GP Stakes in Private Equity

An Empirical Analysis of Minority Stakes in Private Equity Firms[*]

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ABSTRACT

This study examines the phenomenon of minority stakes in Private Equity firms ("GP stakes") and specifically the motives behind such deals and their fund-level impact on target firms. We use a unique dataset on GP stake deals between 1988-2020 to empirically analyze the motivations behind GP stakes using logit regressions and their fund level impact using a Difference-in-Differences (DiD) approach with fixed effects. Our results show that large, younger PE firms with a high fund-size growth are most likely to receive a GP stake. The results further show that investors in GP stakes are more likely to have a large AUM, have invested in many funds and engage in co-investment activity. By type, they tend to be fund-of-funds managers and sovereign wealth funds. As for the fund level impact of GP stakes, we find that they have no significant effect on neither subsequent fund-size growth nor return performance. Our results indicate that the official reasons communicated by PE firms for selling a GP stake - to fund new strategic initiatives, enter new markets and increase capital commitments to new funds - are not the actual reasons. Instead, we argue that the real motivation behind selling a GP is for owners to realize value. Regarding investors' motivations for acquiring a GP stake, our analysis shows that only a minority of GP stakes invested in are acquired by previous LPs in target manager's funds. We therefore argue that interest alignment in an existing GP-LP relationship does not seem to be the main motivation for investing in a GP stake, but that it is rather a novel and attractive way for investors to get exposure to Private Equity, the associated illiquidity premium and the unique risk-return characteristics that the investment offers.

Keywords: GP Stakes, Minority Stakes, Private Equity, Agency Conflicts, Difference-in-Differences

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Definitions & Abbreviations

Abbrevation	Meaning
PE	Private Equity
GP	General Partner
GP stake	Minority investment in the management company of a PE firm
GP staker	An investor which undertakes a GP stake investment
LP	Limited Partner
IPO	Initial Public Offering
LBO	Leveraged Buyout
VC	Venture Capital
IRR	Internal Rate of Return
MOIC	Multiple Of Invested Capital
US	United States
UK	United Kingdom
AUM	Asset Under Management
DiD	Difference-in-Differences
Management fee	Non-performance based fee charged by GPs
Carried interest	Performance based fee charged by GPs

1 Introduction

Since the early days of Private Equity (PE), Limited Partners (LPs) have been able to share the returns with the General Partners (GPs) through the limited partnership, which entitles the LP to a claim on returns in the illiquid private company asset class. Due to the principal-agent relationship between LPs and GPs, there is a certain structure often used for these limited partnerships, which is designed to reduce agency costs by aligning the interests of the GPs with the LPs. Usually, the design incorporates general factors such as the lifetime of the fund and operational provisions. It also incorporates specific details regarding compensation as well as limitations and guidance regarding governance. In addition to the details of the limited partnership, the GPs typically invest 1-3% of the fund's total commitment in order to ensure that interests are aligned between GPs and LPs and that GPs have "skin in the game". As for the compensation agreement, the standard model is the so-called "two and twenty arrangement". This arrangement means that the fund managers (GPs) are entitled to a fixed management fee of around 2% of the fund's committed capital and they are also entitled to a carry fee - usually 20% of the profits after a preferred return of 5-10% has been deducted. That is, the rest of the profits, after management fee and carry are distributed to the LPs together with their preferred return (McCahery and Vermeulen, 2013). As the PE industry has matured over the last decades, the forms in which investors can access the asset class have developed. As documented by Clayton (2017), PE has seen a rise in *individualized investing* on the part of LPs, for example in the form of separate accounts and co-investments alongside the GPs on certain deals - in part driven by an increased pressure on PE fee structures and converging returns with public markets (Harris et al., 2015). Another related phenomenon used by investors as an alternative way to invest in PE, is that of GP staking - which is the topic of this thesis.

A GP stake is the purchase of a minority (typically non-voting) ownership share in the management company of a PE firm. As opposed to the characteristics of traditional fund investing for LPs described above, a GP stake offers investors a portion of the management fees and the carried interest from the funds of the staked manager as well as a potential value appreciation of their ownership stake (Gelfer and Cordeiro, 2017). The investment is thereby of a clearly different nature compared to a traditional LP fund commitment. GP staking has existed for many years and the earliest stakes can be dated back to the mid 1980's. However, the phenomenon has accelerated recently - especially after 2010 and onwards. The main shift that has taken place in the last decade is that large investment managers (such as Neuberger Berman, Goldman Sachs, and Blackstone) have begun raising specialized funds, specifically targeting GP stake deals (Gelfer et al., 2018).

Despite that the quantity of deals undertaken have increased substantially in the last decade, there is practically no research on the topic in the academic community. The main studies conducted on the topic of GP stakes have been done by commercial actors in the financial services industry, and mainly by the data provider PitchBook. The articles written under the banner of PitchBook have looked at the phenomenon from a holistic

perspective, explaining the development and the current market for GP stakes. In this thesis, the aim is to fill the void in the academic literature and provide an extensive econometric analysis of the phenomenon of GP stakes by analyzing the motivations behind the investments as well as their effect on subsequent funds raised by the PE firms invested in. By doing so, we hope to contribute with a deeper understanding of GP stakes in general, and deliver insights regarding why they are undertaken and what effect they have on the targeted PE firms, which could be of interest for both academics and practitioners.

To conduct this analysis, a unique dataset has been compiled of GP stake deals between 1988-2020 - obtained from PitchBook and collected manually. The dataset contains 201 GP stake deals that have been deemed relevant to study. These deals have then been merged with data from Preqin's PE database on PE managers, investors, and funds. Our analysis focuses on three parts. First, we focus on the firms receiving GP stake investments and their characteristics, to predict what type of firms that are subject to GP stakes. In our second analysis, we focus on the investors in GP stake deals and their characteristics, to draw conclusions about the characteristics of the GP stake investors. In both these analyses, binary logistic regressions are used to predict the log-odds of either being the target or the investor in a GP stake based on sets of relevant independent variables. Our third and final analysis concerns the fund-level effect of GP stakes and more specifically, the effect that GP stakes have on subsequent fund returns and fund-size growth of the target firm. For this analysis, a Difference-in-Differences (DiD) approach with staggered treatment and firm and year fixed effect was used to be able to isolate the effect from a GP stake on the factors of interest.

The results from the first analysis, predicting what type of firms are likely to be the targets of GP stakes, show that large, younger PE firms that have demonstrated high fund-size growth have the highest likelihood of being GP staked. Of these characteristics, the results show that size is the strongest predictor, while the other two significant variables demonstrate a marginal effect. The results from the second analysis, where we examine the characteristics of investors that have engaged in GP staking, show that the characteristics that increase the probability of the investor being a GP staker is greater AUM and a larger number of funds invested in. The probability further increases if the investor engages in co-investment activity. By investor type, the probability of being a GP staker increases if the investor is a sovereign wealth fund or a fund-of-funds manager. Of the above-mentioned characteristics, being a sovereign wealth fund particularly increases the probability of an investor being a GP staker. As for our third and final analysis, our results show that a GP stake has no immediate or permanent effect on the staked manager's subsequent return performance or fund-size growth after the GP stake.

Our main conclusion on the motivation for why PE firms decide to offer a GP stake is that it is predominantly a way for owners/founders to realize value. This conclusion is reached in part because we find no significant effect from the GP stake on subsequent fund-size growth or return performance - which would be expected from such a motivation. What further leads us to draw this conclusion is that we find no evidence of the official reasons commonly stated by PE firms for doing a GP stake - namely to be able to finance

the entrance into new geographic markets, fund new strategic initiatives and increase capital commitments to new funds (Gelfer et al., 2018). If these were in fact the actual reasons, we would have expected to find that GP stakes lead to higher fund-size growth post-GP stake. Our results also allow us to reject the validity of a common worry expressed by current LPs in PE managers that bring in an outside investor into the management company - which is that it will lead to an excessive focus on AUM growth and management fee collection post-GP stake (Gelfer et al., 2018). Such tendencies would also likely lead to higher fund-size growth post GP-stake, which we do not find.

Regarding the motivations for why investors decide to acquire GP stakes, we argue that the reason is not for LPs to improve the alignment of interest with GPs. The reason being that only a minority of GP stakes are acquired by LPs who have previously invested in the funds of the staked manager. Instead, we argue the investment is predominantly a novel way for them to get exposure to the private markets, the associated illiquidity premium, and unique risk-return characteristics that the GP stake investment offers.

2 Theoretical Background

2.1 Return performance in Private Equity

The performance of PE has been looked at from many angles in the financial literature. In many cases, the research has shown conflicting results with shifting conclusions over the years as the PE industry has evolved and become more mature. Several studies have been conducted where a comparison has been made regarding the performance of PE compared to other asset classes. Studies have indicated that PE as an asset class has outperformed public market benchmarks net of fees. Harris et al. (2013) does for example find that PE funds have outperformed the S&P 500 benchmark net of fees with more than 3% annually and thereby point towards a clear outperformance. Harris et al. (2015) come to similar conclusions about outperformance but adds that for funds with vintages post 2005 the evidence points towards a performance in line with public market indices. Also, Døskeland and Strömberg (2018) looked at the PE industry's performance compared to public benchmarks and discussed evidence that supports mainly those of Harris et al. (2013). More specifically, they document an outperformance of 3% annually above index for buyout-focused funds and 2% annually for VC-focused funds. Additional research that finds a significant outperformance of PE funds when comparing against the S&P 500 benchmark is Higson and Stucke (2012). In their research they also document that the average fund did much better than the median - indicating that outperformance may be driven by positive outliers.

As for the reasons why PE returns differ from public equity returns, a risk-based explanation states that PE is subject to a time-varying illiquidity premium over public equity. The illiquidity premium varies over time and the relative outperformance of PE compared to public equity is higher in years when investors are reluctant to commit capital to PE (Døskeland and Strömberg, 2018). Other studies have been less optimistic about the performance of PE funds, such as the research by Phalippou and Gottschalg (2005) where it is argued that the outperformance of PE to a great extent can be explained by sample-bias and overstated accounting values of non-exited investments. Phalippou (2020) similarly argues that there has not been an outperformance of PE compared to public market indices net of fees since at least 2006. In this recent research, a harsh criticism is also aimed at the use of IRR as a measure of performance (which is commonly used in PE) when comparing with public benchmarks, due to the ease at which the measure can be used to distort actual long-term performance compared to a public benchmark.

Further research within the field has looked more specifically at what factors seem to drive the returns of PE funds. Research conducted by Söderblom (2011), does for example highlight three main determinants of performance, namely; funds with earlier vintage years have performed better than those with a later vintage year, funds concentrated on buyout-strategies have performed better than VC-focused funds and finally, subsequent funds generally perform better than first funds (i.e. the first fund raised by a PE firm). With respect to limited partners, Sensoy et al. (2013) examine the performance of LPs' PE

investments over time and find that superior performance in 1991-1998 can be attributed to greater access to the top performing funds in VC during the same period. In the subsequent period, the outperformance disappeared as investors lost access to the top performing funds. Historically, the authors state that top performing PE firms have not increased fund sizes or fees to market clearing levels - instead, access to their funds are rationed to favored investors. Furthermore, they argue that the maturing of the PE industry has had implications for the relationship between GPs and LPs since their findings suggest that the importance of access has declined over time - as the industry has become more competitive and commoditized.

In addition to the factors mentioned above, the relationship between the size of PE funds and their performance has also been studied by several authors in the field. In research by Higson and Stucke (2012), conducted on US buyout funds, it was for example shown that there is a weak statistically significant relationship between fund size and performance (both in absolute terms and relative to the S&P 500 index) when examining a dataset of US buyout funds. In contrast to this, Harris et al. (2013) does not find a significant relationship between fund size and performance when looking at buyout-focused funds, but do find that bottom quartile VC-focused funds seem to underperform (indicating a positive relationship between size and performance). The results of Harris et al. (2013) relating to buyout-focused funds are consistent with the results obtained by Kaplan and Schoar (2005) and Lopez-de-Silanes et al. (2015) which indicates that there might be no significant relationship between the size of buyout-focused funds and their performance. In their research, Lopez-de-Silanes et al. (2015) also find evidence of diseconomies of scale related to the number of simultaneous deals being undertaken for buyout funds.

Another topic that has been studied by several authors is the relationship between aggregate capital commitments (capital flows into the industry) and fund performance. Here, Harris et al. (2013) demonstrate that the performance of buyout funds is significantly negatively correlated to aggregate capital commitments. That is, during years when much capital flows into PE, the performance of funds tends to decline. This result is consistent with Kaplan and Strömberg (2009) and Robinson and Sensoy (2015).

