



Private Equity in Family Firms: Performance Effects and the Role of Professionalization – Myth or Reality?

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Dissertation written under the supervision of professor Liliana Dinis.

Dissertation submitted in partial fulfilment of requirements for the International MSc in Management with specialization in Strategy and Consulting, at the Universidade Católica Portuguesa, 02.06.2025.

ABSTRACT (ENGLISH)

This thesis examines the influence of private equity (PE) investments on the profitability of family businesses (FB) in Portugal. Against the background of inconsistent findings in previous research, it combines quantitative measures of profitability with proxies of professionalization in a mediator analysis. I examine (1) whether PE investments lead to sustainable performance improvements and (2) define the role of professionalization of family firms in PE interventions through the lens of upper echelons theory.

Various difference-in-difference models are estimated based on a panel dataset of 56 companies over a period of 11 years. The results show that PE acquisitions are not associated with an increase but with a decrease in profitability, especially in the case of majority shareholdings. There are signs of a professionalization paradox, as PE leads to professionalization, but professionalization does not lead to an improvement in profitability.

The study makes an important contribution to family business research by taking a novel approach to the return on PE investments through professionalization and the upper echelons perspective. For practitioners, it provides important information on which measures are effective in PE takeovers and where they fail to have an impact.

Keywords: family firms, private equity, M&A performance, corporate governance, professionalization, upper echelons theory

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ABSTRACT (PORTUGUÊS)

Esta tese analisa a influência dos investimentos de private equity (PE) na rentabilidade das empresas familiares (FB) em Portugal. Tendo como pano de fundo os resultados inconsistentes de investigações anteriores, combina medidas quantitativas de rentabilidade com proxies de profissionalização numa análise mediadora. Examinamos (1) se os investimentos em PE conduzem a melhorias de desempenho sustentáveis e (2) definimos o papel da profissionalização das empresas familiares nas intervenções de PE através da lente da teoria dos escalões superiores.

São estimados vários modelos de diferença-em-diferença com base num painel de dados de 56 empresas durante um período de 11 anos. Os resultados mostram que as aquisições de PE não estão associadas a um aumento, mas sim a uma diminuição da rentabilidade, especialmente no caso de participações maioritárias. Há sinais de um paradoxo de profissionalização, uma vez que o capital de risco conduz à profissionalização, mas a profissionalização não conduz a uma melhoria da rentabilidade.

O estudo dá um contributo importante para a investigação sobre empresas familiares ao adotar uma nova abordagem ao retorno dos investimentos em PE através da profissionalização e da perspetiva dos escalões superiores. Para os profissionais, fornece informações importantes sobre quais as medidas que são eficazes nas aquisições de PE e onde não têm impacto.

Palavras-chave: empresas familiares, private equity, desempenho das fusões e aquisições, governação empresarial, profissionalização, upper echelons theory

Título: Private Equity em Empresas Familiares: Efeitos no Desempenho e o Papel da Profissionalização - Mito ou Realidade?

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1 Introduction

Family businesses (FB) are of great importance in every economy in the world. They are the most common form of business in the world (Chrisman et al., 2003; Neckebrouck & Manigart, 2023; Porta et al., 1999). In the European Union, 85% of companies are family firms. Meanwhile, they are not only small firms, as over 35% of S&P 500 companies are family businesses (Anderson & Reeb, 2003). In Portugal, more than 70% of all enterprises are family businesses. Thereby, family businesses account for 50% of employment while contributing to two-thirds of Portugal's GDP (Marques, 2023). As scholars have noted before me, family businesses are an attractive target for private equity (PE) investors, and approximately 30% of deals are conducted with them (Boston Consulting Group, 2021; Neckebrouck & Manigart, 2023).

There are numerous reasons why family businesses and PE investors can benefit from each other: family businesses often need external expertise and financial resources to grow or professionalize (Achleitner, Schraml, et al., 2010; Henn & Lutz, 2017), while PE investors seek stable and scalable businesses with long-term value potential (Scholes et al., 2009). Despite this obvious complementarity, there are persistent reservations about PE investment in many family businesses, like concerns about loss of control, short-termism of the PE, and cultural misalignment that overshadow potential benefits (Henn & Lutz, 2017). At the same time, PE funds promise value creation and improved performance through their business model: buy the firm, build the firm, and sell the firm with a premium (Dawson, 2011; Graves et al., 2022; Kaplan & Sensoy, 2015; Wood & Wright, 2009). However, the takeover does not always bear economic fruit, as empirical studies paint an ambivalent picture of M&A performance metrics (e.g., Hammer et al., 2018). While some evidence points to positive effects on growth and productivity (e.g., Croce & Martí, 2016), results on profitability remain mixed and context-dependent. For family businesses in particular, the factors influencing post-investment profitability are not fully understood. Although factors such as professionalization, governance restructuring, and management change are frequently cited (e.g., Dekker et al., 2015; Howorth et al., 2016), they are not examined in a causal framework with family business profitability. My thesis addresses this gap by focusing on the impact of PE investments in Portuguese family businesses on their performance. I examine whether PE involvement leads to a change in profitability and explore the role of family business professionalization as a mediating factor of the performance effect. In doing so, I build on the established theoretical framework of upper

echelons theory (UET). Although it is used in some studies to explain performance differences in family businesses (e.g., Carr et al., 2021; Patel & Cooper, 2014), UET has not yet been applied as a theoretical lens to explain the effectiveness of professionalization measures of PE acquisitions of family businesses.

There are different definitions for family businesses (Marques, 2023). For this thesis, a family business is defined as any company founded by a family or individual, aligning with the leading criteria of firm control of previous studies (Achleitner, Schraml, et al., 2010; Gomez-Mejia et al., 2018; Vieira, 2018) and relevant company databases (e.g., Orbis). This broader definition, unlike those requiring management participation (e.g., Amit et al., 2015; Bartholomeusz & Tanewski, 2006), is important to avoid excluding family businesses that have been taken over by a PE and where the family management has been replaced.

Private equity is an equity financing method that differs from public equity by focusing on investments in unlisted companies (Kaplan & Sensoy, 2015; Klein et al., 2013). In my thesis, I will not consider other forms of private equity like venture capital, which typically invests in young non-family firms (Croce & Martí, 2016; Klein et al., 2013). Moreover, I exclude strategic investors and family offices due to their differing investment strategies. I will only focus on specialized PE funds that typically invest in mature firms to optimize their business models and exit after a four to seven-year holding period (Dawson, 2011; Graves et al., 2022; Kaplan & Sensoy, 2015; Wood & Wright, 2009). Thus, all subsequent mentions of PE refer to this definition.

To investigate my research question, I use a panel data set of 56 companies and a cross-sectional dataset consisting of 3,551 companies. These companies are all from Portugal, they are family businesses, and for the panel, they were observed for 11 years. For the analysis, I estimate multiple difference-in-difference models with fixed effects to examine the treatment effect of private equity investment after the deal. The degree of investment, measured as the shares the PE acquires, will then be added as a treatment intensity indicator. Finally, I scrutinize the role of family business professionalization and test for a mediating role on the performance effect. Thereby, I use proven proxies for professionalization, like the removal of a family CEO or board presence and its characteristics. I found that PE investments lead to worse profitability, especially in the case of majority shareholdings, and especially in the first two years after the PE entry. Moreover, while I could establish that PE investments lead to more professionalization, the findings lack evidence for a mediating role on family business profitability.

My research makes an important contribution to the existing knowledge in the family business and private equity literature, but also in tangential areas of the corporate governance literature. My work contributes to further exploring the under-researched relationship between PE investments in family businesses and their post-deal performance. The difference-in-difference, combined with an event study approach, is particularly novel for the field. Additionally, the use of professionalization as a mediator variable is an important contribution that helps address the research gap and explain the mixed and context-dependent findings of previous works. While the professionalization of family businesses is generally well-researched and represents an important branch of the family business field, the interaction with post-takeover performance is novel. To the best of my knowledge and research, no other study has done this research in the context of the family business-private equity relationship in Portugal.

The thesis comprises four important chapters. First, I review the existing research and literature and thereof, derive my hypotheses. Second, I explain the methodology of my data gathering strategy as well as the variables I use to test my hypotheses. Third, I present the descriptive and regression results. Fourth and finally, I discuss the implications of my findings for scholars and practitioners considering theoretical and empirical contributions.

2 Theory and Hypotheses Development

This chapter provides an overview of the existing research on private equity in family businesses. I examine why family businesses decide for or against PE investments, focusing on the expected performance gains. Then, I analyze empirical evidence and theoretical explanations for such performance effects. Subsequently, I discuss typical governance changes in PE acquisitions and their role in the professionalization of family firms through the lens of upper echelons theory. Finally, I derive my hypotheses based on previous empirical findings and important theoretical frameworks.

2.1 Private Equity in Family Firms: Strategic Motives and Tensions

Private equity is important for family businesses for various reasons. Just like all companies, family businesses face many financial and non-financial challenges which PE can help overcome. However, due to cultural and economic misalignment as well as the fear of losing control of the family business, prejudices have been developed (Henn & Lutz, 2017; Thiele, 2017). This chapter focuses on explaining the reasons why family businesses choose PE financing – or not. There are financial and non-financial reasons to engage with PE, which can be explained through different theories, namely resource-based view (Barney, 1991, 2001; Barney et al., 2001), socioemotional wealth (Gomez-Mejia et al., 2007; Miller & Le Breton–Miller, 2014), and pecking order theory (Majluf & Myers, 1984). There are also different modes of financing, like minority or majority participation, which have different use cases and pros and cons for the family business.

Private equity investments can be explained by the resource-based view (RBV) as private equity investments are expected to change the resource profile of the invested firm (Achleitner et al., 2008). The RBV argues that a firm's resources are determinants of its ability to implement strategies and thus maintain competitiveness, ultimately improving its performance. Resources are thereby defined as the tangible and intangible resources of the firm, like their management, the processes and organizational structures they have, but of course also the financial resources and human capital (Barney, 1991, 2001; Barney et al., 2001). For family businesses, a special term, “familiness”, has been developed based on RBV. It describes the bundle of unique resources a family firm has developed through systemic interaction that gives family businesses a competitive advantage (Habbershon & Williams, 1999; Howorth et al., 2007). Therefore, when a PE invests in a family business, it adds financial resources (equity capital) (Achleitner et al., 2008; Dawson, 2011; Salerno, 2019; Schickinger et al., 2018) and

non-financial resources in the form of knowledge, expertise, and networks to the resource profile of the firm (Achleitner et al., 2008; Barney et al., 2001; Croce & Martí, 2016). While this can foster innovation and growth (Dezi et al., 2018; Lerner et al., 2011), there is a debate whether PE positively influences or jeopardizes family resources (Thiele, 2017), especially with regard to the familiness. Consequently, selling to a PE fund can be a suitable solution for family businesses that lack resources and skills.

In general, there are different forms of financing for businesses, private equity being one of them. According to the pecking order theory (Majluf & Myers, 1984), firms in general prefer internal financing, followed by external debtors, and lastly external equity financing – the latter is the topic of this thesis. Family businesses especially adhere to the pecking order, either through retained earnings or family capital injections, and only choose PE investments as a financing of last resort (Achleitner et al., 2008; Tappeiner et al., 2012; Thiele, 2017).

In family businesses, pecking order theory is closely linked to an important concept called the socioemotional wealth (SEW) of the family (Gomez-Mejia et al., 2007). Family firms, in contrast to conventional firms, also value the non-financial outcomes of their business. Therefore, owners of family businesses are willing to accept risks in relation to their financial results if they receive socioemotional wealth in return. This can be reputational gains or personal or familial non-financial benefits (Berrone et al., 2012; Gomez-Mejia et al., 2007; Miller & Le Breton–Miller, 2014).

To assess the role of pecking order theory and socioemotional wealth on the PE investment decision, a differentiation between minority and majority investments is required (Achleitner et al., 2008; Tappeiner et al., 2012). For instance, a reason for minority funding is growth capital to fund expansion investments or innovation projects (Achleitner et al., 2008; Dezi et al., 2018; Lerner et al., 2011; Tappeiner et al., 2012). This is because a family business is often in a position where it can no longer obtain further (external) capital in any other way, as explained through the pecking order theory (Graves et al., 2022; Majluf & Myers, 1984; Schickinger et al., 2018). On the other hand, predominant instances for majority investments are distressed takeovers (Henn & Lutz, 2017; Thiele, 2017) or succession issues within the family (Kreer et al., 2018; Schlömer-Laufen & Rauch, 2020; Scholes et al., 2008). First, when family firms are in financial crisis, they are willing to accept majority investment, accept more control over their company, and thus a reduction of the SEW, to avoid the entire company's failure (Henn & Lutz, 2017; Thiele, 2017). Second, in general, succession planning is one of the biggest challenges for many family businesses (Kreer et al., 2018; Schlömer-Laufen &

Rauch, 2020; Scholes et al., 2008). Therefore, if there is no viable succession option within the family, a PE successor is often considered a good option because it ensures the survival of the firm (Ahlers et al., 2014; Dawson, 2011; Graves et al., 2022). As a result of these reasons, there may be tensions between the investor and the investee. The PE wants to make a majority investment to be able to make the necessary changes in the company to execute its business model of optimizing the acquired firm (Graves et al., 2022; Kaplan & Sensoy, 2015; Wood & Wright, 2009). Conversely, family businesses prefer minority investments in most cases as it allows them to keep control of their company and thus their SEW while still receiving financial and non-financial outside resources (Achleitner et al., 2008; Berrone et al., 2012; Gomez-Mejia et al., 2007).

Family businesses often have developed reservations or even prejudices towards private equity investors that can deter them from considering their funding (Henn & Lutz, 2017). This can be attributed to three reasons: fear of losing control, conflict between short-term profit orientation and long-term corporate orientation, and fear of drastic restructuring measures. As I have already shown in the previous paragraph, PE investments lead to a loss of control by the family and consequently their SEW, especially in the case of majority investments, which can present a reason for family businesses to refrain from PE funding (Gomez-Mejia et al., 2007; Henn & Lutz, 2017; Schickinger et al., 2018). Another reason is the restructuring measures that the PE can introduce. For example, layoffs or the relocation of production can lead to a reputation loss and therefore also to a loss of SEW for the founding family (Achleitner, Herman, et al., 2010; Di Toma & Montanari, 2017; Neckebrouck et al., 2021). There are also differences in strategic orientation. While the family business often has a longer-term strategic focus, the PE is often looking for quick profits and profit growth to sell the company after a short holding period at a premium (Dawson, 2011; Graves et al., 2022; Kaplan & Sensoy, 2015; Wood & Wright, 2009). This can lead to an empathy gap between the two parties (Graves et al., 2022). However, some investors take this into account; these are the “steward” PE investors (SPEI), who are contrasted by the “activist” PE investors (APEI) (Kammerlander & Khoury, 2025). PE investors are considered “active” when they actively make changes in their portfolio firm’s business model and structure (Kaplan & Sensoy, 2015).

Conclusively, this results in different perceptions and attitudes towards PE, not only as to whether family businesses allow PE at all, but also which type of PE investor and which type of PE investment.

2.2 The Performance Effects of PE Investments

One of the most important components of the relationship between family business and PE is financial performance, as explained by the motivations for both parties to engage from the previous chapter. It is therefore important to summarize the empirical findings of the research field for a well-founded derivation of the hypotheses.

It is necessary to initially look at research on performance outside the family business spectrum. For instance, venture capital investments positively influence firm growth, especially employee growth (Bertoni et al., 2011). Targets can experience an increase in EBITDA and cash flow after the takeover, as demonstrated in a study of MBOs in the U.S. (Kaplan, 1989). Another study from the U.S. finds that LBOs have a strong effect on productivity (Lichtenberg & Siegel, 1990). One study establishes that gains happen more through cost reductions than through sales growth (Muscarella & Vetsuypens, 1990). Another study, which also finds a performance increase, argues that the persistence of performance effects on the target after the PE has exited again depends on the type of buyout and the type of PE firm (Meles et al., 2014).

However, there are also negative or at least ambiguous findings. The cultural dimension power distance has negative performance implications (Hammer et al., 2018). Furthermore, a study in France finds that return on assets and return on equity fall after the transaction (Desbrières & Schatt, 2002). In Western Europe, a study discovers that PE has a positive effect on growth, but no effect on productivity, and a negative effect on profitability (Buzzacchi et al., 2013). In the U.K., a study states that PE entry has a positive impact on liquidity, but again, a negative influence on profitability (Weir et al., 2015). There are already reviews of the PE investment effects outside the family business spectrum that provide a holistic picture (e.g., Hammer et al., 2018).

In the following, the focus lies on studies that deal specifically with performance changes in family businesses after PE investments. To begin with, studies show that PE investments can lead to improved productivity (Croce & Martí, 2016; Schickinger et al., 2018). The effect on productivity is especially true for founder-led family firms. Furthermore, PE-financed family businesses often have higher sales growth and make higher investments in tangible assets (Croce & Martí, 2016). A study in Europe provides evidence that PE has a positive effect on profitability in family firms, measured as return on assets, by finding that PE-backed family firms outperform PE-backed non-family firms (Salerno, 2019). Another study, which did not exclusively investigate family firms, finds that minority investments are more

successful in terms of profitability than majority investments. For investments in family firms, they discover that only minority participations are successful (Battistin et al., 2017). This is particularly interesting considering the SEW considerations regarding majority investments of family owners as described in chapter 2.1.

