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What does private equity buy?

– *A comparison between financial and strategic buyers in European PTP transactions 2005-2019*

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Abstract: This paper outlines a new approach to the takeover literature by comparing target characteristics between financial and strategic buyers in announced European Public-to-Private transactions from 2005 to 2019. We compare PE targets to non-PE targets by conducting a multivariate logistic regression model with a maximum likelihood approach. We find that PE targets exhibit higher profitability, in terms of returns on assets and equity, and lower price to book ratios compared to their strategic competitors. Hence, our results suggests that PE firms search for buyout targets which are profitable and undervalued. Moreover, this paper sheds new light on the impact of macroeconomic factors on private equity activity. By analyzing a split sample from the financial- and Euro crisis, 2008-2013, the evidence from this study intimates that relative preferences between financial and strategic buyers change during the economic cycle. We find that during crisis, compared to strategic acquirers, PE firms prefer targets with a higher debt capacity while undervalued companies are preferred during non-crisis.

Key Words: Acquisition, Leverage Buyouts, LBO, Private Equity, Public-to-Private, Takeover, Target firm

JEL Classification: G01, G30, G34

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Introduction

The European merger and acquisition (M&A) market has been strong the last decade. Despite a global drop in M&A activity, Europe managed to increase the aggregated deal value with 26.4% from 2018 to 2019 (McRobie, 2020). Buyers are generally classified as either strategic or financial, where the latter include for example investment and private equity companies. Together strategic and financial buyers accounted for an M&A volume of $3.9 trillion in 2018 (Chiarella & Ostinelli, 2020)[1]. About 20% of the total market for mergers and acquisitions were contributed to by private equity (PE) firms (McRobie, 2020).

Private equity firms are strongly associated with leverage buyouts (LBO) i.e. buying public companies using large portions of debt (Kaplan & Strömberg, 2009). LBOs and public to private (PTP) transactions have historically come in waves, one in the 1980s, one during late 1990s and early 2000s, and one during the build up to the latest financial crisis (2004-2007) (Weir et al., 2015). The total LBO volume have increased substantially since the 1980s (Kaplan & Strömberg, 2009). During the 21st century, the number of LBOs have been between 20% and 30% of the total number of transactions performed by PE firms (ibid).

A lot of studies has been conducted on the private equity industry, focusing on the corporate governance aspect of how PE transactions align managers and shareholders' interests (e.g. Cornelli, et al., 2013; Williamson, 1988) and whether buyouts create value or not (e.g. Guo, et al., 2011; Harris, et al., 2014; Lerner et al., 2011). A growing body of literature has also used target characteristics to predict both leverage buyout- and M&A activity (e.g. Opler & Titman, 1993; Powell, 1997; Renneboog et al., 2007; Weir et al., 2008). Characteristics such as target firm size, liquidity, and growth (e.g. Danbolt et al., 2016; Palepu, 1986; Tunyi, 2019) appear in the general takeover literature[2]. In addition to liquidity, size and growth, leverage has also been shown to increase the probability of an LBO compared to staying public (e.g. Achleitner et al., 2013; Weir et al., 2008).

[1] In this paper, PE and non-PE is used interchangeably with financial and strategic buyers.

[2] Danbolt et al. (2016) uses firm liquidity defined as cash to total assets; Palepu (1986) uses a liquidity proxy defined as liquid assets to total assets; Tunyi (2019) uses several proxies for capital liquidity, first one defined as the spread between LIBOR and the Bank of England's base rate, the second is defined as the change in the level of credit for all sectors to the non-financial sector as a ratio of domestic products (Tuniy, 2019), there are also a control variable for liquidity defined as the one used by Danbolt et al. (2016).

Despite both financial and strategic buyers have a rather large body of literature concerning target prediction, Chiarella and Ostinelli (2020) argue that only a few papers have examined the relation between strategic and financial buyers so far. Strategic buyers tend to target firms with high market to book values and larger proportion of intangible assets while PE firms target firms with high cash levels and low market to book ratios (Fidrmuc et al., 2012). In general, strategic buyers seem to value and pay more for their targets than their financial counterparts (Bargeron et al., 2008; Fidrmuc et al., 2012; Gorbenko & Malenko, 2014). Dittmar et al. (2012) find statistically significant differences between the target characteristics across the two types of buyers when explaining cumulative abnormal returns (CAR). A result which suggest that financial sponsors show possible superior skills in identifying targets compared to strategic acquirers (Dittmar et al., 2012).

Past PE target literature have focused on the relative comparison with firms remaining public, hence, there is still a need for a further understanding of the relative differences in preferences between the two types of buyers to answer the research question – do PE and non-PE targets differ in terms of financial characteristics? The purpose of this paper is to develop the understanding for private equity as phenomena in Europe. We compare target characteristics in PTP transactions conducted by PE firms with transactions by non-PE firms and aim to increase the understanding of which companies that are more likely to become PE targets.

To achieve the purpose, we perform a univariate analysis to compare firm characteristics between PE and non-PE targets, and a multivariate logistic cross-sectional fixed effects regression model with a maximum likelihood approach to examine the probability of being acquired by a PE firm conditioned on financial characteristics. We use a sample of approximately 2000 European PTP announcements from 2005-2019 and find support for that undervalued, profitable companies are attractive to PE firms. Our results can be explained by PE firms not being able to account for synergies (Gorbenko & Malenko, 2014; Martos-Villa et al., 2019) and hence rely more on finding undervalued profitable companies to generate returns to their investors. We contribute to the understanding of what PE firms wish to buy, in terms of certain characteristics preferred by PE firms in relation to strategic acquirers. As one of the few papers solely focusing on target characteristics in contrast to most other papers (e.g. Aslan & Kumar, 2011; Fidrmuc et al., 2012), we offer a deeper analysis of the relative preferences between buyers in PTP transactions.

We further contribute to the literature of European private equity and PTP transactions. Existing literature have primarily focused on the US and UK, which can possibly be connected to their strong historical reliance on equity markets (Runesson et al., 2018, p.92). Continental Europe (CE) has historically relied on concentrated ownership and debt financing and thus their corresponding equity markets has been fairly less developed (ibid). As pointed out by Renneboog et al. (2007), differences between equity markets are likely to create dissimilarities in the PTP transaction environment between Continental European and Anglo-American countries, and calls for further research. We extend the empirical literature of buyouts within Europe and suggest future studies to fill the gap of comparisons with the US. Previous research on PTP transactions has mostly focused on single countries or group of countries with an emphasis on the US. We examine differences between PE and non-PE targets and builds upon the studies by Andres et al. (2007) Geranio and Zanotti (2012), and Renneboog et al. (2007) which all explain cross-sectional abnormal stock returns of European targets by using target and deal characteristics, by trying to explain dissimilarities in target characteristics between financial and strategic acquirers.

Lastly we contribute to the understanding of the connection between PE firms' behavior and the capital market conditions by examine the relative preferences between strategic and financial buyers during different periods in the economic cycle. We find support for changed relative preferences dependent on the capital market conditions. More specifically, a higher debt capacity increases the probability of being acquired by a PE firm during crisis. The importance of debt capacity during crisis is in line with Chiarella and Ostinelli (2020) who found a large share of the total European deal flow to be assigned to financial buyers when interest rates are high. We also find that PE firms buy relatively undervalued firms outside crisis. Gorbenko and Malenko (2014) show that financial buyers pay relatively less than strategic acquirers since they cannot account for synergies, which is reflected in the decreased proportion of financial buyers during periods of higher equity market valuations (Chiarella & Ostinelli, 2020). Hence our results provide a further explanation of Chiarella and Ostinelli's (2020) results.

We aware that our research may have some limitations. Firstly, after an extensive analysis of the Nordic announcements within our sample, we can conclude that some errors exists in Capital IQ's PE/VC classification. A number of PE owned investment vehicles are classified as non-PE despite the ownership structure and some investment companies with a long-term

investment horizon are incorrectly classified as PE/VC. Secondly, some variables are not manually calculated but downloaded from Capital IQ (henceforth, CIQ) which uses a tax rate of 37.5% for all companies. The fact that the same tax rate is used across countries might cause us to not account for differences in acquirer's behavior dependent on how tax differences between countries impact profitability. Finally, our results of relative differences in preferences between buyers during different states of the economic cycle are robust when controlling for industry- and country fixed effects, but not when changing the proxy variables.

The rest of the paper is organized as follows. Section 2 provides a short background on agency theory and the free cash flow (FCF) hypothesis related to LBOs as well as an overview of PE firms and the corresponding research. Section 3 provides a literature review and the hypotheses development. Section 4 describes our data and methodology, while results are provided in section 5. The paper is concluded in section 6.

1. Background

This section provide a brief summary of agency theory and Jensen's free cash flow hypothesis (Jensen, 1986; Jensen, 1989) which are the theoretical fundaments for the paper, and an overview of the private equity industry.

1.1. Agency Theory and Free Cash Flow Hypothesis

The first publication to touch upon the implication of ownership and control was Berle and Means (1932) who expressed their concern for conflict of interest between shareholders and growing institutional owners. The control of corporations can by itself be considered a valuable asset, not only in combination with synergies or other assets (Manne, 1965). Managerial efficiency is crucial for corporations' value creation. The good (bad) performance of managers will be reflected positively (negatively) in the share price, in which a poorly managed firm will have a higher probability of being acquired (ibid). Many considerations regarding this matter can be related to the separation of ownership and control (Jensen & Meckling, 1976). This resulted in the agency theory, which considers two utility maximizing parties, the principal and the agent, whose respective objective will rarely be maximized through the same actions which creates inefficiencies – agency costs (ibid). Agency problems can be mitigated through the use of debt, close monitoring by shareholders (Jensen, 1986), and aligning interests between the principal and agent through compensation contracts (Jensen & Meckling, 1976).

Agency costs tend to be higher within firms with high free cash flows and can be prevented by for example higher debt levels since managers are afraid to fail on debt service payments (Jensen, 1986). Thus going private transactions (GPT), such as leveraged buyouts, serves a monitoring purpose since LBO targets tend to have a relatively lower level of debt and higher levels of free cash flows, enabling the acquirer to add leverage to the deal and to improve the corporate governance of the target firm (Jensen, 1986). Empirically, Lehn and Poulsen (1989) were one of the pioneers to test Jensen's (1986) free cash flow hypothesis. They found support for the free cash flow hypothesis when US PTP-transactions between 1980 and 1987 were examined. Since, Lehn and Poulsen's (1989) paper has been the foundation for tests of the FCF-hypothesis, however, their methodology has been criticized for violating random sampling by Kieschnick (1998) among others.

Tirole (2006, p.49) argues that the combination of professional monitors and high level of debt represents a highly efficient corporate governance mechanism. Williamson (1988) states that in addition to leveraging the target company after an LBO, the acquirer also tends to put managers under close monitoring and align managers' and equity holders' interests through executive compensation plans. GPTs, and specifically LBOs became an important development of the US market for corporate control during the 80's (Weir et al., 2005b).

1.2. **Private Equity**

Private equity firms are normally structured through a limited partnership and can be described as a close end-fund with a finite life, active under approximately ten years (Kaplan & Schoar, 2005; Ljungqvist et al., 2020). The limited partners of the fund usually consist of wealthy individuals and institutional investors (Kaplan & Schoar, 2005). During an LBO, PE firms acquire a majority stake in the target firm, using a relatively large share of debt compared to equity (60% to 90% debt) (Kaplan & Strömberg, 2009) and can be performed on either a public or private target. In the case of the LBO being performed on a public company, the PE firm will seek to acquire a majority stake in the target company, and the target will, in case of a successful deal, go private and be delisted from the stock market – a PTP transaction (ibid). LBOs are not exclusively PTP transactions by PE firms, the target can also be an independent *private* company, and a PTP transaction can be performed by a strategic buyer (ibid)[3]. Venture capital (VC) firms is closely related to PE but operates with a different approach than PE firms and primarily acquires a minority stake in a young firm with strong growth opportunities (ibid). This study focus solely on PE companies and PTP transactions, hence VC is not further examined.

