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Bachelor Thesis

Secondary buyouts of German companies

An empirical analysis of differential effects on buyout targets

between German and foreign acquirers

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Abstract

Following the boom of secondary buyouts, a lot of research has emerged trying to explain this rather counterintuitive phenomenon. However, so far none have looked into whether there are differential effects on portfolio companies depending on the acquiring private equity company's origin, specifically, if it is from the same country as the target company. Given the quite special German systems of corporate governance and corporate finance, this study examines the effects on German target companies during secondary buyouts and further discerns between German and foreign acquirers. It is found i) that only foreign acquirers increase the target companies' level of total debt, ii) that both German and foreign acquirers increase the level of long-term debt, iii) that only German companies decrease the level of current debt, iv) that only foreign companies exert an influence to grow the company, probably artificially via acquisitions, v) that neither German nor foreign acquirers manage to increase their portfolio companies' profitability or efficiency.

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BVK	Bundesverband Deutscher Kapitalanlagegesellschaften
CDO	Collateralized Debt Obligation
CEO	Chief Executive Officer
DE	Deutschland (Germany)
DrittelbG	Drittelbeteiligungsgesetz
EBITDA	Earnings before Interests, Taxes, Depreciation and Amortization
FE	Fixed Effects
IPO	Initial Public Offering
LBO	Leveraged Buyout
MBI	Management Buy-In
MBO	Management Buy-Out
NAICS	North American Industry Classification System
RE	Random Effects
ROA	Return On Assets
SIC	Standard Industrial Classification
UK	United Kingdom
USA	United States of America
VC	Venture Capitalist

1. Introduction

The surge of the private equity industry since the 1980s[1] which led to a spread of the industry from its origins in the USA to large areas in the world (Strömberg 2007, p. 12) has initiated lively debates in science, politics and the media about its uses, implications and possible dangers to economies and employees world-wide. This was, for example, addressed by UK's regulatory authority FSA (2006), which appreciated private equity's increasing importance in international capital markets and the economy but also raised concern whether it could have detrimental effects to the countries' companies and should thus be regulated more thoroughly. In Germany, this debate was sharply taken to the broad public in 2005 in the form of the "Heuschreckendebatte"[2], depicting financial investors as anonymous grasshoppers which would buy and destroy German companies for the sake of their own profits. Ever since, the metaphor of grasshoppers has negatively shaped the domestic public opinion, especially regarding private equity investors.

However, the rise of the private equity sector has also sparked a lot of interest amongst researchers to understand this relatively young phenomenon. Although hampered by the fact that private equity funds tend not to release a lot of information about them and their investments, which is even amplified by public-to-private transactions leading to even fewer data available on the time period of the investment, this has led to comprehensive research on this sector.

Yet, one special kind of private equity transaction has emerged which has only recently gained quite an important position within the industry:

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[1] Strömberg (2007, p. 4) finds that within the period of 1970 to 2007, more than 40% of leveraged buyouts (LBOs) have taken place after 2003, with more than two thirds of LBO deal volume being transferred after 2000 (ibid.). In 80.4% of deals, they were conducted by a financial sponsor, which again represent 92.4% of deal volume over the entire period (ibid., table 2-B). However it is also stated that the fraction of deals with no involved financial sponsor is likely underrepresented for periods prior to 1995 due to data restrictions (ibid., p. 11).

[2] Literal author's translation: grasshopper debate. It was started by Franz Müntefering, the then-chairman of Germany's social democratic party (SPD).

Secondary buyouts, which mean selling an acquired company to another private equity company as an exit route for investors. Once deemed an inferior kind of exit for investors,[3] this means of exiting an investment only accounted for about 9.4%, or US$4.9 billion, of the global exit volume in 2001. Yet, it became the predominant way in 2007 with almost 50%, or US$174.6 billion, of global private equity exit volume (Ernst & Young 2010, p. 11). Accordingly, research has taken up to analyze secondary buyouts,[4] but only in the past few years, after the secondary buyouts' all-time high in 2007 and the large drop that followed in the course of the financial crisis,[5] have researches been able to perform studies taking into account longer time lines of active investments and including some exits by secondary investors. For example, Bonini (2010) analyzed the impact of secondary buyouts on European target companies' operative performance, but found none. Wang (2010) finds similar results of even deteriorating performance, although accompanied by increasing profits, for secondary buyout targets in the UK. Both come to the same conclusion that secondary buyouts are motivated by advantageous debt market conditions (Bonini 2010, p. 25; Wang 2010, pp. 24). Wang also finds support for the thesis that unfavorable IPO market conditions further facilitate exits via secondary buyout (ibid., p. 23). These results suggest that secondary buyouts are not motivated by the intent to actually generate value in the portfolio company, but merely by rising buyout multiples associated with increasing availability of private equity funding.[6]

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[3] Wall and Smith (1997) cite an investor asked on her opinion about secondary buyouts as an exit opportunity: "(Sales to financial investors are) not attractive. If I can't make money, how can they?" (ibid., p. 9).

[4] As early as 2000, Wright, Robbie and Albrighton published one of the first articles on secondary buyouts, explicitly stating that the phenomenon was, at that point, "not well understood" (ibid., p. 22).

[5] In 2008, secondary buyouts still accounted for about 20.8% of global exit volume, but this only represented US$32.3 billion of secondary buyouts volume, as compared to US$174.6 billion in 2007. In 2009, secondary buyouts further dropped to 16.1%, or US$13.1 billion (Ernst & Young 2010, p. 11).

[6] Cp. Gompers and Lerner (2000, p. 305) for the positive correlation between capital inflows to venture capital funds and their portfolio companies' valuations. Also cp. Axelson et al. (2008, p.27) for the positive influence of favorable credit market conditions on buyout pricing.

Nevertheless, these and other studies do not differentiate between the acquiring funds' origin in respect of the origins of the companies they are buying. Sapienza et al. (1996) found that there are in fact differences in investor activity depending on their origin.[7] However, the German corporate governance and financial system has quite specific characteristics. To name a few, commercial banks do play an important role in corporate finance,[8] especially in regard to the German "Hausbank"[9] and the rather suspicious view on many forms of alternative investments like private equity. Besides the board of directors, supervisory boards[10] and work councils exert strong influences on companies. Especially in manufacturing industries, which are amongst the main targets for private equity investors, unions play an important role, too.

Also, studies reveal that positive biases towards geographical proximity between investors and buyout targets exist, especially if acquired companies require closer monitoring and advice from investors (Cumming and Johan 2006, p. 376).[11] As Kaserer et al. (2007, p. 36) state, these results could be extended to buyouts of German companies, at least for medium-sized target companies,

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[7] Specifically, they found that financial investors with origin in the USA or the UK exert stronger influence on their portfolio companies than investors from France or the Netherlands (ibid.).

[8] Cp. Roe (1994, p. 204ff.).

[9] The German term "Hausbank" refers to one or very few banks supplying most of a company's loans. While there is no indisputably accepted translation for this, it is sometimes translated as house bank, preferred bank or main bank.

[10] A supervisory board is mandatory for companies employing at least 500 people (§1 I No. 3 DrittelbG).

[11] Specifically, in their study based on intra- and interprovincial Canadian buyouts, they find that 84.42% of transactions representing 61.15% of buyout volume happen as intra-provincial buyouts (ibid., p. 377) with higher intra-provincial transaction activity occurring during years of economic distress (ibid., p. 375). This suggests that as possible target companies undergo periods of difficult market conditions and thus may be in need of more expertise input as well as supervision from investors, private equity firms tend to acquire companies which are geographically closer to them (ibid.).

which make up the majority of German buyout targets (BVK 2010a, table A13).[12]

Hence, against this backdrop it could be possible that German investors acquiring German companies via secondary buyouts do exert their influence on their portfolio companies in a different way from how foreign investors do. However, to my best knowledge, no study so far has specifically analyzed the effects of secondary buyouts on German target companies while distinguishing between the origins of the acquiring financial sponsor. Thus, the aim of this paper is to answer the following questions:

> Q1: What is the influence of secondary financial investors on German target companies in respect of capital structure, profitability and efficiency?

> Q2: Is there a difference to this influence between German and foreign investors?

To answer these questions, this paper is structured as follows. First, a general overview of the characteristics of the private equity industry is given in section 2, followed by the definition of secondary buyouts in contrast to other exit strategies. Then, the market development of the private equity industry world-wide, in Europe and in Germany is depicted, together with the development of secondary buyouts. In section3, the hypotheses underlying the statistical analyses are stated, after which section 4.1 describes the process of data generation. Subsequently, section 4.2 describes the methodology applied in the analysis, followed by its results in section 5. Section 7concludes the paper and gives an outlook based upon the results.

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[12] In 2008, 76.4% of private equity was invested in buyouts involving less than €300 million of equity(ibid.) including funds from domestic and foreign investors, members and non-members of BVK (ibid., p. 3).

2. Private equity companies

In this section, an overview of the general characteristics of private equity companies is given first, followed by the disambiguation of secondary buyouts. Thereafter, the market developments of private equity companies and secondary buyouts are depicted.

2.1. Characteristics

This section gives an overview of the characteristics of private equity firms, which are then contrasted to venture capital firms as they are understood in the context of this paper, hedge funds and mutual funds.

The core of private equity companies' business model is to acquire stakes in companies and then sell them with a capital gain (Kaserer et al. 2007, p. 14). In order to be able to do this, private equity firms raise capital from investors to form private equity funds. Typically set up as limited partnerships with the private equity company serving as general partner, the investors enter the fund as limited partners (Metrick and Yasuda 2009, p. 2304). These investors mostly comprise large institutional investors and wealthy individuals next to the private equity company itself, which, in its role as general partner, usually supplies at least one percent of the total capital to the fund (Kaplan and Strömberg 2009, p. 123). The funds are designed as closed-end funds with a typical pre-defined life of ten years, meaning that neither new investors are permitted into the fund nor are existing investors allowed to withdraw their committed capital before the fund's maturity or termination (Ljungqvist, Richardson and Wolfenzon 2007, p. 4). Once the fund is fully capitalized and closed, general partners may look for suiting investment opportunities for up to five years, which is when the capital usually needs to be invested as was agreed with the investors (Kaplan and Strömberg 2009, p. 123). During this investment period, the private equity company is compensated based upon a percentage of the fund's committed capital, usually 2% per year (Metrick and Yasuda 2010, p. 2310). While this compensation used to remain constant over

the investment period, the recent trend is to have the compensation percentage decline each year after the fund's closing. These management fees are paid from the committed and thus reduce the capital available for investments (ibid.). As soon as an investment opportunity is identified, the general partner calls the investors' committed capital and acquires the desired stakes (Phalippou and Zollo 2005, p. 4). Based on this transaction, it is common for general partners companies to charge a transaction similar to advisory fees charged by investment banks. Since in the case of about two thirds of private equity funds this fee is not entirely paid out to limited partners, this is another source of income for private equity companies (Metrick and Yasuda 2010, p. 2313).

During the following holding period, which typically lasts for three to seven years (Kaserer et al. 2007, p. 14)[13], the general partner is compensated with monitoring fees paid by the acquired company. Apparently, these fees typically amount to 1% to 5% of the target company's EBITDA.[14] Mostly, only 20% of the monitoring fees are paid out to general partners, with 80% being distributed to the limited partners (Metrick and Yasuda 2010, p. 2314). In the holding period, the private equity investor may apply several strategies in order to be able to sell the investment with a capital gain after the period. Kaplan and Strömberg (2009, p. 130) define three categories of strategies: financial, governance, and operational engineering.

Financial engineering describes how financial investors alter their portfolio companies' capital structure. Besides the benefit of tax deductibility of interest over dividends[15], this is closely linked to the problem of agency costs of

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[13] Also cp. Strömberg (2007, table 5) who found that the median LBO holding duration decreased from six to seven years during the 1980s to four to five years during the period of 1995-1999.

[14] Metrick and Yasuda did not empirically measure the amount or split of the monitoring fees but were told of these values by industry practitioners (ibid.).

[15] Cp. Graham (2000) for an empirical analysis of the tax benefits and optimal amounts of debt. Also cp. Parrino and Weisbach (1999, p. 39), who find that rising agency costs of debt due to stockholder-bondholder conflicts are offset by tax shield benefits offered by debt. Additionally, cp. Guo, Hotchkiss and Song (2009, p. 25), who find that tax benefits from increasing leverage

free cash flow as stated by Jensen (1986). It describes managers of companies which produce large amounts of free cash flow wasting the cash by growing the company further than would be optimal, investing it in unprofitable projects or just keeping it in the company rather than paying out the cash to shareholders. He suggests the advantage of debt over stock were that debt forces management to pay out cash on the one hand and make the company work most efficiently in order to be able to pay out the debtors on the other hand.[16] Consistent with this, typically sixty to ninety percent of debt is employed to finance private equity acquisitions (Kaplan and Strömberg 2009, p. 124).[17]

However, as Jensen's argumentation shows, financial engineering is closely linked to governance engineering. As Kaserer et al. (2007, p. 23) point out, private equity companies are in need of implementing efficient ways to monitor their portfolio companies' management and their accordance with the owners' interests. Besides considerable direct monitoring efforts,[18] it is common to have management incentives installed that homogenize their interests with those of the investors on order to reduce agency costs. This is implemented using both upside incentives like stock options[19] and having management invest

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account for 33.8% of realized returns to pre-buyout capital across their entire sample of buyouts. However, they add that this value is probably overstated, for instance in the case of companies experiencing distressed restructurings (ibid.).

[16] However, too large levels of debt may also lead companies into bankruptcy, especially in the case of unforeseen shocks (Berg and Gottschalg 2005, p. 27). While Strömberg (2007, p. 14) does not find unambiguous evidence for LBO-financed companies to show a higher probability of entering financial distress, an average annual default rate twice as high as those of publicly traded companies does show up in the data.

[17] From this, the term leveraged buyout (LBO) is derived. Also cp. Axelson et al. (2008, p. 9), who find an average financing of 75% debt and 25% equity for 6,000 deals conducted by the 50 largest buyout funds in Europe and the USA between 1997 and 2006.

[18] Acharya and Kehoe (2008, p. 28) find that within the first 100 days after the buyout, in more than half of the observed cases the investors interact with the portfolio company's management at least once per week.

[19] Kaplan and Strömberg (2009, p. 131) find that the portfolio companies' management teams on average receive 16% of the equity upside in the form of stocks and options in public-to-private transactions. They also point out that these incentives surpass those used by public firms which have not been acquired by financial investors (ibid.). Two decades earlier, Kaplan (1989, p. 220) found similar results of median increases of stock held by management from 5.88% before to 22.63% after the acquisition.

private capital in the company in order to assure management's downside participation, too (Kaplan and Strömberg 2009, p. 131).[20] Yet, governance engineering also describes how private equity investors proceed with the management of their portfolio companies. Acharya and Kehoe (2008, p. 27) find that in 38% of deals the CEO is replaced within a hundred days after the buyout,[21] which suggests that financial investors regard a suiting management an important factor in having their acquired target act in accordance with their interests. Also, Gertner and Kaplan (1996, pp. 9ff.) find that the boards of companies which experienced a reverse buyout[22] are smaller,[23] meet less often[24] and have younger chairmen than the boards of comparable rivals. It is suggested that such a board composition serves best to maximize firm value.

The third category of strategies as applied by private equity companies during the holding period is operational engineering, which describes how investors apply industry and operating knowledge to their portfolio companies (Kaplan and Strömberg 2009, p. 132). Most studies find that LBO target companies experience increasing operative performance during the holding period.[25] These improvements also tend to persist after the investor has exited

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[20] Note that this downside participation incentive may as well turn into significant upside incentives for the management. As Acharya and Kehoe (2008, p. 28) find, the top management receives an average 13.5 multiple on their investment paid out if the value-creation plan's base case is met on time.

[21] Cp. Guo, Hotchkiss and Song (2009, p. 18), who find that 37.2% of acquired companies have their CEO exchanged within the first year after the buyout. Also cp. Kaplan, Klebanov and Sorensen (2008) for a comprehensive analysis of how venture capitalists and buyout funds choose CEOs for their portfolio companies.

[22] The term reverse LBO refers to companies which were acquired in public-to-private transactions and later went public again (Strömberg 2007, p. 20).

[23] Cp. Yermack (1996, p. 186) who finds a negative relation between increasing board size and company market value as measured by Tobin's Q for the sample of 452 public companies in the USA between 1984 and 1991.

[24] The authors assume this somewhat counterintuitive sign of seemingly less activity by the board may be explained by a higher importance of informal communication between board members and the investors, thus the frequency of formal board meetings may not be a suitable proxy for the board's efforts (ibid., p. 11).

[25] Cp. for example Harris, Siegel and Wright (2003, p. 14) who observe a total of 35,752 UK based plants over the period of 1982 to 1998. They find that industry-adjusted, plants which

the investment. For example, Cao and Lerner (2006, p. 13) find that companies that went public after an LBO show slight signs of outperformance against the market return over a period of five years following the IPO. However, other studies, as those performed by Guo, Hotchkiss and Song (2009), only find comparable to modestly higher levels of operating performance compared to target peers,[26] but large returns to buyout capital employed.[27] Still, the large consensus is on the side of significant operating performance gains following private equity acquisitions (Cumming, Siegel and Wright 2007, p. 448).

