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Do Agency Costs of Free Cash Flow Impact Private Equity Acquisitions?

An empirical analysis of the free cash flow hypothesis' impact on US private equity transactions

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Abstract

The bidders in the acquisition market can be divided into two groups, strategic and financial acquirers, where the majority of the latter group consists of private equity firms. The two groups have different purposes for performing acquisitions. While strategic bidders typically intend to acquire targets to incorporate them in their businesses, the incentives of private equity firms are more financially driven as their main objective is to generate a return for their investors over a relatively short time-horizon. Consequently, different target characteristics appeal to the two bidder groups, where one possible explanation for this segmentation is *the free cash flow hypothesis*. Jensen (1989) states that the private equity company has a unique ability to mitigate agency costs of free cash flow. If the market is convinced that this is the case, private equity firms should be able to make a return by reducing agency costs of free cash flow before exiting. Previous literature provides inconsistent evidence concerning whether private equity firms acquire targets prone to agency costs of free cash flow, leaving unclear interpretations of the relationships proposed by Jensen. We argue that the inconsistent evidence in literature could potentially be a consequence of not studying the relationships in a way consistent with Jensen's theory. Hence, we constrain our analysis to public low growth firms. Our findings provide robust evidence in line with Jensen's (1989) hypothesis, indicating that private equity companies target firms prone to agency costs of free cash flow.

Furthermore, if private equity companies expect they can obtain a return through mitigation of agency costs of free cash flow, we assume this to be reflected in their willingness to pay relative to that of the market. However, if the market does not believe that the reduction of agency costs of free cash flow is sustainable, the private equity companies should not be able to make a return on these targets, and hence the proposed relations might not be present. We test this connection by applying the acquisition premium as a proxy for excess willingness to pay above the market. While our main analysis provides evidence for this relationship, our further research does not show an unambiguous picture. We believe this to be a result of the lack of competition in the transactions studied and that consequently, using the acquisition premium as a proxy for willingness to pay in excess of the market valuation does not allow us to capture the relationship we intend to examine.

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1. Introduction

Over the past two decades, the private equity industry has seen a considerable increase in investment value, culminating in the highest five-year level ever recorded last year. In 2018, the aggregated deal value of the global private equity market increased by 10%, amounting to a total of $582 billion (Bain & Company, 2019). At the same time, an ongoing discussion in Norway about major corporates and their low return on foreign investments (Langved et al., 2019) may be related to a continuing relevance of Jensen's theory about agency costs of free cash flow (1986). *The free cash flow hypothesis* advanced by Jensen (1986) states that, if a firm has substantial excess free cash flow, and the interests of the managers are not aligned with those of the shareholders, the managers are likely to invest in negative net present value projects, rather than distributing excess cash to shareholders.

In 1989, Jensen followed up on the subject with his paper "The Eclipse of the Public Corporation", stating that private equity companies[1], have the ability to solve the main issue of public corporations, the principal-agent problem, through their superior organisational form. On one hand, the public corporations, particularly those with dispersed ownership, strive to align the interests of management and shareholders and might face monitoring costs exceeding the individual gain of monitoring. On the contrary, private equity companies are supposedly able to mitigate agency costs of free cash flow as a result of the managing partners' extreme sensitivity to the target's performance, combined with a focus on incentive plans for the target managers. In addition to this, the private equity firm typically imposes a high leverage on the firms they acquire, resulting in little excess cash left in the target company, forcing the managers to run the business efficiently. The combination of the alignment of interests and the reduction of cash available for managers to waste, should theoretically result in mitigation of agency costs of free cash flow. This advantage is especially valuable when acquiring firms with substantial excess free cash flow, and where long-term growth is slow.

Although Jensen's (1989) forecast of an eclipse of the public corporation might have been an exaggeration, the drastically increasing size of the private equity market combined with the

[1]The term private equity refers to buyouts (LBOs and MBOs) and venture capital, with the majority of the capital being placed in the first group (Krishnaswamy, 2009). We confine our analyses in this thesis to the buyouts, and hereafter refer to them as private equity.

seemingly continuing importance of agency costs of free cash flow might indicate that the costs are severe and that private equity investors do manage to mitigate them. Despite the relevance, little attention has, to our knowledge, been paid to the connection between the topics of private equity investments and agency costs of free cash flow in recent academia. In addition, previous literature on the topic provides varying results.

Lehn and Poulsen (1989) and Opler and Titman (1993) provide evidence consistent with the relations between the free cash flow hypothesis and private equity firms proposed by Jensen (1989). Both studies find that companies acquired by private equity firms have greater undistributed free cash flow than companies which did not go private, i.e. companies which were not taken over. Additionally, Lehn and Poulsen (1989) find that the undistributed free cash flow is an important determinant of premiums paid in these transactions. On the contrary, Halpern et al. (1999) do not find support for the relation between private equity firms and the free cash flow hypothesis. They perform a similar analysis to the one of Lehn and Poulsen (1989) and compare the free cash flow of firms acquired by private equity companies to both firms which did not go private and to firms acquired by other operating companies.

It might be that the awareness of the topic has led to changes in the proposed relations. On one hand, as just mentioned, we observe cases indicating the presence of agency costs of free cash flow in companies today. On the other hand, US public firms are different now compared to when Jensen developed his theory (Kahle and Stulz, 2017). There has been a change in the focus on governance and control issues in public markets as well as in business in general. In addition, the payout rate to shareholders of US firms, defined as dividends plus repurchases, has increased substantially the later years. For instance, in most years since the year of 2000, US public firms have repurchased more equity than they have issued (Kahle and Stulz, 2017). This postulates a contrary view to the continuing occurrence of agency cost of free cash flow, indicating that the public companies might have managed to mitigate these agency costs.

Similarly, the recognition of agency costs of free cash flow might have affected the other players in the acquisition market. If private equity firms' ability to mitigate agency costs of free cash flow is in fact a comparative advantage which is not simple to replicate for other acquirers, it is plausible that the increased amount of capital allocated to the private equity market can partially be explained by this acknowledgement. On the contrary, if the comparative advantage is possible to replicate, it might be that the disclosure of the way

private equity firms mitigate agency costs of free cash flow has given other acquirers opportunity and incentives to implement the same adjustments.

The inadequate recent literature in the field, combined with indications of the continuing occurrence of these agency costs and the large amount of capital allocated to the private equity industry, motivates us to further investigate the relationship between private equity firms and public corporate targets prone to agency costs of free cash flow. Although we do not study the evolution of these relationships, we believe the discussion above indicates the relevance and importance of examining the topic further. Our goal is to better understand the relationships and the varied evidence in the literature produced to this date. Specifically, we want to test whether private equity firms expect they can create value by mitigating agency costs of free cash flow for their targets, as proposed by Jensen (1989). The intention of our study is confined to the private equity companies' ex ante calculated exit price, and not the actual long-term value creation. We therefore do not consider whether private equity companies are in fact able to mitigate agency costs of free cash flow, but rather whether they believe they can obtain a return by reducing these costs. Consequently, our research question is:

Do private equity firms target companies prone to agency costs of free cash flow and do agency costs of free cash flow in target companies increase private equity firms' willingness to pay, relative to that of the market?

We argue that the inconsistent evidence found in previous literature could be a result of including both low- and high- growth companies, as well as not comparing the targets acquired by private equity firms to the optimal group of comparison. Hence, our paper contributes to the literature by focusing only on public low growth targets, as advocated by Jensen (1986). We attempt to solve this issue by limiting our sample to the targets with growth below the sample median. The free cash flow hypothesis only describes low growth firms with high free cash flow, and Jensen (1989) claims that it is for these targets that the organisational form of the private equity firm is superior to the public corporation. Hence, we expect that constraining our sample to only include low growth firms increases the likelihood of identifying the assumed relationship. Further, Lang et al. (1991) reveal that it is important to distinguish between low- and high- growth firms as the agency costs of free cash flow is a function of the free cash flow for low growth firms, but unrelated to the free cash flow for high growth firms. In order to verify that this limitation can be justified, we have checked if our study yields the

same results when using the unconstrained sample, consisting of low- and high- growth firms. It appears that constraining our sample is important to identify the relations we intend to study.

Contrary to previous studies, and as a contribution to literature, we analyse the first section of our research question by comparing acquisitions made by private equity firms to acquisitions made by public strategic bidders. This allows us to test whether characteristics associated with being prone to agency costs of free cash flow increases a target's probability of getting acquired by a private equity firm, compared to a public strategic bidder. We believe this choice more easily lets us identify the proposed effect as, if Jensen's theory holds, these two groups should be the two with the largest difference when it comes to their handling of targets' agency costs of free cash flow. Additionally, from a methodological point of view, this study contributes to literature through an extensive matching procedure which lets us obtain a balanced sample of comparable target companies and hence increases the reliability of our results.

We apply a measure of the target's operating income before depreciations, after distributions to stakeholders, as a proxy for the free cash flow available for managers to spend on what the shareholders view as suboptimal behaviour. To study the first part of our research question, we use our matched sample of low growth firms, comprising of 60 acquisitions made by private equity firms and 60 acquisitions made by public strategic companies. We test whether a higher value of our measure of target's free cash flow increases the likelihood of the acquirer being a private equity firm relative to a public strategic company. Subsequently, to analyse the second part of our research question, we use the acquisition premium as a proxy for excess willingness to pay relative to the market[2]. On a sample of 63 acquisitions made by private equity firms, we test whether a higher value of the same measure of target's free cash flow is associated with a higher acquisition premium.

It should be noted that there might be reasons for the relationships proposed in our research question not to hold. It could be that private equity companies' supposed mitigation of agency costs of free cash flow is a short-term effect which is not going to last once the target is sold. If both the market and the private equity companies recognise this, neither the exit price, nor the deal value, is likely to reflect the elimination of agency costs. Further, another concern is

[2] Relying on the assumption that the market's willingness to pay equals the share price.

that applying the acquisition premia as a proxy for excess willingness to pay above the market relies on certain assumptions, such as competition and rational bidders, which might not necessarily hold.

Nevertheless, our study supports the relations suggested in our research question, indicating that private equity firms do target companies prone to agency costs of free cash flow and that their willingness to pay is greater than that of the market for targets prone to these agency costs. However, only the examination of the first section seems to be robust in our further analyses, and hence we cannot conclude, with a reasonable level of certainty, that the implied value creation of private equity firms through mitigation of agency costs of free cash flow is reflected in their excess willingness to pay relative to the market. As we will discuss, we strongly believe this to be a result of the lack of competition in the transactions studied and that consequently, using the acquisition premium as a proxy for excess willingness to pay over the market valuation, i.e. the share price, does not allow us to identify the relationship we intend to examine.

2. Theoretical Framework

In order to explain the rationale behind our hypotheses, this section contains an overview of the theory and literature used in this study. We begin by explaining Jensen's free cash flow hypothesis and characteristics of companies prone to agency costs of free cash flow. We then continue with an introduction to private equity firms and describe how they should be able to mitigate agency costs of free cash flow for their targets. Further, we introduce the different players in the acquisition market and their respective purchasing behaviour, before we develop our first hypothesis. Lastly, we introduce the concept of applying the acquisition premium as a proxy for maximum excess willingness to pay above the market valuation, and establish our second hypothesis.

2.1 Jensen's Free Cash Flow Hypothesis

Jensen (1986) describes the free cash flow hypothesis as a conflict of interest between shareholders and managers over payout policies. He states that in companies generating substantial free cash flow, defined as cash flow in excess of that required to fund all projects with positive net present value, motivating managers to disgorge the cash rather than investing it below the cost of capital or wasting it on organisational inefficiencies can be a severe problem.

This hypothesis is an extension of the general agency theory which states that agency costs arise as a result of the separation between ownership and control. Jensen and Meckling (1976) describes agency relationships 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 parties to the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal"*. In other words, when the manager's goals differ from the shareholders' goals, and the governance and control mechanisms within the company are not strong enough, the manager might have incentives to accomplish his own goals at the expense of the shareholders.

Further, for a company to operate efficiently and maximise shareholder value, excess free cash flow should be distributed to shareholders by paying out dividends or repurchasing stock, rather than retained or invested at a return lower than the cost of capital (Bodie et al., 2018;

Hillier, 2013). However, due to the diverging incentives between shareholders and managers, excess free cash flow might be invested at a low return, wasted or retained. Studies find that one of the reasons shareholders and managers have diverging incentives in terms of payout policies is that an increase in executive pay is more related to increases in company size, rather than shareholder value (Murphy, 1985; Jensen, 1989). Managers may therefore have incentives to maximise firm size by investing at a low return, rather than maximise shareholder wealth. For instance, Lang et al. (1991) find that managers of companies with high free cash flow and low growth opportunities act sub-optimally when performing acquisitions. Corporate growth is also associated with public, social and political prestige and power, and managers' incentives for empire building can lead to wasteful behaviour and low-return investments. Accumulation of cash in excess of the optimal level might be comfortable for management, but also costly as it ties up capital that yields a low return at a high perceived shareholder risk. The pursuance of these "selfish" goals is easier for managers when the firm has excess free cash flow (Hillier, 2013) and the costs they impose on shareholders are regarded as "agency costs of free cash flow".

In a contrary view, it might be that it is not always in the shareholders' best interest to minimise all excess free cash flow in a firm. For instance, in the same way that cost cutting can be a short-term solution for improving performance, it is not certain that minimising all "slack" in a firm is the optimal strategy in a long-term perspective. With the increase of firms relying on human capital rather than physical assets, the importance of, and competition for, the best managers and employees might have been rising. It is likely to be the case that employees find it more attractive to work in less strict firms. On a short-term perspective, this could impact worker motivation, and on a long-term perspective an unattractive workplace is likely to lose in the competition for the best employees. Hence, it might not be unambiguous that the absolute elimination of excess free cash flow leads to maximisation of shareholder value.

In the development of the free cash flow hypothesis, Jensen (1986) distinguishes between low and high growth firms, and states that it is for firms with low growth that agency costs of free cash flow are likely to occur. As firms with growth options have profitable investment opportunities, they will be less likely to have the sort of excess cash that Jensen states should be paid out. The rationale behind this is that companies which have positive net present value options should not give these up to increase or pay dividends to shareholders (Bodie, 2018; Hillier, 2013). Hence, excess cash flow *before investment expenses* for high growth companies cannot directly be characterised as waste. Given this argument and the fact that Jensen's

hypothesis only describes low growth companies, we are not in a position to draw conclusions about agency costs of free cash flow in high growth companies. Additionally, Lang et al. (1991) reveal that agency costs of free cash flow are a function of the free cash flow for low growth companies, but unrelated to the free cash flow for high growth companies. Based on the discussion above, we expect agency costs of free cash flow to be present particularly in public companies where the growth is low and a substantial amount of their free cash flows are withheld.

As agency costs of free cash flow depend on the amount of control exercised by the shareholders, it is reasonable to assume that they are more likely to flourish in loosely monitored companies and companies with weak corporate governance regimes. Publicly traded companies often have a fragmented ownership structure, making it challenging for each owner to enforce desired changes and to monitor the company at a reasonable cost. From this perspective, publicly traded companies might be particularly prone to agency costs of free cash flow. On the other hand, it might be supposed that publicly traded companies, specifically the publicly available information about them, are monitored by the market. However, Jensen (1989) states that the personal wealth of a typical public company manager has a low sensitivity to the company's share price. We therefore argue that the former argument, i.e. that the lack of control could lead to agency problems, should hold in the absence of well designed incentive plans, as the power of the market is restricted to adjusting the share price.

2.2 Private Equity Firms and Mitigation of Agency Problems of Free Cash Flow

Private equity firms were traditionally referred to as leverage buyout associations or LBO partnerships (Kaplan and Strömberg, 2009; Ciccotello, 2014). The term private equity often refers to buyouts (LBOs and MBOs) and venture capital, with the majority of the capital being placed in the first group (Krishnaswamy, 2009). We confine our analyses in this thesis to buyout transactions and refer to them as private equity.

Private equity firms manage assets on behalf of their investors. As their main objective is to generate return for their investors, they typically attempt to acquire troubled or undervalued companies with a turnaround and exit potential within a time horizon of three to five years (Krishnaswamy, 2009). Due to their expertise in restructuring of troubled companies (Gorbenko and Malenko, 2014), they can often realise a gain through improving their targets'

performance and profitability before exiting. One of the segments where private equity companies are known to have an advantage is in the acquisition market for poorly performing targets. To be able to employ the desired changes, they usually acquire a majority stake in the firm (Gorbenko and Malenko, 2014). Further, the extensive use of debt in private equity transactions reduces the amount of equity in a portfolio company and makes concentrated ownership possible. This allows the private equity firm to control a substantial portion of the shares outstanding without making large equity investments (Ciccotello, 2014).

One of the ways private equity firms are presumed to create value in their target firms is by reducing the agency costs of free cash flow. In particular, their organisations are structured in a way which increases the incentives to monitor and improve the performance and profitability of the portfolio company. Through a substantial performance or success fee (often 20% of the value created over a given hurdle rate), the personal wealth of the general partners in the private equity firm is tied almost directly to the shareholders' returns on their investment in the portfolio company, with a much higher degree of alignment than most executives of public companies. Adding to this effect, the staff and other costs of private equity firms are kept lean, increasing the general managers' personal incentives from a large compensation (Jensen, 1989), and resulting in interests more aligned with those of the investors.

In addition to the high correlation between company performance and the general managers' wealth, private equity companies typically focus on tying the target management's incentives to the value of the company in order to align their interests with that of the owners (Jensen 1989). Management compensation systems usually consist of both salaries, bonuses, stock and options. According to Jensen (1989), the sensitivity of the typical business-unit manager's salary to the company performance rises almost 20 times in a buyout.

