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# **Private Equity Funds' Performance Persistence**

An analysis of factors influencing long-term success

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**Abstract:**

Private equity funds are a popular topic in finance and several studies analyse the performance of private equity funds and the mechanics that drives the strong returns for the best funds. Many of the studies conduct analysis specifically from the U.S. private equity markets. Therefore, European private equity markets and the fund performance requires more analysis which this study aims to provide.

This study examines the European private equity funds and venture capital funds. More specifically, the study aims to find out what are the key factors driving the long-term success. The fund performance is analysed during the years 2000-2023. The study includes 768 European private equity and venture capital funds measured with IRR% and total of 915 private equity and venture capital funds measured with Multiple of Money.

This study utilises OLS-regression analysis with Fixed Effects (FE) and Random Effects (RE) models. The regression analysis provides answers of the factors that are driving the returns of private equity funds. The regression analysis provides valuable information that fund size is not significant driver of the returns, and rather it can be even harmful when the large become too large, since the capital become more difficult to deploy in new investments. In addition, this study finds that a sequential number of private equity funds from the same fund manager is a positive signal for the future returns. The more funds the same manager has, the more likely it is that new funds offer an attractive return in the future as well.

The results of this study provides further understanding to the factors that drives the long-term returns of these funds and what kind of factors are preventing the optimal development. This study offers valuable insights and adds literature in the European private equity field.

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**Keywords:** Private equity funds, venture capital funds, buyout funds, private equity

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**Vaasan yliopisto****Laskentatoimen ja rahoituksen yksikkö**

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**Tiivistelmä:**

Pääomarahastot sekä erityisesti riskipääomarahastot ovat olleet 2000-luvulla kiinnostava aihe tutkimusten aihevalinnassa. Lisäksi rahastot ovat kasvattaneet rooliaan taloudessa yleisellä tasolla sekä myös auttaneet innovaatioissa ja niistä on tullut olennainen osa rahoitussektoria. Useat tutkimukset keskittyvät pääosin Yhdysvaltalaisiin rahastoihin. Eurooppalaisten rahastojen analysointi on olennaista, koska ne ovat usein toimijoita, jotka rahoittavat Euroopassa alkuvaiheen yrityksiä sekä kasvuyrityksiä, eikä eurooppalaisista pääomasijoitusrahastoista ole tehty kovin paljoa vielä tutkimuksia.

Tässä tutkimuksessa analysoidaan eurooppalaisia pääoma- ja riskipääomarahastoja. Tarkastelun tavoitteena on ymmärtää tarkemmin, mitkä ovat sellaisia tekijöitä, jotka ajavat näiden rahastojen pitkäaikaisia tuottoja eteenpäin sekä lisäksi, onko näistä mahdollista tehdä johtopäätöksiä tulevaisuuden rahastovalintaa ajatellen. Rahastojen suorituskykyä analysoidaan datalla, joka on vuosilta 2000-2023. Tämä tutkimus sisältää kokonaisuudessaan 915 eurooppalaista PE- sekä VC-rahastoa mitattuna IRR%-llä ja 768 PE- sekä VC-rahastoa mitattuna Moltipile of Money (MoM) -kertoimella.

Tässä tutkimuksessa hyödynnetään OLS-regressioanalyysiä Fixed Effects (FE) ja Random Effects (RE) malleilla. Regressioanalyysi antaa vastauksia niihin tekijöihin, jotka ohjaavat pääomarahastojen tuottoa. Regressioanalyysi osoittaa, että rahaston koko ei ole merkittävä tekijä tuottojen näkökulmasta, vaan se voi olla jopa haitallista siinä vaiheessa, kun suuret rahastot kasvavat vielä suuremmiksi. Tällaisessa tilanteessa pääoman tehokkaasta allokoinnista tulee haastavampaa. Lisäksi analyysi osoittaa, että kun eurooppalainen rahastonhoitaja on kerännyt useampia aikaisempia pääomarahastoja, on tällä myönteinen signaali myös tulevien tuottojen näkökulmasta.

Tämän tutkimuksen tulokset antavat lisätietoa tekijöistä, jotka ohjaavat näiden rahastojen pitkän aikavälin tuottoa ja mitkä ovat sellaisia tekijöitä, jotka saattavat toisaalta estää rahastojen optimaalisen kehityksen. Tutkimus tarjoaa lisäarvoa eurooppalaisten pääomasijoitusrahastojen näkökulmasta, sillä aikaisempia tutkimuksia ei ole vielä tehty kovin paljoa vastaavalla datalla.

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**Avainsanat:** Pääomasijoitusrahastot, riskipääomasijoitusrahastot, buyout-rahastot

## Contents

1	Introduction	8
1.1	Objective and hypotheses	9
1.2	Structure	12
2	Literature review	14
2.1	Private Equity funds	14
2.2	Buyout funds	18
2.3	Growth funds	20
2.4	Co-Investments	20
2.5	Secondaries	21
2.6	Fund of Funds	21
2.7	Venture capital funds	22
2.8	Early-stage	24
2.9	Late-stage	25
2.10	Fund performance and returns	26
2.11	Added value with private equity	30
2.12	Other opportunities and risks	33
2.13	Regulatory impacts	34
3	Data and methodology	37
3.1	Data description	37
3.2	Returns	38
4	Results	44
5	Conclusion	50
5.1	Limitations and suggestions for future research	54
	References	56

## Figures

Figure 1. Fund raising in Europe (InvestEurope, 2024).

Figure 2. Private equity structure (Leleux et al., 2015).

Figure 3. Private equity fund process (Leleux et al., 2015).

Figure 4. Phase of the company by investment strategy (Leleux et al., 2015).

Figure 5. European countries ranked according to their status among innovators (Demaria, 2012).

Figure 6. Size of venture capital and mid-market LBO funds and their returns (Lerner et al., 2012).

Figure 7. Value Creation Lever Assessment (Deloitte 2020).

Figure 8. Distribution of Residuals.

Figure 9. Fund AUM vs. Net IRR (%).

Figure 10. Average Net IRR over vintages.

**Tables**

Table 1. Rolling One-Year Horizon IRR % buyout and venture capital funds (Preqin, 2024).

Table 2. Number of European PE Deals (Preqin, 2024).

Table 3. Net IRR %, descriptive statistics.

Table 4. Multiple of Money (MoM) descriptive statistics.

Table 5. Regression analysis of Net IRR and Fund AUM.

Table 6. Regression analysis of Net IRR and Fund Number.

**Abbreviations**

AI	Artificial intelligence
AIFMD	Alternative investment fund managers directive
AUM	Assets under management
BO	Buyout
ESG	Environmental, social, governance
FOF	Fund of funds
GDPR	General data protection regulation
GP	General partner
IPO	Initial public offering
IRR	Internal rate of return
LBO	Leveraged buyout
LP	Limited partner
M&A	Mergers and acquisitions
MoM	Multiple of Money
PE	Private equity
VC	Venture capital

# 1 Introduction

Private equity (PE) has become an intriguing asset class over the past decades and investors are showing increased interest of including PE funds in their portfolios. Several studies analyse the reasons of how PE funds can deliver constant returns for the investors, and often even outperform listed market. Throughout the 21<sup>st</sup> century, venture capital (VC) funds and buyout (BO) funds have raised more capital every year, and these funds are still able to provide steady returns for their Limited Partners (LPs).

To demonstrate the increased demand for PE funds and partnerships during last decades, there were in 1991 time, where these combined was able to raise less than 10 billion dollars in commitments (Kaplan & Schoar, 2005). While the amount of raised capital is significant, it is nowadays far more significant. In 2023, the U.S. PE funds alone raised capital in their funds over 600 billion dollars, according to Preqin (2024). For over 20 years, the increase of the committed capital has been significant. The development in Europe has been similar, and the amount of raised capital in Europe was 132.9 billion euros in 2023.

## Fundraising at a glance

Europe - Incremental amount raised during the year

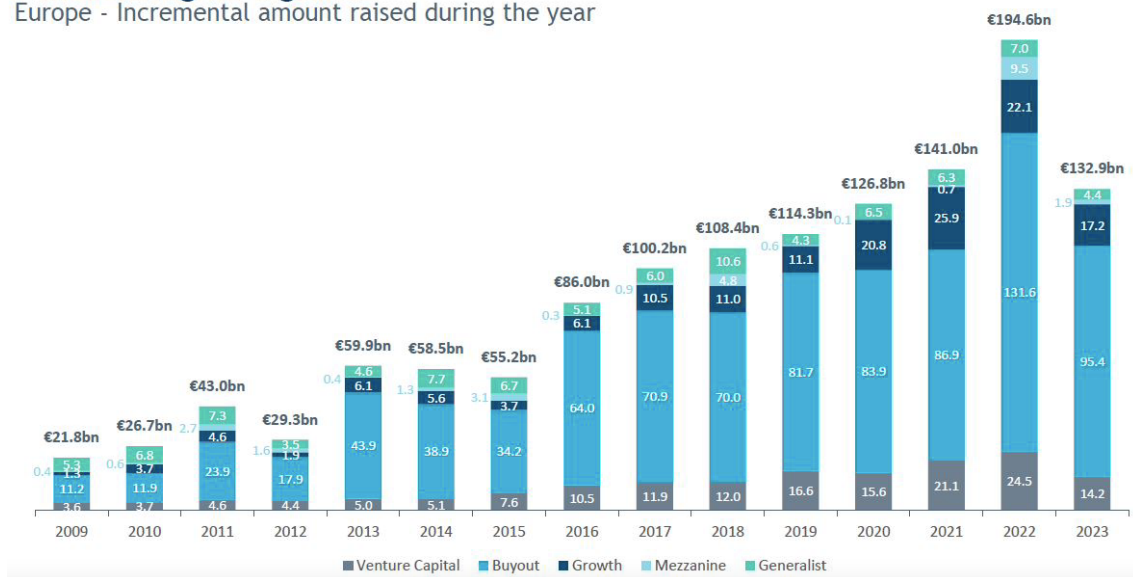


Figure 1. Fund raising in Europe (InvestEurope, 2024).

Private equity investments have already established their position in the institutional investor portfolios and thus become a major asset class. In addition to raised interest on the size of this asset class, more observations should aim towards the returns of the private equity investments. PE funds are not obligated to report all their activity to public, since these are private funds, and they are responsible mainly for their Limited Partner's (LPs). Therefore, the funds are more transparent when they inform their investors, for example, in the form of a quarterly reporting. The reporting is a convenient way to explain carefully the most important activities from the past quarter and to show returns and describe the outlooks for the future of the fund activity. Thus, public and more transparent information may be difficult to find since the information is only shared for the investors.

The role of PE funds is constantly expanding, and as the number of commitments increases in PE funds, the significance of this asset class increases as well. This study analyses thoroughly the mechanics of the European private equity funds and delves into the mystics of private equity. By providing a relevant literature and analysing the factors that influences PE funds' returns and their success, this study is useful for institutional investors and General Partners (GPs). With the help of this study, one can become more aware of this alternative investment class and receive more knowledge of what to consider when investing in a new PE fund or when conducting due diligence of launching a PE fund.

## **1.1 Objective and hypotheses**

During the last decades, PE funds have gained a lot of attention from both academics and investment professionals. This is partly due to the fact that the asset class is recent, it is unique and it has nowadays a large role in the economy in general. PE funds offers financing for growth companies, and they are involved in mergers and acquisitions (M&A). In addition, the PE funds aims to create an additional value for businesses and with that value creation, ultimately provide returns for investors.

This study aims to answer the following questions:

- *What are the main mechanics of PE funds?*
- *Which factors influence the most for the PE funds' returns and its success?*

Often, the lack of reliable data creates obstacles for the study of PE funds. Access for certain information, or rather the lack of access, brings its own challenges. Moreover, the quality of data can be different in various sources, which can bring additional challenges for the analysis, since there might be differences in data depending of where it is retrieved from. However, the lack of transparency can also be seen as an opportunity. It forces the investment professionals and academics to develop new approaches for the information, and to produce data that is both valuable and transparent.

