to notice that the two analyses have a very different dependent variable. In the first analysis, the dependent variable is the target CARs, which is a variable that is stable over time. This is the case because there is only one CAR for a specific deal. This CAR is linked to the financial data and ATM data of that target firm in that specific year. The result is a dataset with 123 CARs with accompanying financial data and ATM data. In the second analysis, the dependent variable is the probability of a firm being taken over. This variable varies over time and is affected by the financial- and ATM data which also varies over time. Unlike in the first analysis, the data in the years where the firm was not the target of a takeover has to be included in the analysis as well because this data is needed to calculate the effects on the time-varying probability of a firm being taken over. As a result of the inclusion of this data, the dataset for the second analysis contains 321 unique firms, 3468 firm-years, and, 121 targets. All these firm-years include financial- and ATM data.

3.2 Dependent variables

In this section, the dependent variables that are used to examine the first and the second hypothesis is discussed. In section 3.2.1 the method of calculating CARs, that have been used to examine the first hypothesis of this research, is elaborated on. In section 3.2.2 the Cox proportional hazard model with its respective dependent variable, that was used to examine the second hypothesis, is explained.

3.2.1 Target cumulative abnormal returns

For the first hypothesis, it is investigated whether the installment of ATMs at target firms leads to an increase in shareholder wealth. Such an increase in shareholder wealth would provide evidence for the shareholder interest theory. It is a common method to examine the wealth effects to target shareholders, or the takeover premium, using abnormal returns of target shares (Comment & Schwert 1995; Field & Karpoff, 2002; Sokolyk, 2011). Using abnormal returns on stocks is an efficient way of measuring the wealth effects for target shareholders because it is based on the share price. If the share price rises, this is a direct increase in shareholder wealth because they could sell the shares and earn a capital gain. Share prices are the basis of so-called event studies. These studies show what happens to shareholder

wealth in case of an event. In M&A studies, the announcement of a merger or acquisition is the event that is looked into. Under efficient markets, described by Malkiel and Fama (1970), markets directly process information that is made public. Therefore, information that is made public is instantly reflected in the share price. Because of this, the announcement of a merger or acquisition is used as an event instead of the actual completion of the merger or acquisition. Already when it is announced that a bid will be made, this information is incorporated in the share price of the target firm. It is even shown by Schwert (1996) that the price of target shares already rises before a bid is actually announced. Schwert (1996) does not definitely conclude that this run-up before the announcement of a bid is due to insider trading but he does discuss the possibility of it. This research uses the announcement of a merger or acquisition as an event as well. In this study, it is investigated how the outcome of the event, the abnormal returns of target shares, is affected by the installment of ATMs at the target firm.

To be able to use CARs as a proxy for the target shareholder wealth, a few steps have to be performed. First, the average return of the target company has to be calculated and this return has to be compared to the average return in the market. The average return will be calculated in the estimation window. Such an estimation window commonly has a length of around 200-250 days, and, per definition lies a few days before the event window. The estimation window has to end before the event window so that the average return is not affected by the event itself (McWilliams & Siegel, 1997). The event window for this research begins at -42 days, as is explained later in this section. Because the estimation window has to end a few days prior to the event window, the estimation window will end at -47 days. The total estimation window will then be from -250 to -47 days. A longer estimation window would perhaps be better at measuring the co-movement of the target stock return with the market return, this however has the disadvantage that the average return might then be biased due to other events that happened. Therefore, it is chosen to stick with this length, which is commonly used in comparable research (Huang & Walkling, 1987; Sokolyk, 2011).

The average return on the stock price of a company *i* at day *t* is calculated using the market model. This model is the most commonly used model for calculating abnormal returns (Armitage, 1995). This model uses an ordinary least squares regression to estimate the relationship between the returns on a specific share and the returns on the market. For this research, Stata is used to calculate the average returns, abnormal returns and, CARs. The following equation (1) calculates the average return (Armitage, 1995):

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \qquad (1)$$

Where:

R_{it} = rate of return on the stock price of the company *i* on day *t*.

α_i = the intercept term, average return on stock *i* when there is no market return.

β_i = stock *i* systematic risk, which reflects the co-movement of the stock with the market.

R_{mt} = rate of return on the market index on day *t*.

e_{it} = the error term, which is expected to be 0.

After having calculated the average return, or, normal return, of all the targets in the sample, the abnormal returns are calculated. The abnormal return is the return of a stock in the event window minus the average, normal, return of that stock that is calculated before (MacKinlay, 1997). An essential part of calculating the abnormal return is the determination of the event window (McWilliams & Siegel, 1997). Whilst determining the length of the event window it is important to try and prevent any confounding events to bias the results of the event window since we want to

measure the effect of the M&A-event and not any effects of other events happening at the same time (McWilliams & Siegel, 1997). Such confounding events could be the announcement of unexpected returns or the declaration of dividends, amongst others. The longer the event window is, the higher the probability of any confounding effects. This research bases its event window on the results found by Schwert (1996). Schwert, documents that the effects of a bid are already starting to become incorporated from 42 days before the announcement of a bid. He furthermore shows that most of the post-bid effects in the price of a stock are reflected after half a year (126 trading days). Since most of the effects of a bid are reflected in the price of a stock 126 trading days after a bid announcement, and considering that the event window should not be too long to prevent confounding events, +126 days is chosen as the end of the event window. The start of the event window is set at 42 days before the bid announcement (-42) since Schwert (1996) shows that already from then on there are effects of the bid. The chosen event window is in accordance with earlier research examining effects on target CARs (Huang & Walkling, 1987; Sokolyk, 2011).

Now that we calculated the average return, and using the data in the estimation window, we can calculate the abnormal returns using the following equation (Armitage, 1995):$AR_{it} = R_{it} - (a_i + \beta_i R_{mt})$ (2)

Where:

a_i ; β_i = parameter estimates of the ordinary least squares (OLS) generated from the regression R_{it} on R_{mt} using the data from the estimation period.

AR_{it} = abnormal return of company *i* on day t.

Since the abnormal returns might fluctuate from day to day during the event window, it is not suited to examine the effects of an event based on these daily abnormal returns. It is better to use the cumulative abnormal returns than abnormal returns since CARs will reflect the reaction of the market to the full event without being subject to fluctuations (Brown & Warner, 1985). The CARs for firm *i* will be simply the sum of the abnormal returns from the first day of the event window until the last day of the event window. The formula for calculating the CARs is the following:

$$CAR_{i,t_1,t_2} = \sum_{t=t_1}^{t_2} AR_{it} \quad (3)$$

Where:

CAR_{i,t_1,t_2} = the cumulative abnormal return for company *i* over the complete event window.

t_1 = -42 days prior to the announcement date.

t_2 = +126 days after the announcement date.

With the calculated CARs, we can investigate the first hypothesis by examining the impact of target ATMs installed on target shareholder wealth. This relationship is examined by the use of an ordinary least squares regression where the CARs are the dependent variable, ATMs are included as the variables of interest and, control variables are included to ascertain that conclusions can be drawn about the found relationships. This is done in the same way by Huang and Walkling (1987) and Sokolyk (2011).

3.2.2 Hazard ratio

For the second hypothesis, we are interested in estimating the effects of ATMs on the probability of a firm being taken over. To measure the probability of a firm being taken over, a Cox proportional (1972) hazard model will be estimated. Regularly, logit models are employed to estimate the likelihood of a firm being taken over. Shumway (2001), however, argues that such single-period logit models are not suited since they produce biased and inconsistent results when being employed for multiple-period data. Shumway suggests that the use of survival models is well-suited to estimate the probability of a takeover. This research will follow the method adopted by Sokolyk (2011), and use the Cox (1972) proportional hazard model to examine the likelihood that a particular firm is the target of a takeover in the period 1997-2019.

The proportional hazard model is a class of survival analysis in statistics and has been used a lot in medicine research (Kumar & Klefsjö, 1994). Survival analysis relates the time that passes before a specific event occurs to covariates that might be associated with the quantity of time passed. In a proportional hazard model, an increase in a covariate is multiplicative with respect to the hazard ratio (Shumway, 2001). In general terms, the hazard model estimates the risk of failing within a very short interval after a given time, assuming survival up till that point (Crichton, 2002). This may be interpreted as the risk of failing at time t. Translated to this research, the Cox proportional hazard model estimates the risk of a firm being taken over at time t, assuming the firm has been independent until now. The dependent variable in this model will thus be the probability that a firm is being taken over. The proportional hazard model solves statistical problems by accounting for the time by including every firm-year as a separate observation (Shumway, 2001). By doing so, the effects of variables that change over time can be measured. This is an important advantage of the proportional hazard model over static models in estimating the probability of a firm being taken over, because, if a firm is taken over because it just abolished an ATM, this affects the effects that ATMs have on takeover probability. Another example is that a firm has become more undervalued over time and this leads to the firm being taken over. Such changing circumstances are important to incorporate in our model because they affect the effects of variables on the probability of a firm being taken over. Furthermore, the proportional hazard model is able to differentiate between firms that lose their independence because of a takeover and firms that lose their independence due to other reasons (bankruptcy for instance). The latter observations are then considered censored, this makes the estimation of the probabilities with this model more reliable than estimation with static models, because such static models cannot differentiate in the same way (Shumway, 2001). Considering firms that went bankrupt as taken over would bias the results dramatically.

Essentially, the proportional hazard model of Cox (1972) is a multiple linear regression of the logarithm of the hazard on the explanatory variables, with the baseline hazard being a time-varying intercept term (Bradburn et al., 2003). The baseline hazard rate is left unparameterized and is assumed to be unknown (Box-Steffensmeier & Jones, 2004). Therefore, there is no intercept term.[1] This is convenient because, in social science, researchers are often interested in the results of certain explanatory variables on the risk of failure and not so much in the baseline hazard (Box-Steffensmeier & Jones, 2004). The vector of explanatory variables acts multiplicatively on the hazard at any point in

[1] This can be observed statistically by expressing the proportional hazard model in terms of the log of the hazard ratios (Box-Steffensmeier & Jones, 2004):
$\log \frac{h_i(t)}{h_0(t)} = \beta_1 x_{1i} + \beta_2 x_{2i} + \cdots + \beta_k x_{ki}.$

time. From this follows the key assumption of the proportional hazard model: the hazard of the event in any group is a constant multiple of the hazard in any other group (Bradburn et al., 2003). This means that groups should have proportional hazard curves which cannot cross. Due to this proportionality, the exponentiated coefficients that are obtained using this model in Stata are hazard ratios. Hazard ratios that are greater than one mean, translated to this research, that the probability of a firm being taken over is increased due to these explanatory variables. Hazard ratios under one mean that the probability of a firm being taken over decreases due to the explanatory variables in question. If the hazard ratio is one, the explanatory variable does not affect the probability of a firm being taken over.

The dependent variable in this model is, as stated before, the probability of a firm being taken over at time t. The independent variables in this model are variables that are related to the hazard of being taken over, such as the ATMs, through a mathematical expression (Crichton, 2002). The model employs a maximum partial likelihood estimation and the functional form of the Cox proportional hazard model is the following:

$$h_i(t) = h_0(t) * e^{Xi'\beta} \quad (4)$$

Where:

$h_i(t) =$ the hazard of firm i being taken over at time t.

$h_0(t) =$ the baseline hazard of a firm being taken over, in the case that all explanatory variables have the value of zero.

$Xi =$ a vector of all independent variables, such as ATMs, corresponding to firm i.

$\beta =$ a vector of the coefficients that are to be estimated.

Regression coefficients obtained from this regression represent the change in the log of the hazard ratio that can be expected, conditional on the changes in explanatory variables. The economic significance of variables in the model can be assessed by the hazard ratio, which equals $100 * (e^{\beta} - 1)$. This model can be estimated within Stata to measure the effect of ATMs on the probability of a firm being taken over.

