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Financial Scoring: The Impact of Private Equity Investment on Top European Football Club Financial Performance

Analysing Private Equity Involvement and its Effect on Financial Performance in the Top European Football Industry

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ABSTRACT

This paper investigates the effect of private equity (PE) investments on the financial performance of top European football clubs. An initial fixed effects panel regression has been used to analyse the data sample from the 2017/18 to 2022/23 seasons, across the top five European leagues. The variables of interest are PE investment (binary), PE duration, club revenue, and club return on assets (ROA). Insignificant results were found for the initial regression. However, due to the financial nature of the European football industry preceding COVID-19, this proved to be an incompatible period of analysis. The period succeeding COVID-19 was typified by increased financial distress and stricter financial regulation, providing a level playing field for PE's value creation process. This resulted in the formation of a renewed model, emphasizing this period. Through an analysis of the renewed model, emphasizing the post-COVID-19 period, evidence for the value creation process of PE is presented in the results section. However, the short time frame of analysis emphasizes the future need for an extended time span analysis, to better understand the relationship between PE involvement and the financial performance of the top European football industry.

Keywords: Private Equity, European Football Industry, Financial Performance and Investment Impact

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CHAPTER 1 Introduction

For years the private equity (PE) industry has been one of the most prevalent investors in global economic activity. For 2023 its total capital invested accounted for USD 1.8 trillion, which in the years prior had been even higher (Statista, 2024). This number is indicative of the global importance and popularity of PE funds within private businesses. Due to its global prevalence, PE valuation and investment decisions have been a source of study for decades. Most commonly, the PE value creation process and the value drivers that motivate their investment decisions. According to Canderle (2022), the goal is to maximize their return on capital invested. To achieve this, PE firms use their extensive knowledge and expertise in the engaged investment industry, devising a business plan and strategy that incorporates all the value drivers and known risks to a PE firm (Michael Prah, 2011). All in all, this is to result in a positive return on investment (ROI), which for over the last twenty years has been an average of 10.48 percent (MARK JAHN, 2022). As such, PE's industry size, as well as its substantial ROI, make it one of the key players within the global economy and leveraged buyout (LBO) market.

Currently, extensive literature has been published regarding the value creation process of PE firms. This literature has created an encompassing perspective on PE. Academic consensus has been reached over the positive impact that PE investment generally entails for engaged firms. Within their paper, Cohn et al. (2022) investigate the value creation process behind PE transactions, most specifically buyout funds. They find that PE firms systematically target private firms with low operating profitability, high growth potential, and which are highly leveraged. This approach, combined with an increase in financial flexibility due to PE investment, allows PE investment to have a positive effect on a firm's financial performance (Cohn et al., 2022). This finding is further supported by Manac et al. (2022), who state that buyout funds systematically outperform other funds and the stock market when compared to their public market equivalent. Finally, Hummer et al. (2016) find that this positive impact upon value creation also translates to cross-border PE acquisition, stating PE's positive investment image as a value creation catalyst. Carlyle's USD 450 million acquisition of AZ-EM in 2004 provides a clear example of the added value of PE involvement (Leleux et al., 2009). After a three-year process of operational restructuring and debt financing, Carlyle was able to sell a fifty percent stake for USD 1.9 billion, with the further amount being publicly listed (Kupec, 2022).

Current academic literature regarding the value creation process of PE has seen extensive coverage of multiple industries. However, the sporting industry, specifically top European football, has been an area of low interest regarding the impact of PE investment and its value creation. In recent years PE investment within European football has seen a drastic increase. As of August 2023, over thirty-five percent of football clubs within Europe's top leagues are financed by PE capital (MacInnes, 2023). The top European football industry offers an intriguing extension to current academic literature. Firstly, Hummer et al. (2016) attempt

to explain cross-border PE involvement, stating the positive effect of this involvement on firm profitability and value. His analysis however did not account for the top European football industry. Over sixty percent of all private capital provided for European football finds its origin in the United States (MacInnes, 2023). Therefore, the implications of Hummer et al.'s findings regarding cross-border PE involvement, apply to the top European football industry. Financial environments typified by poor information are a second shared characteristic between PE and the European football industry, according to Hummer et al. (2016). The top European football industry, due to its competitive nature and financial regulations, shares the same characteristics. Furthermore, due to the implications of the COVID-19 crisis and the introduction of Financial Fair Play (FFP) regulations, top European football clubs have seen a surge in financially distressed situations (MacInnes, 2023). This increased financial distress provides a fruitful groundwork for PE involvement regarding leverage and operational management as indicated by Cohn et al. (2022). In addition, football unmistakably holds great social relevance, being the biggest global sport. As such, PE investment and the resulting value creation process within the top European football industry offer an intriguing context yet to be explored. All in all, these arguments have led to the formulation of the question:

How has private equity investment influenced the financial performance of football clubs in the top five European leagues, from 2017/18 to the 2022/23 season, measured as revenue and return on assets, compared to clubs without private equity investment?

In the following study, the effect of PE investment on financial performance, measured as revenue and return on assets (ROA), of the top European football industry is investigated. For the following approach, the key variables of interest are PE investment, the duration of PE investment, revenue, and ROA. First, the relationship between a club's revenue in the presence and absence of PE investment provides an area of interest. Second, the relationship between a club's revenue and the duration of PE investment is investigated. This is followed by an analysis of the ROA of football clubs, with PE investment and its duration as independent variables. ROA is measured through the formula:

$$ROA (Y) = \left(\frac{Net\ income}{Total\ assets} \right) \times 100\%$$

The value of total assets and net income will be operationalized using quantitative data found in financial disclosures, industry reports, or databases. Most prevalently, the financial database ORBIS will stand at the forefront of this process. The ORBIS database provides extensive insight into data on company financials, fund performance, and investor profiles.

To measure the effect of PE investment on the revenue and ROA of the top European football clubs this study will follow a quantitative approach as in previous studies, applying a fixed effects multivariate panel

regression. Fixed effects are applied for country-specific effects, due to the extensive variance in the financial nature of each domestic league. Furthermore, variables such as private investment, club revenue, domestic and foreign success, wage bill, transfer spending, and transfer receipts will serve as the included control variables. This financial data will be accessed through three categories of sources. Firstly, the Deloitte Football Money League and UEFA Benchmark reports provide annual financial reports of the top European football clubs and industry their financial performance, including revenue streams and value estimates. Secondly, top European football clubs provide financial statements accessible to the public, providing further financial insight, these are once again available in databases like ORBIS. Finally, financial sports databases like Transfermarkt.com provide data on transfer spending, player value, and domestic and foreign success. For the following study, the sample consists of all clubs within the top five European football leagues (Italy, England, Spain, France, and Germany), a total sample of 141 clubs.

This study presents the hypothesis that PE investment within the top European football industry will translate into a positive increase in financial performance, measured by revenue and ROA. Positive developments of these two variables will expectedly result in increased domestic and foreign success, which results in improved financial performance. This follows along with the findings of Cohn et al. (2022) and other studies, indicating the positive effects of PE involvement on firm value. Finally, the lack of academic literature on PE involvement in top European football, as well as the global popularity of the football industry, provide two key reasons for this study's relevance.

As stated, a fixed effect panel regression was run to test the constructed hypotheses of this paper. The choice for this model has been based on previously published literature, allowing for the control of unobserved time-invariant and correlated heterogeneity. The initial results of this paper concluded that none of the constructed null hypotheses could be rejected. However, through the development of a modified model emphasizing the post-COVID-19 industry, evidence in favour of the hypothesis was found. This paper therefore finds evidence in favour of a superior value creation process for PE as compared to other ownership forms. The current data sample however provides a fruitful groundwork for future research, allowing a more definitive answer to the proposed hypotheses.

The remainder of this paper is structured as follows. In Section 2 the theoretical framework is presented, covering all relevant academic literature and research that has been conducted on the current topic. Section 3 presents the dataset used within this paper's analysis, with Section 4 providing the empirical methodology. In Section 5 the results of this paper are discussed, including a sensitivity analysis to validate the model. In Section 6 the main findings of this paper are discussed, comparing them to findings in relevant previous academic literature. Finally, Section 7 provides the conclusion of this paper and its research. Further information and materials are provided in the Appendix.

CHAPTER 2 Theoretical Framework

2.1 Private Equity

PE has been at the forefront of economic activity for decades. Through LBOs, PE investments first gained traction in the 1980s and have steadily evolved into one of the premier ways private companies find capital funding (Kaplan & Strömberg, 2009). Like any private enterprise, the principal aim of a PE firm is to maximize the potential return on their investments. PE follows distinct operating principles, combining concentrated ownership in its portfolio companies with lean and efficient organizations with minimal overhead costs, as summarized by Kaplan and Stromberg (2009). PE firms raise the majority of capital through capital injections in the coinciding PE fund by investors, the limited partners, with an often-fixed life span of ten years (Kaplan & Strömberg, 2009). The firm operates this fund, led by the general partners, who themselves have injected limited capital. The firm typically follows a life span of three to five years, allowing capital injections to occur along multiple stages of the fund's lifecycle. Through this approach, investors can monitor the performance of their capital injections and engage in staged capital commitment. The firm is compensated in two ways, firstly the management fee, often two percent of committed capital, and carried interest, equal to roughly twenty percent of fund profits (Masulis & Thomas, 2009). PE investments are divided into a variety of categories. As indicated by Kaplan and Strömberg (2009), mid-stage company finance, distressed firm investment, LBOs, and private investment are all part of the investing activities of PE firms. For this paper, LBOs and private investment are of the biggest interest regarding the relationship between PE involvement and the effect on firm profitability in the European football industry.

Before diving further into the implications of PE, it is also important to constitute what does not qualify as PE investment. Most prominently the venture capital (VC) industry comes to mind, as such a distinction between the two will be made. Although similar in the acquisition of a private firm's shares and management engagement, VC proves significantly different. To begin with, VC invests in early-stage companies often taking minority stakes and pursuing active growth strategies for their investments. On the other hand, PE invests in mature companies with an established business model, often acquiring a majority stake and aiming to optimize operational and managerial efficiency (Cohn et al., 2022). These factors make it so that VC proves riskier than PE investment. Finally, the time horizon of investment for PE and VC differs. VC has a longer investment horizon, holding the asset for five to ten years, whereas PE is actively seeking to sell its acquired asset after a three to five-year period (Acharya et al., 2008).

Throughout its existence, PE has been engaged within a wide variety of industries. From its onset in the 1980s up until the early 1990s, PE was mostly limited to the American market. However, the increased activity of PE firms in the 1980s eventually translated its operations toward the European market (MARQUEE EQUITY, 2023). PE's increased business transactions within the 1980s are best illustrated at the hand of the USD 25 billion 1988 RJR Nabisco buyout by PE firm Kohlberg Kravis Roberts (KKR)

(Michel & Shaked, 1991). Throughout the 1980s, the manufacturing and media industries proved most popular among PE firms. This shifted towards the technology and healthcare sectors in the 1990s and 2000s, a further indicator of this shift is the 2007 USD 45 billion buyout of TXU Energy by KKR (Bocconi Students Investment Club, 2023). As of 2024, technology, the consumer industry, and the financial industry are the three most dominant sectors within PE activity, yielding the highest return and volume of deals (Witte, 2024). As a result of its diversification towards the consumer industry, PE investment has also become much more prevalent within sports, translating to the European football industry (MacInnes, 2023). The increased commercialization of sports has sought PE firms to capitalize on the increased broadcasting rights, merchandising, and sponsorship revenue.

2.2 Value Creation in Private Equity

Extensive academic literature has been published regarding the value creation process of PE firms, most often comparing the performance of PE firms to that of the market. To begin with, through a combination of the aforementioned characteristics, PE has been lauded as being more effective and realizing higher ROI than the return on the market (Sorensen et al., 2014). A summary of the academic literature below will outline four indicators regarding PE's superior value creation process.

2.2.1 Operational Improvements

To begin with, as stated by Acharya et al. (2013), PE involvement most often increases the operational performance of the acquired firm. As by Kaplan and Strömberg (2009), PE involvement results in an influx of operational expertise, reduces unnecessary expenses, and actively identifies underperforming business segments, allowing the streamlining of operations. Within their work, Acharya et al. (2013) highlight the significance of the operational background of a PE firm's partners and the ensuing ability to generate value-creating strategies. A partner's background is often centered around prior experience in the consulting or investment banking sector, predominantly in the industries they become involved in with their respective PE firm. An improvement in operational performance is further realized through the implementation of diversification strategies upon a PE take-over. For example, a PE take-over may cause the divestitures of non-core businesses, helping acquired firms focus on their strengths and improve efficiency (Opler & Titman, 1993). Finally, the principle of free cash flow (FCF) management presents an indicator of improved operational expertise. As Opler and Titman identified (1993), PE-acquired firms have a relatively superior approach to FCF management compared to other firms. Within active FCF management, the focus lies on ensuring a firm's cash flows are invested in projects with the most favorable returns, incentivizing disciplined and rational investment (Opler & Titman, 1993).

2.2.2 Financial Reengineering

The reengineering and relaxation of an acquired firm's financial situation proves as the second source of value creation for PE firms. The implementation of reengineered financing is closely related to the aforementioned FCF management, ensuring the optimization of a firm's capital structure (Kaplan & Strömberg, 2009). Furthermore, a PE acquisition may result in the relaxation of financial constraints for the acquired firm, as stated earlier in this paper. Private firms often find difficulty in their access to capital funds, as they're most typically dependent upon debt financing for capital inflows. Therefore, a private firm, most specifically when highly leveraged, may be forced to forgo positive NPV investments (Myers, 1977). In the case of PE takeovers, Frel et al. (2015) find a positive relationship regarding the improvement of the acquired firm's financial constraints, resulting in increased opportunities to pursue growth opportunities. For this source of value creation, the ensuing increase in company performance proves most prevalent for companies with untapped growth potential (Cohn et al., 2022). This relation proves most relevant regarding the aim of this paper, as clubs within the European football industry have showcased significant growth potential over the last few decades. Two factors stand at the base for this, firstly increased global attention, as indicated through a surge in TV revenues (Deloitte, 2023). Secondly, PE's introduction of corporate strategy and enhanced governance in clubs' decision-making.

2.2.3 Corporate Governance

Thirdly, it is the introduction of corporate governance that is most prominently cited as the catalyst for the superior financial performance of PE-acquired firms. Strategic planning and active oversight are all prevalent cornerstones of the value creation process of PE firms through an adjusted corporate governance imposed by a PE takeover (Acharya et al., 2013). The first of those factors is the alignment of shareholder and management incentives. Within their study, Kaplan and Strömberg (2009) highlight the positive effects of PE-backed buyouts on management incentives and governance structures. As by Metrick and Yasuda (2010), PE-acquired firms outperform due to their long-term perspective on performance improvements, focusing on sustained operational gains rather than short-term metrics. As management currently holds similar incentives as its shareholders, agency problems within the firm are minimized. In addition, the introduction of smaller, more engaged boards that provide strategic decision-making and active oversight serves as another value driver. Through the decreased board size, the time efficiency of the firm increases (Acharya et al., 2013). Moreover, a key factor regarding this value driver rests on the replacement of prior established and underperforming managements. The newly installed management provides a more experienced leadership team that can quickly adapt to the firm's needs, once again resulting in more efficient decision-making (Acharya et al., 2013). Finally, improved economic productivity stands at the forefront of newly imposed corporate governance as a value driver for PE. Through the implementation of performance monitoring and innovative management practices, the imposed corporate governance results in higher productivity and profitability (Wright et al., 2009).