Private equity backed PTP transaction are known for increasing the leverage in the target firm and are occasionally accused of only levering up the target without adding any operational value (Malenko & Malenko, 2015). The literature focusing on the time post-deals, find support for operational improvements created by the PE funds (Kaplan & Strömberg, 2009). Even though it seems difficult to identify what actions PE firms take, the corresponding effect of those actions has been positive according to research (Davis et al. 2014; Gompers et al., 2016). The same result seems to be present for buyouts. Cumming et al. (2007) concluded that, despite

[3] The percentage of PTP LBOs among all LBO activity between 1970 and 2007 was 27% (Kaplan & Strömberg, 2009).

different samples and sample periods, buyouts add operational value. This was supported in later studies even though the evidence seems somewhat weaker (e.g. Cohn et al., 2014; Gou et al., 2011). Ayash and Schütt (2016), on the other hand, did not found support for operational improvements when they examined LBOs from 1980-2006. An important task for PE firms is to improve the target firm and increase the results in which financial and operational value adding activities should serve as complements to each other (Malenko & Malenko, 2015). In the long run, a financial buyer will not be able to create value by increased leverage without operating improvements (ibid).

2. Literature Review

Private equity is believed to offer a superior way of managing firms (Jensen, 1989). By targeting public companies with agency problems and taking them private, the acquirer could improve the efficiency through a combination of corporate governance mechanisms (Weir et al., 2005b). The large usage of debt in an LBO provides an additional way of preventing agency problems (Jensen, 1989). The combination of strong corporate governance structure and the more efficient usage of debt was argued by Jensen (1989) to be a superior way of managing the firm.

Considering the structure of an LBO transaction, some features are believed to be more common among firms which go private, such as a lower market to book ratios and lower research and development costs (Fidrmuc et al., 2012). The empirical evidence differs across time and countries, and has been able to find arguments both for and against a lower debt levels, higher free cash flows and a lower profitability for PE targets. The following sections outline the theoretical and empirical research substantiating these traits and the associated hypotheses.

2.1. **Leverage**

In LBOs, acquirers often increase the target's leverage to decrease agency costs of free cash flows (Jensen, 1986). The increased leverage prevents managerial waste of resources since a larger fraction of the cash flow is committed to debt holders (Achleitner et al., 2013), which motivates managers to not engage in empire building due to a fear to fail on debt service payments (Jensen, 1986). This is most important in firms with low growth prospects and operations which generate large free cash flows as they are expected to have the highest agency costs.

The need for the leverage pre-transaction to be low enough for PE firms to increase leverage post-transaction should be clear from a theoretical perspective. The empirical evidence of PE targets' leverage, pre-transaction, is diverged. While research conducted in the UK has found a lower leverage among LBO targets than firms *staying public* (Aslan & Kumar, 2011; Weir et al., 2008), evidence from the US has not been able to conclude any differences between the two above-mentioned groups (Axelson et al., 2013; Halpern et al., 1999). The research comparing LBO targets and firms staying public has been inconclusive and so has the scarce literature comparing M&A and LBO targets. Aslan and Kumar (2011) find differences in

leverage between LBO targets and strategic targets in the UK. In contrast, Gorbenko and Malenko (2014), and Fidrmuc et al. (2012) used US samples and could not conclude any differences between the two groups. Strategic buyers aim to include the target into their existing business and utilize possible synergies while financial buyers evaluate the target as a standalone entity (Martos-Villa et al., 2019). Hence, valuation and structure of the company itself should be more important to financial buyers (Gorbenko & Malenko, 2014). The different reasons for an acquisition, divergent results across regions, and the strong reliance on debt in PE backed transactions results in the following hypothesis:

Hypothesis 1: PE targets exhibit a lower leverage than non-PE targets.

2.2. **Debt Capacity**

A high proportion of debt in relation to equity is one of the most prominent post-transaction characteristics of an LBO (Kaplan & Strömberg, 2009), but at the same time, too high leverage will put the company in a distressed situation. Hence, the target company must be able to handle the high level of debt induced by the PE firm (ibid). The magnitude of the target firms' financial distress costs is of great importance during an LBO – firms with high financial distress costs are less likely to become LBO targets (Opler & Titman, 1993). This is supported by Tykvová and Borell (2012) who find that, during 2000-2008, PE firms targeted European companies with a lower risk of financial distress than comparable non-acquired firms. The distress risk increased after the takeover, but bankruptcy rates of PE targets did not exceed the non-buyout control sample (Tykvová & Borell, 2012). Aslan and Kumar (2011) show that PE-targets has an under-utilized debt capacity compared to companies which went private with other means. In addition, Chiarella and Ostinelli (2020) find that Debt to EBITDA ratios are lower for companies targeted by PE firms compared to non-PE targets, which suggests that LBO targets tend to have higher debt capacity than M&A targets. Both Aslan and Kumar (2011) and Chiarella and Ostinelli's (2020) evidence is consistent with the results of Tykvová and Borell (2012). Since PE firms have a strategy of leveraging their target firms to decrease the agency costs of free cash flows (Jensen, 1986), LBO targets should preferably have a better capability to handle increased leverage compared to strategic targets. Thus:

Hypothesis 2: PE targets have higher debt capacity than non-PE targets.

2.3. **Free Cash Flow**

Free cash flows possibly may create severe agency problems between managers and shareholders (Jensen, 1986)[4]. Many of the potential benefits of an LBO are due to the monitoring benefits of debt – firms with severe agency problems of free cash flows are more likely to be LBO candidates (ibid). The likelihood of going private is higher for firms with significant undistributed cash flows in relation to equity and lower for firms with high sales growth rates (Lehn & Poulsen, 1989). However, Lehn and Poulsen's (1989) results have met some criticism. Kieschnick (1998) argues that Lehn and Poulsen (1989) fails to consider the violation of the random sampling assumptions of the maximum likelihood estimator by using a matched control sample which both influence the parameters and variance estimates. Moreover, Kieschnick (1998) shows that Lehn and Poulsen's (1989) dataset do not support Jensen's (1986) hypothesis when a more proper method is used. Despite the arguments for that free cash flows increase the probability of going private, the research comparing strategic and financial targets' characteristics has not been able to find support for the free cash flow hypothesis in neither the US (Fidrmuc et al., 2012; Halpern et al., 1999), nor the UK (Aslan & Kumar, 2011). The research on how FCF affects the likelihood of going private in Europe is, to our knowledge, non-existing. Considering that differences between equity markets are likely to create dissimilarities in the PTP transaction environment between Continental European and Anglo-American countries (Renneboog et al., 2007), high FCF might increase the probability to be targeted by PE than non-PE firms in Europe. Hence:

Hypothesis 3: PE targets exhibit higher free cash flows than non-PE targets.

2.4. **Profitability**

Managerial inefficiency is one reason for going private, with typical effects such as low profitability and high free cash flows (Aslan & Kumar, 2011). Martin and McConnel (1991) show that an increased CEO turnover post going private is more common among firms with lower profitability. In addition, Gou et al.'s (2011) samples show that 37.2% of acquirers change target's management post-transaction and find a positive relationship between a change in management and profitability improvements. Gorbenko and Malenko (2014) find that

[4] "Free cash flow is cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital" (Jensen, 1986).

financial bidders value poorly performing American companies, in terms of cash flow and stock performance, with low investment opportunities higher than strategic bidders. The relatively higher valuation might depend on financial bidders' higher expertise to handle turnaround cases compared to strategical bidders (ibid).

In contrast, additional research support that PE firms target companies with, on average, higher profitability than firms targeted by strategic buyers (Aslan & Kumar, 2011; Chiarella & Ostinelli, 2020; Fidrmuc et al., 2012). Aslan and Kumar (2011) find that PE firms target UK companies with relatively higher profitability, in terms of return on assets, than firms involved in other types of M&A transactions. Fidrmuc et al. (2012) finds additional support for PE-targets to be more profitable than strategic targets using a US sample. Consistent with Aslan and Kumar (2011) and Fidrmuc et al. (2012), Chiarella and Ostinelli (2020) find similar results within continental Europe – firms targeted by financial sponsors are, on average, more profitable than firms targeted by strategic buyers in terms of both return on assets and equity (Chiarella & Ostinelly, 2020). LBO targets often have stable businesses, low growth, and a high potential for generating free cash flows (Jensen, 1986). In the long run, a non-profitable company will not be able to generate FCF. Thus:

Hypothesis 4: PE targets exhibit a higher profitability than non-PE targets.

2.5. **Valuation**

Both targets and bidders are more eager to initiate deals when valuations are high (Shleifer & Vishny, 2003). When equity market valuations are high the proportion of deals backed by financial sponsors tend to drop (Chiarella & Ostinelli, 2020), which could be explained by a lower probability of tender offers compared to mergers (Dong et al. 2006) and lower benefits of going private due to a lower cost of raising equity (Aslan & Kumar, 2011). PE firms evaluate target companies as stand-alone investments while strategic buyers have current projects of which it finds synergies with the target (Chiarella & Ostinelli, 2020; Martos-Villa et al., 2019). Previous literature show that PE firms target companies with a lower relative valuation compared to strategic buyers, whom prefers companies which generates synergies and seek more re-deployable assets (Fidrmuc et al., 2012; Osborne et al., 2012). Since PE firms often have a shorter investment horizon than strategic investors, high valuations are undesirable as it limits the returns possible to generate within the finite life of the fund (Chiarella & Ostinelli, 2020). Evidence in the US market show that PE firms pay a lower premium compared to

strategic buyers (Bargeron et al., 2008). The difference could not be explained by deal or target characteristics, but are believed to be explained by the existence of synergies for strategic buyers (ibid). Fidrmuc et al. (2012) did, on the other hand, not find any significant differences of paid premiums between strategic and financial buyers controlling for deal and target characteristics. Gorbenko and Malenko (2014) investigate differences in target valuation made by strategic and financial bidders and find that strategic bidders in most cases value targets higher than financial bidders. Bargeron et al. (2008), Fidrmuc et al. (2012) and Gorbenko and Malenko (2014) demonstrate a pattern in the US – strategic buyers seem to value and pay more for their targets than their financial counterparts. Despite differences in time periods, existing US literature consistently show that financial buyers are attracted by firms with a lower relative valuation[5]. We examine if a similar pattern is evident in the European market. Hence:

Hypothesis 5: PE targets have a lower relative valuation than targets of non-PE acquirers.

2.6. **Market conditions**

Mergers have a cyclical nature (Kaplan & Strömberg, 2009) and are affected by macroeconomic factors that influence debt (e.g. Axelson et al., 2013; Martos-Villa et al., 2019) and equity markets (Chiarella & Ostinelli, 2020). Kaplan and Strömberg (2009) highlights that "[...] when the cost of debt is relatively low compared to the cost of equity, private equity can arbitrage or benefit from the difference." (p. 137). Kaplan and Stein (1993) examine US buyouts during the 80s and find that the increased demand in the junk bond market, which arose during the middle of the decade, had an impact on the capital structure and pricing of buyouts that occurred during the second half of the same decade. Axelson et al. (2013) show that buyout leverage is negatively related to the credit risk premium, defined as the high yield spread minus LIBOR, in an international sample between 1980 and 2008. Moreover, Axelson et al. (2013) find that the higher the deal leverage, the higher the transaction price. The credit spread is high when investors are reluctant towards risk and low when their risk appetite is high (Chiarella & Ostinelli, 2020).

The equity market's valuation is, in addition to debt capital market conditions, affecting the relative behavior of strategic and financial buyers. A high stock market valuation has a negative effect on the activity of financial buyers and as a consequence, the relative amount of activity

[5] Bargeron et al. (2008) had a sample period between 1980 and 2005, Fidrmuc et al. (2012) used data from 1997-2006, Gorbenko and Malenko (2014) between 2000 and 2008. All three studies use a US sample.

from strategic acquirers increase (Chiarella & Ostinelli, 2020). A higher equity market valuation is also associated with lower discount rates and new growth opportunities not yet incorporated into a valuation will be worth relatively more during periods of lower discount rates (ibid). Thus, synergies are reflected in strategic buyers' premiums exceeding financial acquirers' (Gorbenko & Malenko, 2014), which will be worth relatively more when discount rates are lower (Chiarella & Ositnelli, 2020). At the top of the business cycle, PE transaction leverage tend to peak, target leverage tend to be low, and equity valuation high, and vice versa in economic downturns (Axelson et al., 2013). Private equity funds are differently operated than operating companies (strategic buyers), with the main objective to be an active player in the M&A market to generate return to its investors. Since PE funds have a finite life (Ljungqvist et al., 2020) we argue that PE fund managers are committed to actively search for new investments independent of the state of the economic cycle while operating companies (strategic buyers) mainly focus on their existing business during difficult periods. Haddad et al. (2017) find evidence that LBO target characteristics varies over the economic cycle, influenced by a change in the equity risk premium. Due to the different nature of PE firms and operating companies and the fact that previous studies have shown that market conditions impact LBO activity and deal structure (Axelson et al., 2013; Chiarella & Ostinelli, 2020; Haddad et al., 2017; Martos-Villa et al., 2019), we hypothesize that the prevailing market conditions influence the differences in preferences between strategic and financial acquirers. Hence:

Hypothesis 6: Capital market conditions affect the target characteristics differences between PE and non-PE acquirers.