3.3 Independent variables

In this section, the independent variables used to examine the first and second hypotheses are discussed.

For the first hypothesis, the effects of ATMs on target CARs are examined. For the second hypothesis, the effects of ATMs on the probability of a firm being taken over are estimated. For both these hypotheses, the variables of interest are the ATMs that have been installed by target firms. As stated earlier, this research bases itself upon Voogd (1989) and identifies three types of anti-takeover measures for Dutch firms. Firstly, the presence of anti-takeover preference shares. Secondly, certificates of shares being traded as an anti-takeover measure. Thirdly, the presence of priority shares. These variables are included in the models as binary indicators, dummies. If a firm has a certain anti-takeover measure, it gets a 1 for that ATM variable. Firms that do not have that ATM receive a 0. The variables are called *preference*, *certificates*, and, *priority*. Furthermore, this research follows De Jong and Fliers (2020) in including variable *ATMs*, which counts the number of these three measures installed. For instance, if a firm has priority shares and preference shares in place, it will get a 2 for the variable *ATMs*. This variable measures the effect of the total number of ATMs installed on the target CARs and the probability of a firm being taken over, respectively. For both the hypotheses that are tested, first a regression is run to examine the general effect of ATMs, and, thereafter, a regression is run which incorporates the three ATMs separately.

3.4 Control variables

To be able to draw more definitive conclusions from this research, appropriate control variables have to be included in the models. Each hypothesis that is tested has its own control variables, although some control variables are the same for both hypotheses. First the control variables used to examine the first hypothesis are discussed. Afterwards, the control variables that are used to estimate the probability of a firm being taken over are discussed.

3.4.1 Control variables included in first model

Beginning with the target-firm characteristics that have to be controlled for whilst examining the effects of ATMs on target CARs. Following Sokolyk (2011), Comment and Schwert (1995) and, Palepu (1986), this research will account for several target firm-characteristics when examining the target CARs, although many of them have not been found to be of significant effect on target CARs. Furthermore, to the best of my knowledge, these firm characteristics are not substantiated with economic theories. They have been found to be of influence in previous research examining CARs (Comment & Schwert, 1995). The results found by Sokolyk (2011) will be documented when discussing the control variables that are included, since this is one of the most recent researches on this topic. The following target-firm characteristics are controlled for whilst examining the effect of ATMs on target CARs. The absolute size of a firm in terms of total assets has been found to negatively, but insignificantly, affect the target takeover premium. The variable *SIZE* is included and represents the natural logarithm of total assets at the fiscal year-end. The sales growth of a firm positively affects the takeover premium, albeit insignificantly (Sokolyk, 2011). The variable *GROWTH* measures the average sales growth of a firm. The liquidity of a firm is positively related to the takeover premium. Therefore, the variable *Liq* is included and is calculated as the ratio of current assets to current liabilities (i.e. the current ratio). The market to book ratio is argued to affect the takeover premium negatively, although no effect was found (Sokolyk, 2011). The variable *PB* is included and is calculated as the value of common stock per stock divided by the book value of equity per stock. Furthermore, Sokolyk (2011) found no effect of the P/E ratio on target takeover premiums as well. Nonetheless, the variable *PE* is included and is calculated as the stock price divided by the earnings per share. Since there were many missing observations for this variable, it is decided to use dummy variable adjustment to account for these missing observations. This dummy variable adjustment entails the imputation of the mean PE for all the missing PE observations, as suggested by Cohen et al. (2013). The PE variable with the imputed means is called *PE_X* , and the *PE_dum* variable is a dummy which is 1 when data is missing for PE. Both these variables are included in the model, only *PE_X* is interesting for interpretation. Moreover, since Sokolyk (2011) included the Debt-to-Equity (from now on: D/E) ratio as an additional control, the D/E ratio of the target-firm will be controlled as well. This included as the variable *DE* and simply represents the ratio of total debt to total Equity.

Following Huang and Walkling (1987), there are three deal-characteristics that are of influence on the target's abnormal returns following a merger or acquisition announcement. Firstly, the form of payment that is used to pay for the target matters. Due to tax concerns, cash payment is preferred by shareholders over stock- or mixed payment (Huang &Walkling, 1987). Secondly, the form of the acquisition matters. Within acquisitions, a distinction can be made between mergers and tender offers. It is argued by Huang and Walkling (1987) that mergers permit payment of the control premium directly to the target management in the form of post-acquisition contracts. This is possible because, unlike a tender offer, there is negotiated with the board of a target firm in the case of a merger. Management can then negotiate about the merger and ensure some good (buy-out) conditions for themselves. In a tender offer this is not possible because the offer is made publicly to all existing shareholders, without consulting the target management. Therefore, it is likely

that shareholders will receive less of the control premium in a merger, and thus, a merger will be received less favorably than a tender offer. Thirdly, it matters whether the offer made by an acquirer is deemed hostile or friendly by the target management (Huang & Walkling, 1987). It is unclear whether the offer being deemed hostile has a positive or negative effect on target CARs. On the one hand, if target management resists more then it may drive up the price that the acquirer must pay. On the other hand, target management can resist an offer of an acquirer solely to protect its own jobs. This thinking is more or less the same as it is for the managerial entrenchment theory versus the shareholders' interest theory. Due to these hypothesized effects by Huang and Walkling (1987) and following Sokolyk (2011), there has been controlled for the aforementioned deal-characteristics when examining the target CARs. A variable *ALLCASH* will be incorporated and is a dummy that is equal to 1 if the deal is entirely financed by cash and 0 otherwise. The variable *Tender* is also a dummy variable and equals one if a deal is a tender offer and 0 otherwise. Furthermore, *Hostile* is a dummy variable that is equal to 1 if the deal is considered hostile and 0 otherwise. Unfortunately, in the final sample, there are no hostile deals and no deals were characterized as a tender offer. Therefore, only the control variable *ALLCASH* is included in the analysis.

Finally, there is controlled for year- and industry fixed effects. Because, it could be that CARs are affected by certain years or by certain industries. To control for year fixed effects, there are dummies included for every year from 1997-2019. For example, the *Year-1997* dummy gets a value of one in 1997 and zero in all other years. Industries are categorized in 10 divisions, based on their SIC code (Standard Industrial Classification (SIC) Manual, 2021). Each of these divisions gets a unique dummy. For example the retail divisions gets a *Retail_Dummy* variable. If a firm has a SIC code starting with two numbers from 52-59, the Retail_Dummy gets a one and zero in all other cases.

3.4.2 Control variables included in second model

The control variables that should be included whilst estimating the probability of a firm being taken over are derived from several theories on acquisition-motives. This research follows Comment and Schwert (1995), Sokolyk (2011) and, De Jong and Fliers (2020), in focusing on target firm characteristics as control variables.

First of all, there is the inefficient management theory, discussed by Jensen and Ruback (1983). These authors hypothesize that a motive to take over a firm is when the management in place at the target firm is inefficient in managing the firm. More efficient management, of an acquiring firm, signals this inefficient management and takes over the firm to effectively remove the inefficiencies. Inefficient firms are characterized by low profitability, low market-to-book value. Furthermore, Modigliani and Miller (1963) argued that it is also inefficient to hold a lot of cash reserves and have low leverage. Thus, the target-firm characteristics profitability, market-to-book value, cash holdings and, leverage are controlled for whilst examining the probability that a firm is being taken over. *ROA* is a variable that is defined as the firm's return on assets (i.e. earnings before interest over total assets), a common measure for profitability. The variable *PB* is again included. *CASH* is a variable that is defined as cash and bank holdings and is scaled by total assets. *LEV* is measured as the ratio of total debt to total equity.

Another theory explaining acquisitions is the growth-resource mismatch theory by Palepu (1986). It is argued by Palepu, that after a merger, the firm is worth more than the two separate firms were alone. This is due to synergy effects. Palepu (1986), argues that often in such takeovers, the targets are young small firms with high growth potential and with a shortage of financial resources. Acquirers are typically firms with enough financial resources and the ability to produce on a large scale. Target characteristics of such firms that need to be controlled for are again profitability and market-to-book value. Furthermore, De Jong and Fliers (2020) argue that a takeover target can make itself more

attractive by depreciating its assets to lower values. Therefore, the variable *DEP* that measures depreciation as a ratio of total assets is included. Finally, the variable *SIZE*, which is the log of the total assets of a firm, is included to control for the size of a firm.

A third theory that explains the motive for takeovers is the undervaluation theory. Palepu (1986), argues that whenever management of a firm cannot convince shareholders of the value of the firm, the share price might not follow the true value of the firm. The total market value of the firm might be, in such a case, lower than the book value of the assets. Acquiring management may recognize this undervaluation and subsequently take over the firm to gain control over the assets. The market-to-book value best represents this undervaluation theory and will be controlled for whilst examining the probability that a firm is being taken over. This variable is included as *PB.*

As a final theory about acquisitions, acquirers might be motivated to take over firms because of market sentiment. Rhodes-Kropf and Viswanathan (2004) argue that in times when there is overvaluation in general on the stock markets, acquirers overvalue the potential synergies they can realize from a takeover although they understand that their own stock is overvalued at the time. Furthermore, it is easier for acquirers to finance takeovers by issuing equity in times of overvalued markets. Due to these two circumstances, acquirers are willing and able to (over)pay more for a target. This increases the number of takeovers executed in times of high market sentiment. Therefore, the probability of being taken over is higher when market sentiment is high. This research will follow the methodology adopted by De Jong and Fliers (2020) to incorporate market sentiment in the model. They include a dummy variable for market sentiment, which is one when a certain year ranks in the fourth quantile of merger activity of the sample. Thereby, they control for years when there is higher market sentiment. De Jong and Fliers (2020) do note that it is tautological to measure market sentiment using the own sample, however, market sentiment is otherwise unobservable. Therefore, this research will follow the reasoning of De Jong and Fliers and incorporate market sentiment in the same way as described before. The variable *Market_Sentiment* is included and is a dummy variable that equals one if a year scores in the fourth quantile of merger activity in the sample.

Finally, in this model there is controlled for industry fixed effects in the same way as explained before, for the first model.

3.5 Models

In this section the models used to examine both hypotheses are elaborated on. It is documented what assumptions need to be met for each model, how these assumptions are tested, and, how variables have been adjusted in case they are not in line with assumptions.

3.5.1 Model 1: target cumulative abnormal returns

To examine the effect that anti-takeover measures have on the target cumulative abnormal returns, an ordinary least squares (OLS) regression is used. OLS analysis has certain fundamental assumptions that need to be met, the sample is checked on these assumptions. First, it has to be checked whether there are any outliers or influential points in the sample. Outliers can be detected graphically, by looking at partial plots. There are also studentized tests to determine whether an observation is an outlier[2] (Lehmann, 2012). Such a test divides the residual of an estimate by its standard deviation. When individual observations disproportionally affect the coefficients of the regression, they are considered

[2] When the internally studentized residual for an observation is larger than the critical value of 2.58, it is considered an outlier (Lehmann, 2012).

to be outliers and are removed from the sample. To test whether an observation needs to be removed, DfFit[3] and Cook's Distance[4] are calculated (Berry & Feldman, 1985). With both these calculations, one measures the difference in the regression coefficients with and without observations that are potentially influential. One observation is unreasonably influential and are therefore removed from the analysis.

After having checked for outliers, it is examined whether the data is normally distributed, which is necessary to get non-biased results. The data is examined graphically by looking at the density plot of a variable and the histogram of a variable combined. If the right-hand sight of the tail is longer or fatter than the left-hand sight, the variable is positively skewed. When the distribution of a variable has a relatively high and sharp peak, the variable has a high kurtosis. In such a case, the variance is for a large part the result of some rare extreme values (Groeneveld & Meeden, 1984). No variables deviate from normality substantially. Therefore, all variables are included without any transformations.