Furthermore, private equity firms often require the target managers to make personal investments in the company. This ensures that the managers face downside risk, as well as an upside. Additionally, as the company is private, and hence the equity illiquid, target management's incentives for manipulation of short-term investments are reduced (Kaplan and Strömberg, 2009). Kaplan and Strömberg (2009) find that even though stock and option-based compensation have become more frequently used in public corporations, management's upside through ownership share remain greater in private equity firms than in public corporations.

On the contrary, critics of the private equity company raises the question about whether these firms can really be a long-term alternative to the public corporation (Rappaport, 1990). Although there seems to be arguments for the superiority of private equity firms regarding mitigation of agency costs of free cash flow, it might be that the initiatives taken are not a sustainable solution in a long-term perspective. As several of the advantages rely on the structure and business model of the private equity firm, it is not certain that the improvements will last once they exit.

2.3 The Impact of Leverage on Mitigation of Agency Costs of Free Cash Flow

The transaction model of private equity firms is built around a highly leveraged financial structure, and a buyout can typically be financed with 60 to 90 % debt (Kaplan and Strömberg, 2009). In addition to reducing the principal-agent problem through allowing for a more concentrated ownership, leverage could also help reduce the free cash flow available for spending and thereby the agency costs of free cash flow.

Jensen (1986) states that debt can motivate managers to run a company more efficiently and hence mitigate agency costs of free cash flow and names this effect *the control hypothesis for debt creation*. He further states that firms prone to agency problems of free cash flow are characterised as having "unused borrowing power", and that private equity firms exploit this by leveraging their acquisition transactions. Debt payments force managers to commit to their promise to pay out future cash flows in a more binding way than regular dividends, and thereby decreases the cash available for managers to spend on wasteful behaviour or low return investments (Jensen, 1986). Lehn and Poulsen (1989) support Jensen's view by claiming that while the penalty of dividend reductions is stock price reduction, the penalty for defaulting on a debt service payment is much more serious. As the management's personal wealth is more sensitive to financial distress than stock price reductions, we believe this effect to be especially applicable for management. This is a consequence of the target management's low sensitivity to the stock price mentioned earlier, combined with the real downside risk the management face from their company facing eventual bankruptcy.

Some might argue that most of the gains coming from leveraging the private equity transactions arises due to tax savings. Several studies claim that private equity firms favour targets with large pre-buyout tax expenses, as these targets are the ones which can potentially

offer the largest tax shields (Opler and Titman, 1993). Other studies find that this value creation is captured in the acquisition premium paid by private equity firms (Newbould et al., 1992; Lehn and Poulsen, 1989). Despite this, Opler and Titman (1993) state that it is unlikely that firms take on such a high amount of debt only to achieve tax savings, because they often lever up more than what is optimal to eliminate their taxable earnings. Opler and Titman (1993) also studies determinants of LBO activity and find that high financial distress costs deter LBOs. This evidence illustrates the importance of debt for value creation in private equity transactions.

2.4 Bidder Types in the Acquisitions Market

Gorbenko & Malenko (2014) divide the set of bidders in the acquisition market into two groups: strategic acquirers (typically industrially oriented companies) and financial acquirers (typically private equity firms). They claim that the takeover market is characterised by a segmentation between financial and strategic bidders, whereby different targets appeal to different bidders. Several studies find support for this segmentation view (Fidrmuc et al., 2012; Gorbenko & Malenko, 2014: Bargeron et al., 2008). This segmentation can probably be explained by the fundamental differences between the two bidder groups. In contrast to private equity firms, strategic bidders typically desire to acquire targets which offer long-term operational synergies (Gorbenko & Malenko, 2014). Consequently, they often have either a horizontal or a vertical link to the target company and favour specific industries which can potentially offer such synergistic effects. Strategic bidders, in contrast to private equity firms also tend to seek targets associated with growth potential (Fidrmuc et al., 2012).

As previously mentioned, private equity firms typically search for under-performing and undervalued companies. Gorbenko and Malenko (2014) find that financial bidders pay a higher premium for poorly performing targets, compared to strategic bidders. According to Bhattacharya (1979), under certain conditions, dividends function as an indicator of expected cash flows and thereby performance. The two bidder groups might therefore also target companies with different dividend policies.

In addition, previous research finds evidence that strategic bidders target larger companies than private equity firms (Bargeron et al., 2008, Fidrmuc et al., 2012). The literature also seems to agree on a relationship existing between target's size and the bidder's willingness to pay. However, there seems to be disagreement on the direction of the impact target size has on the

acquisition premium. Alexandridis et al. (2013) and Gorton et al. (2009) find that target size is negatively associated with acquisition premia. They claim there could be several factors explaining this relationship, among them the fact that overpayment potential tends to be lower in larger transactions and that there tends to be less competition prevalent in acquisitions of larger targets. On the contrary, Loderer and Martin (1990) find that acquirers are more likely to overpay when buying large targets.

Furthermore, strategic bidders and private equity firms also target companies with different degrees of leverage. As previously discussed, theory provides evidence consistent with the view that private equity firms target companies with underutilised debt capacity. Despite these reflections, prior research finds evidence that private equity firms acquire targets with higher leverage compared to strategic bidders (Bargeron et al., 2008; Fidrmuc et al., 2012). Bargeron et al. (2008) argues that these findings could be a result of highly levered companies having weaker bargaining positions as a result of not being able to recapitalise and avoid or repel takeovers. As strategic bidders pay significantly larger acquisition premiums compared to private equity firms (Bargeron et al., 2008; Gorbenko and Malenko, 2014), acquisitions made by private equity firms are expected to benefit target shareholders less. Hence, if a company has the desire and ability to resist a private equity acquisition due to low leverage, it might be more challenging for private equity firms to buy companies with little debt.

Moreover, Gorbenko and Malenko (2014) state that the valuations used by the two groups are affected differently by overall economic conditions. Possible explanations for this could be that the profitability, and thereby liquidity, of the two buyer groups is affected differently by macroeconomic changes, for instance as a consequence of the high leverage in private equity transactions, or that political changes favour one group over the other. In addition, it might be that the two groups have different strategies for the timing of acquisitions. More specifically, private equity firms might have a higher sensitivity to economic changes than strategic companies due to the purpose of the acquisitions being more financially driven, whereas strategic acquisitions often are based on longer term strategic priorities and demands. On the contrary, as private equity firms attempt to acquire undervalued targets, they might be more likely to initiate acquisitions when the rest of the market is in a downturn (Gorbenko and Malenko, 2014).

There seems to be few studies performed on the differences between the two bidder groups' ability to mitigate agency costs of free cash flow. Nevertheless, we expect strategic bidders to

have a lower ability to mitigate their target's agency costs of free cash flow compared to private equity firms. According to Gorbenko and Malenko (2014) financial bidders, such as private equity firms, can use their relationships and reputation to obtain financing at a lower cost than strategic bidders. This is in line with evidence from Demiroglu and James (2010) and Ivashina and Kovner (2011). We believe that private equity firms' potential access to cheaper debt makes it easier for them to exploit the benefits of leverage. In addition, it is likely that the short time horizon of private equity companies enables them to make unpopular changes for the employees to a greater extent than an acquiring firm which has a longer time-perspective. We rely this on the idea that the employees will view the private equity firm as a transient owner, while a strategic owner will need to maintain a better relationship with the employees in order to preserve an impression of an attractive workplace. Further, different ownership structure among the strategic bidders, resulting from some being private and some being public, could cause differences in the ability to mitigate agency costs of free cash flow within the group of strategic bidders. Even though ownership structure varies greatly among public firms, we assume that the average public company has a more diverse ownership than the average private company, and hence that they have lower incentives to reduce the principal-agent problem. We therefore expect public strategic bidders to be less able to mitigate agency costs of free cash flow compared to private strategic bidders. Bargeron et al. (2008) argues that even though private equity firms can have many financial investors in their funds, the acquisition, development and exit decisions are made by the managing partners who have incentives closely aligned with those of investors.

2.5 The Impact of the Free Cash Flow Hypothesis on Private Equity Firms' Purchasing Behaviour

The intention of this study is to examine the relationships proposed by Jensen (1989) in respect of whether private equity firm acquisition targets are prone to agency problems of free cash flow. We do not consider whether private equity firms are in fact able to mitigate agency costs of free cash flow, but rather whether they believe they can obtain a return by reducing these costs. Hence, our study is confined to the private equity companies' ex ante calculated exit price, and not the actual long-term value creation. To examine this relationship, we look at whether a higher amount of free cash flow withheld increases the likelihood of a target being acquired by a private equity firm. As Jensen's (1989) statement concerns public companies only, and with regards to our elaboration in this chapter, we believe it is appropriate to study

only public targets. Further, as discussed above, we are not in a position to draw conclusions about agency costs of free cash flow for companies with substantial growth opportunities. Thus, we believe studying only low growth targets will yield more reliable and accurate results. Furthermore, we believe it is favourable to compare our private equity transactions to other transactions where the acquirer is not able to mitigate agency costs of free cash flow to the same extent as private equity firms. Hence, we find the natural group for comparison purposes to be transactions performed by public strategic bidders. If Jensen's theory holds, we believe these two groups should be the two with the largest difference when it comes to their handling of targets' agency costs of free cash flow. Thus, we expect to observe targets of private equity companies to be more prone to agency costs of free cash flow prior to the acquisition, compared to targets of public strategic bidders.

Lehn and Poulsen (1989) and Opler and Titman (1993) provide evidence consistent with the relationships between the free cash flow hypothesis and private equity firms proposed by Jensen (1989). Both studies find that companies acquired by private equity firms have greater undistributed free cash flow than companies which did not go private, i.e. companies which were not taken over. Halpern et al. (1999) examine the same relationships as Lehn and Poulsen (1989) and compare the free cash flow of companies acquired by private equity firms to companies which did not go private and to companies acquired by other operating companies. Contrary to the findings of Lehn and Poulsen (1989), they find a positive, but not significant, coefficient for their measure of free cash flow. However, their study focuses on the effect of managerial holdings on the acquisition premium and they explain their insignificant free cash flow coefficient by arguing that the relationships proposed by Jensen only apply to firms with low levels of managerial ownership. We believe that their argument can be seen in relation to our previous discussion of the importance of the governance and control mechanisms on the level of agency costs of free cash flow.

The above mentioned studies are difficult to compare because the variables chosen to test the free cash flow hypothesis, as well as the calculations of these variables, vary. In our opinion, and as further discussed in our variables-section, some of the variables used in these studies do not just capture agency costs of free cash flow, but rather other target characteristics causing these target firms to be acquired by private equity firms, for instance past performance. Drawing conclusions based on previous research has therefore proven to be difficult. Further, prior research on the relationship between private equity firms and agency costs of free cash flow does not, to our knowledge, distinguish between low- and high- growth targets. We

suspect that the mixed evidence could be a result of both applying inappropriate measures of free cash flow and performing the analyses on both low- and high- growth companies, making it challenging to identify the relationship proposed by Jensen (1989).

Based on the above discussion, we have constructed our first hypothesis:

2.5.1 Hypothesis 1

> *For low growth targets, a higher undistributed free cash flow makes it more likely that the acquirer is a private equity firm rather than a public strategic company.*

2.6 Private Equity Acquisition Premia

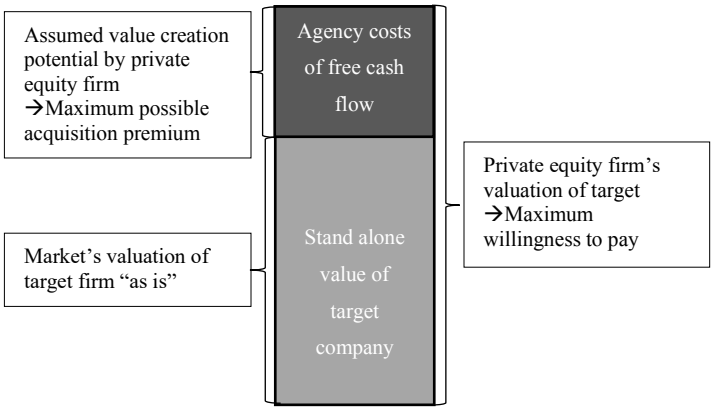
In the stock market, shareholders owning a small stake in a company will, in most scenarios, not have the power to reduce the agency costs of free cash flow that might be present in a particular company. Thus, the share price of the company will reflect the remaining value to shareholders after the consequences of management's eventual potential wasteful behaviour. In other words, the market's valuation of a company, which theoretically should equal the discounted value of future cash flows, should be the company's stand-alone value in the presence of agency costs of free cash flow. In contrast, a valuation performed by a private equity firm should, if Jensen's (1989) theory holds, be equal to the stand-alone value as calculated by the market, plus the additional value generated by the mitigation of agency costs of free cash flow. The difference between the two valuations, i.e. the additional value generated by the mitigation of agency costs of free cash flow, should reflect the private equity company's highest excess willingness to pay, relative to the market[3]. In a world with full competition, this maximum excess willingness to pay relative to the market should equal the acquisition premium. The discussed relationships are illustrated in figure 2.1. Although there are other effects impacting the valuations in reality, this is the relationship we intend to study, and thus the scenario we attempt to create in our analysis.

Hence, if mitigation of agency costs of free cash flow is an important value driver in private equity acquisitions, this should be reflected in the private equity firms' excess willingness to

[3] Relying on the assumption that the market's willingness to pay equals the share price.

pay, relative to the market. More specifically, if Jensen's (1989) hypothesis is correct, we expect the premium paid by private equity firms, in a scenario of full competition, to be higher for targets which seems to be prone to agency costs of free cash flow. As previously discussed, these targets are likely to be characterised by having a substantial undistributed free cash flow in combination with low growth opportunities.

Figure 2.1
Illustration of concept behind the hypotheses. Simplified example assuming full competition and that mitigation of agency costs of free cash flow is the only competitive advantage of private equity firms.



However, as there is not necessarily full competition and homogenous valuations in the private equity market, the acquisition value does not necessarily represent the winning bidder's maximum willingness to pay. Gorbenko and Malenko (2014) find support for this argument and claim that the winning slack, meaning how much acquirers underpay relative to their valuations, depends on the competition in the acquisition process. In a scenario without full competition, the winning bidder only needs to pay marginally above the runner up bidder's valuation, resulting in a premium lower than the winner's maximum willingness to pay. In the extreme scenario that a private equity firm is the only bidder in an acquisition process, they do, in theory, only need to pay marginally above the stand-alone value of the company. In these cases, the premium will reflect the control premium.

Jensen (1989) states that the high acquisition premium paid by private equity firms may indicate the magnitude of agency costs of free cash flow. However, other literature provides inconsistent evidence regarding whether private equity firms have a higher willingness to pay for companies prone to agency costs of free cash flow (Lehn and Poulsen, 1989; Halpern et

al., 1999; Kieschnick, 1989). As previously mentioned, and as further discussed in our variables-section, we are concerned that some of the free cash flow measures used in certain studies do not just capture agency costs of free cash flow, but rather other target characteristics causing private equity firms to pay higher or lower premiums for these targets. An example of such effects could be that the measures of free cash flow are biased because they capture past performance. We argue that the inconsistent evidence could be a result of applying these inadequate measures of free cash flow and of preforming the analyses on both low- and high-growth companies, making it challenging to identify the relationship proposed by Jensen (1989).

As a result of the discussion above, we intend to study whether private equity firms have a higher excess willingness to pay, relative to the market, for targets prone to agency costs of free cash flow. Although we examine whether targets prone to agency costs of free cash flow appeal to private equity bidders in our first hypothesis, we additionally want to study the magnitude of the value private equity companies expect they can create in these transactions[4]. We test this by using the acquisition premium paid by private equity companies as a proxy for their excess willingness to pay above the market valuation. Hence, we intend to study whether targets with higher levels of free cash flow withheld receive a higher acquisition premium. We also limit this analysis to public low growth targets for the same reasons as discussed for our first hypothesis.

Consequently, our second hypothesis will be:

2.6.1 Hypothesis 2

> *For low growth target companies, a higher free cash flow is associated with a higher acquisition premium paid by private equity firms.*

[4] The intention of this study is not to examine whether private equity firms truly create value through mitigation of agency costs of free cash flow for their target firms, but rather if they are willing to pay more because they expect that they can obtain a return by reducing these costs.

2.7 Relevance of Our Study

While this paper will not be a study of how the relationships have changed, it is important to acknowledge that Jensen's "Eclipse of the Public Corporation" (1989) was written 30 years ago. Jensen's analysis, and other studies on this topic, might have made the owners of public companies and the markets monitoring them more aware of the existence and magnitude of these agency costs. Hence, the relationships between public corporations and agency problems of free cash flow could have changed since the article was published. This idea is supported by the fact that US public firms are different now compared to when Jensen developed his theory (Kahle and Stulz, 2017). There has been a change in the focus on governance and control issues in public markets as well as in business in general. In addition, the payout rate to shareholders of US firms, defined as dividends plus repurchases, has increased substantially the later years. For instance, in most years since the year of 2000, US public firms have repurchased more equity than they have issued (Kahle and Stulz, 2017). If it is the case that owners of public companies have had the ability to reduce agency costs of free cash flow themselves, it might be that these agency costs are not as present as before. However, as mentioned in the introduction, it does seem like agency costs of free cash flow is still an occurring issue in public companies.