2.2.4 Portfolio

Lastly, through the introduction to global markets and increased resources, PE takeovers provide further unique opportunities for acquired firms to create value. The first way this becomes evident is through so-called growth strategies pursued after a PE takeover. As by Wright et al. (2009), increased access to capital and international markets allows PE-acquired companies to explore strategic acquisitions and market expansions. Due to a PE firm's extensive company portfolio, an acquired firm may make use of the expertise of one of these firms and put it to its strategic advantage. This becomes more evident in the case of buy-and-build strategies, as proposed by Brigl et al. (2016). Within the buy-and-build strategy pursued by PE firms, their global network is used to expand current portfolio firms, allowing for geographic expansion and cross-border synergies (Brigl et al., 2016). PE firms' market insights, as well as their diverse global resources, aid the identification of strategic opportunities in new regions, giving them a competitive advantage in pursuing international partnerships (Blanco et al., 2024). All in all, these factors may all be summarized under the category of network effects. Through increased access to global and capital markets, as well as the expertise of portfolio companies, PE-acquired companies can alter and improve their operational efficiency (Wright, 1998). Aside from academic literature, the viewpoint of PE as a superior value driver also holds within the current corporate environment, as indicated by Acharya et al. (2008) in a McKinsey report. Within their findings, based upon the experience of twenty UK chairmen active in both private and public industries, fifteen of twenty individuals advocate for the superiority of PE performance whereas the remaining five are indifferent (Acharya et al., 2008). However, PE firm efficiency is not uniform throughout all private industries. For example, within academic work by Harris et al. (2014), a negative relationship is found between capital invested and the returns on investment for PE firms. This proves relevant for this paper, as capital investments in the European football industry have seen a wide variety in size. Illustrative of the following are the acquisitions of Chelsea F.C. by BlueCo for EUR 4.2 billion compared to A.F.C. Bournemouth which was acquired for EUR 128 million, both clubs participate in the same domestic league.

2.3 European Football Industry

Within the world of sports, football holds its place as the most distinguished and popular sport on the globe. With over 3.5 billion fans it is far ahead of other sports, enjoying a global spread that reaches every corner and household (WorldAtlas, 2023). Indicative of this is the FIFA World Cup, reaching over five billion fans during the Qatar 2022 edition, with the final alone reaching 1.5 billion global fans (FIFA, 2023). Even so, club-level football proves to be arguably the highest level of football, exceeding the popularity of the FIFA World Cup. The pinnacle of club football is the European football industry, personified by the top five European leagues (Italy, England, Spain, Germany, and France) as well as tournaments such as the UEFA Champions League. The European football industry operates along a distinctly unique operational and economic framework.

2.3.1 Economic Framework

To begin with, broadcasting rights often form the most relevant revenue stream for clubs in the top European football industry. Particularly for the “Big Five”, which will be the sample selected within this paper, revenue by broadcasting income often proves critical in a club’s income. As by Kesennen (2007), broadcasting income often accounts for over forty percent of league revenue in England and Italy, making it a critical component for financial success. The following is due to their global reach and ensuing popularity, with the English Premier League (EPL) far ahead as indicated through its recent USD 8.45 billion TV deal (Church, 2023). This is further identified within the Deloitte Football Money League (2023) report, highlighting how the EPL dominates due to its strong domestic and international broadcasting rights. Furthermore, commercial deals and sponsorships make up an additional component of the economic framework for the top European football industry. The rights for corporate branding, often through shirt and stadium deals, provide substantial income for clubs. These commercial deals and sponsorships are club-initiated, with a club’s market size being the most critical factor in determining its income. Once again, Kesennen (2007) identifies a positive relationship between a club’s market size and the sponsorship revenue it receives. Finally, a club’s matchday revenue further provides a substantial capital influx. Due to the increased popularity of the top European football industry, broadcasting and commercial revenue have grown, decreasing matchday revenue as a share of total revenue. However, as indicated by the COVID-19 crisis, matchday revenue still proves a valuable source of income for football clubs (Deloitte, 2023).

2.3.2 Operational Characteristics

The European football industry holds unique operational characteristics, introduced within this section. This section will cover the financial nature, competitive balance, player mobility, commercialization, and the governance structure employed by clubs in this industry.

To begin with, in recent seasons following COVID-19 the European football industry has undergone a momentous change in its financial nature. Preceding the COVID-19 pandemic, the European football industry was characterized by excessive spending and unsustainable financial management (Olley, 2022). Due to their attractiveness to (foreign) billionaires, clubs were predominantly used as a status symbol. Improved sporting success stood as the basis of this, foregoing financial sustainability in the process. Clubs such as Paris Saint-Germain, Chelsea F.C., and Manchester City F.C. prove as prime examples (Football Benchmark, 2022). However, the COVID-19 pandemic marked a turning point and introduced a radical shift in the financial nature of the European football industry. Due to reduced revenues, a substantial number of clubs suddenly found themselves in financially distressed situations. A look at annual transfer spending confirms this, as annual transfer spending decreased from EUR 6.63 billion to EUR 4.62 billion, a 30.50 percent decrease (Poli et al., 2020). This increase in financially distressed clubs flagged the importance of improved financial sustainability in the industry, hence tighter financial regulations were imposed. It is in this environment of financial distress and tightened regulations that PE involvement took off. The increase

in financial regulation and limited financial possibilities for clubs levelled the playing field, providing a unique opportunity for the implementation of PE's value creation process.

Secondly, the competitive balance is characterized by a significant variety between clubs in the football landscape. The following is primarily because of unequal distributions in broadcasting revenue from the European competitions mentioned before. As identified by Malagila et al. (2021), this unequal distribution of revenue proves a self-enforcing cycle of repetition, in which the wealthier clubs become wealthier, increasing the gap. As a result, these clubs can attract better talent, enhancing their competitive advantage over the other clubs. Indicative of this growing disparity is the top five European leagues obtaining 83.3 percent of potential points in the 2017/18 Champions League season, a record number and ten percent higher than ten years prior (Poli et al., 2018). As summarized by Poli et al. (2018), "The present situation favours the wealthiest clubs. Each day, they increase their sporting, economic, and political domination". Within the European football industry, labour market mobility may be characterized in two ways. If a current player is still under contract at his club and wishes to transfer to another club, a financial fee must be paid to his current club to settle for his eventual move. Following the Bosman arrest in 1995, a player running out of his contract will be able to choose his next club without this new club paying a financial fee towards his old club. The result of the 1995 Bosman ruling was an increase in financial opportunities regarding labour market mobility in the European football industry. For clubs, it resulted in a restructured governance regarding player contracts as well as increased commercial opportunities due to an increased global market (Michie & Oughton, 2005).

Fourthly, within the last few decades, the European football industry has seen a drastic increase in its commercialization. As identified by Goddard and Dobson, the EPL as well as all other European leagues, have become increasingly business-oriented (Dobson & Goddard, 2011). With this increase in commercialization, signified through increased investments in marketing, stadium infrastructure, and fan engagement a new style of governance was introduced (Malagila et al., 2021). This change in governance is further identified within a working paper by Matt Andrews. Through the study of four European "superclubs"; FC Bayern Munich, FC Barcelona, Real Madrid, and Manchester United he points out the increased commercial nature of the industry and the resulting change in corporate governance for these clubs (Andrews, 2015).

Furthermore, one of the unique operational characteristics of the European football industry is the governance systems that it employs. As identified by Geeraert et al., (2013) the industry is characterized by high amounts of governance failures and scandals. As an example, one may take the case of A.F.C. AJAX. A 2022 scandal related to its sporting director Marc Overmars resulted in a sporting and financial downturn that has lasted for the last two seasons, with significant future implications still to come (Conmy, 2024). The financial size, as well as the global relevance of the industry, make it vulnerable to such failures and scandals. As stated above, one of the key value drivers for PE is the introduction of effective corporate governance. Therefore, this is one of the key principles for PE's value creation process in the top European football industry.

Finally, within the European football industry, a significant variety of governance structures are employed by active clubs. Most clubs follow a private ownership style in which private investors or financial entities control the club. The advantages of this model are its access to significant capital injections of its ownership and a streamlined organization able to pursue effective decision-making (Rohde & Breuer, 2016). A potential downside proves to be decreased transparency and often conflicts of interest with the fan base. As an example, one may take the current ownership of Manchester United. For years a conflict of interest has existed between its fanbase and the American Glazer family at the club. Another governance structure is that of fan-owned football clubs, as is employed within the German Bundesliga. Positives are the direct control by fans in decision-making, limiting agency problems within the club. The downside is the lack of access to capital injections, proving significantly challenging when compared to the financial dominance of the EPL.

2.4 Private Equity in the European Football Industry

The ensuing section will provide a historical overview of PE activity within the European football industry. The aim is to review the historical context and current state of PE investment in the industry, highlighting key developments, strategies as well as the impact of PE investment within the industry. Early involvement of PE firms within the industry arose during the 1990's, through increased popularity and commercialization of the industry. A further explanation for the increased PE investment during the 90s follows from the Bosman arrest ruling and its effect on corporate governance within football clubs. The 2001 acquisition of Tottenham Hotspur FC by English investment fund ENIC became the first case of PE investment in football clubs (Michie & Oughton, 2005).

PE has gradually become an investor within the football industry, with its investment significantly taking flight after 2021 (MacInnes, 2023). From 2018 to 2023, PE investment increased from EUR 66.7 million to EUR 4.9 billion (Sauer et al., 2023). Within PE involvement, multiple strategies and ownership styles exist. Sauer et al. highlight five potential strategies that PE firms may pursue when investing in football clubs. Firstly, the “phoenix strategy” emphasizes the restructuring of a club’s financial situation, aiming to solve its financially distressed situation and improve the operational structure (Sauer et al., 2023). The “cash cow” strategy is aimed at short-term maximization of financial return for the invested club, aiming to pursue short-term success allowing for a profit on sale. Thirdly, the “gazelle” strategy is aimed at growth maximization through the identification of high-potential clubs. These are often clubs in major cities with substantial fanbases, performing below their respective size. The investment of PE firm 777 Capital in German side Hertha B.S.C. proves as an example of this and is also applicable to the next strategy. The “ants’ colony” strategy is aimed at the formation of a portfolio of smaller clubs, all supportive of one another. This approach follows the principles of diversification. Finally, the “eagle’s nest strategy” also follows the principle of a multiple club ownership model. Its difference from the “ants colony” lies in the

aim of developing one dominant club, supported by the smaller clubs in the portfolio (Sauer et al., 2023). Both strategies follow the PE principle of buy-and-build, as proposed earlier by Brigl et al.

For the case of real-life examples, two varying cases of PE involvement within the European football industry have been selected: AC Milan and the City Football Group (CFG). The case of AC Milan provides a premier insight into the functionality of PE involvement within the corporate decision-making of a club and its potential positive outcomes. With Elliot Management taking control of AC Milan in 2018, it inherited a significantly financially distressed club. Through active restructuring of the financial situation as well as its governance structure, Elliot performed a successful approach of the “phoenix” strategy as proposed by Sauer et al. As AC Milan stated, “The constant support of Elliott, which guarantees the financial stability of AC Milan, has however allowed important investments, the effects of which will begin to be visible in the near future.” (Bettoni, 2020). The pinnacle of this successful PE intervention came in the 2021/22 season with AC Milan winning the Italian league, the Scudetto, and reaching the semi-final of the UEFA Champions League. Following this season, Elliot management sold AC Milan to another PE firm in RedBird Capital for EUR 1.2 billion, making a profit of EUR 500 million in six years.

A further example of PE firms investing in football clubs is an acquisition of a ten percent stake in the CFG by Silver Lake Partners in 2019 for USD 500 Million, followed by an additional acquisition of 7.2% in 2022. Silver Lake’s acquisition proves highly different from the case of AC Milan, highlighting the variety in PE firm objectives for the football industry. Silver Lake acquired a minority stake within CFG, providing passive support and remaining absent from active decision-making in CFG. In the case of the Silver Lake acquisition, the aim was to increase synergy with Silver Lake’s current company portfolio and use its extensive network to accelerate the commercialization process of the CFG. This approach follows along with the findings within section 2.2.4 of this paper (Tarvin, 2019).

2.5 Academic Synthesis

In the following section, the impact of PE firm investment in the sports industry is analyzed. At first, through the consultation of empirical evidence, sourced from academic journals, a complete picture of the impact of PE investment on sporting associations is provided. Due to its relevance to this paper, this is followed by an analysis of empirical papers using a regression analysis to analyze the financial performance of clubs in the European football industry.

2.5.1 Empirical Evidence

To begin with, as identified by the four identifiers within section 2.2 of this paper, PE investment has proven to bring positive developments for the involved firms. A similar impact is observed in the European football industry, as by Wright et al. They find that PE-acquired clubs improve their value through three factors; operational improvements, financial restructuring, and the introduction of corporate governance (Wright et al., 2009). On the other hand, the presence of the PE firm as a shareholder may introduce a conflict of

interest. As stated, PE's short-term focus as well as potential increased financial risk for the acquired club presents a challenge for the club's long-term sustainability (Wright et al., 2009). Privately owned clubs, typical for PE firms, hold improved access to funding and are more aggressive in player investments. This enhances their competitive success but at the same time increases the financial risk and reduces transparency, negatively affecting the club's long-term value (Franck, 2010). However, through findings by Sauer et al. and Michie and Oughton, the following argument may be refuted. Sauer et al. argue that the PE firm's and club's interests are aligned, stating that improved on-field performance in the case of the football industry, automatically leads to increased financial returns for the PE firm (Sauer et al., 2023). Moreover, through the adoption of distinct strategies for each respective club, PE firms actively contribute to the professionalization of football club management and the rationalization of strategic decisions (Sauer et al., 2023). Michie and Oughton (2005) identify additional evidence that contradicts Wright et al. Firstly, PE involvement leads to smaller, more engaged boards that drive effective decision-making. Secondly, PE's financial restructuring improves, rather than degrades a club's capital structure and financial discipline, especially in light of financial mismanagement which is common in the football industry (Michie & Oughton, 2005). An important distinction should thus be made regarding the type of private ownership. Within empirical research, private individual owners, different from PE ownership, prove to be positively related to a club's financial inefficiency and negatively to its transparency (Rohde & Breuer, 2018). This paper will solely focus on private ownership as defined by PE involvement and evaluate its performance relative to situations in which it is absent.