Additionally, it is checked whether the residuals of the data are homoscedastic. Graphically the variables have been examined by plotting the error terms against the fitted values. Afterward, a Breusch-Pagan test is performed to test for homoscedasticity statistically. The Breusch-Pagan test has been run for every regression and the data has been homoscedastic in all cases. Only the output of one Breusch-Pagan test has been included in table 5 of Appendix C, since the results of the various tests do not differ. Because the data is homoscedastic, there is no need to use robust standard errors. Regular standard errors are therefore used in the analyses.

In examining the first hypothesis, this study's unit of analysis is Dutch firms that have been the target of a takeover. In the sample that is used for this study, some firms have been the target of a takeover more than once in the timeframe from 1997-2019. Therefore, certain firms are included multiple times in the sample. Because there is a varying number of takeovers that a target has been involved in, the data is an unbalanced panel. Addressing the data as pooled cross-sectional data would lead to ignoring the within-firm correlation of the residuals. Also, every observation is then treated as if it were an individual, independent observation, whereas they are not due to the fact that some firms are represented more than once in the sample. Within-firm correlations can be taken into account using a random or fixed effects model (Petersen, 2009). Due to the fact that the data is an unbalanced panel, however, this approach is not suited, because, in order for a random or fixed effects model to work, the firms would have to be followed over time and not only target firms should be included. The within-firm correlations are therefore accounted for by using clustered standard errors. Clustered standard errors take into account that there are multiple possible correlations, due to the multiple representations of some firms, and still produce consistent estimates. This approach is therefore superior relative to using a similar random-effects model. Clustered standard errors account for residual dependence which exists due to the multiple representations of some firms (Petersen, 2009).

To test the first hypothesis, an OLS regression with clustered robust standard errors will be performed. The model is specified as follows:

[3] DFfit measures the change in an estimated regression coefficient by leaving out a potential outlier from the analysis. When the DFfit score is larger than the critical value of $2 \times \sqrt{\frac{p}{n}}$ the observation should be left out of the analysis. P equals the number of parameters in the model and n equals the number of observations in the model (Berry &Feldman, 1985).

[4] Cook's Distance removes a data point from the regression and then recalculates the regression to see whether the output of the regression has changed. When Cook's D is larger than 4/n, an observation is considered as an influential outlier and removed from the dataset. N is again the number of observations in the model (Berry & Feldman, 1985).

$$CAR^{i}_{t-42,t+126} = \beta_0 + \beta_1 Number\_of\_Takeover\_defenses + \beta_2 SIZE + \beta_3 GROWTH + \beta_4 Liq + \beta_5 PB + \beta_6 PE + \beta_7 DE + \beta_8 ALLCASH + \sum \beta_9 Fixed\ year\ effects + \sum \beta_{10} Fixed\ industry\ effects + \varepsilon_{it} \quad (5)$$

A second regression is run where instead of *ATMs*, the three ATMs are incorporated separately. By doing so, the effects of each individual ATM on target CARs can be analyzed. The specification is almost the same:

$$CAR^{i}_{t-42,t+126} = \beta_0 + \beta_1 Preference\_shares + \beta_2 Certificates + \beta_3 Priority\_shares + \beta_4 SIZE + \beta_5 GROWTH + \beta_6 Liq + \beta_7 PB + \beta_8 PE + \beta_9 DE + \beta_{10} ALLCASH + \sum \beta_{11} Year\ fixed\ effects + \sum \beta_{12} Industry\ fixed\ effects + \varepsilon_{it} \quad (6)$$

In these specifications, $CAR^{i}_{t-42,t+126}$ represents the cumulative abnormal return of a firm i during the event window from -42 to +126 days. β_0 represents the constant in the regression equation. $\beta_1 - \beta_{14}$ represent the estimated coefficients of the main independent and control variables, of which a description is included in appendix A. ε_{it} is the error term of the equation.

3.5.2 Model 2: Cox proportional hazard model

To examine the second hypothesis, the Cox proportional hazard model will be used where the dependent variable is the hazard (probability) that a firm is being taken over. The Cox proportional hazard model requires that a few assumptions about the data are met.

First of all, the independent variables, the covariates, should have a linear functional form (Keele, 2010). It is tested graphically whether the covariates have a linear form with the use of Martingale residuals (Box-Steffensmeier & Jones, 2004).[5] First, the Cox proportional hazards model is estimated. Thereafter, the Martingale residuals are computed and the smoothed residuals are then plotted against each of the covariates.[6] No variables deviated from the linear functional form, every variable is therefore included without any transformation.

Another aspect that should be examined in any statistical model is whether the dataset contains any influential outliers. Such outliers could bias the results majorly. This is most often done by the use of deviance residuals (Nardi & Schemper, 1999). Deviance residuals are Martingale residuals that are normalized such that they are symmetric about zero when the correct model is estimated (Box-Steffensmeier & Jones, 2004).[7] Such deviance residuals can be plotted and should be distributed roughly symmetrically around 0 if there are no outliers. Three observations that are considered as targets are outliers and are therefore removed from the analysis.

Finally, after having performed the two previous checks, a key assumption of the Cox proportional hazard model should be tested. This assumption is that for two observations the hazard rates are proportional to one another and this

[5] The Martingale residual is defined as the difference between the observed event indicator, as is given by the censoring indicator $\delta_i(t)$, and the number of events expected, given by the integrated hazard $H_i(t)$ (Box-Steffensmeier & Jones, 2004). We obtain the following relationship for the martingale residual $M_i(t)$:
$M_i(t) = \delta_i(t) - H_i(t)$.

[6] Martingale residuals have an expected value of 0. If one of the covaries shows systematic deviations from the 0 reference, it might be that this covariate exhibits an incorrect functional form.

[7] Formally, the deviance residual D_i is formally given by (Box-Steffensmeier & Jones, 2004):
$D_i = sign\big(M_i(t)\big)\{-2[M_i(t) + \delta \log(\delta_i - M_i(t))]\}^{\frac{1}{2}}$,
where $M_i(t)$ is the martingale residual for the *ith* observation.

proportionality is maintained over time (Keele, 2010).[8] In other words, the hazard function of each observation should follow the exact same pattern over time, whatever this pattern may be. As Box-Steffensmeier and Jones (2004) note: ‘‘*... whether the proportional hazards assumption holds is arguably the primary concern when fitting a Cox model* (Box-Steffensmeier & Jones, 2004, p. 131).’’ It is essential to check, and if necessary, correct for nonproportional hazards because otherwise biased parameters are obtained and the statistical tests will become less powerful (Therneau et al., 1990). Proportional hazard models that are misspecified will overestimate the impact of covariates that have a hazard ratio that is increasing over time and, covariates that have a converging hazard ratio over time will get coefficient estimates that are biased towards zero (Kalbfleisch & Prentice, 2011). Box-Steffensmeier and Jones (2004) plea to use Grambsch and Therneau’s (1994) global test for nonproportional hazards first.[9] If this test shows that the model overall suffers from nonproportional hazards, the covariates should be assessed on nonproportionality individually (Box-Steffensmeier and Jones, 2004). This individual assessment can be done as well with the test of Grambsch and Therneau (1994).

The results of the test for nonproportional hazards have been included in table 4 in Appendix B. Following the results, an interaction term for the variable Preference_shares with time is included, since this variable had a hazard function that was changing over time. Including such an interaction is in line with existing literature (Borucka, 2014). After having checked the assumptions of the Cox proportional hazards model, the model can be used to estimate how the installment of ATMs at firms affects the probability of a firm being taken over, the second hypothesis of this research. The functional form of the proportional hazard model is the following:

$$h_i(t) = h_0(t) * \mathrm{e}^{\beta_1 Number\_of\_Takeover\_defenses + \beta_2 SIZE + \beta_3 ROA + \beta_4 PB + \beta_5 CASH + \beta_6 LEV + \beta_7 DEP + \beta_8 Market\_Sentiment + \beta_9 \sum Industry\ fixed\ effects} \quad (7)$$

Just as is done for the first hypothesis, the model will be estimated another time. The second time the three different ATMs are included separately, so that the effect of particular ATMs on the probability of a firm being taken over can be estimated. The functional form is then:

$$h_i(t) = h_0(t) * \mathrm{e}^{\beta_1 Preference\_shares + \beta_2 Certificates + \beta_3 Priority\_shares + \beta_4 SIZE\ \beta_5 ROA + \beta_6 PB + \beta_7 CASH + \beta_8 LEV + \beta_9 DEP + \beta_{10} Market\_Sentiment + \beta_{11} \sum Industry\ fixed\ effects} \quad (8)$$

Where for both functional forms:

$h_i(t) =$ the hazard of firm i being taken over at time t.

[8] Formally stated, for two observations I and j, the relative hazard must obey the following relationship (Keele, 2010): $\frac{h_0(t)e^{X_i\beta}}{h_0(t)e^{X_j\beta}} = \frac{e^{X_i\beta}}{e^{X_j\beta}}$.

[9] The global model of Grambsch and Therneau (1994) uses the maximum of the absolute cumulative summed Schoenfeld residuals to check whether the model as a whole suffers from nonproportional hazards (Box-Steffensmeier & Jones, 2004). Schoenfeld residuals “*are based on the individual contributions to the derivative of the log partial likelihood”* (Hosmer & Lemeshow, 1999, p. 198). For subject i on covariate k, the Schoenfeld residual r^ $S_i k$ is given by:

r^ $S_i k = c_i(x_{ik} - \widehat{x_{wik}})$, where $\widehat{x_{wik}} = \frac{\sum j \in R(t_i) x_{jk} e^{x_j' \beta}}{\sum j \in R(t_i) e^{x_j' \beta}}$ and, where t, x, and c represent time, covariates and censoring respectively. i= 1, 2, …., n. $C_i = 1$ when an observation is uncensored and 0 otherwise. The Schoenfeld residual represents the observed minus the expected value for a covariate at each failure time (Box-Steffensmeier & Jones, 2004).

$h_0(t) =$ the baseline hazard of a firm being taken over, in the case that all explanatory variables have the value of zero.
$\beta_1 - \beta_{11} =$ represent the estimates of the coefficients of the main independent and control variables, of which a description is included in appendix A.

4. Results

In this section the results of this research are presented. In the first section the descriptive statistics are discussed. A differentiation is made between descriptive statistics for the first analysis and for the second analysis, since the variables and observations differ per analysis. In section 4.2 the correlation of variables is reported, again differentiated per analysis. In Section 4.3 results with regard to the first hypothesis are presented. Additionally, robustness checks are reported to see whether the results are robust to changes. In section 4.4 the results with regard to the second hypothesis are reported, as well as the results of robustness checks for the second analysis. In table 3 in Appendix A, all variable definitions are documented.