Adding to the question about a changed relation, the disclosure of private equity firms' advantage in reducing agency costs of free cash flow in their target firms can have given other acquirers incentives to exploit these opportunities. Gorbenko and Malenko (2014) states that strategic bidders could theoretically implement the same changes as private equity firms. Hence, if the comparative advantage of private equity firms is possible to replicate, and if this has indeed been the development, the relations we are looking for might no longer be present. On the contrary, as already discussed, there are certain aspects of private equity firms' assumed comparative advantage which might not be possible to replicate for other acquirers. If this is the case, it might be that the increased amount of capital allocated to the private equity market can partially be explained by the acknowledgement of private equity firms' ability to mitigate agency costs of free cash flow. Even though we do not study the evolution of these relations, we believe the discussion above justifies the relevance and importance of testing our hypotheses.

3. Data and Methodology

The following section presents a brief description of the data sample used in this study. In addition, we introduce the relevant variables used in our study and explain the rationale for including them in our regression models. Lastly, we describe the chosen empirical methodology.

3.1 Data Collection and Description

We collect all data on financial transactions from the SDC Platinum database. The sample period covers the years 2009 through 2018. This time span is mainly chosen to avoid capturing the most substantial effects from the financial crisis in 2007-8, as we expect including transactions from this period could potentially lead us to wrongfully conclude on relations that will not be relevant in normal circumstances. Further, we require the acquisition target to have pre-buyout characteristics available in the COMPUSTAT- and Thomson Reuters Eikon-databases. Information on analyst coverage of the target prior to the acquisition is collected from Thomson Reuters Eikon and target pre-buyout financial data is collected from COMPUSTAT. All financial accounting information is stated in million USD. The date of financial accounts from SDC is used as the primary date to collect financial information from the other databases. In the event that no financial information was available for the SDC-date, we search the databases for information one year prior. We manually control that missing financial data is reported correctly and merge our databases in order to substitute variables with data from the other databases in the case of errors.

As we would find it valuable and interesting for our analysis to include acquirer characteristics, we try to collect this data from the databases we have access to. Unfortunately, as most private equity firms are not publicly traded and thus reveal very little information to the public, we are not able to collect sufficient data on acquirer characteristics to make use of it in our analyses.

To be included in our sample we have the following requirements:

- The acquisition had to take place in the US. We require both the bidder and the acquirer to be US firms.
- Deal value and premium paid has to be available in SDC.
- The target had to be publicly listed prior to the acquisition.
- The acquirer has to be categorised as either a private equity firm (utilising a LBO strategy) or a public strategic bidder. Venture capital firms are excluded from the sample. Transactions characterised as financial sponsor deals are manually checked to make sure the bidder is indeed a private equity firm (LBO).
- The acquisition consideration offered has to be cash only. Since private companies do not have publicly traded equity to offer in an acquisition, most of their deals are cash acquisitions (Bargeron et al., 2008). To be able to identify the acquisition value of the transaction with certainty, we have limited our sample to cash deals only (Gorbenko and Malenko, 2014).
- Private equity firms usually buy a majority stake in their target companies (Døskeland and Strömberg, 2018). Owning a majority stake allows the private equity firm to implement the desired changes for the target company. To ensure we compare similar transactions performed by private equity firms and public strategic bidders, we require the percentage of target shares owned by the acquirer after the transaction to be at least 50%.
- The acquisition is not a self-tender, repurchase or recapitalisation.

After applying the criteria listed above, as well as requiring the transactions to have data available in the COMPUSTAT- and Thomson Reuters Eikon- databases, we are left with 700 transactions that took place from 2009 to 2018. Of these transactions, 135 were completed by private equity firms and 565 were completed by public strategic bidders.

As a result of the discussion presented in section 2.1, we further limit our sample to low growth companies only. Instead of setting our growth threshold to one as in previous literature (Lang et al., 1991), we limit our sample to the companies with Tobin's Q below the median of ~1.19. This threshold is mainly chosen to avoid shrinking our data set more than necessary. However, considering the fact that Jensen describes low growth firms only, we believe the threshold can be justified as we assume a Tobin's Q of ~1.19 can be considered as low growth. As all our

regression analyses rely on our main variable of interest, $\frac{FCF}{TA}$, in addition to Tobin's Q, we require the transactions to have data available to calculate the two. Our final sample thus comprises 343 transactions of which 68 were completed by private equity firms and 275 by public strategic bidders. The availability of financial information used to calculate our other variables does differ, and hence, the exact number of transactions included in each analysis varies depending on the variables included.

In order to make sure our results are not driven by extreme outliers, we winsorize variables where this is an issue, which could otherwise give us a biased picture.

Figure A.2 (see appendix A.2) sets out the number of transactions in our sample grouped by one-digit target SIC code, across bidder type. The figure shows that the transactions are not evenly distributed between the two bidder groups with regard to targets' industry. We observe that most of the private equity transactions occur within the service-, manufacturing-, and wholesale trade- industries. We also see that the two industries with the highest number of transactions, irrespective of bidder type, are the service- and manufacturing- industries. Our sample distribution of transactions across industries are comparable to that of Bargeron et al. (2008).

Figure 3.1
Sample of low growth target firms by year. The sample period covers the year of 2009 through 2018. The figure illustrates the number of acquisitions within each year of our sample, across bidder type.

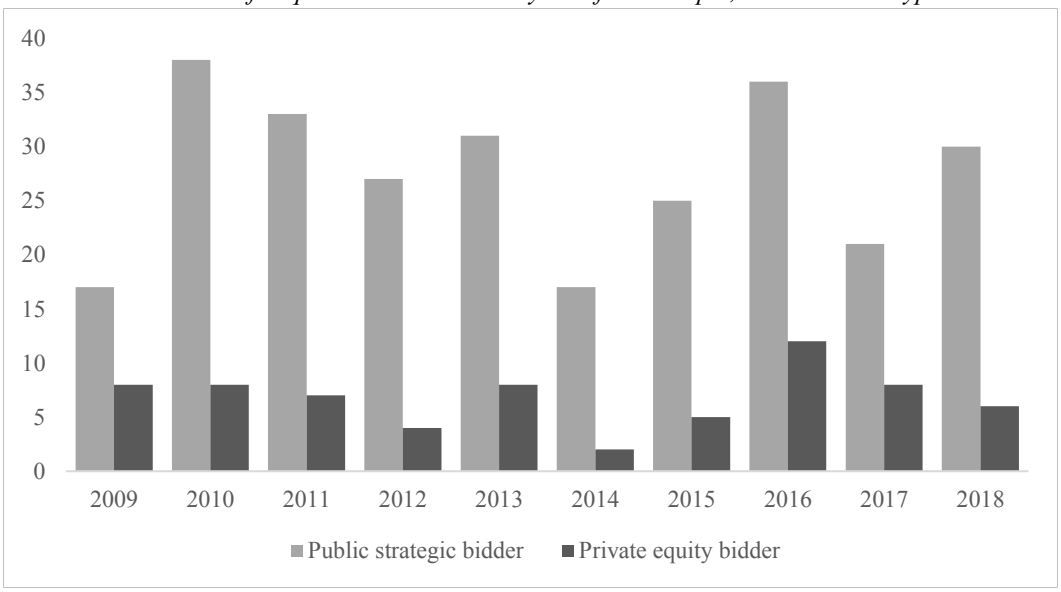


Figure 3.1 sets out the number of transactions in our sample per year, across bidder type. Similarly to the industry distribution, we observe that the transactions are not evenly distributed between the two bidder groups with regard to the year of the transaction. The

growth in aggregated deal value mentioned in the introduction is not visible in the figure. According to Bain & Company (2019), the growth in the aggregate value of public to private deals is a result of larger deals rather than an increased deal count. Figure A.3 (see appendix A.3) displays that our sample follows approximately the same trends as described in the market report by Bain & Company (2019).

3.2 Regression Variables

In this section we introduce the relevant variables used in our study and explain the rationale for including them in our regression models. All variables, unless otherwise specified, are based on pre-buyout target characteristics.

3.2.1 Dependent Variable for Buyer Type Regression: Private Equity Bidder

To test our first hypothesis, we want to estimate whether the likelihood of the acquirer being a private equity firm relative to a public strategic company is larger for targets which seems prone to agency costs of free cash flow. Thus, the dependent variable of our first regression model is a binary variable equal to one if the acquirer is a private equity firm and zero if the acquirer is a public strategic company.

3.2.2 Dependent Variable for Acquisition Premium Regression: Acquisition Premium

For our second hypothesis, we intend to examine whether private equity firms pay a higher acquisition premium for targets which seems prone to agency costs of free cash flow. Hence, the dependent variable in our second regression model is the acquisition premium paid by a private equity firm. The dependent variable is a continuous variable calculated as the difference between the offer price and the target closing stock price four weeks before the announcement of the acquisition, expressed as a percentage of the stock price. Following other empirical research on acquisitions, we collect the target market value per share (i) one day prior to the date of the announcement, (ii) one week prior to the date of the announcement and (iii) four weeks prior to the date of the announcement. Fidrmuc et al. (2012) find that targets of private equity firms are likely to leak information, indicating that using the target share price close to announcement date might cause our premium measure to be biased. If information leakage has occurred, we expect a significant share price runup in the weeks prior

to the announcement. We find evidence of this in our sample and thus measure the premium using the market value per share four weeks prior to the date of the announcement in order to avoid capturing the consequences of information leakage when calculating the premium. We could alternatively measure the premium using the market price further back in time. However, we believe this could cause us to capture other factors from the market affecting the share price and potentially bias our premium measure.

Although the acquisition premium is likely to be the best proxy available for excess willingness to pay relative to the market, it does have certain limitations. Firstly, it relies on the key assumption of full competition and rational players in the acquisition market. Further, it is not adjusted for a benchmark return. In addition, when using the acquisition premium as a measure for private equity firms' calculated value creation, it is important to acknowledge that the share price does not necessarily represent a company's fundamental value. For example, the market might forecast that a target will be subject to an acquisition, and hence speculation might drive the share price up prior to the deal. In that case, a part of the potential premium will be incorporated in the share price, and all else equal, the premium will be lower. It might also be that the share price is artificially high as a result of increased liquidity in the market. If this is only due to a "strong" market, it is not certain that the valuation of private equity firms will be scaled up by the same factor, and thus the premium, which is a percentage, could be different dependent on the market. At the same time, we expect private equity firms to acquire undervalued targets. If a weak market makes the targets more under-priced and the transaction value of private equity acquisitions is equal to their maximum willingness to pay, it may lead to a higher takeover premium.

Another concern related to using the acquisition premium as a measure of calculated value creation is if the share price used as the basis for calculating the premium is not representing the actual market value of the company because the stock has not been actively traded for an extended period of time. As we do not have access to liquidity data for our sample, we attempt to test whether the equity of the targets in our sample lacks liquidity by studying the movement of each target company's share price in the year leading up to the transaction. As we do not find any companies that have severe illiquidity in our sample, we do not proceed to control for this.

3.2.3 Independent Variable: Free Cash Flow

Jensen (1986) defines **free cash flow** as cash flow in excess of that required to fund all projects with positive net present value when discounted at the relevant cost of capital. However, as the present value of a company's projects is not publicly available, the free cash flow described by Jensen (1986) proves difficult to measure in practice. We therefore use a proxy for excess free cash flow in our study.

For our main analyses, we use a measure of free cash flow first applied by Lehn and Poulsen (1989) and later used in other studies such as Lang et al. (1991) and Halpern et al. (1999), as we believe it is the best proxy for the withheld free cash flow discussed by Jensen. The free cash flow (FCF) measure is calculated as:

FCF = Operating income before depreciation – Tax – Interest expenses - Dividends

and represents the cash flow left after operations which was not distributed to shareholders, creditors or the government. By subtracting the required payments of the company, we are left with the cash flow which could potentially be misused by the management.

Alternatively, it would have been interesting to include research and development (R&D) expenses in our free cash flow measure as the relative importance of these expenses versus capital expenditures have changed since Jensen's theory was developed (Kahle and Stulz, 2017). Unfortunately, the insufficient information on R&D in our dataset limits us from performing such an analysis. Further, it would also have been valuable to subtract share repurchases from our free cash flow measure. Share repurchases could create shareholder value by reducing the capital which could be subject to wastage by management. However, it also proves difficult to obtain sufficient and reliable data on share repurchases for our sample of target companies.

Opler and Titman (1993) use operating income before interest, taxes and depreciation (EBITDA) as their proxy for excess free cash flow, and Lang et al. (1991) report operating cash flow as an alternative measure of cash flow. We find these measures misleading because they do not account for distribution to shareholders and creditors, which is essential in order to identify the cash that could potentially be subject to wastage from the cash that is paid out. However, it serves as an alternative measure of cash flow available for managers to misuse on

low-return investments. Due to our concerns, we do not use these measures in our main models, but report Lang et al.'s (1991) alternative measure of cash flow as a robustness test.

For our main regression model, we follow Lang et al. (1991) and scale our free cash flow measure by the book value of assets. However, different scaling factors have been proposed and used in the previous literature. Lehn and Poulsen, (1989) and Lehn et al., (1990) scale their free cash flow measures by the market value of equity, and Opler and Titman (1993) scale by the sum of the firm's market value of equity and book value of debt. We argue that a weakness to scaling free cash flow by the market value of equity is that the denominator which is, at least in theory, the discounted value of all future cash flows, could be strongly correlated with the numerator. Hence, the more front loaded the cash flows are, the closer the ratio is to one. It could also be an issue that our dependent variable in our acquisition premium regression is calculated based on the target's market value of equity. However, as this scaling factor is commonly used in previous literature, we report it as a robustness test. Another frequently used scaling factor proposed by previous literature is net sales (Halpern et al., 1999). We additionally check the robustness of our analyses to this scaling factor and report it in the results section.

Our measure of free cash flow is likely to be particularly sensitive to economic changes as a firm's operating income is likely to be correlated with economic conditions. On the contrary, common dividends and interest expenses are normally fixed to a larger degree, on a short-term perspective. As the market interprets a decrease in dividends as a severe signal of trouble, firms are generally reluctant about changing their payout policies. At the same time, interest payments are an expense which is not easy to cut on a short-term perspective in the case of a weak economic environment.

A weakness to our free cash flow measure is that it characterises all free cash flow after distribution as waste, not allowing for any investments or necessary accumulation of cash to manage varying working capital needs. On the one hand, as we, in line with Jensen's (1986) hypothesis, only study companies with low growth opportunities, a large part of this issue is eliminated because large investments and cash accumulations should not be necessary. On the other hand, low growth companies also need to make investments at a certain level to be able to maintain their daily operations. Further, there are several acceptable reasons why firms need to accumulate cash, for instance for precautionary reasons (Bates et al., 2009). However, as our sample consists only of companies with low growth opportunities, we argue that the

average company should have reason to accumulate more cash without it being a form of wasteful behaviour. We do acknowledge there might be seasonal variations in liquidity which forces also low growth companies to spend cash from their reserves and accumulate cash over the year. Having said that, it could be hypothesised that the kind of liquidity cycle which the market does not evaluate as a change in the growth options of an industry rarely is likely to last more than a year. Even if this does not hold, we assume the size of our sample will correct for the potential differences. As our measure of cash flow, like normal cash flow statements, is measured annually, potential accumulated cash should only reflect accumulation above the level of cash in the opening balance. In the case that seasonal liquidity variations cause spending and accumulation of cash through the year, but both is of an equal amount, it will not be measured as cash accumulation.

3.2.4 Sample Constraint: Low Growth Firms

A frequently used measure for growth opportunities, and what most literature seems to agree to be the best proxy, is **Tobin's Q** (Lang et al., 1991; Opler and Titman, 1993; Halpern et al., 1999). In our study, we follow these authors by using Tobin's Q as a proxy for firms' growth opportunities. Tobin's Q is defined as the market value of assets relative to the replacement cost of assets. Since the replacement cost of assets is difficult to measure, the book value of assets is often used as a proxy to estimate the ratio. We therefore calculate Tobin's Q as the sum of market value of equity and book value of debt divided by the book value of total assets. Further, as previously discussed, we limit our sample to low growth firms defined as firms with Tobin's Q below the sample median of ~1.19. The decision of limiting our sample to only low growth firms is mainly motivated by the discussion given in the theoretical framework. To investigate whether this limitation can be justified, we have checked if our analyses yield the same results when using the unconstrained sample, consisting of low- and high- growth firms. From these analyses we observe that the relations become weaker, and in some cases disappear, when high growth firms are included in the sample. In our opinion, this indicates the importance of limiting our study to low growth firms in order to identify the proposed relations. Further, as previously discussed, the use of our free cash flow measure as a proxy for excess free cash flow relies on the assumption that the target is a low growth firm.

A weakness to the growth measure is that it relies heavily on the assumption that the market prices the share correctly according to its fundamental value. Often, a large part of the company-specific information necessary to price a company is not publicly available, causing

information asymmetry between the management and the market. This, and other factors such as liquidity, might lead the share price to be incorrect with regard to valuing growth opportunities. Previous research has used different approaches to measure a firm's growth opportunities. One example is the firm's sales growth, used by Lehn and Poulsen (1989). A difficulty with this variable is that it is calculated based on historical data, which is not necessarily a good proxy for future performance in a company. In addition, it is possible that sales growth proxies for the tendency of managers to spend free cash flow in value-reducing ways, for instance on low return projects, to expand the size of their company. If these low return projects reduce equity value but increase sales, this variable will appear to be measuring high growth opportunities of the company when it really is measuring the non-productive use of free cash flow. However, limiting our sample only to target companies with Tobin's Q below the median relies on the assumption that Tobin's Q truly captures growth opportunities and is not biasing our sample on other aspects. As the impact on our sample, and therefore assumingly our analysis, from this choice is substantial, the error from using a measure which biases our results could be critical. To make sure this is not the case, we report a robustness check where we perform our analyses substituting Tobin's Q for the target firm's three-year compounded annual growth rate (CAGR) of sales and limit our sample to the section below the sample median of ~0.036.