3. Data and Methodology

This section explains the proxies and methods used in the paper followed by a description of the data and how it is handled to enable a proper statistical analysis[6]. We perform a univariate analysis of difference in means and a multivariate logistic regression model with a maximum likelihood approach. All tests are performed on the full sample 2005-2019 and on two subsamples. The subsamples reflects a period of economic instability (2008-2013) and the remaining years (2005-2007 and 2014-2019). Considering the large economic recession during our sample period and the cyclical nature of M&A (Kaplan & Strömberg, 2009) we perform an additional analysis on two subsamples; one during the bank- and euro-crisis from 2008-2013 (Allegret et al., 2017; Moro, 2014) and the second includes the remaining years, to investigate if there is a difference in target characteristics during different economic cycles between PE and non-PE firms.

3.1. **Methodology**

For the first hypothesis, we use debt to equity (*DE*), debt to assets (*DA*) and liabilities to assets (*LA*) as proxies. We give most attention to debt to equity, which is a commonly used leverage measure in previous literature (e.g. Halpern et al., 1999; Osborne et al., 2012; Renneboog et al., 2007). *DA*, which is used by Aslan and Kumar (2011), and *LA* is primarily used for robustness checks.

Inspired by Chiarella and Ostinelli (2020), we use debt divided by earnings before interest, tax, depreciation and amortization (EBITDA) (*DebtEBITDA*) calculated by using the average debt for the last two years prior to announcement of the transaction and last year's EBITDA to proxy the debt capacity (Hypothesis 2). In addition to *DebtEBITDA* we use the interest coverage ratio (*InterestCov*) (EBIT/interest expenses) inspired by Aslan and Kumar (2011). Debt to EBITDA is a common measure for assessing companies leverage profile (Standard & Poor's, 2019) and a used proxy for debt capacity in previous studies (e.g. Axelson et al., 2013; Chiarella & Ostinelli, 2020). A higher *DebtEBITDA* indicates a lower debt capacity while a higher *InterestCov* indicates a higher debt capacity.

[6] Formulas for proxy variables is provided in Appendix A – Definition of variables.

To examine the third hypothesis, we use levered free cash flows to total assets (*LFCFAssets*) and unlevered free cash flows to total assets (*UFCFAssets*) as proxies. We are scaling free cash flows since ratios are easier to work with when comparing companies with different sizes. The choice to scale FCF with assets is inspired by Achleitner et al. (2013), Aslan and Kumar (2011) and Osborne et al. (2012).

The fourth hypothesis is proxied by return on assets (*ROA*) and return on equity (*ROE*), calculated by CIQ. Both measures are commonly used to measure profitability in the literature; ROA is used by Aslan & Kumar (2011), Chiarella and Ostinelli (2020), Gou et al. (2011), Osborne et al. (2012) and Renneboog et al. (2007) while ROE is used by Chiarella and Ostinelli (2020) and Osborne et al. (2012).

The price to book ratio (*PB*) and price to sales (*PS*) are used as proxies for relative valuation (Hypothesis 5). *PB* is calculated by dividing the market value of equity by the book value of equity at the date of the last annual report before announcement. *PS* is calculated by dividing the market value of equity to total revenue. A higher *PB* and *PS* indicates a relative overvaluation, ceteris paribus. *PB* is used in previous literature (e.g. Chiarella & Ostinelli, 2020; Osborne et al., 2012). *PS* is used as a complement since it is a valuation measures in firms with negative earnings. Price to earnings ratio is common in relative valuation, however, due to negative earnings in 385 of our observations we chose to instead use *PB* with *PS* as an alternative.

We examine Hypothesis 6 by constructing interaction terms between proxy variables of interest for hypothesis 1-5 and a crisis dummy variable which takes the value of one if the transaction is announced during 2008-2013 and zero otherwise.

We conduct a one sided t-test for hypothesis 1-5 which all have a theoretical or empirical framework that suggest a certain direction of the difference between PE and non-PE targets. Stock and Watson (2015, pp.126-127) argue that one-sided test should be used when the corresponding hypothesis is directional. Powell (1997) use one-sided tests for hypotheses with an expected sign when constructing a predictive takeover model based on a UK sample between 1984 and 1991. For hypothesis 6 and for control variables, we conduct two-sided tests since only whether there is a difference or not, is of interest in contrast to hypothesis 1-5. The coefficients of the five interaction terms are then tested with an F-test, to determine whether at least one of the terms affect the probability of being a PE target during crisis.

Table 1 – Summary of hypotheses

Table 1 displays our hypotheses, used proxy variables and the expected sign in the t-tests. All balance sheet items are averages for the two last annual reports preceding the announcement of the transaction, except for price to book which is the market value of equity divided by the book value of equity at the last annual report before announcement. X_i is the proxy variable used to examine hypothesis i, for i=1-5, while Crisis is a dummy variable that equals one if the transaction is announced during 2008-2013 and zero otherwise. For a discussion of the expected sign, see sections 2.1-2.6. See Appendix A – Definition of variables for formulas.

Hypotheses	Proxy variable	Proxy description	Expected sign
1 – Leverage	DE	Debt to equity	(-)
	DA	Debt to assets	(-)
	LA	Liabilities to assets	(-)
2 – Debt capacity	DebtEBITDA	Debt to EBITDA	(-)
	InterestCov	Interest coverage ratio	+
3 – Free cash flow	LFCFAssets	Levered free cash flows to assets	+
	UFCFAssets	Unlevered free cash flows to assets	+
4 – Profitability	ROE	Return on equity	+
	ROA	Return on assets	+
5 – Undervaluation	PB	Price to book	(-)
	PS	Price to sales	(-)
6 – Market conditions	$X_i \times$ Crisis	Interaction term	+/(-)

3.1.1. Univariate

In the univariate analysis, we compare firm characteristics between targets selected by PE and non-PE acquirers. Our univariate analysis composes of two sample one-sided t-test, for hypotheses 1-5, of difference in means with unequal variances. Most previous literature suggests testing for theoretical assumptions such as normal distributions and variance homogeneity (Rasch et al., 2011). For example, Ambrose and Megginson (1992) conducted a chi-square test for unequal variances to decide whether this assumption is fulfilled. Rasch et al. (2011), however, showed that pre-testing of statistical assumptions before the actual model, in a two-sample t-test can lead to unknown final type-I- and type-II risks if the tests are performed using the same set of observations. As per recommendation from Rasch et al. (2011) we do not pre-test our sample but instead apply the Welch-test (1947) who adapts the student t-test for two samples that possibly have different variances (Ahad & Yahaya, 2014):

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}, \quad (1)$$

where t equals the test t-statistic for a Welch t-test, $\bar{x}_{1,2}$*,* $\mu_{1,2}$*,* $s_{1,2}$*,* $n_{1,2}$ *is the sample mean, population mean, sample variance, and number of observations for each group respectively.*

3.1.2. Multivariate

We examine the probability of being acquired by a PE firm conditioned on financial characteristics of the target firm pre-announcement, among the spectra of PTP transactions.. We use a logistic regression model, due to the binary nature of our dependent variable, a type of model commonly used within this field of research (e.g. Lehn & Poulsen, 1989, Osborne et al., 2012, & Weir et al., 2005b). Our main binary logistic regression model is constructed as presented below:

$$\Pr(PE = 1|DE, LFCFAssets, DebtEBITDA, ROA, PB, Size, Country, Industry) = \Phi(\beta_0 + \beta_1 DE + \beta_2 LFCFAssets + \beta_3 DebtEBITDA + \beta_4 ROA + \beta_5 PB + \beta_6 Size + \sum_{i=7}^{20} \beta_i Country_i + \sum_{j=21}^{30} \beta_j Industry_j), \quad (2)$$

where Φ is the logistic cumulative distribution function

Our dependent variable *PE* takes the value 1 if the target company is acquired by a PE firm and 0 otherwise. The explanatory variables are all expressed as ratios to standardize them for better comparability. For hypotheses 1-5 several proxies are constructed (see Table 1). Only one independent variable per hypothesis is used in our main model to avoid multicollinearity between variables.

To test our first hypothesis, we use the debt to equity ratio (*DE*) which is used in previous research by Halpern et al. (1999), Osborne et al. (2012), and Renneboog et al. (2007).

Debt to EBITDA (*DebtEBITDA*) is used as proxy for debt capacity (Hypothesis 2. Due to the incorporation of operating leasing costs in interest expenses according to IFRS16 from January 1, 2019 (IASB, 2016), we use debt to EBITDA rather than the interest coverage ratio in our main model for greater comparability throughout time.

To test the third hypothesis, free cash flows will be estimated by levered free cash flow to assets (*LFCFAssets*). Most previous research (e.g. Aslan and Kumar, 2011; Opler and Titman,1993; Powell, 1997; Weir et al., 2008) have included interest payments in their definition of free cash flow, which indicate that levered free cash flow should be a suitable proxy.

We use return on assets (*ROA*) to examine if PE targets exhibit a higher profitability than non-PE targets (Hypothesis 4). In addition to the common use in empirical studies (e.g. Aslan & Kumar, 2011; Gou et al., 2011; Osborne et al., 2012; Renneboog et al., 2007), using *ROA*

instead of *ROE* leaves us with a profitability measure not influenced by leverage, as with *ROE*, which leaves us with a greater comparability.

For undervaluation price to book (*PB*) is used in our main models, again a commonly used measure (e.g. Chiarella & Ostinelli, 2020; Osborne et al., 2012).

We use a modified version of *equation (2)* to investigate if differences between PE and non-PE targets differs throughout different states of the economic cycle (Hypothesis 6).

$$\begin{aligned}\Pr(PE = 1|DE, LFCFAssets, DebtEBITDA, ROA, PB, Size, Country, Industry) = \\ \Phi(\beta_0 + \beta_1 DE + \beta_2 DebtEBITDA + \beta_3 LFCFAssets + \beta_4 ROA + \beta_5 PB + \beta_6 Crisis \\ + \beta_7 CrisisDE + \beta_8 CrisisDebtEBITDA + \beta_9 CrisisLFCFAssets \\ + \beta_{10} CrisisROA + \beta_{11} CrisisPB + \beta_{12} Size \\ + \sum_{i=13}^{26} \beta_i Country_i + \sum_{j=27}^{36} \beta_j Industry_j)\end{aligned} \quad (3)$$

Models using e*quation (2)* and *(3)* will be controlled for size and fixed effects using target country, target industry sector and time period. β_1-β_5 are regression coefficients of proxies for hypothesis 1-5. Size will serve the purpose of handling potential differences in characteristics which arise due to size, since public companies (strategic acquirers) more often have the ability to buy larger companies compared to PE firms (Bargeron et al., 2008). Target industry and country will control for industry and country specific characteristics. The industry variable is included due to the fact that PE firms often prefer certain industries due to the ability to use fixed assets as collateral (Fidrmuc et al., 2012). While crisis and year will control for macroeconomic factors.

3.2. **Data**

The data includes announced M&A transactions between the 1st of January 2005 and 31st of December 2019 in which the target was incorporated in a developed European financial market according to FTSE Russell (2018). Since the paper is heavily based on accounting numbers, comparability between companies and transactions is desirable. Switzerland is the only country within developed European financial markets that do not require listed companies to report according to IFRS (IFRS, n.d.) – hence, Switzerland is excluded. The transactions are identified through S&P's Capital IQ. The data includes transactions that CIQ classifies as either an LBO, a Going Private Transaction or a Full bid tender offer. The initial data set includes 2,625 transactions of which 560 transactions are made partially or fully by a PE or VC company according to CIQ's definition. All accounting numbers are reported as yearly figures preceding

the announcement of the transaction, a similar approach was used by both Fidrmuc et al. (2012) and Osborne et al. (2012), downloaded from CIQ, converted to million Euros at the report date.