4.1 Descriptive statistics

4.1.1 Descriptive statistics: Analysis 1

In table 6 in Appendix D the descriptive statistics of the dependent and control variables of the first analysis are reported. The mean CAR of 13.83 reveals that on average, target shareholders obtain a positive premium due to a takeover. The variation in CARs, however, is relatively large from -294.11 to +161.15. Combined with a relatively small amount of observations this results in a relatively high standard deviation. The relatively low amount of observations and the high standard deviation are observable for all variables and may influence the significance of the results. Unfortunately, there have been no more than 124 deals where the target was a Dutch listed firm between 1997-2019.[10] The number of takeover defenses was on average 0.76. This is a relatively large decrease from the 1.092 average that De Jong and Fliers (2020) reported for their targets in the period 1986-2008. As can be seen in the tabulation of the number of takeover defenses in Appendix D, there are quite some target firms with 1 ATM installed, only 23 target firms have 2 ATMs, and, only 1 target firm has all 3 ATMs installed. For this sample of targets, the mean number of preference shares is 0.41, the mean number of certificates per target is 0.16, and, the mean number of priority shares per firm is 0.19. These numbers are again a sharp decline compared to the 0.54, 0.29, and, 0.25 averages that De Jong and Fliers (2020) report. Thus, a declining trend is visible in the use of all ATMs by target firms. In Appendix D the 3 ATMs are also separately tabulated to make it easily visible how many firms installed specific ATMs. The average SIZE, which is the log of total assets, is 12.62. Translated to total assets the average firm size is rounded, 302.5 million euros. The average annual growth (*GROWTH*) of a target firm in the sample is 29.86, although the variation is very high for this variable. The debt to equity ratio (*DE*) amounts to an average of 86.73. Again the variation is high and there are also some observations missing for this variable. In Appendix .. the variable *ALLCASH* is tabulated, 80 of the deals were paid using only cash. Furthermore, as mentioned before, in this sample there were no takeovers that are classified as hostile and no tender offers. The mean price to earnings ratio is a relatively high 34.22, although the variation is again high and there are some observations missing for this variable. The liquidity (*Liq)*, measured as the current ratio, is on average 1.59. Finally, the price to book ratio (*PB*) is on average 9.06, although the variation is high.

4.1.2 Descriptive statistics: Analysis 2

In Appendix E, table 12 shows the descriptive statistics for the complete sample of firms and firm years. Table 13 of Appendix E shows a comparison in means for the various variables of target firms and non-target firms. This latter differentiation is what is interesting for the sake of this research since differences in the means of variables could explain why firms have been the target of a takeover. In the final column of the second table, a T-test is reported that checks

[10] One deal was dropped from the sample, as is mentioned in section 3.5.1.

whether the differences in means are statistically significant. First of all, the size of targets and non-targets is almost equal, the difference is not statistically significant. Non-targets have total assets of about 429.3 million whereas targets have total assets of about 382.7 million. Profitability measured as Return On Assets (*ROA*) differs somewhat between non-targets with a mean of 4.384 and targets with a mean of 3.397. The difference is not significant. The amount of cash holdings is quite a bit lower for targets than it is for non-targets, again, this difference is not significant. Targets in the sample are a bit more leveraged than non-targets, the difference is not significant. The depreciation by firms is somewhat lower for the target firms than the non-target firms. The mean price to book ratio is relatively high for target firms compared to non-target firms. The difference, however, is nowhere near significant. Interesting to see for the interest of this research is that the mean number of ATMs is 0.734 for targets and 0.895 for non-targets. This difference is statistically significant and indicates that firms with fewer ATMs installed are more often the target of a takeover. The mean for preference shares is also significantly lower for targets than for non-targets. Again, this indicates that target firms have less often preference shares in place than their non-target counterparts. The mean numbers of certificates and priority shares are also somewhat lower for targets than for non-targets. For these two ATMs, the difference is, however, not significant. Overall the significantly lower number of ATMs thus seems to be due to the lower mean of preference shares in place at target firms.

4.2 Correlation matrices

4.2.1 Correlation matrix: Analysis 1

In table 14 of Appendix F, the pairwise correlations of the first analysis are presented. The highest correlation coefficient of all these variables has a value of 0.32. All of the other correlation coefficients are below 0.3 and are not discussed individually. According to Cohen (1988), correlation coefficients that are below 0.3 show that the two variables only have a small correlation. The one correlation coefficient that is 0.32, for the *ALLCASH* variable with the *CAR* variable, shows a moderate correlation between these two variables (Cohen, 1988). According to George & Mallery (1999), multicollinearity is indicated by correlation coefficients exceeding 0.7 or -0.7. Multicollinearity occurs whenever variables are highly correlated to each other. In such a case, the variables that experience multicollinearity can be explained by the model itself. Multicollinearity can be dealt with by excluding one of the two correlated variables from the model (O'brien, 2007). The variables in the model for analysis 1 do not suffer from multicollinearity since the correlation coefficients are well below 0.7. To be completely sure that multicollinearity is not an issue in this model, the variance inflation factor (VIF) is reported in table 15 of Appendix F. With the biggest VIF being 1.247 for the *SIZE* variable, it is reasonable to conclude that multicollinearity is non-existent in the sample of the first model. Finally, it is worth mentioning that there are two correlation coefficients found to be significant. The correlation relationship between the *ALLCASH* variable and the *CAR* variable is positive and significant. This indicates that when a deal is paid using only cash, this is correlated with a higher CAR. Furthermore, the correlation coefficient of the *DE* and *SIZE* variables is also positive and significant. This means that bigger target firms are associated with a higher debt to equity ratio.

4.2.2 Correlation matrix: Analysis 2

In table 16 of Appendix G, the pairwise correlations of the second analysis are presented. In this case, the highest correlation coefficient is 0.46. This means that again all variables are correlated with each other only on a small to medium basis, and, multicollinearity is not an issue for this analysis. To make sure that multicollinearity is not an issue, again the results of a VIF analysis are reported in table 17 of Appendix G. The results of the VIF analysis show that the highest VIF value is 1.519 and thus, it can be concluded that there is no need to worry about multicollinearity. It can be

observed in the correlation matrix that there are quite some significant correlations in this model. To stay within the scope of this study, the significant correlations of the ATMs are shortly discussed here. First of all, bigger firms are associated with a more frequent installment of preference shares and the use of certificates. This is an interesting observation because, for the installment of ATMs, often the consent of shareholders is needed. At bigger firms, the shareholder capital is more often divided over more shareholders than at smaller firms. Therefore, one might expect that at bigger firms it becomes harder to install ATMs since more shareholders need to be convinced of installing the ATM. The correlation matrix reports the opposite. This might be due to the fact that at larger firms shareholders are less involved, leading to more absenteeism at shareholder meetings, and, less interference from shareholders in the ATM policy. The latter hypothesized relationship could then lead to managers being able to install more easily and frequent the ATMs they want. Preference shares are significantly and negatively correlated with the leverage of a firm. This is a logical observation, because, firms with more leverage are deemed more efficient (Modigliani & Miller, 1963) and management of such firms do not need to protect themselves from a takeover with preference shares. The negative significant correlation of priority shares with the *CASH* variable is opposite of what might be expected. Firms with more cash at hand are deemed inefficient (Modigliani & Miller, 1963) and thus face a higher risk of being taken over according to the inefficient management theory (Jensen & Ruback, 1983). It may be expected that the management of such firms would protect themselves more often using priority shares, but this is not the case. This could indicate that firms with a lot of cash are not inefficient and therefore protect themselves less, or, management does not use priority shares to protect themselves when they are deemed inefficient because they have a lot of cash at hand. Also, the variables can simply be correlated as a result of this specific dataset. Finally, the use of preference shares is positively correlated with the use of certificates and priority shares. This indicates simply that firms with preference shares installed are associated with more usage of certificates and priority shares.

4.3 Regression results Analysis 1

4.3.1 Analysis 1: main results

In this section, the main results with regards to the first hypothesis are outlined. The first hypothesis states that ATMs have a positive effect on the takeover cumulative abnormal returns of target shareholders. Table 1 shows the results of the different OLS regressions where it is examined how the takeover premium for target shareholders, measured by the CARs with an event window of -42 to +126 days, is affected by several financial characteristics of the target firm as well as the ATMs in place. The dependent variable in all cases is the target CAR. Furthermore, it is worth mentioning again that the missing observations of PE have been handled with the use of dummy variable adjustment where the mean is imputed for the missing values.[11] The remainder of the analysis is run as a complete case analysis, where only deals were taken into account that had observations for every variable in the model. The results of this analysis have been compared to, amongst others, a model where multiple imputation was used. The results were quite similar but the explanatory model of this model, measured by the adjusted R-squared, was the highest. Due to the similarities, the lower explanatory power, and, for the sake of brevity, the results of those models are unreported. Three models have been run. Model 1 only incorporates control variables, model 2 incorporates the variable Number_of_Takeover_defenses, and, model 3 incorporates all three ATMs separately. The first hypothesis predicts that ATMs would lead to a higher CAR for target shareholders. In the second model, we would therefore expect to see a positive coefficient for the variable

[11] See also section 3.4.1.

Number_of_Takeover_defenses. A positive coefficient indicates that when a target firm has more ATMs installed, the CAR that shareholders earn amidst a takeover increases. This is exactly what we see in the results of the second model. A positive β coefficient of 10.249. This result hints at the acceptance of the first hypothesis. However, the coefficient is not significant, so definitive conclusions cannot be drawn from this result. In line with the first hypothesis, positive coefficients for all three ATMs incorporated in the third model are expected. Again, this is exactly what is observable in the results. The coefficients for *Preference_shares*, *Certificates*, and, *Priority_shares* are all positive and substantially big (the betas are 2.975, 33.619, and 6 respectively). Only the coefficient for *Certificates* is significant. Therefore, we can only significantly conclude that the installment of certificates at a target firm leads to higher cumulative abnormal returns for target shareholders. Although the coefficients for the other ATMs are positive, we cannot conclude the same for those ATMs significantly. Therefore, the first hypothesis must be rejected, since we cannot accept the hypothesis as a whole following the results of model 2 and the results on *Preference_shares* and *Priority_shares*. Although the research of Sokolyk (2011) focuses on the USA, the results of her research and this research are quite comparable. The variable *Number_of_Takeover_defenses* is reasonably comparable to her variable *G-index*, and, for both these variables, the positive coefficients found are not significant. Furthermore, Sokolyk (2011) did find some significant results whilst differentiating between different ATMs, just as was found in this research. Compared to the models used by Sokolyk, the explanatory power of the models used in this research (measured by the adjusted R-squared) is exceptionally high with the final model having an adjusted R-squared of 0.316. The best model in terms of the explanatory power of Sokolyk has an adjusted R-squared of 0.148. The interpretation of these results is discussed more deeply in the next chapter, and, the results are discussed in comparison to prior research in the next chapter as well.

Looking at the control variables incorporated in the model, there are quite some results that are significant. This is also in contrast to the few significant results that Sokolyk (2011) obtained with her models. All of the control variables show the expected signs, except for the variable *Liq*. It was found by Sokolyk that liquidity leads to higher CARs for target shareholders, although she does not explain why this could be the case. It could be that, in line with the inefficient management theory by Jensen and Ruback (1983), firms that have lots of liquidity have less attractive investment opportunities. Due to the lesser investment opportunities, these firms could be deemed less worthy than other firms by acquirers. However, since the result is not significant, it is not taken to heart.

Table 1: OLS regression results on Cumulative Abnormal Returns (-42, +126)

Variables	Expected Sign	(1) Controls only	(2) ATMs completely	(3) ATMS Separately
SIZE	-	-2.038	-2.299	-2.414
		(2.527)	(2.569)	(2.402)
GROWTH	+	.263	.285*	.299*
		(.164)	(.163)	(.167)
DE	±	-.001	-.003	-.005
		(.013)	(.014)	(.013)
ALLCASH	+	34.593**	36.415**	40.896**
		(14.892)	(15.255)	(15.625)
PE_X	±	-.118*	-.089	-.078
		(.069)	(.066)	(.068)
PE_dum		-29.32**	-30.007**	-30.596**
		(14.49)	(14.209)	(14.896)
Liq	+	-4.284	-4.418	-4.612
		(4.339)	(4.287)	(4.465)
PB	-	-.1***	-.096***	-.087***
		(.023)	(.023)	(.024)
Number_of_Takeover_defenses	+		10.249	
			(9.188)	
Preference_shares	+			2.975
				(12.132)
Certificates	+			33.619**
				(13.14)
Priority_shares	+			6
				(21.713)
_cons		81.056*	61.157	44.273
		(41.123)	(39.721)	(37.331)
Observations		90	90	90
R-squared		.57	.582	.608
Adj R^2		.292	.297	.316
Industry Dummy		YES	YES	YES
Year Dummy		YES	YES	YES

Table 1 presents the OLS regressions on CAR(-42, +126). Model 1 only incorporates control variables. Model 2 incorporates all ATMs together, measured as Number_of_Takeover_defenses. Model 3 incorporates all three ATMs separately. Standard errors are clustered at firm-level and are given in parentheses.
*** p<.01, ** p<.05, * p<.1

4.3.2 Analysis 1: Robustness checks

To make sure that the results of this research are reliable and not due to the choice of certain parameters, two robustness checks are performed. The results are outlined in this section.