Nonetheless, there are also ambiguous or even negative effects of PE investments on performance. Studies show that the performance of successor-controlled family businesses is not different after the entry of PE investors (Croce & Martí, 2016; Schickinger et al., 2018). Other scholars find that PE investment in FB only has positive returns when the family business underperformed before the investment (Wulf et al., 2010). Some results indicate that private equity investors with high experience lead to lower profitability, possibly due to an overestimation of their capabilities (Salerno, 2019). Furthermore, a study finds that public Italian PE-backed family firms underperform compared to their non-PE-backed counterparts in terms of stock market performance (Viviani et al., 2008). Moreover, the type of buyout, divisional or from a family, also appears to have no effect on performance, which implicates a lack of performance effect in family firms (Goossens et al., 2008).

This review of empirical studies provides interesting incentives to develop new hypotheses for the relationship between PE investments in family businesses and the resulting performance implications. Therefore, in a first hypothesis, I posit that private equity leads to a performance increase in family businesses. As the overview of empirical studies shows, there are mixed findings on performance effects, both for PE investments in general and for family businesses in particular. While the findings on productivity and company growth are relatively clear and positive, the picture is not clear and, above all, context-dependent when it comes to profitability studies. For this reason, it is important to bring clarity to the research landscape with further empirical scrutiny. I assume a positive direction of PE influence for two reasons. First, the business model of PE generally assumes so (Dawson, 2011; Graves et al., 2022; Kaplan & Sensoy, 2015; Wood & Wright, 2009). Second, the research trend of empirical studies finds a positive influence, in general, but with mixed findings regarding profitability (e.g., Croce & Martí, 2016; Salerno, 2019).

H1a: PE-backed family businesses outperform non-PE-backed family businesses in terms of profitability.

Additionally, the literature review finds plausible implications that the share that the PE acquires in the target family business has an impact on performance as well. As studies have

shown, with a minority share comes less control and influence over the family management (Achleitner et al., 2008; Battistin et al., 2017; Tappeiner et al., 2012). Therefore, with a majority stake, the impact of the PE on the family business is greater, as the PE obtains more voting rights. Consequently, it is plausible to hypothesize that with increased PE share, profitability gains post-investment are higher among PE-backed family businesses. This allows me to make a distinction between minority and majority shareholdings, which is important according to the SEW review. I will include the PE share as a treatment intensity indicator in my models (see chapter 3).

H1b: The share the PE fund holds in the family business has a positive impact on profitability.

2.3 Restructuring and Professionalization of the Family Business

It is important to understand the mechanism behind the performance difference identified in the previous chapter. In doing so, I look at the different measures PE investors usually take after entry. Upon entry, PEs typically introduce changes to the governance structure to optimize or turnaround the family firm (Achleitner, Herman, et al., 2010; Schickinger et al., 2018). In general, governance changes can help mitigate conflicts between the family and PE representatives, as governance is defined as a resolution mechanism for conflicting parties (Daily et al., 2003). The following research has dealt with the extent, the conditions, as well as the implications of these changes.

Previous research has found that family businesses are not in a strong negotiating position when it comes to changes in their company, especially in distressed takeovers with majority participations (Neckebrouck et al., 2021). There are two common changes. First, it is common in family business takeovers to replace the family CEO with an external CEO as the PE often makes this a condition for the financial support in distressed situations (Battistin et al., 2017; Neckebrouck et al., 2021). The absence of an external manager before the takeover leads to even greater changes in the governance structure after the takeover (Ball et al., 2008). However, there is also evidence for a clear founder effect, which indicates that founder-led family businesses outperform descendant-controlled or PE-controlled firms (Mazzi, 2011). Second, PE investors initiate changes in the composition of the board of directors by appointing independent members to mitigate conflicts between family and PE representatives (Schickinger et al., 2018). Thereby, the number of family members in the top management team (TMT) may decrease while the number of independent managers increases (Achleitner et al., 2008; Achleitner, Herman, et al., 2010; Battistin et al., 2017; Thiele, 2017).

These governance changes in the family business have in common that they are typically aimed at professionalizing the management (Dawson, 2011; Di Toma & Montanari, 2017; Howorth et al., 2007, 2016; Molly et al., 2018; Schickinger et al., 2018; Stewart & Hitt, 2012; Wright et al., 2009). There are different definitions of family business professionalization. One of these is that professionalization describes the convergence of the management and governance practices of the family business with the common practices of a non-family business (Dekker et al., 2013, 2015; Kammerlander & Khoury, 2025; Stewart & Hitt, 2012). An alternative definition states that a professional manager must have received formal business school training (Dyer, 1989). Conclusively, professionalization includes a formalized management, performance-based remuneration and transparent governance (Stewart & Hitt, 2012).

Empirical studies have investigated professionalization streams and their effect on performance in family businesses after takeovers. A study has described that meetings in the company become more professional after the takeover. This happened after the PE had replaced the management and the CEO (Molly et al., 2018). The creation of a board of directors also leads to more professionalization and fosters the exchange with the CEO (Dawson, 2011; Di Toma & Montanari, 2017). The case study of an Italian family business shows how the PE buyout led to a significant improvement in management (Di Toma & Montanari, 2017). Although the previous family CEO remained in office, professionalization on the board was increased and the non-executive directors appointed by PE were in constant contact with the CEO (Di Toma & Montanari, 2017). This shows that family businesses are not always opposed to these changes, although there may be resistance, but they are often promoters of professionalization themselves (Hiebl & Mayrleitner, 2019).

However, it is also the case that not all family businesses professionalize (Schulze et al., 2001). Findings suggest that PE investors prefer already professionalized family businesses as targets to those that still rely on pure family structures (Dawson, 2011; Howorth et al., 2004). This is because it makes fewer interventions from the PE necessary (Achleitner, Schraml, et al., 2010; Dawson, 2011; Dawson & Barrédy, 2018; Howorth et al., 2004). Family firms that adopt a professional context outperform non-family firms, whereas family firms that do not adopt more professional structures underperform (Stewart & Hitt, 2012). Additionally, a study of IPO performance also found that non-professionalized family businesses underperform post-IPO (Lien & Li, 2014).

It is again important to distinguish between minority and majority shareholdings. When the PE investor only acquires a minority stake in the family firm, the family remains in control, which in turn also means that fewer changes on the governance structure can be introduced by the fund (Achleitner et al., 2008; Schickinger et al., 2018; Tappeiner et al., 2012). Thus, the type of investment is crucial for the ability to install professionalization measures post-takeover.

I use upper echelons theory (UET) as a theoretical lens to explain the influence of governance structures on organizational performance, as it establishes the link between the characteristics of leaders and the strategic direction of an organization, and thus performance (Hambrick, 2007; Hambrick & Mason, 1984). UET posits that leaders' subjective interpretations of strategic situations, shaped by their experiences, values, and personalities, drive their decisions. Because complex situations are only interpretable rather than objectively knowable, managerial biases are key to understanding organizational actions and performance (Carr et al., 2021; Hambrick, 2007; Hambrick & Mason, 1984; Hiebl, 2017; Patel & Cooper, 2014). In family businesses, UET is particularly important as family members often take positions in the upper echelon of management, e.g., in the CEO position or the board of directors. Therefore, their personal values and experiences, which are often strongly linked to family history and tradition, influence the strategic decisions of the business (Hiebl, 2017; Patel & Cooper, 2014). A study found that the involvement of non-family members in the top management team (TMT) can have positive performance implications, especially when a balanced power distribution between family and non-family members exists (Patel & Cooper, 2014). Governance structures, such as the composition of the board of directors or compensation systems, can influence the freedom of action of executives and thus the way their characteristics are reflected in strategic decisions (Hambrick, 2007; Hambrick & Mason, 1984; Patel & Cooper, 2014). Thus, from an upper echelons perspective, governance changes through the PE, in particular, in the top management team, can either enhance or hinder performance depending on the fit between the new leadership's profile and the firm's context (Carr et al., 2021; Hambrick, 2007; Hambrick & Mason, 1984; Hiebl, 2017; Patel & Cooper, 2014; Zona, 2016).

Based on the empirical findings on professionalization and the theoretical consideration of upper echelons theory, I hypothesize that professionalization can act as a mediator of the relationship between PE investment and family business profitability post-investment. Therefore, to conduct a mediator investigation (Baron & Kenny, 1986), I posit two sub-hypotheses. First, I argue that PE investment leads to professionalization in the form of changes

in the CEO position or changes in the board composition. These can be summarized as changes in the TMT, as there is sufficient evidence from previous empirical research for that being the case. Second, I hypothesize that this increase in professionalization leads to higher profitability of the family business. As explained above, this is supported by upper echelons considerations where, first, the newly introduced managers can positively impact performance through their individual characteristics and expertise (Carr et al., 2021; Hambrick, 2007; Hambrick & Mason, 1984; Minichilli et al., 2010); second, because equilibrium between family and non-family managers in the TMT increases performance (Patel & Cooper, 2014). Therefore, I hypothesize the following.

- H2:** FB professionalization acts as a mediator for the performance effect (H1a).
- H2a:** PE investment leads to the professionalization of the family business.
- H2b:** Professionalization of the family business leads to a profitability increase.

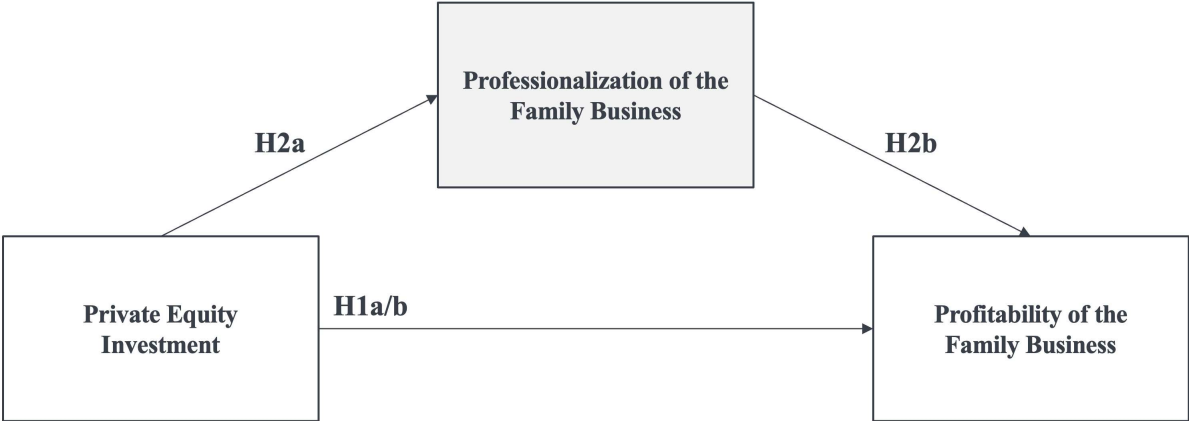


Figure 1. Hypotheses

3 Methodology

To test my hypotheses on whether firm performance is positively influenced by a PE takeover and the role of family business professionalization, I conduct quantitative difference-in-difference and event study fixed effects regressions with panel data as well as simple OLS regressions with cross-section data. In the following, I explain the dataset, my data gathering strategy (chapter 3.1), and the coding process for the key dependent and independent variables (chapter 3.2).

3.1 Dataset

I utilize cross-sectional data to conduct a pre-study of the entire family business landscape in Portugal and to test the professionalization hypotheses where panel data is not available. This dataset consists of 3,551 family businesses in Portugal drawn from Bureau van Dijk's SABI Informa database. 6% of those are PE-backed family businesses – all primary buyouts. In SABI, I used a three-step search strategy to identify the relevant family businesses. First, I set a filter for a minimum requirement of 2 million EUR operating revenue in the last available reporting period. This allows me to exclude inactive firms or firms that are so small they would distort the analysis. Second, I filtered only firms that are headquartered in Portugal. Third, I used the SABI Informa filter “domestic ultimate owner” (DUO) with “owned by a family or individual” to obtain only family firms. I set a minimum threshold of 25% ownership, as a higher threshold, like 50%, would exclude firms that are majority-owned by a PE fund.

For the difference-in-difference models, I use panel data of 56 family businesses, 14 of which are PE-owned. It is a balanced panel with $T=11$ years, ranging from $T-3$ to $T+7$ relative to the transaction year. Consequently, this yielded a total of 616 observations. The panel dataset was built in a two-step approach. First, I identified the optimal number of N and T , and second, I carried out a Mahalanobis distance matching (De Maesschalck et al., 2000). The number of the originally 213 PE-backed family firms in my cross-section sample went down to 14 because I only considered firms with complete information for my key variables (see chapter 3.2) over an observation-maximizing period. In doing so, I computed the optimal numbers of N and T that maximized the total number of observations by ensuring that there is sufficient time before the PE entry, that there are incidents where the PE has already exited, and that the post-investment period is long enough to allow for an event study design. This yielded $T-3$ to $T+7$ as the optimal observation period for my setup. Second, I conducted a 1:3 matching of treatment to control firms by drawing from the pool of 3,551 family firms with the condition that they

had complete data for the previously defined time frame. The match-making was based on the Mahalanobis distance and carried out through R, based on the size and age of the firms (Bernstein et al., 2019; Croce et al., 2013; De Maesschalck et al., 2000).

3.2 Variables

The dependent variable in my study setup is the *profitability* of the family business after the takeover. In existing M&A performance measurement research, there have been different approaches. In general, a distinction between market-based and accounting-based measures needs to be made (Mazzi, 2011; Palm et al., 2024; Pindado & Requejo, 2015; Vieira, 2018; Yu, 2023). From an accounting-based perspective, the most commonly used measure in existing PE and FB literature is the *return on assets (ROA)* (Al-Ghamdi & Rhodes, 2015; Ballal & Bapat, 2020; Desbrières & Schatt, 2002; He & Huang, 2011; Mazzi, 2011; Miller, Le Breton-Miller, et al., 2013; O’Boyle et al., 2012; Pindado & Requejo, 2015; Poutziouris et al., 2015; Salerno, 2019). On the other hand, from a market-based perspective, the most relevant measure for firm performance is *Tobin’s Q* (Al-Ghamdi & Rhodes, 2015; Anderson & Reeb, 2003; Ballal & Bapat, 2020; García-Ramos & García-Olalla, 2011; Miller, Le Breton-Miller, et al., 2013; Pindado & Requejo, 2015). For my study, due to limited data availability of market values in private companies, I will use *ROA* as the dependent variable. Thereby, I will consider three levels of *ROA*: based on EBITDA, EBIT and net income, as this allows for a more fine-grained analysis and as it is common practice in similar studies (e.g., Salerno, 2019). Furthermore, *ROA* will be IHS-transformed¹ to account for the skewness and kurtosis of this variable. However, because transformation limits the economic interpretability, I will determine in the descriptive statistics whether it is more beneficial to use the variable in its original scale or transformed.

In my study, I will use several explanatory variables: *PE* as an indicator for PE investment and therefore, as a treatment indicator, and the *PE-share* as a treatment intensity indicator. The dummies *pre*, *post* and *exited* indicate the investment phase. *PE* is measured as a dummy variable being 1 if the family business has ever received PE funding, and 0 otherwise. Previous studies have utilized PE ownership as an independent variable, measured as a binary variable in the general PE literature (e.g., Levis, 2011; Meles et al., 2014) and specifically in the family business context (e.g., Croce et al., 2013; Croce & Martí, 2016). To realize the

¹ IHS = Inverse Hyperbolic Sine. IHS transformation is commonly used in econometrics for skewed variables that include negative values (Bellemare & Wichman, 2020; Norton, 2022).

difference-in-difference analysis, I create an “after” variable: *post*, being 1 for the years after and including the transaction year for all PE-backed family businesses, and 0 otherwise. In doing so, I can differentiate the performance effects between the PE-backed family businesses in general, as well as before and after the transaction year. The same coding process has been conducted respectively for *pre* and *exited*. To measure the treatment intensity, I introduce *PE-share* to the difference-in-difference interaction term. This variable is measured as the share that the PE currently holds in the family business in the respective panel year. This approach allows me to automatically account for the degree of investment. A comparable approach was previously employed where the loss of corporate control was measured as the ratio of shares sold to the PE to total shares (Henn & Lutz, 2017). In a study of minority shareholdings, the share held by the PE was measured as a percentage, which is also comparable (Tappeiner et al., 2012).

To test for the role of family business professionalization, I will use proxies and test them as a mediator of the performance relationship. In general, a variable acts as a mediator when it explains the relationship between the explanatory and dependent variable (Baron & Kenny, 1986). Multiple regressions need to be estimated to evaluate the mediating effect. First, the mediator is regressed on the independent variable; second, the dependent variable is regressed on the independent variable; and third, the dependent variable is regressed on both the independent variable and the mediator (Baron & Kenny, 1986). Professionalization will be proxied through variables that indicate typical governance changes by the PE upon entry. As derived in the theory and hypotheses section, the *presence of a board of directors* (*d_bod*) and the *composition of the board of directors* – number of directors (*n_bod*), number of family members (*f_bod*), independence ratio (*i_bod*) – can be reasonable proxies for this. These will be used in the cross-sectional data, as it is not available in the panel data structure. As a second proxy, I will use the removal of the family CEO (*family_ceo*). Family CEO is 1 for years with a family CEO, and 0 otherwise. This information is available in panel data. Splitting up the professionalization tests on two distinct datasets adds robustness to the analysis.

I will control for a set of variables to get the isolated effect of my intended research design. To control for *industry effects*, the first two digits of the NACE industry codes are considered (e.g., Anderson & Reeb, 2003; Salerno, 2019; Schulze et al., 2001). Another important control variable is the *leverage before the takeover*, as it can influence the further leverage that the PE can achieve after the takeover (Ballal & Bapat, 2020). Leverage is long-term debt over total assets (Salerno, 2019). Furthermore, I will control for the *age of the firm*

(e.g., Anderson & Reeb, 2003; Cronqvist & Nilsson, 2003; Schickinger et al., 2022). *Total assets* will be used as a control for the size of the firm (e.g., Ballal & Bapat, 2020; Cheung et al., 2011). The *number of employees* is another proxy and control for size (e.g., Arosa et al., 2010; Bloom et al., 2012). *Capital productivity* (CP) and *capital ratio* (CR) are important accounting-based controls that are included in similar study designs (Meles et al., 2014; Salerno, 2019). CP is calculated as sales over fixed assets, while CR is equity over total assets. Moreover, *year dummies* for year fixed effects are introduced (e.g., Anderson & Reeb, 2003; Berrone et al., 2012; Croce & Martí, 2016). I include a one-year lagged variable for the respective *ROA* measure to control for serial correlation (e.g., He & Huang, 2011; Miller, Minichilli, et al., 2013). Finally, macroeconomic control variables for *inflation* and *GDP growth* are considered (Hammer et al., 2018; e.g., Meles et al., 2014).