3.2.5 Control Variables

In this section, we discuss the control variables used in our regression models. The control variables are characteristics identified by previous literature as possible determinants of acquirer type in acquisitions and acquisition premium paid by private equity firms, which is correlated with the free cash flow measure. We include these variables in our regressions, to reduce potential omitted variable bias. Unless otherwise specified, all control variables are target characteristics. Calculations and definitions of the control variables are provided in appendix A.1.

In addition to limiting our sample to low growth companies only, **Tobin's Q** is included as a continuous control variable. As the two bidder groups have different strategies and desires for the growth of their targets, we believe Tobin's Q could be a determinant of bidder type, as well as a determinant of the private equity acquisition premium.

Total assets are measured as the natural logarithm of the book value of the target's total assets, and is included to account for the different purchasing behaviour of the bidder groups with regard to target size. We also expect target size to have an impact on the acquisition premium paid by private equity firms.

Tax payable, measured as the target's payable income tax to the target's net sales, is included as we expect the likelihood of being acquired by a private equity firm, rather than a strategic bidder, to increase with large target pre-buyout taxes. This is also likely to impact the acquisition premium paid by private equity firms.

Dividend is calculated as the total amount of dividends declared on all equity capital of the company divided by the company's net sales. Paying dividends to shareholders is an endogenous choice of the target company itself. We expect this variable to potentially be a determinant of bidder type and therefore include it as a control variable in our regression analyses.

For companies that are not financially constrained, their degree of leverage is endogenously decided by the company itself. As previously discussed, a company's degree of leverage is likely to have an impact on bidder type in an acquisition, as well as to have an effect on the takeover premium paid by a private equity firm. Hence, **leverage** is included as a control variable and calculated as the ratio of the target's book value of debt to the sum of the book value of debt plus the market value of equity. As previously stated, private equity firms tend to find targets with underutilised debt capacity appealing. The ideal measure to capture the effect of underutilised debt would be the difference between a firm's optimal leverage and actual leverage. However, as a firm's optimal amount of debt is difficult to calculate for our entire sample, amongst other things because we are not able to calculate their financial distress costs, we try to establish a proxy for this by using leverage and controlling for industry.

As private equity firms target poorly performing companies, we expect the likelihood of being acquired by a private equity firm rather than a public strategic company to increase when the target is performing poorly. We expect this effect to negatively bias our free cash flow estimates in both regressions. To reduce this bias, we control for **return on assets (ROA)** which is among the most commonly used measures for operating performance (Barber and Lyon, 1996).

As agency costs of free cash flow is more likely to flourish in loosely monitored firms and firms with weak corporate governance, we attempt to establish a proxy for the quality of governance of a company using analyst coverage. Hence, we include the control variable **analyst coverage** which is a dummy variable equal to one if the target is followed by at least one analyst prior to the acquisition and zero otherwise. According to Jensen and Meckling (1976), analysts can be seen as external monitors of management and hence, being followed by analysts forces the managers to act more in line with shareholders' interests. We therefore assume analyst coverage to be an indicator of how well governed a firm is. We originally desired to include managerial holdings in our analysis but are not able to obtain the needed data due to our limited access to databases and the time constraint of this thesis. However, we expect analyst coverage to have a similar impact as managerial holdings on agency costs of free cash flow. By controlling for analyst coverage, we are therefore able to look at variation in cash, conditional on having the same quality of governance. Thus, we also reduce the potential bias which might arise as a result of acceptable reasons for firms having excess free cash flow.

The value of the index **S&P 500** at the time of the acquisition is included in our models as we are concerned about drawing conclusions based on spurious correlations between our dependent and independent variables. Although the value of the S&P 500 index captures effects of time-trends, it does not control for potential changes over the time period which are not clearly visible in the index. An alternative to the S&P 500 could be to control for categorical variables for the **year of the transaction**. These categorical variables allow us to control for time fixed effects and will pick up variations in outcomes which change over time and are attributed to our explanatory variables. However, as economic change is not necessarily constrained to a specific year, and the variations within a given year might be substantial, grouping our transaction by year seems inaccurate. On the contrary, the S&P 500 takes the exact announcement date into account. Due to multicollinearity issues, we are not able to control for both variables at once. Hence, we report the model including year fixed effects as a robustness test, based on discussion above.

As the presence of competition for a target in an acquisition is an important determinant of the premium paid, we include the dummy variable **competition**. This variable takes the value one if a third party launched an offer for the target while the original bid was pending.

Further, we control for **industry fixed effects** in our variables by including a dummy variable for each of the eight groups of one-digit target SIC codes in our sample. This is necessary particularly because our measure of free cash flow relies on strong assumptions for the targets' investments. By controlling for industry, we limit the bias that might arise from the differences in necessity for investments across industries. In addition, it could be that strategic acquirers see a higher potential for synergies in certain industries and consequently favour targets in these industries. Admittedly, one-digit SIC code is not an optimal grouping for industry as it lacks specificity. However, our sample size limits us to such a general grouping to avoid dropping observations where the industry group would only include one transaction. It is also worth noting that it has been debated whether SIC codes are a good approach to categorisation of companies by industry as it does not seem to be able to group firms with similar economic characteristics together (Clarke, 1989).

3.3 Main Regression Models

The following section briefly explains the chosen methodology used in performing our regression analyses. We intend to test two aspects of the free cash flow hypothesis in relation to private equity acquisitions. Firstly, if it affects the acquirer type for a given target in an acquisition, and secondly, to measure the magnitude of the relationship by analysing acquisition premia of private equity firms. In addition, we elaborate on the matching procedure used to obtain a balanced sample for our first regression.

3.3.1 Acquirer Type Regression Model

In order to estimate whether a higher value of our measure of target's free cash flow increases the likelihood of the acquirer being a private equity firm relative to a public strategic company, we rely on a linear probability model. We use our sample of matched target firms to perform the regression analysis. The matching procedure is presented below. The linear probability model allows us to estimate the effect of various explanatory variables on a binary dependent variable and yields easily interpretable coefficients. It should be pointed out that the linear probability model does not ensure that the predicted probability that Y=1 only can take the values between zero and one for all values of x as in a logit model (Wooldridge, 2016). However, as a one-unit increase in our main variable of interest is not a reasonable change, the coefficients of a logit model expressed with odds ratios does not yield intuitively

interpretable results, and we therefore believe applying a linear probability model gives us a more desired output. Another alternative could have been to perform a logit regression and report the marginal effects, which yields results comparable to those of the linear probability model. We have performed this analysis to verify that the results are similar to the ones we obtain in our main regression model. Thus, we believe using a logit model transformed to marginal effects complicates our methodology without yielding improved results.

Hence, in line with our first hypothesis, we regress the binary outcome variable, private equity, on our measure of free cash flow, controlling for variables believed to affect the relation, where the regression equation is specified as:

$$\mathrm{P}(PE = 1|x) = \alpha + \beta_1 \frac{FCF}{TA} + \beta_2\, Tobin's\ Q + \beta_3 Total\ Assets + \beta_4 \frac{Tax}{Sales} + \beta_5 \frac{Dividend}{Sales} + \beta_6\, Leverage + \beta_7\, ROA + \beta_8\, Analyst\ Coverage + \beta_9\, SP500 + \sum_{i=1}^{n} \partial_i\, SICcode + u$$

Where α is the intercept and $\frac{FCF}{TA}$ is our independent variable proxying for the target's withheld excess free cash flow. *Tobin's Q, Total Assets,* $\frac{Tax}{Sales}$, $\frac{Dividend}{Sles}$, *Leverage* and *ROA* are continuous control variables defined in appendix A.1. *Analyst Coverage* is a dummy variable which takes the value one if the target company was followed by at least one analyst prior to the acquisition, and zero otherwise. *SP500* is the value of the index at the date of the transaction. *SICcode* is a categorical variable representing the one-digit target SIC code. *u* captures the undefined effects influencing whether the acquirer is a private equity firm or a strategic bidder.

If our first hypothesis holds, we expect the coefficient of our variable $\frac{FCF}{TA}$ to be positive, indicating that, *ceteris paribus,* the likelihood of a firm getting acquired by a private equity company, rather than a public strategic company, is larger if the target's $\frac{FCF}{TA}$ is larger.

Identification Strategy: Matching Procedure

As our sample of targets acquired by private equity firms could be different than the sample of targets acquired by public strategic companies, we are concerned about introducing selection bias when comparing the two target groups in our first regression. That is, differences among the two groups could determine the outcome variable. To overcome this potential issue, we apply a matching methodology where we match each target acquired by a private equity firm to a similar target acquired by a public strategic bidder to obtain a sample of comparable pairs. We want the probability of a company being acquired by a private equity firm or a public strategic bidder, prior to introducing the free cash flow measure, to be as equal as possible.

The rationale behind the matching methodology is that the observed effect of our free cash flow measure, in our bidder type regression, is more likely to reflect the causal effect rather than the selection bias in a sample of comparable pairs.

Although several types of matching could be used, we have chosen to use nearest neighbour matching due to our limited sample size. We match our sample of 63 targets acquired by private equity firms with a list of 210 targets acquired by public strategic bidders based on target industry and market value of equity in addition to the transaction year. The resulting dataset consists of 60 targets acquired by private equity firms matched with the same number of targets acquired by public strategic bidders. A detailed elaboration on the matching procedure can be found in appendix A.4.

As our sample size limits us from matching on all desirable aspects that could differ between the groups, we have attempted to match the targets based on variables which captures differences among them on multiple aspects. Unfortunately, there is a trade-off between matching on a high number of variables, which would give us more precise matches, and the number of targets matched. Except for certain modifications (see appendix A.4), our matching procedure is comparable to that used by Fidrmuc et al. (2012).

We have prioritised matching on target industry as we expect it to be among the factors that determine most of the characteristics related both to the acquisition and the financial information of the target company. As the industry distribution between the two bidder groups is not similarly distributed (see appendix A.2), matching on industry reduces the potential omitted variable bias introduced by industry effects, such as investment requirements and potential synergies. Boone and Mulherin (2008), referred to in Fidrmuc et al. (2012), illustrate the importance of matching on these criteria by reporting that more than half of the private equity takeovers occur in only four industries. Further, we use the target's size as a matching criterion as we believe it to be linked to relevant target and transaction characteristics. Matching on size is also important because public strategic bidders typically buy larger targets (Bargeron et al., 2008). Fidrmuc et al (2012) control for size by matching on transaction value. However, as the transaction value includes the acquisition premium paid, it might reflect the bidder's subjective valuation, and not only the size of the target prior to the acquisition. The acquisition premium paid differs between the two bidder groups both in our sample and in those of previous literature (Bargeron et al., 2008). Hence, it is reasonable to believe that the two bidder groups have different degrees of willingness to pay, not necessarily driven by the

target's size but rather the potential value creation they believe they can obtain by acquiring the target. In addition, there is a timing issue with attempting to describe a probability ex ante with a value measured ex post. As a result of this, we assume the market value of equity to be a better measure of size for the purpose of matching. Lastly, we match the targets based on the timing of the transaction as there might be market tendencies and macroeconomic factors which vary over time and affect both target characteristics and the behaviour of the different bidder groups.

As the nearest neighbour matching does not match our targets perfectly on all chosen aspects, we still control for size and industry- and time- effects in our regression.

A concern regarding matching is that we face the risk of matching two fundamentally different targets based on similarities in the target characteristics used for matching. If this is the case, we might obtain a sample where the targets seem similar but have different probabilities of being acquired by each bidder type, which might lead to biased results. We therefore report the acquirer type regression on our sample prior to performing the matching as a robustness test, in order to verify that our results are not driven by matching of incomparable transactions.

3.3.2 Acquisition Premium Regression Model

In order to test whether a higher value of the same measure of target's free cash flow is associated with a higher acquisition premium, we use an Ordinary Least Squares (OLS) model. We believe the OLS model is the most suitable model given our continuous independent variable and either continuous or binary dependent variables.

Further, our dependent variable, the acquisition premium, relies on the assumption of a competitive market in order to function as a proxy for the private equity firm's excess willingness to pay above the market. Hence, the ideal way to test the intended relations would be to study only challenged deals. However, as we will present in the summary statistics, only four of the deals in our sample of private equity transactions were challenged deals. Due to the low amount of deals with competition in our sample, limiting our study to these transactions is clearly unfeasible.

Thus, in line with our second hypothesis, we regress the dependent variable, acquisition premium, on our measure of free cash flow, controlling for variables believed to affect the relationship. We specify the regression equation as:

$$Premium = \alpha + \beta_1 \frac{FCF}{TA} + \beta_2 Tobin's\ Q + \beta_3 Total\ Assets + \beta_4 \frac{Tax}{Sales} + \beta_5 \frac{Dividend}{Sales} + \beta_6 Leverage + \beta_7 ROA + \beta_8 Analyst\ Coverage + \beta_9 SP500 + \beta_{10} Competition + \sum_{i=1}^{n} \partial_i SICcode + u$$

Where α is the intercept and $\frac{FCF}{TA}$ is our independent variable proxying for the target's withheld excess free cash flow. *Tobin's Q, Total Assets,* $\frac{Tax}{Sales}$, $\frac{Dividend}{Sales}$, *Leverage* and *ROA* are continuous control variables defined in appendix A.1. *Analyst Coverage* is a dummy variable which takes the value one if the target company was followed by at least one analyst prior to the acquisition, and zero otherwise. *SP500* is the value of the index at the date of the transaction. *Competition* is a dummy variable equal to one if a third party launched an offer for the target while the original bid was pending. *SICcode* is a categorical variable representing the one-digit target SIC code. *u* captures changes in the acquisition premium that remains unexplained by the independent variables.

If our second hypothesis holds, we expect the coefficient of our variable $\frac{FCF}{TA}$ to be positive, indicating that, *ceteris paribus,* the acquisition premium will be larger for targets with high values of $\frac{FCF}{TA}$.

4. Results

In this chapter we present and interpret the empirical results of our analyses. We begin by presenting summary statistics for both the unmatched and the matched sample. Further, simple OLS-regression assumptions are discussed. Thereafter, we present the results of our regression analyses and interpret what the results imply for the corresponding hypothesis. Lastly, the results of our robustness tests and their implications are presented.

4.1 Summary Statistics

In this section we describe the characteristics and variables of our final sample of low growth companies. Table 4.1 sets out mean values and standard deviations of transaction- and target pre-buyout- characteristics, as well as differences in mean values for the reported characteristics across the two bidder groups. For our first hypothesis, we are interested in characteristics of targets acquired by both bidder groups, as well as differences among them. For the second hypothesis, we are particularly interested in the characteristics of targets acquired by private equity firms.

As table 4.1 reveals, we find that private equity firms, when compared to public strategic bidders, acquire targets with statistically significantly larger free cash flows ($\frac{FCF}{TA}$), Tobin's Q, dividends and tax. Except for the larger Tobin's Q, these results are similar to the findings of previous literature (Bargeron et al., 2008; Fidrmuc et al., 2012).

Another interesting observation presented in table 4.1 is the limited degree of competition in our sample. We observe that approximately 6% of the private equity deals in our sample, amounting to 4 transactions, were challenged deals. The degree of competition is even lower for our sample of public strategic bidders. We interpret this as the competition in our sample being limited. It could be noted there can be other measures that better captures competition, for instance rumours and other measures based on private information. We have searched our databases for other measures of competition but are not able to identify any which indicates more competition in our dataset.

As our sample consist of only low growth firms, it is not directly comparable to the samples of the previously mentioned literature. To verify whether our sample is similar to those used in previous literature when it is not limited to low growth firms, we additionally report

summary statistics for our entire sample of low- and high- growth firms (see appendix A.7). In contrast to the findings reported in table 4.1, we find that targets of private equity firms have significantly lower Tobin's Q when compared to targets of public strategic bidders. In addition, and in contrast to what we observe in table 4.1, we also see that the acquisition premium difference between the two bidder groups is statistically significant on the 1% level. Although the difference is based on mean values and does not take control variables into account, this is consistent with the findings of Bargeron et al. (2008), who show that public target shareholders receive a higher premium when the acquirer is a public company rather than a private equity firm.

Table 4.1
Summary statistics table for our final sample of low growth target firms: Target and transaction characteristics. We report mean values and standard deviations as well as differences in means for all characteristics across the two bidder groups. The date of financials from SDC is used as the primary date to collect financial information from the other databases. The specification of all variables can be found in appendix A.1.