The first robustness check entails the exclusion of takeovers that were announced in the period between 2007 and 2009. Generally speaking, the global financial crisis does not need any further introduction. The crisis hit The Netherlands severely, just as most countries in the world. M&A returns, measured by CARs, have also been found to be affected by the financial crisis (Doğan & Yildirim, 2017). It could be that the results found in the previous section are heavily affected by the deals that were announced during the crisis period of 2007-2009. For instance, due to the lack of credit, it could be that firms offered lower takeover premiums to target shareholders because they simply could not pay any higher premiums. Additionally, it could also be that target firms were weakened during the crisis period due to the lack of credit and the reduced consumer demand. This could be reflected in target firms being more willing to let an acquirer take over their firm for a lower price because the alternative would be bankruptcy. To ensure that the results reported in the previous section are not driven by any of those factors, the same OLS regressions are run as in the previous section but now the takeovers announced between 2007 and 2009 are omitted. The results of the various models are reported in table 18 in Appendix H. The models now included 74 observations instead of the previous 90 observations. The changes in results are negligible. All the signs are the same as in the results reported in the main analysis. The coefficients themselves experience minor changes with respect to the previous analysis. The significance of the coefficients did change in some instances but all coefficients that were significant before are still significant. Finally, the adjusted R-squared also changed only by a very small margin.

As is explained in section 3.2.1, the choice of the event window is critical whilst estimating the CARs and ultimately for the results that are obtained from the model that is used. The event window was chosen carefully based on the results of Schwert (1996) and in accordance with previous literature on comparable research (Huang & Walkling, 1987; Sokolyk, 2011). The event window of -42 to +126 is however rather long. Therefore, it is interesting to see whether the results found in the previous section also hold if a very short event window is used. Multiple lengths of short event windows can be found in the literature. For the sake of robustness, it is interesting to see whether the results hold when the shortest possible event window of -1 to +1 is used. Such an event window is also used by for instance Mulherin and Simsir (2015). In table 19 of Appendix I a t-test comparison table is reported which tests whether the difference in means between the long event window CARs and the short event window CARs are statistically significant. The short event window CARs are substantially lower than the long event window CARs. Also, the short event window CARs have a lot less variance. The difference in means between the two CARs is however not significant, probably because of the low amount of observations. The models that have been used for the main analysis are also used for this robustness check, albeit now the dependent variable is the short event window CAR. The results are reported in table 20 of Appendix I. The changes in the model are very big. A lot of variables now have coefficients that are opposite of the expected sign. Moreover, the coefficients for almost every variable have decreased in absolute size and are closer to zero. Not a single variable is significant. Furthermore, the adjusted R-squared is very close to zero in all three models, showing that the power of the models to explain the short event window CARs is very weak. These results indicate that all of the variables that are suited to explain some of the variance of target CARs over a long event window (-42, +126) are not suited at all to explain the CARs of a very short event window (-1, +1). A possible explanation for the lack of explanatory power and the insignificant coefficients is the following. Over such a short event window, the only thing

that is likely to affect the target CARs is the announcement of the bid itself. The effects of the variables that explain the CARs of the long event window are probably already incorporated in the price of the share before the bid is actually announced or, optionally, in the period after the bid is announced. This is what Schwert (1996) calls the runup and the markup. Such a runup can be due to insider trading or due to rumors about a possible bid. Shareholders, in an efficient market, know about the characteristics that may drive up the potential bid of an acquirer, and, this is immediately reflected in the share price. If, for instance, shareholders know that the management is not willing to be taken over without a fight, and, ATMs are in place, shareholders may expect that the takeover premium will be higher and this higher premium is immediately reflected in the share price. Since this research aims to explain the effects of ATMs on the total abnormal returns that shareholders earn long before and after a takeover announcement, the results of this robustness check are not shocking for the scope of this research. Although, it is interesting to see that the short-term CAR cannot be explained by any of the variables in the model.

Overall, the robustness checks performed here show that the choice of the event window is crucial in determining the effects of variables on the long-term CAR of the target shareholders. Moreover, the results have been robust to the exclusion of the financial crisis-years from the analysis, and, therefore, the first hypothesis cannot be accepted.

4.4 Regression results analysis 2

4.4.1 Analysis 2: main results

In this section, the main results with respect to the second hypothesis are outlined. The second hypothesis states that ATMs have a negative effect on the probability that a firm is being taken over. Below, in table 2, the results of the second analysis are reported. The dependent variable in all three models is the probability that a firm is being taken over. The independent variables consist of various financial characteristics, ATMs that are in place, and, industry fixed effects. The reported coefficients are hazard ratios, which makes it possible to interpret the coefficients in a meaningful way. As mentioned earlier, when a variable has a hazard ratio of 1, the variable does not have any influence on the probability that a firm is being taken over. Hazard ratios higher than 1 indicate that the variable increases the likelihood that a firm is being taken over, and, hazard ratios lower than 1 indicate that the variable decreases the likelihood that a firm is being taken over. Again, three models have been run. Model 1 only incorporates control variables, model 2 incorporates the variable *Number_of_Takeover_defenses*, and, model 3 incorporates all three ATMs separately. All models are complete case analyses. Furthermore, it is worth mentioning again that the variable *Preference_shares_t* is included due to the non-proportionality that the variable *Preference_shares* exhibits.[12]

In line with hypothesis 2, it is expected that the hazard ratios for the various ATMs are lower than 1. The reported hazard ratio for the variable *Number_of_Takeover_defenses* in model 2 of 0.95 is in accordance with this hypothesis. This hazard ratio indicates that the probability of a firm being taken over decreases by 5% when the number of installed ATMs increases by 1. The reported coefficient is however not significant, conclusions about this result thus may not be drawn. In model 3, the reported hazard ratios deviate quite a bit from the expected hazard ratios of below 1. The variable *Preference_shares* has a reported hazard ratio of 1.676, well above 1. This would indicate that firms that have preference shares in place have a higher risk of 67% being taken over than firms that do not have preference shares in place. Equally striking is the reported hazard ratio of 1.278 for the variable *Certificates*, which indicates that firms

[12] See section 3.5.2.

that have certificates in place have almost 28% more risk of being taken over than firms that do not have certificates in place. These results, which are opposite of what was expected beforehand, may be the result of the limited dataset consisting of only 79 targets with full information available. An alternative explanation for these positive hazard ratios is that firms that are more likely to be the target of a takeover, know this from themselves, and therefore, install preference shares or certificates. The installment of these measures, however, is in vain, and, not enough to withhold acquirers from selecting these firms as takeover targets. Again, however, the reported hazard ratios are not significant, so it is not possible to draw any definitive conclusions from these results. In the next chapter these results are discussed more deeply with alternative explanations explained, and, are compared to previous research. The hazard ratio of .826 for the variable *Priority_shares* is in line with the ex-ante expectations and indicates that firms with priority shares in place have an 18% lower likelihood of being taken over than firms that do not have priority shares in place. This hazard ratio is not significant. Overall, the second hypothesis thus cannot be accepted. There are no coefficients of ATMs that are significant and the hazard ratios do not provide convincing proof that ATMs lower the probability of a firm being taken over. The results on ATMs are conflicting with the results found by De Jong and Fliers (2020) for their most recent subsample. They found the variable *Number_of_Takeover_defenses* and the variable *Priority_shares* to have small significantly negative effects on the probability that a firm is being taken over. They do not get a significant result on the variables *Preference_shares* and *Certificates*. The latter variable had a small positive effect on the probability that a firm is being taken over, which is the same result as found in this study. The results of this study are however very much in line with the earlier subsample from 1961 to 1985 of de study by De Jong and Fliers (2020). This may be explained by the similarities in the use of ATMs now and in the period from 1961 to 1985, as is explained in the next chapter.

Looking at the control variables, several hazard ratios are not in line with what was expected ex-ante. These results are now discussed. Beginning with the variable *SIZE*, a small positive hazard ratio that is not significant is reported. Although a hazard ratio of less than 1 was expected, this result is in line with De Jong and Fliers (2020). Because the coefficient is not significant, the result will not be discussed. The variable *LEV* has a hazard ratio bigger than 1 in all three models, where a ratio of below 1 was expected. The coefficient for this variable is significant in all three models. This result indicates that firms that are more leveraged face a higher probability of being taken over. This result can be driven by the small sample which is used for this research. Alternatively, an explanation for this result may be that acquirers think of target firms with low leverage as firms with not so attractive investment opportunities. If they did have attractive investment opportunities, they would lend money to engage in these opportunities, and, as a result, these firms would be more leveraged. In this hypothesis, firms with low leverage are less often the target of a takeover because they lack attractive investment opportunities. De Jong and Fliers (2020) do not find a significant result for leverage in their baseline regression. Finally, the variable *DEP*, which measures depreciation, is below 1. This result indicates that firms that depreciate more are less likely to become a takeover target. This contradicts the finding of De Jong and Fliers (2020). However, the coefficient is not significant and thus this result will not be discussed.

The control variables *ROA* and *Market_Sentiment* are both in line with what was expected and are significant. Firms that are more profitable are slightly less likely to be taken over than firms with lower profitability. Moreover, in times of high takeover activity, the probability that a firm is being taken over is higher.

Overall the models fit relatively well, indicated by the high Chi-squared in all three models. The p-value of

0.000 in all three models indicates that it may be concluded that there is an actual relationship between the variables included in the model.

Table 2: COX proportional hazard regression results on the probability of a firm being taken over

	Expected Hazard Ratio	(1) Controls only	(2) ATMs completely	(3) ATMs separately
SIZE	<1	1.017	1.018	1.03
		(.052)	(.052)	(.053)
ROA	<1	.999	.999	.999**
		(0)	(0)	(.001)
CASH	>1	0	1	1
		(0)	(0)	(0)
LEV	<1	1.357**	1.351**	1.39**
		(.17)	(.172)	(.144)
DEP	>1	.297	.289	0.142
		(1.19)	(1.154)	(4.184)
PB	<1	1	1	1
		(0)	(0)	(0)
Market_Sentiment	>1	1.75**	1.732**	1.596*
		(.423)	(.247)	(.271)
Number_of_Takeover_defenses	<1		.950 (.135)	
Preference_shares	<1			1.676
				(.465)
Preference_shares_t				.935*
				(.039)
Certificates	<1			1.278
				(.29)
Priority_shares	<1			.862
				(.296)
Observations		2405	2405	2405
Prob > chi2		.000	.000	0.000
Chi2		1403.27	5742.74	1443.04
Industry Dummies		YES	YES	YES

Table 2 shows the results of the Cox Proportional Hazard model where the dependent variable is the probability of a firm being taken over. Model 1 only incorporates control variables. Model 2 incorporates all ATMs together, measured as Number_of_Takeover_defenses. Model 3 incorporates all three ATMs separately. Standard errors are clustered at firm-level and are given in parentheses.
*** p<.01, ** p<.05, * p<.1

4.4.2 Analysis 2: Robustness checks

For the second analysis, it is also checked whether the results reported in the previous section are robust to changes in the parameters. Two robustness checks have been performed and are documented here.