4 Results

The Results chapter is subdivided into descriptive and regression results. The descriptives give an overview of the two datasets, their variables, and a first indication of data trends, followed by the regression results to test my hypotheses.

4.1 Descriptive Results

The descriptive statistics for the metric variables of the panel data can be found in Appendix 3, and for the binary variables in Appendix 4. The *ROA (EBITDA)* ranges from -0.52 to 1.19 while the mean is 0.07 and the standard deviation is 0.10. Moving forward, I use the original *ROA* measures to maintain economic interpretability because the IHS-transformed variable shows similar characteristics in the descriptives. Both versions yielded identical regression results regarding significance and direction. For the explanatory variables, a histogram of PE-share shows that most investments in my sample are minority investments (see Appendix 9). 7 PE-backed firms have experienced the PE exit during the observation period. In 53% of observations, the firm had a family CEO. 61% of firms had a board of directors and 32% a supervisory board. The descriptive statistics of the control variables can be found in Appendix 3, together with visualizations of the distribution of all variables.

For the cross-section dataset, 6% of firms are PE-backed, and 21% of firms have a board of directors. The average size of the board is 3.36 members, 0.74 of them being family members. The average ratio of independent board directors to family directors is 0.73. The average *ROA* ranges from 0.06 for the net income measure to 0.12 for the *EBITDA* measure. Therefore, I infer comparability of both datasets. For the remaining variables in the cross-section dataset, I refer to Appendix 5.

Appendix 6 shows the correlations between the metric variables. Naturally, there is a high correlation between the different measures of *ROA*. However, as the regression results will show, it makes sense to always consider all measures. *Age* is positively but lowly correlated with *total assets* and *CR*, and negatively with the *number of employees*. The *number of employees* is also negatively correlated with *inflation* and *CP*. *Leverage* has a negative correlation with the dependent variables, the *age* of the company, *CP* and *CR*, whereas there is a positive correlation with *total assets*. *CP* and *CR* are negatively correlated with *total assets*. It is typical for *inflation* and *GDP growth* to correlate, but in my sample, the correlation is not high enough that it would make sense to use only one macroeconomic control in the analyses.

To provide an initial insight based on descriptive statistical methods, I have carried out t-tests to test for differences between PE-backed and non-PE-backed family businesses and illustrate this through graphs (see Appendix 1). There are significant differences for all three measures of *ROA*. Graphically, this can also be confirmed in Appendix 16, which shows that PE-supported family businesses perform better on average in the pre-deal phase; however, worse in the post-deal phase. This could be an indication that PE investments may hurt the profitability of family businesses. Moreover, Appendix 13 shows that with rising PE-share levels, *ROA* falls, thus suggesting that PE-share harms *ROA*.

Regarding the temporal development of *ROA* in the relative years to the transaction date, Appendix 14 shows that the development between PE and non-PE companies pre-deal is almost perfectly parallel. This is an important observation, as it confirms the parallel trends assumption, which must be fulfilled to utilize a difference-in-difference model. This is also confirmed statistically through the non-significant *pre dummy* interaction terms in Appendix 24. It can also be noted that the profitability of non-PE companies is above the profitability level of PE-backed FBs over the entire period. However, this does not mean that PE-backed companies automatically perform worse, but rather confirms that a difference-in-difference model is a robust statistical method.

Appendix 15 shows the same development again along the three investment phases *pre*, *post* and *exited*. The *ROA* gap between PE and non-PE-backed firms significantly widens post-investment, i.e., the non-PE levels are rising more, suggesting a negative impact of PE. For the *EBITDA* measure of *ROA*, there are even lower returns in absolute terms. This trend reverses in the *exited* phase as returns converge. This can also be observed in more detail in the boxplots of Appendix 17. These mean-value observations will be statistically examined using a difference-in-difference model in the following chapter.

Private equity ownership appears to have an impact on the professionalization of family businesses. As t-tests reveal, there is a significant difference in the average presence of *the board of directors* and *supervisory board*, as well as the presence of a *family CEO*. Board presence is higher on average in PE-backed companies. The probability of having a *family CEO* is higher in non-PE-backed companies (see Appendix 1). Moreover, I scrutinized the relationship between professionalization and performance. It is noticeable from Appendix 19 that companies with a board of directors have a lower *ROA* based on the graphical comparison for all *ROA* measures. This could also be confirmed through t-tests in the cross-sectional dataset. However, according to the panel dataset, there is no significant difference between

companies with a *family CEO* and companies without a *family CEO*. Conclusively, it will be important to investigate the causal influence of professionalization in the following chapter due to these mixed findings.

4.2 Regression Results

A pre-study analysis with the cross-sectional dataset shows that PE investment has a negative and significant impact on profitability. A company that is PE-backed has, on average and ceteris paribus, an *ROA (EBITDA)* that is 2% lower than non-PE backed companies. For *ROA (EBIT)*, it is even 4%, and for *Net Income* 5%. The results are summarized in Appendix 20.

To add robustness, the profitability effects were also tested in the panel dataset following a three-step approach. First, I estimated a pooled panel regression, thus utilizing the data like cross-sectional data. The main finding is that PE-backed firms perform, on average and ceteris paribus, 5% worse than non-PE-backed firms (see Appendix 19), which is consistent with the pre-study finding. In a second step, I conduct a panel regression with “first differences” and “within” estimators. HC3 Arellano and group clustered standard errors are employed for these models to account for the characteristics of my dataset. In the first differences model (see Appendix 22), *PE-share* has a significant impact on *ROA (EBITDA)*, a 1% increase in *PE-share* leads to a 0.11% drop in *ROA (EBITDA)*, on average and ceteris paribus. The within model (see Table 1) shows that *PE-share* has a negative effect on all three profitability measures. If the share that the private equity investor is acquiring rises by 1%, *ROA (EBITDA)* diminishes by 0,13%, on average and ceteris paribus. The interaction term of *pe* and *post* is positive but not statistically significant. Nevertheless, the *PE-share* itself can act as a treatment variable since it is 0 for the pre-phase and non-PE control group anyway. Finally, in a robustness check, the Hausman test² reveals that a fixed effects model estimates the coefficients efficiently and should be preferred over a random effects model. Moreover, fixed effects works more efficiently than first differences for samples with a large T, like my sample.

² The Hausman test helps with model selection (e.g., random vs. fixed effects) by checking whether the assumptions of a more efficient estimator are violated, which indicates systematic differences (endogeneity) (Amini et al., 2012; Hausman, 1978).

Fixed Effects PLM Regression Results

	Dependent Variable: ROA		
	EBITDA	EBITA	Net Income
	<i>within</i>	<i>within</i>	<i>within</i>
	(1)	(2)	(3)
post	0.02 (0.01)	0.02 (0.01)	0.01 (0.01)
pe_share	-0.13*** (0.05)	-0.12** (0.05)	-0.08* (0.04)
cr	0.07* (0.04)	0.07* (0.04)	0.06* (0.04)
cp	0.001 (0.001)	0.001 (0.001)	0.0003 (0.001)
leverage	-0.03 (0.04)	-0.02 (0.04)	-0.03 (0.04)
ln_age	-0.06 (0.04)	-0.06 (0.04)	-0.04 (0.04)
ln_employees	-0.001 (0.01)	-0.003 (0.01)	-0.01 (0.01)
ln_totalassets	0.05*** (0.01)	0.06*** (0.01)	0.05*** (0.01)
inflation	6.36 (6.14)	8.09 (6.14)	7.53 (5.65)
gdp_growth	-5.19 (4.31)	-6.31 (4.31)	-5.91 (3.96)
family_ceo	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.01)
post:pe	0.04 (0.03)	0.05 (0.03)	0.04 (0.03)
Year Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	560	560	560
R ²	0.12	0.13	0.13
Adjusted R ²	-0.02	-0.02	-0.02

* p<0.10; ** p<0.05; *** p<0.01

Table 1. Regression Results: Fixed Effect Model of PE Ownership on Profitability

Next, I estimate an event study model to connect the profitability changes to exact years in relation to the transaction year by including *year dummies* for each relative year. The findings are summarized in Table 2 in a shortened form and are complete in Appendix 24. The *pre dummies* are negative and significant for *ROA (EBIT)*. This shows that all companies in the panel perform worse before the treatment. The interaction term for *pe:post_2* is positive and significant in both models, which shows that PE-backed companies are performing better in the second year after the acquisition (at the 10% level). However, there is no significant effect in the other post-acquisition years. Therefore, there is a short-term (T+2) performance boost for PE companies, but the effect is not permanent. The interaction terms between *pe_share* and *post_t* measure whether a higher degree of PE ownership leads to stronger effects among PE-owned firms post investment. The term *pe_share:post_2* shows that with increasing share that the private equity investor purchases, there is lower profitability. The same effect, but weaker, can also be observed in the transaction year and one year after the transaction. Conclusively,

the event study model can find positive effects of PE investment, but limited to the T+2 period only. Moreover, this is negatively influenced by higher *PE-shares* until two years after PE entry. Therefore, I find a negative impact of the treatment intensity indicator *PE-share*. The effects are stable for both the original *ROA* variables based on *EBITDA*, *EBIT* and *Net Income* as well as the IHS-transformed equivalents.

Event Study Regression Results

(only presenting the relevant interaction terms, full table in Appendix)

	Dependent Variable: ROA		
	EBITDA	EBITA	Net Income
	<i>within</i>	<i>within</i>	<i>within</i>
	(1)	(2)	(3)
pe:pre_2	-0.01 (0.05)	-0.01 (0.05)	-0.01 (0.05)
pe:pre_1	-0.01 (0.05)	-0.01 (0.05)	-0.01 (0.05)
pe:post_0	0.07 (0.06)	0.06 (0.06)	0.06 (0.05)
pe:post_1	0.07 (0.06)	0.07 (0.06)	0.06 (0.05)
pe:post_2	0.11* (0.06)	0.10* (0.06)	0.07 (0.06)
pe:post_3	0.04 (0.06)	0.04 (0.06)	0.03 (0.06)
pe:post_4	0.01 (0.06)	0.005 (0.06)	-0.003 (0.05)
pe:post_5	0.02 (0.06)	0.02 (0.06)	0.02 (0.06)
pe:post_6	-0.02 (0.06)	-0.02 (0.06)	-0.01 (0.05)
pe_share:post_0	-0.16* (0.10)	-0.15 (0.10)	-0.15 (0.09)
pe_share:post_1	-0.15 (0.10)	-0.15 (0.10)	-0.16* (0.09)
pe_share:post_2	-0.24** (0.10)	-0.24** (0.10)	-0.20** (0.09)
pe_share:post_3	-0.10 (0.10)	-0.10 (0.10)	-0.07 (0.09)
pe_share:post_4	-0.12 (0.10)	-0.11 (0.10)	-0.09 (0.09)
pe_share:post_5	-0.09 (0.10)	-0.08 (0.10)	-0.08 (0.09)
pe_share:post_6	-0.08 (0.10)	-0.08 (0.10)	-0.07 (0.09)
Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	560	560	560
R ²	0.17	0.17	0.17
Adjusted R ²	-0.02	-0.02	-0.02

* p<0.10; ** p<0.05; *** p<0.01

Table 2. Regression Results: Event Study of PE Ownership on Profitability, shortened

Finally, I ran a model to investigate how the performance changes when the investing PE investor exits. As depicted in Appendix 23, there is a significant increase in profitability after the exit of the investor, in cases even above the level of non-PE-backed family businesses.

Therefore, performance improves again as soon as the initial investor leaves. This confirms the trend already suggested by the illustration in Appendix 15.

To test the mediating role of professionalization, I estimate the three regression models, as derived in the methodology section and according to Barron & Kenny (1986). The first step is to determine whether private equity ownership leads to more professionalization. The central variables here are *pe* as independent and *d_bod* as dependent variable, which are tested in logit and probit models (see Appendix 26). These models clearly find that PE ownership leads to a higher probability of board presence. When a company is PE-financed, the probability of having a board of directors increases by 24.5 percentage points³ (significant at the 1% level), on average and ceteris paribus (see Appendix 27). PE ownership also causes a larger board, fewer family members and more independent directors on the board. These results are strong evidence of professionalization through PE investments in family businesses. Furthermore, in an analysis with the panel data, I come to the same conclusion, as PE ownership leads to the removal of the family CEO. i.e., through a lower probability of having a *family CEO* in the *post* period. (see Appendix 25).

Second, I examine whether the presence of a board and its characteristics influence profitability through the cross-sectional dataset and panel dataset. However, none of the four proxies in the cross-sectional dataset of professionalization shows a significant impact on performance. With the panel data set, I conducted the same analysis twice, once with the complete panel (see Appendix 34) and second, with only PE-backed firms (see Table 3). This differentiated approach adds further robustness. The analysis with the full panel shows that there is evidence for a statistically significant (at the 10% level) and negative impact of family CEO presence on *ROA (EBIT)*. In the PE-backed subsample, the effect is even larger and has more statistical significance (at the 5% level). However, there is no statistically significant effect in the interaction term *family_ceo:post* in the PE subsample that would have indicated that in PE-invested FB after the transaction, a family CEO would have a positive impact (see Table 3). Therefore, considering that a typical governance change in the professionalization process of family businesses through PE is the removal of the family CEO, it can be concluded that professionalization has a slight positive impact on performance, in general, but not in a PE context.

³ Calculated as the average partial effect of a logit glm model.

Conclusively, the mediator conditions according to Baron & Kenny (1986) are not sufficiently fulfilled. First, there is a statistically significant effect of PE ownership on FB professionalization. Second, there is enough evidence to state that professionalization, in general, has a positive effect on profitability. Third, however, the important condition of the same influence within the PE-only dataset is not fulfilled due to a lack of statistical significance, even at the 10% level.

Regression Results: Influence of Family CEO on ROA (PE Subsample)			
	Dependent Variable: ROA		
	EBITDA <i>within</i> (1)	EBITA <i>within</i> (2)	Net Income <i>within</i> (3)
family_ceo	-0.08** (0.04)	-0.09** (0.04)	-0.07* (0.04)
post	-0.01 (0.04)	-0.01 (0.04)	-0.01 (0.03)
cr	0.21*** (0.07)	0.21*** (0.07)	0.19*** (0.07)
cp	0.02** (0.01)	0.02** (0.01)	0.01** (0.01)
leverage	0.03 (0.07)	0.04 (0.07)	0.02 (0.07)
ln_age	-0.04 (0.05)	-0.03 (0.05)	-0.02 (0.05)
ln_employees	0.01 (0.03)	0.01 (0.03)	0.003 (0.03)
ln_totalassets	-0.03 (0.03)	-0.03 (0.03)	-0.02 (0.03)
inflation	0.35 (13.64)	4.32 (13.59)	1.37 (12.50)
gdp_growth	-2.22 (9.56)	-4.72 (9.53)	-2.00 (8.76)
family_ceo:post	0.06 (0.05)	0.06 (0.05)	0.04 (0.05)
Year Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	140	140	140
R ²	0.44	0.44	0.41
Adjusted R ²	0.22	0.23	0.19

* p<0.10; ** p<0.05; *** p<0.01

Table 3. Regression Results: Influence of Family CEO on ROA (PE Subsample)

5 Discussion

The goal of the Discussion is to put my findings in the theoretical and empirical context of the research field. Thereby, I will investigate potential reasons for my findings and, in general, check the plausibility of my findings. Based on this, I infer whether my hypotheses should be accepted or need to be rejected. Finally, limitations of my study are discussed and potential avenues for future research are given.

The results show that PE investments tend to harm family business profitability. There is significant evidence that PE-backed family businesses underperform compared to their non-PE-backed counterparts. Although there is a slight increase in T+2, the positive effects are not persistent and not validated through other models. Both the panel and cross-sectional datasets confirm negative profitability effects of PE. Moreover, a higher share that the PE fund holds in the family business seems to have a negative impact as well. This is confirmed through a predicted regression on *ROA* with *PE-share* as an explanatory variable (see Figure 2). Moreover, the negative effect of PE is especially visible in the first two years after the transaction. After the PE investor has exited, the family business's profitability increases again. Professionalization of the family business clearly rises through PE. However, there is no clear evidence that professionalization, in turn, affects family business performance in the PE setting. Finally, a family CEO, in general, has a negative effect on performance.

