Private Equity and Family Firm Post-Buyout Performance

A European perspective

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Abstract

With private equity increasingly growing in popularity as can be seen in fund size and amount of funds, family firm investments have been an unhighlighted part in research, while family firms represent a significant part of the global economy. This study analyses the post-buyout performance of family firms compared to non-family firms. Furthermore, this study analyses the overall post-buyout performance of a set of target firms. A sample of 364 buyouts in Europe from 2012 to 2017 was compiled. The results indicate a lower post-buyout performance for family firms compared to non-family firms. Moreover, the overall post-buyout performance was also negative. Private equity investors are advised to consider their family firm investments more carefully, taking into account potential non-financial goals, whereas family firm owners are advised to carefully analyse whether private equity is a viable exit option.

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1. Introduction

Buyouts are transactions where an entity such as a private equity fund takes over at least a majority of the shares in a potential target firm in return for a sum of money. Private equity funds are entities which aim to invest in alternative markets such as private firms with the goal to create additional value in the firm. Over the past years the global buyout deal value performed by private equity has been increasing steadily reaching $592 billion in 2020, despite the COVID-19 pandemic, compared to $118 billion in 2009 shortly after the financial crisis (Bain & Company, 2021). This increase in deal values can be attributed to higher valuations, with the average earnings before interest, taxes, depreciation and amortisation, also referred to as EBITDA, purchase price multiple in Europe hitting 12.6 times EBITDA in 2020 compared to 8.0 times EBITDA in 2009 (Bain & Company, 2021). The current capital available with private equity is estimated to surpass $1900 billion, exceeding all previous records, arguably driving all acquirer types from corporates to Special Purpose Acquisition Companies, also referred to as SPACs, to private equity entities towards collision and inflated valuations (PwC, 2021a). All of these effects can largely be attributed to the increasing interest of investors in private equity over the recent years, as there is evidence that private equity investments outperform the public stock market (Blackrock, 2021), and the historically low interest rates which allow for 'cheap' borrowing of debt financing (PwC, 2021B). Private equity, hereafter PE, is regarded as making 'meaningful and direct contributions' to the operations of their portfolio firms, where new focus areas of research should be on the identification of performance drivers of these companies (EY, 2021). It is expected that PE funds will, given the surging multiples paid for assets, increasingly focus on value creation of their portfolio companies (PwC, 2021b). Taking these trends and factors into account, the question arises whether PE investments have an impact on the performance of the target company and which specific drivers lead to this performance.

Furthermore, an increasing portion of the pool of PE investment opportunities is formed by family firms as they substantially dominate the economy and form the biggest proportion of ownership types in the world (Chrisman et al., 2003). PE investors often categorize family firms as 'low hanging fruits' (Schickinger et al., 2018), meaning that PE sees easy-to-solve cases in operational and financing issues of family firms, therefore increasing the probability of exceeding stock market returns. While family firms are overall more reluctant to give away control to outsiders (Poutziouris, 2001), an increasing amount of families are opening the door for outside investors (Neckebrouck et al., 2016). By allowing outsiders to enter, families hope to not solely solve succession issues (Scholes et al., 2008), but also attain the knowledge and

financial sources to remain competitive in an increasingly globalized and turbulent industry (Uptown & Petty, 2000). Research suggests that PE participation in family firms does not come without hiccups. Business-owning families often have non-financial next to financial goals (Berrone et al., 2012) which is contrary to the merely financial motives of PE investors (Dawson, 2011). This leaves room for potential conflicts, in turn affecting the performance of the family firms.

The current capital available in the market exceeding the supply of investment opportunities and family firms increasingly being forced to bring in outsiders to be able to survive are two trends which are contributing to the relevance of this research. Firstly, on the firm-level, it is interesting to see the effects of those trends on family business strategies in general, specifically strategies involving PE. This thesis could be especially relevant for entrepreneurs and owner-managers who are entering the exit stage in their life cycle and see a PE buyout as a viable option. It could also be relevant for managers and directors looking to expand their business inorganically by attracting fresh capital through selling a stake of the firm to a PE entity. Furthermore, family owners experiencing setbacks in growth and profitability or facing succession problems could also take into account the outcomes of this research. Overall, with the results of this thesis, managers are expected to be able to adapt their growth or exit strategies to achieve better exit outcomes. Secondly, on the fund-level, PE funds can adapt their investment rationale to match better with the family firm culture. As more family firm owners are willing to sell to PE, this thesis aims to help PE investors with aligning their investment strategies to the non-financial goals of family firms.

Current studies report insights in how PE affects different economic factors and also highlights the impacts on a firm level. Aldatmaz and Brown (2020) studied the general effects of PE investments on 19 industries worldwide. Using a dataset of PE investments between 1990 and 2017, they found that PE investments within an industry lead to higher employment growth, profitability growth, and labor productivity with the public peers in the domestic industry. These results motivate the positive side of PE as a stimulation entity boosting the real economy. Next to examining overall industry performance, several researchers also specified the performance on the firm level into a market based perspective and operational based perspective. Examples for the measurement of performance from a market perspective include the effect of being PE backed for a firm going public (Bergström et al., 2006) and post-IPO exits of PE funds (Dong et al., 2020). Additionally, from an operational performance perspective, research has been done on how PE backed firms perform during a financial crisis

(Wilson et al., 2012; Meles et al., 2014) and how PE boosts the stimulation of value creation (Acharya et al., 2012). There also has been research on how PE financing affects family firm performance (Salerno, 2019). While conducted research argues that PE investments in general have a positive impact on firms (Kaplan, 1989; Lichtenberg & Siegel, 1989; Smith, 1990; Acharya et al., 2012), other researchers find that this impact has weakened (Guo et al., 2011). Moreover, research has shown a significant shift in strategy over the past years on how PE creates value in their portfolio firms and the ways they invest in companies (Kaplan & Stromberg, 2009). This leads to the question how PE sets itself apart in terms of performance at the firm level. Furthermore, to the best of our knowledge, there is still a lack of quantitative research in the effects of PE investments on family firms, as research so far has largely been qualitative. A recent research by Salerno (2019) examined the impact of PE financing on family firms. However, these family firms were owned by the families still, thus allowing the PE not to exercise full control over business decisions. This leaves a gap in research of what occurs when PE takes a controlling interest or performs a buyout. Secondly, there is still a gap in research of PE impact on firm performance after the financial crisis in 2008 and the impact PE has on the general market for corporate control. The trends described, such as the current market conditions and the trend of PE becoming increasingly open to invest in family firms, allow for bringing renewed perspectives on PE investments in firms. Taking into consideration the contribution this thesis makes to fill these gaps, the following research question arises:

What is the impact of PE on the post-buyout firm performance of family firms and non-family firms?

Financial data of 394 buyouts over Europe between 2012 and 2017 are gathered of which 87 were family firms and 307 are non-family firms. The data for the buyouts will be attained from Zephyr, a database which contains global data on mergers and acquisitions, and Orbis, a database which contains financial and governance data of firms worldwide. Reasons for not specifically focusing on a country in Europe, even though countries in EU can be seen as heterogenous in their economic systems, are data limitations. Quantitative analysis will be performed through applying MANOVAs and bootstrap regression models. Several factors measuring the operating performance of the target company will be used as dependent variables. Two repeated measure variables were created measuring whether the firm is a family business and whether the yearly observation was pre- or postbuyout, which will be used as predictors. In addition to that, multiple control variables on the PE fund, firm and industry level will be included in the regression model. The variables found will be narrowed down to the most

relevant variables used in past research on PE. This study continues with explaining theories and reviewing the literature (section 2), explaining the methodology and research design (section 3), reporting the results (section 4), discussing the results (section 5) and concluding with implications for PE and family firm owners (section 6).

2. Theories and literature review

This chapter explains several aspects of PE buyouts. The first section helps the reader to understand basics of a buy-out and factors which are considered to be critical for the success of a buy-out. Second, the chapter thereafter consists of current evidence explaining the effects of PE investments on firm performance and value creation. Third, theories regarding family firms are highlighted. Fourth, current evidence explaining PE investments and their impact on family firm performance is outlined. Finally, a conceptual framework is created which helps to understand the complexity of creating value in buyouts. The framework summarizes the three ways of how PE investments add value to their targets, specifically family firms. These ways are widely accepted as influential elements of adequate buyouts. We conclude with hypotheses derived from current literature.

2.1 Buyout fundamentals

A buyout is an acquisition of controlling interest in a firm. Buyouts can be either introduced by the sitting management (management buyout, also referred to as MBO) or by an external entity with adding of leverage (leveraged buyouts, also referred to as LBO). Buyout transactions typically are financially diverse in nature, where capital structure and the amount of debt needed to successfully close the transaction play a crucial role. Generally, PE funds conduct transactions where an equity part and a debt part is gathered. Past research leads to conclusions where PE leans to funding the transaction with a maximum amount of external debt, typically provided by large financial institutions such as investment banks and institutional investors, leading to a highly leveraged capital structure in the target portfolio company. The equity capital on the other hand is raised through a PE fund, where private investors and institutions serve a certain amount of money to a management team specialised in spotting attractive investment opportunities in private companies (Kaplan & Stromberg, 2009). The management is paid through a fee, consisting of two portions: a yearly fee and a ‘carried interest’ fee. A yearly fee helps the fund to pay salaries to their investment teams. The carried interest fee is the fee that the partners receive after a successful portfolio company exit. PE funds are mostly limited partnerships, in which the general partner makes an adequate personal investment, allowing the general partner to run the fund and the investments, while the limited partners provide most of the capital. Entities like corporate and public pension funds, endowments, insurance companies, and wealthy individuals, invest in PE funds as limited partners.

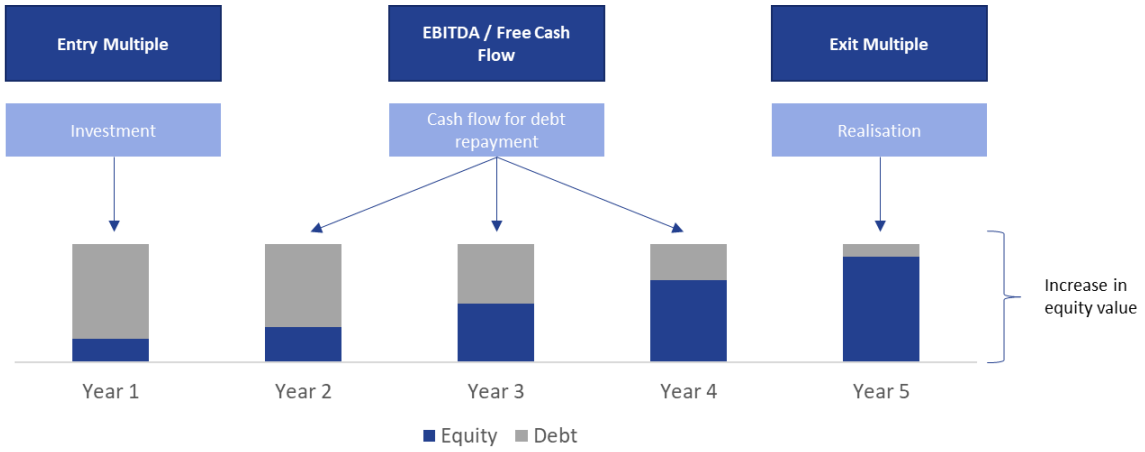

***Figure 1**: Example of a leveraged buy-out from entry to exit (source: Credit Suisse, 2015)*

Figure 1 shows the concept of a LBO (leveraged buyout). At the entry point of the LBO, a company is being acquired with about 20-30% equity. The rest of the financing is debt capital borrowed from financial institutions. Over the period that follows the entry, the capital structure changes significantly where the amount of equity increases and the amount of debt decreases. By applying improvements to the target firm's operations due to governance and operating engineering, which will be discussed later on in the chapter, cash flows are expected to increase which will help the firm to pay off debt and to service interest payments. With the yearly cash flows increasing and the change in capital structure from majorly debt to equity, PE funds expect a higher total value of the firm at the exit point and to achieve a high internal rate of return.