The first robustness check is in line with the robustness check performed for the first analysis and entails the exclusion of all firm years in the period 2007 to 2009. This is done because it could be that the years of the financial crisis heavily affect the results found in the previous section. For instance, firms that in normal circumstances were perfectly able to execute their stand-alone strategy could have been harmed so severely by the crisis, that all of a sudden they became takeover targets. This could lead to biases in the estimation of the coefficients reported in the previous section because firms with characteristics that are not target-like could suddenly become a target in the crisis. Again the three models have been run. The results of the three analyses with the years 2007 to 2009 excluded are documented in table 21 of Appendix J. There are now 2088 firm years and 66 targets in the analysis. The change in results is negligible. Some coefficients changed by a slight bit but none of these changes need to be discussed, since they are so minor. In general, the modeled relationships were worse than in the main analysis, as can be observed by the lower Chi2.

The second robustness check is inspired by the robustness check performed by Sokolyk (2011) who carried out a logit regression to see if the results are due to the specifics of the Cox proportional hazard model. Although it is argued in section 3.2.2 why the Cox proportional hazard is the best-suited model to estimate the probability of a firm being taken over, it still is interesting to examine whether the results found with the Cox model are also found whilst using a logit model. Such a logit model is used by De Jong and Fliers (2020). To ensure comparability across the results of the two models, the odds ratios calculated by the logit regression are reported. These are interpretable in the same manner as the hazard ratios of the Cox model. For instance, an odds ratio higher than 1 for a certain variable indicates that the probability of a firm being taken over is increased by that specific variable. The results of the logit regression are reported in table 22 of Appendix K. The most striking difference that is easily observable is the difference in Chi2s. The Chi2s for the logit models are substantially lower than for the Cox proportional hazard model. This indicates that the Cox model is better suited than the logit model to explain the relationship amongst the independent variables and the probability of a firm being taken over. Furthermore, the results remained more or less the same as in the main analysis. The only difference in coefficients that stands out is the odds ratio of the variable *Preference_shares*, which is now .817. Since this coefficient still is nowhere near significant, and, the overall quality of the model as measured by the Chi2 is much lower, the difference is not taken to heart.

Overall, these two robustness checks show that the results found using the Cox proportional hazard model are robust to the exclusion of the financial crisis years from the analysis and that they are robust to the use of a different model. The second robustness check also confirms that the Cox proportional hazard model is better suited than the logit regression to examine which factors affect the probability of a firm being taken over. Finally, the robustness checks also confirm that the second hypothesis cannot be accepted. The next chapter concludes, discusses the results, and, discusses the limitations of this study.

5. Discussion & Conclusion

With the possible implementation of yet another ATM in The Netherlands, the '*wettelijke bedenktijd',* the discussions about the need for ATMs and the possible detrimental effects they can cause started again. Very little research has been done that investigates the effects of the three typical Dutch ATMs in the context of mergers and acquisitions. This research, therefore, focuses on how the three typical Dutch ATMs affect the target shareholder CARs, and, on how the probability that a firm is being taken over is affected by the installment of these Dutch ATMs. In line with the research of Sokolyk (2011), the ex-ante expectation embodied in the first hypothesis is that the installment of ATMs leads to higher CARs for target shareholders. Such a finding would provide evidence for the shareholder interest theory. In line with the work of De Jong and Fliers (2020), the second hypothesis states that ATMs have a negative effect on the probability that a firm is being taken over. Acceptance of the second hypothesis would be evidence in favor of the managerial entrenchment theory. This chapter continues by discussing the results reported in the previous chapter and by going through the two hypotheses. Thereafter, the results are compared to the results of previous researches. The last section concludes, discusses the limitations of this research, elaborates on the contributions that this study makes, and, makes recommendations for future research.

5.1 Discussion and interpretation of the results

The results of the first analysis show that generally speaking, ATMs do not lead to significantly higher CARs for target shareholders. This is indicated by the insignificant variable *Number_of_Takeover_defenses* in the second model and the insignificant coefficients in model 3 for the variables *Preference_shares* and *Priority_shares*. Although all these coefficients are positive, they are not significantly so. That these coefficients are not significant may be due to the very small sample size with the accompanying relatively large variance. Alternatively, it may be that preference shares and priority shares simply are not used a lot in this ample anymore and simply do not lead to significantly higher CARs for target shareholders. Another explanation is that these ATMs only play a significant role in takeovers that are deemed hostile. In takeovers that are not deemed hostile, the management of the target firm may have no incentive to use the installed ATMs to hinder the takeover and obtain a higher CAR for the shareholders, because, the offer is well received by the management. Since there are no hostile takeovers in the sample of this research, it may be that therefore, preference shares and priority shares have no significant positive effect on the target CARs. Because of database constraints, it cannot be examined whether this is the case since there are simply no hostile deals obtained from the database. Whilst examining the effects of the various ATMs separately in model 3, a significant positive effect of certificates on target CARs is found. This result is of quite some economic influence either, since it indicates that firms with certificates in place get a CAR which is on average 33.619 higher than their counterparts that do not use certificates. It may thus be concluded that the use of certificates leads to higher CARs for target shareholders. This result is mild evidence in favor of the shareholder interest theory since shareholders benefit from the installment of an ATM in the case of a takeover. Due to the lack of significant positive results for the other ATMs, that may be driven by several factors, however, the hypothesis that ATMs in general lead to higher CARs for target shareholders must be rejected. Overall, the results of the first analysis thus fail to provide convincing evidence for the shareholder interest theory. Since there are no significant negative results, the first analysis neither provides convincing evidence in favor of the managerial entrenchment theory.

The first robustness check that excluded the years of the financial crisis did not lead to any substantially different results that justify any other conclusion. All of the coefficients are about the same as in the main analysis and the

significant coefficients remain significant. The second robustness check did lead to some interesting results. More specifically, this robustness check shows that none of the variables incorporated in the model are suited to explain the CAR over a very short event window from -1 to +1. As argued earlier, the effects of these variables are most likely incorporated into the share price longer before or after the bid is announced. This may be due to rumors about a potential bid which make investors speculate about the potential offer price, based on the characteristics that are of influence on the price an acquirer needs to pay for a target firm. Alternatively, these effects may be incorporated into the share price by insider trading. In such a short event window, the only thing that probably affects the CARs of target firms is the bid itself. On such short notice, the exogenous shock in the form of a takeover bid is the only thing that is of real importance in determining the short-term CAR. This is, however, speculation, and, may be investigated further in the future. The interesting results of the second robustness check do not lead to any other conclusion, the first hypothesis still must be rejected.

Since the first theory does not provide convincing evidence in favor of the shareholder interest theory or the managerial entrenchment theory, it is interesting to see whether the second analysis does provide evidence for either of the two theories. The first interesting result of the second analysis is obtained with the comparison of characteristics of target firms and non-target firms. Here it is found that target firms have a significantly lower amount of ATMs installed than their non-target counterparts. This finding is mainly driven by the significantly lower amount of preference shares installed at target firms than at non-target firms. This finding indicates that firms with preference shares installed are less often the target of a takeover than firms with no preference shares issued. Due to this finding, and, in line with hypothesis 2, it is expected that preference shares have a negative effect on the probability of a firm being taken over. Based on hypothesis 2, negative effects of certificates and priority shares on the probability of a firm being taken over are also expected. The results, however, tell otherwise. In the second model of the main analysis, again the variable *Number_of_Takeover_defenses* is included. The reported hazard ratio is below 1, which is in line with the second hypothesis. The reported coefficient is however not significant. The inclusion of the three ATMs separately leads to even more mixed results. The variables for preference shares and certificates get coefficients higher than 1, which would indicate that firms with these ATMs in place actually have a higher probability of being taken over. The reported hazard ratios are again insignificant. The final ATM, priority shares, does have a reported hazard ratio which is below 1 and indicates that the probability that a firm is being taken over decreases with the installment of priority shares. However, this coefficient is insignificant. Like in the first analysis, it is expected that no significant results for the ATMs are obtained due to a lack of targets in the sample. This low amount of targets results in a high variance for the various variables in the Cox proportional hazard model. Alternatively, it might be that the results are insignificant because ATMs are not used as much anymore and simply do not affect the probability that a firm is being taken over in a significant way. Another possible explanation for these results is the lack of takeovers that are deemed hostile, just as for analysis 1. It could be that only in takeovers that are deemed hostile the ATMs play a significant role in determining the probability that a firm is being taken over. This might be a logical explanation, because, takeovers that are not deemed hostile will not be hindered by the target management with ATMs, and thus, the probability that a firm is being taken over is not lowered because of the installed ATMs since they are not used. As a result, no significant results are found in this sample that consists of only deals that are considered non-hostile. As mentioned earlier, due to database constraints, this theory cannot be tested. Overall, the results of the second analysis may be driven by several factors but in the end, simply lead to the rejection of the second hypothesis. ATMs do not have a significant negative influence on

the probability that a firm is being taken over.

The first robustness check, which entails the exclusion of the years of the financial crisis, does not lead to any significantly different results than are reported in the main analysis. The same coefficients are significant and non-significant and the coefficients in general only experienced minor changes due to the exclusion of the financial crisis. The second robustness check, which entails the use of a logit regression model instead of the Cox proportional hazard model, does not lead to any different results either. Based on the chi-squared, this robustness check does show that the Cox proportional hazard model is better in modeling the relationship between the various independent variables and the probability of a firm being taken over than the logit regression model. The two robustness checks do not lead to a different conclusion, the second hypothesis thus definitely must be rejected.

5.2 Findings in comparison with prior research

Several lessons can be drawn from the results of this research. Based on the results of the first analysis, it is concluded that the three typical Dutch ATMs do not lead to significantly higher CARs for target shareholders. Only certificates are found to be of significant positive influence on the target shareholder CARs. So far, there is no research that has investigated the effects of these Dutch ATMs on target CARs. It is therefore hard to compare the results of this study to other research. There are, however, some studies that investigate the effects of ATMs used in the USA on target abnormal returns. Sokolyk (2011) shows that poison pills increase the takeover premiums for target shareholders, Machlin et al. (1993) show that golden parachutes increase the takeover premium for target shareholders, and, Comment and Schwert (1995) find that takeover premiums are increased for target shareholders by ATMs in general. The finding that certificates, although not directly comparable to the aforementioned non-Dutch ATMs, lead to significantly higher CARs for target shareholders is in line with the research just mentioned. Sokolyk (2011), also finds that a higher G-index score, which indicates that a firm uses more ATMs, does not lead to significantly higher CARs for target shareholders. Since the G-index is reasonably comparable to the variable used in this research, *Number_of_Takeover_defenses*, it can be concluded that the finding that this variable has no significant positive effect on target CARs is reasonably comparable to the finding of Sokolyk (2011). The finding that preference shares do not lead to a significantly higher CAR for target shareholders is not in line with the hypothesis of Kabir et al. (1997). They found a positive abnormal return upon announcement of the issuance of preference shares, and, argued that this is likely to be due to the higher abnormal returns shareholders expect to get in the case of a takeover. That there are no significant positive effects found for priority shares and preference shares whereas they were found in other studies might be due to the small sample size, the lack of hostile takeovers in the sample, or, simply because these two Dutch takeover defenses do not increase the CAR for target shareholders significantly.

The first robustness check of the first analysis shows that the financial crisis did not substantially affect the effects that the included variables have on target CARs. The second robustness check yielded the interesting result that all the variables included in the analysis have absolutely no significant effect on the CAR of target shareholders in a very short event window of -1 to +1. It also showed that the CAR over such a short event window is much lower on average, although the difference is not significant. This result is in line with the argumentation of Schwert (1996), who argues that a runup and a markup have a substantial influence on the total CARs target shareholders earn over a longer period, and therefore, a long event window of -42 to +126 should be used to examine the total CARs target shareholders earn around the announcement of a bid.