Usually the PE funds can be quite complex, and they operate in an environment where the risk and return balance can not always be estimated systematically. For these qualities mentioned, the further study in this subject is not only useful but also necessary, since it provides an answer for the questions that are related on the PE funds' long-term success and fund effects in the economy in general.

The center part of this study is to analyse the European PE funds. More specifically, this study aims to find out which factors influence the most for the PE funds returns in the long-term. Furthermore, this study explains how different qualities in the PE funds, such as a fund size, vintage, or the manager's previous experience shape the success for these funds.

Preqin database is selected to answer these aforementioned questions. Preqin is one of the leading private market databases for academics and industry professionals. Preqin offers data from wide variety of PE funds, including their performance, structures and investments within various portfolios. The database covers the data for example buyout

and venture capital funds. Several studies utilise the Preqin database for the analysis of PE funds. Harris et al. (2014) demonstrate in their study, that the information from Preqin is comprehensive and also reliable to make sufficient conclusions. Their study focuses on the buyout funds and offers several observations for the fund returns and their relationship for the fund size and vintage.

Hypotheses for this study are the following:

*H<sub>1</sub>: Fund returns relate positively with the performance of previously raised funds from the same fund manager*

Kaplan & Schoar (2005) found that the General Partners operating the PE funds, can continually outperform the listed markets. Thus, when the first fund is successful enough and outperform the average returns, it is likely that the next fund follows the success. These findings suggest that GP's have the resources and the capability to generate a strong returns for the investors through several funds across the decades.

*H<sub>2</sub>: PE funds' performance is positively related to fund size*

Several studies analyses the effects of the fund size and returns. While Harris et al. (2014) argue that there are no evidence supporting the fact that the fund size would affect the returns, Da Rin & Phalippou (2016) brings an alternative suggestion that the fund size can affect returns. This study aims to add literature and pursues to find a positive relation on fund size with European focused data from the recent decades. According Harris et al., (2014) the fund performance improves over time, since the experience and operating sequential funds may offer competitive advantage.

The analysis of European PE funds offers valuable insights of the PE funds operations and provides important observations for the fund managers and institutional investors. The results from this study can help to understand the mechanics of PE funds, and various strategies, that fund managers are using. In addition, this study aims to find out how

these strategies correlate with fund returns. Further, the results can offer a better information for decision-making process for the investors since there are still quite few studies conducted specifically from the European PE market. This study also aims to highlight a new perspectives and to complement the existing literature by providing an in-depth analysis of the characteristics of European PE funds and their relationship to the fund performance.

## **1.2 Structure**

This study is divided into five chapters. Each chapter builds a foundation for the next one, so it will be easier to deepen the understanding for the topic as the study shifting forward.

The first chapter offers an introduction for the subject. The purpose is to introduce the context of the study and highlight the main elements of private equity. The introduction offers clear chapter and also a general concept of why the PE funds are a central subject of studies and why they are important in the perspective of the financial markets.

In the second chapter this study shifts to a literature review. The literature review delves into the structures, mechanics and operations of the PE funds. It also covers prior studies and walks through the theoretical framework. By providing support from the prior studies, the literature review discusses of how the fund size, vintage, or the experience of fund manager affects to fund performance. In addition, this chapter analyses the current market trends and topical issues that are relevant at the moment in the PE industry.

The third chapter is an introduction of the data used in the analysis and methodologies. In this chapter the purpose is to describe the Preqin database used in this study. The chapter provides further information of the data and how it is suitable for this study. It also reviews key variables for the analysis, such as fund size, vintage and managerial experience. The methodoligal section on the other hand, explains of how the hypotheses

are tested using a statistical methods, and how the data is processed for avoid any potential differences or biases.

The fourth chapter discusses the results. This chapter test the hypotheses and also analyses various factors influencing the long-term success of PE funds. With the help of the results, it is possible to examine of how significant is the role of fund size, and manager's prior experience for the PE fund returns. This chapter offers a concrete answer for the hypotheses and set the observations in the context with the previous literature.

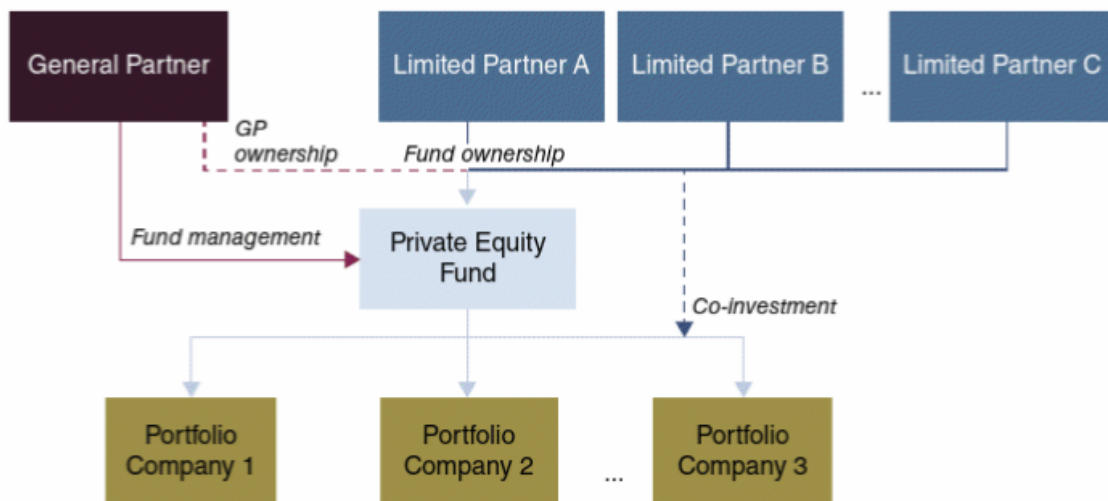
Finally, the fifth and final chapter summarises the study and provide conclusions. The conclusions discusses of how the findings can benefit the investors and fund managers. Furthermore, the conclusions presents the limitations of the study and suggestions for the future research topics. The limitations highlight the challenges related to data availability and analysis methods. Further research ideas provides suggestions that can complement the understanding of the field and to proceed an academic discussion of the topic.

## 2 Literature review

### 2.1 Private Equity funds

PE funds are an illiquid investment funds, also referred as an alternative investment. PE funds varies significantly from mutual funds since PE funds are often valued, for example, quarterly or monthly basis, when mutual funds trades continuously. Essentially, PE funds' objective is to raise the capital from the investors, which will be deployed to portfolio companies. (Roggi et al., 2019).

In a typical structure, the General Partner (GP) oversees fund management, and it has the ultimate responsibility of PE fund. However, usually the GP is not a significant investor of the fund, and often the GP invests in a fund with a minor stake. Limited Partners (LPs) are the ones who are owners and investors in a fund. LPs invest in a fund, and the funds' objective is to manage their money with the best of their ability, when investing in portfolio companies.



**Figure 2.** Private equity structure (Leleux et al., 2015).

Typically, the investors hold their investments in PE funds approximately for ten years. During the first years, the fund raise capital from investors, which usually are large institutional investors, such as pension funds, banks, sovereign funds and other major

mandates. Once the fund has raised the capital needed, it can initiate an investment period, when the investments are made to portfolio companies. The investment period usually lasts four to six years. With these investments, the PE fund aims to develop the portfolio company and increasing the company's value. Eventually, the fund will have an exit from the company with the aim to make profit of that which can be returned for investors (Kaplan & Schoar, 2005).

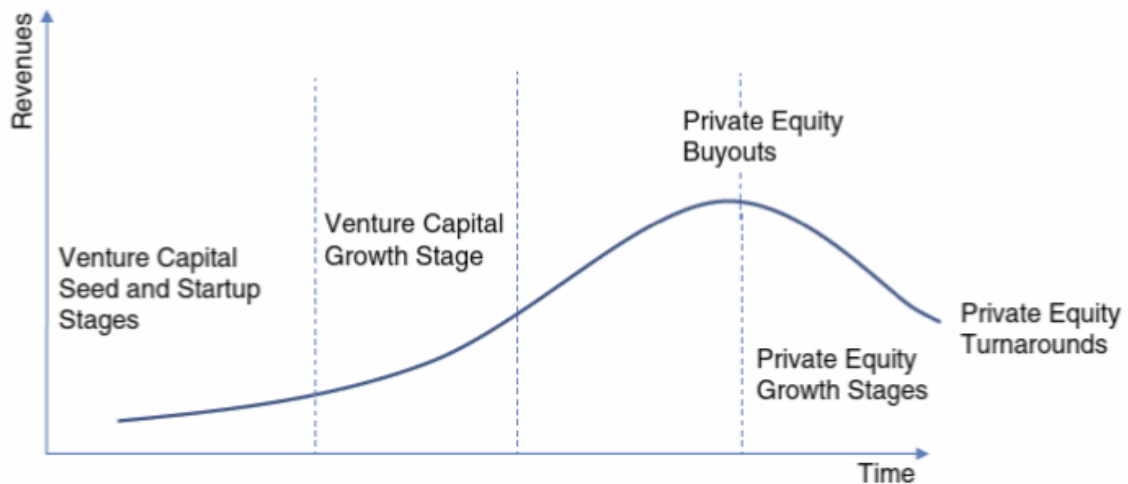


**Figure 3.** Private equity fund process (Leleux et al., 2015).

Fund managers collect management fees from the investors and by doing so, they can operate in a fund management business and for instance, pay salaries for their investment professionals. By collecting the fees, fund management company can maintain its profitability and to continue raising new funds. The fees were originally planned to be charged for cover the transaction losses in case the transaction did not happen. (Holman, 2009). Since then, the fee structure has evolved and nowadays there is a standard market practice, where PE funds collect fixed management fee, which is often 1.5% - 2.0% annually. The management fee is often linked to committed capital, e.g. if the PE fund raises 100 million of commitments, management fee could be, for example 2 million of 100 million, per year.

Furthermore, PE funds also receive a carried interest, which is also known as a success fee for the fund. The investors pay the carried interest for the fund when fund have successfully exceeded a hurdle rate. The hurdle rate is the minimum return for the fund, which is needed to reach before it can have carried interest. The hurdle rate is usually 7 - 8% annually, respectively. Often, the carried interest is 20% of the additional returns that is returned for the investors (Holman, 2009). This will work as an incentive for the fund manager, since it is a clear motivator to succeed in the investment activity.

PE funds are already a well-known player in the markets and has been so for the long time. However, the rapid growth of these funds from the beginning of the year 2000 has been significant. The role of the PE funds has shifted and widened, as now there are giant players in the markets, who manage trillions of capitals. Some of the key players who can move the markets in the U.S. are KKR, Carlyle Group and Blackstone. These are well known for their major buyouts and producing generous returns for their investors. In Europe, there are few players such as Apax, Permira and CVC, which are also significant PE investors. Nowadays, these companies are central participants in global economy. (Leleux et al., 2015). Often, the PE funds are focused on a specific type of companies, that might be very early stage or in the growth stage.



**Figure 4.** Phase of the company by investment strategy (Leleux et al., 2015).

Private equity investments are known for the large scale and profitability. This asset class is useful for institutional investors, since it provides often high returns over the long-term period. Harris et al., (2014) research point out the outperformance of public markets. In their study, PE funds outperform annually 3% compared to S&P 500 for several decades. Retail investors are usually excluded for investing these kinds of funds, since there often needs to be millions of investable capital, or then the fund just prefer to have professional investors onboard. Large institutional investors have often the capital and the resources needed, so that they are able to commit for long-term period investments, where the first profits are likely to received after several years of the initial investment.

One of the world's largest pension funds, California Public Employees' Retirement System (CalPERS), is a significant private equity investor and according to CalPERS report, the private equity program returned 20.2-billion-dollar profits from 1990 to 2011 to its portfolio. This demonstrates how profitable the PE investments can be once committed for the long-term and invested for right time. There are several similar instances. For example Yale Endowment Fund, also a major private equity investor, reported in 2013 that their PE investments generated 29.9% p.a. since inception. The investments in private equity started in 1973 (Leleux et al., 2015). Annual return of 29.9% is higher than other major asset classes, which makes private equity a tempting asset class for those who have the access of investing these funds.