2.2 Sources of value creation by PE

A wide range of research has been dedicated to PE and the several strategies that are being implemented to stimulate value creation. These value-increasing strategies include financial engineering, governance engineering, and operational engineering. While these strategies can be adopted all together, some PE prioritize one over the other, depending on their investment focus (buyout or growth equity investments). While financial and governance engineering were frequently implemented in the 1980s, PE firms now seem to include operational engineering in their propositions (Kaplan, 1989). Achleitner et al. (2010) investigated drivers for value creation by buyouts in Europe and found that two-thirds of value creation can be linked to operational engineering and market timing, while the other third is due to financial and governance engineering. This outcome is in line with the trend of PE putting more emphasis on making operational changes in their portfolio companies.

2.2.1 Financial engineering

As mentioned, PE funds have several strategies which they implement, one of them being 'financial engineering'. Through financial engineering, PE aims to lay pressure on the management of the target firm by incentivizing management to follow the owner's interests following the agency theory (Jensen & Murphy, 1990). This entails including a large portion of debt in their purchase price to be structured at the target firm (Jensen, 1986; Kaplan, 1989ab). Firstly, PE connects the value of the transaction, including the price paid for the aimed target, to the leverage in the target company. By levering the target company, PE funds aim to make managers feel pressurized to make good business decisions, as the business has to pay interest and principals (Kaplan & Stromberg, 2009). "Free cash flow" problems, where managers in mature industries with weak governance practices squander cash flows instead of returning them to the investors, are therefore reduced (Jensen, 1989). Furthermore, leverage can increase value of the firm by inclusion of a tax shield but also decrease value by surging financial distress costs, leading to firms carefully optimizing their capital structure. While maximizing leverage is largely connected to agency theory, which will be further explained in chapter 2.5, Gompers et al. (2016) report that PE investors apply trade-off theory and market timing to their capital structure decisions, which is more related to the optimization of capital structure.

Secondly, by giving the management team a larger equity stake through stock and thus a large upside and downside, they aim to solve agency problems (Jensen & Murphy, 1990) and avoid management to manipulate short-term performance (Kaplan & Stromberg, 2009). Management is expected to implement strategies that create long-term value as they have exposure to the long-term performance of the firm. Kaplan and Stromberg (2009) found by compiling a sample of 23 public-to-private leveraged buyouts in the United States a 16 percent equity stake for the management, showing an increasing trend in management ownership percentages after a leveraged buyout compared to public companies. Similar results were found by Acharya and Kehoe (2008; 2012), who found a 15 percent equity stake for the management team after buyouts in the United Kingdom. A survey conducted by Gompers et al. (2016) showed that PE investors expect to maintain strong equity incentives to their management teams and emphasizes the importance of having those incentives.

2.2.2 Governance engineering

In governance engineering, PE investors develop strong shareholder activism where they participate in the boards of their portfolio firms. Furthermore, evidence has shown that PE investors are also more involved in governance than public company directors and shareholders

(Gompers et al., 2016). Nikoskelainen and Wright (2007) researched the corporate governance mechanisms applied in buyouts and how it affects the returns of the investors. They found that firm-level corporate governance mechanisms like gearing, syndication, and management ownership play a critical role in value enhancement, however these mechanisms depend on context such as the size of the transaction. Gearing can be thought of as leverage where the relationship of a company's debt-to-equity is being referred to. The mechanism of leveraging the company strongly links with financial engineering principles. Syndication refers to two or more PE firms forming an alliance to invest together in a firm and sharing a joint pay-off (Meuleman et al., 2009). Management ownership, also called a ratchet, calls for management being significantly invested through equity which links again to financial engineering principles. Cumming et al. (2007) provide a summary of literature where the role of governance in PE have been discussed. Examples include researching return to investors in relation to law quality and corporate governance mechanisms (Cumming & Walz, 2004) and the impact of shareholder activism in private placements (Barclays et al. 2007).

2.2.3 Operational engineering

Operational engineering refers to the multiple improvements PE can bring to the operations of the portfolio firm. This can be done through applying superior industry and operating expertise. In current times, operational engineering has become especially important due to the high competitiveness within the PE industry, thus offering an extended value proposition to the companies they want to invest in. While the focus was first on financial engineering and the right side of the balance sheet, such as optimizing capital structure and cost of capital, the added focus now includes operational engineering and the left side of the balance sheet, such as the operating potencies of the company. An example of operational engineering was constructed by Kaplan and Stromberg (2009) reporting a trend where in addition to hiring professionals with financial engineering skills, PE funds also hire industry focused professionals with operating backgrounds. Furthermore, plans in operational engineering include identifying and attracting investment opportunities and subsequently including cost-cutting, productivity improvements, strategic decisions and management customizations (Acharya & Kehoe, 2008). It also includes value-enhancing add-ons and acquisitions (Guo et al., 2011).

2.3 Evidence of value creation by PE

Past research on PE affecting performance and value creation has been extensive and distinctive, but has been conducted in different settings.

Kaplan (1989) commenced the line of research which aimed at finding the impact of PE on firm performance by presenting evidence on changes in operating profitability, capital expenditures and net cashflow for a sample of public US companies. He found that three years after the buyout, these companies had an increase in operating income and net cash flow, but a decrease in capital expenditures. These results can be interpreted as the implementation of financial and governance engineering, with management incentives rather than layoffs.

Lichtenberg and Siegel (1990) investigated the effects of LBOs on productivity and included 12000 manufacturing plants in their sample. They found a strong positive impact on productivity where manufacturing plants where outperforming the industry by 8.3%.

Smith (1990) was triggered to investigate MBOs after finding a strong rise in number and size of buyouts in the 90s. He measured operating performance after 58 management buyouts in the United States and found significant increases in operating cash flows (before interest and taxes) per employee and per dollar of operating assets.

Cumming et al. (2007) continued discussing the effects of governance engineering on leveraged buyout returns and find that governance mechanisms that enhance performance appear to be related to buyouts and PE transactions. Furthermore, by performing a review of other evidence, they argue that buyout performance is consistently superior with risk-adjusted performance against industry benchmarks.

Guo et al. (2011) examined the surge of leveraged buyouts in the United States between 1990 and 2006 and compared them to the previous wave of buyouts in the 1980s. Evidence was found that deals in the sample period were significantly different in terms of gains in operating performance, being substantially smaller. On the flip side, firm value of the portfolio companies largely increased from the buyout to the subsequent exit.

Tykvova and Borell (2011) discussed financial engineering by PE and evaluated whether European buyout companies have more tendency towards bankruptcy than comparable non-buyout companies. Results have shown that PE funds choose companies with less financial distress, but that distress risk increases during the holding period. However, PE-backed companies show no difference in bankruptcy rates compared to their peers who are not PE-backed and at times, with experienced PE funds, show lower rates.

Wilson et al. (2011) assessed the performance of PE backed buyouts in the United Kingdom, focusing on how they performed before and during the financial crisis in 2008. By having a

preference in investing in stable sectors with strong cash flows, and thus companies with opportunities of improvement in performance and productivity (Kaplan & Stromberg, 2009), PE firms are expected to identify companies which are better able to persevere in periods of recession and thus perform better. They found that PE-backed companies achieved higher growth, productivity, and profitability compared to non PE-backed companies.

Acharya et al. (2012) looked at the effects of ownership by large PE funds on the operating performance of portfolio companies and how these funds create financial value. They found an increase in cash flow (EBITDA/Sales) above sector median during PE ownership. Higher abnormal performance was caused by stronger operating improvement in all factors such as sales growth, EBITDA margin, and multiple improvement. Overall, the conclusion is that large PE funds implement operational engineering to their portfolio firms, leading to value creation and performance amelioration.

Alperovych et al. (2013) compiled a dataset of 88 PE backed LBOs during 1999 and 2008 and found an increase in post-buyout efficiency. Furthermore, they highlighted the impacts of investor experience and vendor source on the efficiency improvements where different vendor sources had differing outcome levels. They also suggested that PE firm experience has a positive impact on the subsequent post-buyout efficiency.

Meles et al. (2014) explored the effect of PE backing on the operating performance of firms during the financial crisis in 2008. By sampling 939 European PE-backed firms and an additional control sample of 2516 non-PE-backed firms, they found that PE-backed firms are more profitable and less leveraged than non-PE-backed firms. Despite the negative impact on operational performance on all firms, PE-backed firms were seemingly better off during the financial crisis.

Chen et al. (2014) distinguished PE investments by examining the sources of value gains in PE minority equity investments. Their first finding is that PE acquirers are more inclined to place directors with finance or industry experience on the target's board, especially when the need for oversight and advice is higher. Additionally, poorly performing PE targets with high R&D intensity and PE-appointed directors with industry expertise show better operating performance during the holding period than other targets acquired by non-PE entities. These findings suggest that PE through minority investments also brings value to their targets through governance and operational engineering.

Davis et al. (2014) evaluated if the claims of PE-led leveraged buyouts lead to employment reductions and little added value in performance by tracking 3200 US target firms from 1980 to 2005. Results indicated a 1% net loss of jobs at target firms, while productivity increased due to reallocation of resources to high productivity units, thus leading to material improvement of operating margins.

Overall, past research led to a general consensus of PE affecting firm performance positively, be it in different contexts. By applying financial, governance and operational engineering PE seems to be creating value for their portfolio.

2.4 Family firms

As argued before, family firms make up the majority of firms in worldwide and thus provide an important deal source for PE funds (Scholes et al., 2009). Typically, family firms can be defined as firms which are "owned and managed by a concentrated group of family members where the firm's objectives are closely linked to family objectives" (Scholes et al., 2009, p.7). Buyout motivation in family firms can be classified following two factors; the efficiency buyout and growth buyout (Scholes et al., 2009). Efficiency buyouts are driven by underperformance and aim at implementing renewed strategies to correct this. Growth buyouts are driven by the liberty of new owners to chase their own interests and aim at growing through expansion or diversification. In turn, these buyouts and the subsequent outcomes such as firm performance are driven by several theories as argued by past research. These theories include agency theory (Schulze et al., 2001), specifically for family firms SEW (socioeconomical wealth) theory (Berrone et al., 2012), stewardship theory (Chrisman, 2019) and pecking order theory (Tappeiner et al., 2012), which are to be explained in the following parts of this chapter.

2.4.1 Agency theory

In this chapter, agency theory and family firms and their relationship is described. Agency theory helps identifying relationships in an organization where there is risk-sharing (Eisenhard, 1989). The agency relationship refers to one party (the principal) delegating work to another (the agent) who then performs the work. Agency theory focuses on solving two problems which can occur in these type of relationships. One is the problem that occurs when the "desires or goals of the principal and agent conflict and it is difficult or expensive for the principal to verify what the agent is doing" (Eisenhardt, 1989, p.58).