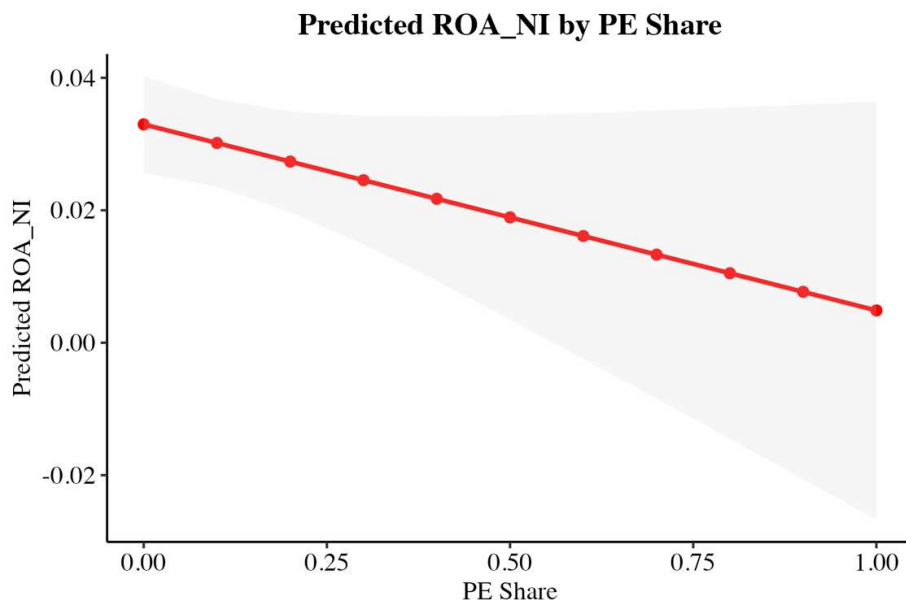


Figure 2. Predicted ROA by PE-Share

Referring to the derived hypotheses in Figure 1, based on my empirical findings, I must reject the H1a – that PE investments lead to positive profitability changes in the family business

– clearly, as the results confirm quite the contrary. PE investments in family businesses have a negative effect on profitability in family firms. Moreover, I must also reject H1b, as a higher share the PE acquires in the family business increases the negative effects on profitability. However, this proves that PE shares acts as a treatment intensity indicator, as it enforces the negative influence of H1a. Therefore, I can infer that minority shareholdings, if at all, are better for profitability than majority acquisitions. Regarding the professionalization hypotheses, I reject the hypothesis that FB professionalization acts as a mediator due to a lack of confirmation of sub-hypothesis H2b, the effect of professionalization on profitability. Although professionalization in general leads to better performance, this is not the case for PE-owned family businesses post-investment. However, there are strong empirical findings for the professionalization of family businesses through PE (H2a). Conclusively, these results paint a mixed picture of PE effects on family businesses.

The literature review highlights a lack of consensus in empirical research on the performance effects of PE investments in family businesses, offering a relevant context for interpreting my own results. Salerno (2019) found that family businesses that are PE-backed perform better than non-FBs that are PE-backed. It should be noted that the independent variable here is the family business, and the sample is PE companies. In contrast, in my case, the sample is family businesses, and the independent variable is PE. This could be a possible reason for these different results. Consistent with other findings, my sample underperformed pre-investment, but I could not find a positive effect post-investment (Wulf et al., 2010). Viviani et al. (2008) is an example of research that identified negative effects of PE investments in family businesses. A key difference to my research, however, is that they deal with listed companies, and I deal exclusively with private family businesses (Viviani et al., 2008). Battistin et al. (2017) found that there is a profitability increase, but only for minority investments. This finding is consistent with my results, as I show that with increasing PE-share, profitability decreases. Moreover, this provides evidence for the suitability of minority investments in family businesses (Achleitner, Schraml, et al., 2010; Tappeiner et al., 2012). In addition, I was able to extend existing findings on the sustainability of performance improvements by showing that these effects tend to reverse after the PE exit (Meles et al., 2014).

Regarding professionalization, I have also made significant findings that can also be placed in the empirical and theoretical context of previous research. Achleitner et al. (2010) find that PE involvement can change the balance between family members and non-family members in the top management team, including the board of directors. My findings provide

evidence that the ratio of independent members rises with PE investments. Another typical step is the removal of the family CEO (Molly et al., 2018), for which my research was also able to provide empirical evidence. As already described in the literature review, there is a lack of investigation of the performance impact of professionalization. However, my results cannot confirm that the balance of the TMT leads to better performance (Patel & Cooper, 2014).

My findings must also be discussed and plausibilized through upper echelons theory as used in the derivation of hypotheses. One of the theory's strengths lies in explaining the professionalization paradox⁴ that my findings of the mediator analysis have created. This is a term I use to describe the fact that PE investment, through the investor's governance changes, leads to increased professionalization in the family business, but these changes do not ultimately lead to increased profitability. The UET perspective can be used for both the increase in professionalization and the lack of profitability effect of this professionalization. According to upper echelons theory, as derived previously, characteristics in the top management team are responsible for differences in strategic decision-making between firms and, thus for differences in performance (Hambrick, 2007; Hambrick & Mason, 1984). Therefore, it is plausible from a UET perspective that a PE fund that wants to achieve higher returns to fulfill its business model (Dawson, 2011; Graves et al., 2022; Kaplan & Sensoy, 2015; Wood & Wright, 2009), makes adjustments within the top management team of the acquired firm. In the case of my study, I investigated the CEO position and the board of directors as the top management team.

The upper echelons theory, furthermore, addresses the consequences of these changes in the composition of the top management team on the performance effect, i.e., the paradox part. The characteristics of the new managers appointed by the PE investor, like their previous experience in PE-backed companies or large corporations, could differ significantly from those of the family managers and lead to different strategic decisions. The theory suggests that negative performance could be due to a mismatch between the new external managers and the context of the company, and therefore to unsuitable managers (Carr et al., 2021; Hambrick, 2007; Hambrick & Mason, 1984). Therefore, the professionalization paradox could be a paradox because of a cognitive unfit of the new managers. PE investors install managers who are professional by definition, for example, through formal management training or experience

⁴ Paradoxes in family business research are not a novel idea, they are discussed in the literature on family business governance, but not in the context of professionalization and in relation to PE investments (e.g., Cunha et al., 2021)

in larger companies (Dyer, 1989). Nonetheless, their cognitive schemas, values and decision-making heuristics may lack fit with the unique profile and culture of the family business.

Like any other study, mine is not without limitations, which I present in the following and thereby provide directions for future research. I begin by addressing the methodological limitations of my work. Regarding the panel data, although the N is quite small for panel datasets, I gain statistical power from the larger T. Nevertheless, the generalizability of only 14 PE companies is a clear limitation of the work. In compiling my data, I drew on public secondary data from the SABI Informa database. Initially, I planned to supplement this secondary data with primary data from a standardized quantitative survey. Although the questionnaire was sent to over 1,000 Portuguese family businesses, the response rate was very low. I suspect that this is due to the sensitive nature of the data in the context of governance and financial information. Moreover, the quality of the received survey data was insufficient, which I attribute to the complex nature of my research question. Consequently, I defaulted back to secondary data from SABI Informa. However, due to the poorer availability of private companies in the database, many firms needed to be excluded because of missing data. Another limitation is the geographical restriction to Portugal. Most comparable studies refer to the entire European or U.S. market. Conversely, this also results in an important research contribution, because no study has previously conducted my or similar research for the Portuguese family business landscape. Furthermore, I matched my sample based on company size criteria. This is not unusual, but of course carries the risk of hidden bias due to unobserved confounding factors, because I did not select companies based on management quality or strategic orientation, for example. Another problem that every research on PE investments has is the endogeneity of PE investments. PE firms may deliberately select underperforming or turnaround-capable targets, which can lead to selection bias. An indication of this is the negative pre dummy estimator of my sample. One way of making the analysis more robust in this regard would be to include additional control groups in the form of other investment types (e.g., VC) and non-family businesses. Focusing only on selected industries would also be a sensible way to deepen research, although this would further limit data availability. Furthermore, the inclusion of other measures of performance measurement is an important direction for the future. Although return on assets is the most widely used measure of performance measurement in this line of research, there are other market-based measures such as Tobin's Q or cash flows. I could not use these in my study because of limited data availability.

There are also limitations related to the professionalization measurement, as I could only draw from limited information on governance structures in the companies in SABI Informa. It was also not possible to observe all governance proxies over time, which created the need for a second cross-sectional dataset. Thus, the proxies for professionalization are kept very simple as dummies. I could not incorporate information on quality, management style or other qualitative factors that, according to upper echelons theory, have an influence on strategic choices and thus on profitability. Moreover, the cross-sectional dataset for the board variables does not allow for a temporal study of professionalization effects. As a result of these limitations, professionalization was coded as a one-dimensional concept, although studies have suggested that professionalization should be understood as a multidimensional construct (Dekker et al., 2015). This presents an interesting option for future studies to include qualitative professionalization proxies that describe the changes in the governance structure before and after PE entry. More precisely, I suggest expanding my research by sending a standardized survey to family businesses that have experienced a PE transaction to qualitatively gather the governance changes upon PE entry. This allows the study design to include qualitative measures like the management style or the personal characteristics of the managers before and after the transaction. Thereby, the study would measure the effect of professionalization through the lens of upper echelons theory even more adequately. Another possibility for future research would be to examine the influence of professionalization through a different theoretical lens. Agency theory, stewardship theory, or the resource-based view all offer interesting angles from which the role of professionalization could be analyzed. It must be noted, however, that for my study design with a focus on the changes in the top management team, upper echelons theory provides the most suitable perspective.

Conclusively, the Discussion shows that the effect of PE investments on family businesses must be viewed in a differentiated manner. While the empirical results point to a negative profitability effect and a low impact of professionalization, theoretical interpretation through the lens of upper echelons theory provides important explanations for these findings. Moreover, my findings are not completely in contrast to the already mixed field of empirical research on the performance effects of PE. At the same time, my analysis is subject to methodological and data-related limitations that restrict the generalizability and relativize the interpretation. These findings not only highlight the complexity of the interactions between PE and family businesses but also open interesting points for future research, particularly regarding qualitative mechanisms, long-term effects and more differentiated professionalization proxies.

6 Conclusion

My thesis aimed to investigate the influence of private equity takeovers on the profitability of family businesses. It was subdivided into four important chapters. First, I reviewed the existing literature on family business, their motivations to engage with private equity investors, the existing empirical findings about performance effects, and the theoretical considerations of professionalization as a mediating mechanism for performance through the upper echelons lens. Based on this, I derived my four hypotheses about profitability and professionalization. Second, I presented the methodology, mainly consisting of the two distinct datasets to add statistical robustness and a difference-in-difference model approach. Third, I presented my descriptive and regression results. Fourth and finally, I discussed my findings in light of existing empirical and theoretical considerations and inferred major contributions, but also the limitations of my work. In the Conclusion, I summarize the key findings and concepts and provide an outlook on the field.

My results are in line with previous empirical findings. By design, my research has similarities with earlier studies, such as the fact that only family businesses are examined or the choice of variables. However, important differences are the geographical scope and inclusion of professionalization as a mediator in the equation. This adds to the novelty of my research, which, to the best of my knowledge, is the first work to examine profitability measurement in interaction with professionalization changes caused by private equity investments in the family business context. My findings are also consistent with upper echelons theory, which explains performance differences in firms through the characteristics of the top management team. A key insight that has emerged from this theoretical reflection is that it is important to understand professionalization as a more qualitative construct. Thus, it is necessary to complement quantitative proxies with qualitative measures. For future research, I recommend adding qualitative measures to make the analysis more robust to unobserved confounding variables. Furthermore, an expansion of the panel with a larger sample and broader geographical coverage is useful to achieve the generalizability of the results.

Thus, my findings hold important contributions for both scholars and practitioners. There is currently a gap in the theoretical considerations and ambiguous empirical findings. My research, despite not all hypotheses being confirmed, gradually contributes to closing these gaps. The novelty of my work lies mainly in the combination of profitability changes through PE investments and professionalization. In my opinion, these three variables are closely intertwined and should be analyzed as a joint construct. In addition, reflection through the upper

echelons lens is novel for this research stream. My findings confirm what is logical from a theoretical perspective and raise new questions for research: although professionalization generally leads to more professional structure in family businesses, this does not always translate to profitability gains, at least not in PE-backed family businesses. The lack of translation of professionalization measures in the PE context is what I want to establish as the professionalization paradox. It seems paradoxical that professionalization mechanisms have no effect in situations in which a PE investor actively seeks to induce professionalization, when they might have in a different context. This poses the question about the remaining drivers. In the Discussion, I therefore directed the attention towards qualitative aspects of professionalization for future studies.

My thesis is also relevant for practitioners in family businesses and private equity funds, as the professionalization paradox also needs to be reviewed from a practical standpoint. It is up to the PE funds to review their restructuring practices to see whether the professionalization measures bear economic fruit. This also raises the question whether majority shareholdings in family businesses make sense from the PE fund's point of view, as my results show that a higher share leads to poorer results. Since a minority shareholding is the preferred choice of the family from a socioemotional wealth and pecking order perspective anyway, this may be a welcome change of strategy in the industry.

Family businesses are an important pillar of any economy. Private equity is not only one of the most important financing options for family businesses, but also contributes to professionalization, supplements with external expertise, can pave the way to new markets and innovations, and much more. Overall, my results underline the growing importance of PE investments as a strategic instrument for the further development of family businesses. There are good reasons in favor but also against working together from the perspective of both private equity funds and family businesses. My research shows that the outcome, at least from a financial perspective, is not always positive. The thesis finds indications that argue against the business model of PE funds and the generally assumed high returns behind it. The results call for the often sweeping promises of success of private equity to be met with more empirical sobriety. There is potential in the relationship between PE and family businesses, but only if both sides draw the right conclusions. My thesis thus contributes to a better understanding of the complex interactions between private equity, professionalization and profitability in family businesses and has important implications for both scholars and practitioners in the field.

IV Appendix

Appendix 1. Online Appendix

Online Appendix: https://ucppt-my.sharepoint.com/:f/g/personal/s-fleimer_ucp_pt/EtljcgXiomJHr0fhLrU6EEEEI3NCbpw3m6mb2GTnHa8k4w?e=Rl4cuQ

Please note that this Appendix includes all relevant information for the thesis. The online Appendix's purpose is to demonstrate the extent and scrutiny of the research.

Appendix 2. Explorative Analysis of Professionalization as a Moderator

Besides testing the role of professionalization as a mediator, as it is primarily suggested by theory, I have also conducted an exploratory analysis with professionalization as a moderator, in the process of developing this thesis. The following summarizes the rationale and main findings.

As exploratory research, I hypothesize that FB professionalization can act as a moderator of firm performance. Thereby, I posit that it has a moderating effect on performance during the investment phase, but also already before the investment has begun. As the literature review shows, professionalization has an impact on the performance of the takeover, which may explain the role of professionalization as a moderator during the takeover. Furthermore, PE investors favor family businesses that have already established professional structures over those that have not. The reason is that it reduces further intervention by the PE because less professionalization measures are necessary. This can also have a positive impact on performance as it triggers less disruption in the governance structure. Therefore, pre-deal professionalization can also act as a moderator of the performance effect previously hypothesized.

H3a: Professionalization during the investment period acts as a moderator for the PE-investment-performance relationship (H1a).

H3b: Pre-deal professionalization of the family business acts as a moderator for the PE-investment-performance relationship (H1a).

To test whether professionalization can act as a moderator of the previously established relation of PE investment and profitability, I estimate regressions with both datasets. For the panel data set, I examine the moderating role of the supervisory board, board of directors and family CEO on performance, with uniform results and no significance. For the cross-sectional

data, I find that only board presence (*d_bod*) is a significant moderator of the relationship. As Appendix 1 shows, the interaction term for *ROA (EBIT)* is significant (at the 10% level) and for *ROA (Net Income)* very significant (at the 1% level). In PE-backed family businesses, the negative effect of PE participation is mitigated by the presence of a board of directors, compared to their counterparts who do not have a board of directors. Therefore, FB professionalization, proxied through board presence, negatively moderates the previously found negative effect of PE investment on profitability.

To test whether pre-deal professionalization is also a moderator, the interaction term from PE and pre-deal professionalization is relevant. Since this investigation is only possible with a panel data set, the *pre_prof* variable is the interaction of pre and *family_CEO*. As can be seen in Appendix 1, this interaction is not statistically significant. Therefore, pre-deal professionalization is not a moderator of the performance impact.

Conclusively, and with regard to the above hypotheses, I state that professionalization acts as a moderator during the investment, but not pre-deal. Thus, H3a is accepted while H3b must be rejected.