2.2   Financial intermediation in Private Equity

A subfield within the financial literature relating to PE is the one describing and examining the structure of PE firms and the financial intermediation aspect of PE. The basic premise of financial intermediation in PE is that it solves sorting and incentive problems between private firms and investors, and solving these problems requires intensive pre-investment due diligence and post-investment monitoring (Prowse, 1998). Delegating these activities to a single intermediary has created the traditional fund structure in PE and the relationship between GPs and LPs. However, the relationship between GPs and LPs is subject to agency problems, which can result in adverse selection and moral hazard. Adverse selection mainly arises when the GPs have better information with regards to their skill in investing

vis-a-vis LPs. This issue is mitigated as a result of the contractual profit sharing in the form of carried interest, which allows LPs to identify between GPs that are willing to take a majority of their compensation via carried interest and those who are not. Likewise, numerous covenants are also included in limited partnership agreements to mitigate downsides of information asymmetries between GPs and LPs, such as limits on amounts invested in failing companies in previous funds. With respect to moral hazard, this is mitigated through LPs' ability to monitor the effort level exerted by GPs, as well as through the profit-sharing structure and contractual covenants mentioned above. While a fixed compensation would have incentivized GPs to exert minimal effort to satisfy external requirements, the profit-sharing arrangement motivates GPs to maximize their own potential payoff from increasing the value of the fund. Furthermore, various covenants in limited partnership agreements can specifically limit the activities of GPs (e.g. through limiting the personal funds a GP can invest in a single firm to enforce sufficient efforts are exerted across the fund portfolio) (Mehta, 2004). However, moral hazard still exists in the form of e.g. PE-firms choosing to grow fees at the expense of returns (Kaplan and Schoar, 2005; Lopez-de-Silanes et al., 2015), deciding to aggressively invest at market peaks when expected returns are modest (Axelson et al., 2013), and when PE firms exit transactions prematurely to facilitate fundraising (Gompers, 1996).

2.3   Conflict of interest between LPs and GPs

Elaborating further on the LP-GP conflict, research on this topic has been conducted by Axelson et al. (2009) in their study on the financial structure of PE firms. They propose an explanation for the financial structure of PE firms based on the type of agency conflict between PE fund managers (GPs) and their investors (LPs), mentioned above. They show that by combining fundraising for several investments (ex-ante - raising equity in funds) and fundraising on a deal-by-deal basis (ex-post - debt financing for each separate deal), PE firms are incentivized to avoid bad deals in good times (since they have access to capital ex-ante) and at the same time prevented from doing bad deals in bad times (due to limited debt financing ex-post). Other research that has examined the GP-LP conflict is Figge et al. (2012). They specifically set out to study if there sometimes is a moral hazard problem in the decision to sell investments in a particular fund (if GPs sometimes make divestment decisions that harm LPs in favor of their own interest). They find that GPs generally maximize income from both current funds they manage and from future funds (i.e. by building a good reputation) and hence refrain from divestment decisions that may harm their LPs' returns (e.g. by exiting in a way that is financially suboptimal but may be reputationally preferable). However, they do find that this relationship breaks down when a fund approaches the end of its lifetime as GPs increasingly focus on managing subsequent funds.

Additional research on the topic covers other ways to mitigate the conflict between GPs and LPs, besides the fundamental, inherent structure of the limited partnership. One such example is the study of direct investments and co-investments in PE that has

been conducted by Fang et al. (2015). In this study, the main goal is to examine the performance of 'solo deals' (where traditional LPs in principal act as a PE firm on their own and make their own investments) and co-investments (where traditional LPs invest alongside the GP in a deal originated by the GP on the same terms as the GP) and compare these to traditional fund investments - to observe moral hazard on behalf of GPs. What they find is that the track record of co-investments is generally quite poor compared to the funds they invest in (due to the adverse selection of transactions that GPs give LPs access to for co-investment). They also find that solo deals by LPs tend to outperform fund benchmarks (here the effect is however not uniform but is in large an effect of an informational advantage of the LP making the investment). Other authors that have explored the phenomena of co-investments in PE is Myles (2013) where it was concluded that an increasing number of small and medium sized investors are demanding separate accounts and co-investment arrangements with their PE managers. They also speculate that LPs' increasing leverage in the PE dynamic could mean that first time and less successful managers lose the option of raising funds through blind pools (i.e. traditional PE equity fundraising) in favor of alternative arrangements. Relating to LP co-investments, Clayton (2017) documents a rise in individualized investing which has facilitated an increase in the occurrence of preferential treatment in the private equity industry. He argues that individualized investing in the form of co-investments or separate accounts sometimes can constitute new value that accrues to the benefit of the preferred investor while leaving other investors no worse off, and sometimes it can be a zero-sum game, where value is transferred from non-preferred investors to the preferred investors. Braun et al. (2020) further highlights that involvement in co-investments is linked to LP skill and experience to evaluate the types of transactions which to participate in. They also highlight that participation in co-investments may strengthen and deepen the relationship between GPs and LPs, which might be particularly valuable in the case of successful GPs whose funds are oversubscribed and where investor participation is rationed. They also discuss the motives for co-investments and its link to converging private and public equity returns, documented by Harris et al. (2015) which has put pressure on PE fee structures.

2.4   Non-traditional financing in Private Equity

Turning to the existing literature about non-traditional PE fundraising, there is generally less research to be found. The subject of PE IPOs is the area that has been studied in most detail within the subfield of non-traditional PE fundraising. Gogineni and Megginson (2009) discuss new trends in PE fundraising practices and focuses on PE IPOs and the underlying motives of PE firms to go public. They also highlight PE firms' inclination to attract investment from sovereign wealth funds. Their findings include the conclusion that PE firms are increasingly searching for alternative sources of funds due to factors such as: a willingness to diversify funding sources, tightening credit conditions and the eagerness of founders to realize value by divesting their illiquid ownership stakes in the management company. They also conclude that the reason why PE firms are becoming

increasingly eager to attract capital from sovereign wealth funds is that their characteristics of being passive, long-term investors suits the requirements of PE firms when looking for investors. Other research has focused on the investor aspect of PE and investigated what characterizes the investors that engage in different forms of PE investing. Such research has been conducted by Cumming et al. (2011) where the authors examine a dataset of 100 institutional investors in Europe to investigate what type of investors engage in investments into listed PE firms. Their findings show that smaller institutional investors allocate capital to listed PE, as do private (not public) pension funds. They also find that investors with a preference for liquidity that are based in the UK tend to engage in these investments. In addition to the above, they point to the fact that the empowerment of decision making power to an equities team (rather than a PE team, alternative asset team or a board/investment committee) has a pronounced impact for investment in listed PE. A more recent study on the phenomenon of listed PE has been conducted by Mustafina and Nacksten (2020). In their research, they find that the official reason stated by PE firms for going public is to improve employee incentives as well as to fund growth. However, in their analysis, they find that the actual reason seems to be for founders to realize value - which is in line with the reasoning by Gogineni and Megginson (2009). In addition to this, they find that the investors in listed PE have a propensity to lack access to limited partnerships (i.e. traditional PE fund investments) and that investing in listed PE might be the only way for them to get exposure to the PE asset class. Besides the conclusions mentioned above, the research by Mustafina and Nacksten (2020) includes an investigation of fund performance and fund-size growth in connection to the IPO of PE firms. Regarding fund performance, their results show that fund performance deteriorates significantly after the IPO. Also, PE firms seem to demonstrate more aggressive fundraising prior to the IPO than a set of private peers. Regarding fund-size growth post-IPO, the results are not as clear and no significant effect can be found, despite a stated ambition to grow fund size in IPO prospectuses. A lack of post-IPO fund-size growth, in combination with the timing of the IPO being when AUM and management fee growth is high motivates their conclusion that the actual reason to go public is for owners to realize value.

2.5   GP stakes

Turning to the specific topic of GP stakes, financial data provider PitchBook does in a series of articles by Gelfer and Cordeiro (2017), Gelfer et al. (2018), Fernyhough and Beck (2019) and Fernyhough and Carmean (2020) provide an introduction to the subject. They describe the emergence of GP stakes as a result of LPs seeking new ways to forge relationships with GPs and to gain better exposure to underlying deals. The phenomenon, as documented by Gelfer and Cordeiro (2017) was previously manifested through individualized investment mandates (as described by Clayton, 2017) and co-investments, but has extended to involve minority investments in the management companies themselves. Gelfer and Cordeiro (2017) define GP stakes as a direct equity investment in the GP's underlying management company. They argue that the phenomenon is similar in structure to a seeding arrangement,

but with two major differences, relating to the structure of the deal and the type of GPs that are targets of the investment. First, seeding arrangements are generally structured as an ordinary LP commitment to a fund but with preferential terms such as reduced fees, potentially rights to part of the carried interest charged by the manager (Dartley, 2017) and right of first refusal on co-investments. This preferential treatment is given in exchange for the LP's early commitment to the firm and often relatively long lock-up period. Here, GP stake investments are different since they are structured as a purchase of a minority (typically non-voting) ownership position in the GP's underlying management company. Second, while seeding arrangements typically involve emerging managers, the target manager of GP stake deals are often well-established firms that have a track record of strong performance (Gelfer and Cordeiro 2017). Another distinct feature of GP stakes, is that there exists a particular element of liquidity risk in the GP stake investment, as full liquidations are unlikely because the stakes are too large for management to buy back themselves (Fernyhough and Carmean, 2020).

Regarding the investors in GP stakes ("GP stakers"), one of the early, major GP stake deals was done by CalPERS, which acquired a 10% stake in the Carlyle Group in 2000. Other prominent PE firms such as Apollo Global Management have also been documented to sell equity stakes to sovereign wealth funds. Furthermore, it has been reported that investors typically have a longstanding relationship with the GP (Gelfer and Cordeiro, 2017). In recent years, managers of fund-of-funds have been increasingly interested in GP stakes. While fund-of-funds have been around for many years in public equity investing (e.g. Brands and Gallagher, 2005), this strategy is less common in PE, and has only recently accelerated (Weidig et al., 2005; Fernyhough and Carmean, 2020). Some fund-of-funds managers have also adjusted their investment strategy to specifically invest in GP stakes instead of the funds of the manager. This has been exemplified by for example Goldman Sachs Alternative Investments & Manager Selection (AIMS) and Dyal Capital Partners (part of Neuberger Berman) that both have raised funds dedicated to specifically target minority equity investments in PE firms as opposed to fund investments, although their investment style is still generally defined as PE fund-of-funds. In a study on PE fund-of-funds, Weidig and Mathonet (2004) emphasized their positive return characteristics, using a sample of 1,027 direct funds and a simulation approach to obtain fund-of-funds returns and find that they offer significant risk diversification relative to direct fund investments.

Furthemore, Gelfer and Cordeiro (2017) offer an explanation for why GP stakes in PE might have accelerated in recent years. A turning point might have come in 2016 when Goldman Sachs Alternative Investments & Manager Selection (AIMS) struck a deal to sell their GP stake in AMG (a PE firm) for $ 800 million, providing a 15% annualized return on the investment. This deal showed that it was possible to exit a GP stake investment and might have changed the industry's perspective on these types of investments. Further explanations could, according to the authors, be that the average age of founders and partners of PE firms is increasing and that a GP stake could be a way to provide liquidity without giving up too much control of the firm they built. This reason could also have

been exacerbated by the fact that an alternative route to liquidity - namely, the IPO of the PE firm - has proved to be of limited attractiveness due to the lackluster performance of PE IPOs during the 2000's.

In terms of what type of firms that receive GP stakes, Gelfer et al. (2018) document that PE managers receiving GP stakes tend to boast industry leading performance and document that PE firms receiving GP stakes are showing better historical performance than other PE firms (35% were in the top quartile in their peer group and only 19% were in the bottom quartile in their peer group). This is also confirmed by Fernyhough and Beck (2019), who claim that of the PE firms receiving GP stake investments, 60% of previous funds raised were in the top two performance quartiles, on average. They further conclude that PE firms receiving GP stakes tend to have higher average capital raised (i.e., they tend to be of larger size) than non-staked PE managers. In addition to this, Gelfer et al. (2018) claim that GP-staked firms have an older vintage of their first fund on average (i.e., they tend to be older firms). Related to their documentation of the size of GP staked managers, the authors also document that fund-size growth for GP staked managers is higher than the average fund-size growth before the GP stake takes place. However, they do not see any tendencies of the funds for GP staked managers growing faster after the investment. Their observation about fund-size growth prior to the GP stake is also confirmed in the article by Fernyhough and Beck (2019) who document that firms that receive a GP stake tend to have displayed a larger step-up in fund size than the industry average prior to the GP stake. To summarize: the results above seem to point towards GP staked firms being large, old firms that have displayed a strong performance track record. It also points towards GP staking investors targeting fast growing managers.

In addition to identifying the type of GPs likely to receive a GP stake, Gelfer et al. (2018) mention three primary reasons cited by PE firms being the rationale behind raising outside capital (that is, raising capital in the management company through a GP stake) being the following: launching initiatives in new sectors and geographies, increasing their capital commitment to new funds (keeping their "skin in the game") and lastly to seed new strategies (e.g. a new VC strategy). Furthermore, Gelfer et al. (2018) states that a common worry among LPs is that the presence of an outside investor will encourage the manager to become an asset-gatherer more concerned with raising capital and collecting management fees rather than maximizing value of the investments.

3 Research Questions

3.1 Prediction of the fund managers receiving a GP stake

In the first part of the thesis, we focus on distinguishing between what type of managers have a high or low probability of receiving a GP stake, depending on the characteristics of these managers and the funds they manage. Hence, the first research question is formulated as:

Q1. What type of PE firms are likely to receive a GP stake?

An answer to this question could contribute with important insights to what drives GP staking and what has caused the increase of such investments in recent years. Based on the preliminary documentation of GP stakes done by PitchBook through Gelfer et al. (2018), we expect to find that fund managers attracting GP stakes generally are large, old firms with industry leading return performance and with a large step-up in fund size prior to the GP stake being made.

Furthermore, based on previous research on the dynamics between LPs and GPs by Sensoy et al. (2013) and Braun et al. (2020) we expect investors in GP stakes to want to deepen the relationship with top performing GPs to improve access to their funds. In line with the above, this too leads us to believe that strong return performance, and a long history of such performance, should be a characteristic among managers that attract GP stake investments.