Schulze et al. (2001) explain agency relationships in family firms in detail. Through Jensen's and Meckling's (1976) model they connect three reasons why private family-managed firms

are not subjected to agency costs. First, as owners of family firms are often holding roles as managers next to owning the firm, agency costs are naturally incurred less due to easier alignment of owner-managers' interests. Second, the fact that family firms adds up to reducing agency costs as rights of property are restricted to internal decisions. Thus, managers will face difficulties when trying to expropriate shareholder wealth. Finally, family firms often have multiple family members in management. This allows for special relations where agents are virtually controlling each other.

However, Schulze et al. (2001) also highlight a contrasting argument, where private ownership arguably exposes family firms to agency problems. First, private ownership leads to less discipline by the market for corporate control and instead increases the agency threat of self-control. This phenomenon consists of owner-managers being incentivized to make decisions which harm not only themselves but also the people around them (Jenssen, 1998). Furthermore, family-managed firms face increased effects of altruism within management, as managers out of self- interest not only care about the welfare of themselves but also of others. This allows for risks of free-riding, where family members are secured of employment and often also receive privileges which would normally not be received by outside managers.

Based on the previous arguments and contrary to the Jensen and Meckling (1976) model, Schulze et al. (2001) compile several hypotheses to back their proposition why eliminating previously mentioned agency costs actually improve firm performance in privately held family-managed firms. First, giving pay incentives to both non-family and family agents to avoid altruism. Second, including the use of strategic planning as privately-held firms lack the discipline imposed by capital markets. Third, aiming at disentangling board entrenchment by setting a clear policy that increases board autonomy such as appointment of outside directors. Fourth, the major shareholder should disclose plans for share transfer as this helps reduce information asymmetry between family managers.

These hypotheses can be related to governance engineering which family firms in particular should scrutinize in order to improve firm performance and create value. Thus, it seems that value can be created by PE firms by applying missing governance practices which had an influence on family firm performance.

2.4.2 Socioemotional wealth theory

Past research studied the unique aspects which drive family firms in their strategic decisions. While studies on other ownership types predominantly use agency theory which provides useful

insights on the economical behavior of family firms, past research argues that this theory falls short in explaining all aspects of the behavior of family firms as it does not adequately address the non-economical motivations.

Berrone et al. (2012) tackled this issue by creating the socioemotional wealth theory; a theory that suggests that family firms are driven by safeguarding their socioemotional wealth, hereafter SEW, specifically referring to "nonfinancial aspects or affective endowments of family owners" (Berrone et al., 2012, p.259). Gains and losses in SEW symbolize the relation with family-controlled firms' strategic policies. Five dimensions were derived from this study.

Firstly, *family control and influence*. This dimension aims to explain the control and influence of family members in the firm by taking the position of CEO or placing themselves in management. Secondly, *family member's identification with the firm*. This dimension aims at the identification of the family with firm, which gives the firm a unique identity such as carrying the family name in the name of the firm, leading to the internal and external stakeholders interpreting a family-oriented cohesion within the firm and towards its environment. Thirdly, *binding social ties*. This dimension aims at the strong ties within the firm between family members and other individuals but also towards the environment through community sponsoring for preservation of reputation and image. Fourthly, *emotional attachment*. This dimension deals with the emotional context in family business. The emotional side of doing business can have its advantages and drawbacks such as deeper and stronger relationships with customers who perceive family firms more with their own personal identity but also more difficulty in firing employees which are not performing well. Lastly, *renewal of family bonds to the firm through dynastic succession*. This dimension refers to the succession and retainment of the business within the family. By allowing succession within the family, the firm aims to keep its identity and strive for long-term wealth preservation.

The SEW theory can have an impact on whether family firms sell their business to PE investors. Because the family wants to preserve its identity and selling to outsiders is often associated with a loss of identity, family firms could be more reluctant to sell to PE. It could also present agency problems when family management remains in the firm after the buyout.

2.4.3 Other theories

Other theories mentioned in family business literature include stewardship theory, pecking order theory and trade-off theory.

Stewardship theory is a potent alternative to agency theory in relation to family firm governance. It relates to the assumption that managers aim at fulfilling the needs of the organization through pro-organizational behavior which naturally aligns the interest with the owners (Davis et al., 1997). It lays a stronger basis for cooperation instead of managers acting in their own interests. The steward in a firm maximizes shareholder wealth by focusing on improvement of firm performance as the steward has altruistic aspirations. However, this theory has received criticism by Schulze et al. (2001) when relating it to a family firm context as he argues agency and stewardship theories exist simultaneously. Furthermore, Chrisman (2019) also mentioned shortcomings of the stewardship theory in relation to family firms where he argues for a middle ground where aspects from both agency and stewardship theory are integrated into a realistic management view of behavior and governance. Family firms may have common characteristics relating to stewardship theory like collective behavior instead of behaving in self-interest, but they tend not to always behave as expected, largely due to complexities in goal and control systems.

Pecking order theory refers to hierarchical order of firms deciding how to finance operations the right side of the balance sheet (Myers, 1984; Myers & Majluf, 1984). It argues that firms at first prefer to finance themselves through internally generated cash flows. Once this source becomes unavailable, firms tend to resort to debt. Finally, if debt capacity is reached or financial distress risk rises, firms tend to sell part of their equity. The dimension of pecking order is derived from the costs of information asymmetry and financial distress.

Trade-off theory derives from the idea that companies can increase firm value by finding an optimal balance of debt and equity financing (Kraus & Litzenberger, 1973). As financial leverage creates interest payments and these payments are paid before taxes, a tax shield is made which increases when a larger portion of the assets is financed with debt. However, if maximal capacity for debt is reached, firms risk financial distress, thus offsetting the benefits of having leverage and increasing cost of capital as investors ask for larger premiums.

Past studies have argued that pecking order and trade-off models may complement each other in helping to reduce agency issues (Fama & French, 2005).

Tappeiner et al. (2012) discuss the demand for minority investments by PE in family firms in Germany and find that family firms often value the non-financial resources which PE can provide leading to the conceptualization of ‘smart money’. This term includes the experience, expertise and potential networks which PE brings to the table. Furthermore, they find that

family firms largely do follow the pecking order, but the concept of smart money can move it up in the ladder. A conceptual framework was created where family firms' demand for PE is driven by factors such as the perception of value added through non-financial resources, financing needs and the costs of losing control. Through this framework, the study comes with several propositions. First, they argue that family firms with succession problems would value the non-financial resources of PE higher while the costs of losing control would decrease the demand for PE. The study does however highlight that the different motivations for bringing in PE into family firms can be synchronous, thus leading to the conclusion that pecking order theory does play a role into family firms deciding whether to bring in PE, but it is not complete as it largely ignores aspects unique to family firms.

Pecking order theory and trade-off theory are more related to firms deciding their optimal capital structure, thus affecting not only the post-buyout phase and thus firm performance but also the pre-buyout phase. In the pre-buyout phase, family firms according to theories described above could be reluctant to bring in PE investors as equity is down the ladder of the pecking order, but once the buyout has passed PE could apply financial engineering thus deciding a more optimal capital structure by aiming for maximum debt financing to increase internal rate of return and create value.

2.5 PE investments in family firms

Past research on PE affecting family firm performance and value creation has been limited but increasingly put in the spotlight by researchers.

First, Goossens et al. (2008) researched family-owned businesses and the impact of buyouts on the performance of a formerly family-owned business. They argue that change in ownership from being family-owned to co-ownership with PE may significantly affect post-buyout performance. They analysed 167 Belgian buyouts in the 1990s, of which 43 are argued to have been family-owned. They found that buyouts are an efficient way to transfer family-owned businesses. Firm performance increases after a buyout of a family-owned business and no significant difference was found with other types of ownerships pre-buyout.

Furthermore, Wulf et al. (2010) extended family firm research by examining where PE fills the gaps in family firms precisely. Based on a resource based view and interviews with experienced PE fund managers, they built a framework with an overview of value adding endeavors performed by PE in family firms. Results after analysing 118 family firms which were acquired by PE show that cooperation and networking seem to be neglected factors in family firms.

Furthermore, they conclude that PE can create value to family-owned businesses, but that prior performance of these firms moderate the impact of PE.

Moreover, there have been additional studies over the recent years related to European family firm performance and PE. A study by Battistin et al. (2016) used a sample of 191 Italian firms, majorly private family firms, in the manufacturing industry, distinguishing between majority and minority targets. PEs boost growth and profitability in firms where it holds a minority stake, especially when compared to majority stakes. Minority stakes even seem to outperform majority stakes which could be related to the optimization of interplay between PE value-creating endeavors and keeping the firm's identity and control with the family owners.

This finding was reinforced by Marti et al. (2013) who found lower growth in Spanish venture capital, hereafter VC, backed firms where VC held a minority stake. While VC is a distinctive form of PE, being mostly focused on firms in the beginning of their life cycle, it confirms the importance of taking into account the possible forms of ownerships taken in the buyout of a family firm.

Another study on European family firms and PE in by Jean-Etienne et al. (2013) found a positive relationship between PE investment and French family firms. Indications show a higher ROE and lower level of interest charges for family firms. They also found an increase in relative firm value with the presence of a PE and the meeting of family criteria.

Another performance metric was used by Croce and Martí (2016). In their research they examined and dived into founder backgrounds analysing the productivity growth after PE investment in 143 Spanish PE-backed family firms. They found evidence that despite the possible conflicts between external investors and owners in family firms productivity grew significantly after PE entry.

A more recent study by Salerno (2019) investigated the effects of private equity financing in PE-backed family firms. This study is highly relevant as it confirms the positive effects of PE investments of family firms. By using a dataset consisting of European PE-backed SMEs over the period of 2007-2012, they found that PE-backed family SMEs outperform non-family PE-backed SMEs, suggesting the positive effects of combining family ownership and PE financing.

Concludingly, there seems to be consensus in current research of the positive effects of PE on family firms, be it that the heterogeneity of PE ownership and the types of investments should be taken into account in determining the relationship between PE and firm performance.

2.6 Conceptual framework and hypotheses

The previous discussed literature allows for the creation of a conceptual framework which helps understand what PE ownership brings to the table for family portfolio companies.

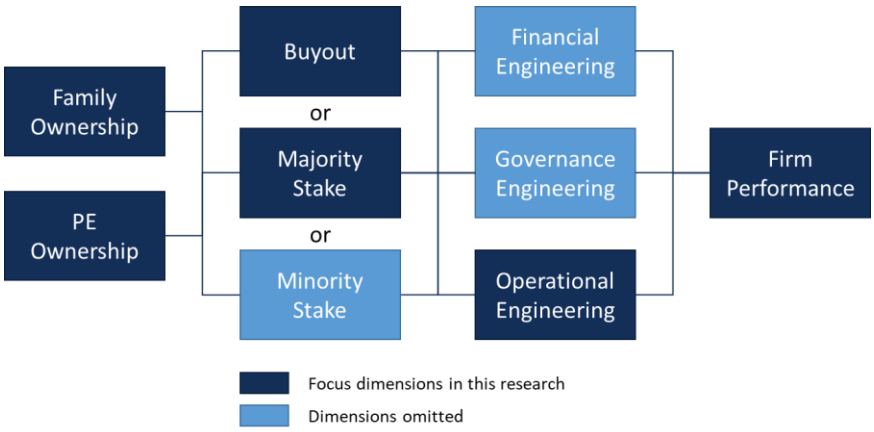

***Figure 2**: Conceptual framework from PE investment to value creation*

As derived from the literature it can be concluded that PE aims to create value to their investees by implementing several concepts. First and foremost, it must be addressed that PE ownership in their portfolio firm can take several forms and is heterogenous. Either it can take form as a minority stake where PE has less control over their portfolio firm or a majority stake where the contrary is present. Moreover, PE also has the option to buy out the existing owners in the family firm, thus exercising complete control over the company. While current literature highlights the positive effects of PE financing on family firm performance (Salerno, 2019), family firms tend to be averse to losing control based on SEW (Berrone et al., 2012). Therefore, it could be that family firms are more inclined to take PE minority investments. Furthermore, research has shown that minority stakes of PE show different outcomes compared to majority stakes (Battistin et al., 2016). Thus, adding the two dimensions of stakes when researching family firms and PE is justifiable. Research has not studied the third option yet which is when PE performs a buyout of a family firm, thus taking a majority stake or full control in the family firm creating an exit of the family owners. However, in line with the trend of more family firms facing succession problems and thus PE becoming more evident for family owners (Neckebrouck et al., 2017), adding this dimension can be justified. In this study, our focus will be on those PE funds that take majority stakes or buyout the family firm.