Appendix 3. Summary Statistics for Metric Variables

Summary Statistics Metric Variables						
Statistic	N	Mean	St. Dev.	Min	Median	Max
ROA (EBITDA/TA)	616	0.07	0.10	-0.52	0.07	1.19
ROA (EBIT/TA)	616	0.05	0.09	-0.52	0.04	1.19
ROA (NI/TA)	616	0.03	0.09	-0.48	0.02	1.10
Firm Age	616	26.09	16.30	1	21	76
Employees	616	161.91	157.70	1	119.5	1,197
Leverage	616	0.19	0.17	0.00	0.14	0.95
Total Assets	616	23,789,255	40,541,142	551,136	5,733,063	242,410,088
Inflation	616	0.01	0.02	-0.01	0.01	0.08
GDP Growth	616	0.01	0.03	-0.08	0.02	0.07
Capital Ratio	616	0.39	0.23	-1.25	0.38	0.93
Capital Productivity	616	4.24	6.26	0.01	2.46	56.93

Appendix 4. Summary Statistics for Binary Variables

Summary Statistics Binary Variables

Statistic	Mean	Min	Max	N
PE-backed	0.25	0	1	616
Pre Investment	0.27	0	1	616
Post Investment	0.73	0	1	616
PE Exited	0.06	0	1	616
Family CEO	0.53	0	1	616
Board of Directors	0.61	0	1	616
Supervisory Board	0.32	0	1	616

Appendix 5. Summary Statistics for Cross-Section Dataset

Summary Statistics Cross-Section Dataset

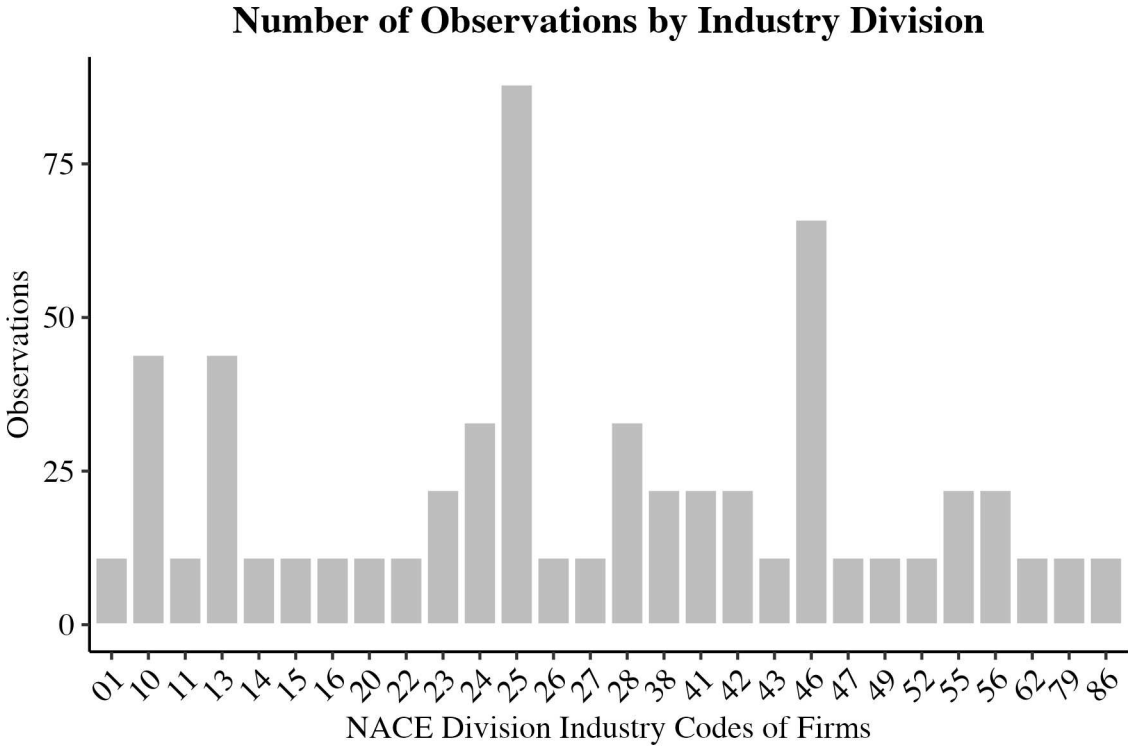
Statistic	N	Mean	St. Dev.	Min	Median	Max
pe	3,551	0.06	0.23	0	0	1
d_bod	3,551	0.21	0.41	0	0	1
n_bod	755	3.36	2.08	1	3	30
f_bod	755	0.74	1.09	0	0	6
i_bod	755	0.73	0.38	0.00	1.00	1.00
age	3,551	28.49	17.41	2	26	231
ln_age	3,551	1.37	0.28	0.30	1.41	2.36
ln_employees	3,551	1.44	0.52	0.30	1.43	4.00
ln_totalassets	3,551	3.67	0.56	1.68	3.57	6.81
roa_ebitda	3,551	0.12	0.13	-1.97	0.10	1.16
roa_ebitda_lag1	3,551	0.11	0.13	-2.12	0.10	0.85
roa_ebit	3,551	0.09	0.14	-2.45	0.07	0.90
roa_ebit_lag1	3,551	0.08	0.13	-2.14	0.07	0.81
roa_ni	3,551	0.06	0.13	-2.44	0.05	0.86
roa_ni_lag1	3,551	0.06	0.12	-2.18	0.05	0.79
leverage	3,551	0.12	0.16	0.00	0.06	2.16
cr	3,551	0.47	0.32	-5.38	0.48	1.00
cp	3,551	170.24	3,787.41	0.01	5.34	175,351.90
year	3,551	2,022.78	1.32	2,010	2,023	2,023
inflation	3,551	0.05	0.01	-0.002	0.05	0.08
gdp_growth	3,551	0.03	0.01	-0.08	0.03	0.07
industry_code	3,551	43.43	18.68	1	46	96

Appendix 6. Correlation Matrix of the Panel Dataset

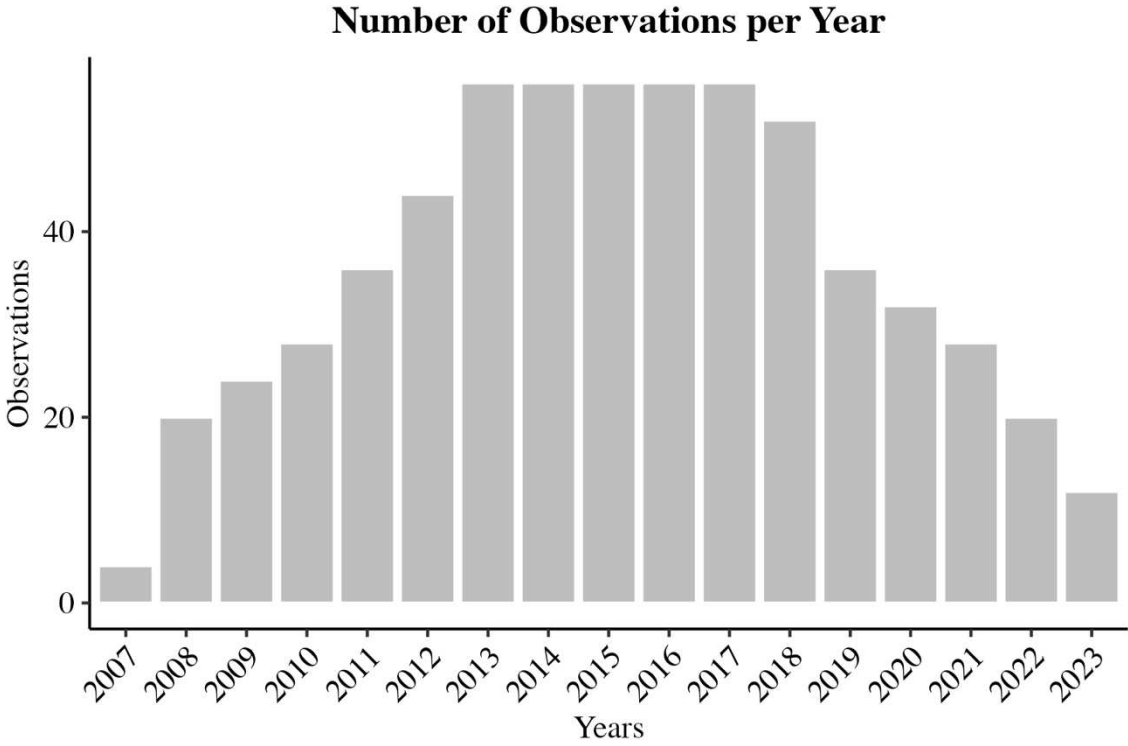
Variable	1	2	3	4	5	6	7	8	9	10
1. ROA (EBITDA)										
2. ROA (EBIT)	.97**									
3. ROA (Net Income)	.94**	.97**								
4. Firm Age	.00	-.02	.00							
5. Employees	.03	.05	.04	-.09*						
6. Leverage	-.20**	-.18**	-.23**	-.09*	.01					
7. Total Assets	-.05	-.01	.03	.17**	.00	.12**				
8. Inflation	.04	.04	.04	-.01	-.09*	-.00	-.01			
9. GDP Growth	.09*	.10*	.11**	.05	-.02	-.01	.01	.26**		
10. CR	.13**	.11**	.16**	.19**	-.01	-.57**	-.19**	-.01	.05	
11. CP	.08	.05	.03	-.00	-.12**	-.19**	.28**	.02	.01	-.10*

Note. * indicates $p < .05$. ** indicates $p < .01$.

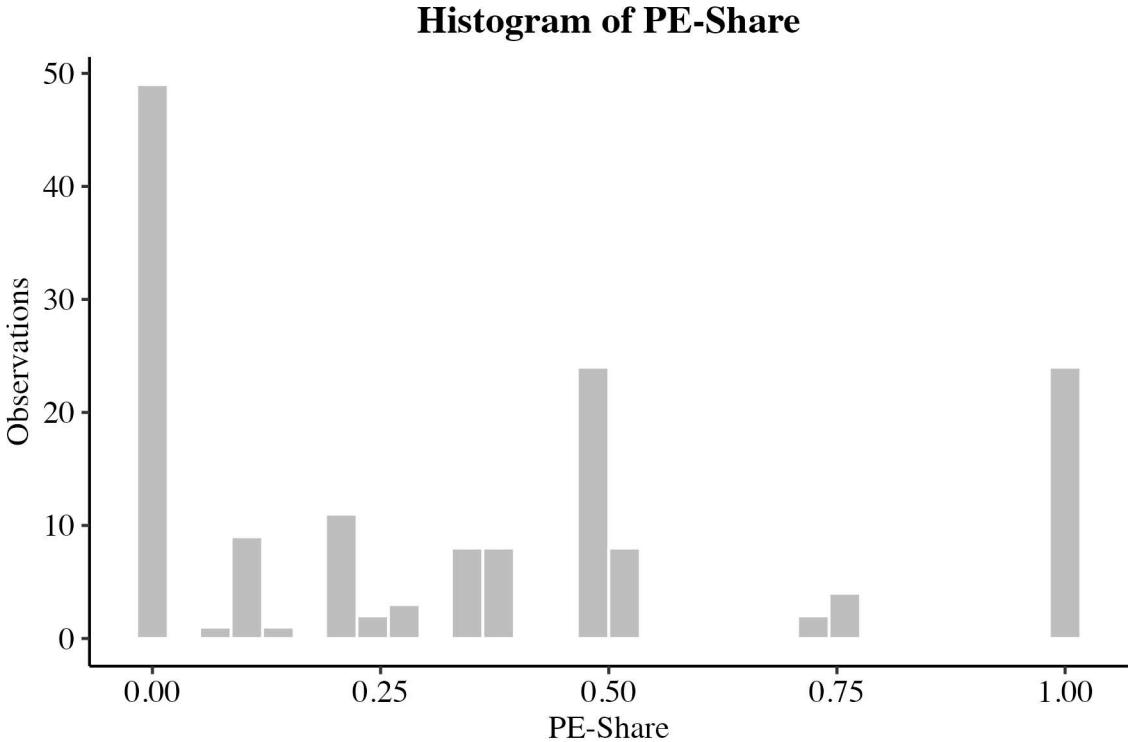
Appendix 7. Observations by NACE Division



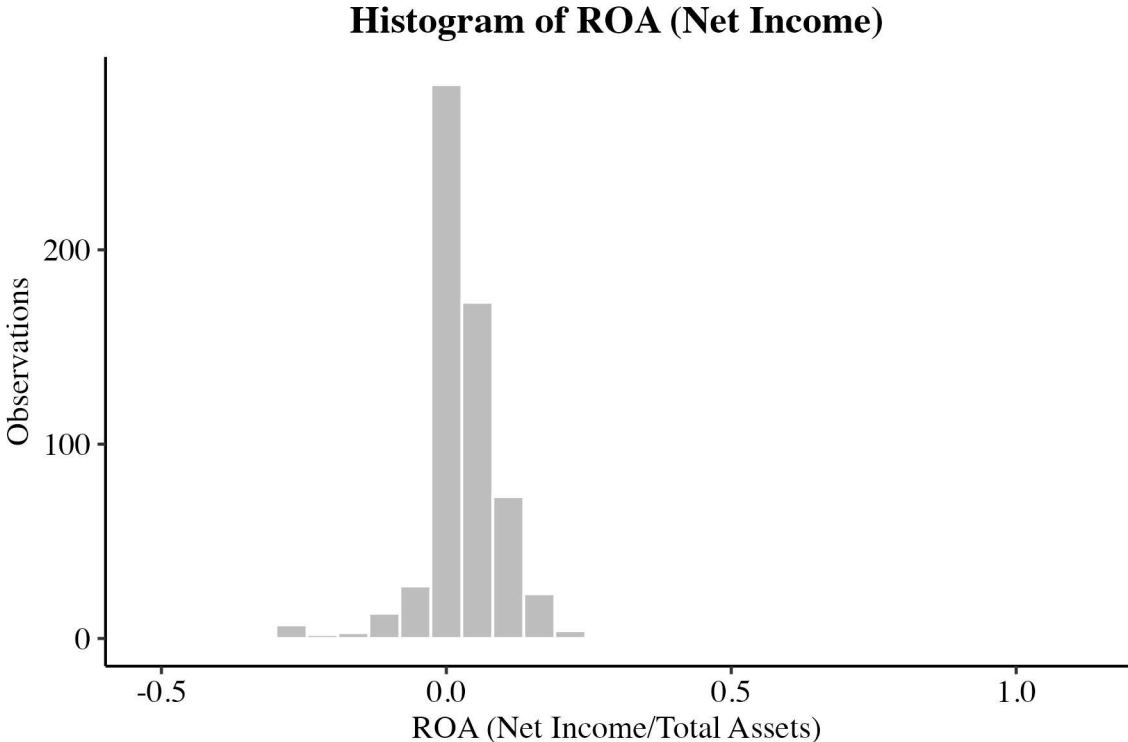
Appendix 8. Observations per Year



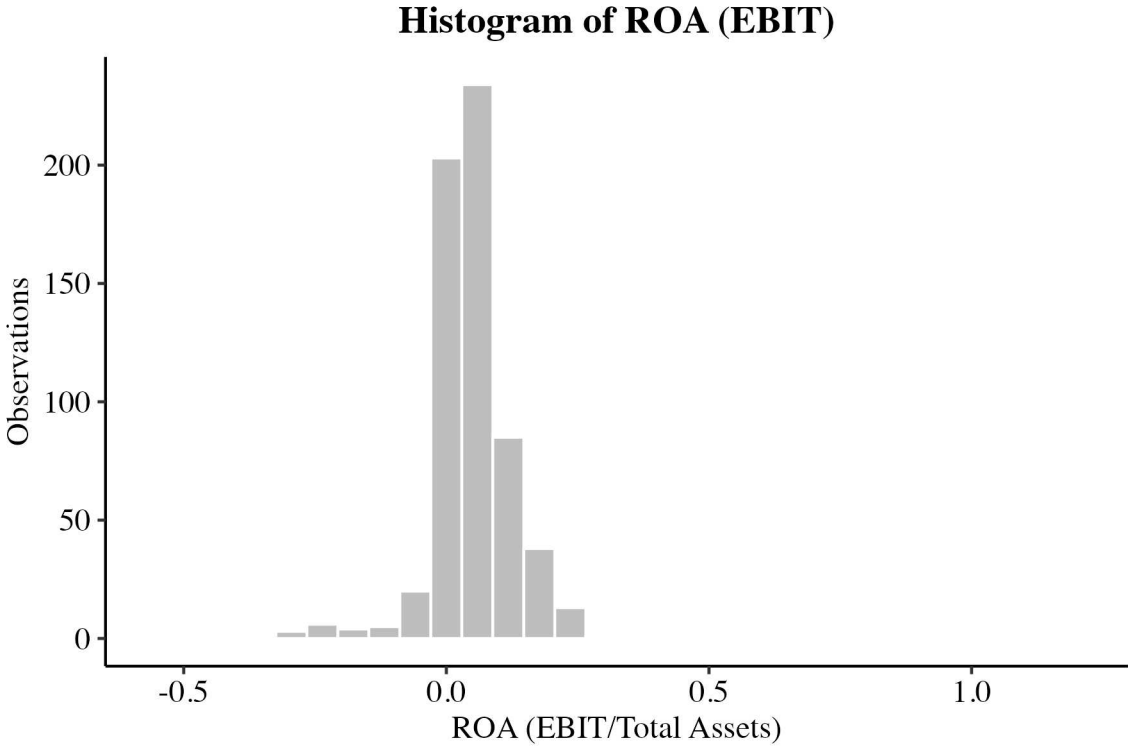
Appendix 9. Histogram of PE-Share



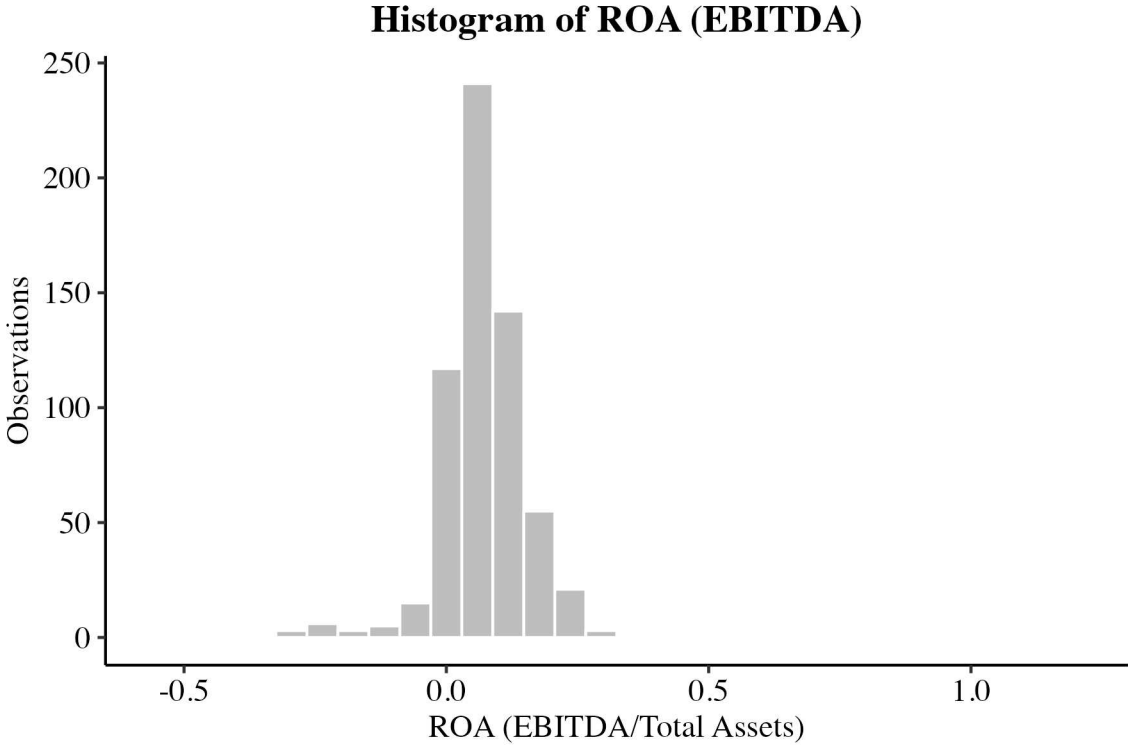
Appendix 10. Histogram of ROA (Net Income)