Also in the category of increases in operative performance falls the selling of parts of the existing portfolio company. By divesting unprofitable products or entire business areas, core competencies shall be strengthened and the company's profitability increased, which may lead to higher enterprise valuations.[28] However, the practice of divesting entire business areas is also connected with frequently criticized and feared employee layoffs. Yet, while somewhat negative influences on employees of buyout target companies may in fact be stated,[29] these are widely exaggerated by the media, as Kaserer et al. (2007, p. 170) argue.

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were acquired via MBOs showed lower levels of productivity before the buyout, while after the buyout, the plants experienced an average 90.3% long-run efficiency gain. They assume these changes are linked to new ownership structures (ibid., p. 15).

[26] Two years after the buyout, they find a significant 14.27% outperformance in net cash flow over sales if values are adjusted for industry, performance and market-to-book ratio. These findings disappear after the second year (ibid., p. 15). Although significant, this value pales in comparison to an 43.5% improvement two years following the buyout, as found by Kaplan (1989, p. 219).

[27] Net of market- and risk-adjustment, the median realized return to pre-buyout capital is found as high as 68.7% following the exit (ibid., p. 13).

[28] Divesting unprofitable business areas may lead to increases in cash flow, which in turn have a positive influence on the realized return on buyout capital (cp. Guo, Hotchkiss and Song (2009, p. 22)).

[29] Davis et al. (2008, p. 23) find that for target companies in their sample of 5,000 US-based companies over the period of 1980 to 2005, average job growth rates at firm level are 4% below those of the control companies for each of the three years after the buyout. Yet, this trend reverses to slightly higher rates in the fourth and fifth year (ibid.). After controlling for acquisitions, divestitures and Greenfield agreements, it is found that new establishments opened up by target companies experience higher growth rates than control establishments;

Related to this are buy and build strategies, i.e., the investor buying further companies or parts of concerns through a carve-out and adds them to their existing portfolio company. The aims of this not uncommon strategy[30] are to realize economies of scale or scope, gain access to markets which have not yet been entered or to improve existing market positions (Berg and Gottschalg 2005, p. 24). Also, Strömberg (2007, p. 20) finds that companies involved in larger deals are more likely to go public, so extensive acquisitions may also occur in preparation for an exit via IPO.

Lastly, before the focus is turned to the exit or realization phase, it shall briefly be noted that besides these value-creation strategies, private equity companies may also generate profits merely from rising multiples throughout entire industries over the duration of the holding period (Guo, Hotchkiss and Song 2009, p. 23).[31] Thus, investing in specific industries in anticipation of rising multiples may facilitate profits in addition to value created by applying the aforementioned strategies or might even be a profitable investment strategy in itself.

Considering the exit of the investment, general partners have a total of five options at their disposal, as described by Cumming and MacIntosh (2003, p. 513f.). The first of these is an exit via IPO, which is considered the "Holy Grail"

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however, this is offset by even higher job destruction rates, resulting in average net firm-level job growth rates still 3.6% below those of control firms for the two years following the transaction (ibid., p. 32f.).
For a similar analysis of buyout targets outside the USA, cp. Amess and Wright (2007). Over the period of 1999 to 2004, they split their findings in (private equity backed) MBOs and MBIs in comparison to non-target companies. For MBOs, wage growth is .31% lower and employment growth .51% higher compared to their control firms, while for MBIs the values are .97% lower and .81% lower, respectively (ibid., p. 18)

[30] Guo, Hotchkiss and Song (2009, p. 19) find that exactly half of the target companies in their sample are involved in additional acquisitions with a mean value of 40.2% of their respective buyout price. Also cp. Acharya, Hahn and Kehoe (2010, p. 9) who find that 34% of the deals in their sample experience acquisitions that altered sales or enterprise value by at least 20%; most of which happening in the first year after the buyout (ibid., p. 10).

[31] Specifically, the overall average contribution of rising industry and market multiples to the realized returns on pre-buyout capital is 17.7% (ibid.).

of all exits (Wall and Smith 1997, p. 8).[32] In an IPO, the investor typically does not sell its shares in the company immediately at all, or only by a small fraction, and sells the remainder of its shares over the course of the following months or years.[33] Bienz and Leite (2008) state that "VCs will exit more profitable firms using IPOs and less profitable firms using trade-sales" (ibid., p. 10), which is largely consistent with empirical findings.[34] This is due to the fact that for investors bringing their portfolio companies public, the stock price at the expiration of the lock-up period[35] is more important than the issuance price (Schwienbacher 2005, p. 22), with share prices being less likely to decrease for more profitable companies. However, besides conflicting interests regarding the exit route between managers and investors,[36] the IPO as an exit channel is mostly only available if the issue markets provide suitable conditions for new issuers and enough market participants are willing to subscribe for the new shares.[37] If this is not given, investors may opt for exiting their investments via trade sale, for example.

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[32] Cp. Schwienbacher (2005, p. 23) who found in a survey that 81% of European VCs expect reputational gains from successful IPOs.

[33] Cp. Neus and Walz (2005) for an analytical approach to explaining the optimal selling strategy for VCs in the course of an IPO. Also cp. Lin and Smith (1998, p. 251), who find that three years following a portfolio company's IPO, 12.3% of lead investors still hold at least 5% of shares in the company.

[34] Cp. Gompers (1995, p. 1463), who finds that with an average return on investment of 59.5% p.a., IPOs yield the highest returns for investors, while trade sales come second with 15.4% p.a. of return on investment.

[35] The lock-up period describes a period following the IPO during which existing shareholders are obliged not to sell their shares.

[36] Cp. Black and Gilson (1998) for the notion of the "implicit contract" that is provided to the portfolio company's management when going public, stating that management may remain in control of the company after the IPO, while in the course of a trade sale to a strategic investor, the management is subordinated to the new mother company. Yet, the investor may prefer a trade sale over an IPO, as it does not bear the risk of failing like an IPO does over the time of the lock-up period, which would result in reputational losses for the investor. In fact, as Cumming (2008, p. 1961) finds, IPOs are a less likely exit route for VCs which possess greater control rights over their portfolio companies.

[37] Cp. Ibbotson and Jaffe (1975) for the notion of "hot issue" markets, which refers to periods during which new issued stocks experience abnormally high gains over the first month following their IPO (ibid., p. 1027). Also cp. Cumming (2008), who finds that an increase in stock returns

Trade sale refers to an exit in which the portfolio company is sold to a third party, often a strategic investor (Cumming and MacIntosh 2003a, p. 8). In the context of this paper, selling portfolio companies to another financial investor is not understood as trade sale, but as secondary buyout.[38] The acquirer is often larger than the target company and, in most cases, motivated to buy the company due to expected synergies from the absorption of the target's products and technologies (ibid.). According to Strömberg (2007, table 4), trade sales are the most frequently chosen exit route of LBOs with financial sponsored involved for each stated sub period between 1970 and 2007.[39] Considering the period of 2000 to 2009, Ernst & Young (2010, p. 11) find that in terms of value, trade sales represent the biggest individual exit route in seven out of these ten years, while accounting for more than half of all global private equity exits value in five. Related to trade sales are secondary buyouts, which involve a portfolio company being sold to another financial investor and form the third category of exits. However, as these are in the focus of this study, their description is skipped at this point and is instead given in greater detail in the following section 2.2.

The forth exit route is selling the portfolio company back to management, i.e., performing an MBO which is financed by the management itself.[40] However, according to Strömberg (2007, table 3-A) the average enterprise value of LBO-targeted companies in the 2006 to 2007 period is US$601.5 million, with a median value of US$86.8 million.[41] While the substantially lower median value

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of 1% to 4% during the three months preceding a VC's exit corresponds with an increase in probability that this exit becomes an IPO by 1% (ibid., p. 14).

[38] Sales to another financial sponsor are sometimes included in the term of trade sale, too (cp. Giot and Schwienbacher (2007), who only differentiate between exits via IPO, trade sale and liquidation).

[39] Unfortunately, specific data for the deal values associated with exit routes is not given for the individual sub periods.

[40] Were it financed by a financial sponsor, the deal would fall in the realm of secondary buyouts.

[41] During this period, enterprise values could be observed for 32% of deals. All values are given in 2007 US$ (ibid.).

suggests that there are a number of relatively small deals which could potentially be financed by individuals, the amount of exits via sale to management never exceeds 2% for either reported sub period between 1970 and 2007 (ibid., table 4-A). Hence, these deals do not seem to make up for an important share of private equity exits and are thus not further discussed here. Also the fifth exit route, which is the write-off or liquidation of a bankrupt portfolio company or one for which no profitable future is expected, is not further discussed, as it does not qualify as an exit as such and does not fall within the scope of this paper.

Whatever exit route is chosen, the general partner receives a form of compensation which is known as carried interest. This describes a variable compensation based on the fund's profit after exiting the investments. It is calculated on the carry basis, which, for 83.3% of buyout funds, is the committed capital (Metrick and Yasuda 2010, p. 2312). Thus, from the exit profit, the committed capital from the limited partners is subtracted first. Furthermore, the carry hurdle is subtracted, which is 8% of the carry basis for 72.2% of general partners (ibid., p. 2311) and forms the profit for fund investors before the general partner receives any carried interest. For profits surpassing the carry basis plus carry hurdle, the private equity company receives a carry level of 20% in the case of virtually all buyout funds (ibid.).[42] Summarizing the income from the different fees charged over the life of a buyout fund, Metrick and Yasuda find that about two thirds of the overall income for private equity companies stem from fixed fees independent from the fund's performance (ibid., p. 2328).

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[42] While all buyout funds in Metrick and Yasuda's sample report a carry level of 20%, Gompers and Lerner (1999, p. 14) report a fraction of 81% of their sample of VC general partners receiving carry levels between 20% and 21%.

2.2. Secondary buyouts

Since the focus of this paper lies on secondary buyouts of German target companies, in this section an overview of this particular form of buyouts is given.

As stated above, secondary buyouts describe the phenomenon of portfolio companies being sold from one private equity investor directly to another one. Thus, secondary buyouts may equally be seen as an exit and investment strategy, depending on the respective point of view. However, in the light of general partners' compensation structure, in which the fund's performance contributes about one third to the overall compensation (ibid.) and the incentive for general partners to maximize company value derived from this, the question of why these buyouts happen is raised. Bonini (2010, p. 7) entertains doubt whether first-time buyout value creation theories may also be applied to secondary buyouts, as secondary acquirers should not be able to make use of the same strategies for value creation as first-time acquirers may, since these should have been applied already. In order to create actual value within the target company, drastic strategy changes or aggressive domestic and/or international growth accompanied with the realization of economies of scale would be required (ibid.). Therefore, empirical literature has examined several possible explanations for why secondary buyouts occur.

First of all, Wang (2010) analyzes if the aforementioned assumptions hold true or if efficiency gains may in fact still be realized by the secondary investor. If the second investor possesses superior, or at least quite different, skills in creating value in portfolio companies, for example, due to industry focus or if she is able to create synergy gains with other, already acquired companies, additional values may be created (ibid., p. 7). However, while the observed target companies do show large increases in size, all measured profitability and

efficiency indicators[43] decrease during the holding period (ibid., p. 19f.). Thus, this approach is largely ruled out.

Another possible explanation similar to the first states that companies may be sold between investors which specialize on different investment stages and that portfolio companies may grow out of the first acquirer's focus. Sousa (2010, p. 27) cannot find support for this thesis, as secondary buyouts are related to slower growing companies. Additionally, as Bonini (2010, p. 7) points out, the remaining growth potential should be included in the buyout price, thus reducing the acquirer's profit potential.

A third theory is built around the perception of secondary buyouts as "exits of last resort", also wondering why private equity firms should sell companies with potential value yet to be created, respectively, why another financial investor should acquire companies without further value lying idle. It is hypothesized that as a fund draws to its fixed maturity, general partners could be willing to sell still active investments at a discount relative to what could be realized in an IPO or trade sale rather than asking the investors for prolongations (Sousa 2010, p. 12). Yet, whereas positive correlations can be found between both increasing holding durations and later exits relative to the fund's life and the probability of an exit via secondary buyout, the average secondary buyout takes place six years after the fund's establishment. With four years left until the fund's maturity,[44] the theory of "exit of last resort" can hardly be supported (ibid., p. 26).

Another approach as proposed by Wang (2010) is that of collusion between private equity companies. Against the backdrop of rather poor regulation of buyout funds, lacking transparency and the double role of general partners as both agents of investors and decision-makers with respect to the deals performed she argues that private equity companies may trade poorly

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[43] These are EBITDA over sales, EBITDA over fixed assets, earnings over sales and ROA.

[44] The typical buyout fund has a fixed life of ten years (Kaplan and Strömberg 2009, p. 123).

performing or nearly distressed portfolio companies amongst each other above fair prices in order to realize positive returns (ibid., p. 26 f.). Although collusion cannot be ruled out be the findings,[45] no trade patterns amongst secondary acquirers are found, thus the theory of collusion cannot be supported, either (ibid.).

With all theories so far failing to comprehensively explain the occurrence of secondary buyouts, the last theory proposed by the authors takes credit and equity issue markets into account. In times of "cold" stock markets, an exit via IPO is a less feasible option.[46] Also considering the positive effect of low credit spreads on buyout valuations (Axelson et al. 2008, p. 27), first-time acquirers may find an exit via secondary buyout a more viable option than a trade sale (Sousa 2010, p. 13). On the one hand, this is due to buyout funds employing higher levels of leverage than strategic investors, thus making greater use of the advantages of cheap credit (Wang 2010, p. 9). On the other hand, banks may be willing to offer even better loan conditions for secondary buyouts due to the reduced risk from the banks already knowing the transferred company and the target company's management being accustomed to working with private equity companies (ibid.).[47] Additionally, as general partners may face reputational losses if committed capital is not fully invested, they also have an incentive to rather invest in larger buyouts (ibid.). The theory of secondary buyouts being driven mainly by market conditions is confirmed by all three analyses mentioned in this section. Bonini (2010, p. 25), Sousa (2010, p. 27) and Wang (2010, p. 22) all find that favorable credit market conditions are positively related to secondary buyouts. Additionally, Sousa (2010, p. 27) and Wang (2010, p. 23) find that secondary buyouts are more likely to occur when the stock market is "cold",

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[45] Mainly due to the difficulty of detecting it (ibid., p. 26).

[46] As stated above, cp. Cumming (2008, p. 1961).

[47] Cp. Demiroglu and James (207, p. 19), who find that acquiring private equity companies' reputation, which is a proxy for reduced information asymmetry between banks and borrowers, is negatively related to the spreads of bank loans used to finance their deals.

suggesting that secondary buyouts are largely a product of suiting capital market conditions.

2.3. Market developments

Following the description of the characteristics of private equity companies and the specifics of secondary buyouts, this section gives an overview of the developments of the private equity market and of secondary buyouts world-wide, in Europe and in Germany. However, it has to be stated beforehand that due to lacking transparency in the private equity industry, no complete data is available for either region.

2.3.1. World-wide data

Since the beginnings of the private equity industry in the 1980s, it has developed into an important factor in corporate finance. Strömberg (2007, p. 10) estimates that up until mid-2007, companies worth close to US$4 trillion have been acquired, using cumulated committed capital of about US$1.4 trillion. With deals in Western Europe surpassing those in the USA in both number and deal value over the period of 2001 to 2007 (ibid., table 2-B), private equity is no longer a phenomenon largely restricted to the US market. Illustration 1 shows the distribution of global private equity transactions by value and regions.
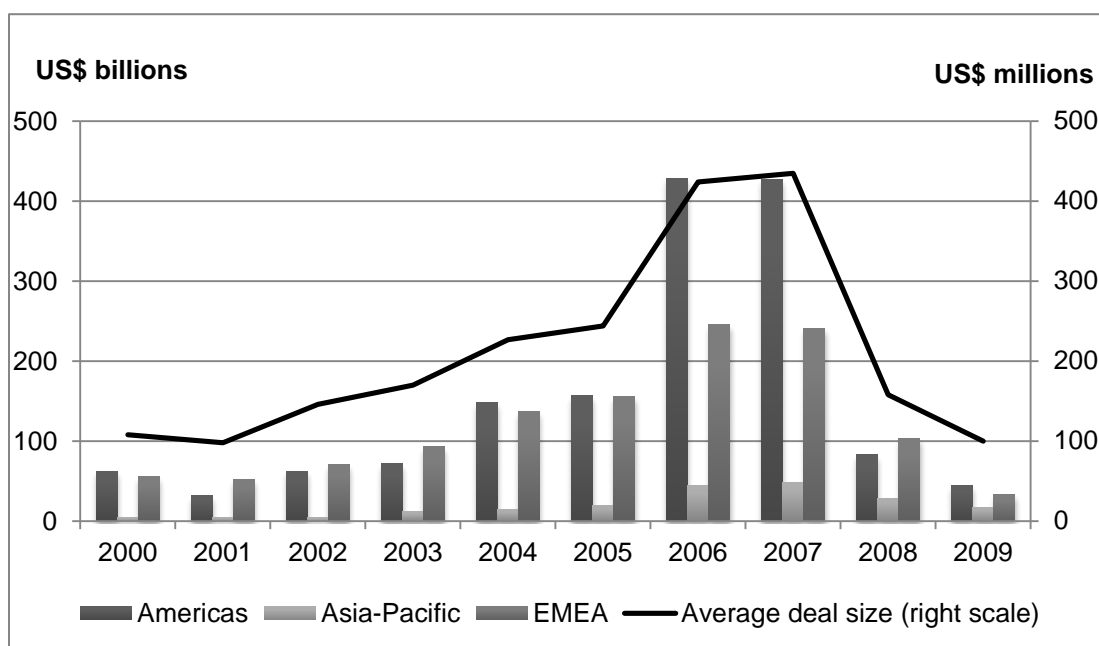
Source: Ernst & Young (2010, p. 2ff.).