Following PE investment, several value creating policies can be derived from current literature. Financial engineering refers to PE aiming at aligning management interest with its own interests through leveraging the target after buyout. Furthermore, governance engineering refers to PE

exercising their shareholder rights by actively monitoring their portfolio companies and aligning the portfolio company business strategy and operations with the most optimal value creating policies. Operational engineering refers to PE implementing tweaks to the portfolio companies' operations through accumulated industry knowledge. All of these together aim at improving the performance of the firm through increased growth, profitability and efficiency. In this study, we will focus on the dimension of operational engineering in line with Salerno (2019).

Overall, in line with previous research, it can be expected that PE investments are positively correlated with firm performance. However, based on several theories, it can be argued that performance could differ in absolute and relative numbers based on the stake PE takes in a family firm. As PE's main goal is to achieve a higher exit value than they paid at entry, increasing profitability and size can help this goal. Increasing profitability leads to a higher multiple paid at exit. However, we argue that there could be differences in post-buyout outcomes between PE taking a majority stake or performing a buyout. First, agency problems could arise with PE taking a majority stake and the family still being active in the firm's management (Schulze et al., 2001; Berrone et al.; 2012). This could lead to potential conflicts when interests need to be aligned, leading to poorer performance. With a buyout, this agency problem is solved but the firm risks losing its family identity, which is arguably an asset to the firm's value proposition (Ahlers et al., 2014). Furthermore, PE investment could lead to loss of socioemotional wealth, as PE will likely intend of shaping management to avoid altruism and hire new managers based on meritocracy instead of being part or having closing connections to the family. While this could lead to positive effects, the negative effects would again be the loss of family identity which various stakeholders such as customers, suppliers and employees identify with. However, it can be expected that family firms attracting PE investments experience higher profitability based on general research of PE impact on their portfolio companies. Furthermore, Salerno (2019) highlighted the positive impact of PE on family firms. However, this should be taken into context as his research only included family firms for which the family remained in control post-buyout. It could be argued that the adverse effects of PE on family firms were thus less compared to family firms which were bought out. This leads to conflicting assumptions which is why this study hypothesizes the following for how PE impacts post-buyout profitability in family firms:

H1 – Family firms perform worse than non-family firms post buyout.

H1a – Family firms perform worse post buyout than non-family firms as measured by EBIT/Total Assets.

H1b – Family firms perform worse post buyout than non-family firms as measured by EBIT/Sales.

H1c – Family firms perform worse post buyout than non-family firms as measured by EBITDA/Total Assets.

H1d – Family firms perform worse post buyout than non-family firms as measured by EBITDA/Sales.

Additionally, we will reassess the claims of postbuyout impact of PE for both family and non-family firms. Earlier in this study, the literature mentioned largely indicated the positive impacts of PE on postbuyout profitability and other firm level aspects. However, the need for a reassessment is justified due to differing time periods and market circumstances in which the focus of PE has arguably shifted more towards operational engineering. Therefore, the following hypotheses will be tested:

H2 – Target firms by PE perform better post buyout than pre buyout.

H2a – Target firms by PE perform better post buyout than pre buyout as measured by EBIT/Total Assets.

H2b – Target firms by PE perform better post buyout than pre buyout as measured by EBIT/Sales.

H2c – Target firms by PE perform better post buyout than pre buyout as measured by EBITDA/Total Assets.

H2d – Target firms by PE perform better post buyout as measured by EBITDA/Sales.

3. Methodology

In the next section, the research method and design will be further explained including arguments for using certain variables, the data collection, the eventual sample and the used variables in the research design.

3.1 Research method

Past literature has shown several performance factors with different levels of analysis used in analysing post-acquisition performance. Meglio and Risberg (2011) summarize how performance is conceptualized and operationalized and focus on the research setting, the measuring method, the time scale and the units of analysis.

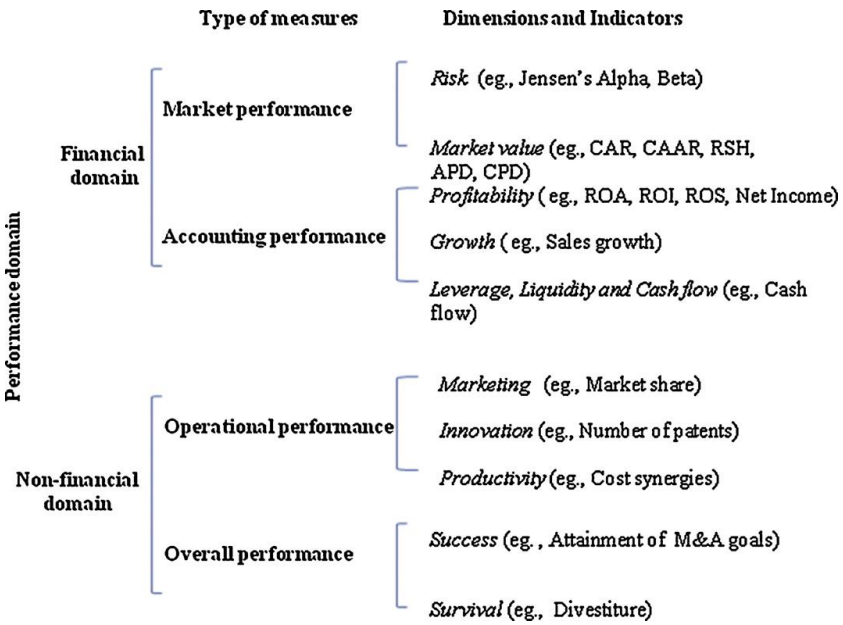

***Figure 3**: An overview of performance measures (Meglio & Risberg, 2011)*

Dimensions and indicators seem in line with research on PE firms and their operational performance. For the research design, the focus will be on the financial domain with the focus on accounting performance. The research design and choice of variables will be largely in line with Salerno (2019). In the next part we will highlight the various considerations taken for the research design.

(1) Performance measures

The method of use is to measure turnover growth and operating profitability after the buyout through the usage of the following performance measures: sales (turnover growth), earnings before interest and taxes measured with sales (EBIT/Sales) and total assets (EBIT/Assets) as

denominators and earnings before interests, taxes, depreciation of tangible assets and amortization of intangible assets with sales (EBITDA/Sales) or total assets (EBITDA/Assets) as denominators.

While turnover growth is used broadly by previous research as a measure of performance at the firm level, it does include some limitations. Growth in sales could lead to generation of cash flows for the portfolio company, subsequently leading to these cash flows being used to cover the debt service payments. However, PE backed firms could have less financial flexibility caused by management ownership incentives and debt obligations, especially compared to comparable firms which are public. The expectation based on past studies is that PE firms will grow faster in sales post-buyout when compared to peer companies. Nonetheless, turnover growth is an adequate performance measure which can be used to examine if the PE backed company is working towards a growth strategy. Hence, the sales growth after the buyout is examined in this research.

Operating profitability is the more significant dimension, testing the economic efficiency in a way that Jensen (1989) argued in his research and thus whether operational engineering has taken place. Performance measures employed to measure this specific efficiency include EBITDA/Sales, EBITDA/Assets, EBIT/Sales and EBIT/Assets which are measures used in current literature (Salerno, 2019). These indicators help understand whether the PE investment helps the portfolio company to improve its operational effectiveness. This includes, as argued beforehand, cost-cutting and margin improvements, removal of unproductive assets, more efficient usage of existing assets, or by making value-enhancing add-on acquisitions. There are advantages of implementing EBIT and EBITDA in a research design as performance measures. EBIT for example helps to remove outside effects, in this case interest and taxes, distorting the company's profitability (Acharya et al., 2009) while 'net income' would allow these distortions to impact the results. Furthermore, EBITDA is another measure often used as a proxy for a firm's free cash flow stemming operations. Critics of this measure mention the possible misrepresentation of real earnings as it cancels out non-cash charges coming from the costs of assets (depreciation and amortization). The measure does however take working capital requirements into account. Furthermore, as mentioned before, the measure is broadly implemented in research designs of past literature. Hence, EBITDA is also included in this research design.

Additionally, profitability metrics like EBIT and EBITDA weighted with assets rather than using net income (ROA) can be advantageous as it evens out the impact of financial engineering on the outcomes (Cressy et al., 2007).

(2) Time window

For applying post-buyout operating performance indicators to measure performance improvements, an appropriate time window needs to be observed. Following previous research, the aim is to observe the performance from years 0 to +3 after the buyout (Salerno, 2019). A widely-known concern which rises with research of private companies is the possible lack of accounting information and missing values. As only European companies are part of the sample for this research this concern could be minimized. Due to obligation of disclosing financials in most of the European countries, unlike in the US, the chances of finding sufficient data from chosen databases are promising. While not all accounting information is evenly accessible, it is estimated that it should be sufficient for compiling a sample.

Moreover, this study is based on buyouts stemming from 2012 to 2017. The motivation for this specific time window of 2012 to 2017 can be justified by three reasonings. First, PE investments have seen a significant swift in engineering focus with the increased competition after the ‘90s. While financial and governance engineering remain important, operational engineering is now seen as the main source of value creation for PE (Kaplan & Stromberg, 2009). While this trend seems to have continued for the years after, current research has not focused on this. Therefore, this study aims to close that gap and provide a renewed perspective on the impact of operational engineering, specifically in family firms compared to other buyouts. Second, the surge of available dry powder, meaning cash which is ready to invested, with financial institutions such as PE in the recent years could provide further interesting insights into the effects on portfolio company performance. PE are increasingly faced with competition from their investor peers which could lead to a wider scope including family firms. Lastly, as the geographical scope is limited to European countries, a longer time horizon will increase the observations included in the sample.

3.2 Sample and data

The preceding methods and hypothesis call for a significant amount of data, spanning information on transactions and dates, accounting information for the target portfolio companies. In the following section, a step-by-step explanation will be given on the data collection process. Subsequently, the constructed variables will be clarified in detail.

For this paper a discussed before, the focus will be on the PE industry in Europe. The reasoning behind this is that current literature investigating value creation of family firm buyouts is mainly focused on the US and UK. To test the hypotheses, a distinctive dataset has been constructed encompassing PE-backed buyouts transactions over the period of 2012 to 2017. The procedure of gathering the data for the sample took three stages.