3.2 Characteristics of the GP stakers

In the second part of the thesis, we investigate the features of the firms engaging in GP staking. We do this to address questions regarding agency conflicts and the underlying economic motives of GP stakes. As with the first research question, an answer to this matter could bring further insights to the drivers of GP staking activity. The second research question is formulated as follows:

Q2: What type of investors engage in GP staking?

As mentioned in the theoretical background, GP stakes could be a way to align incentives between GPs and LPs. If this is the case, we would expect certain GP stakers to be previous LPs in the funds of the manager they invest in. The reason being that they seek to align incentives with a manager they already have a relationship with.

Furthermore, GP stakes could also be the result of LPs' desire to improve the terms of investing in PE, as reported by Clayton (2017). As mentioned in the theoretical background, one way to improve the investment terms for investors in PE is through co-investments. Co-investments are a way for LPs to invest on the same terms as the GPs and lower the associated costs. Therefore, we expect to see that GP stakers generally

have a preference for engaging in co-investment activity. As mentioned by Braun et al. (2020), participation in co-investments requires LP skill and experience, hence we expect the same to be true with respect to GP stake investments.

Moreover, as mentioned in the research by Gogineni and Megginson (2009), sovereign wealth funds have actively sought GP stakes and generally display characteristics that are appreciated by the GPs, namely being passive and long-term owners. Therefore, we expect sovereign wealth funds to be a common type of GP stake investor. Lastly, given the emergence of specialized fund-of-funds investors targeting GP stakes (highlighted in e.g. Fernyhough and Beck, 2019), we expect this trend to affect the type of investors engaging in GP staking.

3.3   Fund level effects of GP stakes

In the last part of the thesis, attention is shifted to how returns and the fund size of target managers change ex-post compared to ex-ante. Hence, the last two research questions are of a different nature compared to the previous two. Rather than focusing on the characteristics of the firms receiving GP stakes or the firms engaging as GP stakers, these questions are intended to answer the question of what *effect* a GP stake has on the GP staked manager and the subsequent funds raised after the investment. The research questions are formulated as follows:

Q3.1: Do PE firms outperform after having received a GP stake?
Q3.2: Do PE firms substantially grow their size after having received a GP stake?

As mentioned by Gelfer et al. (2018), a common worry among LPs is that the presence of an outside investor in the management company of the GP will encourage the manager to focus more on growing, increasing the AUM and collecting management fees, rather than maximizing the value of the investments. If such tendencies were to be found, the results should show that a GP stake has a negative effect on returns and a positive effect on fund-size growth.

Furthermore, if the reasons for taking in an external minority investor is indeed to launch new strategies, enter new markets and increase capital commitments to new funds (which has been documented by Gelfer et al. (2018) and Fernyhough and Carmean (2020) to be officially stated reasons) then we should, in line with the above, see a higher growth in fund size following a GP stake.

Lastly, if the reason behind the GP stake is instead motivated by the current owner's decision to realize value (i.e. which was concluded by Mustafina and Nacksten (2020) to be the main reason for PE firms to go public), we have no reason to expect neither higher post-GP stake fund growth nor increased returns.

4 Data

4.1 Manager, investor and return data

Fund return data as well as general information on fund managers, investors, investor portfolios, benchmark data and fund terms have been retrieved from Preqin's PE database - which contains extensive data on PE firms worldwide. We have used data on returns and fund sizes both before and after the GP stake, which allows us to consider immediate and permanent fund level effects of a GP stake on a manager. To summarize, we have information on 3,233 PE funds for vintage years between 1980-2019, 1,153 PE fund managers and 13,523 PE investors. Both the manager and investor datasets consist of cross-sectional data and has been formatted to include average fund size and return data which has been aggregated over various points in time. Return and fund size is collected from the fund dataset, which consists of panel data spanning over long periods of time. In the manager analysis, which is based on the manager dataset, we seek to develop a model for predicting what types of managers that are likely to receive a GP stake. Therefore we format the data such that the analysis only includes data on firms before they received their first GP stake - meaning we look at all data on firms that have not yet received a GP stake, but use only data prior to the first GP stake for GP staked firms, in order to get a better prediction model. This is in contrast to the investor analysis, which is based on the investor dataset, in which we use all data on all investors that both have already undertaken GP stakes as well as those who have not, in order to get a descriptive model of the types of investors that are typically involved in GP stake investments.

4.2 GP stake deal data

Data on GP stake deals has been collected in part from the data provider PitchBook and in part by manually gathering information on deals. The compiled dataset spans between 1988-2020 and contains information about the company where a minority stake has been acquired (i.e. receiving a GP stake), information about the investors tied to the same deal (i.e. the minority investors), the date of the deal, percentage acquired (available for about ⅓ of deals) and contact details. Through the PitchBook database, 339 transactions were accessed and through manual data gathering, an additional 11 deals were added (in total 350). After a review of all investments, only 201 of the total deals were deemed relevant. To screen relevant deals, a comparison was made between the GP stake deal dataset and information on PE fund managers available through Preqin's PE database. In case a GP staked firm was not available in the Preqin PE database, it has been excluded from the dataset - since it is not defined as a PE fund manager according to Preqin. Furthermore, if a target firm is not present in the Preqin PE database, no empirical analysis can be conducted due to a lack of data on the manager's characteristics (e.g. its country of origin, investment strategy, year of establishment etc.), fund size and performance.

4.3 Variable formatting

4.3.1 Return performance

To assess return performance, data on funds' internal rate of return (IRR) net of fees as well as data on funds' return multiples (MOIC) has been used. These metrics are generally defined as:

$$\text{MOIC} = \frac{\text{Realized value + Unrealized value}}{\text{Total amount invested}}$$

And IRR is the interest rate that solves the following equation by setting NPV = 0

$$\text{NPV} = \sum_{t=1}^{T} \frac{CF_t}{(1 + IRR)^t}$$

Throughout the thesis, IRR has consistently been used as the main return metric, given the extent to which this metric is used in the industry by practitioners (Gompers et al., 2016) and its inherent ability to take the time aspect of the investment into consideration better than a return multiple. However, since there are documented drawbacks of this return metric, such as the implicit reinvestment assumption (Gottschalg and Phalippou, 2007), MOIC has been used as a robustness check for return performance. The fund data on IRR only includes vintage years 1980-2016, since no IRR returns have been reported in the Preqin PE database for funds raised after 2016. For some of the funds with later vintage years, reported IRR is simply given as an estimated, unrealized IRR rather than a realized measure. As an additional performance metric to evaluate returns, "IRR over benchmark" has been considered to get additional information regarding relative performance. The metric is defined as:

$$\text{IRR over benchmark} = \text{fund IRR} - \text{relevant fund benchmark IRR}$$

In which the relevant fund benchmark is based on the fund's vintage year and regional focus, as provided by Preqin. Another method used in the thesis to evaluate relative returns is by considering whether the fund's return is in the top performance quartile.

4.3.2 Fund size

In all analyses including fund size, the variable has been formatted to better suit the analytical framework, eliminate biases, and simplify interpretability. Therefore, top size quartiles have been used when examining characteristics of PE fund managers and investors, and the log-difference and percent growth in size have been used to examine fund level effects. The reason why log-differences and percentage growth in size is used when examining fund level effects is mainly to eliminate any bias from the extent to which funds and managers are already large or small. In order to determine if a manager belongs

to the top quartile of fund size, for all PE managers present in the Preqin PE dataset (in terms of average fund size), a dummy variable was created that takes the value of 1 if the manager belongs to the top quartile among PE managers in terms of size and 0 otherwise.

Figure I
GP Stakes Per Year

This table shows data on GP stake deals compiled manually by the authors and accessed from PitchBook. From a dataset of 201 relevant GP stake deals. 178 deals are displayed below for which an exact year of the deal has been observed. 2020 is not fully comparable with 2019. since data has only been gathered per July.
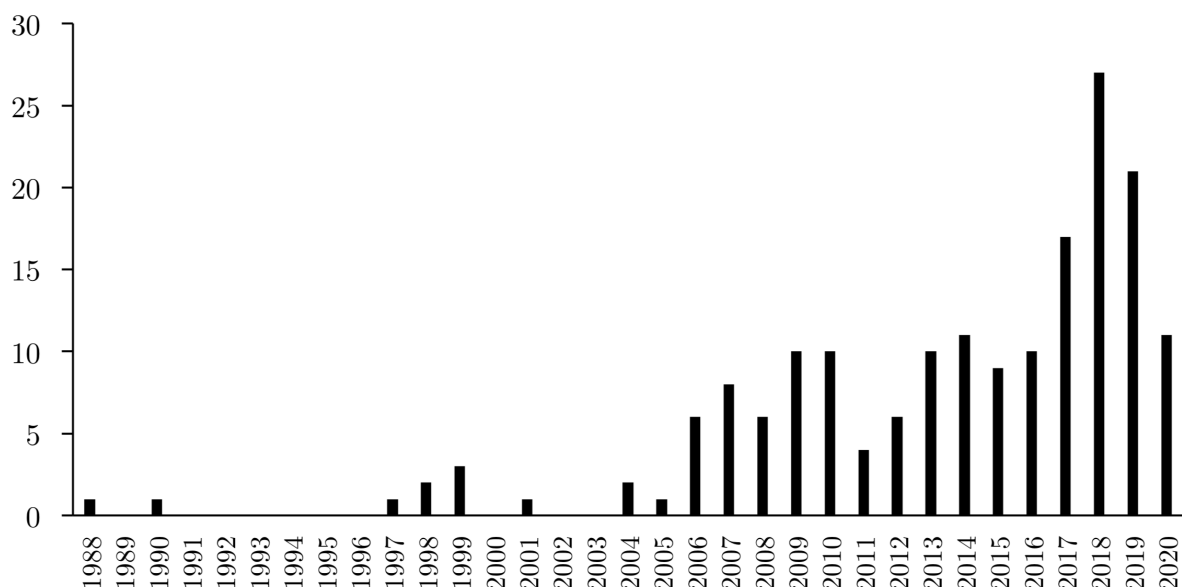
4.4   Descriptive statistics

In this section, when discussing fund data on GP staked managers, the term "GP stake fund" is used, which refers to data on funds both before and after the first GP stake investment for an individual manager. This is the same data which is used in the DiD regression analysis, but it is worth highlighting that this is different from the data used to predict GP stakes in the logit regression on GP staked managers (which is instead based on pre-GP stake data for GP staked managers).

Starting with elaborating on the number of GP stakes, as can be seen in Figure I, they have accelerated in recent years, with the number of GP stakes dramatically increasing in 2018 compared to previously. It should be noted that 2020 data includes only GP stakes in January-July and is therefore not comparable to the other years.

In terms of fund level data, as can be seen in Table I, the second column "Number of GP stake funds" shows the total number of funds raised by GP staked managers. We can observe that the number of GP stake funds have increased over time. In the fourth and fifth columns, the average fund size and average IRR values are reported. The general

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trend in these variables suggests that funds become larger over time, while returns appear to have decreased over time

Comparing the returns and the size of funds raised by GP staked firms with non-GP staked firms in Table II, the average IRR in 1980-2016 is higher for GP staked firms compared to non-GP staked firms. There are certain time periods in which the return is particularly high for GP staked firms compared to non-GP staked firms. This is particularly apparent between 1998-2007, where the returns for GP staked firms are consistently better than for non-GP staked firms. However, in the years 2008-2016, the returns have been similar for both groups. In 1980-1985, there is no data available for GP staked firms' funds, while non-GP staked firms produced above-average results. Looking at fund size in Table II, it can be observed that GP staked funds have been consistently larger over time. The fund size for GP staked firms has gradually increased over time, while non-GP staked firms' funds have only slightly increased since the beginning of the 2000s.

Table I
Summary Statistics Per Year

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms. GP stake data is gathered from PitchBook and the authors consisting of 201 deals in 1988-2020. Number of GP stake funds is the total amount of funds raised by managers that receive a GP stake at some point in time.

Vintage year	Number of GP stake funds	Number of total funds	Average fund size (USDm)	Average IRR (%)
1980	0	2	60.0	22.95
1981	0	1	N/A	26.10
1982	0	3	54.8	8.20
1983	0	2	75.0	21.65
1984	0	3	63.0	10.55
1985	0	10	330.7	11.74
1986	1	10	244.2	11.64
1987	0	9	273.4	18.80
1988	0	11	398.0	16.65
1989	1	9	360.6	19.23
1990	1	16	247.6	15.63
1991	1	7	253.0	25.81
1992	2	19	137.0	17.60
1993	0	21	256.3	28.20
1994	2	28	333.7	29.05
1995	3	34	406.9	26.64
1996	4	44	290.7	19.41
1997	5	47	614.7	17.73
1998	8	80	737.4	11.96
1999	10	83	723.9	2.30
2000	17	131	804.8	4.21
2001	8	84	684.7	10.20
2002	5	63	654.6	10.29
2003	6	47	1,020.9	6.74
2004	6	77	629.5	6.45
2005	17	128	1,079.0	8.61
2006	17	178	1,642.7	6.37
2007	26	188	1,415.9	9.21
2008	22	190	1,261.2	11.56
2009	7	89	815.3	14.28
2010	7	96	613.0	14.53
2011	19	161	998.8	15.45
2012	17	146	1,067.1	16.12
2013	15	174	812.2	15.99
2014	24	197	1,017.9	18.47
2015	24	205	1,145.4	16.92
2016	27	241	1,207.5	19.45
2017	24	211	1,083.0	N/A
2018	22	186	1,756.5	N/A
2019	0	2	407.1	N/A
Sum	**348**	**3,231**	**NM**	**NM**

Table II
Funds Size and Returns Per Year for GP stake and Non-GP staked Funds

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 firms. GP stake data is gathered from PitchBook and the authors consisting of 201 deals in 1988-2020. GP stake refers to average values for funds raised by managers that receive a GP stake at some point in time.