After 2003, accumulated private equity investments, especially in the USA, surge in the wake of the structured credit bubble[48] and fall with its burst as the financial crisis evolved. In 2006, global deal values reach a peak of US$718 billion, however this value is reduced by two thirds in 2008, when it drops to US$215 billion and further to US$95 billion, slightly more than in 2001. The same development can be seen for global average deal size, which, starting in 2001, rises to its climax in 2007 with an average acquisition value of US$435 million. In 2008, deal values fall sharply by about two thirds of their 2007 values to US$158 million and further to US$100 million in 2008, approximately the average deal value of 2001 (Ernst & Young 2010, p. 11ff.).

Consistent with the relation between structured credit and LBO lending, illustration 2 shows loans to US-based and European buyout funds.
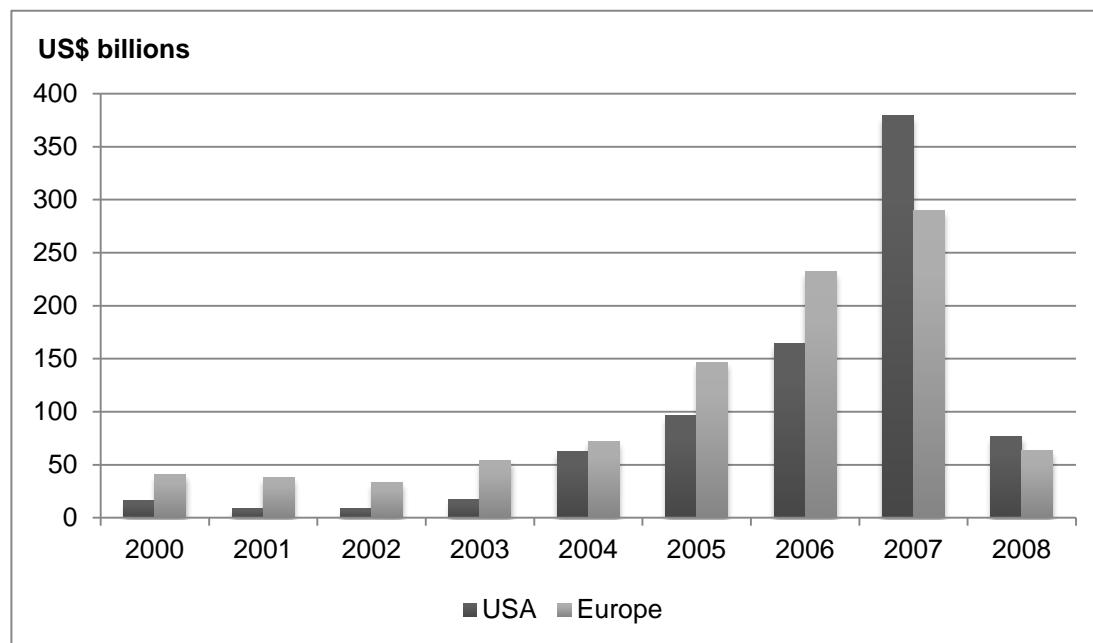
Source: Meerkatt and Liechtenstein (2008, p 2).

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[48] Cp. Shivdasani and Wang (2011, p. 31) who find that banks' lending for LBO funds was in fact related to their connection to investors of CDOs and other forms of securitization.

Illustration 7: LBO credit lending in the USA and Europe.

Similar to illustration 1, the development of loans follows the same pattern of rising LBO loans leading up to the crisis with steep falls as it unfolds. Meerkatt and Liechtenstein report that in October and November 2008, LBO loans for both US and European buyout funds had plummeted to US$3 billion, respectively (ibid., p. 2). In respect of private equity exits, illustration 3 depicts the values of global private equity exits via IPO, trade sale and secondary buyout:
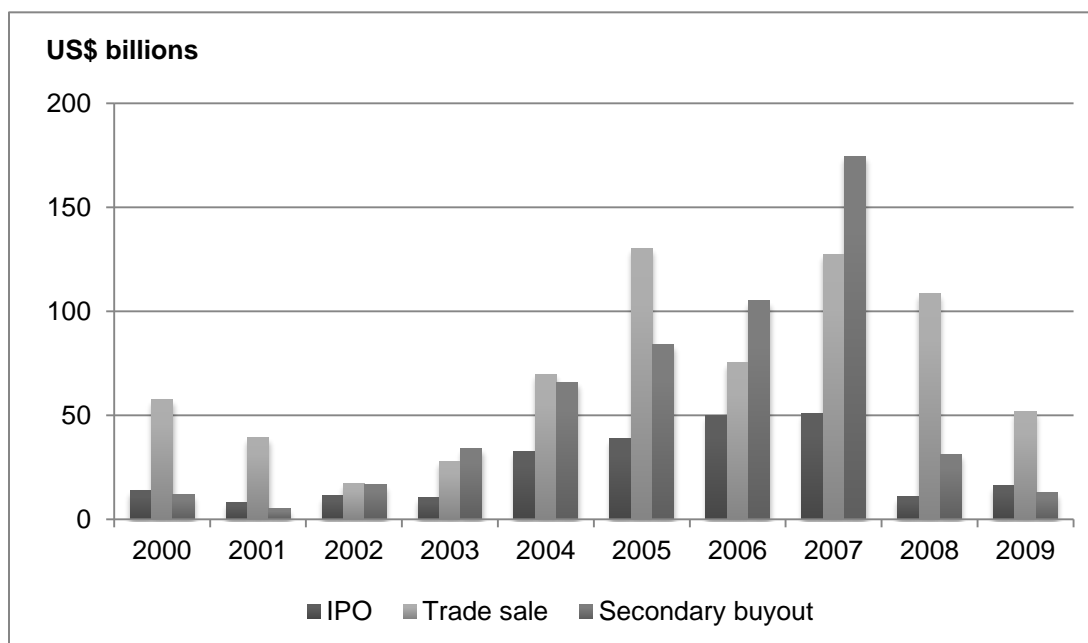
Source: Ernst & Young (2010, p. 11).

Illustration 8: Global distribution of exit routes.

Again, a similar development as in the tables above can be seen. A notable value is that of secondary buyouts in 2007, which not only makes up for about half of all exits that year, but shows the highest peak of all individual exit

routes at US$174.6 billion. This is consistent with the market conditions motive for secondary buyouts,[49] as LBO lending peaks in 2007, too.

2.3.2. European and German data

The following chart shows European and German buyout funds' investment amounts over the period of 1995 to 2009:[50]
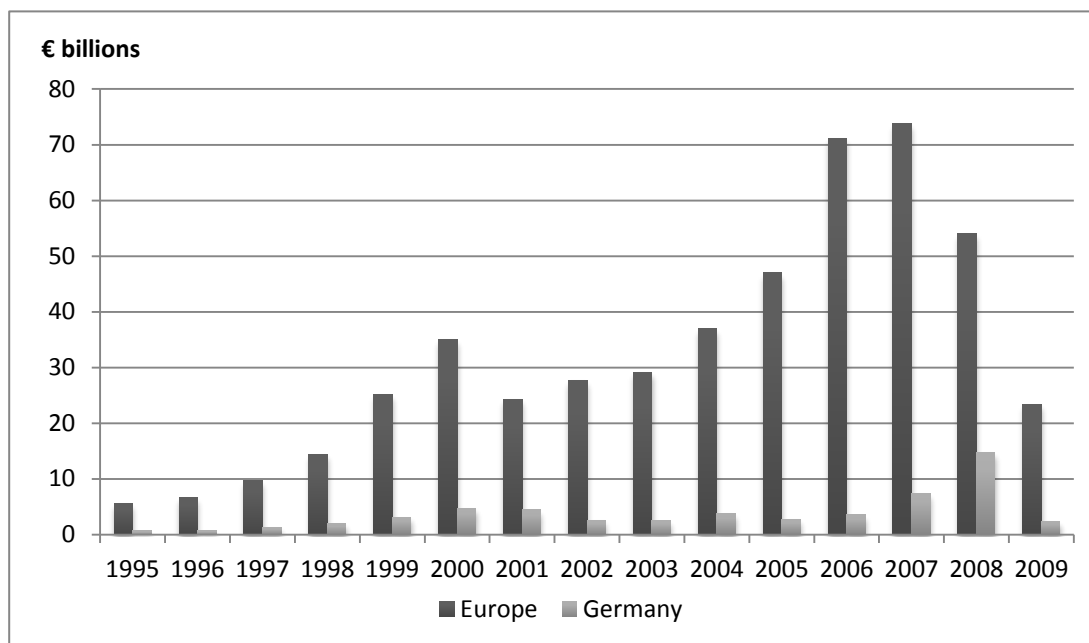
€ billions

Source: BVK (2010, table 1).

Illustration 9: Investments of European and German buyout funds.

This illustration displays the same development patterns as those shown before. Starting in 2001 with a value of €24.3 billion worth of investments by European private equity companies, the upward trend continues through 2007, where it reaches a peak of €73.8 billion. From then on, buyout values decline,

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[49] Cp. Section 2.2 above.

[50] The source (BVK 2010, table 1) reports an investments value of €47.126 billion for German financial sponsors alone; however, the values stated in the table do not add up to the sum of all European private equity companies. Thus, the value for Germany in 2007 was calculated as the difference from the European sum and the other country-specific values given in the table.

albeit not as drastically as those for the Americas shown in illustration 1. It is also shown that in Germany, buyout activities form a rather small fraction of all European activities, while buyout funds based in the United Kingdom[51] add the greatest individual contribution to the European sum with 51.69% of all buyout values in 2004, 57.47% in 2006 and 41.69% in 2008 (BVK 2010, table 1).

Considering exit routes, the following illustration gives an overview of exit routes chosen by European buyout funds:
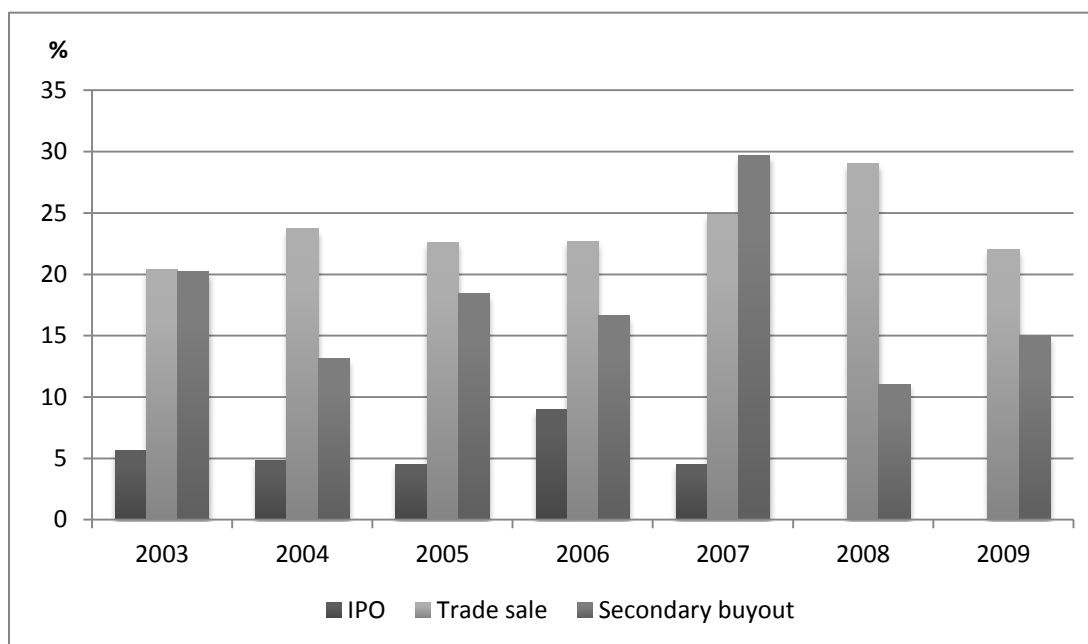
Source: EVCA (2007, p. 15) for 2003 to 2007, EVCA (2010, p. 46) for 2008 and 2009.

Illustration 10: Exit routes of European buyout funds.

Most notably, the EVCA reports that not IPOs at all happened in 2008 or 2009. While IPOs decreased world-wide as seen in illustration 3, this comes as a surprise. Yet, it may help to explain the increased frequency of secondary buyouts, as these declined globally from 2008 to 2009 (see illustration 3).[52]

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[51] Not comprehensively reported here, cp. BVK (2010, table 1).

[52] Cp. the market conditions motive for secondary buyouts in section 2.2, which suggests that secondary buyouts are more likely to be chosen as an exit route if the stock market is "cold".

3. Hypotheses

Having described the characteristics of private equity companies in general, those of secondary buyouts specifically and depicted the developments of the respective phenomena; here the hypotheses underlying the empirical analysis are derived.

First, given that geographical proximity between the investor and the target company may play a role in how the investor is able to monitor the portfolio company (cp. Cumming and Johan 2006, p. 375 and Kaserer et al. 2007, p. 36) and that higher levels of debt may be a means of homogenizing the incentives of the management to those of the investor (Jensen 1986), this could mean that German investors impose lower levels of debt on their portfolio companies than foreign investors do. Hence, the hypothesis is stated as follows:

H1: Target companies' acquired by foreign buyout funds show higher levels of debt than target companies acquired by German investors.

In line with empirical findings on lacking profitability and efficiency gains realized during secondary buyouts presented in section 2.2, the second hypothesis is stated as follows:

H2: Target companies acquired by either domestic or foreign buyout funds do not show better or worse levels of performance.

4. Research Design

The following section describes how the empirical study was conducted. First, data collection is depicted, followed by the employed methods of analysis.

4.1. Data collection

In a first step, data on secondary buyout deals of German target companies needed to be collected. This was conducted using Bureau van Dijk's

Zephyr[53] data base, which lists deals as items. As the resulting number of relevant deals was expected to be not very large,[54] the filter applied first was intentionally chosen very rough as deals including German target companies whose vendor and acquirer are within the 67 SIC code range. Next, deals with vendor and acquirer labeled as "private equity" in the Business Description field supplied by Bureau van Dijk were selected. As some companies labeled as "venture capital" or "investment services" also qualify as private equity company, the remaining list of deals was first reduced to such selling and acquiring companies and then checked manually for relevant deals. After controlling for multiple entries of the same deal – for example, if more than one fund simultaneously bought stakes in the target company, the deal may have been included several times – a list of 65 unique deals was collected. From these deals, those in which entire portfolios of private equity funds were acquired were excluded, which resulted in 63 relevant deals.

In the next step, company-level data on the relevant target companies was to be collected. This was conducted using the Dafne data base, also managed by Bureau van Dijk.[55] Using Bureau van Dijk's company identifier numbers, the target companies' holding structures was examined and the relevant operating companies identified. As it is common for buyout funds to alter the holding structure after each buyout (Axelson et al. 2008, p. 7), these differed over time, in most cases following the respective buyouts. Also, in cases of mergers of the target companies, holding as well as operating companies changed, with obsolete companies deleted and new ones formed. The total list of relevant companies associated with each deal was then consolidated to one stringent time line from 2001 to 2010, respectively. As a third step, this list was then supplemented with hand-collected data from the

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[53] www.Zephyr.bvdep.com

[54] Wang (2010), who used the same data base for sample generation, received a total of 140 deals with UK targets, while private equity companies are a lot more active in the UK than in Germany (BVK 2010, table 1).

[55] www.dafne.bvdep.com

German Electronic Federal Gazette[56] where German companies with disclosure requirement are obliged to publish their annual reports, since especially newer reports were not yet included in the data base.

In order to be able to test the influence of secondary buyouts on target companies, variables for their ownership structure needed to be created. As the secondary investors may have exited their deals within the observed time period, this was conducted by cross-checking the list of relevant deals with deals after the secondary buyout not including private equity funds as acquirers. Hence, for the holding period of secondary buyouts dummy and absolute variables were created representing the fact that a German, foreign or secondary investor no matter the fund's origin is invested.

Next, data on the respective companies' rivals needed to be collected. Based upon the companies' six-digit NAICS industry code, the respective industry universes were identified in the Dafne data base and the same financial data was extracted as for the relevant target companies.