	Private Equity Buyer					Public Strategic Buyer					Public strategic - PE	
	Mean	St.dev	Min	Max	N	Mean	St.dev	Min	Max	N	Diff.	p-value
FCF/TA	0.057	0.067	-0.138	0.220	65	0.035	0.079	-0.138	0.391	241	-0.022**	0.042
FCF/MVE	0.137	0.240	-0.451	0.660	65	0.049	0.234	-0.606	0.431	241	-0.088***	0.008
FCF/Sales	0.065	0.086	-0.143	0.219	64	0.049	0.135	-0.282	0.322	235	-0.016	0.373
OCF/TA	0.062	0.088	-0.207	0.279	68	0.035	0.130	-0.747	0.533	274	-0.028*	0.098
Tobin's Q	0.812	0.255	0.207	1.163	68	0.727	0.302	0.044	1.180	275	-0.085**	0.034
Sales CAGR (%)	3.28	18.23	-25.40	115.5	63	1.23	18.16	-190.0	117.6	265	-2.05	0.422
Dividends/ Sales	0.009	0.019	0.000	0.070	66	0.017	0.039	-0.001	0.150	265	0.008*	0.093
Ln Total Assets	6.26	1.43	2.89	9.72	68	6.06	1.73	2.34	10.27	275	-0.205	0.368
Tax/ Sales	0.004	0.006	0.000	0.020	65	0.002	0.005	0.000	0.018	245	-0.001*	0.096
Leverage	0.381	0.308	0.000	0.988	68	0.318	0.280	0.000	0.975	275	-0.063	0.104
ROA	-0.063	0.183	-0.840	0.162	67	-0.045	0.166	-0.976	0.594	269	0.018	0.437
Premium (%)	45.44	62.74	-3.74	263.6	68	50.86	36.59	1.92	136.1	275	5.43	0.352
Analyst Coverage	0.706	0.459	0.000	1.000	68	0.658	0.475	0.000	1.000	275	-0.048	0.456
Competition	0.059	0.237	0.000	1.000	68	0.051	0.220	0.000	1.000	275	-0.008	0.794

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significant at the 0.10 level

4.1.1 Sample Characteristics of Matched Sample

As our acquirer type regression model relies on the matched sample, this section briefly describes the characteristics and variables of our matched dataset of low growth firms. Table 4.2 reports mean values and standard deviations of transaction- and target pre-buyout-

characteristics, as well as differences in means for the reported characteristics across the two bidder groups of our matched sample.

The purpose of our matching process is to obtain a balanced sample of comparable targets across the two bidder groups on all other aspects than our free cash flow measure. As reflected in table 4.2, after performing our matching procedure, the only variable used in our main model which is statistically significant between the two groups of bidders is our free cash flow measure ($\frac{FCF}{TA}$). The difference is statistically significant on the 1% level. These results indicate that the variables used for matching were able to capture differences between targets of the two bidder groups on multiple aspects, without reducing the variation in our free cash flow measure. We interpret these results as indications of a successful matching procedure and believe the dataset of matched target firms lets us capture the effects we are interested in with greater certainty.

Table 4.2

Summary statistics table for our matched sample of low growth target firms: Target and transaction characteristics. We report mean values and standard deviations as well as differences in means for all characteristics across the two bidder groups. The date of financials from SDC is used as the primary date to collect financial information from the other databases. The specification of all variables can be found in appendix A.1.

	Private Equity Buyer					Public Strategic Buyer					Public strategic - PE	
	Mean	St.dev	Min	Max	N	Mean	St.dev	Min	Max	N	Diff.	p-value
FCF/TA	0.060	0.064	-0.173	0.220	60	0.023	0.085	-0.173	0.150	60	-0.038***	0.007
FCF/MVE	0.164	0.211	-0.244	0.695	60	0.008	0.335	-0.893	0.502	60	-0.156***	0.003
FCF/Sales	0.077	0.076	-0.077	0.239	60	0.011	0.194	-0.589	0.247	60	-0.067**	0.015
OCF/TA	0.073	0.079	-0.168	0.279	60	0.035	0.158	-0.747	0.432	60	-0.038*	0.096
Tobin's Q	0.821	0.256	0.207	1.163	60	0.748	0.289	0.156	1.165	60	-0.074	0.140
Sales CAGR (%)	1.10	11.63	-25.40	44.96	57	-0.856	11.57	-34.85	20.77	59	-1.96	0.365
Dividends/ Sales	0.009	0.021	0.000	0.079	60	0.008	0.020	0.000	0.074	60	-0.001	0.755
Ln Total Assets	6.39	1.25	4.25	9.72	60	6.28	1.52	3.33	8.90	60	-0.107	0.673
Tax/ Sales	0.004	0.007	0.000	0.029	60	0.005	0.012	0.000	0.050	60	0.001	0.675
Leverage	0.377	0.306	0.000	0.988	60	0.307	0.276	0.000	0.957	60	-0.069	0.197
ROA	-0.060	0.187	-0.840	0.162	60	-0.058	0.183	-0.976	0.170	60	0.002	0.952
Premium (%)	40.77	50.68	1.60	220.8	60	44.83	29.19	3.75	110.7	60	4.06	0.592
Analyst Coverage	0.733	0.446	0.000	1.000	60	0.750	0.437	0.000	1.000	60	0.017	0.836
Competition	0.067	0.252	0.000	1.000	60	0.083	0.279	0.000	1.000	60	0.017	0.732

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significant at the 0.10 level

4.2 Regression Diagnostics

In order to perform statistical inference for linear regressions, assumptions on normality for the residuals have to be made. However, if the sample size is large enough, the central limit theorem implies that the distribution of the residuals follows a normal distribution (Wooldridge, 2012). We thus assume normality of our residuals as we consider our sample size to satisfy this requirement. Another assumption made by linear regression is that the residuals have constant variance. We reject the null hypothesis of homoskedasticity in our models, and hence use robust standard errors when conducting our regressions in order to mitigate the issue of heteroskedasticity.

Appendix A.5 and A.6 report pairwise correlation matrixes for all dependent-, independent- and control- variables used in our study. We observe a moderate correlation between our independent variable and certain of the control variables used in our regressions. If the degree of correlation between the variables is large enough, it can cause issues with the interpretation of the results. Consequently, we use the Variance Inflation Factor (VIF) to identify the potential severity of multicollinearity in our regressions. The VIF checks whether a specific variable can be explained by linear combinations of the other independent variables. A more detailed explanation of the intuition behind the VIF is provided in appendix A.8. As reported in appendix A.8, the low Variance Inflation Factors in both our regressions indicate that our analyses do not suffer from multicollinearity issues.

4.3 Regression Results

This section presents and discusses our empirical results. We begin by providing a brief discussion of the regression specifications. Thereafter the results of each regression-analysis and the corresponding hypothesis is discussed.

4.3.1 Discussion of Regressions Analyses

As we do not expect the effect of a one dollar increase in a target's FCF to have the same impact on its agency costs of free cash flow regardless of firm size, we have scaled our measure of free cash flow by the target's total assets. Thus, our main variable of interest in all regressions is $\frac{FCF}{TA}$. As the median of $\frac{FCF}{TA}$ in both of the samples used to test hypothesis one and two is ~0.06 with standard deviations of ~0.08, we do not find it reasonable to discuss a one

unit change in $\frac{FCF}{TA}$, but rather continue our discussion referring to a 0.01 unit change in the measure $\frac{FCF}{TA}$.

The variable Tobin's Q is originally an additional variable of interest in the study of agency costs of free cash flow. Contradictory to previous literature, we limit our sample to the segment with Tobin's Q below the sample median. Although the straightforward interpretation of Jensen's theory about the relationship is that the lower the Tobin's Q of a company, the more prone it is to agency costs of free cash flow, and hence the possible value creation by private equity firms should be higher, we are not confident that this is the case. It might be that the relationship between Tobin's Q and agency costs of free cash flow is not linear, for instance if companies with the lowest Tobin's Q are more closely monitored as they are closer to financial distress. If this is the case, the relationship will not necessarily follow the suggested pattern. As we are not in the position to analogously draw Jensen's (1986) statement to this part of our sample, we will not proceed to comment on the coefficients of Tobin's Q in our regressions.

When reporting the results, we introduce the control variables sequentially. The motivation behind this approach is that it enables us to observe whether the coefficient of interest remain relatively stable when controls are added. A substantial change in the coefficient indicates that a more careful interpretation is required.

4.3.2 Acquirer Type Regression Results

The results from the regression analysis used to test our first hypothesis, with bidder type as dependent variable, is presented in table 4.3. To obtain our results, we have used our sample of matched firms. As a robustness test, a similar regression is performed on the non-matched sample of target firms, reported in appendix A.11 and discussed in section 4.4.1.

The first column (1) of table 4.3 presents our regression model in its simplest form, only including our main variable $\frac{FCF}{TA}$, our growth measure Tobin's Q and industry fixed effects. Further, in column (2), we introduce the group of control variables that might be correlated with our main variable. In column (3) we present our main model specification which also includes our control variables for analyst coverage and the value of the S&P 500 index.

Table 4.3:

Acquirer type regression results. The dependent variable is a dummy variable equal to one if the acquirer is a private equity firm and zero if the acquirer is a public strategic firm. The independent variable (FCF/TA) is calculated as our measure of free cash flow divided by the target's book value of total assets. The remaining variables are control variables, and their specification can be found in appendix A.1.

Variables	(1) PE	(2) PE	(3) PE
FCF/TA	1.545***	2.136***	2.174***
	(0.560)	(0.643)	(0.668)
Tobin's Q	0.109	0.204	0.216
	(0.183)	(0.189)	(0.188)
Ln Total Assets		-0.0209	-0.0194
		(0.0419)	(0.0464)
Tax/Sales		2.850	2.890
		(5.835)	(5.823)
Dividend/Sales		2.529	2.532
		(2.906)	(2.970)
Leverage		0.283	0.271
		(0.191)	(0.195)
ROA		-0.463**	-0.477**
		(0.232)	(0.231)
Analyst Coverage			-0.0567
			(0.113)
SP500 (/1000)			0.040
			(0.096)
Constant	0.275	0.126	0.0895
	(0.388)	(0.430)	(0.420)
Industry FE	Yes	Yes	Yes
Observations	120	120	120
R-squared	0.066	0.114	0.117

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

From table 4.3, we can see that, in our main regression specification (3), an increase in the variable $\frac{FCF}{TA}$ of 0.01 units[5] is associated with a 2.17 percentage points higher probability of a target getting acquired by a private equity firm rather than a public strategic company, holding all other factors constant. The free cash flow coefficient is positive and statistically significant on the 1% level for all specifications of the regression model, indicating evidence supporting our first hypothesis.

[5] According to our model, the likelihood of getting acquired by a PE firm rather than a public strategic bidder is 2.174 times higher for a firm with a one-unit higher ratio of $\frac{FCF}{TA}$. As previously discussed, we refer to a 0.01 unit increase in our main variable to make our discussion more intuitive, i.e., an increase in the variable $\frac{FCF}{TA}$ of 0.01 units is associated with a 0.0217 higher likelihood of getting acquired a private equity firm.

By introducing the regression in such a sequential manner, we observe that the coefficient of our variable of interest, $\frac{FCF}{TA}$ increases slightly from specification (1) to (2) and remains stable in the two last columns. This indicates that the control variables do not impact our main variable decisively. If it is the case that the change from specification (1) to (2) is not due to the control variables reducing the bias in specification (1), but that it rather is a result of correlation between our explanatory variables, this change could be an issue. However, as the VIF does not indicate multicollinearity issues, and the coefficient is positive and highly significant also without the control variables, we are less concerned about wrongfully rejecting the null hypothesis, but limit our potential error to interpreting the effect of the coefficient as being more important than it is. By analysing the changing coefficient of $\frac{FCF}{TA}$ further (not reported), we observe that the increase is primarily a consequence of adding ROA to the regression model. This could be an indicator that we are able to control for the contradictory effect that private equity firms also target poorly performing targets. Hence, we interpret the significant negative coefficient of ROA to be a natural result of our intentions. Thus, we view the results to be an indicator of successfully reducing the omitted variable bias and hence increasing the reliability of our main variable.

Based on this analysis, we believe our results provide evidence in favour of the hypothesis that targets prone to agency problems of free cash flow has a higher probability of being acquired by private equity firms. These results can be viewed as consistent with the relations proposed by Jensen (1989) and indicate that the free cash flow hypothesis has impacted private equity acquisitions over the recent time period.

Contrary to the findings of Halpern et al. (1999), we find evidence in favour of our first hypothesis. We believe an explanation for the contradiction could be the fact that we limit our sample to low growth firms only, while the mentioned study does not impose such a limitation on their sample. As previously discussed, Jensen (1986) distinguishes between low and high growth firms, and the free cash flow hypothesis describes only low growth firms with high free cash flow. If the relationships proposed by Jensen (1986) do not hold for high growth firms, the insignificant results of Halpern et al. (1999) could be a consequence of the high growth firms disturb the relations we observe for our low growth firm sample. Although it is not reported, as we do not believe we have reason to draw any conclusions on the high growth section of our sample, we have performed our first regression analysis on our entire sample, prior to limiting it to low growth firms. On this sample, we observe that the relation found in

our main analysis is weaker. This indicates the importance of constraining our sample in order to obtain reliable results for the studied relation.

An additional possible explanation for our contradicting findings compared to the previous literature could be that our analysis compares targets acquired by private equity firms to targets acquired public strategic bidders, while Halpern et al. (1999) compare private equity targets to targets acquired by a non-private equity firm. If their group of non-private equity acquirers can implement the same solution as private equity firms to a greater extent than our group of public strategic bidders, their free cash flow coefficient might not be able to capture the intended effect and hence be insignificant. Although the studies conducted by Lehn and Poulsen (1989) and Opler and Titman (1993) are not performed on directly comparable samples, we believe it is interesting to observe that the relationships found in their studies of LBO targets compared to firms that are not being acquired yields similar results as our study.

4.3.3 Acquisition Premium Regression Results

The regression results from the second regression with acquisition premium as the dependent variable is presented in table 4.4. To obtain our results, we have used our sample of transactions where the acquirer is a private equity firm only.

As with our first regression, we introduce the model sequentially in order to be able to interpret the coefficient with higher certainty. We begin by presenting the model in its simplest form, only including our main variable of interest $\frac{FCF}{TA}$, our growth measure Tobin's Q and industry fixed effects in column (1). We subsequently add the control variables that might be correlated with our main explanatory variable in column (2). In column (3) we achieve our main model specification when we add the control variables analyst coverage, competition and the value of the S&P 500 index.

Table 4.4:

Acquisition premium regression results. The dependent variable is the acquisition premium, calculated as the difference between the offer price and the target closing stock price four weeks before the announcement of the acquisition, expressed as a percentage. The independent variable (FCF/TA) is calculated as our measure of free cash flow divided by the target's book value of total assets. The remaining variables are control variables, and their specification can be found in appendix A.1.

Variables	(1) Premium	(2) Premium	(3) Premium
FCF/TA	134.1**	154.4***	142.0***
	(54.10)	(54.75)	(52.58)
Tobin's Q	-53.12**	-18.59	-3.641
	(25.28)	(18.67)	(17.41)
Ln Total Assets		-13.45***	-11.73**
		(4.437)	(4.664)
Tax/Sales		126.3	207.3
		(825.4)	(706.9)
Dividend/Sales		227.9	293.6
		(208.9)	(213.5)
Leverage		58.54**	51.94**
		(22.27)	(19.77)
ROA		-106.7***	-89.33***
		(30.26)	(30.73)
Analyst Coverage			-4.121
			(8.840)
SP500			0.00571
			(0.00744)
Competition			58.54**
			(25.29)
Constant	81.64***	59.02**	37.38
	(28.44)	(27.63)	(22.26)
Industry FE	Yes	Yes	Yes
Observations	65	63	63
R-squared	0.124	0.543	0.625

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

From table 4.4, we can see that, in our main regression specification (3), an increase in the variable $\frac{FCF}{TA}$ of 0.01 units is associated with a 1.42 percentage points, i.e.142 basis points, higher acquisition premium (which is measured as a percentage of the stock price before announcement)[6]. This coefficient of our main variable is statistically significant at the 1%

[6] According to our model, a one-unit increase $\frac{FCF}{TA}$ is associated with a 142 percentage points higher acquisition premium. As previously discussed, we refer to a 0.01 unit increase in our main variable to make our discussion more intuitive, i.e., an increase in the variable $\frac{FCF}{TA}$ of 0.01 units is associated with a 1.42 percentage points higher acquisition premium.

level, indicating support for our second hypothesis. To place this in economic perspective, the median acquisition premium for the private equity sample with low growth (the sample used for this regression) is 26.35% with a standard deviation of 42.64 percentage points.

Through the sequential introduction of the control variables, we observe that the coefficient of our main variable is significant and relatively stable in all three columns, indicating a reasonably reliable effect and magnitude. The change from column (1) to (2) is, as in our other regression, mainly a consequence of introducing ROA to the regression model. The same discussion presented in section 4.3.2 is relevant in this section. As in our previous analysis, we interpret the significant negative coefficient as a sign that we have succeeded in our intentions to control for the contradictory effect that private equity firms target poorly performing targets. These results indicate that we have obtained a reliable coefficient of interest.

The R-squared increases considerably from (1) to (2) when adding the control variables, indicating that they explain a considerable amount of the variation in the acquisition premium. In our primary model specification (3), the R-squared is 0.63, indicating that the model fit our data set well.

From this analysis it seems reasonable to conclude that our second hypothesis is likely to hold, specifically that private equity firms pay a higher acquisition premium for targets prone to agency costs of free cash flow. We view these results to be in line with the relationships proposed by Jensen (1989). In addition, the findings indicate a relevancy of the free cash flow hypothesis.

The results from our analysis are in line with the ones of Lehn and Poulsen (1989). However, our findings are contrary to those of Halpern et al. (1999) when analysing the acquisition premium paid by private equity firms in relation to the free cash flow hypothesis. Similarly to the discussion presented earlier, these contradictory findings could be a result of limiting our sample to low growth firms. We have therefore performed our second regression analysis on our entire sample of private equity acquisitions, prior to limiting it to low growth firms (not reported). On this sample, we do, in line with Halpern et al. (1999), not find support for our hypothesis.

4.4 Robustness Checks

The following section contains a presentation of the robustness checks which demonstrates the sensitivity of our regression models. The regression tables are reported in appendix A.9 through A.13. Unless otherwise specified, all robustness checks are performed on our main regression specifications, presented in column (3) of table 4.3 and 4.4.