North America is the largest and most influential private equity market and the amount of raised capital towards funds is completely different level than it is in Europe. In 2007, U.S. alone, PE funds raised 353 billion dollars capital for PE funds, when in 1998 the amount of raised capital was 96 billion dollars. This growth demonstrates the vast increase in the industry and its attractiveness among investors. Though the Financial Crisis in 2008 slowed down the growth of private equity, the markets started to recover in years 2011 and 2012. (Preqin, 2024). Private equity sector has shown the ability to recover economic crisis and continue the path of its growth. (Kaplan & Strömberg, 2009).

In Europe, the development has been similar compared to U.S. even though historically, it has been smaller market. In the last decades, the European private equity market has shown growth as well. In 2000, European PE funds raised approximately 48 billion euros, of which 35 billion euros was invested. This included 20 billion euros of venture capital investments, which highlights the impact of VC investments in innovation centric world and supporting the start-up businesses. The dotcom bubble led to slight downfall in fundraising, as in 2002 raised capital was only 28 billion euros. In 2006 the market improved and raised capital amounted at 112 billion euros, which indicate growth in private equity sector also in Europe and its impact in economic. (Leleux et al., 2015)

Leleux et al., (2015) point out that European private equity markets are geographically quite divided. In 2011, approximately 43% of European GP's locates in UK and Ireland, indicating the strong position in these countries. Another significant center in PE business is France, where 27% of PE managers located. Overall, the Europe is a large player in PE markets but it is worth noting that it is very fragmented since specific countries, such as England and France are still the main centres in PE activity. This might be the cause of many factors, such as more advanced financial markets or more favorable regulation which might increase willingness to start a PE business in these countries.

Several European countries aims to improve their position in private equity sector so that they would have more investors and companies to invest. For example, Germany and Northern European countries has improved the legislation and business environments in the way that these would enable better circumstances for the private equity activity. Some of these actions has been successful and the private equity investments are growing in these areas, even though they have not become at the same level with England or France (Bach & Newman, 2019).

## **2.2 Buyout funds**

Buyout funds have a long history, and it first started in 1980, when leveraged buyouts (LBO) became relevant investment strategy. Buyout funds uses leverage to finance mergers and acquisitions, which enables the returns to be higher if the investment is profitable. In the 1980, buyout funds first started to gain attention among institutional investors and it became a central part of private equity market. In that time, many of buyout investments were focused on major corporations, with the purpose of restructure the business to increase the efficiency and profitability (Kaplan & Strömberg, 2009).

There are several studies regarding on buyout funds, since they perform well compared to traditional listed investments. When buyout funds' portfolio companies are being restructured and company's operation activities is changed to work more efficiently, this

often tends to lead more profitable business. The returns and leverage are usually linked to each other, since the leverage increases the return on equity. Kaplan & Strömberg (2009) show that buyout funds can increase the enterprise value and further, offers for investors competitive returns. This asset class is also interesting because it offers a way to invest in private companies. Usually, private investors do not have the possibility to invest in private companies and thus, buyout funds make it possible if it offers the access for the retail investor.

Buyout funds are part of the PE industry, and the buyout funds can be viewed as a sub-category of the private equity. The buyout funds aim to invest in the private companies and after the investment the fund can begin to grow the business. Buyout funds typically invest in established companies that have the potential of growth or structural changes required in business. Buyout investors aim to acquire significant share of the target company or then acquire it fully (Kaplan & Schoar, 2005).

After the investment, investors can start to develop the target company's operations, for example by improving its financial structure, enhancing various processes or restructuring the business model. The typical quality of the buyout funds is the leverage and how it can be deployed. In other words, the fund often utilizes major amount of debt while it acquires the businesses. With the help of the leverage, funds could have higher rates of return for the invested capital, but on the other hand, the risk increases as well (Phalippou et al., 2018).

The main target for the buyout funds is to develop the portfolio company and grow the business as much as possible for approximately 3 – 4 years. Once the business is showing signs of growth and becomes more profitable, the buyout fund can sell the company either for another investor or then through IPO for the public market. Through this exit, the fund receives the profits which it will return for the investors. Kaplan & Schoar (2005) find out that buyout funds can outperform the returns from the public markets on average 20 – 27% during the lifetime of the fund. Harris et al., (2014) conclude that buyout

funds constantly outperform the public markets in their study where they analyses 1400 U.S. buyout and venture capital -funds.

### **2.3 Growth funds**

Growth funds are also a sub-category of the PE funds. The growth funds are investment funds that provides the capital for already established and well-known companies, with the purpose to support their growth and the expansion. While the buyout funds often acquire majority stakes from the companies, the growth funds typically invests minority stakes by providing financing for those that need the capital, for example, entering new markets or expand their product portfolios or to finance acquisitions (Harris et al., 2014).

### **2.4 Co-Investments**

Co-Investments are slightly different form of PE investing than a traditional investment in the PE fund. Co-Investment is an investment strategy, where the LPs invests directly to the target company, usually together with the General Partner of the PE fund. In some cases, one can deploy both co-investment on a target company and another investment into the PE fund, that invests also in the target company. This kind of approach provides LPs the opportunity to be involved in a certain kind of investments, often with lower management fees and with the better transparency compared on the traditional PE fund investments (Phalippou et al., 2018).

Co-investments offers several advantages for the LP's. First, the co-investments provides diversification to the portfolio without any additional capital in traditional funds. Second, the co-investments offers an opportunity to participate in the individual investments without the usual management fees or carried interest, which can improve the net returns. According to a Goldman Sachs (2023) report, the co-investments often have a more favorable fee structures than PE funds, allowing the investors to take advantage of some of the fee benefits.

## 2.5 Secondaries

Private equity secondary market investments, also known as secondaries, refers to the purchase of the existing investment commitments from the existing investor or then from a private equity fund. This investment strategy offers for the sellers and the buyers the ability to manage liquidity and portfolio construction in a more flexible way. Usually, the PE funds are long-term investments where investors commit their capital for a long time, on average for ten years. The secondary market offers for the investors the opportunity to sell their existing commitments before the fund is liquidated. The opportunity to sell commitments increases the flexibility and liquidity in the portfolio management. For the buyers the secondary market offers access to a mature investments, often at a discounted price which can shorten the payback period of investments and to improve the return expectations (Waterman, 2022).

In the last 20 years the popularity of the secondary market investments has also grown. In 2021, total market volume in secondaries reached record high 134 billion dollars, indicating growing investor interest in this strategy (Waterman, 2022). This kind of growth is partly due to market volatility and the need to diversify portfolios into an alternative investments.

## 2.6 Fund of Funds

Fund of funds (FoF) are a convenient way to diversify the risk, compared to PE investments. With the investment in FoF, one is able to invest in a fund that can in turn invest its assets in one or several funds. In addition, each target fund can have dozens, or even hundreds of target companies in its portfolio, and thus it diversifies the risks for the investor. The first FoF's became available in 1980s (Demaria, 2012).

FoF's have also had challenges in terms of fundraising and in several funds the expenses may affect negatively for the fund returns. In a way, the investor will pay the fund expenses twice as the FoF collects its own management fees and after that, each target

fund collects their own management fees from the fund. In general, these funds are marketed with the idea that the investor can have access to high-quality funds managed by a larger fund manager, with a single investment. The popularity of FoF's has grown in recent years, probably also due to the fact that the number of funds in general has increased (Phalippou et al., 2018).

## **2.7 Venture capital funds**

Venture capital (VC) funds are a central part of the financial system. The VC fund invests specifically early-stage companies which pursue strong financial and technological growth. The financing impact of the VC funds can be viewed from several perspectives, such as investment selection or the innovation outcomes from these investments. These perspectives are approached by Kaplan & Strömberg (2001), Lerner et al., (2009), as well as Kortum & Lerner (2000), where they offer valuable insights of how the VC-investors operate and what is the impact for the financial and technological growth.

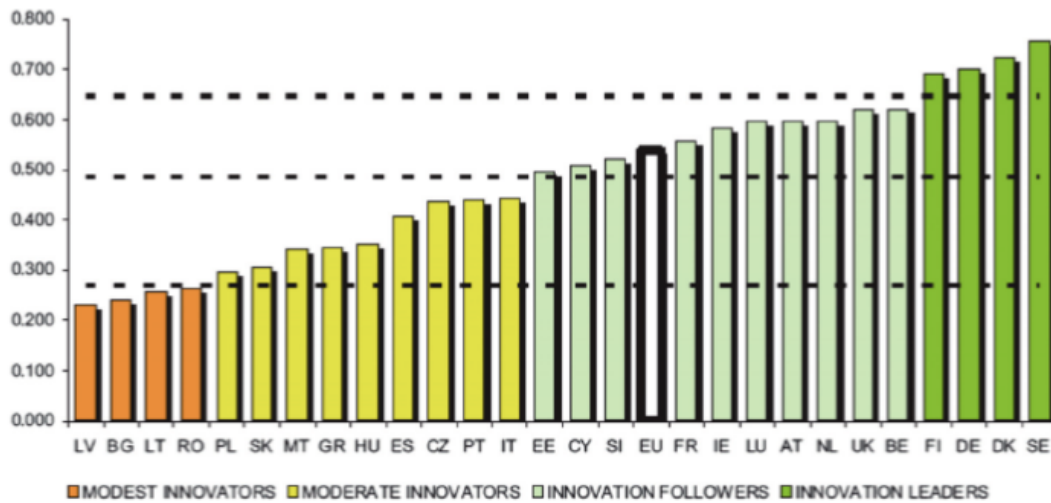
Kaplan & Strömberg (2001) study provide an understanding of venture capital funds and how they operate. Their study shows specifically of how venture capital investors choose, negotiate and monitor their investments. The study indicate that the venture capital agreements deviate from other finance agreements, specifically in terms of monitoring and control. The VC investors might often set terms which ties the use of funds on the certain objectives of operation or different stages of projects (Kaplan & Strömberg, 2001). With these terms, there is usually an objective to prevent misuse of resources and to secure that the target investments are focused on their goals and to exceed the growth targets.

Lerner et al., (2009) review the venture capital development specifically in the emerging markets where the institutional and financial environment may differ from the traditional markets. On the emerging markets, VC investments often face challenges, for example from legal perspective and emerging markets may have higher operational risks. However, the emerging markets offers also exceptional growth opportunities. Lerner et

al., (2009) points out that strong economic growth and the development of institutional structure increases private equity investments and success on these areas. Their study shows that insurance companies and pension funds are interested on emerging markets and this interest might offer an advantage for the companies and improve the target companies' ability on the international markets. The venture capital investments may offer a support on technological and financial growth in countries where traditional financial markets are not available.

Kortum & Lerner (2000) examines the impact of venture capital investments in the U.S. and find strong connection between VC investments and increased patenting. Their analysis suggest that the venture capital funds not only increase the financial ability of the target companies, but also accelerate the innovations by offering crucial capital and expertise needed. This effect on innovations is emphasized specifically in technology sector, where large PE investments enable research and development activity, which may lead to a significant competitive advantage in the markets. The study points out that when VC fund support these innovations, it could generate long term value for the company, and for the society in general, since they support the new technologies.

Interestingly, Europe is often leading innovations compared for example U.S. Unfortunately, the European innovations usually lacks the ability of monetising these mentioned inventions. U.S. may have less innovations compared to Europe, but more often these innovations have turned into a concrete business and revenues (Demaria, 2013). This phenomenon might be due to the fact, that U.S. culture tolerate more risk and thus it reflects in VC markets as well. VC funds have better opportunities to raise capital, since investors tolerate more risk. In addition, target companies therefore can raise funding since there are more funds available who are looking to deploy capital into new investments.



**Figure 5.** European countries ranked according to their status among innovators (Demaria, 2012).

## 2.8 Early-stage

Early-stage venture capital investments are a key form of financing for the startups that have moved from the idea-level stage to developing a working product or service but have not yet achieved market demand on a sufficient level. These investments, often referred also as seed funding, or Series A funding rounds, provides the capital needed, to scale a company, grow its customer base and ultimately, strengthen its business model (Lerner et al., 2009).