4.2. Methodology

The choice of the method of analysis to apply is mainly based upon the format of the data that was collected. For this paper, the data is organized as panel data. Panel data, also known as longitudinal data, is characterized by a combination of time series (variables are observed over a period of time) and cross-sectional data (several units are observed in one point in time): the same sample units are surveyed over several points in time. As Hsiao (2003, p. 3) puts it, panel data give "the researcher a large number of data points, increasing the degrees of freedom and reducing the collinearity among explanatory variables – hence improving the efficiency of econometric estimates". In the case of the data of this paper, several companies are observed over the period of 2001 - 2010. As companies are observed in years during which secondary

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[56] www.unternehmensregister.de

investors were active as well as those in which no secondary investor was active, panel data allows for testing the influence of these investors on their portfolio companies. Panel data may be analyzed in two distinct ways: by means of analyzing data points around certain events (which in this case would be the secondary buyouts) or by analyzing time lines by regression. On the one hand, a prominent approach for event studies is the non-parametric Wilcoxon signed-rank test, as applied, for example, by Bonini (2010) or Wang (2010). Unfortunately, due to data constraints not enough data just around the events is available to make this approach sensible. On the other hand, the method of panel regression, as applied, amongst others, by Cronqvist and Fahlenbrach (2009) or Sousa (2010), does not necessarily require data exactly around certain events, which is why the latter method of panel regression is chosen over an event study.

Hence in this section, a general layout of the methodology of panel regression is given first, followed by the description of the variables employed within the models. Thereafter, the specifically applied models are presented.

4.2.1. Panel regression

Panel regression describes several distinct methods of running regression analyses on data organized in panel format. There are three major methods to estimate regression equations based on panel data: pooled regression as well as he fixed effects and random effects models. First off, the fixed effects model is outlined.

Consider a data set comprised of N companies which are observed over T years in respect of K variables. The general regression formula may be written as

$$Y_{it} = \beta_0 + \alpha_i + X'\beta + u_{it} \quad \text{with} \quad i = 1, \dots, N \qquad (1)$$
$$t = t_1, \dots, T$$

and $X' = (X_{1it}, ..., X_{Kit})$ as well as $\beta = (\beta_{1it}, ..., \beta_{Kit})$ as $(1 * K)$ vectors. Here, β_0 represents the common intercept which does not vary across companies or time (hence no i or t subscript) while α_i represents a time-constant unobserved effect and u_{it} the so-called idiosyncratic, or time-varying, error terms. The sets of the i and t are the same for the following equations and will therefore not be repeated. Due to the unobserved effect being fixed over time, this model is referred to as the fixed effects (FE) regression. Before explaining how the intercept may be allowed to vary over time, the technique of time-demeaning behind the fixed effects model needs to be explained.

In order to compute the effect of time variance of the variables, (1) is time-demeaned. That is, for each i the equation is averaged over time:

$$\overline{y_i} = \beta_0 + \alpha_i + \overline{X'}\beta + \overline{u_i} \qquad (2)$$

with $\overline{y_i} = \frac{\sum_{t=1}^{T} y_{it}}{T}$. $\overline{X'}$ and $\overline{u_i}$ are calculated correspondingly.

Computing (1) – (2) for each i we receive

$$\ddot{y}_{it} = \ddot{X}'\beta + \ddot{u}_{it} \qquad (3)$$

This equation may now be estimated using pooled OLS. Since the time variation is computed within each observation's equation, this is called the within transformation. Note that β_0 and α_i have disappeared from the equation as they are invariant over time and thus deleted when their time-averaged values are subtracted, which are β_0, respectively, α_i themselves. For the same reason, variables which are always constant across time, for example, industry identification variables cannot be included in the FE model. Thus, in order to allow for the intercept to vary over companies, dummy variables for each year may be added to the variables. This method is called the least square dummy variables (LSDV) technique. However, it has to be noted that adding a rather large number of (dummy) variables to the regression quickly results in a very large R^2 simply due to the sheer number of variables included in the regression.

Note furthermore that, as Wooldridge (2006, p. 491) points out, FE panel regressions do not have one intercept as such but rather individual intercepts for each company included in the data set. The intercept reported along FE panel regressions may thus be interpreted as the average of the $\beta_0 + \alpha_i$ across all i (assuming year dummy variables have been added to them).

Besides the fixed effects model, the most prominent other model is that of random effects (RE). The main difference between them is that while FE allows for the α_i to be correlated with the X_{kit}, the random effects model does not. However, in the case of the data underlying this paper, the α_i represent company, industry and general economic influences which are expected to be highly correlated with the variables included in the regression equations. This correlation does appear in the FE regressions conducted, although it is not reported as it was expected and does not harm the models due to it being provisioned for in the FE model. Thus, no RE regression are conducted here.

The same applies for the method of first differencing. In this method, (1) is also the starting point of the calculation, but no time-demeaning is conducted. Instead, for $t = 1, \ldots, T - 1$ the difference $Y_{t+1} - Y_t$ is calculated. As with the RE model, strictly exogenous variables that are uncorrelated with the idiosyncratic errors are required. Due to this, no first differencing will be applied in this paper.

There is also another method of obtaining estimable equations for the FE model besides time-demeaning, which is the between estimator. However, the between estimator yields biased results if the exogenous variables are not uncorrelated with the idiosyncratic errors, which means that it cannot be applied in the context of this analysis. Hence, only FE within transformed models will be applied and neither between transformation nor RE nor first difference will be further outlined here.

4.2.2. Industry-adjustment

To test the hypotheses, models were conducted using data only for the companies in the list of relevant deals as well as industry-adjusted data. Here, the process of industry-adjusting shall be outlined.

The raw rival data was collected as described above. Following Bonini (2010, p. 15) and Barber and Lyon (1996, p.369), industry-adjusted values were computed by

$$Y_{is} = x_i - m_s$$

with x_i being ratio x for company i and m_s describing the median of ratio x of the universe of industry s, in which the given company operates, yielding the industry-adjusted value Y_{is}. This is conducted for endogenous and exogenous variables alike, safe, of course, for the variables indicating secondary buyout stakes, which are not transformed in any way.

4.3. Specified models

Following the FE model as described above, the general regression equation may be formulated as

$$Y_{it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \quad \text{with} \quad i = 1, \dots, N$$
$$t = t_1, \dots, T$$

and α_i representing individual unobserved fixed effects (encompassing the common intercept). $X' = (X_{1it}, \dots, X_{Kit})$ is a $(1 * K)$ vector of exogenous variables included in the regression (safe for the secondary stakes variables), $\beta = (\beta_{1it}, \dots, \beta_{Kit})$ a $(1 * K)$ vector of their respective coefficients, Sec_{it} one of the secondary stakes variables as stated below, δ_{it} their respective coefficient and the u_{it} are the idiosyncratic errors. Dummy variables making for the α_i not be dropped by time-demeaning are not shown here but are included in the computation and then reduced to one variable labeled as intercept. As assessing the influence of secondary private equity investors on their acquired

companies is the goal of this paper, the δ_{it} will be of most interest. Each model was computed using variables both before and after industry-adjustment. However, as the influence from secondary investors cannot be isolated from general industry or economic factors influencing the entire industry (for example, generally low interest rates affecting loan borrowing or world-wide economic downturns) when using non-market-adjusted values, only regression results using adjusted variables will be reported.[57] For these, both endogenous and all exogenous variables except for the Sec_{it} were adjusted as stated above.

In order to test the influence of secondary private equity investors on their portfolio companies, a total of ten different variables representing secondary buyout stakes were included in each regression model. The following table gives an overview of the variables used:

	Investor, independent of origin	German investor	Foreign investor
Investor is invested	Secondary Dummy	Secondary DE Dummy	Secondary FOR Dummy
Investor holds majority	Secondary Majority	Secondary DE Majority	Secondary FOR Majority
Investor holds 100%	Secondary 100%		
Acquired stake by investor	Secondary %	Secondary DE %	Secondary FOR %

Table 1: Investor variables used in the regressions.

As can be seen, for the cases of German and foreign investors, dummy variables are introduced for the fact that a secondary investor is holding a stake in the company no matter the size of the stake, further dummy variables specifying that the stake is greater than 50% and variables indicating the size of stake. All of these variables are also included for investors regardless of their origin, plus another dummy variable indicating a 100% acquisition of the target company by the secondary investor. The latter variable is not introduced for German or foreign investors as these discrete cases occurred not often enough

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[57] For results using variables before adjustments, refer to appendix B.

for the variable to yield valid results. Within the individual models, the variables are introduced in the order from the top left field to the bottom right field. For the detailed definition of these as well as all other variables incorporated throughout this paper refer to appendix A.

The first set of models (A) tests for the capital structure of target companies associated with hypothesis H1. Model (A) is split fivefold in the equations calculating the influence on total financial debt over total assets (Y_1), long-term debt over total assets (Y_2), short-term debt over total assets (Y_3) and current ratio (Y_4). As exogenous controlling variables, the once-lagged values of total assets (X_1), sales over total assets (X_2), cash flow over sales (X_3) and EBITDA over sales (X_4) are introduced for all five distinct sub-models. Thus, the regression equations for model (A) are stated as

$$Y_{1it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{A1}$$

$$Y_{2it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{A2}$$

$$Y_{3it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{A3}$$

$$Y_{4it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{A4}$$

with $X' = (X_{1it}, X_{2it}, X_{3it}, X_{4it})$, $\beta = (\beta_{1it}, \beta_{2it}, \beta_{3it}, \beta_{4it})$, $i = 1, \dots, 63$ and $t = 2001, \dots, 2010$. Sec_{it} represents one of the ten secondary buyout variables described above that are iterated for each regression equation. Therefore, these five models stand for a total of forty regression equations (eighty, if non-industry-adjusted regressions are counted). The sets of i, t and the iteration of the Sec_{it} remain the same for all models and will not be repeated henceforth.

For model (B) associated with hypothesis H2, two models for companies' performance are formed. Specifically, sales over total assets (Y_5) and EBITDA over total assets (Y_6) were tested against the once-lagged value of total assets

(X_1), total liabilities over total assets (X_2), cash flow over sales (X_3) and cash over total assets (X_4). The regression equations are formulated as

$$Y_{5it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{B1}$$

$$Y_{6it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{B2}$$

with $X' = (X_{1it}, X_{2it}, X_{3it}, X_{4it})$ and $\beta = (\beta_{1it}, \beta_{2it}, \beta_{3it}, \beta_{4it})$.

Thirdly, for hypothesis H3 model (C) calculates the influence on EBITDA over sales (Y_7) using the once-lagged controlling variables total assets (X_1), cash over total assets (X_2), cash flow over sales (X_3) and total liabilities over total assets (X_4). Model (C)'s equation is

$$Y_{7it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{C1}$$

with $X' = (X_{1it}, X_{2it}, X_{3it}, X_{4it})$ and $\beta = (\beta_{1it}, \beta_{2it}, \beta_{3it}, \beta_{4it})$.

To supplement the arguments, as last regression the influence on the size of the company, expressed as total assets (Y_8) is tested in model (D). It is controlled for the once-lagged values of sales over total assets (X_1), cash over total assets (X_2) and total liabilities over total assets (X_3). Model (D) is expressed as

$$Y_{8it} = \alpha_i + X'\beta + \delta_{it}Sec_{it} + u_{it} \tag{D1}$$

with $X' = (X_{1it}, X_{2it}, X_{3it})$ and $\beta = (\beta_{1it}, \beta_{2it}, \beta_{3it})$.

5. Results
Here, the sample is first described with respect to descriptive data. Afterwards, the results of the individual regression models are reported.

5.1. Descriptive

In respect of descriptive statistics on company data, the year in which the buyout occurred is chosen as reported year. As differences between the influences of German and foreign investors on their acquired companies is the focus of this paper, all data is split in the categories of overall data, data for companies acquired by German investors and for those acquired by foreign investors. Differences from the respective companies' rivals are computed based on of industry-adjusted values as stated above. The box plots show the first and third quartile as well as the median value. Whiskers are defined as 1.5 times the respective inter-quartile range; values beyond this border are shown as outliers.

First off, an overview of the vendor/acquirer distribution based on their origins is given:

	German acquirer	Foreign acquirer	∑
German vendor	17	10	27
Foreign vendor	9	27	36
∑	26	37	63

Source: Own calculations

Table 2: Cross-selling matrix between German and Foreign acquirers.

This suggests that German and foreign private equity investors tend to sell amongst one another. Thus, it seems that the possibility that German and foreign acquirers could create value in their portfolio companies by applying different strategies, which could stem from the fact that German acquirers know the domestic corporate governance and financial system better than foreign investors do, is not exploited in this sample.

This table gives an overview of the acquired companies' size as measured by total assets:
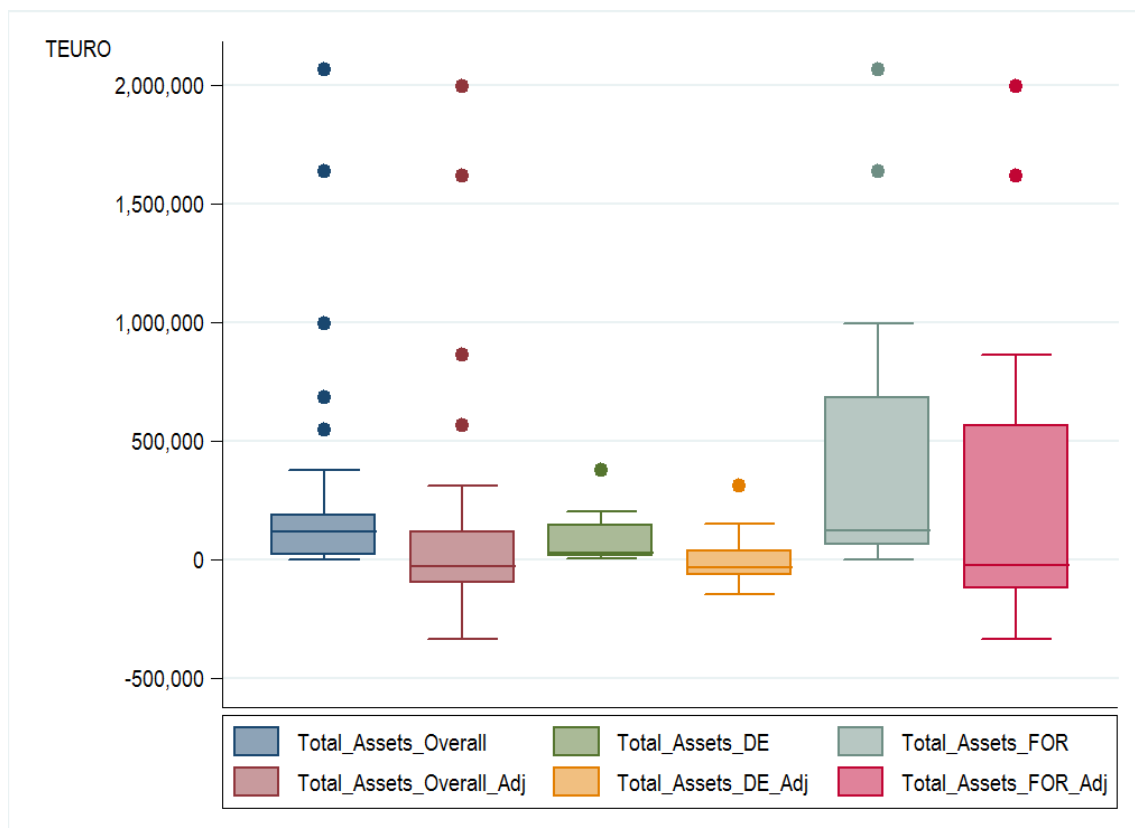
Source: Own calculations.

Illustration 6: Box plot of total assets.

As can be seen, the differences between the sizes of companies acquired by German and foreign companies are quite large such that foreign private equity investors tend to buy much larger companies. All data points considered outliers in the overall and German plots fall within the ranges of the foreign box plots. Obviously, the acquired companies possess more assets than their median rival, but this is mainly due to foreign investors buying a lot larger companies than German investors do. A reason for this may be that especially US- und UK-based private equity funds tend to have larger capital resources[58] which allow them to buy larger companies. As Bonini (2010, p. 7) points out, artificial growth could be a viable strategy for secondary investors to create

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[58] An indicator for this is the 2011 PEI 300 list of the largest private equity companies world-wide. Amongst the top 50 list (which is freely available at www.peimedia.com), there are 32 US-based, 8 UK-based and no Germany-based company listed at all.

value. Hence, another reason may be that foreign investors could want to acquire bigger companies in order to merge them with foreign companies of similar size in order to create international market leaders.