Vintage year	Average IRR (%)		Average size (USDm)	
	GP stake	Non-GP stake	GP stake	Non-GP stake
1980	N/A	22.95	N/A	60.00
1981	N/A	26.10	N/A	N/A
1982	N/A	8.20	N/A	54.80
1983	N/A	21.65	N/A	75.00
1984	N/A	10.55	N/A	63.00
1985	N/A	11.74	N/A	330.74
1986	18.40	10.88	1,175.00	89.12
1987	N/A	18.80	N/A	273.37
1988	N/A	16.65	N/A	398.00
1989	14.80	19.79	1,775.00	158.51
1990	28.56	14.77	59.92	261.02
1991	33.00	24.61	141.82	275.20
1992	-7.33	20.53	142.25	136.29
1993	N/A	28.20	N/A	256.31
1994	36.58	28.47	996.00	280.68
1995	15.25	27.78	692.07	379.33
1996	19.67	19.38	655.62	254.17
1997	11.87	18.44	1,528.63	503.25
1998	14.34	11.69	2,327.30	560.74
1999	10.83	1.06	988.82	687.07
2000	12.42	2.95	1,538.15	694.49
2001	31.69	7.84	2,014.51	540.95
2002	12.58	10.13	881.90	634.31
2003	19.66	4.99	2,872.83	736.03
2004	24.99	5.34	2,571.52	488.76
2005	12.36	8.01	3,061.40	769.76
2006	9.11	6.08	5,216.09	1,258.26
2007	12.61	8.65	4,800.76	858.91
2008	14.90	11.13	3,836.03	911.55
2009	12.91	14.39	1,617.81	739.40
2010	17.78	14.24	928.21	586.77
2011	14.39	15.57	2,650.15	776.93
2012	14.35	16.37	2,719.73	840.53
2013	19.39	15.70	1,888.34	703.86
2014	15.25	18.93	3,703.21	650.93
2015	16.14	17.05	2,595.68	939.45
2016	17.07	19.71	2,864.18	984.36
2017	N/A	N/A	3,223.10	793.02
2018	N/A	N/A	5,626.56	1,189.37
2019	N/A	N/A	N/A	407.14
Average	**15.07**	**12.62**	**2,970.17**	**775.87**

<div align="center">

Table III

Summary Statistics Per Region for GP stake and Non-GP staked Funds

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This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms. GP stake data is gathered from PitchBook and the authors consisting of 201 deals in 1988-2020. Fund regional focus indicates the regional focus of a certain fund.

Fund regional focus	Number of GP stake funds	Number of total funds	Average fund size (USDm)	Average IRR(%)
US	219	2317	955.0	12.99
Europe	80	547	1,414.4	13.65
Asia	33	229	1,006.9	11.52
Americas	3	43	595.4	6.49
Diversified Multi	8	33	863.7	10.93
Africa	0	12	510.3	10.18
Australasia	0	25	396.9	14.36
ME & Israel	5	27	282.5	10.03

From looking at Table III, we can see that the largest number of GP stake funds are geographically located in the US, which has more than four as many total funds compared to Europe, which is the second largest region. However, the average size and return of funds located in Europe are both higher compared to the US.

Table IV
Summary Statistics per Geographic Scope for GP stake and Non-GP staked Funds

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms. GP stake data is gathered from PitchBook and the authors consisting of 201 deals in 1988-2020. Geographic scope indicates the Geographic focus of a certain fund.

Geographic scope	Number of GP stake funds	Number of total funds	Average fund size (USDm)	Average IRR(%)
Country-Specific	76	1238	565.2	12.88
Multi-Continental	110	868	1,649.7	13.21
Continental	119	730	1,069.8	12.55
Regional	33	255	1,379.4	13.60
US Regional	9	108	317.3	11.30

From looking at Table IV, we can see that most funds in the dataset have a geographic scope which is country specific. The multi-continental geographic scope is the type with the highest average size and is the second largest type in terms of total number of funds. Continental is the geographic scope with the highest number of GP stake funds but is not the highest in terms of average fund size or average IRR.

Table V
Summary Statistics per Fund Type for GP stake and Non-GP stake Funds

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms. GP stake data is gathered from PitchBook and the authors consisting of 201 deals in 1988-2020. Fund type indicates the strategy/type of a certain fund.

Fund type	Number of GP stakes	Number of total funds	Average fund size (USDm)	Average IRR(%)
Buyout	215	1196	1,779.2	13.78
Fund of Funds	33	567	398.9	11.87
Venture (General)	18	489	358.6	12.33
Growth	19	240	746.7	11.19
Early Stage	3	237	273.8	11.85
Secondaries	20	122	1,586.9	15.49
Expansion / Late Stage	3	103	405.3	11.75
Co-investment	7	61	344.3	17.91
Balanced	17	59	1,726.8	13.40
Co-Investment Multi-Mgr.	5	52	481.9	17.20
Early Stage: Seed	2	38	266.7	5.22
Early Stage: Start-up	0	34	202.0	6.42
Direct Secondaries	5	19	321.0	11.60

Considering the investment strategy of funds, looking at Table V, the first column "Fund type" indicates that the most common type, in terms of total number of funds, is Buyout, which also has the largest fund size and has the by far greatest amount of GP stake funds.

In terms of industry sector, most total funds and most GP stake funds have a "Diversified" sector focus, followed by "Technology" and "Healthcare" as can be seen in Table VI. The distribution of number of funds per sector is similar between GP stake funds and the total amount of funds, which also has "Diversified" as the most common type, followed by "Technology" and "Healthcare". Overall, the highest average IRR was achieved in "Outsourcing". However, this sector has a small sample size, which makes the results less reliable in this case. The "Chemicals" sector has the highest average fund size across the entire sample.

Table VI
Summary Statistics Per sector for GP stake and non-GP Stake Funds

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms. GP stake data is gathered from PitchBook and the authors consisting of 201 deals in 1988-2020. Industry means that a certain fund is mandated to invest in this industry (most funds have more than one industry listed). The count of GP stake funds and total funds indicate that the particular industry is focused on by the funds in question.

Sector	Count of GP stake funds	Count of total funds	Average fund size (USDm)	Average IRR (%)
Diversified	162	1317	1,226.2	12.81
Technology	122	947	980.8	13.90
Healthcare	98	873	1,171.4	13.70
IT	77	709	908.1	13.72
Software	54	571	805.9	16.64
Media	82	484	1,707.3	14.75
Communications	51	478	1,142.7	14.89
Financial Services	70	473	1,611.7	14.32
Consumer Products	75	468	1,640.5	12.82
Business Services	67	459	1,492.4	15.22
Consumer Services	61	453	1,453.7	12.90
Manufacturing	63	405	1,082.6	11.54
Telecoms	53	329	1,702.4	12.75
Internet	24	311	750.6	13.94
Industrial	54	294	1,879.2	13.87
Retail	62	267	1,949.5	13.73
Distribution	38	246	1,132.5	13.93
Medical Devices	5	164	618.6	13.19
Education / Training	26	163	1,064.9	15.07
Information Services	15	163	1,097.5	16.80
Pharmaceuticals	6	158	778.9	13.88
Digital Media	11	146	859.1	15.27
Food	19	138	912.2	14.16
Semiconductors	6	135	859.1	14.44
Medical Instruments	4	125	541.4	10.72
Computer Services	9	117	960.0	16.40
High-Tech	7	117	531.5	10.85
Biomedical	2	111	519.1	12.02
Chemicals	23	111	1,982.3	15.24
Hardware	11	101	937.5	15.05
Leisure	18	99	1,451.2	16.39
Medical Technologies	2	98	699.4	14.33
Logistics	14	89	1,091.0	13.17
Wireless	6	83	792.3	15.19
Entertainment	9	71	1,110.0	17.08
Beverages	15	67	1,736.7	14.53
Restaurants	7	54	1,084.2	12.99
Outsourcing,	3	37	865.0	20.08
Predictive Medicine	1	14	937.5	10.81

Figure II
GP Stakes By Investor Type

This table shows data from Preqin on 13,532 investors. combined with GP stake data from PitchBook and the authors on 201 GP stake deals in 1988-2020. Values indicate the total number of GP stakes that each type of investor has participated in.
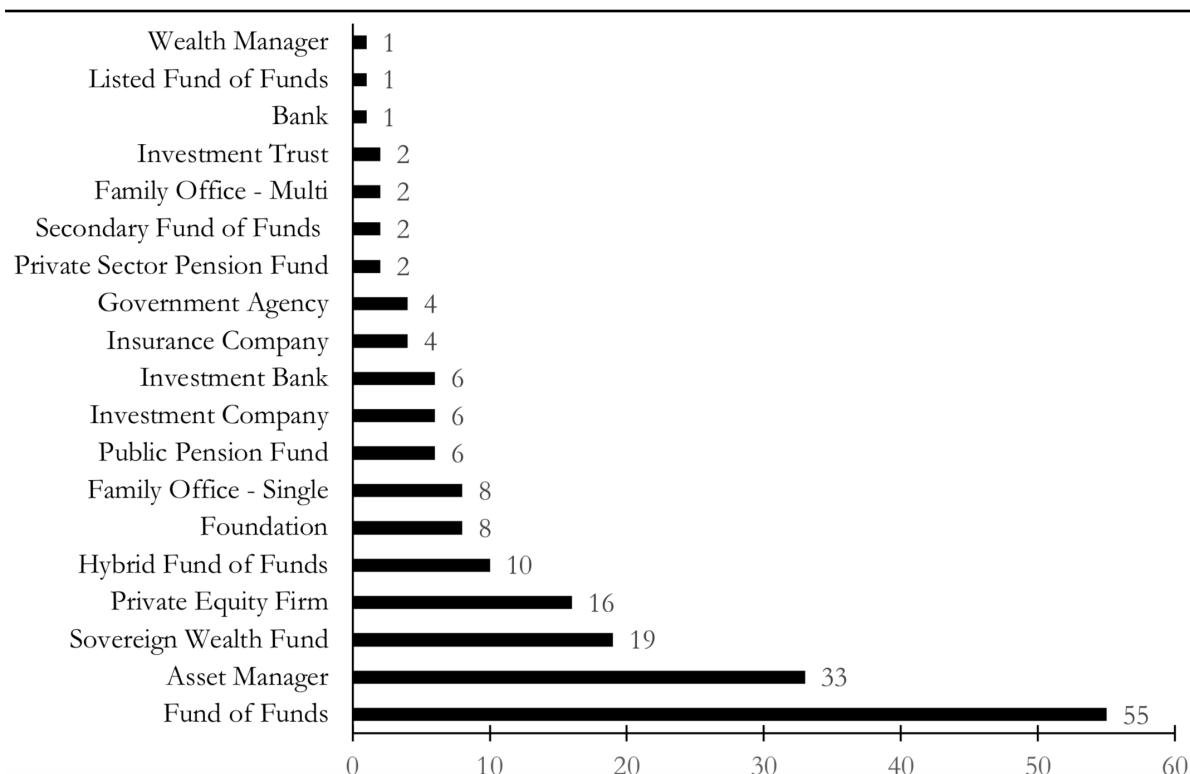
Turning to investor data in Figure II, we can see that the investor type that has done the greatest amount of GP stake investments is "Fund of Funds", followed by "Asset Manager" and "Sovereign Wealth Fund". Asset managers, in this case, includes a variety of different types of investor such as wealth managers, financial advisors and other subcategories. Fund-of-Funds in this dataset also includes the emerging type of specialized GP stake investors which is mentioned in the literature review. The emergence of fund-of-funds managers as a major investor type in GP stakes has been previously documented by PitchBook in e.g. Gelfer and Cordeiro (2017) and Gelfer et al. (2018). The presence of Sovereign Wealth Funds as a GP stake investor is also in line with Gogineni and Megginson (2009). Surprisingly, the traditional LPs are underrepresented in GP stake investments, since pension funds and foundations have few GP stake investments compared to other investors, although these two categories have the highest number of investments in funds overall in the dataset.

Table VII
GP Stakers by Investor Type

This table shows data from Preqin on 13,532 investors. combined with GP stake data from PitchBook and the authors on 201 GP stake deals in 1988-2020. Values indicate the total number of GP stakes in unique firms that each type of investor has participated in.

Type of investor	GP stakes in unique firms	Total number of PE funds invested in	GP stakes in unique firms in percentage of number of PE funds invested in
Fund of Funds	13	483	3%
Sovereign Wealth Fund	9	84	11%
Private Equity Firm	9	326	3%
Family Office - Single	7	694	1%
Asset Manager	6	890	1%
Foundation	5	1570	0%
Investment Company	5	686	1%
Investment Bank	5	164	3%
Public Pension Fund	4	1031	0%
Insurance Company	4	844	0%
Government Agency	3	369	1%
Private Sector Pension Fund	2	1832	0%
Family Office - Multi	2	670	0%
Wealth Manager	2	1231	0%
Hybrid Fund of Funds	1	14	7%
Secondary Fund of Funds	1	60	2%
Investment Trust	1	37	3%
Bank	1	710	0%
Listed Fund of Funds	1	26	4%
Endowment Plan	0	752	0%
Corporate Investor	0	882	0%
Superannuation Scheme	0	139	0%
Infrastructure Fund of Funds	0	5	0%
Real Estate Firm	0	5	0%
Real Estate Fund of Funds	0	1	0%
Real Estate - Other	0	1	0%
Real Assets Fund of Funds	0	2	0%

However, it is worth noting that the GP stakes in Figure II also includes both secondary and tertiary GP stake deals in the same manager. If instead considering only GP stakes in unique firms in Table VII, and comparing this with the total funds invested in, it becomes clear that Sovereign Wealth Funds has the highest percentage compared to the other investor types, with 9 GP stakes and only 84 PE funds invested in.