Building upon the point introduced by Sauer et al. (2023), through PE involvement, clubs operate unique and industry-specific governance frameworks, increasing the professionalization of club management. Recent developments in the football industry, also fueled by increased PE activity, have resulted in the introduction of "tailored governance frameworks" for each club, as by Farquhar et al. (2005). This increased professionalization and rationalization of strategy has increased a club's balance between financial stability and on-field performance. This finding is supported by the differing governance structures of Italian Serie A and EPL football clubs. A 2019 study found significant evidence indicating the better financial performance of EPL clubs relative to Serie A clubs, with governance structure as the independent variable (Ruta et al., 2019). Relative to Serie A clubs, which are typified by private individual ownership, a significant proportion of EPL clubs are PE-backed. Findings concluded that privately owned EPL clubs generally exhibited better financial health and competitive results. Further building upon "tailored governance frameworks", a blended model that combines non-profit (NPO) and private characteristics provides a further example of enhanced value. A blended model can improve a club's value by combining the financial strength of private ownership with the community-based approach of NPOs. PE firms can leverage this model to ensure sustainable growth and strong community ties, improving the club's overall value and reputation (Agostino & Thomasson, 2023). Already PE firms have employed such corporate frameworks, as a maximization of financial returns is the penultimate directive of a PE firm. For example,

the introduction of fan representation within the governance framework of a football club has resulted in increased financial performance for clubs within the top five European leagues (Sánchez et al., 2021).

2.5.2 Analysis of Regression

Within the ensuing section, three regression-based papers related to the efficiency of governance within clubs are analyzed, providing an introductory perspective upon further findings in this paper. To begin with, in a 2017 study by Rohde and Breuer (2017), a regression analysis is used to investigate the relationship between a club's ownership structures and certain performance metrics, such as its financial health. Two models are presented, the financial performance model and the sporting performance model. For the financial performance model, a regression model with financial performance as the dependent variable and ownership as the independent variable is used. Furthermore, control variables that are included in the model are revenue, debt levels, and market size. The regression results indicate that PE ownership positively correlates with financial performance due to better resource management and strategic investments (Rohde & Breuer, 2017). In the second model, where solely the dependent variable is replaced with sporting success, mixed results are attained. Rohde and Breuer (2017) find some evidence suggesting the positive impact of PE ownership, but all in all no statistically significant conclusions can be drawn regarding the effect of ownership structure on a club's sporting success. The omission of lagged variables within the regression by Rohde and Breuer proves as a significant flaw within their model. The negligence to incorporate lagged variables results in a short-term (one-year) perspective on the financial performance and does not account for potential endogeneity. However, as indicated in preceding sections, the PE value-creating process spans multiple years, often three to five, and should be evaluated accordingly. Secondly, in a 2018 paper by Galariotis et al., a regression model has been used to investigate the performance metrics for all clubs within the French Ligue 1. Within this regression, a partial least squares model, dependent variables such as overall club value or performance scores are used, with revenue, expenses, and player performance statistics as independent variables. This paper aims to identify significant predictors that provide insights into which areas of investment are most effective in enhancing club value and performance (Galariotis et al., 2018). Galariotis et al. (2018) find a positive relationship between the business effectivity of a club and its sporting success as well as a further "one-way inverse relationship" of financial performance affecting sporting success. They state: "More revenues affect sports achievements positively and these in turn impact positively on revenues in a virtuous cycle" (Galariotis et al., 2018). All in all, by gaining insight into the variables that drive club performance, PE firms can make informed decisions to increase a club's financial stability and competitive success, increasing the club's overall value. Finally, in a 2016 paper, Rohde and Breuer analyze the relationship between foreign and private ownership on the profitability and investments of a club. Rohde and Breuer make use of a fixed effect panel regression model. The authors use log-transformed forms of wages and profits as dependent variables, and investor type as well as nationality as independent variables. The results show that private majority investors significantly increase team wages but reduce operating profits. This positive is primarily attributed to foreign investors,

who exhibit a stronger effect compared to domestic investors (Rohde & Breuer, 2016). All in all, through the consultation of these three regression-based papers the effect of ownership style on the financial and sporting performance of clubs is identified. A positive relationship between increased financial capabilities and sporting success is identified, often seen as a recurring cycle. Moreover, it is identified that a PE ownership style contributes significantly to the improved financial efficiency of a club. Although not directly related to improved sporting success, the prior identified relation allows one to expect that this increased efficiency will eventually result in increased sporting success.

2.6 Research Expectations

Based on the comprehensive review of the academic literature on PE, the PE value creation process, and the characteristics of the European football industry, multiple hypotheses have been formulated to guide the investigation of this paper. These hypotheses are all centered around answering the research question:

How has private equity investment influenced the financial performance of football clubs in the top five European leagues, from 2017/18 to the 2022/23 season, measured as revenue and return on assets, compared to clubs without private equity investment?

2.6.1 Private Equity Investment and Financial Performance

First, PE involvement often results in an increase in the acquired firm's value and financial performance through the implementation of operational and financial improvements. These improvements, characterized by an introduction of corporate governance as well as access to the PE firm's portfolio network are all characteristics applicable to the European football industry. As identified by Michie and Oughton, within the European football industry a corporate governance framework has been on the rise for clubs (2005). This creates substantial areas for improvement and a distinct quality of PE involvement. Furthermore, the introduction of financial fair play (FFP) provides a perfect example of the increased attention on the financial stability of clubs within the European football industry. Once again, financial re-engineering and the resulting increased efficiency prove as one of PE's staple activities (Cohn et al., 2022). Finally, due to the positive relationship between a club's financials and sporting success, it is to be expected that this increased efficiency and performance will result in increased sporting success. Ensuing increased sporting success is then a catalyst for increased financial performance. As such, the following explanation and characteristics have led to the formulation of this hypothesis.

H₁: *Private equity involvement has a positive effect on the financial performance, measured as revenue, of top European football clubs.*

To account for the duration effects of PE investment a second hypothesis has been formulated.

H₂: *The duration of private equity investment has a positive effect on the financial performance, measured as revenue, of top European football clubs.*

2.6.2 Private Equity Investment and Financial Profitability

Secondly, throughout its history, the average return for PE firms has been a return on investment (ROI) of 10.48% as identified by Jahn (2022). Therefore, for PE investments in the football industry to be sustainable and maintained for the long run its return percentage should be at least equal. Several factors, external to PE involvement, contribute to this required return. First, the increased global demand and ensuing commercialization of football have led to an industry-wide increase of enterprise value for clubs. As identified by Football Benchmark (2022), over the last seven years the enterprise value of top European clubs has grown by 96%. Furthermore, within the top five European leagues, which serve as the sample for this paper, the club's revenues have been increasing with a CAGR varying from 7.5% in the Ligue 1 to 17.9% in the EPL (Football Benchmark, 2023). All in all, these positive external developments as well as the added value through PE involvement have resulted in the ensuing hypothesis regarding the return on assets of football clubs.

H₃: *Private equity involvement has a positive effect on the return on assets of the top European football clubs.*

To account for the relationship between PE investment duration and return on assets a second hypothesis has been formulated.

H₄: *The duration of private equity investment has a positive effect on the return on assets of the top European football clubs.*

CHAPTER 3 Data

3.1 Data Collection Description

For the following study, a dataset of 141 clubs within the top five European competitions between the seasons 2017/18 and 2022/23 has been selected. The following sample consists of clubs from the German Bundesliga (25), English Premier League (29), French Ligue 1 (28), Italian Serie A (30) and the Spanish La Liga (29). The period of six years has been selected due to the increased investment from PE funds from the 2017/18 season onwards. Moreover, as financial data for the 2023/24 season is yet to be published, most of the data for this season has been omitted from consideration due to the prevalence of missing values. For all variables, one observation for each club per season has been selected. As such, with a sample of 141 clubs over six years, a total of 846 observations (club-season combinations) have been identified.

For this sample, a selection of variables has been selected that will form the basis for the regression analysis in the ensuing methodology and results section. Most financial data regarding the sample is collected through online databases such as the ORBIS and Capology databases next to consultation of annual league reports. Country-specific data, such as league revenue and league brand value have been collected through consultation of annual financial research reports such as the Deloitte Football Money League and the Football Benchmark report. Furthermore, data considering a club's transfer spending, transfer receipts, and on-field performance has been accessed through the football database Transfermarkt.com and the UEFA database. In addition, in the case of substantial missing values, further sources such as newspapers, and annual financial reports by clubs have been consulted.

3.2 Variable Description

The relationship that is investigated within this paper is the effect of PE investment, as well as the length of PE investment (independent variables), on the financial performance of a football club (dependent variable). The financial performance of the respective football club is measured by its revenue and return on assets. Below a description of these variables is provided:

3.2.1 Dependent Variables

Return on Assets: Percentage measure of profitability relative to total assets, indicated as an integer representing the percentual value. Collected through consultation of the ORBIS database with a total of six hundred observations for the selected sample.

Revenue: An integer indicating the total income of each football club for a given season, measured in millions. Collected through consultation of the ORBIS database with a total of 633 observations for the selected sample.

3.2.2 Independent Variables

PE investment: Binary variable indicating the presence (1) or absence (0) of PE investment, measured per year for all clubs in the sample. Collected through the consultation of annual financial research reports and newspaper reports, with a total of 846 observations for the selected sample.

PE investment duration: An integer representing the number of years a club has had PE investment, measured per year for all clubs in the sample. Collected through the consultation of annual financial research reports and newspaper reports, with a total of 846 observations for the selected sample.

Ownership type: An integer representing the type of PE investment, measured per year for all clubs in the sample. Takes a value of 0 if there is no PE investment, 1 if there is a minority PE investment, and 2 if there is a majority PE investment. Minority investment often collaborates actively with the majority stakeholder, resulting in a balanced ownership concentration (Crafton, 2024). Collected through consultation of club statements, newspaper reports, and financial reports, with a total of 846 for the selected sample.

3.2.3 Control Variables

Furthermore, in line with previous literature, control variables are included for the selected sample. These control variables are based on the findings and selected control variables indicated in prior literature. Due to the nature of the selected regression model, a fixed effect panel regression, country-specific variables have also been included as done by Rohde and Breuer (2016). Below a description of these variables is provided:

Timeseries variables:

Club: The name of the respective football club with a total of 846 observations for all clubs included in the sample.

Year: This variable indicates the season for which the data was collected, ranging from the 2017/2018 season to the 2022/2023 season. A total of 846 observations for all clubs that are included in the sample.

Club fixed effects variables:

Domestic success: An integer indicating the domestic success of each club per season. Collected through consultation of the Transfermarkt.com database with a total of 846 observations for the selected sample. One point has been awarded to the last position finish for each season, going up with one point for each increase in position on the table. As such, in a twenty-club league, the champion receives twenty points with the last team receiving one point. If the team did not participate in the top league that season it has received zero points for the respective season.

Club Value: An integer indicating the market value of the club's players for each season, measured in millions. Collected through consultation of the Transfermarkt.com database with a total of 608 observations for the selected sample.

Foreign Success: An integer indicating the success of each club in European competitions over the last six years at the hand of the UEFA Club Coefficient. Collected through consultation of the UEFA database with 846 observations for the selected sample. Points have been appointed as follows: No club coefficient is zero points, club coefficient from 0-20000 is one point, club coefficient from 20001-40000 is two points, club coefficient from 40001-60000 is three points, club coefficient between 60001-80000 is four points, club coefficient between 80001-100000 is five points and club coefficient above 100000 is six points.

TV Revenue: An integer indicating the income each club receives from broadcasting rights per season, measured in millions. Collected through consultation of league publications and clubs' financial statements with a total of 474 observations for the selected sample.

Transfer Receipts: An integer indicating the total income from player transfers for each club in a given season, measured in millions. Collected through consultation of the Transfermarkt.com database with a total of 545 observations for the selected sample.

Transfer Spending: An integer indicating the total amount spent on player transfers for each club in a given season, measured in millions. Collected through consultation of the Transfermarkt.com database with a total of 565 observations for the selected sample.

Wage bill: An integer indicating the total wage bill of each football club for a given season, measured in millions. Measured through consultation of the Capology database with a total of 585 observations for the selected sample.

League fixed effects variables:

Country: Binary variable indicating the country of the club, represented by letters with a total of 846 observations.

Brand value per league: An integer indicating the brand value of each league per season, measured in millions. Collected through the consultation of annual financial research reports with a total of 846 observations for the selected sample.

League revenue: An integer indicating the income each league receives from broadcasting rights per season, measured in millions. Collected through the consultation of annual financial research reports with a total of 846 observations for the selected sample.

3.3 Summary Statistics

Table 3.1

This table shows the descriptive statistics for the variables used within this paper, beginning in the 2017/18 season up until the 2022/23 season for a sample of 141 clubs in the top-five European competitions.

Variable	Obs	Mean	Std. dev.	Min	Max	Type
Wage bill	585	120.98	124.39	9.30	760.20	Metric
Transfer spending	565	56.97	65.75	0.05	615.49	Metric
Transfer receipts	545	43.60	46.67	0.10	367.25	Metric
TV revenue	474	76.35	46.87	12.40	201.48	Metric
Return on Equity	456	-0.63	1.72	-0.87	6.51	Percent
Return on Assets	600	-0.11	0.22	-0.92	0.55	Percent
PE investment duration	846	0.50	2.26	0	25	Dummy
PE investment	846	0.12	0.32	0	1	Dummy
Ownership type	846	0.21	0.58	0	2	Dummy
League Revenue	846	3294.06	1420.16	1598.00	6605.00	Metric
Foreign Success	847	1.55	2.86	0	10	Metric
Club Value	608	282.93	251.57	27.00	1200.00	Metric
Brand value per competition	846	3743.25	2571.82	899.00	9000.00	Metric
Domestic Success	846	7.43	6.83	0	20	Metric
Revenue	633	145.85	168.53	0.00	854.21	Metric

Within Table 3.1 the descriptive statistics for the included variables are provided. The **Return on Assets** variable holds a mean of -0.1102, indicating that on average for this sample the financial performance of football clubs is negative. However, as indicated by the standard deviation of 0.2247 there is significant variance in financial performance between the clubs in the selected sample. For example, clubs such as FC Bayern München have shown significant positive returns during the six years. On the other hand, clubs such as AS Roma and FC Barcelona have shown primarily negative returns during this period. Secondly, **Return on Equity** has portrayed a mean value of -0.6319 which further acknowledges the unprofitable financial performance of the clubs in this sample. The standard deviation of 1.7224 proves significantly higher than that of the **Return on Assets**. This is best explained with the calculation of both variables. Within accounting principles, assets should always equal equity and liabilities. Both variables are calculated by dividing the profitability measure by a club's total assets or equity, thus explaining the discrepancy. The **Revenue** variable has portrayed a significant standard deviation, indicative of the variance in the financial situation for clubs included in the sample. To account for this in the methodology part of this paper further regressions will be run with a logarithmic value of this variable.

Furthermore, the financial club fixed effects variables (**Wage bill, Club Value, TV revenue, Transfer spending, and Transfer receipts**) have all shown significant standard deviations, indicating the significant variance that exists between the financial capabilities of the clubs selected within this sample. The following builds upon findings by Galariotis et al. (2018) mentioned within section 2.5.2 of this paper, indicating the principle of a “virtuous cycle” when considering the relationship between increased revenues and sporting success. This is most prevalent for the top percentage of clubs within the sample, as also indicated by the maximum value for each variable, indicating a skewed distribution of the data. This is best explained by Malagila et al. (2021) in section 2.3.2. who state, “This unequal distribution of revenue proves a self-enforcing cycle of repetition, in which the wealthier clubs become wealthier, increasing the gap”. To account for this skewness, in the methodology part of this paper, further regressions will be run with logarithmic values of these variables.