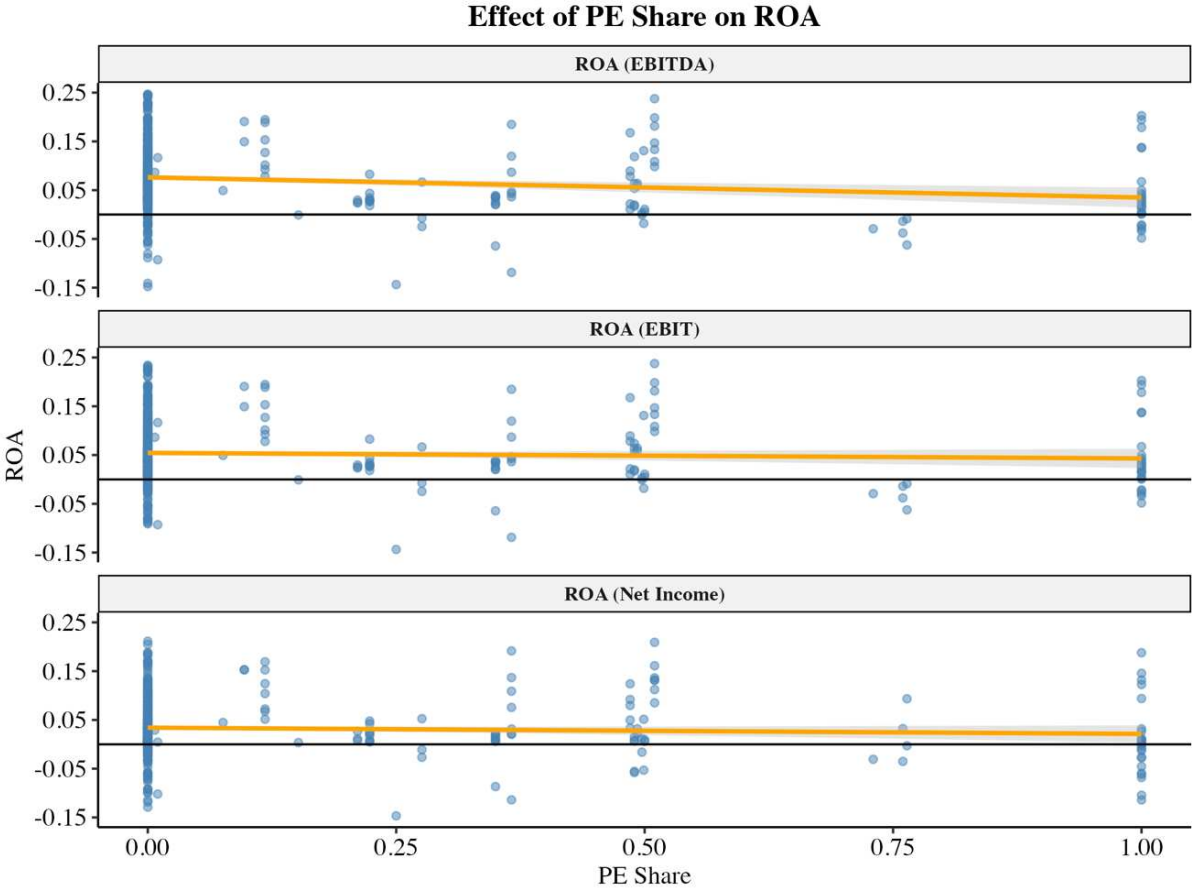
Appendix 11. Histogram of ROA (EBIT)



Appendix 12. Histogram of ROA (EBITDA)

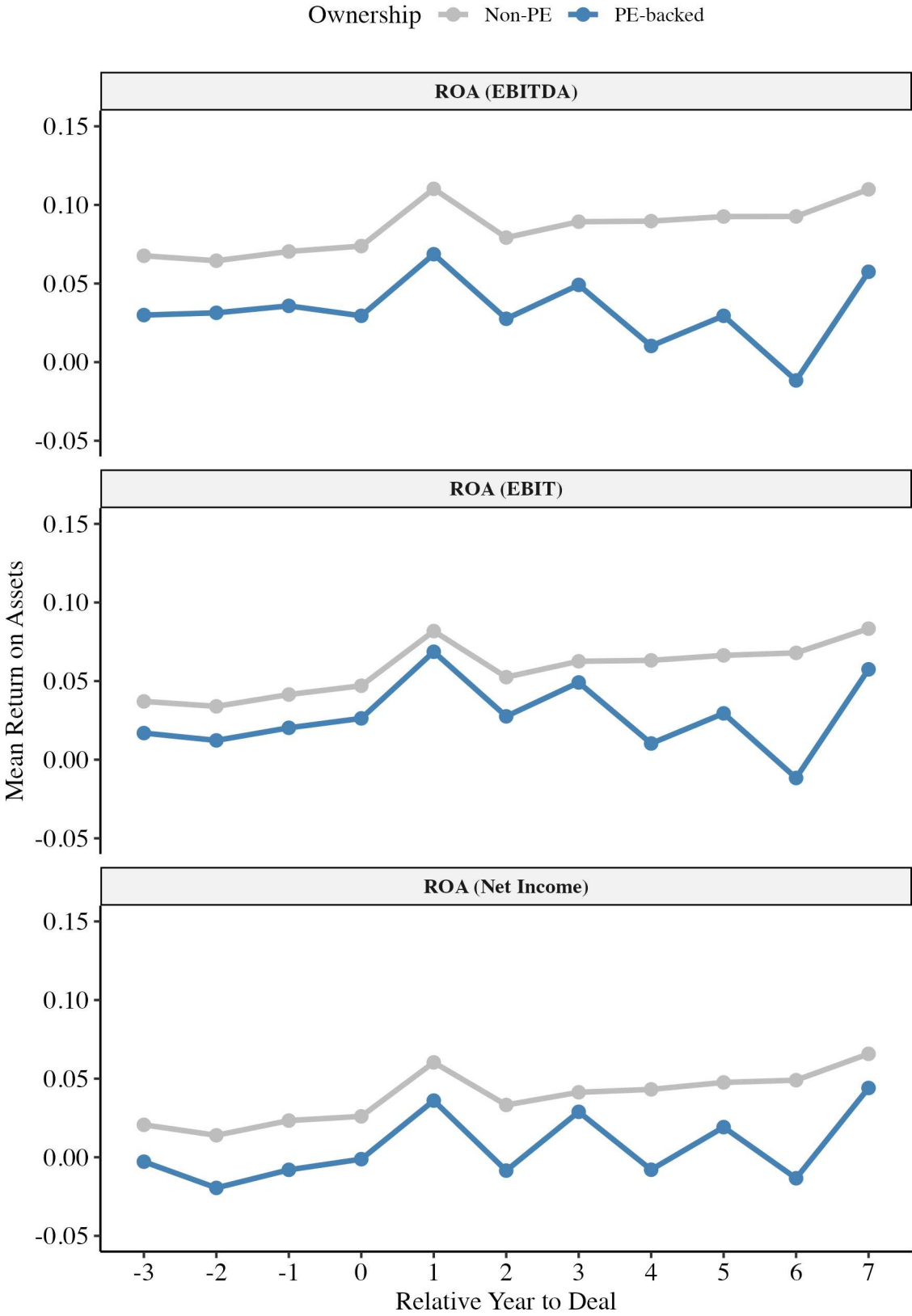


Appendix 13. Scatter Plot of PE-Share on ROA



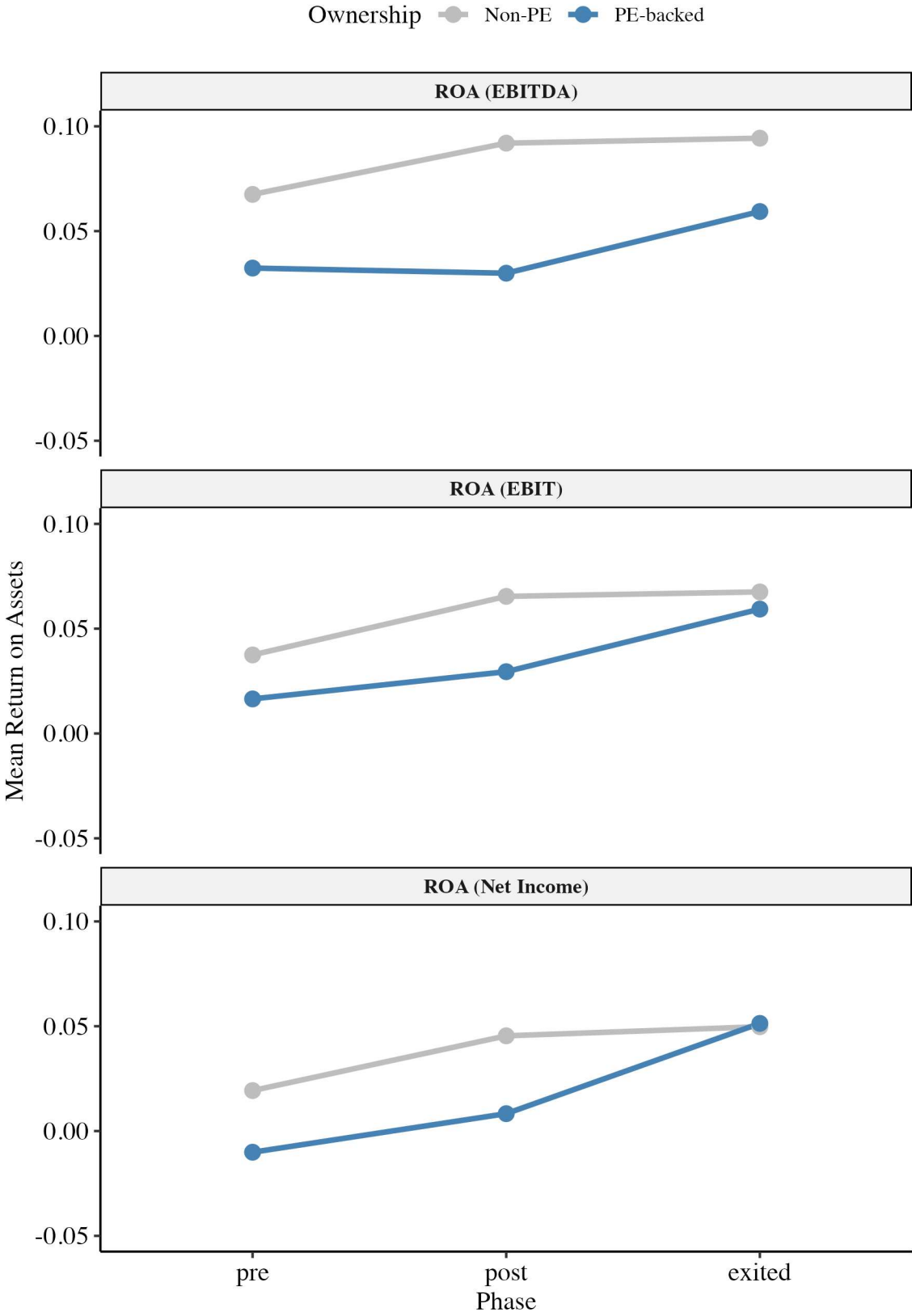
Appendix 14. Mean ROA by Relative Year and Ownership Type