The companies' profitability as measured by EBITDA over total assets is distributed as follows:
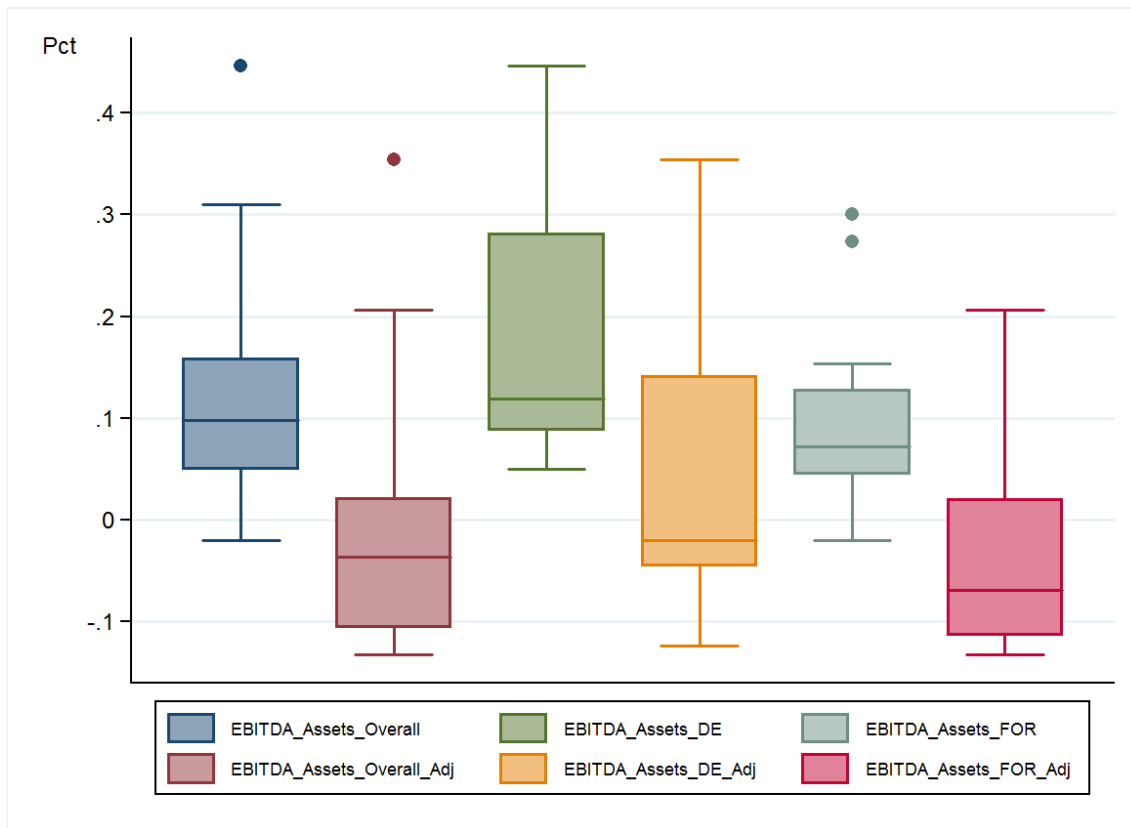
Source: Own calculations.

Illustration 7: Box plots of EBITDA over total assets.

Here, it can be seen that German acquirers tend to buy companies that are more profitable than those acquired by foreign funds using both adjusted and non-adjusted values. However, the medians of industry-adjusted values are negative in all cases and show the lowest value for companies acquired by foreign investors. This seems puzzling against the backdrop of first-time investors normally increasing their portfolio companies' profitability. It could however be a sign of a selection process amongst secondary investors, who

could hope to be able to create some value in companies which are performing worse than their competitors. It could also be a sign of investors trading troubled assets as proposed by Wang (2010, p. 26) as collusion motive for secondary buyouts. Still, as looking for collusion is neither in the scope nor in the reach of this paper, this shall not be further investigated.

For total liabilities over total assets, the following distribution is found:
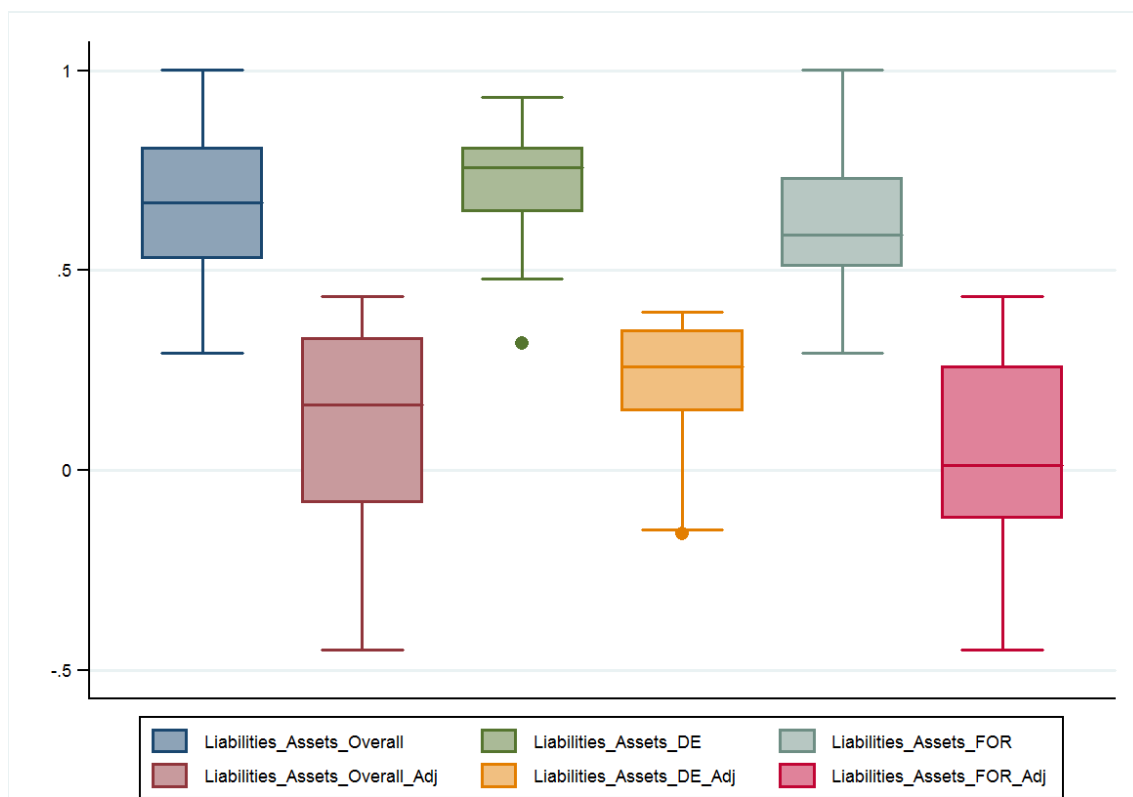
Source: Own calculations.

Illustration 8: Box plots of total liabilities over total assets.

It shows that in all cases, the acquired companies have higher levels of debt already, although this finding is only small for the case of foreign investors. This is consistent with findings in previous research and a product of the value creation strategies applied by the first investor (see section 2.1).

For current liabilities over total assets, the data yield:
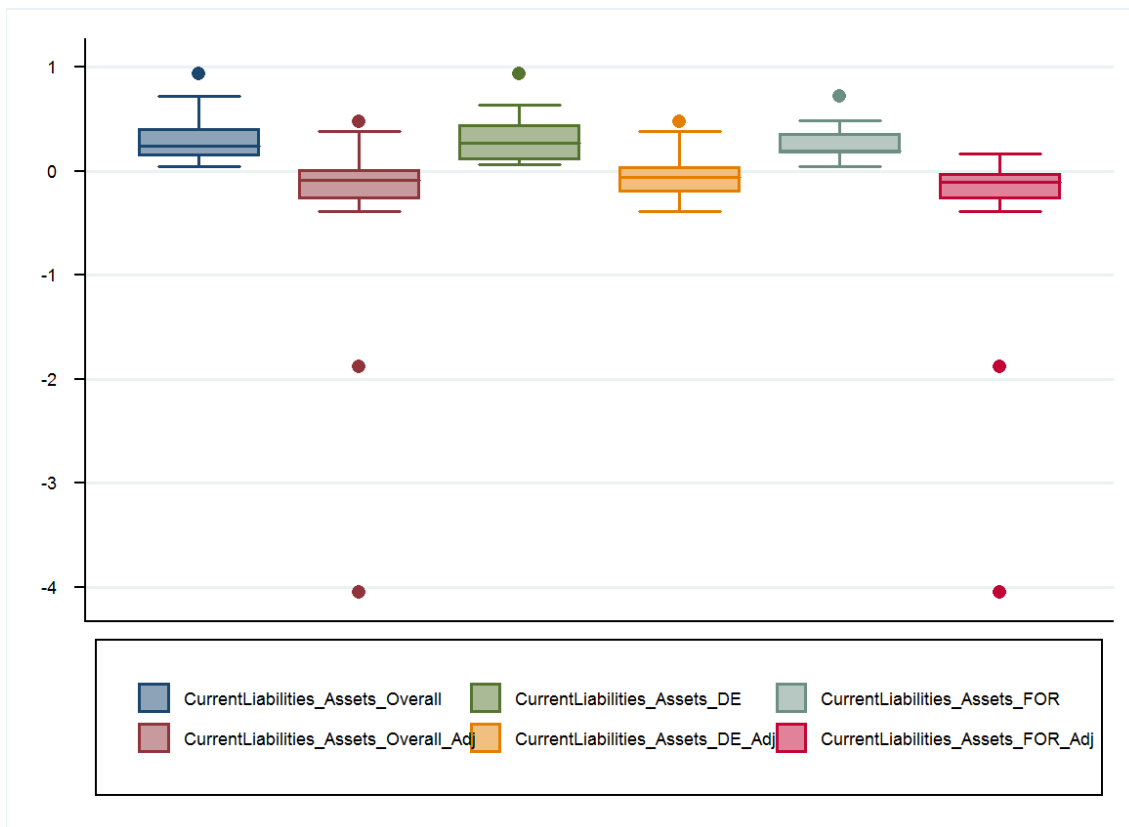
Source: Own calculation.

Illustration 9: Box plots of current liabilities over total assets.

Despite some outliers, the picture is again quite homogenous and shows that the sample target companies have a slightly lower level of current liabilities. This comes somewhat surprising, as first-time investors often increase accounts payable (which are a part of the current liabilities) in order to enhance cash flow.

Unfortunately, not sufficient data is available on the exits of the secondary investors, as most target companies were acquired during the peak of secondary buyouts in 2007 and are still in the portfolio of the investors. Thus, no data can be given on holding durations.

5.2. Panel regression results

Here, the results from the panel regression equations are given. As stated above, only models using industry-adjusted values are reported and discussed, as these exclude possible bias from misinterpreting variable changes which in reality stem from general market or economy-wide trends for influences exerted by the investors. Results from the same models using non-industry-adjusted values are reported in appendix B. However, cases where significant differences can be observed between results before and after industry-adjustment are stated here as well.

5.2.1. Model (A) – capital structure

Model (A1) on total debt over total assets yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the p < .1, p < .05 and p < .01 levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models.

Dependent	(Current Debt + Long Term Debt) / Total Assets									
	Industry adjusted									
Independent										
Lag Total Assets	-1.22e-07 *	-1.25e-07 *	-8.95e-08	-9.48e-08	-5.39e-08	-5.24e-08	-5.24e-08	-1.28e-07 *	-1.56e-07 **	-9.92e-08
	(6.58e-08)	(6.63e-08)	(6.25e-08)	(6.13e-08)	(6.53e-08)	(6.61e-08)	(6.53e-08)	(6.88e-08)	(6.87e-08)	(6.30e-08)
Lag Sales / Assets	-.021082	-.0105827	-.0000495	-.0053554	-.0203355	-.0185093	-.0138284	-.0261798	-.0252662	-.0187958
	(.026492)	(.0268691)	(.0270866)	(.026138)	(.0278922)	(.0290477)	(.0285395)	(.0269279)	(.0262727)	(.0262509)
Lag Cash Flow / Sales	.002393	.0022623	.0026591	.0023659	.0023162	.0022132	.0022628	.0022211	.0021541	.002251
	(.0023416)	(.0023446)	(.0023193)	(.0022723)	(.0024571)	(.0024843)	(.0023803)	(.0023229)	(.0023168)	
Lag EBITDA / Sales	.332694 ***	.3119614 ***	.3334743 ***	.3145059 ***	.3248715 ***	.3152227 ***	.3141872 ***	.3250214 ***	.3191987 ***	.3196388 ***
	(.0997475)	(.0998256)	(.0986582)	(.0967201)	(.1046187)	(.1057986)	(.1044972)	(.1013657)	(.0988923)	(.0986285)
Secondary Dummy	.1181397 ***									
	(.0365797)									
Secondary Majority		.1294622 ***								
		(.0406442)								
Secondary 100%			.1445994 ***							
			(.0411234)							
Secondary %				.0017376 ***						
				(.0004371)						
Secondary DE Dummy					.0977045					
					(.0623992)					
Secondary DE Majority						.0530703				
						(.0662236)				
Secondary DE %							.0013368			
							(.0008385)			
Secondary FOR Dummy								.1285061 ***		
								(.0468004)		
Secondary FOR Majority									.1783076 ***	
									(.0519804)	
Secondary FOR %										.0018512 ***
										(.0005291)
Intercept	.2221779 ***	.2328719	.2421762 ***	.2163834 ***	.2406917 ***	.2520731 ***	.2471266 ***	.2418155 ***	.2433437 ***	.2287367 ***
	(.0293077)	(.0282937)	(.0272065)	(.0283348)	(.0305303)	(.0297244)	(.0292477)	(.0282098)	(.0272588)	(.0281228)
df	134	134	134	134	134	134	134	134	134	134
Adj R²	.2182	.2156	.2351	.2635	.1397	.1196	.1407	.1915	.2300	.2341

Source: own calculations.

Table 3: Results of model (A1).

It is obvious that all secondary stake variables show a positive and highly significant (p < .01) effect on the total level of debt except for those indicating German investors' stakes. Due to this, the effect may be combined to only foreign investors taking effect on an increase in total level of debt. The dummy for a foreign-held majority shows the strongest coefficient amongst all investor variables. The lagged values of EBITDA over sales are positive and highly

significant throughout the regressions, indicating that more efficiently working companies are able to sustain higher levels of debt. Also, for the general and majority dummies for both world-wide and foreign investors the lagged values of total assets are negative and significant, but not on the $p < .01$ level. There are no changes in either signs or significances between these and non-industry-adjusted results.

Model (A2) on long-term debt over total assets yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the $p < .1$, $p < .05$ and $p < .01$ levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models.

Dependent	Long Term Liabilities / Total Assets									
	Industry adjusted									
Independent										
Lag Total Assets	-7.73e-08	-9.91e-08	-3.52e-08	-4.31e-08	1.17e-08	1.38e-08	1.14e-08	-7.85e-08	-9.55e-08	-3.83e-08
	(1.01e-07)	(9.99e-08)	(9.71e-08)	(9.54e-08)	(9.88e-08)	(9.76e-08)	(9.79e-08)	(1.05e-07)	(1.07e-07)	(9.86e-08)
Lag Sales / Assets	-.0595941	-.0469621	-.04091	-.0435609	-.0585986	-.0467328	-.0496813	-.0661482 *	-.0649629	-.0582195
	(.0390079)	(.038665)	(.0397558)	(.0387211)	(.0403351)	(.0405222)	(.0404917)	(.0396169)	(.0394942)	(.0393517)
Lag Cash Flow / Sales	-.0014229	-.0015702	-.0008939	-.0014132	-.0014963	-.0015549	-.0015057	-.0016215	-.0016967	-.0015867
	(.0035945)	(.0035328)	(.0035981)	(.0035264)	(.0037054)	(.0036601)	(.0036732)	(.0036526)	(.0036418)	(.0036217)
Lag EBITDA / Sales	.0537582	.0297111	.0779932	.0381891	.0454294	.0287722	.03575	.045483	.0385671	.0398055
	(.1496543)	(.1470418)	(.1499693)	(.1467279)	(.1542139)	(.1523595)	(.1528315)	(.1520519)	(.1515633)	(.1507233)
Secondary Dummy	.1546858 ***									
	(.0542112)									
Secondary Majority		.1966535 ***								
		(.0582398)								
Secondary 100%			.1765696 ***							
			(.0608287)							
Secondary %				.0022175 ***						
				(.0006457)						
Secondary DE Dummy					.1424066					
					(.0880184)					
Secondary DE Majority						.1949065 **				
						(.0893161)				
Secondary DE %							.002319 **			
							(.0011394)			
Secondary FOR Dummy								.1595912 **		
								(.0705737)		
Secondary FOR Majority									.1892099 **	
									(.0795703)	
Secondary FOR %										.0020851 **
										(.0008067)
Intercept	.2632091 ***	.2706743 ***	.2879805 ***	.255808 ***	.2850345 ***	.287929 ***	.2901712 ***	.2895564 ***	.2934525 ***	.2767425 ***
	(.0428423)	(.0406243)	(.0402521)	(.0419202)	(.043605)	(.0415637)	(.0416091)	(.0412417)	(.0407222)	(.0419169)
df	144	144	144	144	144	144	144	144	144	144
Adj R²	.1175	.1470	.1201	.1504	.0624	.0846	.0783	.0881	.0935	.1036

Source: own calculations.

Table 4: Results of model (A2).

Here, all investor variables are positive and significant except for the general dummy of German investors. It can thus be stated that all investors, regardless of their origin, exert an influence to increase the level of long-term debt. However, for German investors this seems true only if the majority of the company is held.[59] Amongst the control variables, the lagged value of sales over total assets is negative and slightly significant ($p < .1$) only for the equation including the general foreign dummy. As there seems to be no systematical influence emanating from this variable, its interpretation will be refrained from. There are no changes in signs between these results and those obtained from non-industry-adjusted models. In the case of variable significances, the general dummies for world-wide and foreign investors as well as the percentage held by German investors are each one level of significance weaker in the non-adjusted regressions. This suggests that their influence on the company is relatively small when looking at the acquired company on its own compared to their stronger influence on increasing the level of long-term debt beyond median industry levels.

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[59] Note that mainly minority stakes were unknown in their exact size and thus included only in the general dummy.

Model (A3) on current liabilities over total assets yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the p < .1, p < .05 and p < .01 levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models.