The second analysis also yielded some interesting results. To begin with, the finding that targets have, on

average, significantly fewer ATMs installed than non-targets. Also, targets have significantly less frequent preference shares installed than non-targets. This finding is in line with the finding of De Jong and Fliers (2020) and indicates that firms with preference shares installed are less often the target of a takeover. De Jong and Fliers find that priority shares are also significantly less often used by targets than non-targets, this result is not found in this research. Looking at the subsamples of De Jong and Fliers, an interesting trend can be observed. In their subsample from 1961 to 1985, the mean of ATMs installed is 0.844 for non-targets and 0.726 for targets, the difference is non-significant. In their subsample of 1986 to 2008, the mean ATMs installed for targets is 1.477 for non-targets and 1.092 for targets, this difference is significant. In the sample of this research from 1997 to 2019, non-targets have on average 0.895 ATMs installed and targets have an average of 0.734 ATMs installed, this difference is significant. Whereas the trend from 1985 on was increasing when it comes to the use of ATMs, this research shows that the trend has been downward from 1997 on. The use of ATMs is now almost equal to the use of ATMs in the period from 1961 to 1985. Also, the difference between targets and non-targets in the use of ATMs is almost the same now as in the period from 1961 to 1985, although the difference then was not significant whereas the difference now is significant. This research thus shows that, compared to the most recent period examined by De Jong and Fliers (2020), the use of ATMs, in general, has become less popular and converges more towards the use of ATMs in the period from 1961 to 1985. It is very well possible that this decline in the use of ATMs is due to the public discussion about the harmful effects these Dutch ATMs could have. These harmful effects, often grouped under the heading ‘Dutch Discount’, were brought to light in the end of the 1990’s (Timmermans, 2018). It might be that due to the bad publicity these ATMs got then, and, because of the lobbying by shareholders, management of firms were less eager to use ATMs because shareholders would disapprove such ATM-using firms. This would explain the result found here that the use of ATMs has decreased since the mid 1990’s.

The second main analysis finds that the three ATMs, combined into one variable and separately, do not significantly lower the probability that a firm is being taken over. This result is not in line with the most recent subsample of De Jong and Fliers (2020). As is just shown, however, the sample used in this research is much more comparable to the earlier subsample of De Jong and Fliers when it comes to the use of ATMs. For this early subsample, De Jong and Fliers find that none of the three ATMs significantly reduces the probability of a firm being taken over, nor do the three ATMs combined into one variable reduce the probability of a firm being taken over. Therefore, the results of the second analysis are very much in line with the findings of De Jong and Fliers (2020), and, the results of this research show that the trend of increasing use of ATMs with increasing importance when it comes to takeover probabilities is broken. The results of this research show that the use of ATMs and their importance in terms of takeover probabilities has decreased and is very much in line with the period of 1961 to 1985 reported by De Jong and Fliers (2020). This decrease in the use of ATMs may be due to the bad publicity ATMs have gotten as a result of the rumors about a Dutch Discount in the end of the 1990’s. The two robustness checks do not lead to any different conclusions for the second analysis. The second robustness check, however, does show that the Cox proportional hazard model is better suited to explain the relationship between the independent variables and the probability of a firm being taken over than the logit regression model.

5.3 Conclusion, contribution, limitations and recommendations for further research

The conclusion drawn from this research cannot be captured within one sentence. First of all, it is concluded that ATMs, in general, do not lead to higher CARs for target shareholders, but, the use of certificates does lead to higher target CARs. Generally, the results are no evidence in favor of shareholder interest theory, although, the positive effect of certificates on target CARs are in line with shareholder interest theory. Moreover, the conclusion is drawn that ATMs do not lower the probability that a firm is being taken over in the timeframe from 1997 to 2019. Both the first and second conclusions may be due to the small sample size or due to the lack of hostile takeovers in the sample. However, a trend is brought to light in this study that shows that the use of ATMs has decreased, and, is much more like the earlier subsample of De Jong and Fliers (2020) from 1961 to 1985. Which may be due to the bad publicity ATMs have gotten as a result of the public debate about a Dutch Discount. In this early subsample of De Jong and Fliers (2020), ATMs did not affect the takeover probability either. Thus, it might be that the importance of ATMs in the context of takeovers has decreased back to the levels of importance it had in the period from 1961 to 1985. The argument that is used now in the debate about the Wettelijke Bedenktijd, that ATMs affect the outcomes of a takeover and thereby affect firm value, is thus not valid. Thereby, the results of this study can be an extra argument in favor of the introduction of the Wettelijke Bedenktijd since the already existing ATMs are not found to be harmful to target shareholders. Additionally, the findings indicate the non-existence of a Dutch discount, since such a discount would solely exist because of the reduced functioning of the market for corporate control. No evidence is found in this study for a reduced functioning of the market for corporate control because of ATM use.

This research makes several contributions to existing literature. With the extensive data-gathering that is done for this research, a thorough insight into the use of ATMs up to date is given. Moreover, this study is the very first to examine how target CARs are affected by the use of Dutch ATMs. Additionally, this study provides an insight into the non-existence of effects of various variables on the short-term CAR (-1, +1) of target shareholders. Furthermore, a declining trend in the use of ATMs is brought to light in this research, and, it is examined how the probability that a firm is being taken over is affected by the use of Dutch ATMs for a very recent period (1997 – 2019). Finally, this study shows that the Cox proportional hazard model is better suited to predict takeover probabilities than a logit regression model.

There are some limitations to this study. Two of these limitations involve the specifics of the sample used in this research. Firstly, due to the lack of deals that have been done in the period from 1997 to 2019, the final sample only includes 123 deals. Such a small sample size leads to higher standard deviations in the regression analysis and may affect the significance of the results. A larger sample size with more deals may lead to more significant results. Future research can overcome this weakness and extend this research by using a longer timeframe, either by incorporating deals from before 1997 or by incorporating years after 2019. A second limitation concerning the sample used in this research is the fact that none of the deals are considered hostile in the Zephyr database. It is possible that the hypothesized results are not found because ATMs only play a significant role in hostile takeovers. Future research can overcome this limitation by evaluating the facts of every deal individually, because, it is possible that deals that were very much hostile in reality are not recognized as such in the Zephyr database. Having found hostile deals, future research can include an interaction effect between the ATMs and an indicator variable for the hostile deals. It is possible that then more significant results are found. Nonetheless, the results in this study are insightful and are not

necessarily a result of the sample used. Another limitation of this research is the lack of comparison made between Dutch ATMs and ATMs used in other countries. Due to the scope of this study, there is no elaborate discussion of the juridical differences between Dutch ATMs and foreign ATMs, and, the economical differences are neither discussed extensively. Future research can use the results and the specifics of the Dutch corporate governance system discussed in this study as a starting point to examine the differences in effects of ATMs on an international basis. It could be interesting to see whether the effects of Dutch ATMs are really different from other foreign ATMs, and, whether the effects of ATMs differ in countries where the extent of investor protection differs. Thus, although future research can extend this research to an international basis, the results of this study are a good starting point where future research can extend upon.

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Appendix A

Table 3: description of variables

Variable name	Measurement	Source
	Dependent variables	
CAR_{i,t_1,t_2}	The cumulative abnormal return for company i over the complete event window from 42 days before announcement until 126 days after announcement.	**Eikon**
$h_i(t)$	The hazard that firm i is taken over at time t.	**Stata regression**
	Independent variables	
Number_of_Takeover _defenses	Variable that counts the number of ATMs installed by a firm.	**Eikon De Jong and Fliers**
Preference_shares	Dummy variable equal to 1 when a firm has preference shares in place.	**Eikon De Jong and Fliers**
Certificates	Dummy variable equal to 1 when a firm has certificates in place.	**Eikon De Jong and Fliers**
Priority_shares	Dummy variable equal to 1 when a firm has priority shares in place.	**Eikon De Jong and Fliers**
	Control variables	
SIZE	Size of a firm, calculated as the log of total assets of a firm.	**Eikon**
GROWTH	The average sales growth of a firm for all available firm-years in the period 1997-2019.	**Eikon**
Liq	This variable represents the liquidity of a firm and is calculated as the current ratio. The ratio of current assets to current liabilities.	**Eikon**
PB	Represents the market to book ratio of a company and is calculated as the value of common stock divided by the book value of equity.	**Eikon**

PE	Represents the price to earnings ratio of a company and is calculated as the stock price divided by the earnings per share.	**Eikon**
DE	Represents the debt to equity ratio of a firm and is calculated as total debt divided by total equity	**Eikon**
ALLCASH	A dummy variable which is equal to 1 when a deal has been financed completely with cash.	**Zephyr**
ROA	Measures the profitability of a firm as the earnings before interest over total assets.	**Eikon**
LEV	Measures the leverage of a firm by dividing total debt by total equity. (DE ratio, now calculated manually).	**Eikon**
DEP	Measures the depreciation of a firm as a ratio of total assets.	**Eikon**
Market_Sentiment	Is a dummy variable which is equal to 1 when the year is in the fourth quantile of the sample takeover activity.	**Zephyr**
YEAR FE	Year fixed effects: 23 dummy variables for the years 1997 – 2019.	**Eikon**
INDUSTRY FE	Industry fixed effects: 11 dummy variables for each of the major SIC industry categories.	**Eikon**

Appendix B

Table 4: Test of proportional-hazards assumption
Time: Log(t)

	rho	chi2	df	Prob>chi2
SIZE	0.080	0.670	1	0.414
ROA	-0.045	1.990	1	0.159
CASH	0.108	0.660	1	0.415
LEV	0.095	1.560	1	0.211
DEP	-0.088	1.650	1	0.200
Preference_shares	-0.228	6.050	1	0.014
Certificates	0.098	0.960	1	0.327
Priority_shares	-0.009	0.010	1	0.927
global test		12.470	8	0.131

Table 4 represents the results of the Grambsch and Therneau test of proportional hazards.

Appendix C

TABLE 5: BREUSCH-PAGAN / COOK-WEISBERG TEST FOR HETEROSKEDASTICITY

	H0: Constant variance
Chi2	0.05
Prob > Chi2	0.8245
Reject H0	NO

Appendix D: Descriptive statistics and tabulations first analysis

Table 6: Descriptive Statistics first analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
CAR	123	13.83	57.07	-294.11	161.15
Number_of_Takeover_defenses	123	0.76	0.78	0.00	3.00
Preference_shares	123	0.41	0.49	0.00	1.00
Certificates	123	0.16	0.37	0.00	1.00
Priority_shares	123	0.19	0.39	0.00	1.00
SIZE	123	12.62	2.74	4.20	20.71
GROWTH	123	29.86	150.61	-41.53	1102.89
DE	111	86.73	330.02	-2438.52	1731.07
ALLCASH	123	0.65	0.48	0.00	1.00
PE	88	34.22	68.61	0.90	552.90
Liq	103	1.59	1.21	0.21	6.99
PB	117	9.06	93.23	-248.34	975.45

Table 7: Tabulation of *ALLCASH*

	Freq.	Percent	Cum.
0	43	34.96	34.96
1	80	65.04	100.00
Total	123	100.00	

Table 8: Tabulation of *Number_of_Takeover_defenses*

Number_of_ Takeover_ defenses	Freq.	Percent	Cum.
0	55	44.72	44.72
1	44	35.77	80.49
2	23	18.70	99.19
3	1	0.81	100.00
Total	123	100.00	

Table 9: Tabulation of *Preference_shares*

Preference_shares	Freq.	Percent	Cum.
0	73	59.35	59.35
1	50	40.65	100.00
Total	123	100.00	

Table 10: Tabulation of *Certificates*

Certificates	Freq.	Percent	Cum.
0	103	83.74	83.74
1	20	16.26	100.00
Total	123	100.00	