In the first stage, the initial sample of family firm buyouts in Europe from 2012 to 2017 was gathered from Zephyr, which is a commercial database by Bureau van Dijk. This database contains relevant global data for mergers and acquisitions. In order to get the most accurate buyouts for the research design, the following criteria were implemented. First, we only allowed the acquirers to be PE funds. Second, the target company type was set as owned by individuals or families or another company as excluding financial holdings should be avoided. This was done in order to commence filtering for buyouts of family firms and is in line with current research (Salerno, 2019). Third, the deal types were only allowed to be institutional buyouts. Minority stakes were excluded as this does not fall within the scope of research of this study. Fourth, the time period was set from beginning of January 2012 to end of December 2017 for which the deals had to be noted as completed, confirmed or announced. Fifth, secondary and tertiary buyouts were excluded as these buyouts could lead to distorted results of the effect of PE on the portfolio firm, as it was already bought out beforehand and this study aims at studying the initial impact of PE on firms. Sixth, the business description, trade description, overview, deal comments or deal rationale should contain the word “family”. The aim for this is to aid the data collection in finding family firms, as criteria setting for this in current research has been limited and database do not specify in detail which firms are classified as family firms and which are not. To the best of my knowledge, this study is the first to implement this criteria. Seventh, the geographical area of the target firm is set to the entirety of Europe which is in line with the goal of studying European family firms. For each buyout, several variables were then selected: the name of the acquiror, the acquiror BvD (Bureau van Dijk) ID number, the name of the target, the target BvD ID number, the deal completion and announced date, the percentage

stake and the deal type. The target BvD number aids in cross referencing the targets or vendors with Orbis and removes the potential exclusion from the sample due to name changes.

In the second stage, the complete sample of buyouts in Europe from 2012 to 2017 was gathered. The sample criteria were applied as with the gathering of family firm buyouts, except for the sixth step. Furthermore, one step was added were the results of the previous sample were excluded from this sample in order to avoid potential overlaps.

In the third stage, accounting information for the sample of target companies, both family and non-family, was collected from Orbis. Orbis is also a commercial database by Bureau van Dijk, containing vast amounts of accounting information of public and private companies worldwide. A multitude of criteria were implemented in Orbis as well to aid in accuracy of the dataset. First and foremost, financial services companies were excluded. Next, companies could only have a standardised legal form of a private limited company, partnership or sole trader. This was done in order to avoid including publicly quoted companies. Furthermore, again the regional criterium of the target company needing to be in Europe was implemented. Lastly, all financial data needed for the variables in this study needed to be available. Companies with no known value for revenue, EBIT, EBITDA, assets, shareholder funds and gearing were excluded. Once these criteria were optimized to fit the data requirements, the target BvD ID number and the deal completion date from Zephyr were added to collect the accounting information from years 0 to +3. Year 0 is when the buyout of the portfolio firm occurred. If there was a difference in the year the deal was announced and completed, the deal information was checked with official sources such as press releases and PE websites to get the accurate completion year. During the creation of a dataset, some hurdles led to the exclusion of further companies such as not having clear information as to which PE was behind the buyout and not having all the financial data. This was namely the case for EBITDA data since financial reporting standards in countries within Europe differ. Concludingly, after all data limitations were solved, a sample of 89 family firm buyouts and 307 non-family firm buyouts were included which will be used in this study.

3.3 Overview of variables

***Table 1**: Variables used in research design*

Dependent variables	Symbol	Definition
EBIT/Sales	EBIT_SAL	Mean operating profitability in a 3-year window after the buyout measured as (EBIT/Sales)*100.
EBIT/Assets	EBIT_TA	Mean operating profitability in a 3-year window after the buyout measures as (EBIT/TA)*100.
EBITDA/Sales	EBITDA_SAL	Mean operating profitability plus depreciation and amortization expenses in a 3-year window after the buyout measures as (EBITDA/Sales)*100.
EBITDA/Assets	EBITDA_TA	Mean operating profitability plus depreciation and amortization expenses in a 3-year window after the buyout measures as (EBIT/TA)*100.
Independent variables		
Family business	FB	A dummy variable measuring the organizational ownership of the target company pre-buyout taking the value of 1 if the target is/was a family business and 0 otherwise.
Pre- and postbuyout	PrePost	A dummy variable distinguishing between pre-buyout performance and post-buyout performance taking the value of 1 if the observation was in year 1, 2 and 3 and 0 when the observation was in year 0.
Interaction	FB_PrePost	An interaction variable between the two dummy variables FB and PrePost.
Control variables		
Gearing_0	GEAR_0	The target company's debt to equity at year 0, defined as (Total Liabilities/Equity)*100.
Size	TA	Natural logarithm of the total assets of the target firm
Age	Age	Natural logarithm of the target firm age
Capital Ratio	CR	The book value of total equity divided by total assets
Capital Productivity	CP	The sales divided by fixed assets
PE Experience	PE_EXP	Total number of investments of the PE firm up until the buyout.
PE Age	PE_Age	The age of the PE firm at the time of the buyout.
COVID	COVID	A dummy variable measuring whether year +3 is 2020 to control for COVID effects in companies.
Industry	IND	Ordered industry codes based on NACE Rev. 2

In **Table 1**, all the dependent, independent and control variables used in this empirical study along with definitions can be explored. The following section provides additional explanation for the choice of these variables.

(1) Dependent variables

The performance measures, which were outlined before in this study, symbolize the dependent variables. *Turnover growth* entails the mean growth of sales in the 3 years after the buyout. Furthermore, *operating profitability* will be measured by taking two EBIT ratios and two EBITDA ratios; EBIT/Sales, EBIT/Assets, EBITDA/Sales and EBITDA/Assets. EBIT/Sales

will be measured by taking the mean profitability compared to the sales of the target company while EBIT/Assets will compare profitability to the total assets of the target.

(2) Independent variables

The binary variable *Family Business* is created to capture the impact of buyouts on family firms compared to non-family firms. The variable takes the value 1 if the selling owner of the target firm was classified as a family and 0 otherwise. By creating this variable, this study aims to see whether buyouts of family firms perform differently relative to other buyouts in the time period.

Pre- and postbuyout is created to capture the impact of buyouts pre-buyout compared to post-buyout. The variable takes the value 1 if the yearly observation of the dependent variable was in year 1, 2 or 3. It takes 0 when the yearly observation of the dependent variable was in year 0. By creating this variable, this study aims to see the performance impact of buyouts on target firms in the years after.

Interaction was created to check for potential interaction effects between family businesses and post-buyout performance. It takes the value of 1 if the yearly observation from a family firm is in one of the postbuyout years and 0 otherwise.

(3) Control variables

For the control variables, this study applies a mix of firm level and fund level variables. Current literature describes various factors that can influence the decision-making of the PE fund and the target post-buyout performance. Controlling for these factors helps to isolate the impact of PE ownership on firm performance. The following control variables were put in use.

Gearing_0 – Gearing refers to the target firm's debt-equity ratio in the year of the buyout. Higher debt reduces agency costs by adding a disciplining measure (Cumming et al., 2007). While this study aims at confining to operational engineering, financial engineering aspects may remain as we do not exclude for interest payments in the dependent variables. Hence, this variable will be added to control for financial engineering aspects post-buyout.

Size – Next to looking at size in terms of sales, this study also controls for the size in terms of assets. In line with Salerno (2019), the size of the company measured as the natural logarithm of the total assets of the target firm is added.

Age – Moreover, in line with Salerno (2019), age is included measured by including the natural logarithm of the target firm age at the buyout. Age is generally associated with higher chances of positive profitability margins (Salerno, 2019) as the business reached maturity.

While the business has a higher chance of profitability, it also tends to grow slower. Therefore, the analysis will control for age.

Capital ratio – Capital ratio refers to the book value of total equity divided by total assets. This measure is used to see how much equity the company has applied to finance the assets of the company. Private equity firms tend to finance deals with a combination of debt and equity which in turn could lead to contrasting performance. Thus, in line with Salerno (2019), capital ratio will be controlled for in the analysis.

Capital productivity – Capital productivity refers to the ability of the firm to generate sales measured by the amount of assets. The higher the ratio, the better the firm scores in productivity. However, this ratio differs largely per industry as some industries are more capital intensive than others, thus leading to various ratios. Thus, this study controls for the effect of capital productivity in line with Salerno (2019).

PE experience – Other than size, the amount of experience also plays a role in influencing target firm performance (Gompers et al, 2008; Alperovych et al., 2013). Hence, PE experience will be added as a control variable and is measured by total amount of deals executed by PE at the time the investment is made.

PE age – Furthermore, this study adds the age of PE funds as a control variable. PE funds which are older in age have often built up a stronger reputation and have proven their strength in beating the market. Moreover, these funds have most likely gained more experience. It is therefore justified to control for PE age and is measured by the year of the buyout and the year that the PE was founded (Meuleman et al., 2009).

COVID – Lastly, due to some buyouts taken place in 2017 this study includes a variable for controlling for COVID effects. There are two reasons why this study includes this variable. Firm performance could have been affected by COVID measures, however the COVID measures are environmental impacts which are not in control of the firm's management, meaning it could lead to a distorting impact in the analysis. Furthermore, it can be argued that these COVID measures are non-recurring. Thus, we include this variable in the analysis.

Industry – In order to control for potential industry effects, this study adds the variable IND based on NACE Rev. 2 which is an worldwide used system for classification of firms within industries. Reasons for including this variable are that there are performance differences between industries based on life cycles and characteristics.

4 Analysis and results

The following section starts with an overview of descriptive statistics for the sample. The dataset was further prepared by removing outliers. In this case all firms with SAL_GR exceeding 2, or 200%, were excluded (2 cases). With regard to EBIT_TA, EBIT_SAL, EBITDA_TA and EBITDA_SAL no further cases needed to be excluded. This results in a dataset of 87 family firms and 307 non-family firms on which the analysis was performed for EBIT_TA and EBIT_SAL. EBITDA_SAL and EBITDA_TA were missing additional values for non-family businesses, however this was deemed as not having a material impact on our research design as ANOVAs and OLS regressions would be performed on each dependent variable separately. Therefore, this resulted in a dataset of 87 family firms and 287 non-family firms for EBITDA_SAL and EBITDA_TA. After the exclusion of the outliers, the descriptive statistics were compiled. The descriptive statistics for the dependent variables split into family firm buyouts and non-family firm buyouts can be found in **Table 2**. Moreover, this section continues with analysing ANOVAs for family and non-family firms, for which the results can be viewed in **Table 4,** in preparation for the linear regressions which came after. Then, possible multicollinearity is tested between independent variables used in the research design by analysing the coefficients in the correlation matrix in **Table 5**. The results of these regressions can be viewed in **Table 6.** Lastly, the section ends up with a conclusion on the results found in the several analyses.

4.1 Descriptive statistics

In **Table 2**, the descriptive statistics are displayed in detail for the sample of family firms and non-family firms. It should be noted that the outcomes in this table are subject to further scrutiny and that variables are still subject to transformation aiding in further analyses. However, the results in the table do aid in understanding the characteristics of the firms added to the sample. Starting with the dependent variables, it can be seen that SAL_GR is 14.0% for family firms after their buyout and 13.0% for other buyouts firms. Moreover, EBIT_SAL returned a value of 4.6% on average for family firms, while non-family firms had a higher value of 10.1%. EBIT_TA values returned the same pattern with a mean of 5.6% for family firms and a mean of 10.1% for non-family firms. Comparing EBITDA_SAL and EBITDA_TA for both groups also leads to a similar pattern. EBITDA_SAL for family firms returned a value of 10.8% while non-family businesses showed a higher value of 15.4%. EBITDA_TA for family firms returned a value of 10.3% and non-family businesses again scored higher with a value of 16.5%. These differences in the descriptive statistics indicate finding results in the following analysis.