Dependent	Current Liabilities / Total Assets									
	Industry adjusted									
Independent										
Lag Total Assets	-5.59e-08	-3.21e-08	-5.57e-08	-5.96e-08	-7.51e-08	-7.79e-08	-7.57e-08	-4.39e-08	-4.77e-08	-6.03e-08
	(6.86e-08)	(6.77e-08)	(6.49e-08)	(6.55e-08)	(6.54e-08)	(6.39e-08)	(6.51e-08)	(7.01e-08)	(7.17e-08)	(6.62e-08)
Lag Sales / Assets	.0001444	-.0065366	-.0110021	-.0054231	.0008737	-.0127858	-.0049496	.0020483	.0014565	-.0003735
	(.0275794)	(.027342)	(.0278503)	(.0276958)	(.0278297)	(.0280154)	(.0283595)	(.0274992)	(.0275802)	(.0275082)
Lag Cash Flow / Sales	.0046867	.0047381 *	.004541 *	.0047087 *	.0047243 *	.0046249 *	.0046696 *	.0047458 *	.0047648	.0047473 *
	(.0024403)	(.0023967)	(.0024023)	(.0024213)	(.0024537)	(.0023985)	(.0024415)	(.0024312)	(.0024399)	(.0024331)
Lag EBITDA / Sales	.2581175 **	.2687345 **	.2573135 **	.265547 **	.2603944 **	.2668642 **	.2622298 **	.2605187 **	.2626882 **	.2633066 **
	(.1036035)	(.1018408)	(.1019077)	(.1028603)	(.1041736)	(.1018592)	(.1036507)	(.1032019)	(.1035921)	(.1033214)
Secondary Dummy	-.0326375									
	(.037094)									
Secondary Majority		-.0766821 *								
		(.0401182)								
Secondary 100%			-.0754067 *							
			(.040899)							
Secondary %				-.0006299						
				(.0004456)						
Secondary DE Dummy					.0057052					
					(.0624312)					
Secondary DE Majority						-.1209074 *				
						(.0640475)				
Secondary DE %							-.0007083			
							(.0008355)			
Secondary FOR Dummy								-.0534052		
								(.0458683)		
Secondary FOR Majority									-.0469266	
									(.0517711)	
Secondary FOR %										-.000583
										(.0005244)
Intercept	.0008029	.0058098	-.0008249	.0059891	-.0100995	.0042074	-.003426	-.0022695	-.0051393	.0001959
	(.0304012)	(.0288151)	(.0281428)	(.0299887)	(.0304218)	(.0286357)	(.0290332)	(.028743)	(.0285692)	(.0293741)
df	135	135	135	135	135	135	135	135	135	135
Adj R²	.1023	.1340	.1313	.1161	.0935	.1330	.1017	.1089	.1029	.1076

Source: own calculations.

Table 5: Results of model (A3).

In this model, slightly significant negative effects (p < .1) become apparent for the dummies of majorities and complete stakes held by world-wide investors and majorities held by German investors. As the variables for foreign investors are all insignificant, this may be reduced to only German investors exerting an influence on decreasing the short-term level of debt if they hold the majority in their portfolio companies. The lagged values of cash flow over sales and EBITDA over sales are positive and significant throughout the single

equations on the p < .1 and p < .05 level, respectively, except for the cases of the world-wide investors' general dummy and foreign-held majority dummy, where cash flow over sales is not significant. Comparing this model to its non-industry-adjusted counterpart, the significances on the values of lagged total assets have disappeared, while cash flow over sales and EBITDA over sales are insignificant in each non-adjusted equation. Amongst the investor variables, the significances are generally stronger in the non-adjusted regressions, with some losing their significance entirely. This may be interpreted as most of the seeming influence exerted by the investor can actually be attributed to underlying general industry or economy-wide trends, safe for the cases in which the significances remain. This is also reflected in the fact that the high significances (p < .01) of the intercepts disappear altogether after industry-adjustment, which may here be interpreted as just those mentioned general effects being included in the intercepts before adjustments.

Model (A4) on the current ratio yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the p < .1, p < .05 and p < .01 levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models.

Dependent	Current Ratio									
	Industry adjusted									
Independent										
Lag Total Assets	-1.26e-07	-6.89e-07	-2.94e-07	-2.52e-07	-1.53e-07	-1.82e-07	-1.85e-07	-1.62e-08	1.18e-07	-1.47e-08
	(7.37e-07)	(7.48e-07)	(6.98e-07)	(7.01e-07)	(6.90e-07)	(6.48e-07)	(6.64e-07)	(7.59e-07)	(8.13e-07)	(7.04e-07)
Lag Cash /Assets	-1.75406	-3.47332	-2.34029	-2.52893	-1.8578	-1.80353	-1.62351	-1.48291	-.970508	-.729745
	(2.676099)	(2.710762)	(2.605103)	(2.742603)	(2.580612)	(2.422513)	(2.481115)	(2.698219)	(2.914972)	(2.85405)
Lag Cash Flow / Sales	-4.79504 ***	-4.38682 ***	-4.65311 ***	-4.61230	-4.71305 ***	-4.35599 ***	-4.57179 ***	-4.81655 ***	-4.87636 ***	-4.94939 ***
	(1.565973)	(1.53765)	(1.544545)	(1.56301)	(1.562418)	(1.465633)	(1.495504)	(1.554532)	(1.557404)	(1.557107)
Lag Liabilities / Assets	-.878612	-1.7700	-1.24556	-1.27179	-1.04385	-1.96274	-1.66308	-.834567	-.727089	-.639291
	(1.273893)	(1.29022)	(1.240729)	(1.298857)	(1.261944)	(1.193209)	(1.209342)	(1.224845)	(1.245368)	(1245131)
Secondary Dummy	-.0463028									
	(.4958886)									
Secondary Majority		1.000539 *								
		(.5973667)								
Secondary 100%			.6274637							
			(.5935583)							
Secondary %				.0051841						
				(.0070065)						
Secondary DE Dummy					.2638686					
					(.7340539)					
Secondary DE Majority						2.153952 ***				
						(.7437752)				
Secondary DE %							.0233687 **			
							(.0102656)			
Secondary FOR Dummy								-.262837		
								(.6222147)		
Secondary FOR Majority									-.5117919	
									(.8250453)	
Secondary FOR %										-.0075121
										(.0086159)
Intercept	.026427	.0339449	-.0052804	-.0295906	.0075529	-.0700741	-.0608604	.0283879	-.0050102	.0717542
	(.4283753)	(.4173258)	(.4236465)	(.4305917)	(.428261)	(.4016684)	(.4114684)	(.4262035)	(.4276415)	(.4277231)
df	115	115	115	115	115	115	115	115	115	115
Adj R²	.1634	.1995	.1781	.1706	.1650	.2630	.2278	.1657	.1684	.1734

Source: own calculations.

Table 6: Results of model (A4).

For the current ratio, amongst the investor variables the world-wide held majority dummy is significant (p < .1) alongside the dummy for a German-held majority and the size of the German-held stake (p < .01 and p < .05, respectively), all with positive coefficients. Thus, an influence can only asserted for German investors. Among the control variables, the lagged values of cash flow over sales are negative and highly significant (p < .01) throughout all equations. These are not significant in the non-industry-adjusted models, while

all intercepts (p < .01) are. The latter may again be interpreted as market or economy-wide influences being included in the intercepts and then accounted for by industry-adjustments. In terms of signs, no changes occur between the two models for variables that show significances in either model, but the values of lagged total assets show positive coefficients for all but one equation with non-adjusted values and negative coefficients throughout the adjusted regressions. However, in both models their coefficients show magnitudes only slightly different from zero and the negative values are consistent with models (A1), (A2) and (A3).

5.2.2. Model (B) - profitability

Model (B1) on sales over total assets yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the p < .1, p < .05 and p < .01 levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models.

Dependent	Sales / Total Assets									
Independent	Industry adjusted									
Lag Total Assets	-1.95e-07 (2.03e-07)	-1.29e-07 (2.08e-07)	-1.76e-07 (1.91e-07)	-1.78e-07 (1.91e-07)	-2.29e-07 (1.92e-07)	-2.30e-07 (1.92e-07)	-2.30e-07 (1.92e-07)	-1.64e-07 (2.08e-07)	-1.15e-07 (2.17e-07)	-1.69e-07 (1.91e-07)
Lag Liabilities / Assets	-.0853474 (.3392307)	-.0237892 (.340308)	-.0273605 (.3326283)	-.0094992 (.3355411)	-.1243865 (.3376586)	-.0896769 (.3380554)	-.1111163 (.3364511)	-.0810956 (.3364086)	-.045687 (.3381863)	-.0036241 (.3341462)
Lag Cash Flow / Sales	-.1968329 (.4254167)	-.2280105 (.4222822)	-.1678684 (.4160315)	-.2307998 (.4179806)	-.1677612 (.4260085)	-.1929872 (.424894)	-.1787651 (.4251795)	-.1940587 (.4231919)	-.214129 (.422191)	-.2503087 (.4173265)
Lag Cash / Assets	-.9187985 (.7555788)	-.7443878 (.7641251)	-.7700729 (.7402061)	-.6428411 (.7610553)	-.9826729 (.7441812)	-102465 (.7460649)	-.9941218 (.7493457)	-.8480207 (.7607983)	-.6561022 (.7965085)	-.518488 (.7757016)
Secondary Dummy	-.0721558 (.139469)									
Secondary Majority		-.1992944 (.165442)								
Secondary 100%			-.260153 * (.1533086)							
Secondary %				-.0031392 (.001941)						
Secondary DE Dummy					.0894426 (.2652269)					
Secondary DE Majority						-.1480394 (.2860089)				
Secondary DE %							-.000267 (.0052257)			
Secondary FOR Dummy								-.1333367 (.1630717)		
Secondary FOR Majority									-.2274785 (.2048363)	
Secondary FOR %										-.0037172 * (.0021181)
Intercept	-.48752 *** (.1240872)	-.479316 *** (.1207583)	-.476701 *** (.1188822)	-.435397 *** (.1253585)	-.517591 *** (.1271778)	-.484822 *** (.1254959)	-.500673 *** (.1335995)	-.494672 *** (.1202562)	-.504786 *** (.119256)	-.464081 *** (.119786)
df	119	119	119	119	1119	119	119	119	119	119
Adj R²	.0577	.0743	.0935	.0900	.0555	.0577	.0539	.0634	.0713	.0961

Source own calculations.

Table 7: Results of model (B1).

Here, slightly significant (p < .05) negative coefficients are observed for the dummy of world-wide lone secondary shareholders as well as the size of the stake held by foreign investors. Compared to the non-adjusted model, there is no change in respect of the investor variables except for the latter variable not being significant in the non-adjusted model. Thus, a rather weak negative influence on sales over assets may be observed for foreign secondary private

equity investors. Regarding the control variables, there are no changes in either significance or sign; however, the intercepts are not negative but positive and significant (p < .01) in the adjacent model, suggesting large influences from the market

Model (B2) on EBITDA over total assets yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the p < .1, p < .05 and p < .01 levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models.

Dependent	EBITDA / Total Assets									
	Industry adjusted									
Independent										
Lag Total Assets	-3.74e-08	-4.27e-08	-3.41e-08	-2.91e-08	-3.69e-08	-3.69e-08	-3.54e-08	-4.43e-08	-4.92e-08	-3.56e-08
	(4.70e-08)	(4.82e-08)	(4.52e-08)	(4.47e-08)	(4.45e-08)	(4.46e-08)	(4.38e-08)	(4.82e-08)	(5.03e-08)	(4.53e-08)
Lag Liabilities / Assets	.1500799 *	.1430495 *	.1560869 **	.1747632 **	.159872 **	.1529919 *	.1816295 **	.1478183 *	.1448969 *	.152751 **
	(.0771834)	(.0786421)	(.0761957)	(.0773562)	(.077516)	(.0780731)	(.0760886)	(.075086)	(.0755072)	(.0757792)
Lag Cash Flow / Sales	-.0844778	-.081325	-.0866476	-.0959098	-.0895025	-.085715	-.0932513	-.0834177	-.0816776	-.0862287
	(.0998406)	(.0999267)	(.0994202)	(.0990365)	(.0998055)	(.0997954)	(.0977681)	(.0993338)	(.0993742)	(.0997151)
Lag Cash / Assets	-.0602972	-.0725567	-.0530674	-.0168472	-.0575198	-.0596991	-.0699213	-.0727363	-.0893108	-.0501464
	(.162697)	(.1652833)	(.1606884)	(.1631825)	(.1597507)	(.1599298)	(.1572202)	(.1632764)	(.169807)	(.1682015)
Secondary Dummy	.0008373									
	(.0302543)									
Secondary Majority		.010986								
		(.0353922)								
Secondary 100%			-.0133793							
			(.0359218)							
Secondary %				-.0004455						
				(.0004047)						
Secondary DE Dummy					-.0212395					
					(.0472363)					
Secondary DE Majority						-.0052915				
						(.0493261)				
Secondary DE %							-.0010387			
							(.0006584)			
Secondary FOR Dummy								.0148049		
								(.0376771)		
Secondary FOR Majority									.0241725	
									(.0469305)	
Secondary FOR %										-.0000882
										(.0004938)
Intercept	-.0228058	-.0232515	-.0216153	-.0158043	-.021127	-.0224443	-.0185405	-.0237935	-.0228514	-.0216719
	(.0269817)	(.0266507)	(.0267329)	(.0271022)	(.0267908)	(.0266958)	(.0262639)	(.0267263)	(.0265566)	(.0271944)
df	122	122	122	122	122	122	122	122	122	122
Adj R²	.0731	.0744	.0749	.0893	.0758	.0732	.1058	.0752	.0767	.0735

Source: own calculations.

Table 8: Results of model (B2).

In this model, not a single secondary investor variable shows significant values, indicating that they exert no influence on their companies' profitability as

measured by EBITDA over total assets. The only significant values here are the lagged values of total liabilities over total assets, which show positive and significant ($p < .1$ and $p < .05$) values, suggesting that companies with higher levels of total debt use this debt to become more profitable. However, (A1) has shown that foreign investors do increase their portfolio companies' level of debt, so this may speak for an indirect increase of EBITDA over sales for companies owned by secondary private equity investors. The positive effect of the level of debt also shows up in the non-adjusted equations. There, the only difference is that the variables for the sizes of stakes held by world-wide and German investors are negative and significant on the $p < .05$ and $p < .1$ level. This is consistent with the findings in (A1), where it is suggested that German investors do not alter their acquired companies' level of debt, which in this model shows a positive influence on EBITDA over total assets.

5.2.3. Model (C) - efficiency

Model (C1) on EBITDA over sales yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the p < .1, p < .05 and p < .01 levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models

Dependent	EBITDA / Sales									
Independent	Industry adjusted									
Lag Total Assets	1.86e-08 (4.35e-08)	2.30e-08 (4.48e-08)	1.47e-08 (4.20e-08)	2.03e-08 (4.12e-08)	9.53e-09 (4.12e-08)	9.56e-09 (4.12e-08)	9.53e-09 (4.11e-08)	2.19e-08 (4.45e-08)	3.66e-08 (4.64e-08)	2.09e-08 (4.14e-08)
Lag Cash / Assets	.1323232 (.1631676)	.1465161 (.1662803)	.1330765 (.163812)	.1832717 (.1652124)	.1134314 (.1609956)	.1195839 (.1613964)	.1061671 (.1615086)	.1404495 (.1646568)	.1927464 (.1718523)	.1959482 (.1687801)
Lag Cash Flow / Sales	-.1274495 (.0924593)	-.1293909 (.092486)	-.1238796 (.0922127)	-.1339197 (.0912618)	-.1230946 (.092733)	-.1205771 (.0924841)	-.1229186 (.0922955)	-.1257335 (.0921777)	-.1313777 (.0916858)	-.1343098 (.0914182)
Lag Liabilities / Assets	.2796504 *** (.0729866)	.2844519 *** (.073791)	.2765618 *** (.0724564)	.291128 *** (.072272)	.2729142 *** (.0727508)	.2688362 *** (.0728364)	.2737703 *** (.0722725)	.2785625 *** (.0725455)	.2884776 *** (.0727128)	.2905908 *** (.0723751)
Secondary Dummy	-.0189533 (.0300584)									
Secondary Majority		-.0266677 (.0359319)								
Secondary 100%			-.0208024 (.0350253)							
Secondary %				-.0006211 (.0004206)						
Secondary DE Dummy					-.002383 (.0572594)					
Secondary DE Majority						.0251336 (.061745)				
Secondary DE %							-.0005271 (.0011557)			
Secondary FOR Dummy								-.0251453 (.0352118)		
Secondary FOR Majority									-.053802 (.0440952)	
Secondary FOR %										-.0006519 (.0004588)
Intercept	-.0213388 (.0270103)	-.0223659 (.0265054)	-.023244 (.026479)	-.0120325 (.0274128)	-.0251186 (.0276082)	-.0284506 (.0272511)	-.0199261 (.0289201)	-.0237017 (.0262982)	-.0255863 (.0259909)	-.0182239 (.0263866)
df	119	119	119	119	119	119	119	119	119	119
Adj R²	.2115	.2133	.2110	.2321	.2068	.2087	.2093	.2128	.2243	.2303

Source: own calculations.

Table 9: Results of model (C1).