Figure III
GP Stakes Per Year By Investor Type

This table shows data from PitchBook and the authors per year on 201 GP Stakes (of which only 178 have year of the GP stake included). The data is split into two investor categories: "Fund of Funds" and "Other" (for which "Other" includes all other investor types).
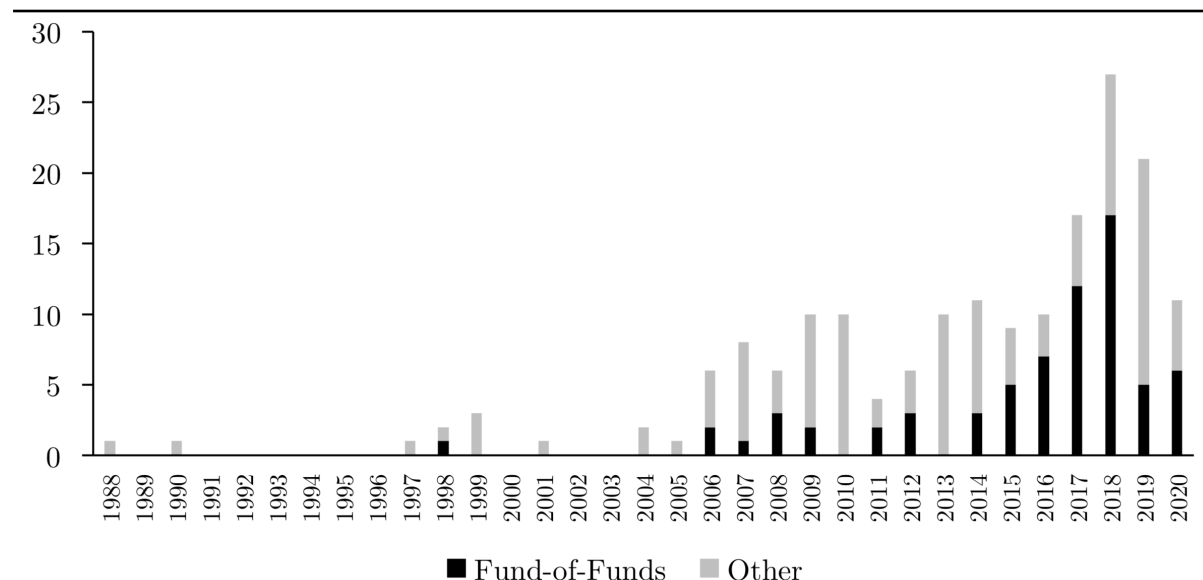
To understand the distribution of the GP stake investments per investor type with respect to time, Figure III shows the split between "Fund of Funds" and "Other" (which indicates any other investor type). The figure clearly shows how fund-of-funds managers have been partially responsible for the great increase of GP stakes in the last couple of years, as fund-of-funds account for more than half of GP stake deals in 2014-2018 and 17 GP stakes alone in 2018 in the dataset. As mentioned previously, 2020 data includes only deals between January-July, which makes it non-comparable with previous years.

Table VIII
Deal Overview of GP Stakes

This table summarizes deal data from PitchBook and the authors on 201 GP Stakes. "Number of deals in which the investor is a previous LP" means that the GP staker has previously invested in the target GPs funds.

Number of deals	Average amount of investors per deal	Average % acquired	Number of deals in which the investor is a previous LP
201	1.3	17.8	36

Considering some deal specific metrics on GP stakes, Table VIII shows values for terms of GP stakes and information on the investors in the deal. "Average amount of investors per deal" shows a value greater than 1, which means there are on average more than one investor per GP stake. However, the median amount of investors per deal (not shown) is in fact 1, meaning that the most common type of deal includes one investor and one manager, but there are some individual deals which increase the average value.

Furthermore, the average percentage ownership is at 17.8%. Moreover, only 72 out of 201 deals (not shown in table) have this datapoint available which limits the extent to which we can analyze this metric. We also know that many deals tend to be non-voting (Gelfer and Cordeiro, 2017), which could speak to the fact that investors do not have an aggressive change agenda in the PE firm once having done the GP stake.

Lastly, the column "Number of deals in which the investor is a previous LP" in Table VIII indicates whether the investor in a GP stake deal has previously invested in any of the GP's previous funds. Surprisingly, only 36 GP stake deals are preceded by a previous LP-GP relationship, which corresponds to about ⅙ of the total 201 deals.

5 Methodology

5.1 Logistic regressions

In order to test the first and second research questions, we use a model for the probability that a firm will receive a GP stake (or is a GP staker) using a logistic regression model (i.e., logit model). We use the binary form of the logistic model, meaning the dependent variable can only take values 1 (a "case") or 0 (a "non-instance"). The binary regression model predicts the log-odds of a case based on the values of the independent variables. The odds are, in accordance with the general definition, defined as the probability that a particular outcome of interest is a case (e.g. a GP Stake), divided by the probability that it is a non-instance. We define the model as:

$$log\left(\frac{p_i}{1 - p_i}\right) = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + ... + \beta_n x_{ni} + \epsilon_i$$

Where p_i is the probability that firm i will receive a GP stake (or the probability that investor i is a GP staker) and $x_1, ..., x_n$ are the explanatory variables used in the respective logit regressions for firms receiving GP stakes and firms investing in GP stakes. See Appendix VII for a further elaboration on how the logit model has been used in the thesis.

5.2 Difference-in-Differences regressions

To test the third research question, we use a Difference-in-Differences (DiD) approach with fixed effects to study the effect of the GP stake on the manager's subsequent fund returns and fund size. We define our model in line with Callaway and Sant'Anna (2019) as:

$$Y_{it} \quad = \quad \alpha_t \quad + \quad c_i \quad + \quad \beta D_{it} \quad + \quad \theta X_i \quad + \quad \epsilon_{it}$$

Where Y_{it} is the outcome variable of interest, α_t is a time fixed effect, c_i is a firm fixed effect, D_{it} is a treatment indicator that takes the value of either 1 if an individual firm i has received a GP stake at time t and 0 otherwise, X_{it} is a vector of observed characteristics, ϵ_{it} is an error term, and β is the causal effect of interest. This is a generalization of the ordinary DiD model (with two periods and two groups), which is valid under more restrictive assumptions (Bertrand et al., 2004), which is relevant in our case since, unlike in a standard DiD setup, there is no unique treatment date for all treated firms - since treatment is staggered in the sample. In relation to the ordinary two-way, two-period DiD regression, no separate dummy variables are included for the treatment group and the post-treatment period because time and group fixed effects are adjusted for. Including these dummies would create issues with collinearity. Additionally, we have evaluated the parallel trends assumption in relation to the DiD regressions (see Appendix VIII and IX).

6 Empirical Findings

6.1 Prediction of the fund managers receiving a GP stake

From investigating the characteristics of fund managers receiving GP stakes, our results show that GPs with larger and faster growing funds are more likely to receive a GP stake and GPs of older age are less likely to receive a GP stake. It appears that especially being in the top quartile in terms of fund size significantly increases the likelihood that the manager will be subject to a GP stake.

6.1.1 Size and growth

In Table IX, starting with size and growth, we observe that the variables "Top size quartile" and "Average fund-size growth" have statistically significant and positive coefficients. Top size quartile is significant on the 1% level and has a coefficient value of 2.215. To give an intuitive interpretation, being in the top size quartile compared to not being so, ceteris paribus, increases the probability of receiving a GP stake by 19.31 percentage points, compared to the representative firm[1]. At the same time, the average growth in fund size is also significant, but on a 10% level, and increasing the fund growth of the representative firm by 1 (i.e. 100 percentage points) will, ceteris paribus, increase the probability of receiving a GP stake, but only by 0.10 percentage points (compared to the representative firm) - indicating that growth is relatively less important compared to size when predicting if a manager will be GP staked.

6.1.2 Experience

Considering the variables "Age" and "Number of funds raised" in Table IX, we find that Age is statistically significant on a 1% level, with a negative coefficient of -0.051, meaning that the probability of receiving a GP stake marginally decreases as firms get older. Furthermore, the number of funds raised is not statistically significant, indicating it is less relevant for predicting GP stakes.

6.1.3 Return

Lastly, evaluating the impact of returns on the prediction of GP stakes, in Table IX ("Average IRR" and "Top IRR quartile"), we find no significant relationship. Neither absolute performance nor being in the best performing quartile of fund managers (in terms of IRR) seem to have any significant relationship with the fund manager receiving a GP stake.

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[1]The representative firm is, based on average values in the dataset, not part of the top size quartile, has average fund growth of 112%, 22.6 years of average age, has raised 2.69 funds, has average IRR or 10.52% and is not part of the top IRR quartile.

Table IX
Logit Regressions for GP Staked Managers

This table reports the output of the logit regressions for managers receiving a GP stake. The sample contains data on 1,153 managers from Preqin. combined with GP stakes from PitchBook and the authors. Data shown on GP staked managers is based on values prior to the GP stake. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:
	GP Staked manager
Top size quartile	2.215***
	(0.346)
Average fund size growth	0.032*
	(0.018)
Age	−0.051***
	(0.019)
Number of funds raised	0.018
	(0.041)
Average IRR	0.010
	(0.010)
Top IRR quartile	0.028
	(0.387)
Constant	−2.497***
	(0.476)
McFadden R2	0.502
McFadden adjusted R2	0.479
Observations	558
Log Likelihood	−131.452
Akaike Inf. Crit.	276.904

6.2 Characteristics of the investors that undertake GP stakes

In this section, we investigate the likelihood of investors being GP stakers, based on their characteristics both before and after the investment. Thus, in contrast to our analysis on GP staked managers, we are in this analysis not predicting if investors will conduct a GP stake, but instead examine the characteristics associated with the investors engaging in GP staking.

Our results show that greater size and higher number of PE funds invested in increase the likelihood of being a GP staker. GP stakers also have a general preference for co-investments and tend to be fund-of-funds managers and sovereign wealth funds. Being a sovereign wealth fund particularly increases the probability of being a GP staker.

6.2.1 Experience

Starting with the characteristics of GP stakers in terms of size, the first variable in Table X "Top AUM quartile" has a statistically significant coefficient with a value of 1.189, which is the second highest coefficient in the regression and speaks to the importance of size as a factor for the GP staker. To give an intuitive interpretation of the coefficient, being in the top AUM quartile compared to not being so, ceteris paribus, increases the probability that the investor is a GP staker by 0.81 percentage points, compared to the representative investor[2]. Hence, the effect is not material. Further analyzing the characteristics of GP stakers in terms of experience in Table X, variables "Number of years invested in Private Equity" and "Number of funds invested in" show quite different results. Years invested in PE shows no statistical significance, but the number of funds invested does show a weak, positive, and statistically significant relationship with being a GP staker. Further considering "Average realized IRR" as a proxy for investing skill and or experience, we find no statistical significance. Looking at "Co-investments" (which measures the investor's general preference for engaging in co-investments and not specifically co-investments with a particular GP staked manager), we find a statistically significant coefficient with a value of 0.701. This means that having a preference for co-investments compared to not having so, ceteris paribus, increases the probability that the investor is a GP staker by 1.96 percentage points compared to the representative investor[2].

6.2.2 Investor type

Turning to the last two dummy variables in Table X, "Fund-of-funds" and "Sovereign Wealth Fund", (which indicate different types of investors in PE) they both display statistically significant and positive coefficients - indicating that they are important.

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[2]The representative investor is, based on average values in the investor dataset, not part of the top AUM quartile, has 16.4 years of experience of investing in PE, has invested in 7.0 funds and realized 7.5% IRR on average over time, is not actively participating in co-investments and is neither a fund-of-funds manager nor a sovereign wealth fund.

Table X
Logit Regressions for GP Stake Investors

This table reports the output of the logit regressions for managers receiving a GP stake. The sample contains data on 13,523 investors from Preqin. combined with GP stakes from PitchBook and the authors. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:
	GP Staker
Top AUM quartile	1.189***
	(0.377)
Number of years invested in Private Equity	0.007
	(0.022)
Number of funds invested in	0.004***
	(0.001)
Average realized IRR	−0.013
	(0.021)
Co-investments	0.701**
	(0.356)
Fund-of-Funds	1.121***
	(0.419)
Sovereign Wealth Fund	3.217***
	(0.516)
Constant	−5.676***
	(0.509)
McFadden R2	0.584
McFadden adjusted R2	0.57
Observations	3,483
Log Likelihood	−203.832
Akaike Inf. Crit.	423.663

Furthermore, "Sovereign Wealth Fund" has the highest coefficient in the regression table, with a value of 3.217. To provide an interpretation of the coefficient, being a sovereign wealth fund compared to not being so, ceteris paribus, increases the probability that the investor is a GP staker by 7.86 percentage points compared to the representative investor. Hence, it has the greatest impact on the probability that the investor is a GP staker.