***Table 2**: Descriptive statistics for family & non-family businesses*

		Family business			Non-family business	
Dependent variables	*n*	Mean	*SD*	*n*	Mean	*SD*
EBIT_SAL (%)	87	0.046	0.151	307	0.101	0.164
EBIT_TA (%)	87	0.056	0.147	307	0.129	0.173
EBITDA_SAL (%)	87	0.108	0.171	287	0.154	0.173
EBITDA_TA (%)	87	0.103	0.142	287	0.165	0.174
Independent variables						
GEAR_0 (%)	87	101.234	125.204	307	80.117	126.596
TA (mln EUR)	87	113.8	275.7	307	78.3	258.9
Age	87	34.64	26.09	307	23.24	17.66
CR (%)	87	0.425	0.202	307	0.427	0.216
CP (%)	87	1.190	0.767	307	1.566	0.985
PE_EXP	87	113.02	245.21	307	92.74	150.39
PE_Age	87	19.55	16.98	307	20.18	16.75

Note: This table reports descriptive statistics for 87 PE-backed family firm buyouts and 307 PE-backed non-family firm buyouts in Europe over the period 2012-2017. The variables EBIT/Sales, EBIT/Assets, EBITDA/Sales and EBITDA/Assets represent the dependent variables that measure post-buyout performance. GEAR_0, TA, Age, CR, CP, PE_EXP and PE_Age measure respectively debt-equity ratio, total assets, age of the target company, total shareholder's funds/total assets, turnover/total assets, the amount of deals done by the buying PE fund and the age of the buying PE fund at the year of the buyout.

Next, for the independent variables, the control variables are described. It can be seen that family firms score higher on gearing with 1.01 debt times equity while non-family firms score 0.80 debt times equity. Moreover, family firms return a higher value on total assets (TA) with the average firm having 113.8 million euros in assets when non-family firms have 78.3 million euros in assets. Regarding age, family firms are 34.64 years old while non-family firms are younger in age with a returned value of 23.24 years. Looking at additional balance sheet ratio items starting with the capital ratio, it can be seen that family firms return a similar value as non-family firms with the values being 0.425 and 0.427 respectively. The capital productivity returns different values where family firms have approximately 1.19 times the assets in sales while non-family firms scored higher with approximately 1.57 times the assets in sales. The variables focused on the PE funds acquiring the family and non-family firms returned varying values, mainly for PE_EXP. PE funds acquiring family firms have done on average 113 investments compared to PE funds acquiring non-family firms which have done approximately 93 investments before the buyout.

Concludingly, regarding firm performance, it can be derived that family firms seem to grow slightly faster in the years after the buyout but are less profitable in all four profitability ratios. Furthermore, family businesses seem to be on average more leveraged, bigger in terms in size, older and less productive with their assets. Lastly, on the fund level of the buy-out firm, it can

be seen that family firms which were bought out attracted PE funds with more previous experience. While these results are preliminary and still subject to statistical testing, they provide an interesting perspective on the characteristics of buyout companies and the PE funds involved.

4.2 ANOVAs for family and non-family firms

To test the hypotheses and give a first indication based on statistical outcomes, two mixed multivariate analysis of variance (MANOVA) were performed to check whether there are differences in performance of family firms vs. non-family firms pre and post buyout. The term MANOVA stands for "Multivariate Analysis of Variance" and represents the further development of ANOVA, a simple analysis of variance. The multivariate analysis of variance examines whether there is a multivariate difference between the groups beyond all dependent variables. A MANOVA was used instead of several t-tests, since several dependent variables were examined, and thus an accumulation of the alpha error can be prevented (cf. Backhaus et al., 2018). Due to missing data for the EBITDA_TA and EBITDA_SAL variables and therefore two different *n* values, two separate MANOVAS had to be performed. Levene's tests of equal variance show that there is variance homogeneity between the two groups in each dependent variable. Thus, this assumption for performing a MANOVA is met and the degrees of freedom of the *F* value do not have to be adjusted. Moreover, the normality of the dependent variables were tested with the Kolmogrov-Smirnov test. In case this assumption was not fulfilled, the Kurtosis and skewness were examined to check whether the normality of dependent variables assumption was met. However, all breaches of the normality assumption were caused by slim-tailed distribution as indicated by the Kurtosis > 0. Therefore, it was still allowed to perform the analysis.

First, the EBIT_TA and EBIT_SAL were analysed using a 2 (FB: family vs. non-family firms) x 2 (PrePost: pre- vs. post-buyout) mixed MANOVA with FB as a between-subjects variable and PrePost as a within-subjects variable. The descriptive statistics can be found in **Table 3** and the test results in **Table 4**.

This MANOVA showed a significant main effect for PrePost on EBIT_TA, $F(1, 392) = 15.40$, $p < .001$, $\eta_p^2 = .04$, indicating that EBIT_TA decreased after a buyout. However, for EBIT_SAL no effect as in no significant difference was found. Moreover, a significant effect of FB on EBIT_TA was found, $F(1, 392) = 13.11$, $p < .001$, $\eta_p^2 = .03$, indicating that EBIT_TA is lower

for family firms than for non-family firms. The same effect was found for EBIT _SAL, $F(1, 392) = 8.66$, $p = .003$, $\eta_p^2 = .02$. No interaction effect between FB and PrePost was found.

***Table 3**: Means of the dependent variables*

	Family business			**Non-family business**		
			Pre-buyout			
Dependent variables	*n*	Mean	*SD*	*n*	Mean	*SD*
EBIT_SAL (%)	87	0.050	0.222	307	0.110	0.185
EBIT_TA (%)	87	0.086	0.136	307	0.158	0.202
EBITDA_SAL (%)	87	0.105	0.239	287	0.164	0.166
EBITDA_TA (%)	87	0.127	0.141	287	0.193	0.202
			Post-buyout			
	n	Mean	SD	*n*	Mean	SD
EBIT_SAL (%)	87	0.044	0.148	307	0.098	0.185
EBIT_TA (%)	87	0.046	0.163	307	0.119	0.185
EBITDA_SAL (%)	87	0.108	0.166	287	0.150	0.184
EBITDA_TA (%)	87	0.095	0.152	287	0.155	0.185

Note: The table presents descriptive statistics for the dependent variables that describes pre- and post-buyout performance for family and non-family businesses. Pre-buyout describes the mean values in EBIT_SAL, EBIT_TA, EBITDA_SAL and EBITDA_TA in the year of the buyout for family and non-family businesses. Post-buyout describes the mean values of EBIT_SAL, EBIT_TA, EBITDA_SAL and EBITDA_TA in the years after the buyout.

Furthermore, significant multivariate effects were found for FB, $F(2, 391) = 7.23$, $p < .001$, Pillai's Trace = .22, $\eta_p^2 = .04$, indicating that performance measured through EBIT is significantly dependent on whether the firm is a family firm or a non-family firm. Pillai's Trace was used instead of Wilkins' lambda as the variance of more homogeneous. Significant multivariate effects were also found for PrePost, $F(2, 391) = 8.42$, $p < .001$, Pillai's Trace = .41, $\eta_p^2 = .04$, indicating that performance measured through EBIT is significantly different pre- and postbuyout. No interaction effect between FB and PrePost was found in the multivariate tests either.

Second, the EBITDA_TA and EBITDA_SAL were analysed using the same 2 (FB: family vs. non-family firms) x 2 (PrePost: pre- vs. post-buyout) mixed MANOVA with FB as a between-subjects variable and PrePost as a within-subjects variable. The descriptive statistics can be found in **Table 3** and the test results in **Table 4**.

This MANOVA showed a significant main effect for PrePost on EBITDA_TA, $F(1, 372) = 13.29$, $p < .001$, $\eta_p^2 = .03$, indicating that EBITDA_TA decreased after a buyout. However, for EBITDA_SAL no effect as in no significant difference was found. Moreover, a significant effect of FB on EBITDA_TA was found, $F(1, 372) = 9.69$, $p = .002$, $\eta p2 = .03$, indicating that

EBITDA_TA is lower for family firms than for non-family firms. The same effect was found for EBITDA _SAL, F(1, 372) = 8.66 , p = .003, ηp2 = .02. Again, no interaction effect between FB and PrePost was found.

Furthermore, significant multivariate effects were found for FB, $F(2, 391) = 7.23$, $p < .001$, Pillai's Trace = .22, $\eta_p^2 = .04$, indicating that performance measured through EBITDA is significantly dependent on whether the firm is a family firm or a non-family firm. Significant multivariate effects were also found for PrePost, $F(2, 391) = 8.42$, $p < .001$, Pillai's Trace = .41, $\eta_p^2 = .04$, indicating that performance measured through EBITDA is significantly different pre- and postbuyout. No interaction effect between FB and PrePost was found in the multivariate tests, similarly to EBIT.

Table 4*: MANOVAs tests for between- and within subjects effects*

Test of Between-Subjects Effects

FB	*df*	*F*	*p*	η_p^2
EBIT_TA (%)	1, 392	13.109	<0.001	0.032
EBIT_SAL (%)	1, 392	8.664	0.003	0.022
EBITDA_TA (%)	1, 372	9.685	0.002	0.025
EBITDA_SAL (%)	1, 372	5.807	0.016	0.015

Test of Within-Subjects Effects

PrePost	*df*	*F*	*p*	η_p^2
EBIT_TA (%)	1, 392	15.402	<0.001	0.038
EBIT_SAL (%)	1, 392	0.577	0.448	0.001
EBITDA_TA (%)	1, 372	13.291	<0.001	0.034
EBITDA_SAL (%)	1, 372	0.463	0.497	0.001

Note: The table displays the results for the repeated measures MANOVA tests. The two dimensions are FB and PrePost. The degrees of freedom of the four performance indicators are shown on the left. The F statistics are shown in the middle. Significance levels, as determined by the p values, are shown on the right together with the effect size metric measured by Eta Squared.

These results provide initial indications on how the family firms in the sample perform on average compared to non-family firms. Indications are that family firms perform less postbuyout than non-family firms. Moreover, results were found that for both family firm and non-family firms, the firm performance seems to deteriorate postbuyout as measured by the within-subjects test using PrePost, showing significant differences for EBIT_TA and EBITDA_TA. This will be further tested in the next section by using OLS regressions as they aid in controlling for other potential effects of these indications.

Table 5 presents the correlations of the variables used in the analysis to assess potential multicollinearity among independent variables. For reporting purposes and to check for initial correlations, the dependent variables were included.

4.3 Regressions

In the current section the effects of organizational and strategic differences on the three different performance measures are being analysed. The results of mixed repeated measures ANOVAs only tells us whether there exists a statistical difference in performance between the groups of interest. To test whether there exists a causal relationship between the family firms and firm performance, multiple regression are conducted. In this chapter three regressions are conducted on the sample of companies (family firm vs. non-family firm) including a family firm dummy (FB) and a pre- vs. postbuyout dummy (PrePost). Moreover, an interaction variable was created between FB and PrePost. The effects of the variables on post-buyout performance are estimated using ordinary least square (OLS) regressions. Whilst running the regressions, it is essential that the assumptions are being investigated. These include linearity, independence of errors, homoscedasticity, collinearity and normality. While checking these assumptions, violations were found for the homoscedasticity and the normality of residuals. To compensate for these violations, it was decided to perform robust regressions through bootstrapping (Field, 2013). Bootstrapping is a nonparametric approach to statistical inference that substitutes computation for more traditional distributional assumptions and asymptotic results (Efron, 1979). It is suggested to use 1,000 bootstrap samples based on bootstrap confidence intervals as they generally provide accurate results (Effron & Tibshirani, 1993). Other assumptions such as linearity, independence of errors and collinearity were not violated. Linearity was checked using scatterplots which showed no exponential or parabolic curves. Durban-Watson statistics were between 1.5-2.5 for all models, indicating independent error terms. None of the variables showed multicollinearity issues based on the VIF not being larger than 2. Thus, it can be concluded that using the bootstrapped OLS regression results, displayed in **Table 6** can be used for further analysis.