Here, the results look similar to (B2). Again, no investor variable shows significant values, however, the lagged values of total liabilities over total debt show positive and highly significant coefficients throughout the equations. As (A1) indicates, foreign investors do exert an influence to increase their portfolio companies' level of debt, which in turn is here suggested to increase EBITDA over sales. Thus, foreign investors seem to indirectly strengthen acquired

companies' efficiency. The control variables and intercepts in the non-adjusted model yield the same results in respect of signs and significance as here, but, in addition, the variables for the sizes of stakes held by world-wide and foreign investors as well as for majorities held by foreign investors show negative and slightly significant ($p < .1$ each) values. This suggests that although target companies seem to show decreased levels of efficiency in years during which foreign investors are active, they still perform better than their respective rivals.

5.2.4. Model (D) – company size

Model (D1) on total assets yields

For the definitions of variables refer to appendix B. *, **, *** indicate significance on the $p < .1$, $p < .05$ and $p < .01$ levels. Standard errors are given in parentheses. All equations were estimated using within-transformed fixed effect models

Dependent	Total Assets									
	Industry adjusted									
Independent										
Lag EBITDA / Sales	177553.1	149407.6	243382	187656.4	199061.2	204977.8	198466	187382.9	169347.9	192796.8
	(264402.5)	(264339.7)	(271991.6)	(268298.3)	(268757.8)	(269735.9)	(268978.7)	(259584.2)	(257032.3)	(267060.7)
Lag Cash Flow / Sales	-76822.7	-44778.94	-166095.3	-121151.7	-181317.8	-185970.8	-174830.1	-142821.4	-129858.2	-145983.3
	(334355.6)	(335178.9)	(335089.6)	(339687.2)	(343958.6)	(346071.4)	(344243.9)	(325331.3)	(322026.2)	(334740)
Lag Liabilities / Assets	221960.7	185138.5	262726.8	279338	359170.9	360421.2	352752.7	255448.3	212288.3	279884
	(222651.5)	(226476.5)	(225671.1)	(231551.7)	(225604.4)	(226121.6)	(225562.4)	(210864)	(210960)	(220626.5)
Secondary Dummy	134977.4									
	(84079.66)									
Secondary Majority		168680.6 *								
		(94547.89)								
Secondary 100%			96205.66							
			(99468.63)							
Secondary %				698.7085						
				(1157.135)						
Secondary DE Dummy					-58456.16					
					(138866.4)					
Secondary DE Majority						-61966.81				
						(144640.6)				
Secondary DE %							-603.142			
							(1842.325)			
Secondary FOR Dummy								231950.5 **		
								(100369.5)		
Secondary FOR Majority									304584.4 **	
									(114972.3)	
Secondary FOR %										1350.45
										(1383.355)
Intercept	292700.3 ***	295330.3 ***	324397.1 ***	322873.9 ***	341601 ***	340307.3 ***	339589.2 ***	276438.1 ***	274727.5 ***	313672.6 ***
	(62917.63)	(60934.37)	(58587.48)	(62165.17)	(58065.13)	(57623.55)	(57628.42)	(61371.52)	(59715)	(62012.86)
df	127	127	127	127	127	127	127	127	127	127
Adj R²	.0749	.0822	.0546	.0474	.0450	.0451	.0441	.1071	.1256	.0549

Source: own calculations.

Table 10: Results of model (D1).

In this model, the variable for majorities held by world-wide investors shows a positive and slightly significant (p < .1) coefficient alongside those representing active foreign investors and majorities held by them, with positive and significant (p < .05) values each. These findings may be reduced to foreign investors exerting an influence to increase their portfolio companies' total assets. All variables show the same signs and significances in the non-adjusted model, except for the investor variables significant in this model, which are one level of significance stronger each in the adjacent model, and the general dummy for world-wide active investors, which is significant (p < .05) only when including non-adjusted values.

6. Discussion

In this section, the results from the regression are discussed and set into context with each other as well as with findings from other studies.

Firstly, it could be found in model (A1) that only foreign investors appear to increase the level of total debt, while German investors do not exert any influence on this variable. This is consistent with the descriptive findings on the total level of debt, which is lower for foreign investors than for German. Yet, split into the respective levels of long-term debt (A2) and short-term debt (A3), it however becomes obvious that both German and foreign investors increase the level of long-term debt. While this was not expected, it is in line with Jensen's (1986) theory of management incentivizing by increased level of debt and may as well be explained by debt's tax benefits. Also, it is possible that large fractions of this debt were added to companies during years of favorable credit market conditions, during which larger levels of debt would hurt a company less. Yet, German investors decrease the level of short-term debt, which seems to offset the increase in long-term debt. This finding is supported by model (A4) on the current ratio, in which only German majority holders seem to increase the current ratio by decreasing current liabilities. This result is somewhat puzzling,

as decreasing current liabilities can result in decreasing cash flows via earlier paid creditors, something that is mostly not associated with financial investors.

However, since accounts payable are included in the short-term debt, the effect might also be of inverse direction. Specifically, customers of portfolio companies of German acquirers might demand shorter payment delays from these companies. This could be explained such that the increased level of long-term (and interest-bearing) debt causes target companies' customers to lose trust in their future solvency. The fact that decreasing levels of current liabilities cannot be observed for companies acquired by foreign investors may stem from their potentially higher reputation and better track record, plus the fact that while foreign investors seem to actively grow their portfolio companies, German investors do not. This may be seen as a signal of potential future distress, since by artificially growing the companies, targets of foreign investors may be able to realize future economies of scale. While these could not be found over the period observed in this analysis, this may be due to the fact that most target companies were acquired during the peak of secondary buyouts in 2007, which not only was not too long ago, but was also immediately followed by the financial crisis. This theory could find support in the fact that besides increasing the level of long-term debt (in this argumentation, excluding decreasing levels of short-term debt), German investors could not be found to exert influence on any other variable. Hence, although German investors do not impose increased levels of total debt on their target companies, due to the fact that they do increase levels of long-term debt, hypothesis H1 cannot be found fully supported.

Regarding the measures of profitability, no increases for either sales over total assets (B1) or EBITDA over total assets (B2) could be found. Moreover, foreign investors seem to actually decrease the sales ratio. Also, EBITDA margins are not increased by either type of investor (model (C1)). Taken together with model (D1) on total assets, where it is found that only foreign investors exert an increasing influence on the size of the company, this

suggests that foreign investors mostly grow the company by merging it with other companies, possibly also foreign. It is unlikely that the target companies grow organically, since this should go along with increases in profitability and/or efficiency. This finding is in line with Bonini (2010, p. 7) who suggests that secondary investors could be able to create value by artificially growing target companies. It also fits with the finding that foreign investors tend to buy larger companies than German investors do, suggesting that bigger international concerns are formed from the target companies. Also, as bigger companies are more likely to go public (cp. Strömberg 2007, p. 20), it may be possible that foreign investors aim to exit the portfolio companies via IPO. This is further supported by the fact that going public is easier and more common outside of Germany (cp. Roe (1994, p. 204ff.) for the relatively less important role of capital markets in comparison to Anglo-American shaped countries); hence merging the German target companies with foreign companies could simplify a possible IPO. However, as no data was collected on the origin of companies that are acquired in order to to be merged with or added to the German target company and no sufficient data is available on the exits of the secondary investors, this theory cannot be confirmed without doubt. Another explanation could be that this growth is largely financed by loans which stem from favorable credit market conditions prior to 2008 (cp. illustration 2) and that stable or increasing conditions were anticipated which would result in rising deal multiples (Kaplan and Strömberg 2009, p. 123). Such still enhancing credit market conditions could thus result in large returns once the company is sold. To summarize, hypothesis H2 on lacking increases of profitability and efficiency during the secondary buyout can largely be confirmed through the findings.

7. Conclusion and Outlook

Using a self-collected sample of German targets of secondary buyouts, the aim of this paper was to examine the influence on the target companies exerted by the investors during the secondary buyout. Company-level data was collected for the period of 2001 to 2010 and analyzed by means of panel

regression. Specifically analyzing differential effects on target companies depending on whether the acquiring private equity fund was of German or foreign origin, two hypotheses were expressed. The first hypothesis is that the levels of debt imposed on acquired companies differ between these two kinds of investors, since less monitoring effects from high levels of debt should be required for domestic investors to effectively monitor their portfolio companies. While the analysis yields that only foreign investors increase the target companies' levels of total debt while German investors do not change this, it was also found that both foreign and domestic investors increase the level of long-term debt. For German acquirers, this effect seems to be offset by concurrent decreases in levels of current debt. As an explanation for this rather counterintuitive effect it was proposed that it may in fact not be the investor who decreases current debt, but the target companies' customers, who could fear financial distress in the companies due to increased levels of long-term debt.

Secondly it is hypothesized that, in line with other empirical research, secondary buyout targets do not experience increased levels of profitability or efficiency from the investor's influence. This is explained by the first investor already having applied most strategies that effectively increase target companies' profitability and efficiency. As expected, the data can support this hypothesis, as neither values of profitability nor efficiency could be found to be increased through the investor's influence. Moreover, it could be found that foreign investors exert an influence to decrease sales over total assets, which could be explained by the finding that foreign investors seem to grow their portfolio companies artificially through mergers and acquisitions. This may be explained by the anticipation of further enhancing credit market conditions (from 2007, when most companies were acquired) and associated rising deal multiples on cheaply borrowed loans. Another explanation could be the hope for realized economies of scale through growing companies' larger production capabilities or the growth happening in preparation of an exit via IPO, which is more likely for bigger companies.

However, mainly due to the fact that most secondary buyouts observed in this study only happen in 2007, no data could be collected on the secondary investors' exits. Once most of the target companies acquired in the secondary buyout wave of 2007 are exited, future research could look into how the companies are sold.

Moreover, as only different influences on target companies depending on the origin of the investor were analyzed, no explanation could be given as to how exactly German and foreign investors chose their targets. Also, it is found that German and foreign investors seem to rather sell companies amongst each other and not between domestic and foreign investors and that for both no increases in profitability or efficiency of their target companies could be found. However, it could be possible that due to better knowledge of the respective domestic corporate governance and financial systems as well as different approaches to maximizing value in portfolio companies, Portfolio companies traded between domestic and foreign investors could perform better than those traded only amongst domestic or foreign investors. However, no evidence could be found that secondary investors exploit their different skill sets. Further studies could thus be conducted analyzing the question if secondary target companies which are traded between foreign and domestic investors perform better than those traded amongst domestic and foreign investors, respectively.

Appendices

Appendix A: Variable specifications

Financial leverage:
$$\frac{Long-term\ debt + short-term\ debt}{Total\ assets}$$

Long-term financial leverage:
$$\frac{Long-term\ debt}{Total\ assets}$$

Short-term financial leverage:
$$\frac{Short-term\ debt}{Total\ assets}$$

Current Ratio:
$$\frac{Current\ assets}{Current\ liabilities}$$

EBITDA-Margin:
$$\frac{EBITDA}{Sales}$$

Company size: $Total\ assets$

Note that due to the fact that models including industry-adjusted values are in the focus of this paper and size-effects are accounted for by adjusting the values to industry averages, taking the logarithm of this value was relinquished.

Secondary Dummy: Equals 1 if a secondary investor is active in a given year, 0 otherwise.

Secondary Majority: Equals 1 if a secondary investor holds more than 50% in a company in a given year, 0 otherwise.

Secondary 100%:	Equals 1 if a secondary investor holds 100% in a company in a given year, 0 otherwise.
Secondary %:	Gives the height of the stake held by a secondary investor in a company in a given year
Secondary DE Dummy:	Equals 1 if a German secondary investor is active in a given year, 0 otherwise.
Secondary DE Majority:	Equals 1 if a German secondary investor holds more than 50% in a company in a given year, 0 otherwise.
Secondary DE %:	Gives the height of the stake held by a German secondary investor in a company in a given year
Secondary FOR Dummy:	Equals 1 if a foreign secondary investor is active in a given year, 0 otherwise.
Secondary FOR Majority:	Equals 1 if a foreign secondary investor holds more than 50% in a company in a given year, 0 otherwise.
Secondary FOR %:	Gives the height of the stake held by a foreign secondary investor in a company in a given year

Appendix B: Company-level regression results

Dependent	(Current Debt + Long Term Debt) / Total Assets									
	Only company									
Independent										
Lag Total Assets	-1.30e-07 **	-1.26e-07 *	-9.59e-08	.0529734	-6.94e-08	-6.81e-08	-6.82e-08	-.0172293	-1.58e-07 **	-.009506 *
	(.000000064)	(6.46e-08)	(6.12e-08)	(5.99e-08)	(6.36e-08)	(6.44e-08)	(6.39e-08)	(.0278989)	(6.58e-08)	(.027148)
Lag Sales/Assets	-0,47	-.0032236	.0053402	.0021557	-.0114443	-.0120224	-.0070076	.0007815	-.0163601	.0008975
	(.27474)	(.0281173)	(.0281741)	(.0272546)	(.0288878)	(.0300719)	(.0296013)	(.0023078)	(.0272956)	(.0022438)
Lag Cash Flow / Sales	0,41	.0008433	.0012456	.0009893	.000868	.0007613	.0008135	.2472797	.0007744	.2493079
	(.00227)	(.0023029)	(.0022789)	(.0022259)	(.0023852)	(.0024163)	(.0023954)	(.0945929)	(.0022586)	(.0919602)
Lag EBITDA / Sales	2,73 ***	.2401731 **	.2639809 ***	.2462948 ***	.2473734 **	.2402333 **	.2399235 **	.1232265	.2465072 ***	.0017976 ***
	(.09324)	(.0943595)	(.0934353)	(.0911847)	(.0977676)	(.0990349)	(.0981382)	(.0442955)	(.0925686)	(.0005028)
Secondary Dummy	.1123026 ***									
	(.034840)									
Secondary Majority		.1110164 ***								
		(.0389494)								
Secondary 100%			.1269318 ***							
			(.0394248)							
Secondary %				.0015872 ***						
				(.0004195)						
Secondary DE Dummy					.0907692					
					(.0599268)					
Secondary DE Majority						.024297				
						(.0635875)				
Secondary DE %							.0010049			
							(.0008066)			
Secondary FOR Dummy								.7382928 ***		
								(.0515182)		
Secondary FOR Majority									.166974 ***	
									(.0491276)	
Secondary FOR %										.708206 ***
										(.0512504)
Intercept	.7121421 ***	.7084069 ***	.6951276 ***	.6783526 ***	.7276352 ***	.7419918 ***	.7276139 ***	.7382928 ***	.7398043 ***	.708206 ***
	(.05190)	(.0532417)	(.0533496)	(.0529734)	(.0549931)	(.0573161)	(.0561353)	(.0515182)	(.0503475)	(.0512504)
df	136	136	136	136	136	136	136	136	136	136
Adj R²	.1959	.175	.1957	.2298	.1159	.0919	0.1077	.1714	0.2063	.2169

Source: Own calculations.

Table 11: Results of Model (A1), non-industry-adjusted.

Dependent	Long Term Liabilities / Total Assets									
	Only company									
Independent										
Lag Total Assets	-4.14e-08	-6.29e-08	-7.74e-09	-1.06e-08	2.95e-08	3.20e-08	2.95e-08	-3.60e-08	-6.00e-08	-6.99e-09
	(9.39e-08)	(9.26e-08)	(8.97e-08)	(8.86e-08)	(9.16e-08)	(9.09e-08)	(9.12e-08)	(9.74e-08)	(9.81e-08)	(9.09e-08)
Lag Sales/Assets	-.013875	-.0021216	.003818	.0011129	-.0113875	-.000665	-.0038628	-.0182153	-.0173602	-.0107782
	(.0387209)	(.0382177)	(.0389107)	(.0382397)	(.0396903)	(.0400104)	(.0399548)	(.039353)	(.0389591)	(.0387845)
Lag Cash Flow / Sales	-.0013655	-.0014359	-.000778	-.0012451	-.0013811	-.0014523	-.0013889	-.0015438	-.0015531	-.0014242
	(.0033544)	(.0032896)	(.0033302)	(.0032831)	(.003431)	(.0034027)	(.0034153)	(.0034079)	(.0033747)	(.0033555)
Lag EBITDA / Sales	.0828271	.0685811	.1138901	.0795172	.0781376	.0642154	.0716637	.0735772	.0726775	.0761552
	(.1348451)	(.1321563)	(.1342456)	(.1318864)	(.137894)	(.1367066)	(.1371696)	(.1369433)	(.1355969)	(.1348269)
Secondary Dummy	.1326375 **									
	(.0509644)									
Secondary Majority		.1766862 ***								
		(.0546151)								
Secondary 100%			.1627213 ***							
			(.0551362)							
Secondary %				.0020012 ***						
				(.0006054)						
Secondary DE Dummy					.1420641					
					(.0866883)					
Secondary DE Majority						.1791063 **				
						(.0883693)				
Secondary DE %							.002122 *			
							(.0011366)			
Secondary FOR Dummy								.1254906 *		
								(.064346)		
Secondary FOR Majority									.169815 **	
									(.0717723)	
Secondary FOR %										.0018981 **
										(.000734)
Intercept	.4152526 ***	.4006586 ***	.3978518 ***	.3759349 ***	.4262268 ***	.4119999 ***	.4194245 ***	.4476429 ***	.4486302 ***	.4167082 ***
	(.0731732)	(.0721338)	(.0734846)	(.0741029)	(.0756026)	(.0759545)	(.0756068)	(.0725478)	(.0717255)	(.0730993)
df	145	145	145	145	145	145	145	145	145	145
Adj R²	.0850	.1197	.1035	.1238	.0433	.0582	.0517	.0551	.0734	.0842

Source: Own calculations.