3.2.1. Stylized Transaction Situations (STS)

Most of the previous literature examining LBO-targets' characteristics have the main purpose to explain returns to capital providers (e.g. Andres et al., 2007; Renneboog et al., 2007; Officer et al., 2010) and thus need successful transactions to be able to perform the study. We intend to investigate potential differences in target characteristics between PE and non-PE acquirers. Hence, the study includes both successful and unsuccessful bids to avoid biased results, consistent with the approach used by Fidrmuc et al. (2012). Due to our approach, the following three stylized transaction situations (STS), which previous studies mostly do not have, appear throughout our sample and create duplicates. STS 1 – the same acquirer make several bids that are, by CIQ, classified as closed or successful, but the company remains listed since the acquirer does not receive enough shares to delist the target company. STS 2 – the same acquirer does separate attempts to acquire the same target in which the conditions of the transaction are not fulfilled, or the bid is cancelled due to other reasons. STS 3 – different buyers bid for the same target in an auction process[7]. This study investigates which firms financial acquirers find attractive and will only keep one single observation in bidding wars (STS 3) to avoid situations where distressed firms are targeted by several acquirers or situations where a successful financial advisor has collected several bids, which may otherwise bias the results. To avoid duplicates in the three stylized transaction situations mentioned above, a threshold of 300 trading days between two consecutive bids will be imposed, inspired by Martynova and Renneboog (2009). When any of the three above situations are applicable and the time-window is smaller than 300 trading days between duplicates, the first transaction, in chronological order, is kept to avoid sampling bias. Thus, some target firms appear several times in the data if they either are acquired, delisted, re-listed and targeted again, or if there is an unsuccessful buyout followed by an announced transaction later than 300 days after the first announcement.

3.2.2. Descriptive statistics – Raw data

After removing 278 duplicates according to STS 1-3, the number of transactions reduce to 2,347 of which 478 have a PE/VC, as reported by CIQ, company as buyer. VC firms primarily

[7] For an extensive overview of auction processes, see Boone & Mulherin (2007).

invest in young companies and do typically not engage in leveraged buyouts (Kaplan & Strömberg, 2009). Thus, we do not see the fact that CIQ includes VC firms when we sort for PE firms as a large issue for our study. It might, however, impact the inferences about buyout funds but not which companies funds with limited time horizons find attractive since VC firms have also have a relatively short investment horizons. Companies with total assets less than €1 million are eliminated, reducing the sample to 2,331 transactions of which 475 are targeted by PE/VC.

Table 2 – Descriptive statistics – Raw data

Table 2 shows descriptive statistics for the raw data. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. *ImpliedEV* is the enterprise value implied by the transaction calculated by CIQ converted to million euros, *DE* is the debt to equity ratio, *DA* is debt to assets, *LA* is the liabilities to assets ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *DebtEBTIDA* is average debt to *EBITDA*, and *InterestCov* is the interest coverage ratio. *ROE* and *ROA* are the return on equity and assets, both reported by CIQ. *PB* is the price to book and *PS* is the market value of equity to total sales. *Assets* are average total assets converted to million euros and *LTA* is the log transformation of *Assets*. *LFCFAssets*, *UFCFAssets*, *ROE* and *ROA* are denominated in percentages. All accounting averages are calculated by averaging the variable for the two last annual reports preceding the announcement of the transaction. See Appendix A – Definition of variables for formulas.

	N	Mean	Std. Dev.	min	p25	Median	p75	max
ImpliedEV	1988	1351.164	5642.365	-47.706	37.521	144.823	664.15	146000
DE	2301	.784	8.315	-189.761	.08	.424	.974	122.664
DA	2302	.232	.218	0	.053	.194	.346	2.331
LA	2310	.57	.268	.001	.404	.569	.716	4.093
LFCFAssets	2068	1.185	75.221	-156.752	-3.919	1.617	6.405	3337.771
UFCFAssets	2068	2.036	75.203	-147.49	-3.155	2.52	7.382	3338.876
DebtEBITDA	2155	2.108	49.477	-1229.322	.024	1.354	3.622	826.386
InterestCov	2072	-75.389	4448.033	-175974	.42	3.487	12.275	44802.67
ROE	2149	-10.05	181.182	-5401.65	-4.141	7.55	16.387	978.947
ROA	2202	1.789	10.691	-145.038	.205	3.007	5.732	55.555
PB	2257	2.239	6.195	-123.61	.86	1.485	2.545	124.798
PS	2137	3.089	12.501	0	.383	.886	2.149	261.424
Assets	2310	3128.488	32620.78	1.042	35.985	124.913	584.848	933934
LTA	2310	5.067	2.091	.041	3.583	4.828	6.371	13.747

The average implied enterprise value is approximately €1,351 million with a standard deviation of €5,642 million in our raw data, see Table 2. Interestingly, there are 21 observations, of which 3 targeted by a PE-firm, with a negative *ImpliedEV*, i.e. a larger net cash position than the offered price of the shares, indicating firms in financial distress. Economically, it could be argued that firms with a negative *ImpliedEV* should be dropped in the analysis. However, to avoid a sampling bias from firms that are not financial distressed, we chose to keep these observations in the final sample. The debt to equity ratio has standard deviation of approximately 10.6 times the mean value of 0.784. All 60 observations with a negative debt to equity ratio are caused by a negative average equity, which is possible in e.g. consolidated

statements in company groups with large goodwill amortizations. Targets in the sample are on average generating positive cash flows as shown by a mean value of *LFCFAssets* of 1.185% and *UFCFAssets* of 2.036% respectively. The mean of *DebtEBITDA* (2.108) is lower in our sample than for companies included in the S&P500 between 2009 and 2018 which was between 4 and 5 each year during the period (Standard & Poor's, 2019). Targeted companies are on average generating positive *ROA* but negative *ROE*. This could be explained by the fact that companies included could have negative equity but are restricted to have average *Assets* of at least €1 million. However, the most probable reason is that companies can make positive profit on EBIT (*ROA*) but losses after continued operations (*ROE*), i.e. earnings including non-recurring items after interest and tax expenses. *Assets* and *ImpliedEV* have a mean value that is very large compared to their respective medians. For the former, the mean is located between the 90th and 95th percentile while the latter have a mean between the 75th and 90th percentile. Since neither *ImpliedEV* nor *Assets* are used in the analysis, nothing is done with respect to these two variables when it comes to outliers[8]. In variables which total assets impacts directly or indirectly (*DE*, *DA*, *LA*, *LFCFAssets* and *UFCFAssets*, *ROE* and *ROA*, and *PB*), all analysis is conducted using ratios, decreasing the potential impact of outliers in *Assets*. As shown in Table 2 the sample contains some missing data, where cash flow ratios are most prominent of the variables which will be tested in the analysis. Transactions with missing observations are not dropped since the univariate analysis do not require the same number of observations for all variables and in the multivariate regression analysis the statistical software used, Stata 16.1, handles the missing observations automatically.

As indicated by previous literature, a large proportion of PE backed PTP transactions, throughout our sample, have been conducted in the UK. In our sample, see Table 3, most PE backed transactions are conducted in UK, France, Sweden, Germany and Netherlands, which are the same five countries as in Axelson et al. (2013), excluding US, whom use a large international sample with transactions between 1980 and 2008. However, the total number of transactions in Poland is surprising since, to our best knowledge, no studies has been conducted on the Polish market.

Table 3 – Transactions per Country

Table 3 presents the number of PTP transactions 2005-2019 per country. All targets included had a two-year

[8] See section 3.2.3 for a further description of outliers in the data.

average of total assets of at least €1 million preceding the announcement. Targets of non-PE firms if PE=0 and by a PE-firm if PE=1.

Target Country	PE		
	0	1	Total
Austria	30	4	34
Belgium	52	4	56
Denmark	58	8	66
Finland	46	11	57
France	256	90	346
Germany	208	42	250
Ireland	28	7	35
Italy	112	22	134
Netherlands	75	30	105
Norway	142	25	167
Poland	108	16	124
Portugal	31	0	31
Spain	68	8	76
Sweden	156	43	199
United Kingdom	486	165	651
Total	1856	475	2331

When investigating the yearly distribution of our data (see Table 4), there are more transactions initiated up until the financial crisis 2008, decreasing over the euro crisis and thereafter the number of transactions is rather stable at a lower level than previous the financial crisis. The pattern for PE backed transactions, which decreased remarkably between 2008 and 2009, could be explained by favorable debt market conditions pre-crisis as argued by Martos-Villa et al. (2019) and Ljungqvist et al. (2020).

Table 4 – Transactions per Year

Table 4 shows the number of announced PTP transactions throughout 2005-2019 presented per year. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. Targets of non PE firms if PE=0 and by a PE-firm if PE=1.

PE	Year															
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
0	141	197	225	177	142	116	112	108	86	105	85	104	85	83	90	1856
1	42	46	60	50	30	37	33	22	19	24	16	23	25	22	26	475
Total	183	243	285	227	172	153	145	130	105	129	101	127	110	105	116	2331

Categorizing the data between industry sectors (Table 5) it becomes apparent that three industries seem to be more attractive to PE firms than other; Consumer Discretionary, Industrials, and Information Technology. These industries do also seem to attract non-PE firms in a larger extent and are in general more common in PTP transactions, whereas Energy and Utilities are subject to a more restrained number of buyout attempts. The pattern regarding more and less popular industries is consistent with Osborne et al. (2012) and Chiarella and Ostinelli (2020).

Table 5 – Transactions per sector

Table *5* sorts the targets into industry sector based on their respective GICS code. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. Targets of non PE firms if PE=0 and by a PE-firm if PE=1.

	PE		
Industry sector	0	1	Total
Communication Services	167	34	201
Consumer Discretionary	219	100	319
Consumer Staples	124	27	151
Energy	74	8	82
Financials	159	36	195
Health Care	138	39	177
Industrials	330	94	424
Information Technology	331	92	423
Materials	105	22	127
Real Estate	154	17	171
Utilities	55	6	61
Total	1856	475	2331

*3.2.3. **Outliers***

As concluded by Adams et al. (2019), dealing with outliers is a fundamental challenge in empirical finance. When checking the data almost all variables, except *LTA*, exhibits a highly skewed distribution, however, consider that we work with accounting ratios, a skewed sample is not surprising. More concerning is the high kurtosis the same parameters exhibits. We further investigate potential outliers which might mislead the results. Inspired by Powell (2001), we use the mean value for each variable +/- 3 standard deviations to identify potential outliers. These observations were established if they are economically reasonable and if not, they were removed from the data in the univariate analysis. This test was performed individually for each variable and the data was restored between the cleaning and the test to avoid bias from other variables when constructing our univariate analysis, inspired by Adams et al. (2019).

The second part of our analysis is a multivariate analysis which focus on how individual factors influence the probability of being acquired by a PE firm compared to a strategic acquirer. For the multivariate analysis, we scan our data for extreme values, guided by Powell (2001). The observations are then removed if impossible or highly improbable as per advice by Adams et al. (2019), a total of 143 observations were removed. In addition to scan for extreme values it is also important to understand potential influential observations, either to gain a further understanding of them and their deviation from the majority of our observations or if they are potential data errors. We plot regression residuals, which showed negative leverage points, i.e. observations whom highly affect the coefficients and the fit of the model (Adams et al., 2019).

Three additional observations were excluded due to extraordinarily events disturbing the comparability between observations.

3.2.4. Descriptive statistics – Final samples

In Table 6 outliers are handled on a univariate level, i.e. outlier truncation in one variable, does not impact the other variables. As outliers are removed, the standard deviation for the variables are reduced. Since neither *Assets* nor *ImpliedEV* are used in the univariate or multivariate tests, these are not included in our data cleaning process and hence not affected by it. The average leverage in the final sample, expressed as *DA*, is 0.223 in addition, the average *DebtEBITDA* is 2.66 which by S&P's standards are considered intermediately levered (Standard & Poor's, 2019). Despite truncating some of the more extreme values for *ROE*, the variable still have a relatively high (low) maximum (minimum) value.

Table 6 – Descriptive statistics – Final univariate sample

Table 6 shows descriptive statistics for all target companies in the *final sample* used in the univariate analysis. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. *ImpliedEV* is the enterprise value implied by the transaction calculated by CIQ converted to million euros, *DE* is the debt to equity ratio, *DA* is debt to assets, *LA* is the liabilities to assets ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, and *InterestCov* is the interest coverage ratio. *ROE* and *ROA* are the return on equity and assets, both reported by CIQ. *PB* is the price to book and *PS* is the market value of equity to total sales. *Assets* are average total assets converted to million euros and *LTA* is the log transformation of *Assets*. *LFCFAssets*, *UFCFAssets*, *ROE* and *ROA* are denominated in percentages. All accounting averages are calculated by averaging the variable for the last two annual reports preceding the announcement of the transaction. See Appendix A – Definition of variables for formulas.