4.4.1 Robustness of Acquirer Type Regression Model

Alternatives to our Main Variable of Interest

We test the robustness of the acquirer type regression results to alternative scaling factors for our free cash flow measure and report the outcomes in column (1) and (2) of table A.9. Column (1) shows a positive coefficient of interest, significant at the 1% level, when the target's market value of equity is used as scaling factor. The magnitude of the coefficient is lower than the one reported in our main model. As a potential consequence of limiting our sample to low growth firms only, the median of $\frac{FCF}{MVE}$ is approximately twice the size of the median of $\frac{FCF}{TA}$, meaning the target's market value of equity on average is smaller than the corresponding total assets. This could be an explanation for why a one unit increase in $\frac{FCF}{MVE}$ has a smaller impact on the dependent variable when compared to a one unit increase in $\frac{FCF}{TA}$. Further, column (2) provides the results of our acquirer type regressions when scaling our free cash flow measure by the target's net sales. The results reveal a positive coefficient of interest, significant at the 1% level. These findings indicate that our initially reported results are not sensitive to the choice of scaling factor for our free cash flow measure.

Column (3) of the same table shows the results of our acquirer type regression when we, in line with Lang et al. (1991), include the target's reported operating cash flow as an alternative to our measure of free cash flow. As reported, the coefficient of the operating cash flow variable is positive and significant at the 10% level. We therefore interpret the results as indications supporting our hypothesis and primary findings. Naturally, as the two cash flow measures are not calculated identically and include different accounting items, the magnitude of the coefficients are not directly comparable. In addition, as previously discussed, the operating cash flow is not directly comparable to our measure of free cash flow as it does not account for distributions to stakeholders.

Alternative Measure of Time Varying Fixed Effects

We observe that our initial results seem robust also when including year fixed effects as an alternative to the S&P 500 index, reported in column (4) of table A.9. The coefficient of the variable of interest is significant at the 1% level and enters with a positive sign. The fact that we do not observe significant changes in any of the coefficients in the regression when introducing the year fixed effects indicates that our initial results are not sensitive to controlling for time varying effects.

Alternative Proxy for Growth Opportunities

To ensure our analysis is not biased by the weaknesses of our measure of growth opportunities, Tobin's Q, we report the results of our acquirer type regressions preformed on a sample limited to target firms with three-year CAGR of sales as a substitute for Tobin's Q in table A.10. We report all regression specifications from section 4.3.2 in addition to the specification including year fixed effects discussed above. As a substantial amount of the target firms are not the same as in our main sample, the matching procedure is repeated in order to ensure that the results are reliable. This leaves us with a new balanced sample consisting of 112 transactions, 56 pairs of target firms. Based on the results, it appears that the relationships in hypothesis one is supported as well, when using the three-year CAGR of sales as our proxy for growth opportunities. Although the coefficients of our main variable of interest $\frac{FCF}{TA}$ are lower than in our main regression model, it still enters with a positive and significant coefficient in all regression specifications. Furthermore, as our regressions are performed on a relatively small number of observations and a substantial part of this sample consists of target firms not included in our main analysis, we are not surprised to see unidentical coefficients. Instead we interpret the results as an indication that our model is robust also for a different sample set of observations. We also view the substantial change in targets included in our analysis as an indicator of a substantial sensitivity to the chosen proxy for future growth opportunities, and thereby the importance of this robustness check.

Regression Performed on Unmatched Sample

In order to test whether the findings reported is a result of our matching procedure, we report the same analysis on the unmatched sample in table A.11. The results of these tests indicate the same relationships as in our main regression model. The coefficient on our main variable is positive and significant at the 5% level. Further, both the sign and the significance of the

control variables are similar to those reported in the results section. This provides evidence that our initial results are not drawn based on matching of incomparable transactions.

To summarise, the robustness tests performed on our acquirer type regression indicate that the results initially found are reliable and that the conclusions drawn are likely to hold. The robustness tests hence support that targets prone to agency costs of free cash flow have a higher likelihood of being acquired by a private equity firm rather than a public strategic bidder.

4.4.2 Robustness of Acquisition Premium Regression Model

Alternatives to our Main Variable of Interest

As with our first hypothesis, we test the robustness of the acquisition premium regression results to alternative scaling factors for our free cash flow measure and report the outcomes in column (1) and (2) of table A.12. Column (1) shows a positive coefficient of interest, significant at the 1% level, when scaling our free cash flow measure by the target's market value of equity. Similar to the robustness checks reported in section 4.4.1, the coefficient of interest is lower than the one reported in our initial results. As previously discussed, this could be a natural result of the different sizes of the scaling factor. Colum (2) reports a positive, but insignificant coefficient when the target's net sales is used as scaling factors. Although both coefficients are positive, the insignificant coefficient of $\frac{FCF}{Sales}$ indicates that we might not be able to interpret the findings of our main analysis with certainty.

Column (3) of the same table shows the results of our acquirer type regression when including the target's reported operating cash flow as an alternative to our measure of free cash flow. As reported, the coefficient of the operating cash flow variable is positive, but insignificant, indicating that our results might not be supported. However, we again want to underline that this measure does not account for distributions to stakeholders.

Alternative Measure of Time Varying Fixed Effects

When controlling for year fixed effects in column (4), the magnitude of the coefficient decreases relative to the main model specification, and the p-value is only 0.16. As this is not the case when controlling for time trends (not reported, but which yields results similar to the main model in column (3) table 4.4), it appears that our variable of interest, $\frac{FCF}{TA}$, in our main regression model captures effects related to changes in our dependent variable which are not captured by the S&P 500 index. Examples of such effects could be trends, political changes

and legislation changes which affect the private equity market differently than the rest of the market. On the other side, as mentioned in the variables section, it is not certain that grouping our transactions by year is the optimal categorising to control for time varying effects, as economic changes is not likely to be limited to a given year. In addition, adding time fixed effects to our regression model reduces the number of degrees of freedom further. As our dataset is already relatively small, the reduction in degrees of freedom makes it difficult to obtain reliable results and could be an explanation for the decrease in significance of our main coefficient.

Alternative Proxy for Growth Opportunities

To test the robustness of our analysis to the sample limitation based on Tobin's Q, we show the results of our acquisition premium regressions preformed on a sample limited to target firms with three-year CAGR of sales as a substitute for Tobin's Q in table A.13. We report all regression specifications from section 4.3.3 in addition to the specification including year fixed effects discussed above. The results from table A.13 indicate that the relationships discussed in hypothesis two are also supported when using the three-year CAGR of sales as our proxy for growth opportunities. Surprisingly, and contrary to our initial findings, we observe that the relationships are still supported when controlling for time fixed effects. Although the coefficients are smaller than in our initial main regression model, the main variable of interest enters with a positive and significant coefficient in our main regression specification. Furthermore, as our regressions are performed on a relatively small number of observations and a substantial part of this sample consists of transactions not included in our main analysis, we are not surprised to see unidentical coefficients. The change of proxy does not either seem to change the sign or significance of our control variables substantially. We believe this analysis provides evidence in line with the relationships discussed in section 4.3.3.

Alternative Robustness Check

An additional interesting robustness check could have been to control for firm-specific fixed effects related to the acquiring firm. As some private equity firms in our sample undertake several acquisitions over the time period under review, it might be that our results reflect their particular behaviour and preferences. However, there are only seven acquiring private equity firms which repeatedly complete transactions in our sample, and hence it would be necessary to control for 53 different private equity firms. Thus, including firm fixed effects in addition to all our control variables is not feasible as the number of control variables exceeds the

number of observations. We did attempt to carry out the analysis excluding industry fixed effects, but as this analysis is calculated with only one degree of freedom, we do not consider it reliable enough to report. It could however be mentioned that it did yield a positive insignificant coefficient for our variable of interest.

In summary, the relationships between the acquisition premium and the free cash flow hypothesis initially found, are not unambiguous in our robustness checks. These findings suggest that we cannot be certain that private equity companies pay a higher acquisition premium for targets prone to agency problems of free cash flow. Hence, we cannot conclude that they have a higher willingness to pay for these targets than the rest of the market.

4.5 Further Discussion

This section contains a further discussion of the inconsistent findings of our analyses and possible reasons for the outcomes.

As set out in the previous section, our acquirer type analysis seems to be robust to the additional tests, whilst the findings of our acquisition premium analysis are not unambiguous. As we did find support for the hypothesis that private equity firms target companies prone to agency costs of free cash flow, we assume that private equity firms believe they are able to create value by acquiring these targets. However, it does not seem like our additional analyses for the acquisition premium regression manages to capture this.

A likely explanation for this is that the competition in the private equity market is not strong enough to push the deal value up to the acquirer's maximum willingness to pay, and thus the premium we observe is not the acquirer's calculated value creation. This weakness is already discussed in our theoretical framework (see section 2.6) and is supported by the observation that only four of the 68 transactions in our sample where the acquirer was a private equity firm were challenged by a competing bid while the winning bid was pending. Based on this, it would perhaps be more interesting to conduct the same analysis on a sample of challenged deals only. Unfortunately, as we have a limited amount of challenged deals in our sample, we have not been able to perform this analysis. Although we will not report it as we do not view results based on four observations to be reliable enough for our thesis, we did attempt to perform our analysis also including an interaction term between our variable of interest and

our competition variable. The results were in line with our expectations, that the free cash flow has a much larger impact on the premium for challenged deals.

Related to this discussion it could be that as private equity firms often attempt to buy undervalued targets (Gorbenko and Malenko, 2014) they might be less interested in acquiring targets where they have competition in the acquisition process, as this naturally increases the price. If the rest of the market is not able to match the private equity firms' ability and desire to restructure targets prone to agency costs of free cash flow, it might be that these targets are in fact under-priced relative to the valuation of private equity firms. Consequently, our results that these targets have a higher probability of being acquired by private equity firms, but that they do not necessarily pay more for them, could indicate that, in the market for targets prone to agency problems, private equity firms are still able to exploit the opportunity of acquiring under-valued targets.

An additional possible explanation for why this expected value creation is not reflected in the acquisition premium is, as also previously discussed, that the market might have forecasted the acquisition and that the assumed value creation is thus already incorporated in the share price.

5. Conclusion

The following section provides a summary of our research question, methodology and findings. We further discuss limitations of the analyses and suggestion for future research on the topic.

5.1 Summary and Conclusion

Jensen (1986) argues that firms with substantial free cash flow and limited growth opportunities are prone to agency costs of free cash flow and states that private equity firms have a unique ability to mitigate these agency costs (Jensen, 1989). Based on this statement, the research question of this thesis is:

Do private equity firms target companies prone to agency costs of free cash flow and do agency costs of free cash flow in target companies increase private equity firms' willingness to pay, relative to that of the market?

We apply a measure of the target's operating income before depreciations, after distributions to stakeholders, as a proxy for the free cash flow available for managers to spend on what the shareholders view as suboptimal behaviour. Additionally, we limit our sample to contain only acquisition targets with low growth, measured as having a Tobin's Q below the sample median. To study the first part of our research question, we apply a matching procedure to obtain a balanced sample of 60 targets acquired by private equity firms and 60 targets acquired by public strategic companies. We test whether a higher value of our measure of target's free cash flow increases the likelihood of the acquirer being a private equity firm relative to a public strategic company. Subsequently, in order to analyse the second part of our research question, we use the acquisition premium as a proxy for excess willingness to pay relative to the market. On a sample of 63 acquisitions performed by private equity firms, we test whether a higher value of the same measure of target's free cash flow is associated with a higher acquisition premium.

The findings of our main regression models provide significant evidence in favour of both our hypotheses, indicating that private equity firms do target companies prone to agency costs of free cash flow and that their willingness to pay is greater than the market's for targets prone to these costs. However, in the subsequent analyses, only the first hypothesis seems to be

robust, and hence we cannot conclude with a reasonable level of certainty that the implied value creation of private equity firms through mitigation of agency costs of free cash flow is reflected in their willingness to pay. As discussed, we believe this to be a result of the lack of competition in the transactions studied and that consequently, using the acquisition premium as a proxy for excess willingness to pay over the market valuation is not allowing us to identify the relationship we intend to study. On the other hand, our mixed results indicating that private equity companies target firms prone to agency costs of free cash flow, but not necessarily pay more for them, may indicate that there are good investment opportunities in the acquisition market for firms prone to agency costs of free cash flow.

5.2 Limitations

When interpreting the results of our study, one must be aware of certain limitations. The first limitation to our analysis is related to the external validity of the results. As Jensen's (1989) statement concerns public companies only and as we expect agency costs of free cash flow to be most severe in public companies, we have limited our sample to public targets. Hence, as our analysis is performed on public targets only, we cannot generalise the relationships found in this study across the entire population of targets acquired by private equity firms. However, as the intention of this study is to test the relationships proposed by Jensen (1989), our goal is not to identify relationships that can be generalised across both public and private targets acquired by private equity firms. Although we do not consider this a weakness to our study, we consider it a limitation that the reader should be aware of. Relatedly, a limiting factor arising from our review of public targets, is the relatively small sample size.

Another limitation of this study relates to the use of proxies in our study. Agency costs of free cash flow, growth opportunities and maximum willingness to pay are all variables which are challenging to measure directly with the data availability we have. Hence, a large part of our study relies on proxies. As these proxies will never be perfect measures, we face the risk of drawing conclusions based on incorrect measures. For the free cash flow and growth measure, we mitigate this issue to some extent by performing robustness tests on the relationships found in our main analyses and by controlling for relevant variables. However, for our measure of maximum willingness to pay, we believe the lack of competition prevents the acquisition premium from serving as a perfect proxy. Unfortunately, as we do not have access to additional data on challenged deals, we are not able to improve the weaknesses of the proxy.

Related to the challenge with using proxies, a concern could be if we assume a link between the independent and dependent variable to be evidence of our hypothesis while it is actually a result of private equity firms targeting companies with substantial free cash flow because they are more liquid, and hence have a more stable cash flow to pay debt. Additionally, our free cash flow measure is calculated based on operating income before depreciation and hence it is measured after subtracting operating expenses. Although Jensen's (1986) hypothesis mainly concerns low-return investments, wasteful behaviour by management can also be reflected in the operating expenses. However, identifying waste within operating expenses is difficult. Ideally such waste should be added to our free cash flow measure, as it might be a part of the potential gain by mitigating agency costs of free cash flow.

Additionally, our analyses are based on the assumption that players in the acquisition market make acquisitions based on value creation for their shareholders. Ironically, certain acquisitions might be a result of agency costs of free cash flow in the acquiring firm. This relation is confirmed in the study of Lang et al. (1991). Due to the alignment of incentives between managers and investors in private equity firms, we believe this to be particularly applicable to the public strategic bidders in our sample. If this is the case, our results might be biased as public strategic bidders could acquire targets which should in theory be acquired by private equity firms.

A final limiting factor to our study concerns the availability of data. Through the development of our thesis, there have been certain additional relationships which we believe would have been valuable to incorporate in our analyses, but which we have not been able to include due to our limited access to relevant databases and the time constraint of this thesis. Firstly, we believe including data on managerial shareholdings in our target companies could have yielded valuable results as we expect managers of companies with substantial managerial shareholdings to have incentives closer aligned with shareholders and hence the agency problems between managers and shareholders in these firms to be less severe. Secondly, data on the degree of fragmentation of ownership could be used to control for the fact that the owners of public companies with concentrated ownership more likely monitor their companies more closely which might also lead to less severe agency problems between managers and shareholders. Thirdly, we assume access to acquirer characteristics, for instance performance fees, could have provided relevant insight which might have added value to our analyses.

5.3 Suggestions for Future Research

Building on the research conducted and limitations of this thesis, we would find it interesting to further investigate the relationship between agency costs of free cash flow and private equity firms' excess willingness to pay, compared to the market. As we believe the lack of competition in our data set prevents us from measuring this relationship when applying the acquisition premium as our proxy for excess willingness to pay, a direction for future research could be to attempt to obtain more data on challenged deals. More detailed data, which could enable a more comprehensive analysis, might also make it easier to identify potential waste in operating expenses. We suppose this could be done by obtaining and including detailed data which might be available in more advanced M&A databases or through collaboration with larger M&A firms. We also think that the access to data form larger M&A firms could make it possible to improve the study by including characteristics of private equity acquirers and more characteristics on public strategic acquirers in the analysis. An alternative approach to alleviate this issue could be to attempt to study private equity firms' valuation of targets directly.

Another suggestion for further research could be to look at how the relationships between public corporations and agency costs of free cash flow have developed over time. Through the contribution of Jensen's theories and further research, the market might have become more aware of these potential costs. Further, it could be hypothesised that recent technological development and increasing reporting requirements in respect of governance have made it easier for the market to more closely monitor companies, making it more challenging for managers not to act in the interests of shareholders. Thus, the possible value creation of private equity firms arising from mitigating agency costs of free cash flow might not be as prevalent today as before.

Considering the ongoing debate in Norway regarding the large unprofitable foreign investments made by major corporations like Equinor, Telenor, Hydro and Statkraft over recent years (Langved et al., 2019), a relevant and exciting topic for a subsequent paper would be to study agency costs of free cash flow in such corporations where there is substantial national government ownership. The Norwegian media has criticised the government for not being sufficiently active in relation to these investments and the requirements for effective and profitable use of capital. In our view, large unprofitable foreign investments in profitable

companies with weak corporate governance could be an indicator of empire building and agency costs of free cash flow.

References

Alexandridis, G., Fuller, K. P., Terhaar, L. and Nickolaos, T. G. (2013). Deal size, acquisition premia and shareholder gains. *Journal of Corporate Finance*, 20: 1-13.