Table 12: Results of Model (A2), non-industry-adjusted.

ependent	Current Liabilities / Total Assets									
	Only company									
Independent										
Lag Total Assets	-9.84e-08 (6.38e-08)	-6.53e-08 (6.19e-08)	-9.43e-08 (5.95e-08)	-9.89e-08 (6.03e-08)	-1.19e-07 * (6.03e-08)	-1.23e-07 ** (5.68e-08)	-1.20e-07 ** (5.91e-08)	-1.06e-07 (6.57e-08)	-1.01e-07 (6.70e-08)	-1.08e-07 * (6.18e-08)
Lag Sales/Assets	-.0264035 (.0276192)	-.0340564 (.0268456)	-.0384517 (.0272659)	-.0330369 (.0273596)	-.0288337 (.0277069)	-.0482825 * (.026788)	-.039056 (.0276581)	-.025687 (.0278199)	-.0256074 (.0277758)	-.026866 (.0276512)
Lag Cash Flow / Sales	.0014432 (.0022904)	.0014674 (.0022139)	.0012082 (.0022279)	.0014273 (.0022529)	.0013979 (.0022923)	.0013513 (.0021575)	.0013708 (.0022433)	.0014849 (.0023013)	.001493 (.0022991)	.001477 (.002293)
Lag EBITDA / Sales	.1254551 (.0937675)	.1332027 (.0906305)	.1168407 (.0911897)	.1296571 (.0922055)	.1243365 (.0938421)	.1367804 (.0883275)	.130651 (.0917971)	.1278945 (.0941831)	.1283802 (.0940926)	.1282788 (.0938461)
Secondary Dummy	-.0354513 (.0344864)									
Secondary Majority		-.0949043 ** (.0365559)								
Secondary 100%			-.090134 ** (.0372246)							
Secondary %				-.0007936 * (.0004088)						
Secondary DE Dummy					-.0576402 (.0577008)					
Secondary DE Majority						-.1916555 *** (.0568713)				
Secondary DE %							-.0016094 ** (.0007567)			
Secondary FOR Dummy								-.0229332 (.0430676)		
Secondary FOR Majority									-.0320037 (.0483597)	
Secondary FOR %										-.0004537 (.0004893)
Intercept	.3564528 *** (.0498509)	.3770222 *** (.0486752)	.3785393 *** (.0492916)	.3768923 *** (.0505773)	.3603387 *** (.0508792)	.4061151 *** (.0493154)	.3815813 *** (.0506375)	.3471232 *** (.0490937)	.3464962 *** (.049012)	.3536947 *** (.0495635)
df	137	137	137	137	137	137	137	137	137	137
Adj R²	.0745	.1351	.1263	.1044	.0738	.1788	.1124	.0655	.0673	.0722

Source: Own calculations.

Table 13: Results of Model (A3), non-industry-adjusted.

Dependent	Current Ratio									
	Only company									
Independent										
Lag Total Assets	**1.80e-07**	**-3.74e-07**	**5.78e-08**	**7.28e-08**	**1.17e-07**	**5.28e-08**	**7.10e-08**	**4.15e-07**	**4.79e-07**	**2.56e-07**
	(6.51e-07)	(6.51e-07)	(6.18e-07)	(6.20e-07)	(6.10e-07)	(5.45e-07)	(5.76e-07)	(6.55e-07)	(6.90e-07)	(6.14e-07)
Lag Cash /Assets	**-3.634134**	**-4.632116**	**-3.639687**	**-3.930288**	**-3.677126**	**-3.390514**	**-3.232681**	**-3.403.381**	**-2.916888**	**-2.985869**
	(2.873591)	(2.822856)	(2.84876)	(2.876737)	(2.840011)	(2.540127)	(2.684708)	(2.847949)	(2.931536)	(2.881553)
Lag Cash Flow / Sales	**.4872601**	**.9901013**	**.6235608**	**.6860365**	**.7147677**	**1046147**	**.7642258**	**.4218501**	**.3382155**	**.2699343**
	(1.396521)	(1.362639)	(1.379136)	(1.395577)	(1.381619)	(1.231983)	(1.296255)	(1.372646)	(1.383021)	(1.380602)
Lag Liabilities / Assets	**-.585361**	**-1662543**	**-.9944779**	**-1019457**	**-1015091**	**-1870739 ***	**-1452739**	**-.3447701**	**-.3006735**	**-.21669**
	(1.285979)	(1.273343)	(1.250699)	(1.292315)	(1.235961)	(1.1077)	(1.158409)	(1.228312)	(1.246805)	(1.2435)
Secondary Dummy	**-.0802216**									
	(.4241725)									
Secondary Majority		**.980932 ***								
		(.4948856)								
Secondary 100%			**.4669547**							
			(.5107652)							
Secondary %				**.004308**						
				(.0058444)						
Secondary DE Dummy					**.6969567**					
					(.6324386)					
Secondary DE Majority						**2507868 *****				
						(.6068597)				
Secondary DE %							**.0258204 *****			
							(.0086304)			
Secondary FOR Dummy								**-.5887024**		
								(.5173374)		
Secondary FOR Majority									**-.6912161**	
									(.65716)	
Secondary FOR %										**-.00889**
										(.0069784)
Intercept	2.649116 ***	3.219104 ***	2.807512 ***	2.809649 ***	2.811161 ***	3.136718 ***	2.944632 ***	2.528325 ***	2.433125 ***	2.517128 ***
	(.8835809)	(.8794176)	(.8678827)	(.8759565)	(.8625334)	(.7721338)	(.8116)	(.8653778)	(.8885067)	(.8622784)
df	114	114	114	114	114	114	114	114	114	114
Adj R²	.0487	.1049	.0608	.0564	.0664	.2537	.1682	.0676	.0648	.0724

Source: Own calculations.

Table 14: Results of Model (A4), non-industry-adjusted.

Dependent	Sales / Total Assets									
	Only company									
Independent										
Lag Total Assets	**-1.19e-07** (1.86e-07)	**-7.64e-08** (1.91e-07)	**-1.02e-07** (1.74e-07)	**-1.14e-07** (1.76e-07)	**-1.47e-07** (1.77e-07)	**-1.47e-07** (1.77e-07)	**-1.48e-07** (1.77e-07)	**-9.07e-08** (1.89e-07)	**-6.45e-08** (1.98e-07)	**-1.09e-07** (1.76e-07)
Lag Liabilities / Assets	**-.1742983** (.3492019)	**-.1187681** (.3514072)	**-.0917063** (.3362726)	**-.0921212** (.3453586)	**-.2416404** (.3410985)	**-.1994568** (.3419274)	**-.2131479** (.3390269)	**-.1571954** (.34386)	**-.1379213** (.3468531)	**-.0943844** (.3436557)
Lag Cash Flow / Sales	**.2609551** (.394415)	**.2248754** (.3946846)	**.2584736** (.3831874)	**.2080531** (.3909678)	**.296322** (.393242)	**.2759264** (.3927021)	**.2849373** (.3928501)	**.2556249** (.3919261)	**.2273336** (.3948046)	**.1886739** (.3922809)
Lag Cash / Assets	**-.2946618** (.9132216)	**-.1745135** (.9197308)	**-.1754469** (.8947038)	**-.1275238** (.9115803)	**-.2763853** (.9163362)	**-.3539516** (.9212899)	**-.3347884** (.9239847)	**-.2349599** (.914289)	**-.0726945** (.9459269)	**-.0244112** (.9228586)
Secondary Dummy	**-.0607344** (.1266734)									
Secondary Majority		**-.1426241** (.1506576)								
Secondary 100%			**-.2555867 *** (.137669)							
Secondary %				**-.00242** (.0017609)						
Secondary DE Dummy					**.1077551** (.2413474)					
Secondary DE Majority						**-.0867969** (.260317)				
Secondary DE %							**-.0007442** (.0047461)			
Secondary FOR Dummy								**-.120613** (.1458078)		
Secondary FOR Majority									**-.1669233** (.1830195)	
Secondary FOR %										**-.0027347** (.0019119)
Intercept	1.416885 *** (.2520038)	1.382841 *** (.2542341)	1.380901 *** (.2463023)	1.407203 *** (.2481523)	1.42415 *** (.2509603)	1.432182 *** (.2509494)	1.435412 *** (.2537306)	1.398297 *** (.2526255)	1.36987 *** (.2579564)	1.382852 *** (.249487)
df	120	120	120	120	120	120	120	120	120	120
Adj R²	.0277	.0372	.0715	.0508	.0273	.0261	.0248	.0342	.0363	.0530

Source: Own calculations.

Table 15: Results of Model (B1), non-industry-adjusted.

Dependent	EBITDA / Total Assets									
	Industry adjusted									
Independent										
Lag Total Assets	-7.72e-09	-1.29e-11	-7.13e-09	-1.59e-09	-1.35e-08	-1.36e-08	-1.10e-08	-1.27e-08	-3.60e-10	-7.48e-09
	(4.85e-08)	(4.97e-08)	(4.62e-08)	(4.53e-08)	(4.61e-08)	(4.61e-08)	(4.52e-08)	(4.94e-08)	(5.13e-08)	(4.62e-08)
Lag Liabilities / Assets	.1904108 **	.2027537 **	.202803 **	.2363264 **	.1896534 **	.1866051 **	.2102718 **	.1797883 **	.1912781 **	.2015159 **
	(.0906529)	(.0917381)	(.0884096)	(.0886599)	(.0885517)	(.088831)	(.0863598)	(.0880707)	(.0885837)	(.0881439)
Lag Cash Flow / Sales	-.0681887	-.0753567	-.0717845	-.0940051	-.069095	-.066247	-.0730214	-.0629017	-.0700659	-.0782026
	(.1034149)	(.1036517)	(.1021442)	(.1010177)	(.1031761)	(.1030419)	(.100652)	(.1028695)	(.1031446)	(.1028309)
Lag Cash / Assets	.0449926	.0650033	.0372732	.0867736	.039593	.0376154	.0224542	.0407411	.0687081	.0784914
	(.210598)	(.2122923)	(.2086782)	(.2059401)	(.210007)	(.2102725)	(.2062136)	(.2110409)	(.2152489)	(.2117895)
Secondary Dummy	-.013462									
	(.0309476)									
Secondary Majority		-.0275187								
		(.0360664)								
Secondary 100%			-.0397989							
			(.0364416)							
Secondary %				-.0008129 **						
				(.0004048)						
Secondary DE Dummy					-.0263187					
					(.0478105)					
Secondary DE Majority						-.019467				
						(.0497015)				
Secondary DE %							-.0011507 *			
							(.0006608)			
Secondary FOR Dummy								-.0036828		
								(.0379716)		
Secondary FOR Majority									-.0289376	
									(.046843)	
Secondary FOR %										-.0005375
										(.0004943)
Intercept	-.0011684	-.0091575	-.0054529	-.0147592	-.0001267	.0004228	-.006461	.0028084	-.0051066	-.0038484
	(.0632427)	(.064321)	(.0623944)	(.0613131)	(.0626034)	(.0628281)	(.06132)	(.0628891)	(.0637761)	(.0622243)
df	122	122	122	122	122	122	122	122	122	122
Adj R²	.0799	.0851	.0930	.1283	.0814	.0794	.1162	.0775	.0824	.0929

Source: Own calculations.

Table 16: Results of Model (B2), non-industry-adjusted.

Dependent	EBITDA / Sales									
	Only company									
Independent										
Lag Total Assets	**3.80e-08**	**5.02e-08**	**3.54e-08**	**3.98e-08**	**2.80e-08**	**2.80e-08**	**2.80e-08**	**4.14e-08**	**6.55e-08**	**4.02e-08**
	(4.53e-08)	(4.64e-08)	(4.35e-08)	(4.25e-08)	(4.31e-08)	(4.31e-08)	(4.30e-08)	(4.61e-08)	(4.75e-08)	(4.27e-08)
Lag Cash /Assets	**.3114481**	**.3489787**	**.329746**	**.3708717**	**.3047425**	**.3141014**	**.2859631**	**.3233659**	**.4154525 ***	**.3946046**
	(.224688)	(.2257737)	(.2252096)	(.2223221)	(.2261675)	(.2270818)	(.2268257)	(.2254265)	(.2296765)	(.2257301)
Lag Cash Flow / Sales	**-.1562494**	**-.1668721**	**-.1549875**	**-.1744473**	**-.1487197**	**-.147327**	**-.1482259**	**-.155136**	**-.1742387 ***	**-.1758029**
	(.0970829)	(.0969119)	(.0963584)	(.0953249)	(.0971007)	(.0968392)	(.0965512)	(.0966877)	(.0958965)	(.0957769)
Lag Liabilities / Assets	**.2435692 *****	**.2594406 *****	**.2413403 *****	**.2684038 *****	**.2280753 *****	**.2237972 *****	**.232215 *****	**.2426233 *****	**.2650583 *****	**.2648424 *****
	(.0854388)	(.0857883)	(.0832883)	(.083407)	(.0836922)	(.0837824)	(.0827845)	(.0843298)	(.0837635)	(.083382)
Secondary Dummy	**-.021338**									
	(.0309667)									
Secondary Majority		**-.044696**								
		(.0367477)								
Secondary 100%			**-.0344128**							
			(.0356138)							
Secondary %				**-.0008038 ***						
				(.0004267)						
Secondary DE Dummy					**.000023**					
					(.0591791)					
Secondary DE Majority						**.019975**				
						(.0637467)				
Secondary DE %							**-.0007156**			
							(.0011904)			
Secondary FOR Dummy								**-.0284602**		
								(.0357156)		
Secondary FOR Majority									**-.0758963 ***	
									(.04415)	
Secondary FOR %										**-.0008281 ***
										(.0004628)
Intercept	-.0640347	-.0741256	-.0644736	-.0666559	-.0597012	-.0601627	-.0541408	-.0667247	-.0859526	-.0733011
	(.061374)	(.061751)	(.0610444)	(.0598201)	(.0613212)	(.0612397)	(.0617982)	(.0616123)	(.0618729)	(.0603337)
df	119	119	119	119	119	119	119	119	1119	119
Adj R²	.1869	.1989	.1924	.2224	.1812	.1824	.1856	.1889	.2158	.2185

Source: Own calculations.

Table 17: Results of Model (C1), non-industry-adjusted.

Dependent	Total Assets									
	Only company									
Independent										
Lag EBITDA / Sales	130235.8	107015	192980	145437.8	152374.9	153861.1	150511.9	143735.4	136689.1	151949.9
	(199968.9)	(199085.4)	(207503.1)	(204668.5)	(205482.5)	(206347.3)	(205580.1)	(196027.6)	(192896.6)	204198
Lag Cash Flow / Sales	-48271.62	-10722.54	-148626.2	-112405.7	-162205.6	-161528.9	-152370.4	-116809.2	-97330.87	-133829.4
	(260834.7)	(261086.8)	(261019.2)	(268024.9)	(270575)	(271902.8)	(270113.8)	(251591.3)	(247794.4)	(262388.3)
Lag Liabilities / Assets	73912.84	30956.54	137893.7	152039.4	215301	213874.1	207758.8	92357.86	34467.36	150146.6
	(183476.7)	(186354)	(185912.4)	(193449.9)	(182485)	(182197.3)	(180960.8)	(173686.8)	(174448.8)	(187221.9)
Secondary Dummy	135749.9 **									
	(66805.62)									
Secondary Majority		173284.9 **								
		(74970.38)								
Secondary 100%			84906.47							
			(78839.52)							
Secondary %				618.5502						
				(932.7689)						
Secondary DE Dummy					-22238.93					
					(107913.9)					
Secondary DE Majority						-20159.02				
						(111789.4)				
Secondary DE %							-76.18409			
							(1417.244)			
Secondary FOR Dummy								212716.8 ***		
								(79479.33)		
Secondary FOR Majority									287245.2 ***	
									(91383.48)	
Secondary FOR %										958.9827
										(1129.362)
Intercept	351013.3 ***	374786.2 ***	351296.9 ***	345129 ***	329738.7 **	329712 **	331736.3	336858.2 ***	365459 ***	344749 ***
	(124409)	(124491)	(127684.9)	(128524.5)	(128019.3)	(128232.6)	(127907.4)	(121768.2)	(120254.5)	(127670.9)
df	127	127	127	127	127	127	127	127	127	127
Adj R²	.0795	.0934	.0436	.0344	.0293	.0292	.0288	.1134	.1418	.0380

Source: Own calculations.

Table 18: Results of Model (D1), non-industry-adjusted.

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Ehrenwörtliche Erklärung

Ich erkläre hiermit ehrenwörtlich, dass ich die vorliegende Bachelorarbeit mit dem Thema:

Secondary buyouts of German companies

An empirical analysis of differential effects on buyout targets

between German and foreign acquirers

selbstständig und ohne fremde Hilfe angefertigt habe.

Die Übernahme wörtlicher Zitate sowie die Verwendung der Gedanken anderer Autoren habe ich an den entsprechenden Stellen der Arbeit kenntlich gemacht.

Ich bin mir bewusst, dass eine falsche Erklärung rechtliche Folgen haben wird.

Ort, Datum   Unterschrift