Mean ROA by Relative Year and Ownership Type

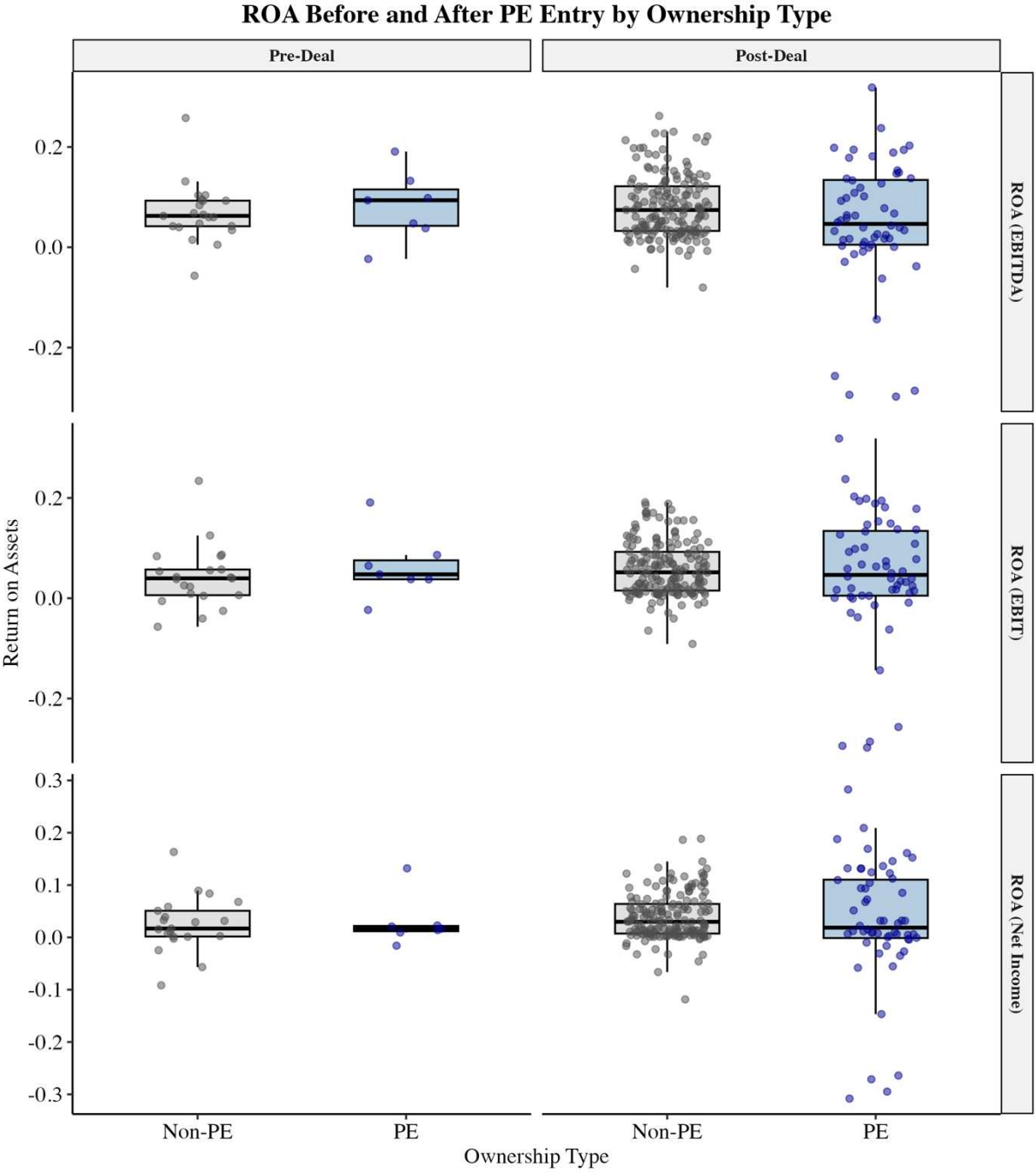


Appendix 15. Mean ROA by Deal Phase and Ownership Type

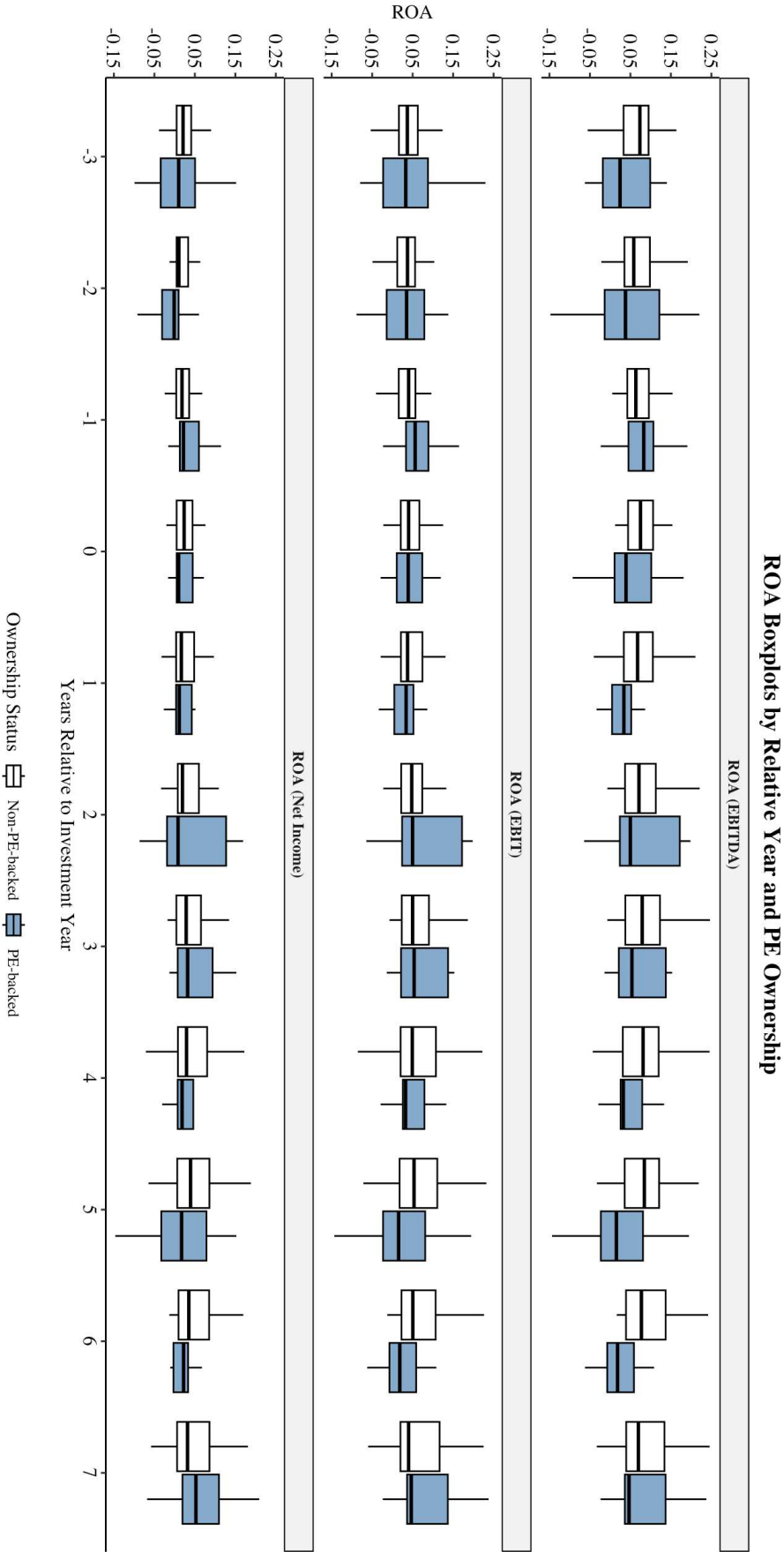
Mean ROA by Phase and PE Ownership Type



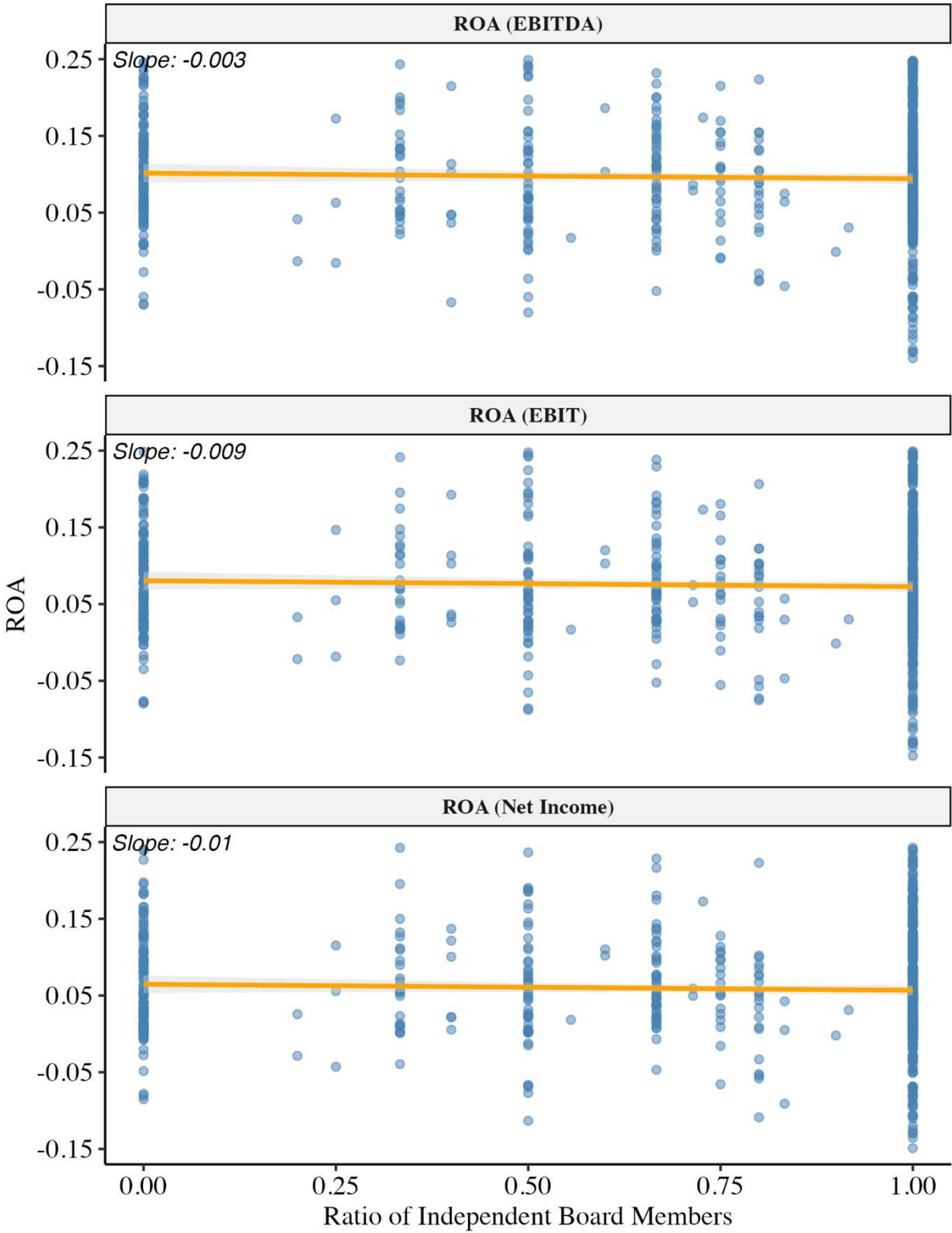
Appendix 16. ROA Before and After PE Entry by Ownership Type



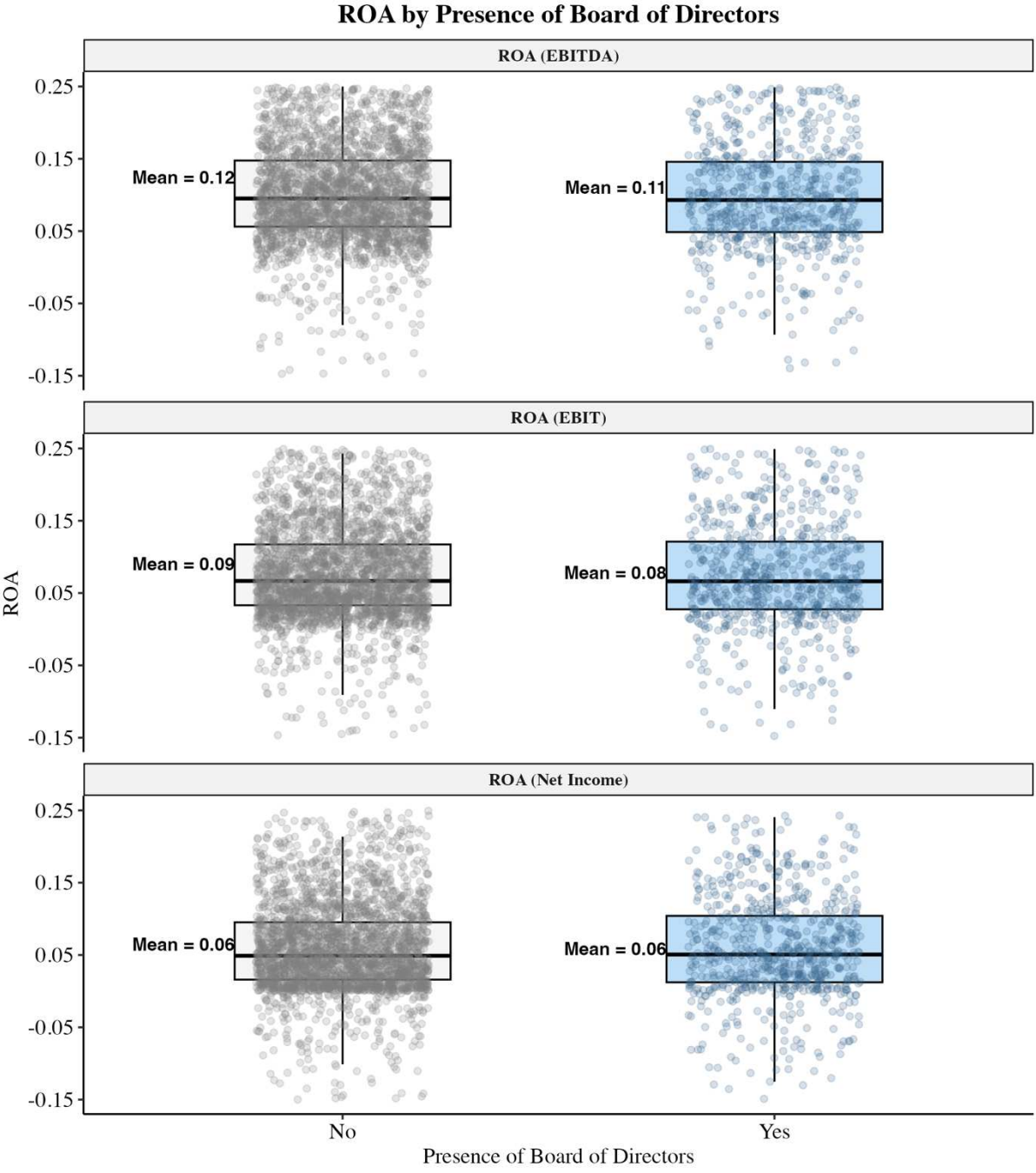
Appendix 17. Boxplot of ROA by Relative Years and by PE Ownership



Effect of Board Independence on ROA



Appendix 19. Boxplot of ROA by Presence of Board of Directors



Appendix 20. Regressions Results: Pre-Study OLS with Cross-Section Dataset

OLS Results: Pre-Study OLS with Cross-Section Dataset

	Dependent Variable: ROA		
	EBITDA (1)	EBITA (2)	Net Income (3)
pe	-0.02*** (0.01)	-0.04*** (0.01)	-0.05*** (0.01)
ln_age	-0.04*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
ln_employees	-0.001 (0.005)	-0.01** (0.01)	-0.01** (0.005)
ln_totalassets	-0.02*** (0.005)	-0.01** (0.005)	-0.01 (0.005)
cr	0.09*** (0.01)	0.10*** (0.01)	0.11*** (0.01)
cp	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
leverage	0.04*** (0.01)	0.02 (0.01)	0.001 (0.01)
inflation			
gdp_growth			
d_bod	0.004 (0.01)	0.01 (0.01)	0.01 (0.01)
n_bod	0.0002 (0.002)	0.001 (0.002)	0.0004 (0.002)
Constant	0.09** (0.04)	0.06 (0.04)	0.04 (0.04)
Industry Controls	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	3,551	3,551	3,551
R ²	0.42	0.40	0.40
Adjusted R ²	0.41	0.38	0.39

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 21. Regression Results: Pooled PLM with Panel Dataset

Pooled PLM Results with Panel Dataset

	Dependent Variable: ROA		
	EBITDA (1)	EBITA (2)	Net Income (3)
post	0.02 (0.01)	0.02 (0.01)	0.002 (0.01)
pe	-0.05** (0.02)	-0.04* (0.02)	-0.05** (0.02)
pe_share	-0.04 (0.03)	-0.03 (0.03)	-0.03 (0.03)
cr	0.05* (0.03)	0.04 (0.03)	0.02 (0.03)
cp	-0.0002 (0.001)	-0.0003 (0.001)	-0.001 (0.001)
leverage	-0.05 (0.04)	-0.06* (0.04)	-0.08** (0.03)
ln_age	-0.03*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
ln_employees	0.003 (0.01)	0.003 (0.01)	0.002 (0.005)
ln_totalassets	0.01*** (0.005)	0.01*** (0.005)	0.01*** (0.004)
inflation	5.25 (5.15)	7.75 (5.14)	9.23* (4.72)
gdp_growth	-4.55 (3.72)	-6.24* (3.71)	-7.16** (3.41)
family_ceo	-0.02** (0.01)	-0.03** (0.01)	-0.02 (0.01)
n_bod	-0.0003 (0.002)	0.0001 (0.002)	-0.0002 (0.002)
f_bod	-0.02*** (0.01)	-0.02** (0.01)	-0.02*** (0.01)
n_supb	0.02*** (0.01)	0.02** (0.01)	0.02*** (0.01)
f_supb	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
post:pe	-0.01 (0.03)	0.003 (0.03)	0.01 (0.02)
Constant	-0.21 (0.17)	-0.29* (0.17)	-0.37** (0.16)
Industry Controls	Yes	Yes	Yes
Year Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	560	560	560
R ²	0.37	0.32	0.34
Adjusted R ²	0.30	0.24	0.26

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 22. Regression Results: PE Effect on ROA (First Differences)

First Differences PLM Regression Results

	Dependent Variable: ROA		
	EBITDA (1)	EBITA (2)	Net Income (3)
post	0.01 (0.02)	0.01 (0.02)	0.003 (0.01)
pe_share	-0.11* (0.06)	-0.09 (0.06)	-0.06 (0.05)
cr	0.07 (0.05)	0.07 (0.04)	0.06 (0.04)
cp	0.001 (0.001)	0.001 (0.001)	0.0005 (0.001)
leverage	-0.08* (0.04)	-0.09* (0.04)	-0.09** (0.04)
ln_age	0.03 (0.10)	0.02 (0.09)	0.0003 (0.09)
ln_employees	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
ln_totalassets	0.19*** (0.02)	0.20*** (0.02)	0.20*** (0.02)
inflation	-0.02 (0.33)	-0.07 (0.33)	-0.14 (0.30)
gdp_growth	-0.90 (0.64)	-0.87 (0.63)	-0.75 (0.57)
family_ceo	-0.01 (0.02)	-0.01 (0.02)	-0.003 (0.02)
post:pe	0.03 (0.04)	0.03 (0.04)	0.02 (0.04)
Constant	-0.003 (0.01)	-0.003 (0.01)	-0.001 (0.01)
Year Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	504	504	504
R ²	0.30	0.32	0.32
Adjusted R ²	0.27	0.28	0.29

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 23. Regression Result: Effect of PE Exit on Profitability (Fixed Effects)

Effect of PE Exit on Performance (Fixed Effects)			
	Dependent Variable: ROA		
	EBITDA (1)	EBITA (2)	Net Income (3)
exited	-0.004 (0.02)	-0.01 (0.02)	-0.003 (0.02)
cr	0.07* (0.04)	0.07* (0.04)	0.06* (0.04)
cp	0.001 (0.001)	0.001 (0.001)	0.0003 (0.001)
leverage	-0.03 (0.04)	-0.02 (0.04)	-0.03 (0.04)
ln_age	-0.08** (0.04)	-0.07** (0.04)	-0.05 (0.03)
ln_employees	-0.001 (0.01)	-0.002 (0.01)	-0.005 (0.01)
ln_totalassets	0.05*** (0.01)	0.06*** (0.01)	0.06*** (0.01)
inflation	9.88* (5.94)	11.06* (5.93)	9.12* (5.42)
gdp_growth	-7.48* (4.20)	-8.23* (4.19)	-6.93* (3.83)
family_ceo	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.01)
pe:exited	0.06* (0.04)	0.06* (0.03)	0.07** (0.03)
Year Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	560	560	560
R ²	0.11	0.12	0.13
Adjusted R ²	-0.04	-0.03	-0.01

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 24. Event Study PLM (Fixed Effects) Regression Results

Event Study PLM (Fixed Effects) Regression Results			
	Dependent Variable: ROA		
	EBITDA (1)	EBITA (2)	Net Income (3)
pe_share	-0.02 (0.07)	-0.01 (0.07)	0.02 (0.07)
pre_2	-0.06 (0.04)	-0.07* (0.04)	-0.06 (0.04)
pre_1	-0.05 (0.04)	-0.06 (0.04)	-0.05 (0.04)
post_0	-0.04 (0.04)	-0.05 (0.04)	-0.05 (0.03)
post_1	-0.002 (0.03)	-0.01 (0.03)	-0.01 (0.03)
post_2	-0.04 (0.03)	-0.04 (0.03)	-0.04 (0.03)
post_3	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)
post_4	-0.003 (0.02)	-0.01 (0.02)	-0.01 (0.02)
post_5	-0.003 (0.02)	-0.01 (0.02)	-0.01 (0.02)

post_6	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
cr	0.05 (0.04)	0.05 (0.04)	0.04 (0.04)
cp	0.0005 (0.001)	0.001 (0.001)	0.0003 (0.001)
leverage	-0.03 (0.05)	-0.03 (0.05)	-0.03 (0.04)
ln_age	-0.05 (0.04)	-0.05 (0.04)	-0.03 (0.04)
ln_employees	-0.002 (0.01)	-0.004 (0.01)	-0.01 (0.01)
ln_totalassets	0.05*** (0.01)	0.06*** (0.01)	0.05*** (0.01)
inflation	0.15 (0.37)	0.07 (0.37)	0.04 (0.34)
gdp_growth	-0.96 (0.67)	-0.91 (0.67)	-0.87 (0.62)
family_ceo	-0.01 (0.02)	-0.01 (0.02)	-0.01 (0.01)
pe:pre_2	-0.01 (0.05)	-0.01 (0.05)	-0.01 (0.05)
pe:pre_1	-0.01 (0.05)	-0.01 (0.05)	-0.01 (0.05)
pe:post_0	0.07 (0.06)	0.06 (0.06)	0.06 (0.05)
pe:post_1	0.07 (0.06)	0.07 (0.06)	0.06 (0.05)
pe:post_2	0.11* (0.06)	0.10* (0.06)	0.07 (0.06)
pe:post_3	0.04 (0.06)	0.04 (0.06)	0.03 (0.06)
pe:post_4	0.01 (0.06)	0.005 (0.06)	-0.003 (0.05)
pe:post_5	0.02 (0.06)	0.02 (0.06)	0.02 (0.06)
pe:post_6	-0.02 (0.06)	-0.02 (0.06)	-0.01 (0.05)
pe_share:post_0	-0.16* (0.10)	-0.15 (0.10)	-0.15 (0.09)
pe_share:post_1	-0.15 (0.10)	-0.15 (0.10)	-0.16* (0.09)
pe_share:post_2	-0.24** (0.10)	-0.24** (0.10)	-0.20** (0.09)
pe_share:post_3	-0.10 (0.10)	-0.10 (0.10)	-0.07 (0.09)
pe_share:post_4	-0.12 (0.10)	-0.11 (0.10)	-0.09 (0.09)
pe_share:post_5	-0.09 (0.10)	-0.08 (0.10)	-0.08 (0.09)
pe_share:post_6	-0.08 (0.10)	-0.08 (0.10)	-0.07 (0.09)
Industry Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	560	560	560
R ²	0.17	0.17	0.17
Adjusted R ²	-0.02	-0.02	-0.02