6.3 Fund level effects of GP stakes

To evaluate the effects of a GP stake, we introduce the DiD regression framework with fixed effects to formally assess the GP stakes' impact on subsequent fund size and returns. Specifically, we examine the effect of the GP stake on returns and size by using the DiD dummy variables "First fund raised post GP stake" and "Fund raised post GP stake" in order to consider the effects on the dependent variables in regressions 1-5 in Tables XI and XII. We also control for both year and firm fixed effects to remove any biases linked to these factors and isolate the specific effect of the GP-stake. To summarize the analysis, the overall results indicate that there are no immediate or permanent effects on subsequently raised funds in terms of returns, fund size or fund growth after a GP stake has taken place.

6.3.1 Immediate fund level effect of a GP stake

In the first set of DiD regressions, observing the immediate effects of the GP stake, the results are presented in Table XI. To summarize, GP stakes do not seem to significantly impact the size or return metrics of the first funds raised after a GP stake. The p-values of the DiD dummy in Table XI for regressions 1-5 takes values 0.8541, 0.9110, 0.6251 and 0.3312 - indicating that the variable has very little explanatory power.

6.3.2 Permanent fund level effect of a GP stake

In our second set of DiD regressions, we use the same dependent variables but change the independent variable to "Funds raised post GP stake" to observe the cumulative effect rather than the effect on impact. The results, seen in Table XII, are in line with the previous regression results of Table XI. Once again, there are no statistically significant results to be found, indicating that there are no permanent effects on the returns, fund size or growth for GP staked firms. Compared with the previous set of DiD regressions, the coefficients are lower for IRR and marginally higher for IRR over benchmark, but still not significant (p-values are 0.7559 and 0.9618). Regarding fund growth, the coefficient is still negative and far from statistically significant (p-value of 0.3961 compared to 0.6261 in the previous DiD regression). Regarding fund size, the coefficient is smaller and still not statistically significant (p-value of 0.5931 now compared to 0.3312 previously).

Table XI
Difference-in-Differences Regressions for First Fund Raised Post-GP Stake

This table reports the output of the Difference-in-Differences regressions for funds that have been raised post-GP stake. The sample contains data on 3,233 funds from Preqin. combined with GP stakes from PitchBook and the authors. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:			
	IRR	IRR over benchmark	Fund growth	Log of fund size
	(1)	(2)	(3)	(4)
First fund raised post GP stake	−0.956	−0.671	−2.632	0.157
	(5.199)	(6.012)	(5.386)	(0.161)
Constant	22.679	0.985	−3.072	1.644*
	(20.421)	(21.376)	(33.134)	(0.949)
Year fixed Effects	Yes	Yes	Yes	Yes
Firm fixed Effects	Yes	Yes	Yes	Yes
Observations	2,400	2,128	1,858	3,001
R^2	0.526	0.503	0.144	0.797
Adjusted R^2	0.209	0.165	−0.308	0.673
Residual Std. Error	18.829 (df = 1439)	19.702 (df = 1265)	22.298 (df = 1216)	0.748 (df = 1861)
F Statistic	1.662*** (df = 960; 1439)	1.488*** (df = 862; 1265)	0.318 (df = 641; 1216)	6.422*** (df = 1139; 1861)

Table XII
Difference-in-Differences Regressions for Subsequent Funds Raised Post-GP Stake

This table reports the output of the Difference-in-Differences regressions for funds that have been raised post-GP stake. The sample contains data on 3,233 funds from Preqin. combined with GP stakes from PitchBook and the authors. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:			
	IRR	IRR over benchmark	Fund growth	Log of fund size
	(1)	(2)	(3)	(4)
Fund raised post GP stake	−1.391	−0.267	−3.899	0.072
	(4.473)	(5.581)	(4.593)	(0.134)
Constant	22.603	0.971	−3.706	1.647*
	(20.422)	(21.378)	(33.136)	(0.949)
Year fixed Effects	Yes	Yes	Yes	Yes
Firm fixed Effects	Yes	Yes	Yes	Yes
Observations	2,400	2,128	1,858	3,001
R^2	0.526	0.503	0.144	0.797
Adjusted R^2	0.209	0.165	−0.307	0.673
Residual Std. Error	18.829 (df = 1439)	19.702 (df = 1265)	22.294 (df = 1216)	0.749 (df = 1861)
F Statistic	1.662*** (df = 960; 1439)	1.488*** (df = 862; 1265)	0.319 (df = 641; 1216)	6.419*** (df = 1139; 1861)

7 Robustness Checks

7.1 Realized returns

As mentioned in the data section, the regressions are based on IRR, as reported by Preqin, for each fund. This means that for recent funds, unrealized IRR measures are reported, which might not accurately reflect the final outcome of the fund. As a robustness check, we have therefore run the regression with only realized IRR instead for the DiD regressions (replacing column (1) in Tables XI and XII), and the outcome is essentially the same, indicating that our interpretation of the results are robust. Realized IRR has a coefficient that is slightly more positive when regressed on "First fund raised post GP stake" and slightly more negative when regressed on "Fund raised post GP stake" - but is still not statistically significant in any regression. The results can be seen in Appendix XII and XIII.

7.2 Alternative performance measures

As an additional robustness check of our regressions, we have run the same regressions where IRR is used as a performance measure, and instead using MOIC as the variable of interest. This is done due to the drawbacks of IRR as a performance metric documented by e.g. Gottschalg and Phalippou (2007). We have used MOIC as an absolute measure and a relative measure for the robustness test. This was done in the logit regression on GP staked managers in Table IX (replacing average IRR and Top IRR quartile with average MOIC and Top MOIC quartile) and for both sets of DiD regressions in column (1) (replacing IRR and with MOIC) in Tables XI and XII. The results can be seen in Appendix XIV, XV and XVI.

The outcome of replacing IRR with MOIC in the DiD regressions is that the coefficient becomes marginally less negative for "First fund post GP stake" (can be seen in Appendix XV) and positive instead of negative for "Fund raised post GP stake" (seen in Appendix XVI) - but still not significant in any regression. However, the outcome of replacing IRR with MOIC in Table IX is that "Top MOIC quartile" becomes statistically significant at the 5% level with a positive coefficient of 0.894 (can be seen in Appendix XIV). This is somewhat surprising since being in the top IRR quartile showed no statistical significance. The interpretation is that being in the top MOIC quartile compared to not being so, ceteris paribus, increases the probability to receive a GP stake by 2.65 percentage points compared to the representative firm[3]. This is a marginal increase compared to being part of the top size quartile (as opposed to not being so), which in this setting, ceteris paribus, increases the probability to receive a GP stake by 13.9 percentage points, compared to the representative firm.

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[3]The representative firm is in this setting, based on average values in the dataset, not part of the top size quartile, has average fund growth of 112%, 22.6 years of average age, has raised 2.69 funds, has average MOIC or 1.40 and is not part of the top MOIC quartile.

8 Analysis

8.1 Prediction of firms likely to receive a GP stake investment

The purpose of the first research question of this thesis was to understand what characteristics that increase the probability for a manager to receive a GP stake. Our initial hypotheses stated that managers receiving GP stakes were expected to be large, old firms with industry leading return performance and high growth prior to the GP stake. We further theorized that a track record of high performance was particularly important from the perspective of the GP staker, who wishes to improve access to high performing managers. The results confirm that being large and demonstrating high fund-size growth increases the probability of receiving a GP stake, while age decreases the probability to receive a GP stake. With respect to returns, the conflicting results prevent us from confirming the hypothesis that high returns increase the probability to receive a GP stake, as the main results indicate that IRR does not affect the probability - but from the robustness check, we know that having returns in the top quartile (measured as the multiple of invested capital) marginally increases the probability. Of the above-mentioned variables, size has the most significant impact on the probability of receiving a GP stake, while growth and age have a marginal impact.

Our findings thereby partly confirm what has been observed in prior documentation by Gelfer et al. (2018). The results are similar in that we find that large and growing firms have a higher probability to receive a GP stake (although the fund growth impact is marginal). However, our results contradict the findings by Gelfer et al. (2018), stating that targeted managers tend to be old firms with a strong performance record, as we find that age has a slightly *negative* impact on the probability to receive a GP stake and since our results regarding returns show conflicting evidence, as previously discussed. In relation to our hypothesis stating that GP stakes could be a way to improve investors' access to the funds of top performing GPs, our results indicate that this is not the case, since we do not find clear evidence of return performance being a significant predictor of GP stakes. Furthermore, the fact that we find that greater size is the strongest predictor for receiving a GP stake could be argued to also stand in contrast to this hypothesis. The reason being that the firms most likely to impose rationing on access to their funds are presumably firms that have delivered high returns historically (and thereby face a high demand from LPs) and firms that are smaller (and thereby have fewer investment opportunities to offer to LPs).

An explanation as to why high returns do not seem to significantly increase the probability of being GP staked, could be that GP stakes are simply not offered for sale by the best performing managers, and that investors have to settle with GP stakes in managers with mediocre returns. One question does however remain - why would investors be drawn to the investment type (and increasingly so), if the best performing managers do not offer stakes in their firms for sale? There could be several reasons for this, but one explanation is that a GP stake offers a novel exposure to the PE market

with unique risk-return characteristics. The reason being that an investment in the management company of a PE firm allows an investor to take part in management fees (non-performance based), carried interest (performance based) as well value appreciation of their stake through one single investment. These investment characteristics may cause the historical return performance to be of limited importance, as long as the management fee and value appreciation potential is great enough. This would explain why size and growth are important predictors of a GP stake - since these are arguably important drivers of management fees and value appreciation.

8.2 Characterization of investors likely to undertake a GP stake investment

The purpose of the second research question of this thesis was to identify the type of investors that are likely to have invested in a GP stake. Our first hypothesis for this research question stated that GP stakes could be a way to align incentives between GPs and LPs, leading us to believe that investors are likely to have had a previous relationship with the GP they invest in. Our second hypothesis stated that GP stakes could be a way for investors to improve the terms of investing in PE, which lead us to expect GP stakers to have a preference for co-investments and to demonstrate skill and experience. We also expected GP stakers to generally be sovereign wealth funds and fund-of-funds. The result showed that most GP stakers have never invested in a previous fund of the targeted GP. Furthermore, greater size, having invested in many funds and having a preference to engage in co-investments marginally increases the probability that the investor is a GP staker. By type, GP stakers are indeed particularly likely to be sovereign wealth funds and fund-of-funds managers. Of the variables mentioned above, being a sovereign wealth fund has the most substantial impact on the probability of being a GP staker.

Relating to our first hypothesis on incentive alignment, this issue does not appear to be the main factor driving GP stakes, as prior relationships between the LPs and GPs are not overrepresented in GP stake deals. The descriptive statistics show that the GP staker is a previous LP in the funds of the GP in only about ⅙ of all GP stakes. This means most GP stakes are not preceded by an existing LP-GP relationship. Assuming that the investors' ambition is indeed to align incentives with the GP, the investment could rather be a way to build a new relationship (as opposed to an existing one) and for the investor to invest on the same terms as the GP, which is in line with the second hypothesis.

With regards to our second hypothesis, the results confirmed that a preference for co-investments is positively affecting the probability that an investor engages in GP staking, which is in line with the investor's agenda to improve the terms of investing in PE, but the effect is marginal. The connection between co-investments and GP stakes could suggest that GP stakes is another step in the trend of 'individualized investing' among LPs, documented by Clayton (2017). As for evidence of skill and experience in investing, the evidence we find is somewhat conflicting. The fact that GP stakers tend to be large and have invested in many funds could be interpreted as experience being

important, while at the same time, the results do not indicate that GP stakers tend to have been active for a greater number of years compared to non-GP stakers, and that their average realized IRR does not tend to be higher. This might be interpreted as experience and skill having less importance, but it could also be that the latter variables are less accurate indicators of skill and experience than the former. Relating our findings to the investor's agenda to improve the terms of investing in PE, the relation to co-investment activity suggests this could be true, while experience and skill gives a less clear picture.

Our finding that GP stakers tend to be sovereign wealth funds is in line with previous documentation by Gogineni and Megginson (2009). Our results suggest that their passive and long-term investment horizon is appreciated by GPs, but also potentially that their long term agenda allows them to be more tolerant than other types of investors with respect to the particular illiquidity constraint that comes with investing in a GP stake. Furthermore, as can be seen in the descriptive statistics, a large fraction of GP stake investments have been done by fund-of-funds managers in the last couple of years, and in particular, a new type of specialized fund-of-funds manager that exclusively focuses on GP stakes (as mentioned by Fernyhough & Beck 2019). We argue that their emergence is related to the inherent agency problems in PE and that the specialized fund-of-funds investors could be seen as a new type of financial intermediary between LPs and GPs, which mitigate adverse selection problems that an investor face when selecting which funds to invest in and with which managers to form a relationship. Furthermore, the fund-of-funds managers that exclusively focus on GP stakes can provide a new type of exposure to the PE asset class for investors.

8.3 GP Stakes' impact on fund size and returns

The purpose of the third research question of this thesis was to investigate what effect a GP stake investment has on the target PE firm in terms of return performance and fund-size growth. Our first hypothesis stated that a GP stake should have a negative effect on returns and a positive effect on fund-size growth, as a result of a shift in focus following the GP stake to excessive AUM growth - as opposed to maximizing the value of investments. Our second hypothesis stated that we should, in line with the first hypothesis, expect a high fund-size growth following a GP stake, if the GPs' official reasons for offering a stake is true (i.e., to launch new strategies, enter new markets and increase capital commitments to new funds). Our third hypothesis stated that a GP stake should have no effect on growth or returns, assuming GP stakes are motivated by the current owner's decision to realize value. The results showed that a GP stake has no immediate or permanent effect on the returns or growth of funds raised subsequent to the investment.