	N	Mean	Std. Dev.	min	p25	Median	p75	max
ImpliedEV	1988	1351.163	5642.365	-47.706	37.521	144.823	664.15	145576.38
DE	2280	0.757	2.149	-22.115	0.08	0.422	0.961	23.312
DA	2284	0.223	0.195	0	0.052	0.191	0.341	0.878
LA	2296	0.56	0.229	0.001	0.403	0.567	0.712	1.34
LFCFAssets	2067	-0.429	16.425	-156.752	-3.924	1.602	6.399	75.055
UFCFAssets	2067	0.422	16.315	-147.49	-3.199	2.519	7.381	75.351
DebtEBITDA	2136	2.662	12.593	-111.525	0.028	1.351	3.588	150.191
InterestCov	2064	25.719	534.604	-8843.724	0.447	3.498	12.238	7749.067
ROE	2135	0.202	47.417	-529.227	-3.644	7.672	16.404	305.028
ROA	2165	2.633	6.709	-29.759	0.412	3.056	5.783	30.099
PB	2228	2.021	2.551	-15.977	0.86	1.478	2.497	20.286
PS	2115	2.048	3.771	0	0.38	0.874	2.08	37.408
Assets	2310	3128.488	32620.778	1.042	35.985	124.913	584.848	933934
LTA	2310	5.067	2.091	0.041	3.583	4.828	6.371	13.747

The data used in the multivariate analysis is described by Table 7 and differs slightly from the initial data (see Table 2) and our univariate data (see Table 6) due to the differences in handling outliers in the two settings. When comparing the two data sets it becomes clear that due to

missing data the average size on targets' assets decrease. Remaining variables become less affected by outliers and thus the corresponding standard deviation decreases.

Table 7 – Descriptive Statistics – Final multivariate sample

Table 7 shows descriptive statistics for all target companies in the *final sample* used in the multivariate analysis. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. *ImpliedEV* is the enterprise value implied by the transaction calculated by CIQ converted to million euros, *DE* is the debt to equity ratio, *DA* is debt to assets, *LA* is the liabilities to assets ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, and *InterestCov* is the interest coverage ratio. *ROE* and *ROA* are the return on equity and assets, both reported by CIQ. *PB* is the price to book and *PS* is the market value of equity to total sales. *Assets* are average total assets converted to million euros and *LTA* is the log transformation of *Assets*. *LFCFAssets*, *UFCFAssets*, *ROE* and *ROA* are denominated in percentages. All accounting averages are calculated by averaging the variable for the last two annual reports preceding the announcement of the transaction. See Appendix A – Definition of variables for formulas.

	N	Mean	Std. Dev.	min	p25	Median	p75	max
ImpliedEV	1698	1426.869	6005.669	-47.706	41.479	157.533	703.77	146000
DE	1899	.699	1.614	-22.115	.097	.424	.917	23.312
DA	1899	.218	.185	0	.057	.191	.33	.87
LA	1899	.543	.212	.004	.399	.559	.684	1.331
LFCFAssets	1899	.391	13.845	-89.852	-3.47	1.757	6.505	75.055
UFCFAssets	1899	1.175	13.795	-88.866	-2.61	2.619	7.242	75.351
DebtEBITDA	1899	2.58	12.113	-111.525	.072	1.413	3.572	150.191
InterestCov	1772	45.65	471.695	-6463.293	.962	4.106	13.468	7749.067
ROE	1877	2.165	40.341	-529.227	-2.719	7.972	16.388	305.028
ROA	1899	2.773	6.574	-29.759	.681	3.284	5.957	25.754
PB	1899	2.085	2.331	-15.977	.897	1.527	2.526	18.691
PS	1819	1.847	3.3	0	.372	.844	1.941	34.399
Assets	1899	1583.601	7821.839	1.281	41.508	136.957	560.778	151000
LTA	1899	5.114	1.932	.248	3.726	4.92	6.329	11.926

The Pearson and Spearman correlation matrix of the final data is provided in Appendix B – Table B2. Interestingly, all explanatory variables have a statistically insignificant correlation with the PE variable, except *ROA, ROE* and *PS*. Several variables that have a positive pair-wise correlation are variables that share the same numerator (e.g. *DE* and *DA*; *DA* and *DebtEBITDA*) or the same denominator (e.g. *DE* and *PB*; *DA* and *LA*; *LFCFAssets* and *UFCFAssets*). Correlations of interest are those between variables with a different numerator and denominator, and variables that are expected to correlate according to the financial theory. The correlation matrix (Table B2) indicates that companies with a higher book leverage (*DE*) have a higher valuation (in terms of *PB*) but are less profitable (*ROE* and *ROA*). It could be argued that the correlation between *DE* and *PB* is caused by the fact that the two ratios share the same denominator. From a simple Dupont decomposition a higher leverage increases the return on equity, ceteris paribus. Since the correlation between *DE* and *ROE* are negative and significantly different from zero, our data indicates a different logic – firms with higher

leverage have a lower profitability. The correlation between *DE* and *ROA* indicates the same pattern even though not statistically significant.

4. Results and analysis

This section provides the study's results, the corresponding analysis and the interpretation of the results. Firstly, we present our results for the full sample, followed by an analysis of the subsamples which answer our sixth hypothesis – if capital market conditions impact the relative difference in preferences between financial and strategical buyers. In both subsections, we provide the results per hypothesis for both the univariate and multivariate models. In the univariate analysis, we test whether PE and non-PE targets differs on average in terms of leverage, free cash flows, debt capacity, profitability and undervaluation, ceteris paribus. The multivariate models examine whether firms with certain financial characteristics exhibits a higher probability to be taken private by a PE-firm than a non-PE firm, or not, while controlling for other financial and non-financial characteristics such as the target's size and country of incorporation etc. Since our sample consist of all announced PE transactions within our chosen time period and geography, the multivariate models are interpreted similar to the univariate, with the main difference that we control, in the multivariate models, for other potential characteristics that could explain differences between the two groups of buyers. Hence, the results from the multivariate model is used to answer our research question – do PE and non-PE targets differ in terms of financial characteristics?

4.1. **Full Sample**

We hypothesize, in hypothesis 1, that PE targets exhibits a lower leverage than non-PE targets. The only proxy for leverage in our univariate sample (Table 8) which shows the expected, negative, sign is *DE*. *DA* and *LA* have positive signs indicating that PE targets exhibit a higher leverage than non-PE targets. None of the three proxies for our first hypothesis are statistically significant and we can thus not reject that PE targets exhibits a leverage higher or equal to non-PE targets. Continuing, in model 1-4 (Table 9) *DE* is not statistically significant. Hence, we cannot reject the null and thus not conclude that PE targets exhibits a lower leverage than non-PE targets. Previous empirical findings of PE targets' leverage are diverged and our results continue to send doubts to our leverage hypothesis (Hypothesis 1). Achleitner et al. (2013), Lehn and Poulsen (1989) and Opler and Titman (1993) show that PE targets exhibit a lower leverage pre-transaction compared to firms that remain public while Halpern et al. (1999), Kieshnick (1998) and Weir et al. (2005a) do not. Interestingly, our results are more similar to Fidrmuc et al. (2012) whom did not find significant differences between strategic and financial

targets in a US sample, than to Aslan and Kumar (2011) whom find a lower leverage for PE targets than non PE targets in a UK sample. The dissimilarities with Aslan and Kumar (2011) are surprising since our sample consist of approximately 28% UK transactions. In summary, we cannot reject that PE targets have a leverage higher or equal to non-PE targets. Hence we do not find support for a part of Jensen's (1986) free cash flow hypothesis.

Table 8 – Univariate full sample results

Table 8 shows the results of the univariate analysis. *DE* is the debt to equity ratio, *DA* is debt to assets, *LA* is the liabilities to assets ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, and *InterestCov* is the interest coverage ratio. *ROE* and *ROA* are the return on equity and assets, both reported by CIQ. *PB* is the price to book and *PS* is the market value of equity to total sales. *LFCFAssets*, *UFCFAssets*, *ROE* and *ROA* are denominated in percentages. All accounting averages are calculated by averaging the variable for the last two annual reports preceding the announcement of the transaction. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. See Appendix A – Definition of variables for formulas. N(PE) and N(non-PE) denotes the number of observations with PE and non-PE buyers respectively. PE and Non-PE show the sample mean for firms targeted by PE and non-PE buyers respectively, t shows the t-statistic for the difference of means between PE and non-PE, while p-lower and p-upper show the p-value for prob(PE<non-PE) and prob(PE>non-PE) respectively. The t-statistic is calculated using Welch (1947) t-test assuming unequal variance in the population of PE and non-PE targets. *, ** and *** denotes significance on a ten, five and one percent level respectively for a one-sided t-test. For an overview of each variable's expected sign please see Table 1.

	N(PE)	N(non-PE)	PE	Non-PE	t	p-lower	p-upper
DE	462	1818	0.696	0.773	-0.934	0.175	0.825
DA	469	1815	0.228	0.222	0.565	0.714	0.286
LA	471	1825	0.560	0.559	0.086	0.534	0.466
LFCFAssets	430	1637	0.786	-0.748	1.882**	0.970	0.030
UFCFAssets	430	1637	1.674	0.093	1.954**	0.974	0.026
DebtEBITDA	443	1693	2.612	2.675	-0.099	0.460	0.540
InterestCov	432	1632	38.860	22.241	0.760	0.776	0.224
ROE	439	1696	5.357	-1.132	3.000***	0.999	0.001
ROA	443	1722	3.730	2.350	4.143***	1.000	0.000
PB	452	1776	2.034	2.018	0.133	0.553	0.447
PS	438	1677	1.908	2.085	-0.877	0.191	0.809

In the univariate setting, our insignificant results do not show any support for differences in debt capacity between PE and non-PE targets when using neither *DebtEBITDA* nor *InterestCov* as a proxy (Table 8). It is important to remember, despite different signs and statistically insignificant, the two ratios indicate the same pattern (see Table 1). Our results do neither suggest that PE targets, on average, have a higher debt capacity than non-PE targets (Table 8) nor that a higher debt capacity increase the probability (Table 9) of being a PE target. These findings refute previous results reported by Aslan and Kumar (2011), and Chiarella and Ostinelli (2020). Aslan and Kumar (2011) find that PE firms seem to choose targets with higher debt capacity than their public peers while firms which go private with other means are not better than their public peers. Their overall conclusion is that PE firms are able to select relatively stronger firms while not formally conducting any univariate tests between the two

groups (Aslan & Kumar, 2011). The results and conclusions from Aslan and Kumar (2011) were later supported by Chiarella and Ostinelli (2020) who not only used firms from the euro area, instead of UK as Aslan and Kumar (2011), but also used a longer and more recent time-period than Aslan and Kumar (2011).

The difference in means, between PE and non-PE targets, for *LFCFAssets* and *UFCFAssets* are significantly larger than zero on a five percent level (Table 8). On the other hand, recent results have not been able to find significant differences between PE targets and their comparable firms in neither US (Fidrmuc et al., 2012), nor in an international sample (Osborne et al, 2012). Geranio and Zanotti (2012), on the other hand, presents differences in cash flow ratios between buyers in Continental Europe. PE firms seem to acquire companies with higher cash flows than other types of buyers, though no formal tests are constructed and a statistical difference cannot be concluded (Geranio & Zanotti, 2012). Potential differences between our and previous results by Fidrmuc et al. (2012) and Osborne et al. (2012) might be due to time-specific trends and the fact that our sample period is more recent than the two above mentioned studies. We can, however, not reject that firms with lower cash flows have an increased probability to be a PE-target (Table 9) when controlling for other firm characteristic. Hence, we find weak support for that PE targets have an ability to generate larger cash flows in relation to their asset base, than non-PE targets, but are not able to say if there are other circumstances that affects the mean difference between targets.