Finally, the financial league fixed effects variables (**Brand value per competition and League revenue**) display the significant discrepancies that exist between the top five European leagues in terms of their annual financial funds. The significant standard deviation as well as the discrepancy between minimum and maximum values is best explained through findings by Ben Church (2023) in section 2.3.2 of this paper. As stated, the unique commercial nature of the EPL, illustrated through its record broadcasting deal solidifies its position as the frontrunner regarding the annual financial funds available (Church, 2023). On the other hand, the French Ligue 1 historically holds a significantly weaker commercial position than its peers, as proven by the lower minimum values within our sample. Like the financial club fixed effects variables in the methodology part of this paper, further regressions will be run with logarithmic values of these variables to account for their skewness.

CHAPTER 4 Method

4.1 Hypothesis Models

For both hypotheses, a fixed effects panel regression model is used. The fixed effects panel regression is used to control for unobserved time-invariant and correlated heterogeneity within the sample. A panel regression offers several advantages over an ordinary least squares (OLS) model, which is employed in the study by Rohde and Breuer (2016). Firstly, by using a fixed effects panel regression, the model accounts for individual characteristics that do not change over time, thus isolating the effect of the independent variables on the dependent variable. This method controls for time-invariant club-specific effects, allowing for a more accurate estimation of the impact of PE investment on the financial performance of football clubs. Furthermore, by combining cross-sectional and time series data, more robust statistical estimates as well as increased degrees of freedom are realized. In addition, panel data can model the dynamic relationship between variables, this includes the effect of past variables on the current value of the dependent variable. This relationship proves particularly useful when considering the long-term nature of PE investment in the top European football clubs.

4.1.1 Private Equity Investment and Financial Performance Models

For the first hypothesis, the main purpose of this model is to identify if PE investment within top European football clubs has a positive effect on their financial performance. At first, a simple regression is run, including only the dependent and binary independent variables.

$$(1) Fp_{it} = \beta_0 + \beta_1 PE\ investment + \varepsilon$$

The dependent variable Fp_{it} is the logarithmic revenue value for club i during season t . The first independent variable $PE\ investment$ is a dummy variable indicating if PE investment is present for club i during season t , 1 if yes and 0 if not. When the constant β_0 is omitted, the coefficient β_1 indicates the mean effect of $PE\ investment$ on Fp_{it} . The residual of the regression is ε .

Control variables are added to account for omitted variable bias and increase the model's accuracy and validity. This results in the following model:

$$(2) Fp_{it} = \beta_0 + \beta_1 PE\ investment + \beta_2 \mathbf{Control\ Variables} + \varepsilon$$

The control variables are indicated in the data section, being the club and league fixed effects variables.

For this regression, it is hypothesized that PE investment has no statistically significant effect on the financial performance of top European football clubs. The alternative hypothesis is that there is a statistically significant difference.

$$H_0 : \beta_1 = 0$$

$$H_a : \beta_1 \neq 0$$

For the second hypothesis, the duration of PE investment and its effect on the financial performance of the top European football clubs is analyzed. Once again, a simplified model will be run, followed by a more extensive model including the control variables. This results in the following models:

$$H_0 : \beta_1 = 0$$

$$H_a : \beta_1 \neq 0$$

4.1.2 PE Investment and Financial Profitability Models

For the second area of interest, PE investment and its effect on a club's return on assets, a further four models have been constructed. For this model, the dependent variable has been altered, Fp_{it} is replaced with RoA_{it} . The independent and control variables have remained constant. These models have been created:

$$(5) RoA_{it} = \beta_0 + \beta_1 PE\ investment + \varepsilon$$

$$(6) RoA_{it} = \beta_0 + \beta_1 PE\ investment + \beta_2 \mathbf{Control\ Variables} + \varepsilon$$

The dependent variable RoA_{it} is the return on assets, reported as an integer representative of the percentual return of club i during season t . As such, when the constant β_0 is omitted, the coefficient β_1 indicates the mean effect of $PE\ investment$ on RoA_{it} . The residual of the regression is ε .

For this regression, it is hypothesized that PE investment has no statistically significant effect on the return on investment for top European football clubs. The alternative hypothesis is that there is a statistically significant difference.

$$H_0 : \beta_1 = 0$$

$$H_a : \beta_1 \neq 0$$

For the final hypothesis, the duration of PE investment and its effect on the return on assets of the top European football clubs is analyzed. Once again, a simplified model will be run, followed by a more extensive model including the control variables. This results in the following models:

$$(7) RoA_{it} = \beta_0 + \beta_1 PEID + \varepsilon$$

$$(8) RoA_{it} = \beta_0 + \beta_1 PEID + \beta_2 \mathbf{Control Variables} + \varepsilon$$

The dependent variable RoA_{it} is the return on assets, reported as an integer representative of the percentual return of club i during season t . As such, when the constant β_0 is omitted, the coefficient β_1 indicates the mean effect of $PEID$ on RoA_{it} . The residual of the regression is ε .

For this regression, it is hypothesized that the duration of PE investment has no statistically significant effect on the return on investment for top European football clubs. The alternative hypothesis is that there is a statistically significant difference.

$$H_0 : \beta_1 = 0$$

$$H_a : \beta_1 \neq 0$$

CHAPTER 5 Results

5.1 Hypothesis One

A fixed effects panel data regression with clustered standard errors was run for the first hypothesis. The dependent variable, Fp_{it} , is the logarithmic revenue value for club i during season t . The first independent variable *PE investment* is a dummy variable indicating if PE investment is present for club i during season t , 1 if yes and 0 if not. The coefficient of *PE investment*, a binary variable, indicates the expected percentual change in a club's revenue in the presence or absence of PE investment. This resulted in the following model:

$$(1) Fp_{it} = \beta_0 + \beta_1 PE\ investment + \varepsilon$$

For model two we then estimate an extended model including the control variables. This resulted in the following model:

$$(2) Fp_{it} = \beta_0 + \beta_1 PE\ investment + \beta_2 L Fp_{it} + \beta_3 Yr_t + \beta_4 FS_{it} + \beta_5 DS_{it} + \beta_6 LDS_{it} \\ + \beta_7 LogTS_{it} + \beta_8 LLogTS_{it} + \beta_9 LogTR_{it} + \beta_{10} LLogTR_{it} + \beta_{11} LogWB_{it} + \varepsilon$$

For model two $L Fp_{it}$ refers to the one-period lag of the dependent variable. Yr_t is the dummy variable indicating the year-by-year difference in revenue. FS_{it} and DS_{it} are the variables indicating a club's domestic and foreign success, with LDS_{it} referring to the one-period lag of the domestic success. Furthermore, $LogTS_{it}$, $LogTR_{it}$ and $LogWB_{it}$ refer to the logarithmic value of transfer spending, transfer receipts, and a club's wage bill. $LLogTS_{it}$ and $LLogTR_{it}$ are the one-period lag values of a club's transfer spending and transfer receipts.

In Table 5.1 the results for models one and two are presented. For the first model, the adjusted R-squared is 0.002, implying 0.2 percent of the variance in the revenue for top European football clubs can be explained *PE investment*. Furthermore, within model one *PE investment* has a positive coefficient of 0.129. Therefore, the presence of PE investment indicates a 13.77 percent increase in the revenue of top European football clubs. No statistical inference can however be taken from this result as the coefficient fails to be significant at the ten percent confidence interval with a p-value of 0.178. Therefore, even though *PE investment* has a positive effect on the revenue, the p-value indicates it is not strong enough to rule out the possibility of occurring by chance. This may be due to the lack of variability in *PE investment* or the presence of external factors that the model has not accounted for. For model two we find an adjusted R-squared of 0.387, implying that 38.70 percent of the variance in the revenue for top European football clubs is explained by the included variables. This marks an increase of 38.50 percent compared to model one, which excluded the relevant control variables. The reported R-squared is in line with multiple findings in corresponding academic literature, such as the studies performed by Rohde and Breuer (2016). For model

two, which is extended with relevant control variables, we find a negative coefficient of 0.037 for *PE investment*. As such, after including additional variables the presence of PE investment results in a 3.76 percent decrease in revenue for top European football clubs. Yet, *PE investment*'s coefficient still proves insignificant. The change in sign may be attributed to the inclusion of control variables that may have absorbed the effect initially attributed to *PE investment* in model one. This suggests that the additional control variables significantly impact the variation of a club's revenue. Therefore, a comparison of models one and two highlights the importance of including control variables in avoiding omitted variable bias. The findings in Table 5.1 indicate that it is impossible to reject the null hypothesis for the first hypothesis of this paper. As such, PE involvement does not have a positive effect on the financial performance of top European football clubs from 2017/18 to 2022/23. Whereas model one indicated a positive but insignificant effect of *PE investment* on revenue, the control variables in model two reversed this effect whilst still proving insignificant. The coefficient of lagged revenue has a negative and statistically significant coefficient. The return to the mean effect explains this coefficient. High revenue seasons are often correlated with a successful performance on the pitch. For example, winning the UEFA Champions League leads to an influx of EUR seventy million in prize money (Evans, 2024). Due to the variability in successful teams, as well as difficulty in maintaining domestic and European dominance, it is unrealistic to maintain this performance level. This decrease in performance coincides with a decrease in club revenue. In addition, the dummy for 2020 presents a negative and significant coefficient, best explained by the economic impact of the COVID-19 crisis. The positive and significant coefficient for 2023 indicates a rebound effect after recovering from COVID-19. Foreign success has a negative yet insignificant coefficient, which suggests that foreign success does not strongly alter a club's revenue. Current and lagged domestic success both present positive and significant coefficients. The positive effect of increased domestic success is best explained by increased broadcasting revenue, ticket sales, and merchandise. Current transfer spending presents a negative but insignificant coefficient in model two, implying that transfer spending might not have an immediate effect on revenue. This is further confirmed by the lagged value of transfer spending, which has a positive and significant coefficient. Due to the nature of player development, it is common for players to perform optimally after adjusting to a new club. This increased performance materializes into higher revenue for the club, as is also in line with findings in previous literature (Malagila et al., 2021). The coefficient for transfer receipts is negative and insignificant, indicating that the short-term transfer receipts have no significant impact on revenue. However, the lagged value for transfer receipts holds a positive and significant coefficient. This shows that past transfer receipts have a delayed positive effect on revenue. High past transfer receipts are an indicator of good performance in the preceding season, increasing player value. Past season success often coincides with qualification for European competitions, which increase revenue through broadcasting revenue and prize money. Finally, wage bill has a positive but insignificant coefficient. This is in line with expectations as revenue and wages are highly correlated.

5.2 Hypothesis Two

Similarly, a fixed effect panel data regression with clustered standard errors was run for the second hypothesis. Once again, Fp_{it} , is the logarithmic revenue value for club i during season t . The second independent variable, $PEID$, indicates the total years that PE investment has been present for club i during season t , being 0 if no PE investment has occurred. The coefficient of $PEID$ indicates the expected percentual change in a club's revenue for each additional year of PE investment. This resulted in the following model three:

$$(3) Fp_{it} = \beta_0 + \beta_1 PEID + \varepsilon$$

Model four is then estimated as an extended model including the control variables like the ones used in model two. This resulted in the following model:

$$(4) Fp_{it} = \beta_0 + \beta_1 PEID + \beta_2 LFp_{it} + \beta_3 Yr_t + \beta_4 FS_{it} + \beta_5 DS_{it} + \beta_6 LDS_{it} + \beta_7 LogTS_{it} \\ + \beta_8 LLogTS_{it} + \beta_9 LogTR_{it} + \beta_{10} LLogTR_{it} + \beta_{11} LogWB_{it} + \varepsilon$$

In Table 5.1 models three and four for hypothesis two of this paper are presented. The simplified model, model three, has an adjusted R-squared of 0.016, implying that 1.60 percent of the variance in the revenue for top European football clubs is explained by $PEID$. In addition, within model three $PEID$ has a positive coefficient of 0.111 and is significant at the 0.1 level with a p-value of 0.013. This implies that an additional year of PE investment yields an increase of 11.74 percent in revenue. For model four we find an adjusted R-squared of 0.388, implying that 38.80 percent of the variance in the revenue for top European football clubs is explained by the included variables. This number marks an increase of 0.372 with model three, indicating the value of added control variables. Furthermore, the R-squared of models two and four show significant similarities, with a difference of 0.01. This is best explained through the similarity of the dependent variables PE investment and $PEID$. Within model four the coefficient of $PEID$ has decreased to 0.022 and lost its statistical significance. The positive coefficient for $PEID$ indicates that an additional year of PE investment increases revenue by 2.22 percent. However, the changes in the coefficient of $PEID$ indicate that its effect is not robust across the two model specifications. Once again, the findings in Table 5.1 make it impossible to reject the null hypothesis for the second hypothesis of this paper. Therefore, it is to be stated that the duration of PE investment yields no positive effect on the financial performance of top European football clubs for the 2017/18 till 2022/23 period. Whereas the simplified model indicated a positive and statistically significant effect of $PEID$ on revenue, this effect was removed when adding the relevant control variables. Moreover, although statistically significant, the minimal adjusted R-squared (0.016) of the simplified model shows its limited explanatory power. Due to the similarity of models two and four, all control variables for Table 5.1 show similar signs and significance as in Table 5.1. As such, the description provided for the control variables in model two is also applicable to those in model four.

Table 5.1

This table shows the two regression models for hypotheses one and two with financial performance (revenue) as the dependent variable. Column (1) shows the simplified regression, without control variables for the first hypothesis. Column (2) adds the control variables mentioned above for the first hypothesis. Column (3) shows the simplified regression, without control variables for the second hypothesis. Column (4) adds the control variables mentioned above for the second hypothesis. *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses. Season 2017/18 up until season 2022/23.