Bain & Company (2019). Global Private Equity Report 2019. Retrieved from: https://www.bain.com/contentassets/875a49e26e9c4775942ec5b86084df0a/bain_report_private_equity_report_2019.pdf

Barber, B. M. and Lyon, J. D. (1996). Detecting abnormal operating performance: The empirical power and specification of test statistics. *Journal of Financial Economics*, 41: 359-399.

Bargeron, L., Schlingemann, F., Stulz, R., and Zutter, C. (2008). Why do private acquirers pay so little compared to public acquirers? *Journal of Financial Economics*, 89 (3): 375-390.

Bates, T. W., Kahle, K. M. and Stulz, R. M. (2009). Why do U.S. Firms Hold So Much More Cash than They Used To? *The Journal of Finance*, 64 (5): 1985-2021.

Bhattacharya, Sudipto. (1979). Imperfect information, dividend policy, and 'the bird in the hand' fallacy, *The Bell Journal of Economics,* 10, (1): 233-244.

Bodie, Z., Kane, A., Marcus, A. J. and Kain, R. (2018). Investments. International Edition, McGraw-Hill Global Education.

Ciccotello, C. (2014). The state of the Public Corporation: Not So Much an Eclipse as an Evolution. *Journal of Applied Corporate Finance*, 26 (4).

Clarke, R. N. (1989). SICs As Delineators of Economic Markets. *Journal of Business*, 62: 17-32.

Demiroglu, C., and James, M. C. (2010). The Role of Private Equity Group Reputation in LBO Financing. *Journal of Financial Economics*, 96: 306-330.

Døskeland, T. M, and Strömberg, P. (2018). Evaluation Investment in Unlisted Equity for The Norwegian Government Pension Fund Global.

Fidrmuc, J., Roosenboom, P., Paap, R., and Teunissen, T. (2012). One size does not fit all: Selling firms to private equity versus strategic acquirers. *Journal of Corporate Finance*, 18 (4): 828-848.

Gorbenko, A., and Malenko, A. (2014). Strategic and Financial Bidders in Takeover Auctions. The Journal of Finance, 69 (6): 2513-2555

Gorton, G., Kahl, M., and Rosen, R. J. (2009). Eat or Be Eaten: A Theory of Merger and Firm Size. *Journal of finance*, 64 (3): 1291-1344.

Griffin. P. A., Lont, D. H. and Sun, Y. (2010). Agency problems and audit fees: further tests of the free cash flow hypothesis. *Accounting and Finance*, 50 (2): 321-350.

Halpern, P., Kieschnick, R. and Rotenberg, W. (1999). On the Heterogeneity of Leveraged Going Private Transactions. *The review of Financial studies*, 12 (2): 281-309.

Hillier, D., Ross, S., Westerfield, R., Jaffe, J. and Jordan, B. (2013). Corporate Finance. Second European Edition, McGraw-Hill Global Education.

Ivashina, V. and Kovner, A. (2011). The Private Equity Advantage: Leveraged Buyout Firms and Relationship Banking. *Review of Financial Studies*, 24 (7): 2462-2498.

Jensen, M. C. (1986). Agency Costs of Fee Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*. 76 (2): 323-329

Jensen, M. C. (1989). Eclipse of the public corporation. *Harvard Business Review*, 67: 61-75

Jensen, M., and Meckling, W. (1976). Theory of the firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3 (4): 305-360.

Kahle, K. M. and Stulz, R. M. (2017). Is the US Public Corporation in Trouble? *Journal of Economic Perspectives*, 31 (3): 67-88.

Kaplan, S., and Strömberg, P. (2009). Leveraged Buyouts and Private Equity. *Journal of Economic Perspectives*, 24 (2): 217-254.

Kieschnick, R. (1989) "Management Buyouts of Public Corporations: An Analysis of Prior Characteristics" in Y. Amihud (ed.), Leveraged Management Buyouts: Causes and Consequences, Dow Jones-Irwin, Homewood, IL.

Krishnaswamy, C. R. (2009). An Analysis of the Performance of Private Equity: Agency Cost Approach. *Corporate Ownership & Control*, 6 (3): 424-428.

Lang, L., Stulz, R., and Walkling, R. (1991). A test of the free cash flow hypothesis. *Journal of Financial Economics*, 29 (2): 315-335.

Langved, Å., Riisnæs, I. G., and Klevstrand, A. (2019). Godtroende styremedlemmer noe avårsaken til Equinors tap i utlandet, mener riksrevisoren. *Dagens Næringsliv*. Retrieved from: https://www.dn.no/marked/riksrevisjonen/equinor/naringsdepartementet/godtroende-styremedlemmer-noe-av-arsaken-til-equinors-tap-i-utlandet-mener-riksrevisoren/2-1-715461

Lehn, K., Netter, J. and Poulsen, A. (1990). Consolidating corporate control: Dual-class recapitalizations versus leveraged buyouts. *Journal of Financial Economics*, 27 (2): 557-580.

Lehn, K., and Poulsen, A. (1989). Free Cash Flow and Stockholder Gains in Going Private Transactions. *The Journal of Finance*, 44 (3): 771-787.

Loderer, C., and Martin, K. (1990). Corporate Acquisitions by Listed Firms: The Experience of a Comprehensive Sample. *Financial Management*, 19 (4): 17-33

Murphy, K. J. (1985). Corporate Performance and Managerial Remuneration: An Empirical Analysis. *Journal of Accounting and Economics*, 7: 11-41

Opler, T. and Titman, S. (1993). The Determinants of Leveraged Buyout Activity: Free Cash Flow vs. Financial Distress Costs. *The Journal of Finance*, 48 (5): 1985-1999.

Rappaport, A. (1990). The Staying Power of the Public Corporation. *Harvard Business Review* 68: 96-104.

Wooldridge, J. M. (2016). Introductory Econometrics. 6th edition. Cengage Learning.

Appendix

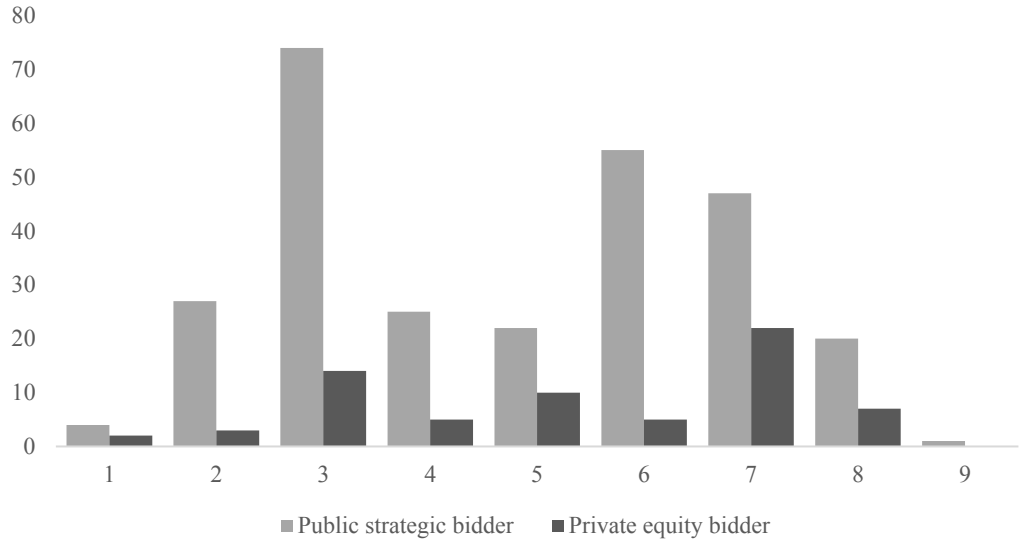
Appendix A.1: Variable Definitions

Variable	Description	Further description and calculation
PE	Private equity firm	A dummy equal to one if the acquirer is a private equity firm and zero if the acquirer is a public strategic firm.
Premium	Acquisition premium	$\frac{Offer\ price - Closing\ price\ four\ weeks\ prior\ to\ annoucnement}{Closing\ price\ four\ weeks\ prior\ to\ annoucnement}$
FCF	Proxy for Jensen's free cash flow	Operating income before depreciation - Cash payments for income taxes - Cash payments to finance short and long term debt - Cash dividend to common and preferred stock
FCF/TA	Our free cash flow measure	$\frac{FCF}{Book\ value\ of\ total\ assets}$
FCF/MVE	Alternative free cash flow measure	$\frac{FCF}{Market\ value\ of\ equity}$
FCF/Sales	Alternative free cash flow measure	$\frac{FCF}{Net\ sales}$
OCF/TA	Alternate cash flow measure	$\frac{Operating\ cash\ flow}{Book\ value\ of\ total\ assets}$
Tobin's Q	Proxy for growth opportunities	$\frac{Market\ value\ of\ equity + Book\ value\ of\ debt}{Book\ value\ of\ total\ assets}$
Sales growth	Proxy for growth opportunities: Three-year compounded annual growth rate (CAGR) of sales	$\left(\frac{Net\ sales_{t=-1}}{Net\ sales_{t=-3}}\right)^{\frac{1}{2}} - 1$
Ln Total Assets	Measure for firm size	Measured as the natural logarithm of the book value of the target's total assets
Dividend/Sales	Dividend	$\frac{Amount\ of\ dividend\ declared\ on\ all\ equity\ capital}{Net\ sales}$
Tax/Sales	Tax payable	$\frac{\text{Target's income tax payable}}{Net\ sales}$
Leverage	Leverage	$\frac{Book\ value\ of\ debt}{Book\ value\ of\ debt + Market\ value\ of\ equity}$

Analyst Coverage	Analyst coverage of target	A dummy variable equal to one if the target is followed by at least one analyst prior to the acquisition and zero otherwise
ROA	Return on assets	Target's net income divided by the book value of total assets
Target SIC code	Target's SIC code	Categorical variable equal to one if the first digit of the target's SIC code is within the given group
SP500	S&P 500 index	The value of the index S&P 500 at the deal announcement date.
Year	Year of the transaction	Categorical variable equal to one if the year of the transaction is within the given year
MVE	Market value of equity	Target's stock price times the numbers of shares outstanding four weeks prior to the announcement of the acquisition
Competition	Bidding competition	A dummy variable equal to one if a third party launched an offer for the target while this original bid was pending.

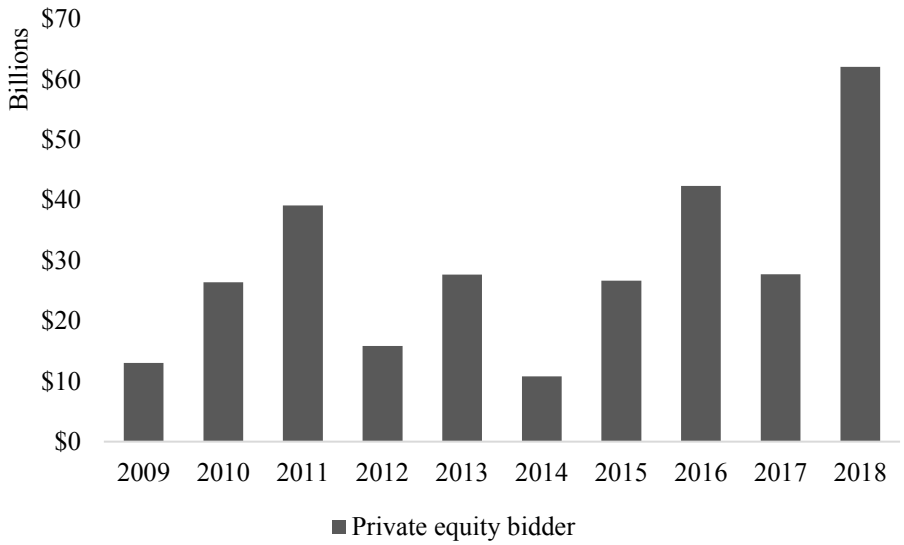
Appendix A.2: Sample Distribution

Figure A.2
Sample of low growth target firms by target one-digit SIC code. The figure illustrates the number of acquisitions divided by target one-digit SIC code across bidder types.



Appendix A.3: Aggregate Deal Value by Year

Figure A.3
Aggregate deal value for the sample of low growth target firms by year. The sample period covers the year of 2009 through 2018. The figure illustrates the aggregate deal value of private equity acquisitions within each year of our sample.



Appendix A.4: Matching Procedure

In order to obtain a balanced sample for our acquirer type regression we have performed a nearest-neighbour matching procedure. To limit the bias in our conclusions, it is important that the targets acquired by private equity companies and the targets acquired by public strategic companies are comparable before adding our free cash flow variable to the regression. There is a trade-off between the number of matches obtained, the number of variables to match on and the allowed difference between the paired targets in a match. As our sample is already relatively small, we have chosen to match on the variables we believe is the largest determinants of characteristics which might impact buyer type, except from the free cash flow. Similar to Fidrmuc et al. (2012), we have chosen to focus on target industry, target firm size and year of the transaction. We measure industry by SIC code and firm size by market value of equity. We assume the market value of equity to be a better measure of firm size than the transaction value used by Fidrmuc et al. (2012) for two reasons. Firstly, the deal size includes the acquisition premium which we know is generally lower for private equity firms than public strategic bidders (Bargeron et al., 2008). Hence, matching on deal size might yield biased results. Secondly, as our goal is to find targets which are equally likely to be acquired by the two bidder groups, the matching variables should be variables which are measured previous to the transaction in time in order to capture the likelihood of being acquired by a certain group. As the deal value is not measured ex ante, we do not believe it to be a desirable matching variable.

We have also changed the weight placed on the different variables compared to the procedure used by Fidrmuc et al. (2012). As we believe a target's industry to be the factor which affects the most aspects of the business and financial numbers, we place the most weight on matching on identical SIC codes. We assume the industry to be an important determinant of buyer type both directly (the bidder groups tend to buy targets from different sectors) and indirectly through affecting financials which might be more desirable for one of the groups. We further believe the firm size to be the second most important variable and weight it thereafter. The rationale behind this is the mentioned relation that the two groups target firms of different size combined with the fact that firm size impact several aspects of both the business and its financials. Lastly, we prioritise matching on deal year, which we assume might impact the buyer type through time trends.

To perform the matching, we construct a model which attempts to match each of the 63 targets acquired by private equity companies to a list of 210 targets acquired by public strategic bidders, by the presented variables. Each target acquired by a private equity company is only allowed to be matched with one target acquired by a public strategic bidder, and the same target acquired by a public strategic bidder can only be matched once. Further, the matching process is executed 50 times with the companies in random order to ensure that we employ the optimal set of matches. Each set of matches is given a score based on manually chosen weights for the matching criterion, and lastly, the set with the best match is chosen.

The final matched sample consists of 60 targets acquired by a private equity firm and 60 comparable targets acquired by a public strategic firm. Out of them, 25 of the 60 pairs were matched on all four digits of their SIC code, nine have a match where the three first digits of their SIC codes are identical, 15 targets have identical two-digit SIC codes and 11 were matched on the first digit of their SIC code. As the composition of levels for the matching variables is complex to illustrate with more than two components, we do not report the matching levels for the other variables, but rather report a test of the differences in the resulting matched sample. As we can observe, the matching has yielded a balanced sample with the largest equalities on the heaviest weighted variables. On a one-digit SIC code level, the groups of targets acquired by the different bidders are identical. The p-value of the difference in target market value is 0.939, indicating a very small difference. Lastly, none of the differences in transaction years are statistically significant at any conventional significance level. We view this as evidence of a balanced sample, given that we have chosen the right variables to match on.

Table A.4:

Test of differences between groups for the matched sample of low growth firms: Target and transaction characteristics. We report mean values and %bias between the groups for the variables used in the matching procedure, in addition to t- and p-values.

	Mean			t-test	
Variable	Private Equity Buyer	Public Strategic Buyer	%bias	t-statistic	p-value
One-digit SIC code (1)	0.017	0.017	0.000	0.000	1.000
One-digit SIC code (2)	0.050	0.050	0.000	0.000	1.000
One-digit SIC code (3)	0.233	0.233	0.000	0.000	1.000
One-digit SIC code (4)	0.083	0.083	0.000	0.000	1.000
One-digit SIC code (5)	0.117	0.117	0.000	0.000	1.000
One-digit SIC code (6)	0.067	0.067	0.000	0.000	1.000
One-digit SIC code (7)	0.317	0.317	0.000	0.000	1.000
One-digit SIC code (8)	0.117	0.117	0.000	0.000	1.000
Market Value of Equity	555.1	568.9	-1.40	-0.080	0.939
Year 2009	0.083	0.050	13.30	0.730	0.468
Year 2010	0.133	0.133	0.000	0.000	1.000
Year 2011	0.117	0.083	11.00	0.600	0.547
Year 2012	0.050	0.067	-7.10	-0.390	0.700
Year 2013	0.117	0.183	-18.60	-1.020	0.311
Year 2014	0.033	0.017	10.60	0.580	0.563
Year 2015	0.050	0.117	-24.10	-1.320	0.189
Year 2016	0.200	0.167	8.60	0.470	0.640
Year 2017	0.117	0.117	0.000	0.000	1.000
Year 2018	0.100	0.067	12.000	0.660	0.513

Appendix A.5: Pairwise Correlation Matrix (Matched Acquirer Type Sample)

Table A.5:

Pairwise correlation matrix for the sample used in our acquirer type regression. The sample is limited to low growth firms only and consists of matched target companies. The specification of all variables can be found in appendix A.1.