Early-stage investments is critical to the success of startups. They not only provide financial resources, but also a strategic guidance, networks and expertise that help the companies to navigate through the challenging markets. Research shows that early-stage VC investments can improve company's opportunities of achieving successful market entry and growth. For example, Busenitz & Fiet (2002) found that venture capital investor actions, such as increasing the number of investments and diversifying investments, can increase the likelihood of a company listing on a stock exchange (IPO), which is one of the most profitable exit strategies.

Early-stage investors evaluate several factors before they make an investment decision. Most common criteria are often the team expertise or product and service innovation. Criteria could also be factors, such as the market size and growth potential for the company and investors also monitor how scalable the business could be. Lupulescu (2021) study the criteria of Dutch high-tech VC investor and find that the team competence and market attractiveness are the key factors in investment decisions.

Despite the potential benefits, early-stage investments also involve risks. Startups often face uncertainty regarding the market acceptance, competition, and operational challenges. In addition, the availability of financing can vary depending on the economic cycles. For example, in 2022 and 2023, when the inflation and interest rates started to rise, the volume of early-stage VC investments decreased significantly, which affected the ability of many startups to raise the necessary capital (Preqin, 2024).

## **2.9 Late-stage**

Late-stage VC investments refers to the target companies that have already established themselves in the markets and demonstrates sustainable growth in its daily operations. These investments are often made before potential corporate restructurings, such as IPO or acquisitions, and are intended to support the company's expansion and strengthening the market position or expansion to a new market (Chen et al., 2022).

Traditionally, the VC investments have focused more on early-stage companies but in the last 20 years, the late-stage investments have become also popular, and the demand continues to increase. This trend is partly due to investors seeking more stable and predictable investments with lower risks compared to early-stage companies. The late-stage VC investments can also improve the financial performance of the target companies although their impact on innovations activity may be negative (Chen et al., 2022).

The late-stage investors usually evaluate the companies in a different way, compared to early-stage investors. The key factors often include an established revenue, profitability, market share, and a clear path to an exit, such as IPO or an acquisition. While these companies are in general more stable, investors still may face some challenges such as higher valuations or tightening competition for attractive investment targets.

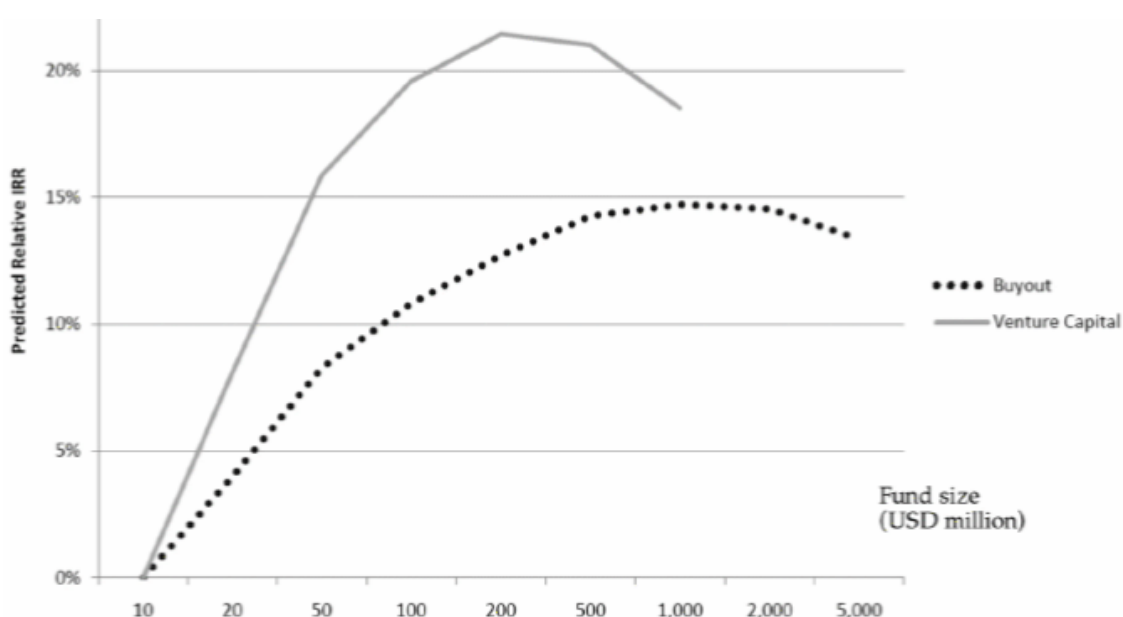
Several studies analyse the impact of late-stage VC investments on the company performance. For example, Chen et al., (2022) find that late-stage investments improve the financial performance of the target company. However, the investment may reduce the company's innovation activity. This suggests that while the financial benefits are clear, the companies need also to balance short-term financial goals with the long-term innovation benefits.

## **2.10 Fund performance and returns**

In their study, Roggi et al., (2019) analyse the performance of the U.S. buyout and venture capital funds from the years 1995 – 2010 and find that there is a connection between fund size and performance. They also point out that the growing fund size can improve the returns, but only to a certain point. After a certain point is exceeded, there will be a negative impact on the returns. This phenomenon can be due to the fact that smaller funds often suffer from their small size for example in the negotiations. Furthermore, smaller funds might have difficulties to achieve a reasonable diversification which might also drive for poor returns.

When the fund manages to increase its size, it has more resources to use for example investment sourcing and further, it can improve its risk management and thus optimise the returns. Larger funds have often better resources of hiring experienced professionals, which can add the quality of the investments and ultimately the fund returns.

As mentioned, if the fund is too large it may be harmful for the fund. Too large fund might have difficulties to find the right investments or the fund might be unable to use its large cash balance for the new investments if there are too strict requirements for the investments. Furthermore, if there are no specific requirements, it can lead easily for the poor investments and therefore poor performance of the fund. Roggi et al., (2019) find out that the optimal size of the buyout fund is approximately 800 million dollars, while the optimal size of the venture capital fund is approximately 200 million dollars. Similar findings are presented in Lerner et al., (2012) study.

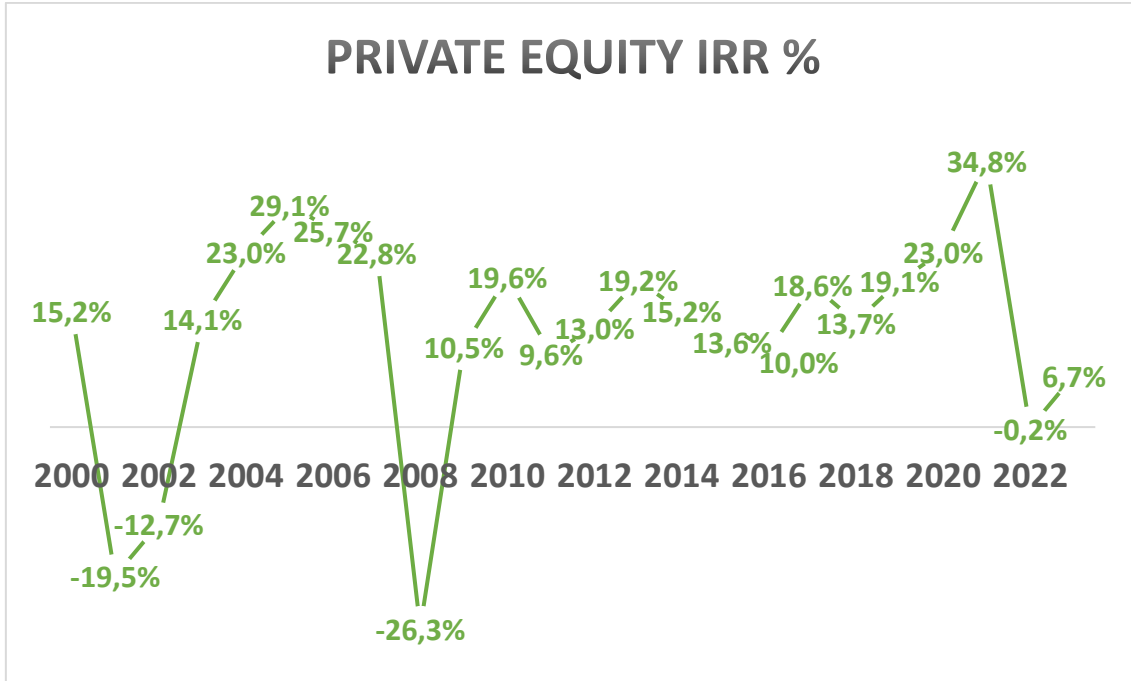


**Figure 6.** Size of venture capital and mid-market LBO funds and their returns (Lerner et al., 2012).

The growth and the competition in private equity has reshaped the persistence of private equity funds' performance. Previous studies show that there is persistence among PE fund returns and well performed funds can show continued returns also in the upcoming funds. Kaplan & Schoar (2005) show that PE investments tend to generate persistent returns for the investors and continue to succeed in the next funds' fundraising.

However, as the private equity industry grows and become more competed, the persistence of the returns can begin to decrease. Sensoy et al., (2014) find out that the venture capital -funds' performance persistence declined significantly after 1999, which partly can be explained the industry growth and more of participants in the market. This development has affected the ability of finding appropriate investments in the portfolio and thus, it has a negative impact on the fund performance. The negative effect can be an issue specifically on the venture capital funds, since the investments with a high growth potential are often limited and the competition for these companies has become more aggressive.

The performance persistence seems to be more stable in buyout funds, more specifically for those managers, who have more experience and especially those with a successful track record. Roggi et al., (2019) conclude that in the buyout funds, the managerial experience strengthens the additional returns from the funds. Furthermore, this result is emphasized with a certain size of the buyout fund and the managers of these funds can utilize their experience in the markets and leverage their negotiation skills in acquisitions. For these reasons, buyout funds seems to be more persistent to perform and generate returns than venture capital funds, where the persistence is more dependent on singular achievements and the market conditions.



**Table 1.** Rolling One-Year Horizon IRR % buyout and venture capital funds (Prequin, 2024).

European PE funds have a strong position as an alternative investment class and impacts in the economic growth. The investment profitability has growing interest and, in their study, Diller and Kaserer (2004) find that typical European PE fund use approximately 23% of investor's capital commitment in the first year, and first three years this figure is at 60%. On average, the PE funds return (IRR) was 12.7%, and on average, the excess relative for the MSCI Europe equity index was 4.5%. Their study demonstrates well that PE funds can outperform public relative asset classes. The study shows inconclusive findings in the fund size, but the correlation exists regarding on PE funds vintage and returns. Part of this can be explained by the level of interest rates and the condition of economy. If the economy is not in a good condition and interest rates are higher, it tend to create more difficulties to success in the fund management and ultimately to generate returns for the investors.

There are also challenges in the European PE market. Due to its size, it can be harder to raise capital, for example compared to U.S. Many of the investments experience legal and structural obstacles, since complex legal systems in Europe create challenges to

investors (Klonowski, 2006). Furthermore, since the European market is smaller than U.S. market, IPOs can be harder to achieve when considering exit. IPOs are not considered since they are usually very expensive, there are specific regulatory requirements, and the investor base is more limited. Often, in Central and Eastern European PE market investors prefer trade sales and secondary buyouts. (Bílek, 2024).



**Table 2.** Number of European PE Deals (Preqin, 2024).

Private equity deal activity also follows the general atmosphere of economy. When there are better times in economy, and for example, interest rates are lower, PE funds are more willing to conduct transactions and the fund level activity can be significantly different compared to more difficult times. Table 2 above shows the deal activity regarding on European PE funds. After the financial crisis in 2008, the deal activity was rather slow for one year, before it started to be more active again. Throughout 2010's the deal activity rose since the interest rates were more favorable for the PE funds to conduct deals. As inflation started to rise in 2022, deal activity fell lower again.

## 2.11 Added value with private equity

As mentioned previously, private equity investments are important part of finance and economy in general, and thus the role of private equity investments in business

development is crucial. The purpose of the PE investors is not only limited to offer financing, but also the impact of investments is related to create additional value by improving the operational business and to increase the value of a company.