	(1)	(2)	(3)	(4)
PE investment	0.129 (0.095)	-0.037 (0.071)		
PE investment duration			0.111* (0.044)	0.022 (0.028)
Revenue (logarithmic and lagged)		-0.098* (0.048)		-0.094* (0.046)
2019 Year		0 (.)		0 (.)
2020 Year		-0.161*** (0.046)		-0.166*** (0.046)
2021 Year		-0.059 (0.047)		-0.069 (0.047)
2022 Year		0.041 (0.046)		0.025 (0.046)
2023 Year		0.130** (0.049)		0.102* (0.050)
Foreign Success		-0.013 (0.028)		-0.017 (0.029)
Domestic Success		0.017*** (0.004)		0.017*** (0.004)
Domestic Success (lagged)		0.023*** (0.006)		0.024*** (0.006)
Transfer spending (logarithmic)		-0.019 (0.017)		-0.023 (0.017)
Transfer spending (logarithmic and lagged)		0.044* (0.017)		0.042* (0.017)
Transfer receipts (logarithmic)		-0.004 (0.016)		-0.004 (0.016)
Transfer receipts (logarithmic and lagged)		0.053* (0.021)		0.054** (0.020)
Wage bill (logarithmic)		0.193 (0.103)		0.165 (0.099)
Constant	4.416*** (0.011)	3.959*** (0.391)	4.384*** (0.019)	4.076*** (0.398)
N	633	277	633	277
Adj. R-squared	0.002	0.387	0.016	0.388
No. of groups	122	89	122	89

5.3 Hypothesis Three

A fixed effects panel data regression with clustered standard errors was run for the third hypothesis. The dependent variable RoA_{it} is the return on assets, reported as an integer representative of the percentual return of club i during season t . The independent variable, $PE\ investment$, is equal to the one used within models one and two for the first hypothesis. The coefficient of $PE\ investment$, a binary variable, indicates the expected percentual change in a club's return on assets in the presence or absence of PE investment. This resulted in the following model:

$$(5) RoA_{it} = \beta_0 + \beta_1 PE\ investment + \varepsilon$$

Model six is then estimated as an extended model including the control variables like the ones used in model two. This resulted in the following model:

$$(6) RoA_{it} = \beta_0 + \beta_1 PE\ investment + \beta_2 LFP_{it} + \beta_3 Yr_t + \beta_4 FS_{it} + \beta_5 DS_{it} + \beta_6 LDS_{it} \\ + \beta_7 LogTS_{it} + \beta_8 LLogTS_{it} + \beta_9 LogTR_{it} + \beta_{10} LLogTR_{it} + \beta_{11} LogWB_{it} + \varepsilon$$

In Table 5.2 the results for models five and six regarding this paper's third hypothesis are presented. Model five, the simplified model, shows an adjusted R-squared of 0.015, implying that 1.50 percent of the variation in ROA is explained by the binary independent variable $PE\ investment$. This low number indicates the weak explanatory nature of the simplified nature, explaining the need for additional control variables in model six. A further reason for this low adjusted R-squared may be the limited timespan of PE investment in the top European football industry. As stated, PE investment has been on the rise since the 2018 season, seeing a substantial increase in the past two seasons due to the effects of COVID-19 (MacInnes, 2023). For the simplified model a coefficient of -9.109, significant at the five percent level, for $PE\ investment$ is provided. This implies that the presence of PE investment results in a decrease of 9.109 percentage points in a club's ROA. The results of model five suggest the opposite effect as was proposed in hypothesis three of this paper. Through a look at model six, including the relevant control variables, a comprehensive answer to the hypothesis is provided. In model six an adjusted R-squared of 0.298 is presented, implying that 29.80 percent of variation in ROA is explained by the included variables. This percentage marks an increase of 28.30 percent with model five, indicating the worth of the included control variables. Although marking a substantial increase from model five, the adjusted R-squared still proves inferior to models found in similar studies. For example, within a study comparing the effect of ownership structure on profitability in the Serie A and EPL, Ruta et al. (2019) present a model with an adjusted R-squared of 0.512. Possible explanations for this difference are found in the size of the data sample, as well as a deviation in the investigated independent variable. Ruta et al. present a timeline of nine years, as compared to the six years in this paper, improving the predictionary nature of its variables. Furthermore, whereas this study solely

investigates the effect of PE investment, Ruta et al. (2016) emphasize the complete ownership structure of a club in their paper. Due to the closed nature of PE firms, data for this category is less widely available. The inclusion of control variables in model six has multiple implications for the coefficient of *PE investment*. The magnitude of the coefficient has decreased to -2.817, implying that the inclusion of control variables may have absorbed some of the effect that was initially attributed to *PE investment*. Furthermore, within model six the coefficient of *PE investment* has lost its statistical significance. Therefore, the evidence is not strong enough to reject the null hypothesis that it is different from zero. All in all, the comparison of models five and six highlights the importance of including control variables in avoiding omitted variable bias. At the hand of the findings in models five and six, there is insufficient evidence to reject the null hypothesis applicable to the third hypothesis of this paper. As such, it is to be stated that there is no evidence to be found that PE involvement has a positive effect on the ROA of clubs in the top European football industry for the period from 2017/18 to 2022/23. Once again, the recent increase in PE investment in the football industry due to COVID-19 provides a possible explanation. PE investment in the top European football industry saw a major increase following the COVID-19 crisis and the financially distressed situations it caused. Financial reengineering proves as one of the specializations of PE, marking the reason for this increase. However, this took place from the 2021/22 season onwards. the current timespan selected may provide an inconclusive perspective. Therefore, in section 5.5 altered models with special emphasis on the period after COVID-19 are presented. Although employing a different dependent variable, ROA as compared to revenue, the added control variables in model six show similar characteristics as in models two and four. This is best explained by the overlap between the two variables and the effect of control variables on their performance. Revenue is one of the components in the formula for ROA, therefore, positive increases in revenue are often associated with an improved ROA. Below an analysis is provided of control variables that portray significantly different statistical behavior as to those in models two and four. The wage bill control variable has a negative and significant coefficient, implying that increases in a club's wage bill harm ROA. A logical evaluation of this relation follows when evaluating the formula for ROA. The formula for ROA is as follows:

$$ROA (Y) = \left(\frac{Net\ income}{Total\ assets} \right) \times 100\%$$

Net income marks the total sum of money that remains after subtracting all relevant expenses from a club's revenue. Therefore, wages harm a club's ROA, as they are often among the most prominent expenses. All other control variables portray similar behavior as in the prior mentioned models.

5.4 Hypothesis Four

Similarly, a fixed effect panel data regression with clustered standard errors was run for the fourth hypothesis. Once again, the dependent variable RoA_{it} is the return on assets, reported as an integer representative of the percentual return of club i during season t . The second independent variable, $PEID$, indicates the total years that PE investment has been present for club i during season t , being 0 if no PE investment has occurred. The coefficient of $PEID$ indicates the expected percentual change in a club's return on assets in the presence or absence of PE investment. This resulted in the following model:

$$(7) RoA_{it} = \beta_0 + \beta_1 PEID + \varepsilon$$

Model eight is then estimated as an extended model including the control variables like the ones used in model two. This resulted in the following model:

$$(7) RoA_{it} = \beta_0 + \beta_1 PEID + \beta_2 LFP_{it} + \beta_3 Yr_t + \beta_4 FS_{it} + \beta_5 DS_{it} + \beta_6 LDS_{it} + \beta_7 LogTS_{it} \\ + \beta_8 LLogTS_{it} + \beta_9 LogTR_{it} + \beta_{10} LLogTR_{it} + \beta_{11} LogWB_{it} + \varepsilon$$

For model seven the simplified model has been run, indicating the relation between the duration of PE investment and its effect on club ROA. For the simplified model an adjusted R-squared of 0.007 is reported, implying that $PEID$ explains 0.70 percent of variation in a club's ROA. Like model five, this simplified regression reports a low adjusted R-squared. This is best explained by the nature of the variable $PEID$ when looking at Table 3.1. As stated, PE investment within the top European football industry has only taken flight in recent seasons. The mean of 0.496 as well as its standard deviation of 2.258 are indicative of this relation. Therefore, due to the infancy of PE investment duration, the sample size of the variable may yield inadequate explanatory power. Within model seven, an insignificant and negative coefficient for $PEID$ is reported. Therefore, a negative relation between the duration of PE investment and a club's ROA is identified. There is however no statistical evidence to be able to reject the null hypothesis of the coefficient being different from zero. Model eight presents the extended model including the relevant explanatory variables. For the following model an adjusted R-squared of 0.296 is reported, implying that the included variables explain 29.60 percent of the variance for ROA. This marks an increase of 28.93 percent compared to model seven. Once again, the adjusted R-squared for model eight proves lower than in academic literature studying ownership structure and financial performance. Similar reasoning as for model six serves as the explanation for this. Furthermore, the inclusion of control variables has resulted in a decrease of $PEID$'s magnitude. The extended model thus captures the effects that in the simplified model were attributed to the explanatory variable $PEID$. Due to the statistical insignificance of the coefficient for $PEID$ the null hypothesis cannot be rejected. Finally, within model eight the control variables portray similar behavior as in model six. The interpretation of control variables is therefore equal for model eight.

Table 5.2

This table shows the two regression models for hypotheses three and four with return on assets as the dependent variable. Column (5) shows the simplified regression, without control variables for the third hypothesis. Column (6) adds the control variables mentioned above for the third hypothesis. Column (7) shows the simplified regression, without control variables for the fourth hypothesis. Column (8) adds the control variables mentioned above for the fourth hypothesis. *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses. Season 2017/18 up until season 2022/23.

	(5)	(6)	(7)	(8)
PE investment	-9.109** (4.418)	-2.817 (4.395)		
PE investment duration			-2.262 (1.385)	-0.439 (1.611)
Revenue (logarithmic and lagged)		-6.221** (3.021)		-5.798* (3.002)
2019 Year		0.000 (.)		0.000 (.)
2020 Year		-4.937** (2.159)		-5.059** (2.170)
2021 Year		-8.183*** (2.398)		-8.360*** (2.422)
2022 Year		-1.473 (3.320)		-1.779 (3.314)
2023 Year		-1.720 (2.927)		-2.237 (3.192)
Foreign Success		-1.305 (1.791)		-1.387 (1.812)
Domestic Success		1.144*** (0.382)		1.128*** (0.388)
Domestic Success (lagged)		0.746** (0.321)		0.738** (0.324)
Transfer spending (logarithmic)		1.508 (1.380)		1.492 (1.386)
Transfer spending (logarithmic and lagged)		-1.096 (1.398)		-1.114 (1.401)
Transfer receipts (logarithmic)		2.183 (1.349)		2.180 (1.341)
Transfer receipts (logarithmic and lagged)		4.146*** (1.540)		4.162*** (1.532)
Wage bill (logarithmic)		-14.812* (7.534)		-15.464** (7.396)
Constant	-9.913*** (0.538)	50.375 (33.450)	-10.007*** (0.621)	51.865 (33.403)
N	600	264	600	264
Adj. R-squared	0.015	0.298	0.007	0.296
No. of groups	122	86	122	86

5.5 Post COVID-19 Results

In the following section, a further modified regression is run due to the results presented in sections 5.1-5.4. In sections 5.1-5.4, the period accounted for stretched from 2017/18 till the 2022/23 season. However, as stated in this paper's theoretical framework, PE involvement only really took off due to the increased financial distress for clubs caused by the COVID-19 crisis (MacInnes, 2023). The negative effects of COVID-19 on a club's financial situation concluded during the 2021/22 season. Therefore, this section will isolate these two seasons, 2021/22 and 2022/23, to provide a more comprehensive image of the impact of PE investment. This claim is further supported by the data collected in this thesis, as 69.44 percent of all PE investments occurred during the latter two seasons of the six seasons investigated in this paper. COVID-19 marked a turning point regarding the financial nature of the top European football industry, serving as an explanatory factor for the increase in PE involvement. Preceding COVID-19, excessive spending and irresponsible financial policies characterized the top European football industry. Owners, most notably Chelsea F.C.'s Roman Abramovich, perceived football clubs as status symbols, showcasing their wealth and influence. Owners sought to increase their standing through sporting success, financial performance was therefore of secondary importance. Chelsea F.C.'s weekly losses of EUR 900 thousand during the nineteen-year Abramovich period are indicative of this (Olley, 2022). Although UEFA FFP regulation aimed to improve financial sustainability, bypassing its financial regulations proved straightforward (Galanda, 2022). Once again an EPL example can be taken, this time Manchester F.C., who were charged with 115 breaches of FFP and profit and sustainability rules (PSR) (BBC, 2024). As indicated by Galiarotis et al. (2018), a positive relationship exists between a club's increased spending and sporting success. However, PE's competitive edge in value creation proves unattainable in an environment that is typified by excessive spending and irrespective of financial sustainability. Following COVID-19, a shift in the nature of the industry occurred, emphasizing financial sustainability, and introducing corporate governance systems in club management. These developments form the basis for the additional results section presented below.

Model two, displayed in Table 5.3, shows an adjusted R-squared of 0.516, meaning 51.60 percent of the variation in revenue is explained by the model. This marks an increase of 0.129 compared to model two in Table 5.1, which accounts for the full six years of the sample. Several factors may explain this increase. Firstly, the total variability of the data may have decreased due to the reduced years consulted, leading to a smaller total sum of squares. If the residual sum of squares has not decreased proportionally this will lead to a higher adjusted R-squared. A further explanation is a decrease in the adjustment factor for the adjusted R-squared, due to the selection of the two-year window instead of six. Furthermore, this improved adjusted R-squared exceeds the reported values in the comparative literature (Rohde & Breuer, 2018). Once again, this is best explained through the two factors mentioned above. For the coefficient of the altered model two a value of 0.107 is observed, indicating that the presence of *PE investment* leads to an increase of 11.29 percent in a club's revenue. This coefficient proves more in line with the first proposed hypothesis of this

paper, making the case for the positive impact of *PE investment*. However, due to its statistical significance, the null hypothesis may still not be rejected. In addition, several changes to the control variables can be observed in the model. Foreign Success holds a statistically significant coefficient of -0.099, implying that an increase in a club's UEFA Coefficient rating leads to a 9.43 percent decrease in club revenue. Resource allocation may provide a possible explanation for its negative coefficient. As a result of foreign success teams are required to participate in an increased number of games, allocating a substantial number of resources to foreign success rather than foreign success. An academic paper by John Moffat (2020) provides empirical evidence in favour of this claim. In his paper, Moffat (2020) finds a negative relationship between domestic and foreign performance for clubs from the top European leagues. Domestic success has lost its statistical significance but maintained its positive value, which is to be expected, the same has occurred for the lagged value of transfer spending. The control variables have seen no further changes in signs or significance when compared to the models presented in Table 5.1. In model four an adjusted R-squared of 0.509 is reported, implying that the explanatory variables in model four explain 50.90 percent of the variation in revenue. Once again, an increase as compared to the results in Table 5.1 is observed, this time an increase of 0.121. Similar reasons as those provided for model two apply to the increase in adjusted R-squared. Furthermore, a positive coefficient of 0.037 can be observed for *PEID*, the explanatory variable of interest. This means that an additional year of PE involvement leads to an increase of 3.77 percent in club revenue. A positive relationship is therefore observed, aligning with the expectation of the second hypothesis in this paper. However, the null hypothesis cannot be rejected as the coefficient proves insignificant. Finally, due to the similarity of models two and four, the control variables show similar signs and significance. Therefore, the description provided for the control variables in model two is also applicable to those in model four. The only exception applies to the foreign success variable, which still proves negative but is no longer statistically significant.

Table 5.3

This table shows two regression models for hypotheses one and two with financial performance (revenue) as the dependent variable. For these regression models, only data from the 2021/22 and 2022/23 seasons have been selected to analyse the impact of PE involvement following the COVID-19 crisis. *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses.