Observing the bootstrapped regression for EBIT_TA (model 1), it can be examined that the model has a significant explanatory power at the 1% level (F = 16.110, p = <.001). The adjusted R-squared reports a value of 0.111, meaning that the model explain 11.1% of the variance in EBIT_TA. The *FB* variable is negative in sign (B = -.053) and significant at the 1% level (p = .004) indicating that family firms perform less after a buyout than non-family firms in terms of EBIT_TA. Furthermore, the *PrePost* variable is also negative in sign (B = -.039) and significant

at the 1% level (p = .005), indicating that all firms in the sample perform worse post-buyout in terms of EBIT_TA. No interaction effect was found as the coefficient for *FB_PrePost* is not significant. Other variables which are significant are TA (p = .014), CR (p = .001), CP (p = .001) and PE_Age (p = .003). CR and CP are positive in sign indicating that a higher capital ratio and capital productivity is positively correlated with EBIT_TA. Moreover, PE_Age is also positive in sign indicating that older PE funds are positively correlated with EBIT_TA. However, TA is negative in sign indicating that buyout firms which were bigger in size in terms of total assets performed less post buyout.

Moreover, observing the bootstrapped regression for EBIT_SAL (model 2), it can be examined that the model has a significant explanatory power at the 1% level (F = 3.765, p < .001). The adjusted R-squared reports a value of 0.022, meaning that the model explain 3.1% of the variance in EBIT_SAL. The *FB* variable is negative in sign, however insignificant indicating that there is no evidence for family firms performing differently than non-family firms in terms of EBIT_SAL. Moreover, the *PrePost* variable is also not significant indicating that there is no evidence for differences in buyout firms pre- and post-buyout in terms of EBIT_SAL. The only other variable which is significant in model 2 at the 5% level is CR (p = .037), indicating that capital ratio is positively correlated with EBIT_SAL.

In the next model the bootstrapped regression for EBITDA_TA (model 3) is observed. It can be examined that the model has a significant explanatory power at the 1% level (F = 14.211, p < .001). The adjusted R-squared reports a value of .104, meaning that the model explains 10.4% of the variance in EBITDA_TA. The *FB* variable is again negative in sign (B = -.050) and significant at the 1% level (p = .007) indicating once more that family firms perform less after a buyout than non-family firms in terms of EBITDA_TA. Furthermore, the *PrePost* variable is also negative in sign (B = -.038) and significant at the 1% level (p = .007), indicating that all firms in the sample perform worse post-buyout in terms of EBITDA_TA. Other variables which are significant are TA (p = .028), CR (p < .001), CP (p < .001) and PE_Age (p = .005). CR and CP are positive in sign indicating that a higher capital ratio and capital productivity is also positively correlated with EBITDA_TA. Moreover, PE_Age is again positive in sign indicating that older PE funds are positively correlated with EBIT_TA. However, TA is negative in sign indicating that buyout firms which were bigger in size in terms of total assets performed less post buyout.

Lastly, the bootstrapped regression for EBITDA_SAL (model 4) is observed. It can be examined that the model has a significant explanatory power at the 1% level ($F = 4.007$, $p < .001$). The adjusted R-squared reports a value of .026, meaning that the model explains 2.6% of the variance in EBITDA_SAL. The *FB* variable is negative in sign, however only significant at the 10% level ($p = .097$) indicating that there is slight evidence for family firms performing worse than non-family firms in terms of EBITDA_SAL. The *PrePost* variable is insignificant indicating that there is no evidence for differences in buyout firm pre- and post-buyout in terms of EBITDA_SAL. Other variables are also not significant.

Overall, it can be observed from these regression results that family firm buyouts, controlled for several firm and fund characteristics, do perform less postbuyout than non-family firms. However, this interpretation depends on the ratio used to measure performance. The sub hypotheses 1a and 1c are confirmed as the finding can be observed in all model 1 and 3. However, this study did not find statistically significant evidence in model 2. While there is slight evidence for worse performance by family firms in model 4, this study with its sample size limitations requires statistical significance at the 5%. Therefore hypotheses 1b and 1d are rejected. Furthermore, the same pattern is followed for examining buyout firms in general and their performance post-buyout. Indications are, controlled for firm and fund characteristics, that buyouts firms perform worse post-buyout. However, we expected based on previous literature that buyout firms would perform better. Therefore, hypotheses 2a, 2b, 2c and 2d are all rejected.

***Table 5**: Correlation matrix*

	EBIT_TA	*EBIT_SAL*	*EBITDA_TA*	*EBITDA_SAL*	*FB*	*PrePost*	*FB_PrePost*	*GEAR_0*	*TA*	*CR*	*CP*	*Age*	*PE_EXP*	*PE_Age*	*COVID*
EBIT_TA	1														
EBIT_SAL	0.253**	1													
EBITDA_TA	0.975**	0.251**	1												
EBITDA_SAL	0.219**	0.956**	0.239**	1											
FB	**-0.153****	**-0.118****	**-0.137****	**-0.111****	1										
PrePost	**-0.083****	-0.013	**-0.078****	-0.013	0	1									
FB_PrePost	**-0.150****	**-0.105****	**-0.133****	**-0.096****	**0.836****	**0.259****	1								
GEAR_0	**-0.108****	**-0.081****	**-0.087****	**-0.054***	**0.102****	0	**0.085****	1							
TA	**-0.154****	0.007	**-0.150****	**0.067***	**0.169****	**0**	**0.142****	**0.235****	1						
CR	**0.136****	**0.080****	**0.124****	**0.051***	-0.019	0	-0.016	**-0.538****	**-0.169****	1					
CP	**0.229****	0.036	**0.225****	**-0.039**	**-0.172****	**0**	**-0.144****	**-0.244****	**-0.394****	0.005	1				
Age	**-0.043**	-0.033	**-0.048**	**-0.044**	**0.235****	**0**	**0.197****	0.003	**0.134****	0.045	-0.007	1			
PE_EXP	0.014	0.006	0.006	0.020	-0.019	0.000	-0.016	0.023	**0.235****	**-0.068****	**-0.076****	-0.006	1		
PE_Age	0.013	-0.027	0.004	0.000	0.008	0.000	0.007	**0.096****	**0.212****	**-0.114****	**-0.101****	**-0.012**	**0.659****	1	
COVID	0.021	0.022	0.020	0.014	0.048	0.000	0.040	-0.073**	-0.059*	0.043	-0.043	0.151**	0.097**	0.030	1

*** Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

Note: This table presents simple correlations between the variables in the subsample of PE-backed firms. In this table the highly correlated variables are indicated in bold. PE Industry Specialized, PE Stage Specialized and Independent PE are dummy variables taking the value 1 if the company is acquired respectively by an industry-specialized PE firm, by a buyout-specialized PE firm or by an independent PE firm and 0 elsewhere. Turnover_0, Profitability_0, Gearing_0 and Target Age measure respectively turnover, operating EBIT/Assets, debt-equity ratio and age of the target company at the year of the buyout. PE Size encompasses the PE firm's total capital under management. Syndicated is a dummy variable taking the value 1 for syndicated buyout deals.PE Experience encompasses the experience of the acquiring PE firm measured as the total number of investments of the lead PE firm up until the buyout. PE Age is the age of the PE firm at the time of the buyout. Bubble is a dummy taking the value 1 for buyouts occurring in the years 2005-2007 and 0 elsewhere.

***Table 6**: Bootstrapped OLS regressions results*

Variable	(1) EBIT_TA				(2) EBIT_SAL				(2) EBITDA_TA				(2) EBITDA_SAL			
			BCa 95% Confidence				*BCa 95% Confidence*				*BCa 95% Confidence*				*BCa 95% Confidence*	
	B	*Significance*	*Lower*	*Upper*	*B*	*Significance*	*Lower*	*Upper*	*B*	*Significance*	*Lower*	*Upper*	*B*	*Significance*	*Lower*	*Upper*
FB	**-0.053*** **	0.004	-0.086	-0.018	-0.129	0.130	-0.294	-0.022	**-0.050*** **	0.007	-0.087	-0.016	**-0.143***	0.097	-0.324	-0.025
PrePost	**-0.039*** **	0.005	-0.065	-0.013	-0.012	0.416	-0.037	0.016	**-0.038*** **	0.002	-0.065	-0.012	-0.015	0.272	-0.042	0.009
FB*PrePost	0.003	0.892	-0.038	0.045	-0.013	0.920	-0.217	0.190	0.009	0.711	-0.032	0.051	0.001	0.994	-0.185	0.193
GEAR_0	0.084	0.106	0.000	0.000	0.000	0.499	0.000	0.000	0.000	0.057	-0.004	0.000	0.000	0.345	-0.001	0.000
TA	**-0.023** **	0.014	-0.039	-0.004	0.060	0.282	-0.026	0.171	**-0.021** **	0.028	-0.039	-0.002	0.096	0.118	0.017	0.190
Age	-0.008	0.542	-0.036	0.019	-0.029	0.174	-0.066	0.007	-0.016	0.286	-0.048	0.012	**-0.045***	0.067	-0.084	-0.009
CR	**0.162*** **	0.001	0.108	0.220	**0.176**	0.037**	0.086	0.292	**0.153*** **	0.001	0.101	0.211	**0.117***	0.085	0.023	0.226
CP	**0.045*** **	0.001	0.033	0.058	0.018	0.426	-0.017	0.061	**0.047*** **	0.001	0.034	0.061	-0.014	0.569	-0.047	0.027
PE_EXP	-0.006	0.491	-0.020	0.010	0.007	0.633	-0.019	0.032	-0.008	0.325	-0.024	0.007	-0.009	0.438	-0.031	0.012
PE_Age	**0.045*** **	0.003	0.015	0.073	-0.039	0.254	-0.104	0.014	**0.040*** **	0.005	0.010	0.068	-0.011	0.704	-0.076	0.038
COVID	0.019	0.107	-0.004	0.042	0.045	0.109	0.006	0.095	0.015	0.180	-0.006	0.036	0.034	0.162	-0.001	0.076
Industry Effects	Yes				Yes				Yes				Yes			
Country Effects	Yes				Yes				Yes				Yes			
F value for regression	16.110	<0.001			3.765	<0.001			14.211	<0.001			4.007	<0.001		
Adjusted R	0.111				0.022				0.104				0.026			
Durban-Watson	1.981				2.029				2.026				2.043			
N. obs in regression	1568				1568				1488				1488			

Note: Panel regression analysis of operating performance of a sample of 87 European family PE-backed firms and 307 non-family PE-backed firms is reported considering countries in Europe. The dependent variables are EBIT_TA (column I), EBIT_SAL (column II), EBITDA_TA (column III) and EBITDA_SAL (column IV). FB is a dummy variable that takes value 1 for family business and 0 otherwise. PrePost is dummy variable that takes the value 1 if for postbuyout years and 0 for the year of the buyout. FB*PrePost is the interaction variable between FB and PrePost. The control variables are: Gear_0, debt-equity ratio of the buyout firm. TA, natural logarithm of the total asset. Age, natural logarithm of the firm age. CP, is the sales divided by fixed assets. CR, is the book value of total equity divided by total assets. PE_EXP is the natural logarithm of amount of deals done by the buying PE firm in and before the buyout year. PE_Age, natural logarithm of the PE firm age. COVID, a dummy variable taking the value 1 if year 3 was in during COVID. Country and industry dummies are included in the estimates. *,**,***Significant at the 10, 5 and 1 percent levels, respectively

5. Discussion

In the previous chapter, the results were presented which led to the acceptance and rejection of the hypotheses presented based on previous literature. In this chapter, the results are discussed and related to previous literature.