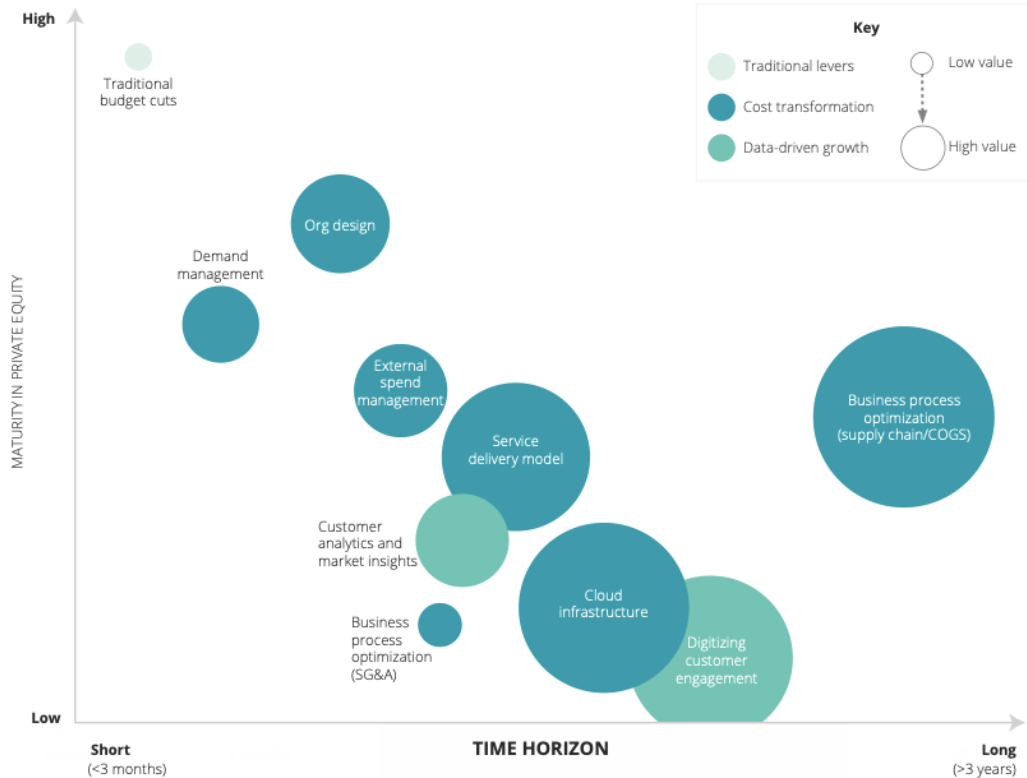
Often, the private equity funds are concentrated on increasing the efficiency of operations and thus, add value on the target company. This may mean for example restructuring the manufacturing processes, cost management, or deployment of a new technology. Kaplan & Strömberg (2009) show that private equity investors are usually focused on reducing operating costs, and further, improving efficiency which ultimately add the company value. When the operations of the business can be more efficient, that will improve the financial state of the company. In addition, it creates long-term value for stakeholders and customers.

Private equity funds offers for the target companies financing and the strategic capability that is needed and thus, it enables the growth for the company. This could include organic growth, e.g. development of the new products or exploring new markets, or non-organic growth, such as acquiring new businesses. The study of Gomers & Lerner (2001) demonstrate that the companies financed by private equity grows faster on average than the similar companies without private equity investors. Specifically, in technology sectors the private equity investors can expedite the commercialization of the new innovations and therefore, create an additional value for the business.

When the private equity fund invests in a specific company, the team behind the fund support the business and help to build sustainable and efficient finance structure. For example, the team might assist matters, such as optimizing the balance of debt and equity which can improve the stability for the business and to increase opportunities to succeed in tight competition. Furthermore, Modigliani and Miller (1958) theory of corporate finance support this view – optimal capital structure can reduce capital costs and increase value of the company. Private equity investors utilize often complex tax benefits and other finance strategies to maximize the return for the investments.

The value creation process for the private equity funds culminates in a successful exit and the planning usually starts already at the investment phase. PE funds evaluate when the value for the company is at its peak so it can execute an exit. That is when the fund sells the target company and ultimately, gain profits for that. Typical strategies for the exits are initial public offering (IPO) and other corporate transactions. The objective is to make an exit when the value of the company has grown significantly.

Jenkinson & Sousa (2015) note, that PE owned companies, who goes through IPO, will have higher valuations than those companies who does not have a private equity investor supporting them. Carefully executed exit strategy will maximize the return for the investors and furthermore, maintain the stability for the company after the exit. Furthermore, creating added value require modern thinking where the focus is on data and technology and long-term partnerships.



**Figure 7.** Value Creation Lever Assessment (Deloitte 2020).

PE funds and their investment team provides an added value for the portfolio companies in several ways. Some might participate on daily operations but often the focus is on board level and one or several members of the fund is a member of the board of directors of the portfolio company. In addition, PE fund offers financial structuring and seeks outside investors when needed. The role of creating value also can be different depending on the maturity of the life cycle. Kaplan & Strömberg (2009) and Gompers & Lerner (2001) support these observations and confirm the significance of private equity fund investments.

In the future, the role of PE funds might increase even more when companies face more complex issues and need more support for the professionals on a specific field to keep up with the competition. When the PE fund invests in a target company, it has better opportunities to influence company's daily operations compared on listed investments. When a mutual fund invests in a company, it does not usually have similar power to state terms for the target company of how to run daily operations or strategy.

## **2.12 Other opportunities and risks**

In addition to traditional methods on creating value for businesses, in recent years there has been more interest among PE funds to be more involved in new possibilities that are well-known. Environment, social, and governance (ESG) related matters have become a central criterion when the investor is looking for the possible investment opportunity.

The PE funds that can integrate ESG-criterias into their investment strategies can mitigate risks and benefit on the increasing demand for the responsible investments. According to Harvard Business Review (2019), investment returns can increase over the long-term when ESG-factors are considered and deployed in the investment process. Similar findings are made by Friede et al., (2015) where they conclude in their meta-analysis, that ESG-integration correlate positively with the financial performance.

In addition, advanced data analytics and artificial intelligence (AI) can improve the quality of investment decision and improve predictability. By analysing large datasets carefully, funds are able to recognise various trends and risks with more efficient way than for example a decade ago. Deloitte (2020) emphasizes that the utilization of data analytics can bring competitive advantage in private equity markets. Furthermore, Kumar et al., (2020) note that AI can improve the efficiency and returns on various investment strategy.

Even though data-analytics and AI could offer a significant benefit in private equity, it is important to remember that these are not necessarily perfect solutions and there are still some mistakes in those kinds of tools. For example, data-analytics tools are as good, as the data that the person insert in the program. If the data is inaccurate, or the markets experience a rapid crisis, the data might not be then correct if it tries to construct an estimate for the future.

Sustainable development and the battle against climate change opens new opportunities for the private equity sector and specifically for the VC funds. Investments focusing on a green energy and sustainable technologies are popular among institutional investors and they can offer steady returns in addition to promoting environmental targets. According to International Energy Agency (2021), renewable energy market is estimated to grow exponentially over the following decades. PE funds can benefit from this trend, by supporting innovative businesses that develops for instance solar panels, electric vehicles or energy warehousing solutions.

### **2.13 Regulatory impacts**

A relevant factor of the European PE funds is the fact that these funds operate within quite complex regulatory environment and that may affect to the fund performance and strategies. In some cases, this might be a risk for the funds, or it might have an impact for the investors when they are deciding of where to invest. There are two common

regulatory requirements in the markets that the fund managers should be aware of, AIFMD, GDPR. In addition, there are tax requirements which may vary depending on the country.

Alternative Investment Fund Managers Directive (AIFMD) is a regulatory framework which guide the PE fund operations within European Union. The purpose of this directive is to add the transparency and essentially protect investors. AIFMD requires the fund managers to standardize their reporting. With the help of the standardized reporting, investors can compare similar funds in more efficient way (Kaplan & Strömberg 2009). Though there might rise costs from following these requirements, it still improve the market stability which is always beneficial for the investors. In addition, a cohesive framework is beneficial for the fund managers too. In some instances, there have been issues in LBO's, especially in Europe because of the extreme regulation. In the early 2000s, many courts concluded in Italy that LBOs were illegal and were therefore prohibited (Aldatmaz et al., 2023). There is also another upside with this directive and relates to the fund management practices. Following the AIFMD it offers support to make a cohesive fund management practice which enables fund operations across the world. Several fund managers have had benefits for the clear instructions for example towards risk management.

General Data Protection Regulation (GDPR) is a regulation that set strict requirements for handling the personal data and it has an affect on the PE fund operations, specifically during due diligence process and post-acquisitions. Following GDPR ensures an adequate level of information security and furthermore, protects the information of investors and portfolio companies. However, this might also have an administration burden and increasing the cost effects (Bílek, 2024).

Various tax systems in Europe create both opportunities and challenges for PE funds. For instance, countries such as Luxembourg and Ireland are used frequently when considering the country where to set up new fund. Luxembourg and Ireland support the PE fund

activity with more beneficial tax system and favorable regulatory environment (Diller & Kaserer, 2004).

On the other hand, there are more strict tax requirements in France and Germany, and it might limit for making the investments in these countries since it creates more administrative tasks. The fund manager must have strong experience in the target country's tax and other regulatory requirements so that the fund is able to optimize its structure and maximize the returns for the investors.

According to Demaria (2013), Solvency II directive and Foreign Account Tax Compliance Act (FATCA) sets also requirements for the PE funds. Essentially, the impact is that funds must be more transparent and continuously faster to conduct reporting for the various stakeholders and investors. Demanding and increasing reporting requirements are also linked to fundraising.

Since private equity as an asset class has become more popular among investors, it brings new limited partners to these funds and not necessarily all have the information that should be when starting to invest such an illiquid asset. Therefore, by increasing the transparency and making reporting more comprehensive, it can ensure that more investors are also aware of the risks that the investment might have.

### **3 Data and methodology**

This chapter covers the data, and the methodology used in this study. The third chapter begin with describing the data more specifically which explains also the variables and methods used in this study. Overall, this study includes 915 PE funds during the years of 2000-2023. To analyse these funds more carefully, this study uses a panel data regression analysis for the European PE funds to obtain thorough information of the factors that influences the long-term success for the PE funds. The panel data regression is a well-known method, when analysing similar topics.

#### **3.1 Data description**

The data for this study is retrieved from a Preqin database. The Preqin database is one of the most used databases in the PE industry and thus it contains comprehensively fund level information such as vintages, geographic focus, asset class, strategy, returns, fund sizes and more information about the fund managers. Several studies use the Preqin's database and therefore it is a convenient to use the database also in this study. (Ang et al., 2018; Cavagnaro et al., 2019).

Even though several studies deploys the data from Preqin, it is not perfect. Often, the reporting is still voluntarily so it is possible that fund managers avoid reporting their losses in a fund, if there are any. Preqin validates the data and usually receives the data straight from the managers but there is still the possibility that data might be biased, and some funds are left out intentionally from the data sample.

This study focuses on the European private equity funds. More specifically, the funds are divided on two asset classes since the data contains both private equity and venture capital funds. Both of these asset classes have their own sub-categories or strategies that they uses on their investment process. Starting with private equity, the strategies used covers mostly Buyout, Co-Investments, Growth, Fund of Funds, and Secondaries funds. Venture capital holds also various strategies. In this data the fund strategies are divided

on General VC, Early Stage, Late Stage and Start-Ups. Furthermore, the data set covers also core industries, i.e. the sectors where these PE funds are aiming their investments. To mention a few, there are industries including Energy, Utilities, Healthcare, Information Technology, Telecoms and Media, and Consumer Discretionary. In addition, the data offers information whether the fund in question is the first from the fund manager or second or third. This information will help to conclude whether it is relevant for the return's perspective if the fund has already prior funds running operations.