	(2)	(4)
PE investment	0.107 (0.088)	
PE investment duration		0.037 (0.085)
Revenue (logarithmic and lagged)	-0.232** (0.096)	-0.238** (0.095)
2022 Year	0.000 (.)	0.000 (.)
2023 Year	0.099* (0.052)	0.095 (0.059)
Foreign Success	-0.099* (0.059)	-0.092 (0.058)
Domestic Success	0.006 (0.008)	0.009 (0.008)
Domestic Success (lagged)	0.030*** (0.010)	0.030*** (0.011)
Transfer spending (logarithmic)	0.061 (0.083)	0.046 (0.089)
Transfer spending (logarithmic and lagged)	0.081 (0.054)	0.079 (0.053)
Transfer receipts (logarithmic)	-0.061 (0.048)	-0.054 (0.048)
Transfer receipts (logarithmic and lagged)	0.062* (0.032)	0.062* (0.033)
Wage bill (logarithmic)	0.154 (0.146)	0.207 (0.159)
Constant	4.836*** (0.892)	4.590*** (0.912)
N	106	106
Adj. R-squared	0.516	0.509
No. of groups	64	64

For models six and eight a similar procedure as for Table 5.3 has been conducted, presented in Table 5.4. Model six reports an adjusted R-squared of 0.444, implying that 44.40 percent of the variation in ROA is explained by the explanatory variables. This marks an increase of 0.146 with model six in Table 5.1. The increase in the adjusted R-squared can be explained by the same two reasons as in the prior paragraph, a decrease in total variability or a decrease in the adjustment factor. The increased adjusted R-squared for model six comes closer to that of similar academic literature, such as the one by Ruta et al. (2019), this is best explained by the two reasons mentioned. A positive coefficient of 10.683 is presented in model six, implying a positive relationship between the presence of *PE investment* and ROA. Therefore, *PE investment* increases a club's ROA by 10.68 percent. This positive relationship aligns with the expectation of this paper's third hypothesis and that of the consulted literature in the theoretical framework. However, the null hypothesis may not be rejected as the coefficient proves statistically insignificant. The control variables in Table 5.4 have seen several changes in their signs and magnitude as compared to Table 5.2. First, for foreign success, a negative and statistically significant coefficient is presented. A similar explanation as the one provided for model two in Table 5.3, resource allocation, is applicable here. Furthermore, the domestic success variable has reversed its sign and lost its statistical significance. The recovery from COVID-19 and altered market dynamics provide an intriguing explanation. Due to increased financial distress, a trade-off between domestic success and financial sustainability is presented. Increased emphasis on financial sustainability, thus lowered spending, may have lowered domestic success as is also supported by academic literature (Malagila et al., 2021). The case of Everton F.C. serves as an example. Excessive spending, to secure domestic success, led to a breach of PSR, resulting in a six-point deduction (BBC, 2024). Furthermore, transfer spending has now proven significant. This can be explained by the change in the economic landscape of the football industry, with the transfer market as a reference point. Increased economic constraints, due to COVID-19, make the impacts of transfer spending more significant relative to the period preceding COVID-19. This is further explained by the decrease in transfer activity on the market. In the 2019/20 season, total transfer spending decreased from EUR 6.63 billion to EUR 4.62 billion, a 30.50 percent decrease (Poli et al., 2020). Furthermore, a shift in the types of transfers provides an additional explanation for the change in sign. Following the COVID-19 crisis an increased amount of free or loan transfers occurred, best explained by the financially constrained situation of clubs (Poli et al., 2020). Therefore, being able to pay a transfer fee for a player provides an indicator of the financial health of a club, which is positively associated with the ROA. For model eight an adjusted R-squared of 0.429 is reported, indicating that 42.90 percent of the variation in ROA is explained by the explanatory variables. Once again, a substantial increase as compared to the results in Table 5.2 is observed, this time an increase of 0.133. Similar reasons as those provided for model four apply to the increase in adjusted R-squared. For model eight a positive coefficient of 4.646 is presented. Therefore, an additional year of PE investment results in an increase of 4.65 percent for a club's ROA. Although we cannot reject the null hypothesis, due to its statistical insignificance, this relationship is in line with the prediction of this paper's fourth hypothesis. Control variables in model eight have shown similar behaviour and significance as compared

to model six. The additional results section is created due to COVID-19's financial effects and the ensuing increase in PE involvement in the top European football industry. Although all four models did not reject the null hypotheses, a valuable perspective is provided. These newly presented relationships provide an additional perspective on the effect of PE involvement and its duration on a club's financial performance.

Table 5.4

This table shows two regression models for hypotheses three and four with return on assets as the dependent variable. For these regression models, only data from the 2021/22 and 2022/23 seasons have been selected to analyse the impact of PE involvement following the COVID-19 crisis. *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses.

	(6)	(8)
PE investment	10.683 (8.548)	
PE investment duration		4.646 (5.258)
Revenue (logarithmic and lagged)	-8.450 (5.122)	-9.215* (5.172)
2022 Year	0.000 (.)	0.000 (.)
2023 Year	-3.259 (4.319)	-4.171 (5.102)
Foreign Success	-6.756* (3.860)	-6.092 (4.033)
Domestic Success	-0.326 (0.653)	0.050 (0.828)
Domestic Success (lagged)	1.432*** (0.535)	1.493*** (0.497)
Transfer spending (logarithmic)	11.449** (4.335)	9.502* (5.197)
Transfer spending (logarithmic and lagged)	5.669* (3.073)	5.447* (3.155)
Transfer receipts (logarithmic)	-1.050 (3.028)	-0.044 (3.094)
Transfer receipts (logarithmic and lagged)	6.075** (2.504)	6.267** (2.546)
Wage bill (logarithmic)	-42.909*** (10.984)	-37.800*** (11.806)
Constant	153.128*** (57.527)	128.853** (56.024)
N	101	101
Adj. R-squared	0.444	0.429
No. of groups	61	61

5.6 Ownership Results

In section 5.6 an extended analysis on the binary variable *PE investment* is presented. This is done for both dependent variables, revenue, and ROA. In the following analysis *PE investment* has been subdivided into two different ownership types, minority, and majority stakeholders. By distinguishing between both types of ownership, possible differences between the two may be identified. These differences will then be explained with economic reasoning and empirical evidence in the Discussion section of this paper. This will provide further insight into the dynamics and outcomes of *PE investment* on our selected sample of clubs. Moreover, this section builds upon existing academic literature considering ownership type and concentration, and its effect on financial performance. Finally, this section will make use of the two different periods presented in section 5.5. This choice has been motivated by the stark contrast in results during both periods. Within the ensuing Discussion section, further clarification and explanation of both models and their interpretability are presented.

To begin with, model nine reports an adjusted R-squared of 0.387, which means that it explains 38.70 percent of the variation in club revenue. This number is identical to the adjusted R-squared presented in Table 5.1. Their similarity is best explained by the collinearity of the variable *PE investment* with the new independent variable accounting for ownership type. The variable for minority investors has a negative coefficient of 0.098, implying that the presence of minority investors results in a 9.34 decrease in club revenue. Due to the statistical insignificance of both independent variables, the null hypothesis for this paper's first hypothesis may not be rejected. All control variables, except for the wage bill, portray similar signs and significance levels as those in Table 5.1 for model two. The wage bill variable has become statistically significant, whilst maintaining a positive coefficient. The introduction of *ownership type* as the new independent variable has potentially increased model specification between variables, explaining the change in coefficient significance. Model eight reports an adjusted R-squared of 0.558, thus accounting for 55.80 percent in the variation of club revenue. This marks an increase of 0.171 with model two in Table 5.1 and 0.042 with model two in Table 5.3. Once again, the increase of 0.171 is best explained by a decrease in total variability or a decrease in the adjustment factor. The increase of 0.042 is best explained by the improved specification of *ownership type*, capturing more model variation than the binary *PE investment*. Model ten presents a positive and significant coefficient of 0.293 for minority ownership. The presence of minority PE ownership therefore results in a 34.04 percent increase in club revenue. For majority ownership, a negative coefficient of 0.057 is reported, implying that the presence of majority ownership decreases club revenue by 5.54 percent. Due to its statistical insignificance, the null hypothesis cannot be rejected for the dummy variable indicating majority PE ownership. However, with a positive and statistically significant coefficient, the dummy for minority PE ownership can reject the null hypothesis in favor of this paper's first hypothesis. The lagged value transfer spending is the only control variable altering in significance from those in Table 5.3 for model two. It has maintained its positive coefficient but gained statistical significance. Once again, the increased model specification explains this change.

Table 5.5

This table shows two regression models for hypothesis one with financial performance (revenue) as the dependent variable and the ownership type as the independent variable. Model nine shows the regression for this paper's full time span (2017/18 till 2022/23), and model ten for the period ensuing COVID-19 (2021-22 till 2022/23). *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses.

	(9)	(10)
No PE involvement	0.000 (.)	0.000 (.)
Minority investors	-0.098 (0.133)	0.293*** (0.087)
Majority investors	-0.004 (0.075)	-0.057 (0.053)
Revenue (logarithmic and lagged)	-0.098** (0.048)	-0.207** (0.086)
2019 Year	0.000 (.)	
2020 Year	-0.163*** (0.047)	
2021 Year	-0.064 (0.047)	
2022 Year	0.036 (0.046)	0.000 (.)
2023 Year	0.132** (0.050)	0.082 (0.052)
Foreign Success	-0.013 (0.028)	-0.116** (0.057)
Domestic Success	0.017*** (0.005)	-0.001 (0.008)
Domestic Success (lagged)	0.023*** (0.006)	0.033*** (0.010)
Transfer spending (logarithmic)	-0.019 (0.013)	0.074 (0.070)
Transfer spending (logarithmic and lagged)	0.035*** (0.012)	0.089** (0.040)
Transfer receipts (logarithmic)	-0.006 (0.014)	-0.060 (0.045)
Transfer receipts (logarithmic and lagged)	0.050*** (0.018)	0.066** (0.027)
Wage bill (logarithmic)	0.209** (0.101)	0.091 (0.119)
Constant	3.927*** (0.382)	5.010*** (0.692)
N	277	106
Adj. R-squared	0.387	0.558
No. of groups	89	64

Within Table 5.6 the results of the extended analysis for this paper's third hypothesis are presented. Model eleven, which applies to the full period of this paper, reports an adjusted R-squared of 0.264. The model thus explains 26.40 percent of the variation observed in club ROA. This presents a decrease of 0.034 as compared to model six in Table 5.2. The coefficient for minority investors is -11.485 and is statistically significant. This implies that football clubs with minority PE investment have an annual ROA 11.49 percent lower than those without PE investment during the period from 2017/2018 onwards. For the dummy concerning majority investors, a positive and statistically insignificant coefficient of 1.172 is presented. Thus, football clubs under majority PE control have an annual ROA 1.18 percent higher than those without PE investment during the period from 2017/2018 onwards. For this paper's third hypothesis, the null hypothesis of the coefficient being equal to zero is rejected for the minority investor dummy variable. However, due to the negative coefficient, this is not in line with the predicted hypothesis which forecasted a positive effect of PE involvement. Second, the null hypothesis may not be rejected for the majority dummy variable. Due to its statistical insignificance, insufficient evidence exists to reject the null hypothesis of it being different from zero. The control variables in model eleven portray the same signs and significance as in model six in Table 5.2. Due to the collinearity of *PE investment* and *ownership type*, the same explanation for the control variables is applicable here. For model twelve an adjusted R-squared of 0.444 is stated, implying the model accounts for 44.40 percent of variation in ROA. This number proves identical to the adjusted R-squared in Table 5.4. The coefficient for the minority investor dummy is positive and insignificant, with a value of 6.012. This entails that the presence of minority PE investment leads to an annual increase of 6.01 percent in club ROA for the period from 2021/22 to 2022/23. Next, the coefficient for the majority investor dummy proves statistically significant and positive, with a value of 18.160. Club ROA therefore annually increases by 18.16 percent in the case of majority PE control for the period from 2021/22 to 2022/23. For the minority dummy, the null hypothesis may not be rejected due to its statistical insignificance, thus not rejecting the third hypothesis. On the other hand, due to its statistical significance, the majority dummy rejects the null hypothesis in favour of this paper's third hypothesis, majority PE ownership has a positive effect on a club's ROA based on the data from 2021/22 to 2022/23. Once more, the collinearity of *PE investment* and *ownership type*, has resulted in almost identical control variables. In model eleven, the lagged value of transfer spending proves statistically significant, which may not be observed for model six in Table 5.4. A similar explanation accounts for the one provided in the paragraph above, improved model specification due to the introduction of *ownership type* as the new independent variable.

Table 5.6

This table shows two regression models for hypothesis three with return on assets as the dependent variable and the ownership type as the independent variable. Model eleven shows the regression for this paper's full time span (2017/18 till 2022/23), and model twelve for the period ensuing COVID-19 (2021-22 till 2022/23). *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses.

	(11)	(12)
No PE involvement	0.000 (.)	0.000 (.)
Minority investors	-11.485* (6.666)	6.012 (15.079)
Majority investors	1.172 (4.956)	18.160*** (4.650)
Revenue (logarithmic and lagged)	-6.413** (2.975)	-9.066* (4.717)
2019 Year	0.000 (.)	
2020 Year	-5.045** (2.164)	
2021 Year	-8.783*** (2.376)	
2022 Year	-2.057 (3.249)	0.000 (.)
2023 Year	-1.479 (2.910)	-2.104 (4.111)
Foreign Success	-1.105 (1.767)	-5.626 (3.655)
Domestic Success	1.211*** (0.384)	-0.116 (0.573)
Domestic Success (lagged)	0.733** (0.320)	1.393*** (0.514)
Transfer spending (logarithmic)	0.958 (1.188)	9.755** (4.119)
Transfer spending (logarithmic and lagged)	-1.016 (1.151)	3.659 (2.493)
Transfer receipts (logarithmic)	1.959 (1.186)	-1.491 (2.935)
Transfer receipts (logarithmic and lagged)	3.861*** (1.335)	5.638** (2.238)
Wage bill (logarithmic)	-12.823* (6.742)	-42.345*** (11.769)
Constant	45.101 (31.969)	165.329*** (59.273)
N	264	101
Adj. R-squared	0.264	0.444
No. of groups	86	61

5.7 Sensitivity Analysis

Several tests have been run to improve the model's validity and accuracy. Firstly, the Breusch-Pagan LM Test is performed in STATA to test for heteroskedasticity across panels within the regression. This is followed by a modified Wald test to test for the potential heteroskedasticity of the errors. For all models heteroskedastic robust and clustered standard errors have been used, to account for heteroskedasticity and to reduce the impact of kurtosis and skewness within the data sample. In addition, clustered standard errors correct for heteroskedasticity, within-group correlation, and autocorrelation which is common in a panel regression.

Furthermore, a skewness and kurtosis test are performed in STATA to test for the normal distribution of data within the panel regression. To improve the normal distribution of data several variables have been transformed to their logarithmic form. These variables are revenue, wage bill, transfer spending, and transfer receipts. When testing for the normal distribution of the models the null hypothesis was rejected for models six and eight at the one percent level (Appendix A.1). In line with this rejection density curves for the residuals of all four initial models have been constructed (Appendix A.2). The current data sample has underfitted the normal distribution, as the density curves indicate. Several reasons can be identified as to why this is. Firstly, the lack of data on the ORBIS database regarding the ROA for our selected sample makes the data spread increasingly receptive to outliers. Furthermore, variables illustrative of market conditions or management quality have not been included in the regression due to unavailability. This may explain the underfitting model, as the current explanatory variables may not explain the variability in the revenue and ROA. As an effect, residuals with systematic patterns exist that are not accounted for in the model, explaining the underfitting (Chamberlain, 1978). Secondly, limited variation in PE investment may explain the underfitting, due to the limited data available on PE investment in the top European football industry. A lack of variation in the explanatory variable implies difficulties for the model to identify significant relations between the effect of PE investment and its duration on revenue and ROA. Limited variation of the independent variable may result in a statistically insignificant coefficient, with underfitting as a result (Omar & Inaba, 2020). Although rejecting one of the assumptions for econometric models, the results presented still hold economic significance and explanatory power as the model has met all the other preceding assumptions. As indicated by Heij (2004), "The standard inference methods for least squares are still valid for stochastic regressors and non-normal disturbances, provided that these four conditions are satisfied.". Furthermore, to account for the rejected null hypothesis of normal distribution, models six and eight have been simulated using Box-Cox transformed dependent variables. The Box-Cox transformation of the dependent variables uses a statistical technique to stabilize variance and improve the normalized distribution of a variable. A power transformation is applied to the data, in which the optimal value of λ is selected to make the data as normally distributed as possible (Sakia, 1992). Within Appendix A.3 the results of this regression are presented, showing no significant deviations from coefficient significance and signs in Table 5.2. Furthermore, a bootstrap transformation has been applied to all extended models to improve their normal distribution. The following method extends the consulted data sample, allowing the model to

attain the assumptions of the Central Limit Theorem (CLT) (Prahl, 2011). Simply put, from the current data sample a fixed number of repetitions with equal length has been drawn. For each model, a thousand repetitions have been selected to adhere to the CLT. Appendix A.5 and A.6 both show the tables constructed for models two, four, six, and eight. As shown in both appendices, standard errors are very similar to the standard errors presented in the Results section. Furthermore, almost no changes in the adjusted R-squared of both models are observed. This confirms the validity of the current models and indicates that the bootstrap method has successfully captured the uncertainty in the data, providing a reliable estimate that conforms to the normal distribution assumption.