Table 9 – Full sample regression results

Table 9 shows the regression results from the logistic regression with a dependent variable that equals 1 if the buyer is a PE firm and 0 otherwise, using a maximum likelihood approach with robust standard errors. *DE* is the debt to equity ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, *ROA* is the return on assets, reported by CIQ, and *PB* is the price to book ratio. *Size* is the target size proxied by *LTA*, Crisis is a dummy variable equal to 1 if the transactions is announced during 2008-2013 and 0 otherwise. *Country* and *Industry* controls for country and industry fixed effects respectively. (1) is the regression output of the model in equation (2) without control variables, (2) is the regression results using *LTA* as a control for target size, (3) is the regression results controlling for crisis period and (4) is the regression results controlling for target size, using *LTA*, the crisis period, target country, and target industry. *LTA* is the log transformation of average total assets the last 2 years preceding announcement of the transaction. The table shows the regression coefficients for respective variable with t-values in brackets. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. See Appendix A – Definition of variables for formulas. *, ** and *** denotes significance on a ten, five and one percent level respectively for a one-sided t-test. +, ++ and +++ denotes significance on a ten, five and one percent level respectively for a two-sided t-test. For an overview of each variable's expected sign please see Table 1.

	(1)	**(2)**	**(3)**	**(4)**
DE	0.018	0.017	0.018	0.036
	(0.63)	(0.61)	(0.66)	(1.13)
LFCFAssets	0.005	0.005	0.005	0.002
	(1.20)	(1.20)	(1.22)	(0.51)
DebtEBITDA	-0.001	-0.001	-0.001	0.001

	(-0.26)	(-0.27)	(-0.23)	(0.25)
ROA	0.027***	0.027***	0.027***	0.023**
	(2.79)	(2.78)	(2.79)	(2.27)
PB	-0.064***	-0.064***	-0.062***	-0.078***
	(-2.60)	(-2.58)	(-2.48)	(-2.79)
Constant	-1.299+++	-1.306+++	-1.344+++	-2.349+++
	(-16.98)	(-8.04)	(-14.20)	(-3.57)
Size		0.001		0.035
		(0.05)		(1.12)
Crisis			0.094	0.088
			(0.81)	(0.74)
Country fixed effects	No	No	No	Yes
Industry fixed effects	No	No	No	Yes
Observations	1899	1899	1899	1879

We expect PE targets to have a higher profitability, on average, than non-PE targets and find results that strengthens our fourth hypothesis. Both mean *ROE* and *ROA* are significantly larger, at a one percent level, for PE targets (Table 8) consistent with most previous empirical work (e.g. Aslan & Kumar, 2011; Chiarella & Ostinelli, 2020; Fidrmuc et al., 2012). Our results in model (1) (Table 9) is robust to industry and country fixed effects on a five percent significance level. Hence, a higher profitability suggest an increased likelihood of being a PE target. These results strengthen Aslan and Kumar's (2011) view that PE firms have a superior ability to identify relative stronger firms for LBOs. Our results for *ROA* are partly in line with Osborne et al. (2012) who find significant results in some models dependent on used control variables in an international sample. Aslan and Kumar (2011) use a UK sample and find that a higher ROA increase the likelihood of being taken private by a PE firm in a multinomial logit. However, their results also show that a higher profitability increases the likelihood of being subject to a PTP transactions, while not directly compare PE and non-PE buyouts (ibid). Hence, our results complement previous findings by Aslan and Kumar (2011). Profitability for PE targets seems to be consistent across countries, as Fidrmuc et al. (2012) found similar evidence for US companies. Our findings contradict Gorbenko and Malenko's (2014) suggestion that financial acquirers target poorly performing firms due to their superior ability to handle turnaround cases, and suggests that PE firms do not desire to buy poorly performing firms to a larger extent than strategic buyers. In our sample, it is reasonable to believe that the PE targets are seen, by the PE firms, as separate entities and not add-on acquisitions since we (1) are investigating PTP transactions and (2) are not able to identify whether strategic buyers are

owned by PE firms or not[9]. Thus, our PE firms may not value potential synergies as strategical buyers do (Gorbenko and Malenko, 2014) and hence, the underlying profitability and cash generating capacity could be argued to be of larger importance.

We do not find any significant mean difference in target valuation between PE and non-PE acquirers, using neither *PB* nor *PS* as proxy (Table 8), in contrast to Fidrmuc et al. (2012) and Osborne et al. (2012). Despite statistically insignificant, *PS* have the expected sign in contrast to *PB* (Table 1). Based on Table 9, we can reject the null, which suggest that PE targets have a lower relative valuation and thus are undervalued. A lower market-to-book ratio (similar to *PB*) indicates firms with lower future growth prospects (Osborne et al., 2012). Since we find evidence for lower *PB* ratios for PE targets than non-PE targets, our results suggests that there are difference in either valuation or future growth prospects between the two groups of target firms.

We find that both profitability and undervaluation significantly affects, at a one percent significance level, the likelihood of being taken private by a PE firm compared to a non-PE firm, robust to country and industry fixed effects (model 2 to 4 Table 9). The multivariate tests reveals that a high profitability is relative more important to PE firms than strategic firms, considering PE firms do not have the possibility to account for synergies (Chiarella & Ostinelli, 2020; Gorbenko & Malenko, 2014; Martos-Villa et al. 2019) their reliance on individual firm performance could be seen as relatively stronger. Our results suggest that a relatively higher valuation, ceteris paribus, decreases the probability of being a PE target. The fact that a lower valuation seems to be attractive to PE firms is consistent with previous findings (Aslan & Kumar, 2011; Chiarella & Ostinelli, 2020; Fidrmuc et al., 2012; Osborne et al., 2012). Hence, our results of the full sample analysis suggest that PE firms prefer undervalued profitable targets.

4.2. **Subsample Analysis**

The following section discuss the effect of crisis on our respective proxies before answering the sixth hypothesis – if capital market conditions impact the relative difference in preferences between financial and strategical buyers.

[9] By identifying transactions, known by the authors, it could be concluded that CIQ sometimes fail to classify special purpose vehicles founded by PE firms of the sole purpose to perform a buyout, as PE buyers. Due to time constraints, all buyers have not been manually investigated and classified as PE or non-PE.

Table 10 – Univariate split sample results

Panel A shows the results of the univariate analysis during the crisis period 2008-2013. Panel B shows the results of the univariate analysis during the non-crisis period (2005-2007 and 2014-2019). *DE* is the debt to equity ratio, *DA* is debt to assets, *LA* is the liabilities to assets ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, and *InterestCov* is the interest coverage ratio. *ROE* and *ROA* are the return on equity and assets, both reported by CIQ. *PB* is the price to book ratio and *PS* is the market value of equity to total sales. *LFCFAssets*, *UFCFAssets*, *ROE* and *ROA* are denominated in percentages. All accounting averages are calculated by averaging the variable for the last two annual reports preceding the announcement of the transaction. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. See Appendix A – Definition of variables for formulas. N(PE) and N(non-PE) denotes the number of observations with PE and non-PE buyers respectively. PE and Non-PE show the sample mean for firms targeted by PE and non-PE buyers respectively, t shows the t-statistic for the difference of means between PE and non-PE, while p-lower and p-upper show the p-value for prob(PE<non-PE) and prob(PE>non-PE) respectively. The t-statistic is calculated using Welch (1947) t-test assuming unequal variance in the population of PE and non-PE targets. *, ** and *** denotes significance on a ten, five and one percent level respectively for a one-sided t-test. For an overview of each variable's expected sign please see Table 1.

Panel A

	N(PE)	N(non-PE)	PE	Non-PE	t	p-lower	p-upper
DE	188	727	0.570	0.741	-1.607*	0.054	0.946
DA	190	730	0.201	0.218	-1.132	0.129	0.871
LA	190	735	0.548	0.544	0.256	0.601	0.399
LFCFAssets	181	653	1.965	-1.983	3.375***	1.000	0.000
UFCFAssets	181	653	2.862	-1.145	3.428***	1.000	0.000
DebtEBITDA	183	683	0.967	2.661	-1.883**	0.030	0.970
InterestCov	175	647	49.915	25.819	0.504	0.693	0.307
ROE	179	686	3.187	-6.384	2.629***	0.996	0.004
ROA	180	691	3.646	1.788	3.657***	1.000	0.000
PB	183	716	1.916	1.643	1.490	0.931	0.069
PS	177	676	1.471	1.822	-1.299	0.098	0.902

Panel B

	N(PE)	N(non-PE)	PE	Non-PE	t	p-lower	p-upper
DE	274	1091	0.783	0.794	-0.097	0.461	0.539
DA	279	1085	0.246	0.226	1.630	0.948	0.052
LA	281	1090	0.568	0.570	-0.088	0.465	0.535
LFCFAssets	249	984	-0.071	0.071	-0.126	0.450	0.550
UFCFAssets	249	984	0.810	0.915	-0.095	0.462	0.538
DebtEBITDA	260	1010	3.770	2.685	1.250	0.894	0.106
InterestCov	257	985	31.332	19.891	0.659	0.745	0.255
ROE	260	1010	6.852	2.435	1.664**	0.952	0.048
ROA	263	1031	3.788	2.727	2.407***	0.992	0.008
PB	269	1060	2.115	2.271	-0.910	0.182	0.818
PS	261	1001	2.204	2.262	-0.205	0.419	0.581

Leverage exhibits some differences between the two groups during crisis and non-crisis in table (Table 10). During crisis, see panel A Table 10, PE targets exhibit a lower leverage expressed as *DE*, significant at a ten percent level. In a multivariate setting (see Table 12) we do not find support for that capital market conditions affect the relative leverage preferences. The coefficients for *DE* is positive and for the interaction term *CrisisLeverage*, the coefficient is negative which can be seen in Table 12, however, the coefficients are not statistically significant.

While market conditions did not affect differences in leverage preferences between PE and non-PE acquirers, debt capacity preferences seem to change in different economic states. During crisis, PE targets have a higher debt capacity than non-PE targets in terms of *DebtEBITDA*, significant at a five percent level in our univariate tests found in Table 10. The analysis of the interaction term *CrisisDebtCapacity* (Table 12) supports the univariate results, significant at a one percent level, which suggest that PE targets exhibits a higher debt capacity during crisis than non-PE targets. Considering that debt becomes relatively more expensive during crisis periods (Chiarella & Ostinelli, 2020) we expect debt capacity to be important for PE firms when evaluating possible targets during crisis since the ability to handle increased leverage post-transaction and higher distress costs are important for the PE business model (Axelson et al., 2013).

Table 11 – Split sample regression results I

Table 11 shows the regression results from the logistic regression with a dependent variable that equals 1 if the buyer is a PE firm and 0 otherwise, using a maximum likelihood approach with robust standard errors. *DE* is the debt to equity ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, *ROA* is the return on assets, reported by CIQ, and *PB* is the price to book ratio. *Size* is the target size proxied by *LTA*, *Crisis* is a dummy variable equal to 1 if the transactions is announced during 2008-2013 and 0 otherwise. *Country* and *Industry* controls for country and industry fixed effects respectively. (5) is the regression output of the model in *equation (2)* during the crisis period (2008-2013), (6) is the regression output of the model in equation (2) during the non-crisis period (2005-2007 and 2014-2019), model (7) is the regression results during crisis controlling for size, model (8) is the regression results during non-crisis controlling for size, (9) is the regression results during crisis controlling for size, country of incorporation and industry, and (10) is the regression results during non-crisis controlling for size, country of incorporation and industry. *LTA* is the log transformation of average total assets the last 2 years preceding announcement of the transaction. The table shows the regression coefficients for respective variable with t-values in brackets. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. See Appendix A – Definition of variables for formulas. *, ** and *** denotes significance on a ten, five and one percent level respectively for a one-sided t-test. +, ++ and +++ denotes significance on a ten, five and one percent level respectively for a two-sided t-test. For an overview of each variable's expected sign please see Table 1.