The first hypothesis stated that a buyout would lead to deterioration of family firm performance, and was accepted. While Salerno (2019) found a positive relation between PE financing and family firm performance, this study finds the contrary. PE buyouts in family firms seem to show an adverse effect compared to minority stakes. There could be several arguments to why this result was found.

First, based on the agency theory, Schulze et al. (2001) argued for more focus on governance engineering to avoid agency costs in a family firm. However, based on the results of this study, as the family firm loses control and PE in combination with outside managers take over, it could be that agency costs increase as family firms are known for taking owner-manager roles and thus limiting agency costs. Moreover, family's rationale for selling the firm could be questioned as they possess superior information regarding current firm developments and future prospects of the firm (Schickinger et al., 2018), meaning that the family expected decreasing performance and thus selling the firm to achieve maximum value.

Second, it was highlighted that family firms follow non-economical motivations in their business decision making. Based on socioemotional wealth theory as mentioned by Berrone et al. (2012), PE buyouts could lead to loss of family influence and identification within and outside of the firm. As family firms exerted strong ties within the firm between family members and other individuals, it could be that the foregoing of this situation leads to abandonment by these individuals. It could be that recurring customers of the firm had emotional attachment with the family themselves and its identity, leading to an advantageous business relationship and deals compared to firms which are not related to families, thus leading to deterioration of performance. Furthermore, as PE have a more short-term horizon compared to the families which aim for long-term wealth preservation, this could lead to potential conflicts of interest within the family firm as the focus would be more on economical motivations.

Third, looking at stewardship theory, it could be that family firm owner-managers aimed at fulfilling the needs of the organization on the basis of cooperation, while the PE fund and its managers could mainly relate decision making based on self-interest. Replacement of the 'steward', as in the family member, could then negatively affect the firm after a PE transaction.

However, this theory was criticised in a family firm context as Chrisman (2019) argues for a middle ground between agency and stewardship theory. It could however be that this middle ground shifts and the spectrum changes based on the context of the PE buyout and the buyout characteristics.

Tappeiner et al. (2012) find that demand for PE is driven by perception of added value non-financial resources and costs of losing control. The relationship between these could be related to the context of minority stakes and buyouts and could be the reason why PE minority stakes lead to better firm performance while PE buyouts lead to deterioration. Battistin et al. (2016) confirmed this argument in their study by showing that minority stakes lead to better performance due to the interplay of PE's value creating endeavours while the firm's identity and family control is preserved. Instead of substituting the family owner, a superior governance structure could be created in family firms in combination with minority private equity investments, especially compared to PE majority or sole family ownership structures (Battistin et al., 2013). This interplay was also confirmed by Ahlers et al. (2014), who found and argued that while the buyer gains real options for external value creation due to family departure, real options dependent on the family may subsequently reduce the economic value for the new owner. It was highlighted that there is no coherent consideration of the influence of the family on family firm valuation. PE should according to findings take into account the negative implications of the loss of family involvement while searching for high potential non-family options to increase value. Tappeiner et al. (2012) also argued that family firms follow the pecking order when financing decisions are made, resulting in PE being among the last options for family firms. Croce and Martí (2014) found that, based on protecting socioemotional wealth (Gómez-Mejía et al., 2007), family firms accept private equity solely in later stages of their life cycle when growth is stalling and performance commences to deteriorate.

Another interesting finding in the results was that while family firms performed worse post-buyout when compared to other buyouts, there was a significant negative difference between pre-buyout profitability and post-buyout profitability. This finding is not in line with previous literature. Previous literature largely showed a positive correlation between PE buyouts and post-buyout firm performance (Kaplan, 1989; Lichtenberg & Siegel, 1990; Acharya et al., 2012; Alperovych et al., 2013). As current research agrees with the positive aspects of PE on firms, this study indicates the contrary. Vinten (2007) found a negative effect of PE ownership on operation profitability post buyout for Danish firms. He relates it to the diminished impact on solving agency problems as previous research studied public-to-private transactions more

often than private-to-private transactions where ownership was already more concentrated thus diminishing the expected benefits from PE fund ownership since companies theoretically have less agency problems. Aligning this argument with the findings presented in this study, it could be that family firms which were once fully owned by family and where the family keeps a minority stake post-buyout together with the PE fund lead to contrary effects through ownership dispersion. A related study (Desbrières & Schatt, 2003) found similar results where post-buyout performance decreased and that the cause was the large fraction of family firm buyouts, i.e. firms with highly concentrated ownership. Furthermore, Vinted (2007) also argued that using total assets might create bias since firm goodwill valuations changes drastically post-buyout, leading to higher total assets which leads to downward pressure on operating performance ratios and therefore leading to underestimation of PE ownership. However, after correcting for post-buyout goodwill increases, the negative impact of PE ownership was still found.

Moreover, previous studies included more buyouts from the USA and U.K. where ownership is more dispersed compared to continental European countries where more closely-held companies with large shareholders exist (Faccio and Lang, 2002). Guo et al. (2007) also found capital structures of buyouts to be less fragile today than before, thus arguing for fewer disciplining benefits of debt. Lastly, target firms are found to be more often firms which are already efficient with high cash flows instead of inefficient or turnaround firms (Kaplan et al. 2006), thus potentially limiting the upside potential for PE efficiency improvements.

However, recalling the research design, the sample and data sources, it should be mentioned that this study has its limitations too. As this study is the first to conduct research on family firm buyouts in Europe, it should be emphasized that future research is needed to confirm the results found in this study. First, a critical eye on the explanatory power of this study due to the sample size for family firms should be taken into account, mainly due to decisions in setting criteria. Checking the outcomes coming from the databases led to exclusion of several firms of which there was a lack in data. It can be argued that this is due to differing GAAP standards between European countries. Thus, this led to limitations in the sample size for family firms which could mean that the firms in the sample are potentially not completely representative of the whole market. Second, current research does not implement a common definition for a ‘family firm’. This study implemented additional criteria, such as keyword criteria, to aid in finding firms which were owned in families, however this was not a common practice in past literature. Therefore, academics active in the field of family firm research are advised to create a definition in order to avoid discrepancies and possible false interpretations of data. Third, this

study largely followed the research design of Salerno (2019). While the model summaries showed significant explanatory power, future research should include additional firm and fund level variables which could help in decreasing omitted variable bias and could help in finding new insights on the dynamic of PE funds and family firms. For example, future studies could include pre-buyout characteristics as current research found evidence of firms focusing on efficiency improvements pre-buyout and PE funds selecting firms which have already implemented efficiency improvements or changed management by attracting outside managers which is an important factor explaining PE investment decisions in family firms. Fourth, it should be noted that performance pre- and post-buyout was only compared within the sample of buyouts. It could thus be that peer firms comparable to the firms in the sample are performing differently. Future research should include a peer group of non-PE firms to confirm findings or whether other factors such as market or sector movement had a role to play. Fifth, this study did not separate majority and full buyouts which could lead to different potential outcomes. Agency problems could be more significant in buyout firms where family retains a stake instead of a full buyout as mentioned before. Lastly, the results of this study cannot be globally generalised due to the unique economic environment of Europe, especially when compared to the Anglo-Saxon and Asian markets and economies. In order to generalise these findings, more research should be done in these markets. Moreover, in order to create sample size feasibility, this study included all European countries while there are also significant differences between individual European countries. Future studies could focus on individual countries instead of whole regions or continents to examine whether the findings are similar.

6. Conclusion

As interest rates kept dropping over the years, money became cheaper and investors were looking for ways to find returns on their investments, PE funds gathered significant dry powder to invest in private businesses. While PE became more popular among investees and research on PE is increasing, the heterogeneity of PE and the investments they make provide for continuous gaps in research. Literature has largely been positive about PE and its impact on the businesses they target as they implement financial, governance and operational engineering which mostly resulted in positive outcomes such as an increase in profitability. Furthermore, in recent years, the scope of PE investors has widened to include more family firms as potential buyout targets. While representing a large portion of the worldwide economy, family firms have largely been neglected due to their complex nature and unwillingness of family firm owners towards outside investors. However, now, family firms, due to succession problems, are more willing or even forced to look for outside investors in order to establish continuity for their firm. While previous research has focused on some aspects of family firms and PE, there has been no research yet into the impact of buyouts by private equity on family firms. Hence, this study aimed at filling this gap by looking whether there is a difference in post buyout firm performance, measured by EBITDA and EBIT ratio changes over three years (including the year of the buyout) between family and non-family firms. Moreover, this study reassessed the established general conclusions regarding the positive impact of PE on firm performance by checking the pre- and postbuyout performance for the sample as a whole.

For this study a sample of 87 family firm buyouts and 307 non-family firm buyouts in Europe was compiled. Then, this study looked into the effects of PE on family firms postbuyout and subsequently compared it to non-family buyouts, while also looking for confirmation that operating performance improves post-buyout and that this can be related to PE value creation endeavours. This research contributes to the existing literature on family firms and PE in several ways. First, to the best of our knowledge, this study is the first to provide tangible quantitative outcomes to the impact of PE on family firm buyouts. Second, this study emphasizes the need for renewed research on the impact of PE postbuyout in general as some of the results are contrary to findings of previous research. Finally, this study provides practical implications to family firm owners and private equity funds as the interplay between family firm and PE ownership in a firm is important in determining firm performance. For example, family firm owners are advised to take into consideration their strategy towards solving the succession problems by taking into account their willingness to open up to private equity.

There are numerous factors that explain the post-buyout performance of acquired companies by PE. First, this study checked the mean differences between several performance indicators measuring profitability and found that there is a significant negative difference between the performance in the year of the buyout and the subsequent three years after. Moreover, similar findings were also found in analysing post-buyout profitability with OLS regressions indicating that overall profitability does decrease post-buyout. This was found for both family and non-family firms indicating the importance of renewed research on PE and post-buyout performance. Future research should examine PE impact on firm performance for the recent years as past literature largely focused on buyouts before the financial crisis in 2008, where market circumstances were different with higher interest rates and fewer regulations, with only limited evidence of buyout performance after the financial crisis.

Furthermore, this study found that family firms, controlled for firm and fund level characteristics, deteriorate in profitability post-buyout compared to non-family firms. This finding has several implications for family firms and PE funds. First, family firm managers should consider more carefully whether attracting PE funds for succession helps the firm into becoming more profitable and helps the firm in the long run. In return, PE funds should consider whether performing a family firm buyout requires additional attention compared to non-family firm buyouts. While it was found that both family and non-family firms are less profitable post-buyout, family firms require extra attention as non-financial goals are more present than with non-family firms. Current literature highlights the differences between minority and majority PE investments and its outcomes as family firms could have differing motivations compared to PE investors, mainly towards business policies and strategies including non-economical motivations. PE funds are advised to take these motivations into account in deciding the structure and strategy of their family firm investments and the potential post deal outcomes.

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