With regards to the first hypothesis, the common worry among current LPs of a shift in focus post-GP stake (from value maximization of investments to AUM growth) seems to be ungrounded. The reason being that we find no significant fund-size growth for funds raised subsequent to the GP stake compared to previous ones. Had there been a shift in focus towards AUM growth and fee collection, away from value maximization, this

would likely have displayed itself in the form of higher fund-size growth after the GP stake. Furthermore, the absence of any negative effect on fund returns due to a GP stake also points towards an ungrounded worry among LPs for a shift in focus.

Furthermore, we reject the second hypothesis, regarding the official reason for offering a GP stake, since there is no evidence of GP stakes having an effect on fund growth. Had there been serious activity of new strategies being launched, new markets being entered, and larger funds being raised post-GP stake, this would likely have displayed itself in higher fund-size growth.

In regard to the third hypothesis, stating that GP stakes mainly is a means for owners/founders to realize value, the evidence suggests this could potentially be the case, since neither fund growth nor returns increase post-GP stake. Even though we found that a GP stake leads to no significant effect on fund returns ex-post, it has been documented by Mustafina and Nacksten (2020) that fund returns decreased significantly after a PE IPO (after having concluded that value realization was the motive). The reason why returns do not decrease post-GP stake, but seem to do so when a PE firm goes public, might be because GP stake investors offer better governance compared to the new, dispersed ownership introduced in a PE IPO (as documented by Mustafina and Nacksten, 2020). Furthermore, potential short-termism in public markets (as documented by e.g. Davies et al., 2014) and increased public scrutiny might also be factors contributing to why a PE IPO leads to lower fund return performance ex-post, compared to a GP stake. In addition to the above, the research by Gelfer and Cordeiro (2017), arguing that GP stakes might have accelerated in recent years due to the lackluster performance in the stock market of public PE firms during the 2000's, would support that GP stakes are increasingly being used as an alternative way for founders to realize their ownership stake instead of going public.

9   Conclusion

This thesis provides a comprehensive analysis of the motivations behind and fund level impact of GP stakes, by studying a unique dataset on deals between 1988-2020 in combination with investor, manager, and fund level data. We offer an empirical analysis of the characteristics of both the targets and investors in GP stake deals and show how the deals impact PE firms at the fund level, with respect to fund growth, size and returns. We do this using econometric methods in the form of logit regressions to examine motivations behind the deals and a Difference-in-Differences (DiD) approach with staggered treatment and fixed effects to examine their fund level impact.

Our results show that large, younger PE firms that have demonstrated high fund-size growth have the highest likelihood of being GP staked. Of these characteristics, size is by far the strongest predictor while fund-size growth and age demonstrate a marginal effect. The results on investors showed that most GP stakers have never invested in a previous fund of the targeted GP. They further show that the characteristics that increase the probability of the investor being a GP staker is greater AUM and a larger number of funds invested in historically. Additionally, the results indicate that GP stakers have a general preference for co-investments. By investor type, GP stakers tend to be sovereign wealth funds and fund-of-funds managers. Of the above-mentioned characteristics, being a sovereign wealth fund particularly increases the probability of an investor being a GP staker. Lastly, our results show that a GP stake has no immediate or permanent effect on the staked manager's subsequent return performance or fund-size growth.

Since there are both a buyer and a seller in a GP stake deal, we argue that the phenomenon is driven from two sources; the willingness of the PE firms to sell a GP stake and the desire from investors to acquire a GP stake. Our conclusion is that the main motivation to sell a GP stake is as a way for owners to realize value. The reason we draw this conclusion is that we find no significant effect from GP stakes on target managers' subsequent fund-size growth nor return performance - which would be expected from such a motivation. This conclusion is also consistent with the fact that we find no evidence on the commonly stated official reasons communicated by PE firms for selling a GP stake - which is to fund new strategies, enter new markets and increase capital commitments to new funds (which would imply higher growth post-GP stake). Furthermore, we reject the hypothesis that alignment of interest between GPs and LPs is the main motivation behind investing in a GP stake. The main finding underpinning this is the fact that only a minority of GP stake deals are conducted by LPs who have previously invested in the funds of the GP staked manager. Instead, we argue that the main motivation for acquiring a GP stake is for investors to improve their terms when investing in PE and for them to, in a novel way, get exposure to the illiquidity premium of private markets - as an alternative or complement to investing in PE funds as an LP and benefit from the unique risk-return characteristics of the investment.

10 Limitations and Suggestions for Future Research

As for the main limitations of this study, we would like to address the problem of data availability. Since the phenomenon of GP staking has been accelerated in recent years, many of the analyzed deals have been made fairly recently. This is less of a problem when analyzing the motivations behind GP stakes, by looking at the characteristics of GP staked firms and GP stake investors. However, it becomes more of a problem when investigating the effect that a GP stake has on fund size and performance. The reason for why the large number of recent deals pose an issue, is that the firms that have received GP stake investments recently may have come less far in fundraising and investment realization of funds raised post-GP stake than firms that have received a GP stake investment earlier in time. Furthermore, the fact that GP stakes are increasingly being acquired by fund-of-funds managers may eventually contribute to a shift in the main motivations for undertaking these types of investments. Due to the reasons above, it would be relevant to conduct a similar study to this one in a few years when new data has become available and when the long term fund level effect on the GP staked firms may have become more obvious. Furthermore, in the logit regression where we examine the characteristics of GP stake investors, we would like to highlight a concern related to causality. As previously mentioned in this thesis, data on investors for the whole period available in the dataset has been used (i.e. both before and after the GP stake has been invested in). The reason for this is a lack of granularity in the data. Thereby, this model does not give a causal explanation for which investors are likely to engage in GP staking and there could also be a reverse-causality mechanism present in the model. However, we see this as a minor issue, since we in our analysis on GP stake investors are mainly interested in examining what characteristics are displayed by the investors who have engaged in these types of deals (both before and after the investment has been made). A last limitation worth mentioning concerns the dataset assembled for conducting the predictive regressions on the managers most likely to receive GP stakes. As mentioned in the data section of this thesis, the data on manager characteristics was formatted such that it represented the manager at the time of the first GP stake. Although this conveys important information on the characteristics among PE managers that may lead to a GP stake, the data might be somewhat biased, since several managers have also received a second and third GP stake that are not reflected in the analysis.

Adding to the discussion on suggestions for future research, there are some specific findings made in this thesis that would be interesting to investigate further. One topic that would be interesting to explore in more detail is the real motivation behind GP stakes, from the GP's perspective - which we find to be for current owners to realize value. For example, an in-depth investigation into what differs in the motivation between selling a GP stake and a PE IPO could contribute with valuable insights into what the actual drivers behind selling a GP stake are. Furthermore, relating to the same topic, a valuable study to conduct would be one looking deeper into the contractual details of GP stake deals. For example, if data can be accessed on what share of purchased equity in GP

stake deals is newly issued vs. a secondary offering, it could help explain what the real motivations behind GP stake deals are. More specifically, if evidence were to be found that the majority of the equity purchased in GP stake deals comes from a secondary offering - this would suggest that it is indeed mainly a way for owners to realize value.

Appendix

Appendix I
Descriptive Statistics for Manager Data

This table shows data from Preqin on 1,153 managers.

Statistic	N	Mean	St. Dev.	Min	Max
Age	1,097	22.6	13.1	-2.0	151.0
Average growth	601	1.1	5.0	-1.0	86.1
Number of funds raised	900	53.2	151.8	1.0	1,700.0
Avg IRR	917	10.5	17.0	-100.0	207.5

Appendix II
Descriptive Statistics for Investor Data

This table shows data from Preqin on 13,532 investors in PE.

Statistic	N	Mean	St. Dev.	Min	Max
Number of years invested in PE	6,317	16.4	8.3	1	51
Number of funds invested in	13,523	7	29	0	818
Average realized IRR	3,484	7.5	7.8	-87.9	56.5

Appendix III
Descriptive Statistics for Fund Data

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms.

Statistic	N	Mean	St. Dev.	Min	Max
IRR (%)	2,400	12.9	21.2	-100.0	514.3
IRR return over benchmark	2,128	-0.7	21.6	-104.5	504.5
Fund size (USDm)	3,001	1 020.1	2 012.7	1.0	24,713.8
Growth since last fund	1,858	161.4	1 949.4	-100.0	77,678.0

Appendix IV
Correlation Matrix for Manager Data

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms.

	Age	Avg. growth	# funds raised	Avg. IRR	Top IRR quartile	Top size quartile
Age	1.00					
Average growth	-0.01	1.00				
# funds raised	0.25	0.07	1.00			
Average IRR	0.00	0.04	0.14	1.00		
Top IRR quartile	0.05	0.03	0.09	0.56	1.00	
Top size quartile	0.11	0.05	0.16	0.08	0.08	1.00

Appendix V
## Correlation Matrix for Investor Data

This table shows data from Preqin on 13,532 investors in PE.

	Top AUM quartile	Years invested in PE	# funds invested in	Avg. realizd IRR	Co-invest	FoF	SWF
Top AUM quartile	1.00						
Years invested in PE	0.10	1.00					
# funds invested in	0.22	0.45	1.00				
Average realized IRR	0.01	0.22	0.07	1.00			
Co-investments	0.15	0.10	0.22	0.00	1.00		
Fund of funds	-0.02	0.04	0.10	0.04	0.24	1.00	
SWF	0.08	-0.01	0.02	-0.01	0.05	-0.02	1.00

Appendix VI
Return Distribution for All Funds

This table shows data from Preqin on 3,233 funds between 1980-2019 for 1,153 unique firms.
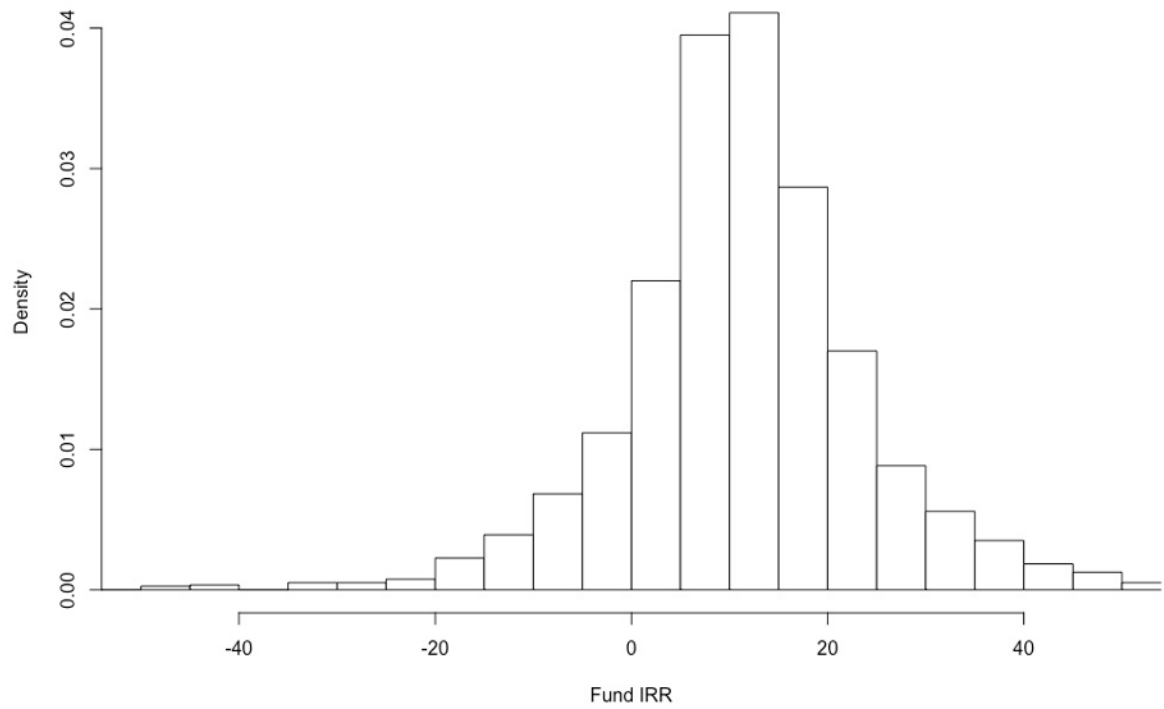
Appendix VII
The Logit Model

Setting up the model, let Y_i denote the response of firm i with respect to the outcome of the explanatory variables $x_{1i}, ..., x_{ki}$. For example, let $Y_i = 1$ denote that the firm has received a GP stake and $Y_i = 0$ if this is not the case. Then, using logistic regression, the probability that a company has received a GP stake is denoted by:

$$P(Y_i = 1 | x_{1i}, ..., x_{ki}) = f(x_{1i}, ..., x_{ki})$$

For which function f denotes the logistic distribution function such that

$$P(Y_i = 1 | x_{1i}, ..., x_{ki}) = \frac{exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + ... + \beta_n x_{ni})}{1 + exp(\beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + ... + \beta_n x_{ni})}$$

The logistic distribution function thereby transforms the regression into the unit interval $(0, 1)$. The logarithm of the odds is the logit of the probability, as defined below:

$$logit(p_i) = log\left(\frac{p_i}{1 - p_i}\right)$$

And the model can be re-written as

$$logit(P(Y_i = 1 | x_{1i}, ..., x_{ki})) = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + ... + \beta_n x_{ni} + \epsilon_{it}$$