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 25. Regression Results: PE Presence on Family CEO

Regression Results: PE Presence on Family CEO

	<i>Dependent variable:</i>	
	Probability of Family CEO	
	Probit	Logit
	(1)	(2)
pe	-0.81** (0.40)	-1.40* (0.72)
post	-0.09 (0.20)	-0.18 (0.35)
ln_age	-0.07 (0.16)	-0.16 (0.28)
ln_employees	0.26*** (0.09)	0.46*** (0.17)
ln_totalassets	0.10 (0.07)	0.19 (0.13)
cr	1.01** (0.50)	1.98** (0.92)
cp	-0.05*** (0.02)	-0.08*** (0.03)
inflation	-5.62 (4.41)	-9.23 (7.72)
gdp_growth	1.99 (2.38)	2.95 (4.13)
leverage	0.11 (0.60)	0.12 (1.08)
pe:post	-1.28*** (0.37)	-2.26*** (0.64)
Constant	3.10 (469.85)	14.54 (3,232.94)
Industry Dummies	Yes	Yes
Observations	616	616
Log Likelihood	-191.21	-190.90
Akaike Inf. Crit.	460.41	459.80

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 26. Regression Results: Influence of PE on Board of Director Presence

Regression Results: Influence of PE Presence on Board of Director Presence

	<i>Dependent variable:</i>	
	Probability of Board of Director	
	Probit (1)	Logit (2)
pe	1.20*** (0.13)	2.12*** (0.23)
ln_age	0.15 (0.12)	0.38* (0.21)
ln_employees	0.49*** (0.08)	0.90*** (0.15)
ln_totalassets	1.34*** (0.08)	2.39*** (0.14)
cr	-0.33*** (0.11)	-0.57*** (0.21)
cp	0.0000 (0.0000)	-0.0000 (0.0001)
leverage	-0.56** (0.23)	-0.96** (0.42)
inflation	32.93*** (7.32)	63.51*** (14.29)
gdp_growth	-11.96** (4.74)	-23.47*** (8.98)
Constant	-9.18*** (0.55)	-16.78*** (1.06)
Industry Dummies	Yes	Yes
Year Dummies	Yes	Yes
Lagged ROA T-1	Yes	Yes
Observations	3,551	3,551
Log Likelihood	-1,113.57	-1,113.08
Akaike Inf. Crit.	2,393.13	2,392.16

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 27. Marginal Effects: Influence of PE on Board of Director Presence

Dependent Variable: Presence of Board of Directors

Model type: Logit

Marginal Effects calculated: Average Partial Effect

Marginal Effects from Logit Model					
Variable	dF/dx	Std. Err.	z	P> z	Significance
pe	0.2452	0.0374	6.55	0.0000	***
ln_age	-0.0270	0.0241	-1.12	0.2632	
ln_employees	0.0499	0.0143	3.50	0.0005	***
ln_totalassets	0.0276	0.0092	2.99	0.0028	**
cr	-0.1737	0.0770	-2.26	0.0241	*
cp	-0.0041	0.0024	-1.72	0.0863	.
inflation	-0.1549	0.6850	-0.23	0.8211	
gdp_growth	-0.1132	0.3823	-0.30	0.7672	
leverage	-0.0183	0.1133	-0.16	0.8719	

* p<0.10; ** p<0.05; *** p<0.01

Appendix 28. Regression Results: Influence of PE on Board of Director Size

Regression Results: Influence of PE Presence on Board of Director Size

	<i>Dependent variable:</i>
	Size of Board of Directors
pe	0.64*** (0.19)
ln_age	0.22 (0.26)
ln_employees	0.21 (0.17)
ln_totalassets	1.04*** (0.16)
cr	-0.14 (0.29)
cp	0.0002 (0.0003)
leverage	0.23 (0.52)
inflation	
gdp_growth	
Constant	-4.70*** (1.74)
Industry Dummies	Yes
Year Dummies	Yes
Lagged ROA T-1	Yes
Observations	755
R ²	0.31
Adjusted R ²	0.23
<i>Note:</i>	* p<0.10; ** p<0.05; *** p<0.01

Appendix 29. Regression Results: Influence of PE on Independent Directors

Regression Results: Influence of PE Presence on Independent Directors

	<i>Dependent variable:</i>	
	Ratio of Independent Directors	
	Probit (1)	Logit (2)
pe	0.81*** (0.18)	1.44*** (0.34)
ln_age	-0.23 (0.21)	-0.41 (0.36)
ln_employees	0.31** (0.13)	0.50** (0.23)
ln_totalassets	0.18 (0.13)	0.32 (0.21)
cr	-0.65** (0.27)	-1.14** (0.47)
cp	-0.0002 (0.0002)	-0.0003 (0.0004)
leverage	-0.51 (0.44)	-0.96 (0.75)
inflation	9.15 (14.00)	15.84 (22.64)
gdp_growth	-0.18 (8.99)	0.67 (14.63)
Constant	-0.29 (1.03)	-0.54 (1.75)
Industry Dummies	Yes	Yes
Year Dummies	Yes	Yes
Lagged ROA T-1	Yes	Yes
Observations	755	755
Log Likelihood	-363.12	-363.20
Akaike Inf. Crit.	878.24	878.41

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 30. Regression Results: Board Presence on Profitability

Regression Results: Board Presence on Profitability

	Dependent Variable: ROA		
	EBITDA (1)	EBIT (2)	Net Income (3)
d_bod	0.002 (0.01)	0.004 (0.01)	0.005 (0.01)
ln_age	-0.04*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
ln_employees	-0.002 (0.01)	-0.01** (0.01)	-0.01*** (0.005)
ln_totalassets	-0.02*** (0.005)	-0.01** (0.005)	-0.01* (0.005)
inflation	1.38*** (0.27)	1.08*** (0.29)	1.01*** (0.27)
gdp_growth	0.30 (0.22)	0.62*** (0.23)	0.72*** (0.22)
cr	0.09*** (0.01)	0.11*** (0.01)	0.12*** (0.01)
cp	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Constant	0.10*** (0.03)	0.05** (0.03)	0.01 (0.03)
Industry Dummies	Yes	Yes	Yes
Observations	3,551	3,551	3,551
R ²	0.40	0.36	0.36
Adjusted R ²	0.38	0.35	0.34

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 31. Regression Results: Family Members on Board on Performance

Regression Results: Family Members on Board on Performance

	Dependent Variable: ROA		
	EBITDA (1)	EBIT (2)	Net Income (3)
f_bod	-0.003 (0.003)	-0.003 (0.003)	-0.002 (0.003)
ln_age	-0.04*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
ln_employees	-0.002 (0.005)	-0.01** (0.01)	-0.01*** (0.005)
ln_totalassets	-0.02*** (0.004)	-0.01** (0.005)	-0.01 (0.004)
inflation	1.40*** (0.27)	1.11*** (0.29)	1.03*** (0.27)
gdp_growth	0.30 (0.22)	0.61*** (0.23)	0.72*** (0.22)
cr	0.09*** (0.01)	0.11*** (0.01)	0.12*** (0.01)
cp	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Constant	0.10*** (0.02)	0.04* (0.03)	0.003 (0.02)
Industry Dummies	Yes	Yes	Yes
Observations	3,551	3,551	3,551
R ²	0.40	0.36	0.36
Adjusted R ²	0.38	0.35	0.34

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 32. Regression Results: Board Independence on Profitability

Regression Results: Board Independence on Profitability

	Dependent Variable: ROA		
	EBITDA (1)	EBITA (2)	Net Income (3)
i_bod	-0.05 (0.04)	-0.05 (0.04)	-0.04 (0.04)
I(i_bod2)	0.04 (0.04)	0.05 (0.04)	0.04 (0.03)
ln_age	-0.01 (0.01)	0.001 (0.01)	0.01 (0.01)
ln_employees	0.01 (0.01)	0.002 (0.01)	-0.0001 (0.01)
ln_totalassets	-0.01 (0.01)	-0.01 (0.01)	-0.005 (0.01)
leverage	-0.03 (0.02)	-0.04* (0.03)	-0.05** (0.02)
cr	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
cp	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)
inflation			
gdp_growth			
Constant	0.10 (0.08)	0.04 (0.08)	0.02 (0.08)
Industry Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	755	755	755
R ²	0.56	0.55	0.53
Adjusted R ²	0.51	0.50	0.48

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 33. Regression Results: Board Size on Profitability

Regression Results: Board Size on Profitability

	Dependent Variable: ROA		
	EBITDA (1)	EBIT (2)	Net Income (3)
n_bod	0.0003 (0.001)	0.001 (0.001)	0.001 (0.001)
ln_age	-0.04*** (0.01)	-0.03*** (0.01)	-0.03*** (0.01)
ln_employees	-0.002 (0.01)	-0.01** (0.01)	-0.01*** (0.005)
ln_totalassets	-0.02*** (0.005)	-0.01** (0.005)	-0.01* (0.005)
inflation	1.38*** (0.27)	1.09*** (0.29)	1.02*** (0.27)
gdp_growth	0.30 (0.22)	0.62*** (0.23)	0.72*** (0.22)
cr	0.09*** (0.01)	0.11*** (0.01)	0.12*** (0.01)
cp	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
Constant	0.10*** (0.03)	0.05* (0.03)	0.01 (0.03)
Industry Dummies	Yes	Yes	Yes
Observations	3,551	3,551	3,551
R ²	0.40	0.36	0.36
Adjusted R ²	0.38	0.35	0.34

Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 34. Regression Results: Family CEO on ROA

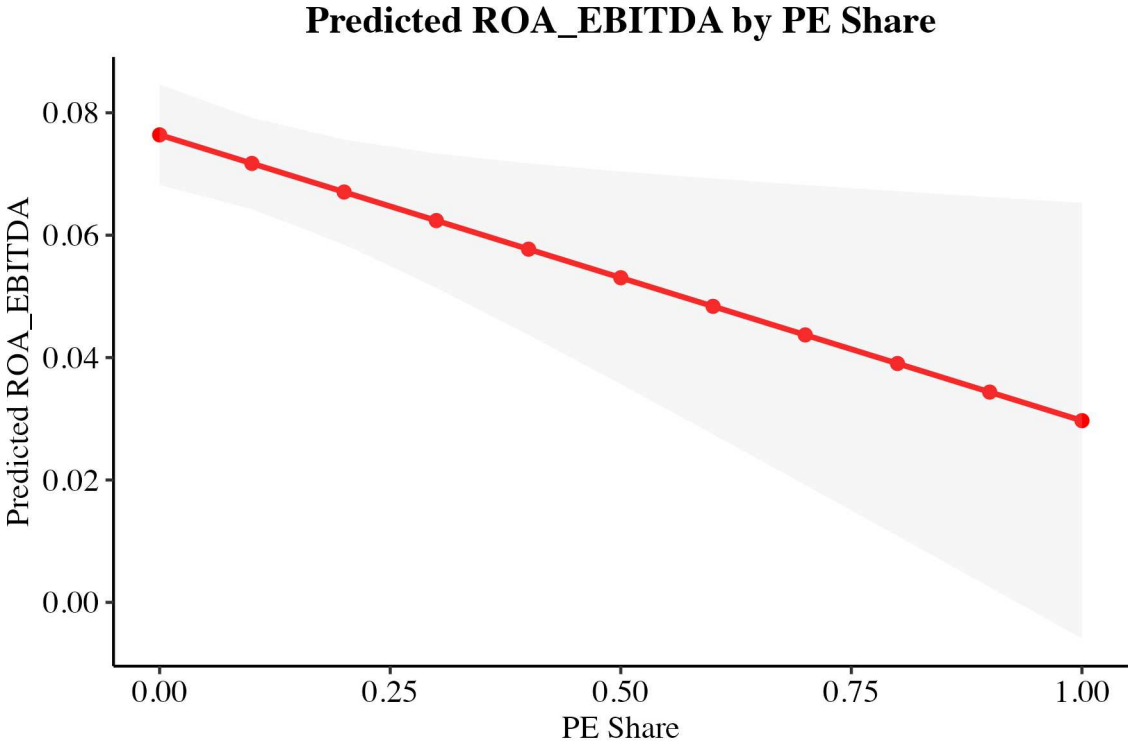
PLM Results: Family CEO on ROA

	Dependent Variable: ROA		
	EBITDA	EBITA	Net Income
	<i>within</i>	<i>within</i>	<i>within</i>
	(1)	(2)	(3)
family_ceo	-0.03 (0.02)	-0.04* (0.02)	-0.03 (0.02)
post	-0.003 (0.02)	-0.002 (0.02)	-0.004 (0.02)
cr	0.06 (0.04)	0.07* (0.04)	0.06 (0.04)
cp	0.001 (0.001)	0.001 (0.001)	0.0003 (0.001)
leverage	-0.02 (0.04)	-0.02 (0.04)	-0.03 (0.04)
ln_age	-0.06 (0.04)	-0.05 (0.04)	-0.03 (0.03)
ln_employees	-0.003 (0.01)	-0.004 (0.01)	-0.01 (0.01)
ln_totalassets	0.05*** (0.01)	0.06*** (0.01)	0.05*** (0.01)
inflation	6.60 (6.04)	7.75 (6.03)	7.06 (5.53)
gdp_growth	-5.38 (4.25)	-6.11 (4.24)	-5.62 (3.89)
family_ceo:post	0.04* (0.02)	0.03* (0.02)	0.02 (0.02)
Year Controls	Yes	Yes	Yes
Lagged ROA T-1	Yes	Yes	Yes
Observations	560	560	560
R ²	0.11	0.12	0.13
Adjusted R ²	-0.03	-0.03	-0.02

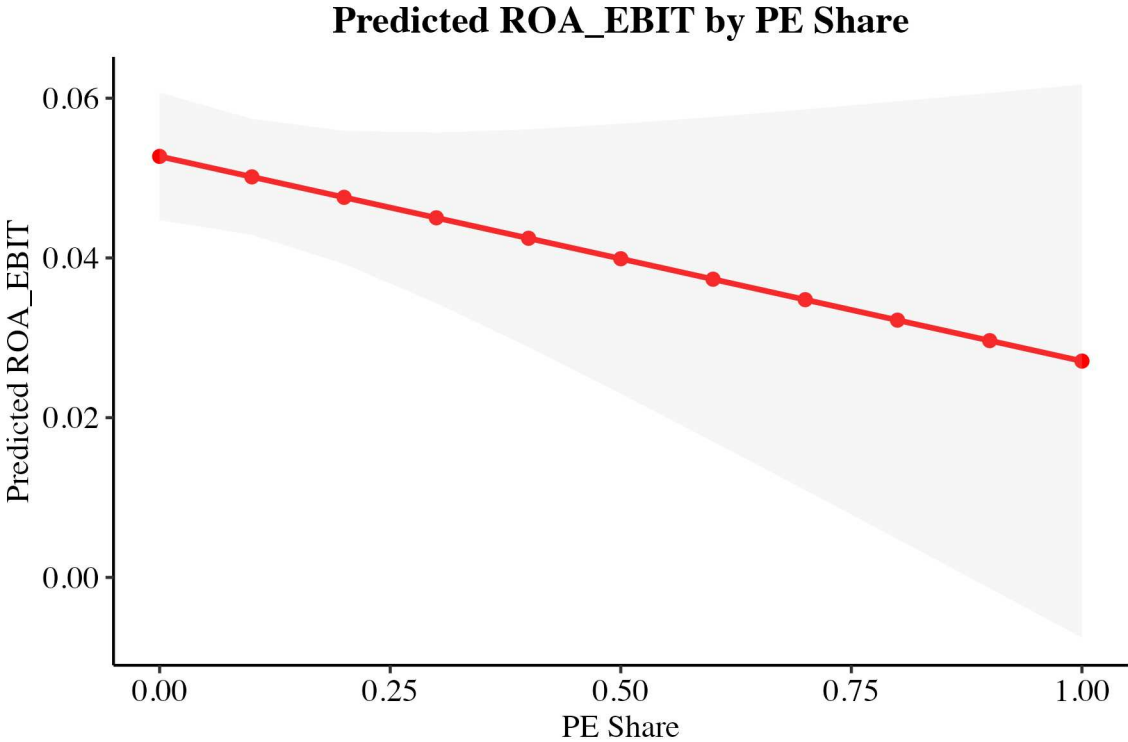
Note:

* p<0.10; ** p<0.05; *** p<0.01

Appendix 35. Predicted ROA (EBITDA) by PE-Share



Appendix 36. Predicted ROA (EBIT) by PE-Share



V References

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