The returns are measured with a Net IRR %, which represents *Internal Rate of Return*. The IRR is often used when analysing PE funds and it represents the annualised returns for the investors. In addition, it considers the time effect of the cash flows. However, it is just a simple percentage figure, that makes easy to compare various funds. (Kaserer and Stucke, 2013). The Net IRR measures the final return where the fees and the carried interest have been already paid off. In other words, Net IRR %, is the actual return for the Limited Partner to receive.

$$IRR = NPV = \sum_{t=1}^T \frac{C_t}{(1 + IRR)^t} - C_0$$

### 3.2 Returns

Based on the Net IRR % measurement, the data includes 768 European PE and VC funds in this study during the years 2000-2023. Measured with Multiple of Money (MoM), the funds totaled 915 during the years 2000-2023. The difference between the number of these fund measured with different multiples, might be because the IRR and MoM are essentially similar measurements. Thus, some managers might report only one of these, while more common method is that managers reports both multiples for their investors.

<b>Vintage</b>	<b>Funds</b>	<b>Median</b>	<b>Average</b>	<b>Min</b>	<b>Max</b>
2000	31	11,0	10,8	-16,5	32,8
2001	24	13,8	14,8	-12,1	41,0
2002	21	16,2	26,4	0,6	76,6
2003	17	13,5	19,0	-7,0	66,0
2004	19	12,8	18,0	-8,6	79,8
2005	32	9,4	13,9	-10,8	67,7
2006	34	6,3	7,8	0,1	30,6
2007	33	8,2	9,0	-9,6	43,0
2008	38	11,3	11,4	-7,1	28,6
2009	19	15,4	17,9	0,2	60,7
2010	20	12,9	11,5	-12,6	20,5
2011	28	15,1	19,6	3,9	127,7
2012	32	13,9	14,3	-6,6	38,6
2013	27	10,7	12,7	-12,0	35,6
2014	46	15,8	20,2	2,0	158,0
2015	36	17,0	19,2	5,1	50,8
2016	40	17,8	23,4	-0,9	196,8
2017	40	18,6	19,6	2,7	88,6
2018	53	19,6	20,4	-23,8	77,0
2019	60	16,0	17,2	0,2	40,0
2020	49	11,3	13,3	-20,2	80,0
2021	69	10,7	16,8	-17,7	213,1
<b>Total</b>	<b>768</b>	<b>13,7</b>	<b>16,2</b>	<b>-23,8</b>	<b>213,1</b>

**Table 3.** Net IRR %, descriptive statistics.

The table above presents the Net IRR % returns from the different vintages, i.e. the year when the fund was originally launched and started its activity. The table contains private equity funds within various sub-categories, as well as venture capital funds with its own sub-categories. In this table the IRR returns are examined during the years 2000-2021, and altogether the number of funds was at 768. The average returns from these funds combined are 16.2% during these years.

The worst performed fund based on this dataset was in 2018. In 2018, there were total of 53 funds reported and one of these funds had a negative return of -23.8%. When viewing the best performing fund, in 2021 there were total of 69 funds reported in the dataset and one of the funds was able to deliver strong returns of 213.1%. This kind of

return is exceptional. It is worth noting that deviation in returns is constant and between the vintages there can be large variations. For instance, macroeconomic environmental has a significant impact of how the fund is performing. In addition, different investment strategies could perform better in different macroeconomic environments (Robinson & Sensoy, 2016). The market cyclicity and transaction volatility are a good example of the factors influencing also to the fund performance. When there are not transactions in the markets enough, it is more difficult for the fund manager to perform better and ultimately deliver returns for the investors.

In certain years in the dataset, the average IRR-return has been higher than other years, which also confirm the fact that there are differences between years and therefore it is important to examine fund performance over the long-term. For instance, if the fund has started its investments during the dotcom bubble or financial crisis, the performance can be most likely weak when compared to funds that are launched in the better market condition. Often, the PE funds benefits more of the increased market activity and lower interest rate levels. This indicates that timing matters when considering the right moment to launch a new fund to the markets. Table 3 confirms that when there is more uncertainty in the market, there are less funds starting the activity and thus, new fund launches can decrease. On the contrary, when the economy begins to seem more stable and for example, interest rates are lower, it correlates with new launches and therefore there is an increase of new funds (Kaplan & Strömberg, 2009).

Minimum and maximal values in the descriptive statistics table demonstrates that Net IRR-returns varies significantly between different funds. This is a typical feature of the PE funds and thus the investor should be aware of that feature. Several factors influence the fund returns such as investment team, investment strategy and exit-opportunities. High volatility is an indicator of the fact that there is an opportunity to achieve higher returns, but at the same time there is a realistic possibility that there are no returns and investors might lose money with their investments.

When examining more carefully the averages and medians of these funds, a clear trend can be viewed, where more late-stage funds could be on average more stable and less influenced for the volatility (Gombers et al., 2016). There might be several reasons for this phenomenon. For instance, when the fund is making late-stage investments, it is possible that the individual investment size is larger and the company itself is already operating more stable state. It can be also due to more enhanced investment strategies that fund manager possess, or even the market conditions as mentioned earlier. In addition, when there is a late-stage company that the fund is supporting, often the company already generates steady cash flows which can be seen a quality that is reducing risk levels and therefore decreasing the volatility of the fund.

<b>Vintage</b>	<b>Funds</b>	<b>Median</b>	<b>Average</b>	<b>Min</b>	<b>Max</b>
2000	30	1,60	1,48	0,36	2,70
2001	31	1,71	1,64	0,37	2,82
2002	23	1,65	1,99	0,76	4,03
2003	18	1,65	1,88	0,61	3,81
2004	20	1,68	1,83	0,69	4,77
2005	33	1,50	1,71	0,03	5,81
2006	42	1,46	1,59	0,23	3,76
2007	34	1,69	1,83	0,40	4,24
2008	38	1,61	1,69	0,42	2,77
2009	20	2,00	2,02	1,00	3,45
2010	19	1,66	1,75	0,49	3,08
2011	29	2,06	2,21	1,14	4,89
2012	31	1,80	1,96	1,01	3,45
2013	29	1,71	2,03	0,94	5,45
2014	48	1,83	2,14	0,10	6,10
2015	39	1,87	2,03	1,05	5,30
2016	44	1,88	2,15	0,00	6,90
2017	42	1,71	1,75	1,06	2,94
2018	51	1,69	1,76	0,55	3,29
2019	57	1,41	1,49	1,03	2,90
2020	53	1,22	1,25	0,67	2,77
2021	80	1,14	1,22	0,84	2,67
2022	55	1,06	1,12	0,00	2,81
2023	49	1,00	0,99	0,00	2,28
<b>Total</b>	<b>915</b>	<b>1,67</b>	<b>1,73</b>	<b>0,00</b>	<b>6,90</b>

**Table 4.** Multiple of Money (MoM) descriptive statistics.

Descriptive statistics measured with a MoM highlights similar narrative than the one used with the Net IRR %. The reason to use both measurements is to confirm results received and moreover, the table with MoM provides more data compared to Net IRR % measurement.

$$\text{Multiple of Money} = \frac{\text{Total Return}}{\text{Initial Investment}}$$

MoM is one of the most used measurements when reviewing the private equity fund returns. The MoM demonstrates of how many times the initial investment returns the

capital invested. For example, when the MoM is at 2.0x, it means that the investment has doubled the initial investment. However, this multiple does not consider the time effect of the investment, but only the absolute return where the IRR on the other hand measures annual return. Essentially, the MoM is a simple way to review returns where the IRR is better when cash flows are received different times (Metrick & Yasuda, 2010).

In the beginning of 2000, PE funds achieved relatively steady returns. In 2000, the median return was at 1.60x, average return 1.48x and the maxim 2.70x. This development continued to 2008, when financial crisis started to affect the markets. In the years of 2009-2011 there were a rise in funds' median returns which is likely due to post-financial crisis recovery and a new tempting investment opportunity. In 2011, median return rose 2.06x while average return was at 2.21x. Maxim return was 4.89x.

When the markets experiences a strong upturn, funds perform better and the maxim returns can rise relatively high. However, the average and median returns indicate that the returns from the most funds remains stable throughout the period.

## 4 Results

This chapter analyses the results of the regression analysis. With the help of OLS regression analysis, the aim is to resolve of how Net IRR and Fund AUM relates to each other. In addition, this chapter aims to provide an answer to the second hypothesis of this study, where the assumption is that the returns correlate with the fund size. The regression analysis enables more specifically the connection between these two factors. More specifically, the regression analysis utilises Fixed Effects (FE) and Random Effects (RE) models. The descriptive statistics above offer an overview of the data that the regression analysis utilises below.

### Panel A

#### OLS Regression Analysis Summary

##### Fixed Effects Model

Dependent Variable	NET IRR
Fund AUM	0.5868 (0.003)
R-squared	0.0010

##### Random Effects Model

Dependent Variable	NET IRR
Fund AUM	0.9185 (0.0002)
R-squared	2.467

**Table 5.** Regression analysis of Net IRR and Fund AUM.

The first part of the regression analysis demonstrates the relationship between Net IRR and Fund AUM. The dependent variable in this first part is Net IRR and the independent variable is Fund AUM. The analysis from the Fixed Effects demonstrates the results where  $R^2$  is 0.0010, which indicates that the independent variable, Fund AUM, explains only a slight variation of the Net IRR. Standard errors are shown within brackets. In addition, the symbol \* highlights the results that has statistical significance in the analysis. In Fixed

Effects model,  $p > 0.05$ , in this case 0.5868. Since p-value is greater than 0.05, it means that deviation is not significant statistically and null hypothesis is not rejected.

To confirm the results, this study uses also Random Effects model in the regression analysis with the same parameters. The Random Effects model provides  $R^2$  of 2.467, which does not offer any indication of variation with Net IRR. P-value  $< 0.05$  is not met in this analysis since the p-value is 0.9185. The p-value state that the fund size and returns does not have a statistically significant impact in this analysis. The lack of statistical significance is in line with the study of Kaplan & Schoar (2005) where they present their findings of PE funds returns and their performance.

Harris et al., (2014) points out, that the fund size is not that significant measurement when comparing various fund returns. Instead, more focus should aim towards various factors within fund management such as managerial experience, to find out more specifically of how the manager is able to provide returns. In addition, the market condition is one important factor to consider of and the investment strategy that the fund uses. Thus, the regression analysis analyses also managerial skills and whether the results correlate with the Fund IRR.

**Panel B**

## OLS Regression Analysis Summary

**Fixed Effects Model**

Dependent Variable	NET IRR
Fund Number	0.0000 (0.0704)*
Fund AUM	0.0311 (0.0003)*
Net Multiple	0.0000 (1.2747)*
R-squared	0.4014

**Random Effects Model**

Dependent Variable	NET IRR
Fund Number	0.0007 (0.0380)*
Fund AUM	0.3163 (0.0002)
Net Multiple	0.0000 (1.1236)*
R-squared	0.2021

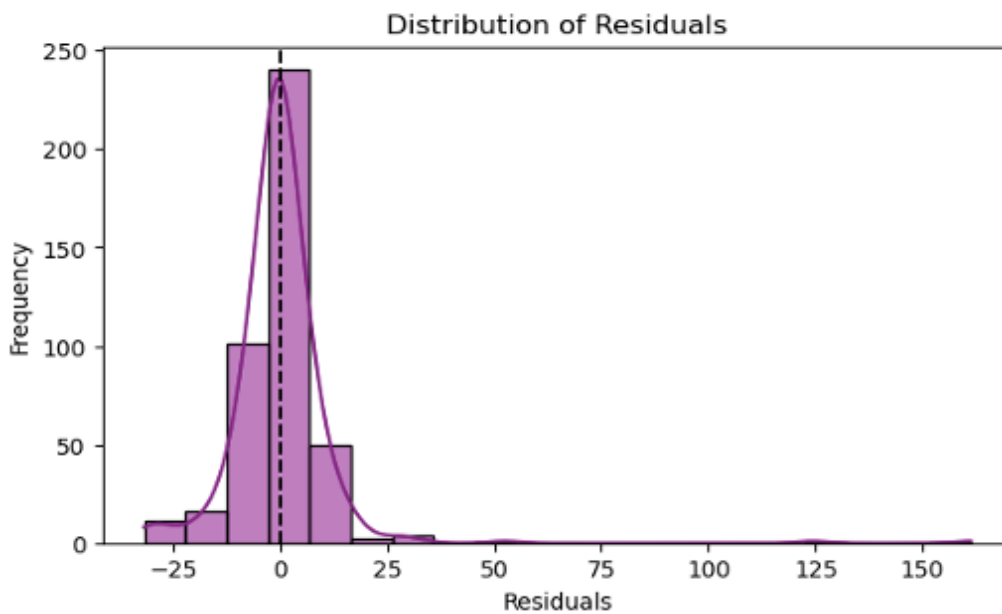
**Table 6.** Regression analysis of Net IRR and Fund Number.