	(5)	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
	Crisis	**No Crisis**	**Crisis**	**No Crisis**	**Crisis**	**No Crisis**
DE	-0.010	0.026	-0.000	0.015	-0.013	0.035
	(-0.27)	(0.64)	(-0.01)	(0.35)	(-0.29)	(0.79)
LFCFAssets	0.014**	0.000	0.013**	-0.000	0.009	-0.002
	(1.98)	(0.06)	(1.97)	(-0.07)	(1.12)	(-0.27)
DebtEBITDA	-0.012*	0.006	-0.011*	0.005	-0.012*	0.010**
	(-1.56)	(1.06)	(-1.46)	(0.94)	(-1.55)	(1.70)
ROA	0.029**	0.023*	0.031***	0.022*	0.025**	0.014
	(2.15)	(1.63)	(2.34)	(1.51)	(1.81)	(0.90)
PB	-0.007	-0.085***	-0.016	-0.080**	-0.024	-0.101***
	(-0.20)	(-2.40)	(-0.41)	(-2.26)	(-0.59)	(-2.50)
Size			-0.060	0.046+	-0.017	0.057+
			(-1.22)	(1.36)	(-0.30)	(1.46)
Constant	-1.327+++	-1.302+++	-1.040+++	-1.544+++	-1.943++	-2.871+++
	(-11.95)	(-11.88)	(-4.01)	(-7.14)	(-2.20)	(-2.47)
Country fixed effects	No	No	No	No	Yes	Yes

Industry fixed effects	No	No	No	No	Yes	Yes
Observations	770	1129	770	1129	751	1115

During crisis, both *LFCFAssets* and *UFCFAssets* are significantly higher, for PE targets than non-PE targets, in a univariate setting, at a one percent level (see panel A Table 10), while no difference could be distinguished before and after the crisis. In the multivariate setting, seen in model (11) in Table 12, we cannot conclude any differences in free cash flows during and outside the crisis, the results are robust when controlling for industry and country fixed effects. Although the sign is as expected for cash flows during crisis, the result is not statistically significant. When dividing the sample and performing regressions on the split sample, the cash flows is significant (model 5 to 8, Table 11). However, when controlling for country and industry fixed effects, in addition to size, the effect wears off. Hence, our results concerning differences in cash flows in model 5-8 (Table 11) between targets is probably explained by the fact that companies from certain industries are more common PE targets (see Table 5) and that companies from these industries in general exhibits different cash flows than companies from other industries. Furthermore, the interaction term *CrisisFreeCashFlows* (see Table 12) is not statistically different from zero, and thus we cannot conclude that FCF affect the probability to become a PE target during economic downturns.

Despite the positive effect of profitability on the likelihood of being acquired by a PE firm in the full sample, we do not find any significant effect of the measure during separate periods. The univariate split sample results (see Table 10) show a significant higher profitability, in both *ROA* and *ROE*, both outside and during crisis. In Table 12, profitability affect the probability of going private but we do not find any results suggesting changed profitability preferences during crisis. This might suggest that profitability is important for PE firms in all economic states (see the discussion for the full sample under section 4.1).

Table 12 – Regression results subsample analysis

Table 12 shows the regression results from the logistic regression with a dependent variable that equals 1 if the buyer is a PE firm and 0 otherwise, using a maximum likelihood approach with robust standard errors. Model (11) and (12) uses the following proxies for the hypotheses: *DE, LFCFAssets*, *DebtEBITDA*, *ROA*, and *PB*, and are used for the variables both on a stand-alone basis and in the interaction terms. *DE* is the debt to equity ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, *ROA* is the return on assets, reported by CIQ, and *PB* is the price to book ratio. *Size* is the target size proxied by *LTA*, *Crisis* is a dummy variable equal to 1 if the transactions is announced during 2008-2013 and 0 otherwise. *Country* and *Industry* controls for country and industry fixed effects respectively. Model (13) and (14) uses the following proxies for the hypotheses: *DA*, *UFCFAssets*, *InterestCov*, *ROE*, and *PS*, and are used for the variables both on a stand-alone basis and in the interaction terms. *DA* is the debt to assets ratio, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *InterestCov* is the interest coverage ratio, *ROE* is the return on equity, reported by CIQ, and *PS* is the price to sales ratio. *LTA* is the log transformation of average total assets the last 2 years preceding announcement of the transaction. The table

shows the regression coefficients for respective variable with t-values in brackets. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. See Appendix A – Definition of variables for formulas. *, ** and *** denotes significance on a ten, five and one percent level respectively for a one-sided t-test. +, ++ and +++ denotes significance on a ten, five and one percent level respectively for a two-sided t-test. For an overview of each variable's expected sign please see Table 1.

	(11)	**(12)**	**(13)**	**(14)**
Leverage	0.027	0.055	0.773*	1.440***
	(0.65)	(1.22)	(1.85)	(3.04)
Debt Capacity	-0.000	0.010**	-0.007	0.000
	(-0.03)	(1.84)	(-1.00)	(0.73)
Free Cash Flows	0.006	-0.001	0.000	-0.007
	(1.09)	(-0.19)	(0.24)	(-1.03)
Profitability	0.024*	0.018	0.006**	0.005**
	(1.66)	(1.22)	(2.48)	(2.24)
Valuation	-0.083**	-0.105***	-0.053*	-0.016
	(-2.32)	(-2.54)	(-1.80)	(-0.61)
Crisis	-0.016	-0.019	0.362+	0.406+
	(-0.11)	(-0.12)	(1.67)	(1.81)
CrisisLeverage	-0.050	-0.079	-1.303++	-1.440++
	(-0.96)	(-1.42)	(-1.98)	(-2.06)
CrisisDebtCapacity	-0.018++	-0.023+++	-0.000	-0.000
	(-2.04)	(-2.60)	(-0.50)	(-0.88)
CrisisFreeCashFlows	0.013	0.009	0.019+	0.017
	(1.44)	(0.99)	(1.74)	(1.55)
CrisisProfitability	0.003	0.006	-0.002	-0.002
	(0.17)	(0.28)	(-0.64)	(-0.74)
CrisisValuation	0.090+	0.097+	-0.004	0.002
	(1.85)	(1.88)	(-0.06)	(0.03)
Constant	-1.344+++	-2.357+++	-1.418+++	-2.406+++
	(-7.19)	(-3.40)	(-7.29)	(-3.64)
Size	0.005	0.034	-0.006	0.013
	(0.18)	(1.08)	(-0.18)	(0.38)
Country	No	Yes	No	Yes
Industry	No	Yes	No	Yes
Observations	1880	1860	1704	1688

When equity markets valuations are high, the proportion of PE-backed deals are lower (Chiarella & Ostinelli, 2020). To examine whether Chiarella and Ostinelli's (2020) argument may impact our results, we execute a test of difference in means during the period 2008-2013, for *PB*, we cannot reject that it is not a difference between the PE and non-PE targets, in terms of relative valuation, neither during crisis nor during normal times[10]. It is interesting to note that *PB* is on average higher for PE targets than non-PE targets during crisis (see Panel A, Table 10). In the split sample multivariate regression (see Table 11), a relatively lower valuation outside crisis increases the probability of being acquired by a PE firm. Furthermore, the interaction term *CrisisValuation* (Table 12) is statistically distinguishable from zero, at a ten percent level, and positive, which suggest that PE targets are relatively overvalued during

[10] Outliers are not examined for the subsamples specifically. Truncated observations are the same as when the analysis of the whole sample period of PB are conducted.

crisis. It might be the case that PE targets' market valuation tend to decrease less than for non-PE targets during crisis periods, which could explain a higher relative valuation when measured as *PB*. Future work need to be carried out to establish whether PE targets are more stable during crisis periods.

To be able to evaluate if we can reject hypothesis six, related to the effect of a crisis, we perform an F-test (F-statistic equal to 15.31, not tabulated) on the coefficients of the interaction terms generated from regression (12) in Table 12. The results demonstrate a rejection of the null at a one percent significance level (p-value equal to 0.0091, not tabulated). This result suggest that the relative preferences between PE and non-PE buyers change throughout the economic cycle. Hence, we provide further evidence of the impact of different states of the economic cycle on PE activity. Previous studies (Axelson et al., 2013; Chiarella & Ostinelli, 2020; Haddad et al., 2017) have shown that macroeconomic factors affects the behavior of PE firms compared to strategic acquirers in terms of deal activity and financing, but have not thoroughly investigated how different states of the economic cycle impact the cross-sectional differences in target characteristics between financial and strategic buyers. A lower relative valuation during non-crisis increases the probability of being a PE target (see model (6), (8), and (10) in Table 11). Chiarella and Ostinelli (2020) find that a higher equity valuation decreases the proportion of PE buyers relative to strategic buyers. Hence, it is reasonable to believe that PE firms search for undervalued targets when the general equity market valuations are higher, since they (1) continuously, throughout the finite life of the fund, have to acquire companies (Ljungqvist et al., 2020) and (2) cannot utilize synergies in their acquisitions (Martos-Villa et al., 2019) which suggest that PE firms less competitive than strategic buyers in good market conditions. During crisis, the importance of debt capacity is expected to be higher due to the cyclicality of leverage levels and distress costs throughout the economic cycle (Axelson et al., 2013), which our results supports, both in the split sample regressions (Table 11) and the interaction term *CrisisDebtCapacity* (in Table 12). We do however, want to highlight that the results are not robust when changing the variables in (11) and (12) to (13) and (14) (Table 12), neither on a single variable level nor on an aggregated level. For a further discussion, see section 0.

4.3. **Robustness**

To check the robustness of our results we perform our model with alternative proxies. Firstly, our robustness checks for the full sample analysis can be found in Table B3 (appendix B) in

model 15 and 16. Profitability remain significant although at a five percent level, however, undervaluation is no longer significant when *PS* is used as a proxy. A possible explanation for undervaluation to no longer be significant is that some of the turnaround cases is not captured when using *PS* as a proxy. However, *PS* is a common measure for companies which do not yet make a positive profit and might not be a suitable proxy for the typical company which faces a PTP transaction i.e. a stable company with low growth (Jensen, 1989). Hence a market based measure, such as past stock performance, might have been a better proxy.

Secondly, the crisis results are no longer significant when changing the proxies for the hypotheses. The two most affected hypotheses are debt capacity and undervaluation which are not statistically significant when using alternative proxies. Although *PB* and *DebtEBITDA* remain robust when using alternative proxies for the remaining hypotheses; leverage, free cash flows, and profitability.

Lastly, the results from our main model (4) (see Table 9) presents robust results when controlling for size, crisis, and industry and country fixed effects. Thus the main concern regarding the robustness of our results is related to the choice of variables and calls for a cautious interpretation of the results.

4.4. **Delimitations**

We are aware of the delimitations of our study, which could impact the results. However, the main conclusions and inferences about differences between PE and non-PE acquirers should not vary due to our delimitations. Some variables have been downloaded from CIQ and not calculated manually due to time constraints. Firstly, when calculating *ROE*, CIQ use a flat-rate tax rate of 37.5 percent for all companies. By not calculating *ROE* manually with the statutory tax rate for each target, we might not account for differences in acquirer's behavior that depends on how tax differences between countries impact profitability. Secondly, LFCF and UFCF are also downloaded from CIQ in which the former potentially do not consider debt repayments and proceedings from new debt issues which a common definition of the variable. The authors have investigated CIQ's definition and calculations in detail without finding whether debt repayments and proceedings from new debt issues are included in LFCF or not.

Since accounting measures are used for our proxies there is a risk of correlation between the variables as the items in the three financial statements are dependent on each other. Although

there are some correlation between the variables (Table B3), it is quite low, and we do not believe it to be a severe problem.

The sample used consists of approximately 2000 observations extracted from CIQ based on the categorization made by the same database. During a detailed examination of a sub sample of Nordic targets, it was concluded that the classification of PE/VC is sometimes not accurate as some investment vehicles are wrongly classified as non-PE firms despite their ownership structure. In addition, the classification do not solely include PE firms but also VC firms. However, as the objective and investment strategy of the different types of acquirers differ, the number of VC companies could be assumed to be rather small given the definition of VC firms by Kaplan and Strömberg (2009).

Finally, the same data is used for our subsample analyses as for our main analyses, no specific data handling process is conducted for these sets. There might therefore be observations which could potentially be outliers in our split sample that are not truncated since they are considered "normal" in the full sample. Furthermore, our non-existing outlier handling in the subsamples could lead to the existence of leverage points in the subsample multivariate setting which is not accounted for and could potentially affect the results in both directions. However, as only three leverage points were considered abnormal in the complete data set, the likelihood of having large or many leverage points is low, and thus the implications for the results should be small.

5. Conclusion

This paper examines differences in target characteristics between financial and strategic buyers in announced European PTP-transactions from 2005 to 2019. Both a univariate and multivariate analysis is conducted for the entire sample as well as for two subsamples – 2008 to 2013 and the remaining years. Emphasis is put on the description of differences in target characteristics desired by PE firms compared to strategic buyers, rather than the predictability of potential PE targets. Our results suggests that PE firms search for cheap profitable companies. We contribute to the existing knowledge about private equity by (1) examine and highlight relative target preferences between financial and strategic buyers, (2) give a further understanding of how capital market conditions impact M&A transactions, (3) expand the research on European PTP transactions by using a broad sample of announced transactions.