In addition, after each regression, a variance inflation factor (VIF) is run to account for multicollinearity among the independent variables. Independent variables exceeding a VIF value of ten will be removed from the regression to improve the validity and reliability of the coefficients within the model. This has resulted in the current models. The table indicating the VIF tests has been noted in the appendix of this paper (Appendix A.4).

Through the Hausman test the appropriate model, fixed or random effects, will be selected within STATA. The Hausman tests against the null hypothesis that a random effects model is preferred to a fixed effect model. The null hypothesis is rejected if a significant difference exists between the coefficients in both models, employing a fixed effect model accordingly. All models are run as fixed effects models due to the rejection of the null hypothesis of the Hausman test.

Moreover, the Durbin-Wu-Hausman test is performed to test for potential endogeneity. A lagged observation of the dependent variable is included in the regression if the null hypothesis, no endogeneity, is rejected with the Durbin-Wu-Hausman test. This transformation has been made in line with findings within the academic literature. The nature of a club's financial performance depends on multiple seasons, motivating the decision to include lagged variables (Rohde & Breuer, 2016) The lagged variables captured the delayed effects of past periods on the current dependent variable, creating a more comprehensive analysis.

Finally, a dummy variable for the year-by-year difference is used to control for the macroeconomic trends and independent shocks on the dependent variable. Significant coefficients of the dummy variable indicate the notable effect of a specific year on the dependent variable. This dummy variable isolates the effect of the independent variable by controlling for temporal effects and shocks, thereby improving the accuracy and reliability.

CHAPTER 6 Discussion

As stated, the period from 2000 to 2020 was marked by financial unsustainability in the football industry (Football Benchmark, 2022). This provides clear reasoning for the insignificant findings reported in Tables 5.1 and 5.2. Throughout the research process, the downsides of the initial time span became evident. Stricter FFP and PSR measures and the impact of the COVID-19 crisis provided an improved period of analysis for PE value creation compared to the first period. The first four years of the sample (2017-18 to 2020/21) provide an image of the industry that is incompatible and unrelatable to the value creation process of PE. In an environment dominated by excessive spending, financial unsustainability, and without budget constraints, the competitive advantage of PE fades. Due to the nature of a PE firm, it is subject to financial limitations. It will therefore not pursue reckless financial decision-making, as most clubs in the top European football industry did (Zanda et al., 2024). The bankruptcies of Serie A sides Chievo Verona and Parma illustrate the financially unsustainable industry that highlighted this period (Iaria, 2024). Value creation, the key objective of PE, only occurs in the football industry through the sporting success of a club. As noted by Galariotis et al. (2018), a positive relationship exists between the financial performance and the sporting success of the corresponding club. However, due to the financial nature of the industry in the first four years, it proved impossible for PE to gain a unique edge in a club's financial performance. This directly translates to lowered sporting success, hence decreased value creation. Therefore, including the first four years, at the hand of the observed sample provides an inaccurate perception of the unique nature of PE's value creation process. Furthermore, from the total sample, only eleven clubs enjoyed PE investment before COVID-19, with only two exceeding two years of PE investment. This provides a limited sample, prone to outliers, that accounts for a substantial part of the results. Therefore, the models presented in Tables 5.3-5.6, focusing on the post-COVID-19 period, provide a better fit for the proposed hypothesis. With a total of thirty-six clubs and a financial environment suited to PE's unique value creation process, a superior answer to the hypothesis may be provided.

Breuer and Rohde (2016) have been one of the most prevalent to investigate the relationship between ownership type and its effect on the financial performance of football clubs. The relationship of interest is the impact of foreign private ownership on the financial performance of the top thirty European teams, all of which have been included in this paper's sample. It is important to note that in all cases PE involvement in this paper was initiated by a foreign firm. Breuer and Rohde (2016) investigate ten years, from 2006 to 2016, focusing on every type of foreign ownership. As a result, their independent variable includes a wider range of parties, rather than solely focusing on PE involvement, thus also including individuals such as Chelsea F.C.'s Roman Abramovich. Breuer and Rohde (2016) run a similar model, fixed effects panel regression, including much of the same control variables. They observed a positive relation between foreign ownership of a club and its financial performance, as measured by revenue. When comparing their findings to those in Tables 5.1 and 5.2 a different relationship is observed, as for these tables PE investment shows

no positive association with the financial performance of clubs. These contrasting findings are best explained through an interpretation of the independent variables and the financial unsustainability of the European football industry during the period of study by Rohde and Breuer (2016). When accounting for the changed market dynamics following COVID-19, and the tightened FFP regulations, different results are presented in Table 5.3. In Table 5.3 a positive but insignificant is presented for PE investment. This indicates that a positive relationship is observed between PE investment and revenue. Although insignificant, these findings are consistent with the academic literature by Rohde and Breuer (2016) and this paper's proposed hypothesis. The limited period of analysis provides a possible explanation for the statistical insignificance. The current window highlights two years, whereas most PE firms operate in a three-to-five-year window. Therefore, the full implications of PE's value creation process may not be met.

Jahn (2022) has reported extensively on the value creation process of PE and its average return realized. In his paper, he notes an average return on investment of 10.48 percent. The findings in Table 5.4, although insignificant, are similar to the findings by Jahn (2022). In model six a positive coefficient of 10.683 is reported, exceeding the return reported by Jahn. Thus, when accounting for the post-COVID-19 period PE investment has reported similar returns in the European football industry as compared to its global average. This is also consistent with the results of model eight, as it is found that the effect of an additional year of PE investment increases the return by 4.65 percent. Still, the findings for model eight also prove insignificant. Once again, the current insignificance is best explained by the short window of analysis that has been unable to capture the full effects of the PE value creation process. A side note should be placed for the measure consulted to report the return. Due to the design of the ORBIS database, the ROA measure has been consulted. The ROI measure, used by Jahn, proved unavailable on the ORBIS database.

Thirdly, in Tables 5.5 and 5.6 a distinction is made between minority and majority PE investment, investigating the effect of ownership concentration. In a study by Fraile et al. (2017), the relationship between ownership concentration and the financial performance of a football club is evaluated. Similar to Rohde and Breuer (2016), all types of ownership are included in the sample. Their findings suggested an argument in favour of an inverted U-curve regarding the relationship between ownership concentration and maximized financial performance. Low and high ownership concentrations implied a negative effect on financial performance, whereas a balanced concentration was concluded to maximize financial performance (Fraile et al., 2017). Due to its applicability to the PE value creation process, only model ten, which addresses the post-COVID-19 period, is discussed. Due to the unique nature of PE involvement, a minority stake by PE still results in their active participation in club management. Three prime examples are Paris Saint-Germain, the CFG, and Manchester United F.C. (Crafton, 2024). Due to this influence, the variable for minority investors is interpreted as a balanced ownership concentration. The results for minority PE investors, in both tables, are consistent with the literature by Fraile et al. A positive, and significant

coefficient of 0.257 is reported, implying an increase of 29.30 percent in club revenue in the presence of minority PE investment. Results for majority investment diverge from the findings by Fraile et al.

This divergence is best explained in consultation with further academic literature and empirical evidence. First, the academic literature by Schneider and Henrik (2021) is consistent with the findings reported in Tables 5.5 and 5.6. In their work, Schneider and Henrik emphasize the differences in minority and majority PE investment. Schneider and Henrik (2021) define majority investment as a two-stage approach. First, the acquired company will aim to maximize efficiency, often through the introduction of corporate governance and financial restructuring (Masulis & Thomas, 2009). This is followed by business expansion, where utilization of the PE firm's portfolio and management expertise are key value creators (Brigl et al., 2016). Therefore, the negative coefficient for majority investment is best explained by PE's emphasis on financial restructuring in the first stage. Due to the novelty of corporate management in the European football industry, the realized return also proves substantial. Most relevant is the example of A.C. Milan. Under the control of Silvio Berlusconi the Italian club spent over EUR one billion, amassing a loss of EUR 857 million during this period (Fisher, 2023). After finding itself in significant financial turmoil following the sale by Berlusconi and problems adhering to FFP regulation, the club was taken over by Elliot Management (Gates, 2023). Because of financial restructuring revenue dropped significantly in the first two seasons. After this, the introduction of corporate management and business expansion resulted in substantial annual increases in revenue. In five years, the PE fund managed to financially reengineer the club, resulting in the eventual sale of EUR 1.2 billion, making a profit of EUR five hundred million (McCarthy, 2023). Minority investment is characterized by the selection of "mature" companies under the control of stable and proven management. Due to the lack of full control over the acquired company, PE only invests in companies with a proven track record (Schneider & Henrik, 2021). As such, minority investment is predominantly active in the latter stage mentioned for majority investment. This approach yields a lower maximum return, but the acquired company's maturity provides stable revenue streams for PE firms explaining the results for minority investment in Tables 5.5 and 5.6. Silver Lake's acquisition of a minority stake in the CFG is an example. Set up in 2013, The CFG has proven to be a stable and well-led consortium of football clubs globally, with multiple EPL championships and promotions for portfolio clubs to account for this. Silver Lake aimed to increase synergy with its current company portfolio and use its extensive network to accelerate the commercialization process of the CFG.

Additionally, an analysis of PE's portfolio strategy, as presented by Brigl (2016), explains the contradictory results with Fraile et al.'s (2017) literature for majority investment. One of the four prominent components in PE's value creation process is the utilization of its portfolio network, as stated in the theoretical framework (Brigl et al., 2016). Only through majority investment is this strategy implemented. Through increased access to capital markets, as well as synergy with portfolio clubs, PE-acquired clubs can alter and improve their operational efficiency. In the case of the European football industry, this translates into two specific strategies: the "ants' colony" and the "eagle's nest strategy" (Sauer et al., 2023). In the first case,

a portfolio of smaller clubs is formed, in the latter a portfolio surrounding one dominant club. The value creation process through a portfolio network, improving a club's operational efficiency, is not necessarily defined with an increased revenue stream. Therefore, this translates to an improved return, as indicated in Table 5.6 with a coefficient of 18.160 but not necessarily increased revenue streams as presented in Table 5.5. The acquisition of Hertha B.S.C. by 777 Partners is an example of this. 777 Partners acquired Hertha B.S.C. in line with the "ants' colony" strategy, integrating them into their European network of clubs. In the first year, 777 Partners significantly cut costs, reducing revenue (Hamilton, 2024). Still, this year Hertha B.S.C. is on course for a financial profit, for the first time in years.

The analysis of these two sources explains the divergence between the findings by Fraile et al. (2017) and those in Tables 5.5 and 5.6. The nature of PE investment, as well as the utilized strategies in the football industry, provide an explanation that is consistent with the results presented in those tables.

Finally, the coefficients of the control variables included in this paper's models also prove consistent with academic literature. In the study by Malagila et al., (2021) the relationship between a club's sporting success and financial performance was investigated. They find a positive relation between the two factors, claiming the existence of a self-enforcing cycle for the two factors. A similar conclusion can be reached at the hand of the results presented within this paper. The statistically significant findings in all tables have been consistent in implying the positive effect of domestic success on the financial performance of top European football clubs. Not only does this support the findings by Malagila et al. (2021), but it is also supportive of the conclusions reached by Galariotis et al. (2018).

CHAPTER 7 Conclusion

This thesis investigated the effect of PE investment and its duration on the financial performance of clubs in the top European football industry. Previous research has emphasized the value creation process of PE investment across various industries. This thesis, however, provides an innovative perspective on the previously non-explored effects of PE investment, and its duration, in the football industry. In recent years PE investment has greatly increased in this industry, fuelled by the impact of the COVID-19 crisis as well as the introduction of FFP regulation. Next to this, this thesis provides additional relevant variables to be able to link the current paper's findings to those in preceding academic literature. Overall, this paper aims to answer the research question:

“How have private equity investments influenced the financial performance of football clubs in the top five European leagues, from 2017/18 to the 2022/23 season, measured as revenue and return on assets, compared to clubs without private equity investments?”

Throughout this paper a fixed effect panel regression was run to investigate the effect of PE investment and its duration on financial performance. The selection of this model was inspired by a similar academic study conducted by Rohde and Breuer (2016). The fixed effect model allowed for the control of unobserved time-invariant and correlated heterogeneity within the sample, isolating the effect of the independent variable on the dependent variable. Furthermore, year dummies have been included to control for yearly fixed effects. In this paper, an extensive set of models has been constructed to provide an answer to the four hypotheses. Due to the flawed nature of the initial sample period and, as a result, insignificant results, this paper has analyzed two time periods to account for the shortcomings of the initial sample period.

Results from the post-COVID-19 crisis prove most relevant to answer the hypothesis, due to the applicability of this period to the value creation process of PE. From this analysis, it is found that PE involvement and its duration have a positive effect on a club's revenue and ROA, albeit not statistically significant. This is in line with the proposed hypotheses, PE involvement is thus positively associated with the financial performance of top European football clubs. Furthermore, additional models have been run to account for minority or majority PE investment and its influence on financial performance. Through additional consultation of academic literature and empirical evidence, the results are coherent with the research expectation of the hypotheses.

This paper thus concludes that in the period following COVID-19, PE involvement has materialized in superior financial performance for clubs. Following an adjustment of this paper's studied period, a more complete image of the value creation process for PE is presented. These findings are in line with the consulted academic literature and provide an academic perspective that as of now has not been explored.

Limitations and Future Research

One of the limitations of this paper lies in the short timespan that is considered for the data sample selected. The relative novelty of PE investment in the top European football industry stands at the basis of this shortcoming. The novelty and nature of PE investment have resulted in a limited data sample. Moreover, current results may not apply to the full effect of PE investment, due to the three to five-year nature of PE investment, which in many cases was not met. Furthermore, the limited timespan made the data susceptible to significant influences caused by external effects that are not accounted for by explanatory variables within the data sample. For future research, it is advised to apply a timespan exceeding ten years for the currently selected sample.