In the second part of the analysis, the regression analysis utilises again Fixed Effects and Random Effects models. FE and RE models help to assess the relationship between Net IRR and other fund characteristics, such as Fund Number. Fund AUM and Net Multiples are also included in independent variables to support the findings from the first analysis. The Fund Number explains the sequential fund number and demonstrate the number of funds which the fund manager has managed previously. This part of the analysis aims to answer to the first hypothesis, where the assumption is that the fund managers who has a long experience from the fund management business and has raised several funds already, are more likely to perform better compared to competitors and to achieve a better return (Kaplan & Strömberg, 2009).

In the Panel B, FE model explains that  $R^2$  is 0.4014 which indicate that there is a low correlation. Fund Number and Net IRR shows a p-value of 0.0000. Since  $p < 0.05$ , results indicate that results show strong evidence of the relationship between Fund Number and Net IRR, and it is also statistically significant. The Fund AUM and Net IRR does not

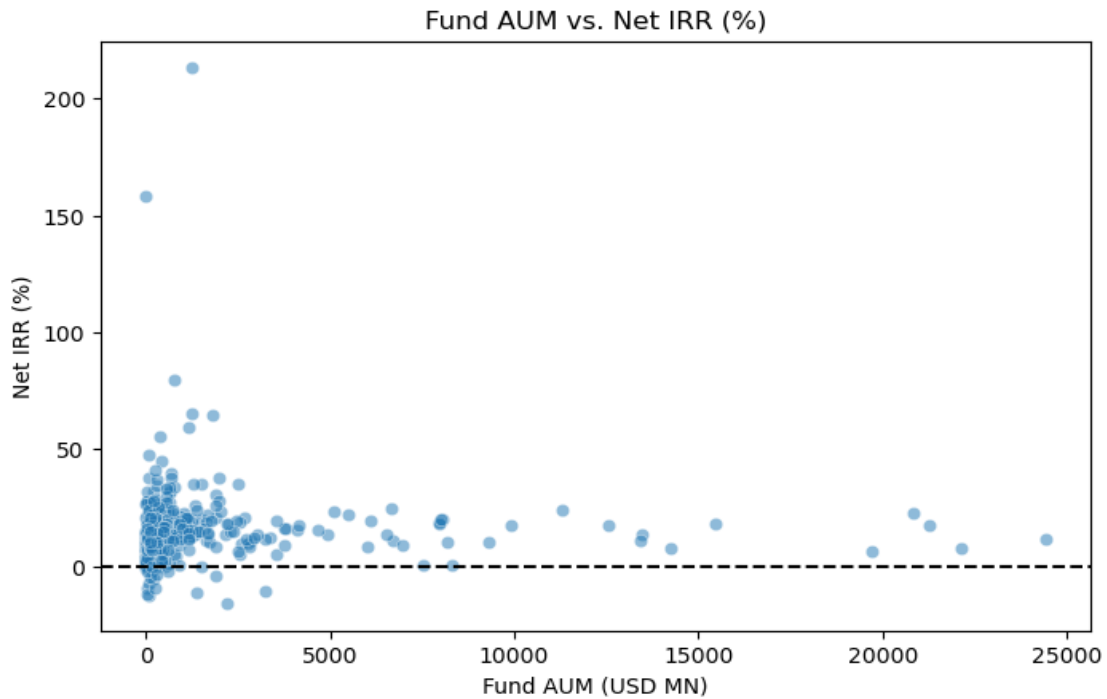
provide statistical significance, which is in line with the results of Panel A regression analysis.

RE model shows similar results. In regression analysis, Fund Number and Net IRR provides p-value  $< 0.05$ , and points out the results with positive correlation between returns and number of funds launched.  $R^2$  in RE model is 0.2021, which shows the result that 20.21% is explaining the variation in fund performance.



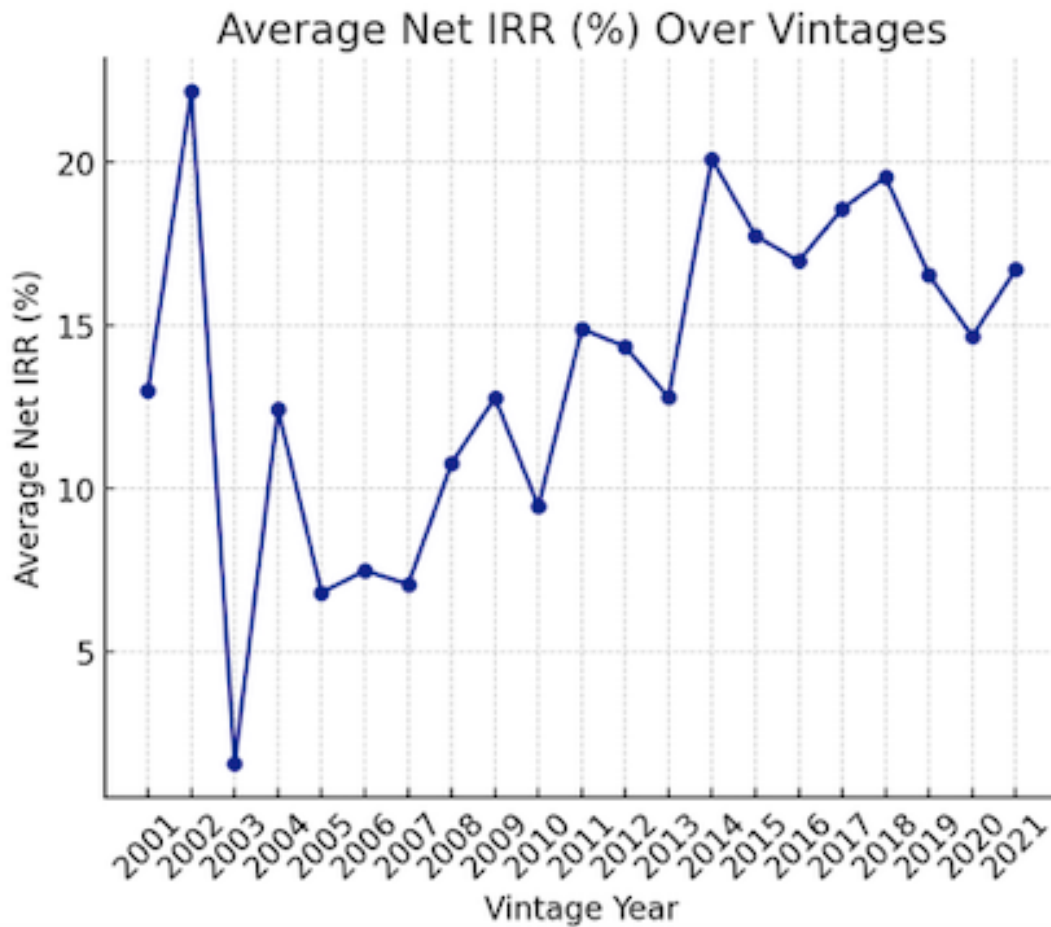
**Figure 8.** Distribution of Residuals.

The distribution of residuals demonstrates the normal distribution and in addition, it provides a confirmation of the execution of regression analysis. When the distribution of residuals follows the normal distribution, it indicates that results from the regression model are valid, and do not deviate significantly. In this instance, residuals stand mostly in zero, with a slight skewness to the right. When results are mostly near zero, it can be interpreted as a good result (Field, 2018). Results from the regression analysis are on average unbiased. Right-skewness indicate that there are some positive residuals in the data, but not significantly.



**Figure 9.** Fund AUM vs. Net IRR (%).

The regression analysis provides results of how the fund size correlates with the Net IRR. A figure 9 above presents the findings in a visual way which helps to interpret the results better. Most of the funds are smaller than 5 billion USD, except a few exceptions. In addition, the funds that have been able to achieve high returns, such as over 50% returns, are the ones that are relatively small funds with the capital of approximately 50-200 million USD. This illustrates that smaller funds achieve more often exceptional returns. Thus, the funds that are larger in size, for example, over 10 billion USD, lies relatively stable on the graph in terms of Net IRR. This demonstrate that larger funds are not able to generate similar returns compared to smaller funds. This confirms prior findings that larger funds have more stable returns, even though the returns are more often lower compared to smaller funds, in terms of Net IRR% (Harris et al., 2014).



**Figure 10.** Average Net IRR over vintages.

There is large variation between the years regarding on IRR-returns. The trend has been rising after the year 2010, which indicates increasing performance within European PE funds. Rising trend can be a result of increasing interest among institutional investors as they have become more interested in this particular asset class. In addition, the years 2010-2020 have been in general relatively steady time and the interest rate levels have been stable. Thus, bond markets or real estate investments have not been able to create additional value as strongly as they might have used to. Therefore, the private equity has gained more interest during these years. In addition, as the industry has grown, funds and fund managers have gained more expertise and operations have become more professional, which indicate the better investment activity (Preqin, 2020).

## 5 Conclusion

The performance of the PE funds has been a popular topic for the further analysis in finance. The subject often aims to answer to question of whether it is possible to predict the future returns with analysing the fund performance. Moreover, the research often tends to focus factors such as raised commitments or fund size. The questions are important for the investors that want to optimise their investment strategy and to evaluate the capability of the fund manager.

This study aims to provide an additional answer in a topic where the interest is regarding the capability of the European PE funds. Moreover, the study aims to answer are the PE funds in Europe able to generate steady returns in the long-term. Furthermore, this study answers a question of is there a relationship between fund size and fund returns. In addition, the study explores the fund performance in different views and pursues to find out is there a possibility to generate more likely better returns for the investor if the same manager has also a several prior funds established.

The first hypothesis of this study is the assumption that the fund returns relates positively with the performance of the previously raised funds from the same fund manager. The results of this study shows that successful European fund managers that launch several private equity funds and can provide returns for the investors, tend to have also better performing funds in the future as well. The regression analysis demonstrates a strong statistical significance of the factor that prior success is a positive signal for the future performance of the PE fund.

The second hypothesis of this study is the assumption that the fund size have an impact to the fund returns. However, the fund size does not explain the returns according to the regression analysis. Larger funds might even have a negative effect to the results. Possible reasons for the negative performance and its continuity can be mean reversion, for example. In the long term, exceptionally high returns do not continue forever but

eventually funds are returning to perform more average return levels in general. Another possible factor to explain this phenomenon can also be the declining scale returns.

When the fund is in the stage where it grows, the invested capital starting to increase and at the same time aiming the capital efficiently in the right targets can become more difficult. Harris et al. (2014) finds similar results in their study which conclude that larger funds tend to have difficulties to deploy the capital in an efficient way. Lerner et al. (2012) point out in their study that the PE funds have a specific optimal size and after a certain point the performance might start to decrease. It is also worth noting that when the fund possesses a large cash reserve, it can also decrease the fund performance. When the investment team is screening new investment opportunities, it might be harmful for the fund performance when there is a strict timeline to deploy the capital.

The regression analysis shows that funds with over 10 billion USD tend to generate lower IRR returns, but on the other hand, the returns are most likely more stable. PE funds with hundreds of millions are still able to achieve exceptionally high returns, which confirms the results of prior research. Smaller funds experience benefits from high risk and smaller deals, which partly explain the fact that there are more options where to invest when the fund is relatively small. The market among PE funds is extremely competitive and this might also have a way to influence in a negative performance. Prior succeeded funds face more competition in new fundraising rounds which might ultimately weaken the return potential.