In this paper, the evidence intimates that PE targets differ from non PE targets in terms of profitability and relative valuation. We find that PE firms prefer cheap profitable companies. We can reject the hypothesis (Hypothesis 4) that PE targets exhibits a profitability which is lower than or equal to non-PE targets. Our findings suggests that PE targets has a higher profitability than non-PE targets and that a higher ROA increases the likelihood of becoming a PE target, ceteris paribus. These results are consistent with previous findings (Aslan & Kumar, 2011; Fidrmuc et al., 2012) and are robust when controlling for target's size as well as country and industry fixed effects. The undervaluation hypothesis (Hypothesis 5) is supported by our results – companies with a lower relative valuation has a greater probability of become PE targets than non-PE targets. The results of the undervaluation hypothesis is robust to target's size as well as country and industry fixed effects. Hence, our results propose that PE targets are on average undervalued compared to non-PE targets.

We do not find any statistically significant difference between PE and non-PE targets in terms of leverage, free cash flows and debt capacity, which continue to send doubts to Jensen's free cash flows hypothesis (1989). In contrast to literature comparing PE buyouts to firms that remain public (e.g. Achleitner et al., 2013; Opler & Titman, 1993), we did not find any significant differences between PE and non-PE targets in terms of leverage. Neither could we find results suggesting that a lower leverage increase the probability to become a PE-target, which is consistent with Osborne et al. (2012) who also find insignificant results.

We extend the research of this field by providing some primary results regarding relative target preferences dependent on the underlying macroeconomic environment. We find initial evidence suggesting that the relative target preferences between strategic and financial buyers depend on the macroeconomic environment. Our result suggests that PE firms seem to have a relative stronger desire than strategic acquirers to buy companies able to handle leverage during crisis. Since leverage tend to be the highest during crisis (Axelson et al., 2013) the results are in line with what could be expected. Outside crisis, however, the results are a bit less consistent. While the univariate analysis show lower leverage, in terms of *DA*, and a higher profitability for PE targets, none of these are significant in a multivariate setting. In addition, undervaluation seem to be the only variable possible to explain a higher likelihood to become a PE target. These findings regarding undervaluation is consistent with Chiarella and Ostinelli's (2020) result of how PE activity corresponds to equity market valuation.

The most important weakness to be considered in our paper is that our results are sensitive to used proxies. Mainly, the effects of debt capacity and undervaluation for the sixth hypothesis, if capital market conditions impact relative preferences between buyers, do not remain when alternative measures are used. It is not answered whether this limitation is due to the fact that our chosen proxies do not capture desirable effects, or that the effects measured by the main proxies is difficult to capture by alternative measures.

In conclusion, the results relating to the crisis period indicate that the reliance on the ability to handle large portions of debt seem to be more important for PE firms in downturns while they primarily search for undervalued targets during stable times. To the best of our knowledge, our paper is among the first to examine differences in target characteristics of European PTP companies during different states of the economic cycle. Different from previous studies (e.g. Axelson et al., 2013; Chiarella & Ostinelli, 2020; Martos-Villa et al., 2019) which investigates capital market conditions impact on the M&A transaction environment, we provide some initial evidence on a changed demand regarding target characteristics in PTP transactions between different kind of buyers during different states of the economic cycle. Further studies should address this issue further and try to explain why differences in target characteristics between financial and strategic buyers seem to vary with capital market conditions.

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Appendix A – Definition of variables

$$\text{DE} = \frac{\frac{1}{2}(\text{Total debt}_t + \text{Total debt}_{t-1})}{\frac{1}{2}(\text{Equity}_t + \text{Equity}_{t-1})}$$

$$\text{DA} = \frac{\frac{1}{2}(\text{Total debt}_t + \text{Total debt}_{t-1})}{\frac{1}{2}(\text{Assets}_t + \text{Assets}_{t-1})}$$

$$\text{LA} = \frac{\frac{1}{2}(\text{Total liabilities}_t + \text{Total liabilities}_{t-1})}{\frac{1}{2}(\text{Assets}_t + \text{Assets}_{t-1})}$$

$$\text{Equity} = \text{Total Common Equity} + \text{Total Preferred Equity} + \text{Total Minority Interest}$$

Unlevered Free Cash Flows= UFCF

$$\begin{aligned}\text{UFCF} = {} & \text{EBIT} \times (1 - \text{Tax Statutory Rate}) + \text{Depreciation \& Amortization} \\ & + \text{Amortization of Deferred Charges} - \text{Capital Expenditures} \\ & + \text{Sale(Purchase)of Intangible Assets} + \text{Total Stock Based Compensation} \\ & - \text{Amortization of Debt Issuance Costs} - \text{Change in Net Working Capital}\end{aligned}$$

$$\text{UFCFAssets} = \frac{\text{UFCF}}{\frac{1}{2}(\text{Assets}_t + \text{Assets}_{t-1})}$$

Levered Free Cash Flows= LFCF

$$\begin{aligned}\text{LFCF} = {} & \text{EBIT} \times (1 - \text{Tax Statutory Rate}) + \text{Total Interest Expense} \times (1 - \text{Tax Statutory Rate}) \\ & + \text{Depreciation \& Amortization} + \text{Amortization of Deferred Charges} \\ & - \text{Capital Expenditures} + \text{Sale(Purchase)of Intangible Assets} \\ & + \text{Total Stock Based Compensation} - \text{Change in Net Working Capital}\end{aligned}$$

$$\text{LFCFAssets} = \frac{\text{LFCF}_t}{\frac{1}{2}(\text{Assets}_t + \text{Assets}_{t-1})}$$

$$\text{DebtEBITDA} = \frac{\frac{1}{2}(\text{Total debt}_t + \text{Total debt}_{t-1})}{\text{EBITDA}_t}$$

$$\text{InterestCov (Interest coverage ratio)} = \frac{\text{EBIT}_t}{\text{Total Interest Expenses}_t}$$

$$\text{ROA (Return on Assets)} = \frac{\text{EBIT}_t * 0.625}{\frac{1}{2}(\text{Assets}_t + \text{Assets}_{t-1})}$$

$$\text{ROE (Return on Equity)} = \frac{\text{Earnings from Continuing Operations}_t}{\frac{1}{2}(\text{Total Equity}_t + \text{Total Equity}_{t-1})}$$

$$\text{PB(Price to Book)} = \frac{\text{Market Value of Equity}_t}{\frac{1}{2}(\text{Equity}_t + \text{Equity}_{t-1})}$$

$$\text{PS(Price to Sales)} = \frac{\text{Market Value of Equity}_t}{\text{Total Revenue}_t}$$

Where t is the date for the last annual report before announcement, and t-1 is the annual report preceding t.

Appendix B – Tables

Table B1 – Industry sector codes

Table B1 presents the industry sector codes according to the Global Industry Classification Standard (GICS) developed by S&P Dow Jones Indices and MSCI.

Industry sector	GICS Code
Communication Services	50
Consumer Discretionary	25
Consumer Staples	30
Energy	10
Financials	40
Health Care	35
Industrials	20
Information Technology	45
Materials	15
Real Estate	60
Utilities	55

Table B2 – Correlation Matrix

Table B2 show the Pearson and Spearman correlation matrix for the final data. PE is a binary variable that equals one if the company is a PE target and 0 otherwise. *DE* is the debt to equity ratio, *DA* is debt to assets, *LA* is the liabilities to assets ratio, *LFCFAssets* is the ratio of levered cash flows to average total assets, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *DebtEBITDA* is average debt to EBITDA, *InterestCov* is the interest coverage ratio, *ROE* and *ROA* are the return on equity and assets, both reported by CIQ. *PB* is the price to book and *PS* is the market value of equity to total sales. All accounting averages are calculated by averaging the variable for the two last annual reports preceding the announcement of the transaction. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. See Appendix A – Definition of variables for formulas. +, ++ and +++ denotes significance on a ten, five and one percent level respectively for a two-sided t-test.

	PE	**DE**	**DA**	**LA**	**LFCFAssets**	**UFCFAssets**	**DebtEBITDA**	**InterestCov**	**ROE**	**ROA**	**PB**	**PS**
PE	1											
DE	-0.037	1										
DA	0.010	0.662^{+++}	1									
LA	0.018	0.566^{+++}	0.554^{+++}	1								
LFCFAssets	0.019	-0.063^{+++}	-0.121^{+++}	0.006	1							
UFCFAssets	0.022	-0.031	-0.078^{+++}	0.035	0.998^{+++}	1						
DebtEBITDA	0.001	0.190^{+++}	0.264^{+++}	0.138^{+++}	-0.066^{+++}	-0.057^{++}	1					
InterestCov	-0.001	-0.062^{++}	-0.125^{+++}	-0.123^{+++}	0.071^{+++}	0.064^{+++}	-0.020	1				
ROE	0.060^{++}	-0.068^{+++}	-0.082^{+++}	-0.086^{+++}	0.213^{+++}	0.204^{+++}	-0.018	0.112^{+++}	1			
ROA	0.058^{++}	-0.068^{+++}	-0.060^{++}	-0.054^{++}	0.356^{+++}	0.352^{+++}	0.006	0.292^{+++}	0.604^{+++}	1		
PB	-0.025	0.159^{+++}	-0.018	0.182^{+++}	0.098^{+++}	0.098^{+++}	-0.057^{++}	0.037	0.163^{+++}	0.223^{+++}	1	
PS	-0.051^{++}	-0.051^{++}	0.047^{+}	-0.234^{+++}	-0.174^{+++}	-0.177^{+++}	0.044^{+}	0.087^{+++}	0.051^{++}	0.001	0.177^{+++}	1

Table B3 – Robustness Checks

Table B3 shows the regression results from the logistic regression with a dependent variable that equals 1 if the buyer is a PE firm and 0 otherwise, using a maximum likelihood approach with robust standard errors. *DA* is the debt to asset ratio, *UFCFAssets* is the ratio of unlevered cash flows to average total assets, *InterestCov* is the interest coverage ratio, *ROE* are the return on equity, reported by CIQ, and *PS* is the market value of equity to total sales. *Size* is the target size proxied by *LTA*, *Crisis* is a dummy variable equal to 1 if the transactions is announced during 2008-2013 and 0 otherwise. *Country* and *Industry* controls for country and industry fixed effects respectively. *Year* is the corresponding year of the transaction announcement. (11) is the regression output of the alternative model during the entire sample period controlling for *size*, *country*, *industry*, and *year*, (12) is the regression output of the alternative model during the entire sample period controlling for *size*, *country*, *industry*, and *crisis*, model (13) is the regression output of the alternative model during the crisis period (2008-2013) controlling for *size*, *country* and *industry*, model (14) is the regression output of the alternative model during the non-crisis period (2005-2007 and 2014-2019) controlling for *size*, *country* and *industry*. *LTA* is the log transformation *Assets* the last 2 years preceding announcement of the transaction. The table shows the regression coefficients for respective variable with t-values in brackets. All targets included had a two-year average of total assets of at least €1 million preceding the announcement. See Appendix A – Definition of variables for formulas. *, ** and *** denotes significance on a ten, five and one percent level respectively for a one-sided t-test. +, ++ and +++ denotes significance on a ten, five and one percent level respectively for a two-sided t-test. For an overview of each variable's expected sign please see Table 1.

	(15)	**(16)**	**(17)**	**(18)**
			Crisis=1	**Crisis=0**
DA	0.866	0.912	0.336	1.224
	(2.14)	(2.27)	(0.48)	(2.37)
UFCFAssets	-0.001	-0.001	0.010	-0.008
	(-0.20)	(-0.12)	(1.03)	(-1.10)
InterestCov	-0.000	-0.000	-0.000	0.000
	(-0.05)	(-0.08)	(-0.62)	(0.52)
ROE	0.004**	0.004**	0.003	0.005*
	(2.45)	(2.47)	(1.31)	(1.95)
P/S	-0.021	-0.018	-0.031	-0.009
	(-0.82)	(-0.74)	(-0.53)	(-0.35)
Constant	-2.208+++	-2.316+++	-1.543+	-2.892+++
	(-3.22)	(-3.57)	(-1.71)	(-2.75)
Size	0.009	0.011	-0.052	0.040
	(0.26)	(0.32)	(-0.82)	(0.93)
Country fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year	Yes	No	No	No
Crisis	No	Yes	-	-
Observations	1688	1688	661	1015