Table 11: Tabulation of *Priority_shares*

Priority_shares	Freq.	Percent	Cum.
0	100	81.30	81.30
1	23	18.70	100.00
Total	123	100.00	

Appendix E: Descriptive statistics for second analysis

Table 12: Descriptive Statistics complete sample

Variable	Obs	Mean	Std. Dev.	Min	Max
SIZE	3308	12.97	2.47	0	21
ROA	3261	4.35	151.11	-3275	7800
CASH	2888	368827.76	1571548.2	1	30455000
LEV	3274	.27	.42	0	13.32
DEP	3252	.03	.08	0	4.2
PB	3217	5.19	120.08	-403.38	6682.45
Number of Takeover_defenses	3468	.89	.8	0	3
Preference_shares	3468	.5	.5	0	1
Certificates	3468	.18	.38	0	1
Priority_shares	3468	.21	.41	0	1

Table 13: Descriptive statistics for Targets and Non-targets

Variable:	Non-target mean	Non-target N	Target mean	Target N	T-test
SIZE	12.970	3191	12.855	117	0.498
ROA	4.384	3145	3.397	116	0.069
CASH	371737.7	2790	285983.3	98	0.531
LEV	0.268	3161	0.307	113	0.988
DEP	0.031	3137	0.026	115	0.702
PB	5.047	3103	9.070	114	0.351
Number_of_Takeover_defenses	0.895	3344	0.734	124	2.194**
Preference_shares	0.501	3344	0.403	124	2.130**
Certificates	0.179	3344	0.153	124	0.724
Priority_shares	0.216	3344	0.177	124	1.018

**** p<0.01, ** p<0.05, * p<0.1*

Appendix F: correlation matrix and VIF table analysis 1

Table 14: Pairwise correlations analysis 1

Variables	(CAR)	(Preference)	(Certificates)	(Priority)	(SIZE)	(GROWTH)	(DE)	(ALLCASH)	(PE)	(Liq)	(PB)
CAR	1.00										
Preference	0.21	1.00									
Certificates	0.14	0.22	1.00								
Priority	-0.08	0.11	-0.15	1.00							
SIZE	-0.01	0.15	0.08	-0.14	1.00						
GROWTH	-0.21	-0.17	-0.09	-0.09	-0.22	1.00					
DE	-0.12	0.06	0.05	-0.04	0.28*	0.11	1.00				
ALLCASH	0.32*	0.05	-0.09	-0.04	0.19	-0.05	-0.05	1.00			
PE	-0.06	-0.22	-0.14	-0.07	0.03	-0.04	-0.22	0.08	1.00		
Liq	0.02	-0.13	-0.10	-0.03	-0.25	0.11	-0.11	-0.15	-0.12	1.00	
PB	-0.10	0.12	-0.03	-0.02	-0.10	-0.01	0.18	-0.14	-0.08	-0.04	1.00

**** p<0.01, ** p<0.05, * p<0.1*

Table 15: Variance inflation factor analysis 1

	VIF	1/VIF
SIZE	1.247	.802
PB	1.244	.804
Preference shares	1.233	.811
GROWTH	1.204	.831
Liq	1.202	.832
PE	1.197	.835
Priority shares	1.179	.848
DE	1.164	.859
Certificates	1.132	.883
ALLCASH	1.112	.9
Mean VIF	1.191	.

Appendix G: correlation matrix and VIF table analysis 2

Table 16: Pairwise correlations Analysis 2

Variables	(SIZE)	(ROA)	(CASH)	(LEV)	(DEP)	(PB)	(Preference)	(Certificates)	(Priority)
SIZE	1.00								
ROA	0.16*	1.00							
CASH	0.46*	0.01	1.00						
LEV	0.01	-0.06*	-0.02	1.00					
DEP	-0.06*	0.08*	-0.04	0.01	1.00				
PB	-0.07*	-0.03	0.00	-0.01	-0.01	1.00			
Preference	0.18*	0.01	0.03	-0.07*	0.02	0.02	1.00		
Certificates	0.05*	0.00	0.03	-0.03	0.02	-0.01	0.15*	1.00	
Priority	-0.03	0.00	-0.07*	-0.03	-0.01	-0.01	0.07*	-0.01	1.00

**** p<0.01, ** p<0.05, * p<0.1*

Table 17: Variance inflation factor Analysis 2

	VIF	1/VIF
SIZE	1.519	.658
CASH	1.325	.755
ROA	1.322	.757
DEP	1.279	.782
LEV	1.161	.861
Preference shares	1.109	.902
Market Sentiment	1.096	.912
Certificates	1.06	.943
Priority shares	1.016	.984
PB	1.011	.989
Mean VIF	1.19	.

Appendix H: Analysis 1: Robustness check 1

Table 18: OLS regression results on Cumulative Abnormal Returns (-42, +126), 2007-2009 excluded

	Expected Sign	(1) Controls only	(3) ATMs completely	(4) ATMs separately
SIZE	-	-2.097	-2.351	-2.487
		(3.232)	(3.297)	(3.093)
GROWTH	+	.364*	.382**	.385**
		(.183)	(.184)	(.192)
DE	±	-.022	-.022	-.022
		(.023)	(.025)	(.023)
ALLCASH	+	34.827*	36.143*	40.925*
		(19.785)	(20.221)	(20.995)
PE_X	±	-.471	-.411	-.361
		(.288)	(.304)	(.295)
PE_dum		-31.039*	-31.99*	-31.989*
		(16.325)	(16.331)	(17.751)
Liq	+	-11.427	-11.704	-11.665
		(9.429)	(9.153)	(9.49)
PB	-	-.11***	-.105***	-.095***
		(.03)	(.028)	(.031)
Number_of_Takeover_defenses	+		10.318	
			(11.463)	
Preference_shares	+			4.684
				(15.03)
Certificates	+			31.854*
				(16.683)
Priority_shares	+			9.63
				(22.787)
_cons		69.074	47.599	30.309
		(68.348)	(64.406)	(62.02)
Observations		74	74	74
R-squared		.618	.628	.646
Adj R^2		.319	.321	.321
Industry Dummy		YES	YES	YES
Year Dummy		YES	YES	YES

Table 1 presents the OLS regressions on CAR(-42, +126). Model 1 only incorporates control variables. Model 2 incorporates all ATMs together, measured as Number_of_Takeover_defenses. Model 3 incorporates all three ATMs separately. Standard errors are clustered at firm-level and are given in parentheses. Years 2007 – 2009 are excluded from the analysis.
*** p<.01, ** p<.05, * p<.1

Appendix I: Analysis 1: Robustness check 2

Table 19: Paired t test : CAR(-42, +126) – CAR(-1, +1)

	obs	Mean1	Mean2	dif	St Err	t value	p value
CAR(-42, +126) – CAR(-1, +1)	122	14.45	8.39	6.05	4.66	1.3	.2

Table 20: OLS regression results on Cumulative Abnormal Returns (-1, +1)

	Expected Sign	(2) Controls only	(3) ATMs completely	(4) ATMs separately
SIZE	-	.013	-.008	.033
		(.725)	(.733)	(.739)
GROWTH	+	-.064	-.061	-.066
		(.052)	(.052)	(.052)
DE	±	0	-.001	-.001
		(.003)	(.003)	(.004)
ALLCASH	+	3.633	3.761	3.34
		(3.78)	(3.996)	(4.12)
PE_X	±	-.022	-.02	-.024
		(.02)	(.02)	(.022)
PE_dum		2.653	2.585	2.137
		(4.11)	(4.193)	(4.538)
Liq	+	1.081	1.034	1.057
		(1.514)	(1.538)	(1.542)
PB	-	-.014	-.014	-.014
		(.011)	(.011)	(.011)
Number_of_Takeover_defenses	+		.921	
			(1.983)	
Preference_shares	+			.521
				(3.181)
Certificates	+			-.907
				(4.178)
Priority_shares	+			4.104
				(7.131)
_cons		-7.913	-9.78	-8.565
		(15.338)	(17.083)	(17.367)
Observations		90	90	90
R-squared		.417	.418	.426
Adj R^2		.039	.023	-.001
Industry Dummy		YES	YES	YES
Year Dummy		YES	YES	YES

Table 1 presents the OLS regressions on CAR(-1, +1). Model 1 only incorporates control variables. Model 2 incorporates all ATMs together, measured as Number_of_Takeover_defenses. Model 3 incorporates all three ATMs separately. Standard errors are clustered at firm-level and are given in parentheses.
*** p<.01, ** p<.05, * p<.1

Appendix J: Analysis 2: Robustness check 1

Table 21: Cox proportional hazard model where the dependent variable is the probability of a firm being taken over, years 2007 – 2009 excluded

	(1) Expected hazard ratio	(2) Controls only	(3) ATMs completely	(4) ATMs separately
SIZE	<1	.993	.994	1.007
		(.055)	(.055)	(.057)
ROA	<1	1	1	.999
		(.001)	(.001)	(.001)
CASH	>1	1	1	1
		(0)	(0)	(0)
LEV	<1	1.355***	1.348**	1.402**
		(.158)	(.158)	(.186)
DEP	>1	.067	.068	.022
		(.291)	(.294)	(.101)
PB	<1	1	1	1
		(0)	(0)	(0)
Market_Sentiment	>1	2.163***	2.147***	2.016**
		(.541)	(.254)	(.562)
Number_of_Takeover_defenses	<1		.946	
			(.141)	
Preference_shares	<1			1.800
				(.870)
Preference_shares_t	<1			-.926*
				(.037)
Certificates	<1			1.219
				(.371)
Priority_shares				.925
				(.287)
Observations		2088	2088	2088
Prob > chi2		.000	.000	.000
Chi2		7973.14	6732.72	6342.45
Industry Dummies		YES	YES	YES

Table 2 shows the results of the Cox Proportional Hazard model where the dependent variable is the probability of a firm being taken over. Model 1 only incorporates control variables. Model 2 incorporates all ATMs together, measured as Number_of_Takeover_defenses. Model 3 incorporates all three ATMs separately. Standard errors are clustered at firm-level and are given in parentheses. Years 2007 – 2009 are excluded from the analysis.
*** p<.01, ** p<.05, * p<.1

Appendix K: Analysis 2: Robustness check 2

Table 22: Logistic regression results on the probability of a firm being taken over

	(1) Expected odds ratio	(2) Controls only	(3) ATMs competely	(4) ATMs separately
SIZE	<1	1.004	1.007	1.011
		(.052)	(.051)	(.051)
ROA	<1	1	1	1
		(0)	(0)	(0)
CASH	>1	1	1	1
		(0)	(0)	(0)
LEV	<1	1.535**	1.496**	1.497**
		(.291)	(.293)	(.296)
DEP	>1	.010	.014	.013
		(3.999)	(.057)	(.052)
PB	<1	1	1	1
		(0)	(0)	(0)
Market_Sentiment	>1	1.982***	1.949***	1.861**
		(.493)	(.496)	(.521)
Number_of_Takeover_defenses	<1		.831	
			(.270)	
Preference_shares	<1			.817
				(.199)
Certificates	<1			1.011
				(.293)
Priority_shares	<1			0.717
				(.209)
_cons		-3.438***	.036***	-.035***
		(.73)	(.026)	(.025)
Observations		2539	2539	2539
Prob > chi2		.000	.000	.000
Chi2		41.06	41.91	43.41
Industry Dummies		YES	YES	YES

Table 2 shows the results of the logistic regression model where the dependent variable is the probability of a firm being taken over. Model 1 only incorporates control variables. Model 2 incorporates all ATMs together, measured as Number_of_Takeover_defenses. Model 3 incorporates all three ATMs separately. Standard errors are clustered at firm-level and are given in parentheses.
*** p<.01, ** p<.05, * p<.1