There are several factors that this study decides to exclude. For example, the changes in the investment strategy can easily influence on the fund returns. When the fund manager follows current trends and shifting accordingly towards latest trends, it can influence the long-term returns. Several successful fund managers change their strategy, and the change can also be for example to decrease risk levels and invest in more stable portfolio companies. It can lead to lower returns but on the other hand, more stable returns. The macroeconomic factors are worth noting when exploring the investment

performance. PE markets are cyclical and economic cycles affect the fund returns, depending on the vintage of the fund. When the fund manager is conducting fund raising and the current market trend is rising but after market conditions change and the investment period is during declining markets, the returns naturally can decrease significantly regardless of the capability and the success of prior funds. Ultimately, investors behavior affect in returns since investors are the ones making the final decision whether to invest in the PE fund. Successful fund managers could entice more capital in funds, but if they continue to increase the size of their fund, the ability to generate additional returns for the investors could end at some point since the larger fund become more difficult to manage.

The funds analysed in this study can be partly biased since the funds that are not performing well, can stop their activity and it is possible that there is lack of funds that are performing negatively. This phenomenon is common when analysing PE funds, known also as survivorship bias. Datasets often include only active or successful funds, while the dissolved funds and negatively performed funds are excluded. This can lead to biased results in PE funds (Brown et al., 1992). This is worth noting also in this study, for example, when the examining period is 20 years, the dataset can contain only those funds, that still exist at that moment. It is possible that the results lead to incorrect conclusion regarding on fund returns, when there are not all the available funds included in the dataset.

In addition, the survivorship bias in private equity can be a consequence due to lack of transparency. PE funds do not have similar requirements to publish returns or other results as transparent than mutual funds. In their study, Phalippou & Gottschalg (2009) point out, that the performance of the PE funds is constantly overestimated since the analysis conducted can not take all the funds including the worst performed funds. In this study, the data contains only 53 funds of 915, showing a negative performance. The results reported to Preqin are voluntary and for this reason, most likely some of the funds performing negatively are left out in the sample.

Metrics sets out its own challenges. Even though measuring performance with IRR % is a market standard and well-known metric to use when analysing the PE funds, it has also received critique since it can be exposed for manipulation and thus not always provide the whole story for the investor. For that reason, this study has included also deployed MoM, to support the findings.

According to the regression analysis of this study, the prior fund performance is not only a poor predictor of future returns but can even have a negative impact on future returns. This can be explained with several factors, such as highly competitive environment within the markets, mean reversion or the challenges large funds have deployed the capital efficiently. In addition, the study shows that the fund size does not have statistical significance to fund returns. Changes in the investment strategy can explain the variation in returns and investors behaviour is one factor to consider, when analysing fund performance. Thus, it is critical to evaluate more PE fund's performance with various metrics and several different models.

## 5.1 Limitations and suggestions for future research

Limitation of this study relates mostly to the transparency of the data. The data from private equity funds rarely is transparent since the reporting is usually voluntary. Thus, fund managers choose to highlight only the better performing funds and rather left out the worst funds from the data sample. The lack of transparency can lead to survivorship bias and selection bias.

Another limitation for the study and important factor to consider, is the timing during different market cycles. Since this analysis is based on a specific timeline, approximately 20 years, the results can reflect in a certain economic cycle feature. For example, financial crisis or low-interest rate levels for several years are that kind of factors that can represent an exceptional development in the markets that are not necessarily recurring. In addition, IRR and MoM are mostly used metrics in the private equity studies, but these can be sensitive depending on the life cycle of fund and the cash flows. This makes the comparison of funds more challenging, specifically when the investment strategies and time horizons between these funds deviate significantly.

Furthermore, PE funds and VC funds deviate from each other regarding on risk levels, investment period and cash flow perspective, even though these asset classes fall in same private equity category. There can be possible limitations related to these funds, since this study examines both sub-categories. Analysing together these funds could lead to inaccurate or biased results. In addition, the data from Preqin is not divided in every country, but there is clear majority representation in specific countries that are most active in private equity, such as UK, Germany and France. Therefore, regional representation can be incomplete.

For the future research topics, it would be more practical to separate venture capital and private equity funds and analyse the asset classes separately. It would be interesting to include the sectors where the specific PE funds focuses on their investment activity and to analyse, which sectors can generate the returns better.

Furhermore, additional studies could focus more on a specific asset class in a global level, rather than analysing European PE funds. However, there is still a lack of private equity studies conducted in Europe level, so it is also important to review studies on Europe level. The geographic are could be included also in the PE fund analysis where there is an analysis of which countries in Europe perform the best, for instance, within buyout funds.

## References

Aldatmaz, S., Brown, G. W., & Demirgüç-Kunt, A. (2023). Determinants of international buyout investments. *Journal of Financial and Quantitative Analysis*, 58(2), 875-913. <https://doi.org/10.1017/S0022109022000278>

Ang, A., Chen, B., Goetzmann, W. & Phalippou, L. (2018). Estimating Private Equity Returns from Limited Partner Cash Flows. *The Journal of Finance*, 73: 1751-1783. <https://doi-org.proxy.uwasa.fi/10.1111/jofi.12688>

Bach, D., & Newman, A. L. (2010). Transgovernmental Networks and Domestic Policy Convergence: Evidence from Insider Trading Regulation. *International Organization*, 64(3), 505-528. <https://doi.org/10.1017/S0020818310000135>

Bílek, M. (2024). *Private Equity Exits in the CEE: An exploratory analysis of exit routes and holding periods*. Trends Economics and Management. <https://doi.org/10.13164/trends.2024.42.9>

Brown, S. J., Goetzmann, W., Ibbotson, R. G., & Ross, S. A. (1992). Survivorship bias in performance studies. *The Review of Financial Studies*, 5(4), 553-5780.

Busenitz, L. W., & Fiet, J. O. (2002). The effects of early stage venture capitalist actions on eventual venture disposition. *The Journal of Entrepreneurial Finance*, 7(2), 1-20. <https://doi.org/10.57229/2373-1761.1086>

Cavagnaro, D., Sensoy, B., Wang, Y. & Weisbach, M. (2019). Measuring Institutional Investors' Skill at Making Private Equity Investments. *The Journal of Finance*, 74: 3089-3134. <https://doi-org.proxy.uwasa.fi/10.1111/jofi.12783>

Chen, Y., Guo, J., Li, Y., & Zhang, X. (2022). Late-stage venture capital and firm performance: Evidence from small and medium-sized enterprises in China. *Applied Economics*, 54(20), 2356-2372. <https://doi.org/10.1080/00036846.2021.1989370>

Deloitte. (2020). *Data Analytics in Private Equity: Unlocking Value Through Advanced Analytics*. Deloitte Insights.

Demaria, C. (2013). *Introduction to private equity : Venture, growth, lbo and turn-around capital*. John Wiley & Sons, Incorporated.

Diller, C., & Kaserer, C. (2004). *European Private Equity Funds: A cash flow based performance analysis* (Working study No. 2004-01). Center for Entrepreneurial and Financial Studies (CEFS), Technische Universität München. <https://hdl.handle.net/10419/48533>

Field, A. (2018). *Discovering statistics using IBM SPSS statistics (5th edition)*. Sage Publication.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and Financial Performance: Aggregated Evidence From More Than 2000 Empirical Studies. *Journal of Sustainable Finance & Investment*, 5(4), 210-233.

Goldman Sachs Asset Management. (2023). *The Case for Co-Investments*. Retrieved from <https://am.gs.com/cms-assets/gsam-app/documents/insights/en/2023/The-Case-for-Co-Investments.pdf>

Gompers, P., Kaplan, S. N., & Mukharlyamov, V. (2016). What do private equity firms say they do? *Journal of Financial Economics*, 121(3), 449-476. <https://doi.org/10.1016/j.jfineco.2016.06.003>

Gompers, P., & Lerner, J. (2001). The Venture Capital Revolution. *Journal of Economic Perspectives*, 15(2), 145-168.

Harris, R., Jenkinson, T. & Kaplan, S. (2014). Private Equity Performance: What Do We Know? *The Journal of Finance*, 69, pp. 1851-1882. <https://doi.org/10.1111/jofi.12154>

Harvard Business Review. (2019). *The Investor Revolution*. *Harvard Business Review*, 97(3), 106-116.

Holman, K. (2009). Fees Hit Private-Equity Cos.: Private equity deal fees are standard business practice in the LBO world but do they leave companies shortchanged? *The Investment Dealers' Digest: IDD*, 75(32), 1.

<https://www.proquest.com/trade-journals/fees-hit-private-equity-cos/docview/198358909/se-2>

Jenkinson, T., & Sousa, M. (2015). What determines the exit decision for leveraged buy-outs? *Journal of Banking & Finance*, 59, 399-408.

Kaplan, S., & Schoar, A. (2005). Private Equity Performance: Returns, Persistence, and Capital Flows. *The Journal of Finance*, 60, pp. 1791-1823.

Kaplan, S. N., & Strömberg, P. (2009). Leveraged Buyouts and Private Equity. *Journal of Economic Perspectives*, 23(1), 121-146. <https://doi.org/10.1257/jep.23.1.121>

Kaplan, S. N., & Strömberg, P. (2001). Venture capitalists as principals: Contracting, screening, and monitoring. *American Economic Review*, 91(2), 426-430.

Kaserer, C. & Stucke, R. (2013). Performance of Private Equity. In *Alternative Investments*. <https://doi.org/10.1002/9781118656501.ch16>

Klonowski, D. (2007). *Venture capital as a method of financing enterprise development in Central and Eastern Europe*. *International Journal of Emerging Markets*. <https://doi.org/10.1108/17468800610658325>

Kortum, S., & Lerner, J. (2002). Assessing the contribution of venture capital to innovation. *RAND Journal of Economics*, 31(4), 674-692.

Leleux, B., Van Swaay, H. & Megally, E. (2015). The Future of Private Equity. *Private Equity 4.0: Reinventing Value Creation*. *Wiley Finance Series*, pp. 32-240. <https://ebookcentral-proquest-com.proxy.uwasa.fi/lib/tritonia-ebooks/reader.action?docID=1895776&query=The+Future+of+Private+Equity>

Lerner, J., Sorensen, M., & Strömberg, P. (2009). What drives private equity activity in emerging markets? *Review of Financial Studies*, 22(7), 2731-2764.

Lerner, J., Leamon, A., & Hardyman, F. (2012). *Venture capital, private equity, and the financing of entrepreneurship*. *John Wiley & Sons*.

Lupulescu, A. (2021). High-tech venture capitalists' investment criteria for early-stage ventures in the Netherlands. *University of Twente Student Theses*. <http://essay.utwente.nl/87916/>

Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporate Finance and the Theory of Investment. *American Economic Review*, 48(3), 261-297.

Metrick, A., & Yasuda, A. (2010). The economics of private equity funds. *The Review of Financial Studies*, 23(6), 2303-2341. <https://doi.org/10.1093/rfs/hhq020>

Phalippou, L., & Gottschalg, O. (2009). The performance of private equity funds. *The Review of Financial Studies*, 22(4), 1747-1776.

Phalippou, L., Rauch, C., & Ueber, M. (2018). Private equity portfolio company fees. *Journal of Financial Economics*, 129(3), 559-585. <https://doi.org/10.1016/j.jfineco.2018.05.003>

Preqin. (2020). Preqin Global Private Equity & Venture Capital Report 2020. Preqin Ltd.

Robinson, D. T., & Sensoy, B. A. (2016). *Cyclical, performance measurement, and cash flow liquidity in private equity*. *Journal of Financial Economics*, 122(3), 521-543. <https://doi.org/10.1016/j.jfineco.2016.08.001>

Roggi, O., Gianozzi, A., Baglioni, T. & Pagliai, F. (2019). Private equity characteristics and performance: An analysis of North American venture capital and buyout funds. *Economic Notes*. <https://doi.org/10.1111/ecno.12128>

Sensoy, B. A., Wang, Y., & Weisbach, M. S. (2014). Limited partner performance and the maturing of the private equity industry. *Journal of Financial Economics*, 112 (3), 320 – 343. <https://doi.org/10.1016/j.jfineco.2014.02.006>

Waterman, N. (2022). Understanding and investing in private equity secondaries. *Morgan Stanley*. Retrieved from <https://www.morganstanley.com/ideas/private-equity-secondaries-volatile-markets>