A further limitation lies in the selection of the two dependent variables for this paper. To accurately measure the effect of PE investment and its duration, variables different from revenue and ROA could have been considered. However, the novelty of PE involvement in the industry, as well as the limited availability of data for PE funds, proved the usage of other variables such as the internal rate of return (IRR) impossible (Humphery-Jenner et al., 2016). For future research, using IRR as the dependent variable may yield a more comprehensive analysis.

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APPENDIX A.1

Table 8.1

This table shows the results for the skewness and kurtosis test performed on model two, four, six and eight used within this paper.

*** $p < .01$, ** $p < .05$, * $p < .1$. Season 2017/18 up until season 2022/23.

Variable	Observations	Pr (skewness)	Pr (kurtosis)	Adj Chi ² (2)	Pr>Chi ²
Model 2	252	0.817	0.023	5.25*	0.073
Model 4	252	0.664	0.013	6.16**	0.046
Model 6	230	0.000	0.428	16.33***	0.000
Model 8	230	0.000	0.0374	27.85***	0.000

APPENDIX A.2

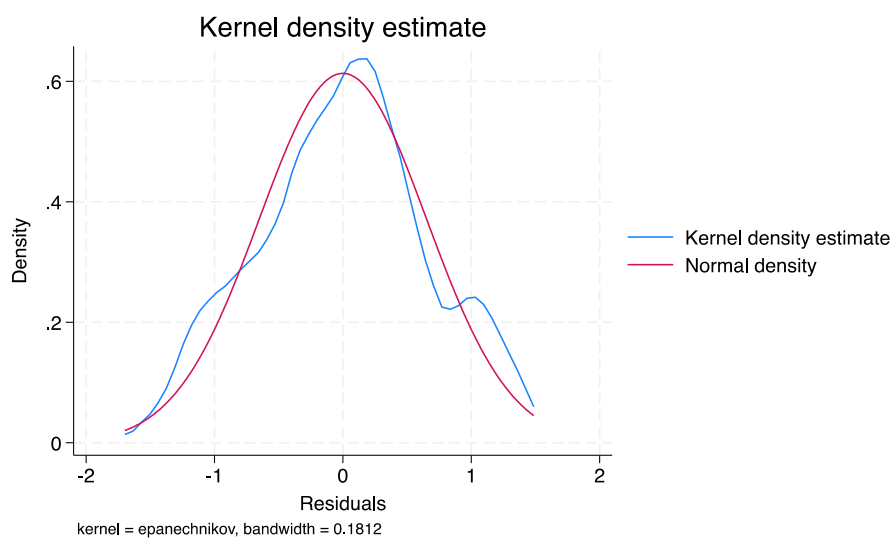


Figure 1. The *Kdensity* curve of the residuals for model two, as compared to a normal distribution. The Y-axis shows the density of the residuals for model two. The X-axis shows the measurement of the residuals within model two. 122 clubs from the top five European football leagues, from the 2017/18 season till the 2022/23 season window have been used in this sample.

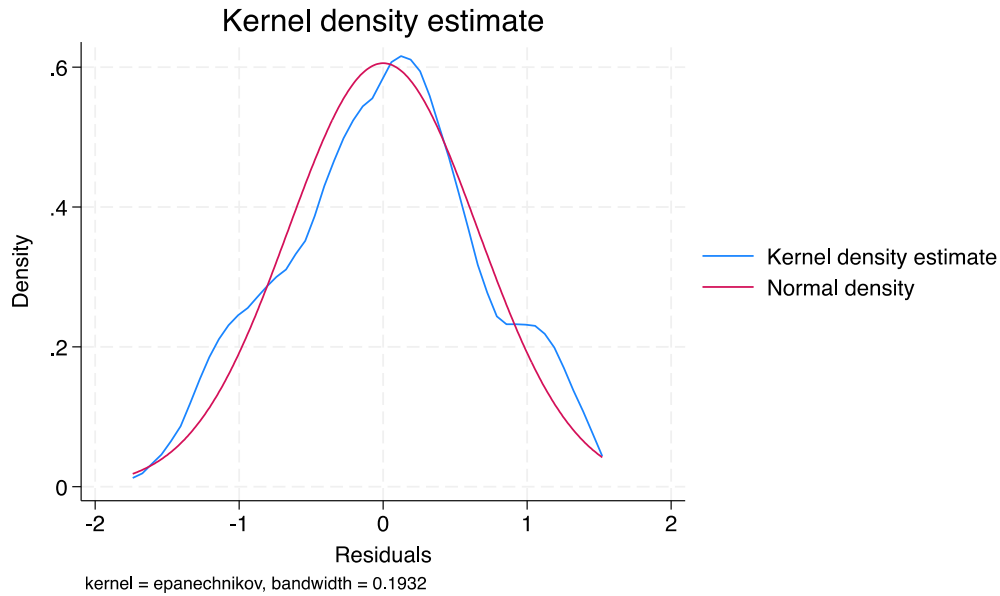


Figure 2. The *Kdensity* curve of the residuals for model four, as compared to a normal distribution. The Y-axis shows the density of the residuals for model four. The X-axis shows the measurement of the residuals within model four. 122 clubs from the top five European football leagues, from the 2017/18 season till the 2022/23 season window have been used in this sample.

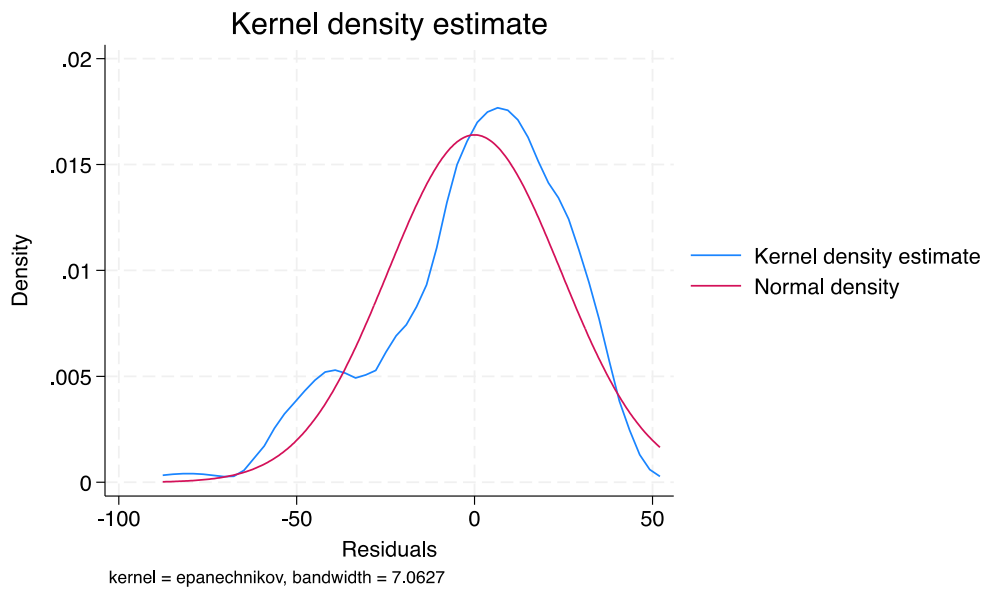


Figure 3. The *Kdensity* curve of the residuals for model six, as compared to a normal distribution. The Y-axis shows the density of the residuals for model six. The X-axis shows the measurement of the residuals within model six. 122 clubs from the top five European football leagues, from the 2017/18 season till the 2022/23 season window have been used in this sample.

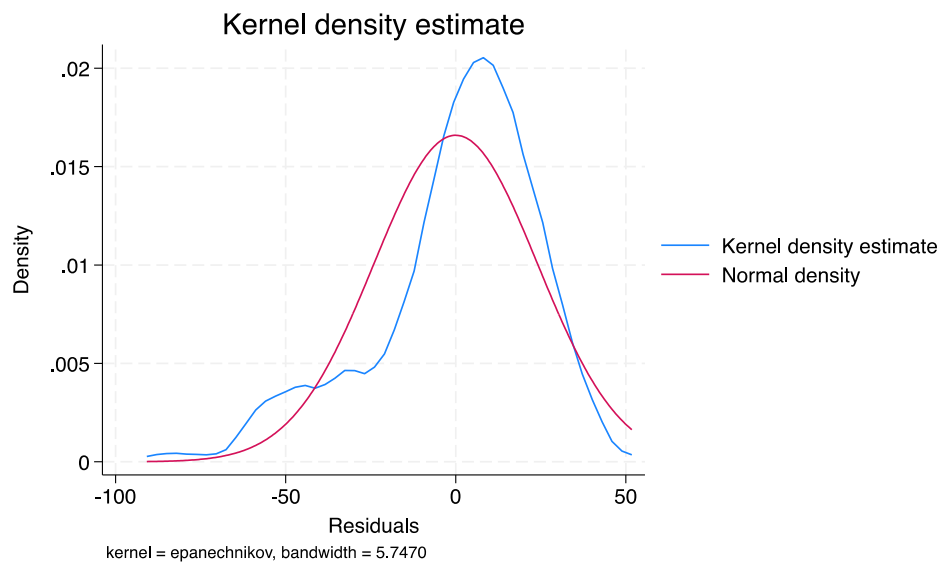


Figure 4. The *Kdensity* curve of the residuals for model eight, as compared to a normal distribution. The Y-axis shows the density of the residuals for model eight. The X-axis shows the measurement of the residuals within model eight. 122 clubs from the top five European football leagues, from the 2017/18 season till the 2022/23 season window have been used in this sample.

APPENDIX A.3

Table 8.2

This table shows the two regression models six and eight with the Box-Cox transformed dependent variable. *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses. Season 2017/18 up until season 2022/23.

	(6)	(8)
PE investment	-0.035 (0.039)	
PE investment duration		-0.005 (0.015)
Revenue (logarithmic and lagged)	-0.067** (0.030)	-0.061** (0.029)
2019 Year	0.000 (.)	0.000 (.)
2020 Year	-0.046** (0.019)	-0.048** (0.020)
2021 Year	-0.073*** (0.021)	-0.076*** (0.021)
2022 Year	-0.011 (0.030)	-0.015 (0.031)
2023 Year	-0.010 (0.028)	-0.017 (0.031)
Foreign Success	-0.012 (0.016)	-0.013 (0.016)
Domestic Success	0.011*** (0.004)	0.011*** (0.004)
Domestic Success (lagged)	0.007** (0.003)	0.007** (0.003)
Transfer spending (logarithmic)	0.010 (0.012)	0.010 (0.012)
Transfer spending (logarithmic and lagged)	-0.007 (0.013)	-0.007 (0.013)
Transfer receipts (logarithmic)	0.020* (0.011)	0.020* (0.011)
Transfer receipts (logarithmic and lagged)	0.039*** (0.014)	0.039*** (0.014)
Wage bill (logarithmic)	-0.140** (0.068)	-0.149** (0.067)
Constant	0.529* (0.300)	0.551* (0.299)
N	264	264
Adj. R-squared	0.313	0.308
No. of groups	86	86

APPENDIX A.4

Table 8.3

This table shows the VIF analysis for models two, four, six and eight. The VIF analysis has been performed to account for potential multicollinearity within the regression. Season 2017/18 up until season 2022/23.

Variable	VIF			
	(2)	(4)	(6)	(8)
PE investment	1.17		1.18	
PE investment duration		1.09		1.09
Revenue (logarithmic and lagged)	7.47	7.44	7.92	7.90
2020 Year	1.87	1.86	1.82	1.81
2021 Year	1.72	1.70	1.70	1.68
2022 Year	1.68	1.64	1.67	1.63
2023 Year	1.64	1.56	1.65	1.57
Foreign Success	4.38	4.39	4.52	4.52
Domestic Success	2.34	2.32	2.43	2.40
Domestic Success (lagged)	3.22	3.21	3.39	3.37
Transfer spending (logarithmic)	2.35	2.34	2.29	2.28
Transfer spending (logarithmic and lagged)	2.79	2.78	2.73	2.72
Transfer receipts (logarithmic)	1.59	1.59	1.56	1.56
Transfer receipts (logarithmic and lagged)	1.45	1.45	1.41	1.41
Wage bill (logarithmic)	8.32	8.32	8.74	8.75
Mean VIF	3.00	2.98	3.07	3.05

APPENDIX A.5

Table 8.4

This table shows the two regression models two and four with the bootstrap model applied. *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses. Season 2017/18 up until season 2022/23.

	(2)	(4)
PE investment	-0.037 (0.076)	
PE investment duration		0.022 (0.031)
Revenue (logarithmic and lagged)	-0.098 (0.075)	-0.094 (0.077)
2019 Year	0.000 (0.000)	0.000 (0.000)
2020 Year	-0.161*** (0.055)	-0.166*** (0.054)
2021 Year	-0.059 (0.052)	-0.069 (0.052)
2022 Year	0.041 (0.052)	0.025 (0.053)
2023 Year	0.130** (0.054)	0.102* (0.056)
Foreign Success	-0.013 (0.033)	-0.017 (0.033)
Domestic Success	0.017*** (0.006)	0.017*** (0.005)
Domestic Success (lagged)	0.023*** (0.007)	0.024*** (0.007)
Transfer spending (logarithmic)	-0.019 (0.024)	-0.023 (0.024)
Transfer spending (logarithmic and lagged)	0.044** (0.022)	0.042* (0.022)
Transfer receipts (logarithmic)	-0.004 (0.020)	-0.004 (0.020)
Transfer receipts (logarithmic and lagged)	0.053** (0.021)	0.054** (0.023)
Wage bill (logarithmic)	0.193* (0.117)	0.165 (0.111)
Constant	-0.037 (0.076)	
PE investment	3.959*** (0.522)	4.076*** (0.514)
N	277	277
Adj. R-squared	0.389	0.389
No. of groups	89	89

APPENDIX A.6

Table 8.5

This table shows the two regression models six and eight with the bootstrap model applied. *** p<.01, ** p<.05, * p<.1. Robust standard errors are shown within the parentheses. Season 2017/18 up until season 2022/23.

	(6)	(8)
PE investment	-2.817 (4.332)	
PE investment duration		-0.439 (1.713)
Revenue (logarithmic and lagged)	-6.221 (3.890)	-5.798 (3.760)
2019 Year	0.000 (0.000)	0.000 (0.000)
2020 Year	-4.937* (2.898)	-5.058* (2.874)
2021 Year	-8.182*** (3.121)	-8.360*** (3.189)
2022 Year	-1.473 (3.333)	-1.779 (3.431)
2023 Year	-1.718 (3.332)	-2.237 (3.577)
Foreign Success	-1.305 (2.062)	-1.387 (2.053)
Domestic Success	1.144*** (0.427)	1.128*** (0.417)
Domestic Success (lagged)	0.746* (0.400)	0.738* (0.397)
Transfer spending (logarithmic)	1.508 (1.770)	1.492 (1.747)
Transfer spending (logarithmic and lagged)	-1.096 (1.816)	-1.114 (1.704)
Transfer receipts (logarithmic)	2.183 (1.519)	2.180 (1.473)
Transfer receipts (logarithmic and lagged)	4.146** (1.667)	4.162** (1.628)
Wage bill (logarithmic)	-14.812* (8.008)	-15.464* (7.901)
Constant	50.375 (38.009)	51.865 (38.678)
N	264	264
Adj. R-squared	0.298	0.296
No. of groups	86	86