Appendix VIII
## Cohort Analysis for Parallel Trends Test of Fund IRR

This table shows data on the treatment group and control group for all 3,233 funds in years 1980-2019. We empirically test for parallel trends before treatment using a cohort-based approach. in which we create a control group for treated firms (and a control fund for each GP manager's fund). based on a range of control characteristics. All cohort funds' IRR are then indexed to a fund number t for which $-5 \leq t \leq 5$ and $t = 1$ indicates that it is the first fund post-treatment for the treated firm (and equivalently for the control firm). Thereby. funds for the treated firm and control firm are measured at similar vintage years. which allows for time-invariant comparison. We then average across cohorts for the same index period to evaluate graphically. The vertical line indicates the point in time that the treatment group (i.e., GP stake firms) received the initial GP stake. The development suggests that fund IRR moves in parallel pre-treatment. However. since the results of the Difference-in-Differences regressions were not statistically significant. the parallel trends assumption becomes irrelevant.
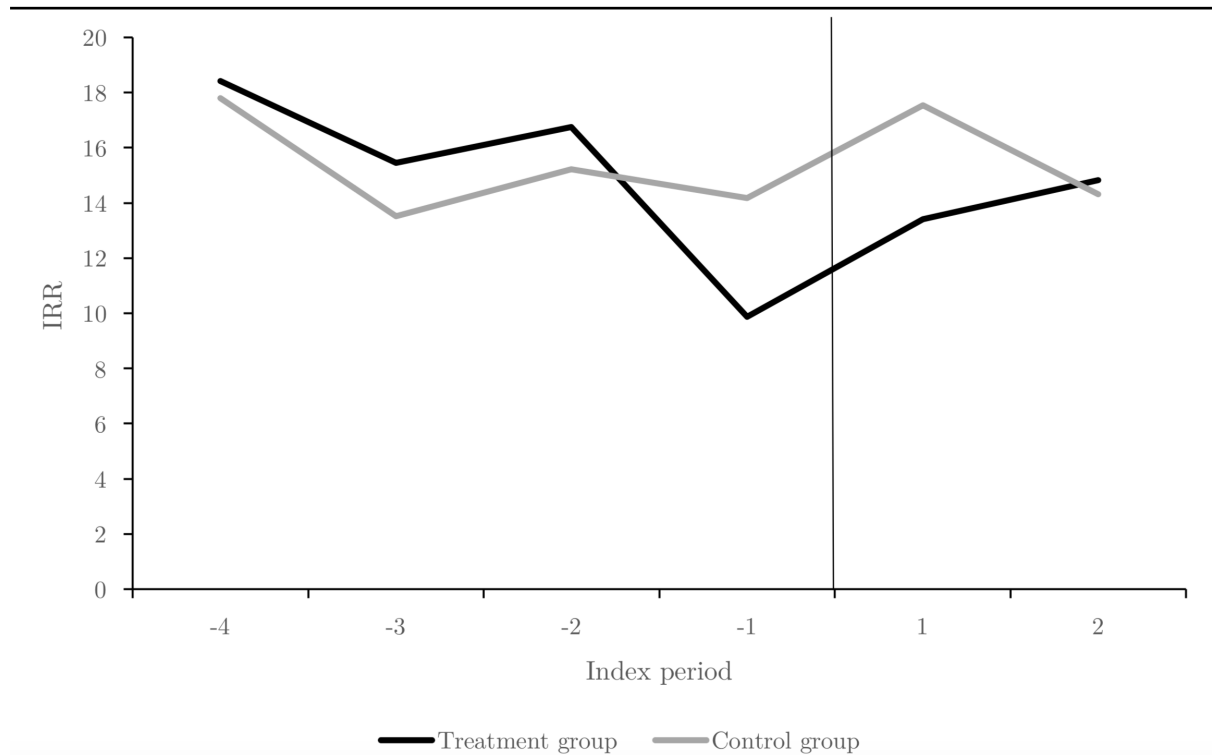
Appendix IX
Cohort Analysis for Parallel Trends Test of Fund Size

This table shows data on the treatment group and control group for all 3,233 funds in years 1980-2019. We empirically test for parallel trends before treatment using a cohort-based approach. in which we create a control group for treated firms (and a control fund for each GP manager's fund). based on a range of control characteristics. All cohort funds' size is then indexed to a fund number t for which $-5 \leq t \leq 5$ and $t = 1$ indicates that it is the first fund post-treatment for the treated firm (and equivalently for the control firm). Thereby. funds for the treated firm and control firm are measured at similar vintage years. which allows for time-invariant comparison. We then average across cohorts for the same index period to evaluate graphically. The vertical line indicates the point in time that the treatment group (i.e., GP stake firms) received the initial GP stake. The evolvement suggests that fund size moves in parallel pre-treatment. However. since the results of the Difference-in-Differences regressions were not statistically significant. the parallel trends assumption becomes irrelevant.
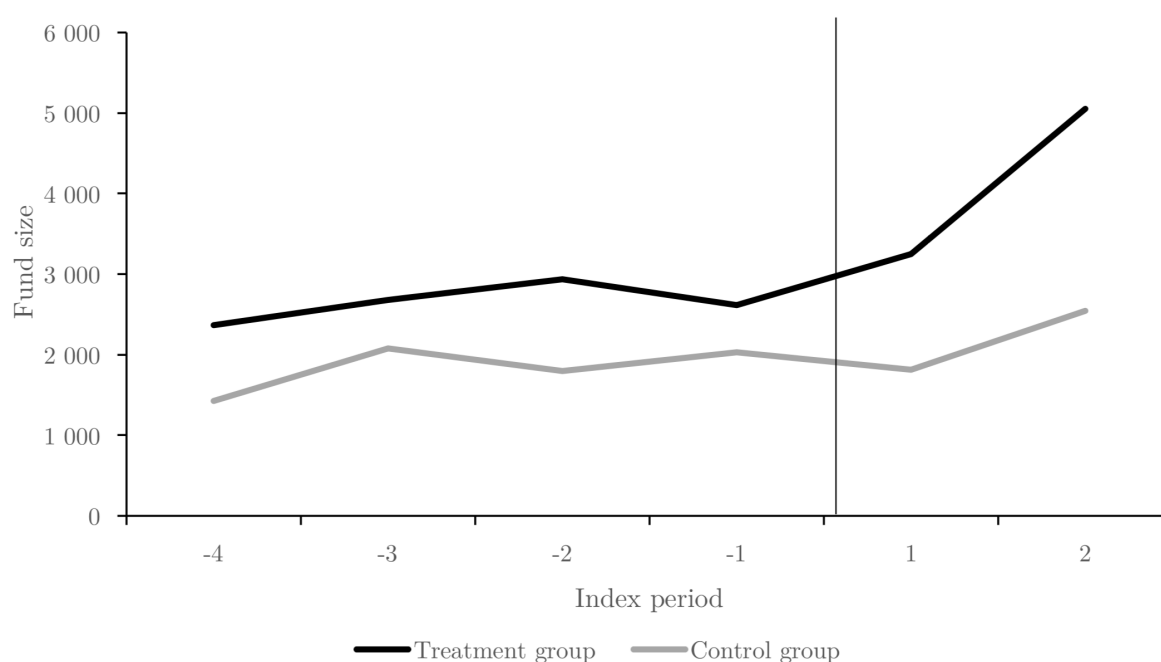
Appendix X

The Wilcoxon Signed-Rank Test

To test the third research question, in a first step, we use the Wilcoxon Signed-Rank Test. The purpose is to observe if there is a significant observable difference on the returns and size of funds raised immediately after a GP stake has taken place. We use an approach in line with Bauer (1972) and Hollander and Wolfe (1973). The Wilcoxon Signed-Rank Test is the non-parametric equivalent of the paired t-test and is appropriate to use when the same subjects are evaluated under two different conditions (Scheff, 2016) - in this case, before and after a GP stake. We use both a two tailed approach and a one-sided version, to test for a significant difference. In the two-sided test, we test the pairs to see if the differences (fund post less fund pre) are significantly different from zero. Hence, the null and alternative hypotheses are the following:

$$
\begin{aligned}
H1_0 \quad &: \quad \delta \quad = \quad 0 \\
H1_A \quad &: \quad \delta \quad \neq \quad 0
\end{aligned}
$$

In the one-sided test, we test the pairs to see if the differences (fund post less fund pre) are greater than zero. Hence, the null and alternative hypotheses are the following:

$$
\begin{aligned}
H2_0 \quad &: \quad \delta \quad = \quad 0 \\
H2_A \quad &: \quad \delta \quad > \quad 0
\end{aligned}
$$

Appendix XI
Wilcoxon Signed Rank test for First Fund Raised Post-GP Stake

This table reports the output of the Wilcoxon Signed Rank test for our main variables and the associated p-values and test statistics. The sample is based on the manager dataset from Preqin of 1,153 managers. combined with fund data and GP stake data from PitchBook and the authors. Only "last before" and "first after" for GP staked managers receiving their first GP stake. N indicates the number of observations and V indicates the test statistic. "Log of fund size" is statistically significant at the 5% level in the one-sided test. meaning the first fund raised immediately after a GP stake is significantly larger than the last fund raised before the GP stake. This contradicts the results in the first set of DiD regressions (of first fund post GP stake). But the below results are subject to a small sample size and does not take into consideration time fixed effects. Therefore. we use base the discussion on the DiD regression output.

| Variables | Two-sided test | | | | | One-sided test | | | | |
	N	V	P-value	95% conf. interval	Pseudo Median	N	V	P-value	95% conf. interval	Pseudo Median
IRR	14	68	0.3575	-3.000 7.625	3.00	14	68	0.1788	-1.820 Inf	3.00
IRR over benchmark	11	36	0.8311	-7.865 7.990	0.78	11	36	0.4155	-5.875 Inf	0.78
Fund growth	17	72	0.8536	-1.626 1.977	-0.25	17	72	0.5912	-1.340 Inf	-0.25
Log of fund size	22	179	0.0917	-0.052 1.049	0.46	22	179	0.0459	0.019 Inf	0.46

Appendix XII
Difference-in-Differences Regressions for First Fund Raised Post-GP Stake with Realized IRR

This table reports the output of the Difference-in-Differences regressions for funds that have been raised post-GP stake. The sample contains data on 3,233 funds from Preqin. combined with GP stakes from PitchBook and the authors. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:
	Realized IRR
First fund raised post GP stake	0.082
	(5.679)
Constant	31.652
	(23.946)
Year fixed Effects	Yes
Firm fixed Effects	Yes
Observations	2,047
R^2	0.528
Adjusted R^2	0.178
Residual Std. Error	18.455 (df = 1175)
F Statistic	1.509*** (df = 871; 1175)

Appendix XIII
Difference-in-Differences Regressions for Subsequent Funds Raised Post-GP Stake with Realized IRR

This table reports the output of the Difference-in-Differences regressions for funds that have been raised post-GP stake. The sample contains data on 3,233 funds from Preqin. combined with GP stakes from PitchBook and the authors. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:
	Realized IRR
Fund raised post GP stake	−2.422
	(5.165)
Constant	31.555
	(23.945)
Year fixed Effects	Yes
Firm fixed Effects	Yes
Observations	2,047
R^2	0.528
Adjusted R^2	0.178
Residual Std. Error	18.454 (df = 1175)
F Statistic	1.510*** (df = 871; 1175)

Appendix XIV
Logit Regressions for GP Staked Managers with MOIC

This table reports the output of the logit regressions for managers receiving a GP stake. The sample contains data on 1153 managers from Preqin. combined with GP stakes from PitchBook and the authors. Data shown on GP staked managers is based on values prior to the GP stake. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:
	GP Staked manager
Top size quartile	2.263***
	(0.351)
Average fund size growth	0.031*
	(0.017)
Age	−0.066***
	(0.020)
Number of funds raised	0.029
	(0.043)
Average MOIC	0.151
	(0.191)
Top MOIC quartile	0.894**
	(0.367)
Constant	−2.769***
	(0.495)
McFadden R2	0.506
McFadden adjusted R2	0.484
Controls included	Yes
Observations	591
Log Likelihood	−130.327
Akaike Inf. Crit.	274.654

Appendix XV
Difference-in-Differences Regressions for First Fund Raised Post-GP Stake with MOIC

This table reports the output of the Difference-in-Differences regressions for funds that have been raised post-GP stake. The sample contains data on 3,233 funds from Preqin. combined with GP stakes from PitchBook and the authors. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:
	MOIC
First fund raised post GP stake	−0.084
	(0.200)
Constant	8.184***
	(0.968)
Year fixed Effects	Yes
Firm fixed Effects	Yes
Observations	3,207
R²	0.542
Adjusted R²	0.272
Residual Std. Error	0.967 (df = 2017)
F Statistic	2.007*** (df = 1189; 2017)

Difference-in-Differences Regressions for Subsequent Funds Raised Post-GP Stake with MOIC

This table reports the output of the Difference-in-Differences regressions for funds that have been raised post-GP stake. The sample contains data on 3,233 funds from Preqin. combined with GP stakes from PitchBook and the authors. t-statistics are shown in parenthesis. Coefficients are statistically significant at the 10% (*). 5% (**). and 1% (***).

	Dependent variable:
	MOIC
Fund raised post GP stake	0.012
	(0.165)
Constant	8.186***
	(0.968)
Year fixed Effects	Yes
Firm fixed Effects	Yes
Observations	3,207
R^2	0.542
Adjusted R^2	0.272
Residual Std. Error	0.967 (df = 2017)
F Statistic	2.006*** (df = 1189; 2017)

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