	Private Equity	FCF/ TA	FCF/ MVE	FCF/ Sales	OCF/ TA	Tobin's Q	Sales CAGR (%)	Dividend/ Sales	Ln Total Assets	Tax/ Sales	Leverage	ROA	Premium (%)	SP500	Analyst Coverage
Private Equity	1														
FCF/TA	0,244	1													
FCF/MVE	0,271	0,771	1												
FCF/Sales	0,221	0,790	0,768	1											
OCF/TA	0,153	0,562	0,474	0,479	1										
Tobin's Q	0,136	0,352	0,129	0,152	0,156	1									
Sales CAGR (%)	0,085	0,329	0,283	0,283	0,213	0,105	1								
Dividend/ Sales	0,029	-0,119	-0,004	0,047	0,260	-0,097	-0,266	1							
Ln Total Assets	0,039	0,223	0,374	0,357	0,195	-0,067	0,188	0,210	1						
Tax/ Sales	-0,039	-0,305	-0,197	-0,280	0,083	-0,199	-0,094	0,323	0,087	1					
Leverage	0,119	0,065	0,389	0,228	0,041	-0,192	0,073	0,081	0,442	-0,028	1				
ROA	-0,006	0,444	0,324	0,465	0,546	0,222	0,184	0,160	0,317	0,037	0,023	1			
Premium (%)	-0,049	-0,035	0,171	-0,116	-0,070	-0,174	-0,065	-0,057	-0,221	-0,069	0,174	-0,462	1		
SP500	0,007	-0,098	-0,114	-0,106	-0,107	-0,048	0,147	-0,018	0,328	0,048	0,195	0,026	-0,163	1	
Analyst Coverage	-0,019	0,038	0,076	0,024	-0,053	0,137	0,125	0,009	0,288	0,025	0,045	0,027	-0,061	0,259	1

Appendix A.6: Pairwise Correlation Matrix (Acquisition Premium Sample)

Table A.6:

Pairwise correlation matrix for the sample used in our acquisition premium regression. The sample is limited to low growth firms only and consists of target companies acquired by private equity firms. The specification of all variables can be found in appendix A.1.

	Premium (%)	FCF/ TA	FCF/ MVE	FCF/ Sales	OCF/ TA	Tobin's Q	Sales CAGR (%)	Dividend/ Sales	Ln Total Assets	Tax/ Sales	Leverage	ROA	SP500	Analyst Coverage	Competition
Premium (%)	1														
FCF/TA	0,130	1													
FCF/MVE	0,327	0,698	1												
FCF/Sales	0,008	0,766	0,697	1											
OCF/TA	0,142	0,570	0,499	0,481	1										
Tobin's Q	-0,176	0,380	0,116	0,228	0,387	1									
Sales CAGR (%)	-0,042	-0,333	-0,185	-0,090	-0,253	-0,002	1								
Dividend/ Sales	-0,049	-0,169	-0,068	-0,101	0,289	-0,089	-0,185	1							
Ln Total Assets	-0,298	0,074	0,173	0,222	-0,057	-0,109	-0,015	0,107	1						
Tax/Sales	-0,030	-0,285	-0,062	-0,154	-0,275	-0,335	-0,126	0,155	0,188	1					
Leverage	0,213	-0,083	0,323	0,108	-0,117	-0,155	0,172	-0,127	0,334	0,054	1				
ROA	-0,493	0,202	0,051	0,209	0,177	0,406	-0,200	0,151	0,178	-0,074	-0,058	1			
SP500	-0,066	-0,048	-0,054	0,089	-0,113	-0,061	0,263	-0,004	0,256	0,147	0,066	0,096	1		
Analyst Coverage	-0,127	-0,085	-0,101	-0,022	0,022	0,052	0,168	0,124	0,257	0,056	-0,039	0,069	0,145	1	
Competition	0,526	-0,037	-0,063	-0,084	0,078	-0,280	-0,026	-0,119	-0,204	0,016	0,063	-0,371	-0,022	0,024	1

Appendix A.7: Summary Statistics Prior to Limiting the Sample Only to Low Growth Firms.

Table A.7

Summary statistics table for our entire dataset prior to limiting the sample to low growth target firms: Target and transaction characteristics. We report mean values and standard deviations for all characteristics, as well as differences in means for the reported characteristics across the two bidder groups. The date of financials from SDC is used as the primary date to collect financial information from the other databases. The specification of all variables can be found in appendix A.1.

	Private Equity Buyer					Public Strategic Buyer					Public strategic - PE	
	Mean	St.dev	Min	Max	N	Mean	St.dev	Min	Max	N	Diff.	p-value
FCF/TA	0.070	0.106	-0.215	0.449	122	0.043	0.099	-0.215	0.391	472	-0.027***	0.008
FCF/MVE	0.103	0.144	-0.231	0.441	122	0.044	0.139	-0.348	0.302	472	-0.059***	0.000
FCF/Sales	0.069	0.117	-0.261	0.264	119	0.052	0.131	-0.306	0.274	460	-0.016	0.223
OCF/TA	0.095	0.123	-0.418	0.850	133	0.005	0.385	-5.86	0.533	557	-0.091***	0.007
Tobin's Q	1.447	0.960	0.207	4.37	134	1.880	2.286	0.044	13.23	551	0.433**	0.032
Sales CAGR (%)	5.20	14.25	-25.40	115.5	127	7.74	64.58	-190.0	1420	535	2.53	0.661
Dividends/ Sales	0.009	0.022	0.000	0.085	130	0.013	0.032	-0.001	0.130	531	0.004	0.214
Ln Total Assets	5.97	1.38	2.87	9.72	134	5.85	1.66	0.39	10.27	560	-0.119	0.443
Tax/ Sales	0.003	0.005	0.000	0.017	127	0.003	0.005	0.000	0.018	508	-0.000	0.517
Leverage	0.249	0.283	0.000	0.988	134	0.208	0.249	0.000	0.995	551	-0.041*	0.100
ROA	-0.016	0.193	-0.840	1.031	131	-0.037	0.752	-9.522	11.837	548	-0.021	0.754
Premium (%)	30.75	25.47	-4.65	100	135	46.55	32.83	4.57	126.9	565	15.79***	0.000
Analyst Coverage	0.733	0.444	0.000	1.000	135	0.735	0.442	0.000	1.000	565	0.001	0.978
Competition	0.044	0.207	0.000	1.000	135	0.051	0.221	0.000	1.000	565	0.007	0.742

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significant at the 0.10 level

Appendix A.8: Regression Diagnostics

We check the potential for multicollinearity using the Variance Inflation Factor (VIF). VIF is calculated as: $\frac{1}{1-R^2}$ for each variable. The intuition behind the VIF is that when R^2 is large, it means that a large amount of the sample variation in a x_j can be explained by the other independent variables in the regression model, and followingly this means that x_j has a strong linear relationships to the other independent variables. Values that exceeds 10 are regarded as indicated multicollinearity and calls for an investigation of the data (Wooldridge, 2012). Other researchers find that a VIF equal 10 is too high and supports the idea that anything above 2,5 should be investigated. The results of our VIF indicates no evidence of multicollinearity. The high VIF factors for the industry fixed effect dummies is likely due to the small proportion of observations in the reference category. We don't consider the large VIF factors a problem as these categorical variables are not the variables of interest.

Table A.8:

VIF for the main model specifications of the acquirer type and the acquisition premium regressions. In column (1) the dependent variable is a dummy variable equal to one if the acquirer is a private equity firm and zero if the acquirer is a public strategic firm. In column (2) the dependent variable is the acquisition premium. The specification of the independent- and control- variables can be found in appendix A.1.

	(1) PE b/t	vif	(2) Premium b/t	vif
FCF/TA	2.174**	1.71	142.0**	1.55
	(3.25)		(2.70)	
Tobin's Q	0.216	1.37	-3.641	1.75
	(1.15)		(-0.21)	
Ln Total Assets	2.532	1.35	-11.73*	1.73
	(0.85)		(-2.51)	
Tax/Sales	-0.0194	1.89	207.3	1.35
	(-0.42)		(0.29)	
Dividend/Sales	0.271	1.56	293.6	1.34
	(1.39)		(1.37)	
Leverage	2.890	1.31	51.94*	1.40
	(0.50)		(2.63)	
ROA	-0.477*	1.49	-89.33**	1.56
	(-2.06)		(-2.91)	
Analyst Coverage	-0.0567	1.22	-4.121	1.23
	(-0.50)		(-0.47)	
SP500	0.0000398	1.28	0.00571	1.25
	(0.41)		(0.77)	
Competition			58.54*	1.39
			(2.32)	
_cons	0.0895		37.38	
	(0.21)		(1.68)	
Industry FE	Yes		Yes	
N	120		63	

Robust standard errors in parentheses

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

Appendix A.9: Robustness Tests for the Acquirer Type Regression (alternative proxies for agency costs of free cash flow and time varying effects)

Table A.9:

Robustness tests for the acquirer type regression (alternative proxies for agency cost of free cash flow and time varying effects). The dependent variable is a dummy variable equal to one if the acquirer is a private equity firm and zero if the acquirer is a public strategic firm. The specification of the independent- and control- variables can be found in appendix A.1.

Variables	(1) PE	(2) PE	(3) PE	(4) PE
FCF/MVE	0.597***			
	(0.159)			
FCF/Sales		1.046***		
		(0.338)		
OCF/TA			0.848*	
			(0.460)	
FCF/TA				2.124***
				(0.747)
Tobin's Q	0.300*	0.343*	0.331*	0.278
	(0.181)	(0.182)	(0.188)	(0.205)
Ln Total Assets	-0.0255	-0.0254	0.00298	-0.0319
	(0.0464)	(0.0478)	(0.0462)	(0.0487)
Tax/Sales	2.009	3.727	-1.493	2.344
	(5.601)	(6.643)	(6.087)	(6.627)
Dividends/Sales	1.655	1.426	0.465	3.305
	(2.863)	(2.988)	(2.797)	(3.154)
Leverage	0.0751	0.203	0.273	0.255
	(0.212)	(0.200)	(0.196)	(0.206)
ROA	-0.396*	-0.490*	-0.440	-0.420*
	(0.227)	(0.263)	(0.293)	(0.242)
Analyst Coverage	-0.0786	-0.0539	-0.0485	-0.0272
	(0.111)	(0.114)	(0.120)	(0.119)
SP500 (/1000)	0.080	0.053	0.017	
	(0.100)	(0.098)	(0.102)	
Constant	0.151	0.152	0.0302	0.291
	(0.435)	(0.415)	(0.387)	(0.468)
Industry FE	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes
Observations	120	120	120	120
R-squared	0.121	0.107	0.080	0.157

Robust standard errors in parentheses

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

Appendix A.10: Robustness Tests for the Acquirer Type Regression (alternative proxy for growth opportunities)

Table A.10:

Robustness tests for the acquirer type regression performed on our sample of low growth firms proxied by tree-year CAGR of sales (alternative proxy for growth opportunities). The dependent variable is a dummy variable equal to one if the acquirer is a private equity firm and zero if the acquirer is a public strategic firm. The specification of the independent- and control- variables can be found in appendix A.1.

	(1)	(2)	(3)	(4)
Variables	PE	PE	PE	PE
FCF/TA	1.031**	1.140*	1.193**	1.171**
	(0.490)	(0.583)	(0.559)	(0.564)
Tobin's Q	0.00558	0.0270	0.0285	0.0467
	(0.0697)	(0.0701)	(0.0682)	(0.0677)
Ln Total Assets		-0.0233	-0.0110	-0.0109
		(0.0451)	(0.0489)	(0.0484)
Tax/Sales		2.409	1.956	0.500
		(8.657)	(8.320)	(9.341)
Dividend/Sales		1.941	1.910	1.871
		(1.779)	(1.887)	(2.094)
Leverage		0.517***	0.449**	0.417**
		(0.186)	(0.192)	(0.197)
ROA		0.0868	-0.00219	-0.0647
		(0.272)	(0.273)	(0.279)
AC			-0.163	-0.135
			(0.119)	(0.125)
SP500 (/1000)			0.0783	
			(0.104)	
Constant	0.460***	0.386	0.274	0.413
	(0.156)	(0.301)	(0.318)	(0.367)
Industry FE	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes
Observations	112	112	112	112
R-squared	0.044	0.115	0.138	0.208

Robust standard errors in parentheses

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

Appendix A.11: Robustness Tests for the Acquirer Type Regression (performed on unmatched sample)

Table A.11:

Robustness tests for the acquirer type regression performed on unmatched sample of low growth firms. The dependent variable is a dummy variable equal to one if the acquirer is a private equity firm and zero if the acquirer is a public strategic firm. The specification of the independent- and control- variables can be found in appendix A.1.

	(1)	(2)	(3)	(4)
Variables	PE	PE	PE	PE
FCF/TA	0.369	0.895**	0.886**	0.930**
	(0.289)	(0.375)	(0.382)	(0.390)
Tobin's Q	0.140	0.186*	0.195*	0.211**
	(0.0944)	(0.0981)	(0.101)	(0.103)
Ln Total Assets		0.00528	0.00920	0.00438
		(0.0159)	(0.0182)	(0.0193)
Tax/Sales		8.507	8.605	8.828
		(5.465)	(5.499)	(5.606)
Dividend/Sales		-0.378	-0.372	-0.428
		(0.913)	(0.935)	(0.957)
Leverage		0.280**	0.278**	0.275**
		(0.108)	(0.108)	(0.110)
ROA		-0.438**	-0.446***	-0.420**
		(0.170)	(0.169)	(0.180)
AC			-0.0223	-0.0252
			(0.0616)	(0.0625)
SP500 (/1000)			-0.0089	
			(0.0483)	
Constant	0.268	0.134	0.138	0.167
	(0.243)	(0.266)	(0.269)	(0.290)
Industry FE	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes
Observations	306	275	275	275
R-squared	0.064	0.122	0.122	0.134

Robust standard errors in parentheses

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

Appendix A.12: Robustness Tests for the Acquisition Premium Regression (alternative proxies for agency costs of free cash flow and time varying effects).

Table A.12:

Robustness tests for the acquisition premium regression (alternative proxies for agency costs of free cash flow and time varying effects). The dependent variable is the acquisition premium, calculated as the difference between the offer price and the target closing stock price four weeks before the announcement of the acquisition, expressed as a percentage. The specification of the independent- and control- variables can be found in appendix A.1.

Variables	(1) Premium	(2) Premium	(3) Premium	(4) Premium
FCF/MVE	67.90***			
	(19.76)			
FCF/Sales		62.17		
		(41.67)		
OCF/TA			92.09	
			(61.89)	
FCF/TA				87.43
				(60.19)
Tobin's Q	4.910	5.871	-3.552	-5.304
	(15.44)	(18.23)	(16.84)	(17.95)
Ln Total Assets	-12.51***	-11.59**	-11.62**	-13.02***
	(4.590)	(4.940)	(4.743)	(4.570)
Tax/Sales	-13.58	-30.74	214.4	-441.3
	(699.6)	(705.0)	(687.1)	(844.9)
Dividend/Sales	252.0	228.4	46.77	299.9
	(226.8)	(210.1)	(233.8)	(236.6)
Leverage	29.93*	47.76**	48.23**	61.10***
	(17.01)	(20.49)	(19.49)	(19.79)
ROA	-85.30***	-87.94***	-85.33**	-87.22***
	(28.42)	(31.30)	(32.28)	(30.34)
AC	-3.705	-5.865	-6.329	-8.943
	(8.067)	(9.522)	(9.213)	(10.32)
SP500	0.00964	0.00421	0.00611	
	(0.00751)	(0.00765)	(0.00752)	
Competition	65.63***	61.98**	53.60**	50.50**
	(21.15)	(24.66)	(20.93)	(23.16)
Constant	35.22*	24.37	25.23	49.77*
	(20.92)	(28.93)	(24.24)	(28.73)
Industry FE	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes
Observations	63	63	65	63
R-squared	0.666	0.593	0.597	0.686

Robust standard errors in parentheses

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

Appendix A.13: Robustness Tests for the Acquisition Premium Regression (alternative proxy for growth opportunities).

Table A.13:

Robustness tests for the acquisition premium regression performed on our sample of low growth firms proxied by tree-year CAGR of sales (alternative proxy for growth opportunities). The dependent variable is the acquisition premium, calculated as the difference between the offer price and the target closing stock price four weeks before the announcement of the acquisition, expressed as a percentage. The specification of the independent- and control- variables can be found in appendix A.1.

Variables	(1) Premium	(2) Premium	(3) Premium	(4) Premium
FCF/TA	52.58	72.80**	75.99**	55.17**
	(39.95)	(34.55)	(31.91)	(25.15)
Tobin's Q	-11.75**	-5.517	-6.426	-6.185
	(5.346)	(5.494)	(5.289)	(3.839)
Ln Total Assets		-7.979**	-10.66**	-13.70***
		(3.848)	(4.237)	(3.192)
Tax/Sales		698.3	726.7	403.8
		(651.6)	(562.1)	(508.8)
Dividend/Sales		100.8	128.2	177.7
		(105.6)	(94.30)	(127.5)
Leverage		39.30**	46.09**	41.58***
		(17.93)	(17.89)	(11.49)
ROA		-49.97***	-46.52***	-41.78***
		(13.95)	(13.50)	(13.57)
AC			5.831	5.793
			(6.133)	(6.488)
SP500			0.0133**	
			(0.00577)	
Competition			12.45	25.33
			(29.11)	(16.65)
Constant	37.18***	48.11***	44.13**	81.04***
	(3.636)	(17.34)	(18.29)	(24.98)
Industry FE	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes
Observations	59	58	58	58
R-squared	0.189	0.471	0.534	0.755

Robust standard errors in parentheses

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