

# Private Equity and Venture Capital Fund Performance: Evidence from a Large Sample of Israeli Limited Partners

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## Abstract

We use a newly-assembled, extensive data set on all investments by Israeli pension providers in private equity (PE) and venture capital (VC) funds over the last 15 years. Our detailed database contains complete cash flows to and from each fund and each investor, allowing us to evaluate fund performance using PME (rather than IRR) measures, which have been hitherto unavailable for non-US-based limited partners (LPs). We obtain four main results: 1. Fund performance, based on Israeli LP returns in this data set, has been slightly lower than the estimates in the US-based literature, perhaps because of limited access by foreign LPs to top performing US funds. 2. Investments in local (Israeli) funds, both PE and VC, have outperformed investments in foreign (non-Israeli) funds, possibly because of better access to local funds. 3. Despite Israel's image as the "Startup Nation", the performance of VC funds (both Israeli and foreign) has generally been poor relative to the appropriate benchmarks (NASDAQ, primarily). 4. Finally, we compare our data and results to those of Preqin, one of the most commonly used commercial data bases, and evaluate possible biases in it. We find that Preqin tends to omit small funds as well as funds with poor performance, both within and outside the US at roughly the same rate. This may lead to upward-biased estimates of PE and VC fund performance in this source.

## 1. Introduction

Pension funds and institutional investors around the world have been allocating more and more assets to private equity, venture capital and other types of private funds (Lerner et al. (2008), Ivashina and Lerner (2018), Binfare et al. (2019)). Public pension funds tracked by Preqin, for example, have steadily increased their allocations to this "alternative" asset class over the past decade, with the median allocation rising from 18.1% in 2010 to 30.3% in 2020, and 79% of investors saying that they expect to deploy a larger proportion of their funds into private equity by 2025 (Lee (2020)).

Even though this trend is observed around the world, there is limited systematic evidence on the performance of non-US-based institutional investors (limited partners, or LPs) in their investments in this asset class. Performance of non-US LPs might differ from what has been documented for US LPs in the literature for various reasons, such as differences in access to top performing ("top quartile") funds (Sensoy et al. (2014)), differences in fees (Begenau and Siriwardane (2021)), differences in skill or ability to select successful PE or VC fund general partners (GPs) and more (Lerner et al. (2007), Da Rin and Phalippou (2017), Cavagnaro et al. (2019)).

In this study we utilize a newly-assembled and highly detailed data set on all capital calls and distributions associated with investments in private equity (PE) and venture capital (VC) funds by the largest eight institutional investors in Israel. Much like their peers elsewhere, institutional investors in Israel (pension funds, life insurance plans and other forms of long-term savings known as provident funds) have also increased their allocation to illiquid assets from 12% in 2010 to 17% in 2020. Their investments in PE and VC funds have increased from a mere 1% of their assets under management (AUM) in 2010 to 5% in 2020. This increase coincided with a dramatic 250% increase in AUM during this period (for reasons that have to do with mandatory retirement savings), so that in monetary value terms, the investment of Israeli LPs in PE and VC funds has become very substantial.

The eight LPs whose investment performance are at the core of this study are the largest institutional investors in Israel, managing 80% of all retirement savings in the country. The cash flow

information on which this study is based constitutes part of the information that the largest financial institutions managing retirement savings are mandated to report to the Capital Market, Insurance, and Savings Authority at the Ministry of Finance in Israel. The data set is therefore free of survivorship and other biases documented in the literature in the context of some commercial data sources on PE and VC fund performance. Furthermore, in contrast with the limited available data on cash flows associated with non-US-based LPs in commonly used commercial data providers, our detailed cash flow data enable the calculation of performance measures such as the Public Market Equivalent (PME) relative to several traded benchmarks, whereas the existing literature has relied primarily on IRR-based measures for non-US LPs and GPs.

The performance of the Israeli pension funds (LPs) in their investments in PE and VC funds is interesting for two main reasons. First, the pension system in Israel is a comprehensive pension system, where each citizen is obliged to participate (i.e., every employee and employer must deposit a fixed fraction of the employee's income each month). In many ways, this pension system is similar to the retirement savings plans of many developed (OECD) countries, making the evidence on the Israeli LPs' investment in PE and VC funds highly relevant to institutional investors elsewhere (mainly outside the US). Within Israel, long-term savings are managed by for-profit, non-bank institutions, primarily insurance companies and other non-bank investment managers.<sup>1</sup> The main consequence of the mandatory nature of the retirement savings system in Israel has been a rapid growth in assets under management (AUM) of close to 10% p.a. over the last decade, reaching a total AUM of about 2.3 trillion ILS (about 700 billion USD) as of the end of 2019. Therefore, as noted above, even in absolute terms, the allocation of funds to the PE and VC industry is substantial.

Second, Israel's reputation as the Start Up Nation makes the documentation of returns to investment in the VC industry particularly interesting. Despite extensive writing about the growth of the high tech sector in Israel (according to the [OECD \(2016\)](#), VC investments relative to GDP in Israel is the highest in the world) there is no systematic evidence on the financial performance of this industry. The data set used here is the first to enable systematic measurement of the realized

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<sup>1</sup>Banks are not allowed to operate in the long-term savings market following a 2006 reform.

returns by LPs on their investments in Israeli (and other) VC funds.

There is an on-going controversy in the academic literature regarding PE and VC performance. (Kaplan and Schoar (2005)), using funds during the years 1980 to 2001 obtained from Venture Economics data set, show that the average fund returns (net of fees) approximately equals that of the S&P 500. (Phalippou and Gottschalg (2009)) find an average net-of-fees fund performance of 3% per year below that of the S&P 500. (Phalippou (2014)) claims that, even though the average buyout fund outperforms the S&P 500, buyout funds mainly invest in small and value companies; accordingly the average buyout fund return is similar to that of small-cap indices. (Phalippou (2020)) finds that PE funds' returns have been roughly the same as the returns of public equity indices since 2006. In contrast with studies which find no evidence for outperformance, there are also studies reaching the opposite conclusion: (Harris et al. (2014)), using data from Burgiss, show that PE and VC funds outperformed the S&P 500 by an average of more than 3% annually during the years 1992 to 2008. (Brown and Kaplan (2019)), using data for 1986 to 2014, find that PE funds outperformed the S&P 500. There is also nuanced evidence, according to which PE and VC funds do not generally outperform the public markets but some asset classes do, at least in certain periods. For example, a very recent survey paper (Korteweg and Westerfield (2022)), Table 1) using long time-series data from 1969 to 2019, reports that PE funds outperformed the S&P 500 by a small margin (with an average PME of 1.11) during this time period, whereas VC and other types of funds under-performed (the average PME for VC funds is 0.96).

The analyses that we describe below are based on cash flows and net asset values (NAVs) for about 1400 investments in PE and VC funds of various types including buyout, venture capital, real estate, debt, infrastructure and co-investments, for a 15-year period ending in December 2019. Using this information, our goal is to provide comprehensive evidence on the net-of-fee return realized by Israeli limited partners.

First, we generate PME measures of performance relative to six equity benchmarks and two debt benchmarks for private debt funds (the details are described below). The main results are as follows: First, PE performance in this sample is slightly below what has been documented for US LPs in the literature (Harris et al. (2014), Korteweg and Westerfield (2022)). One possible interpretation is

that this is due to limited access: Israeli LPs may not be able to gain access to the top performing ("top quartile") funds. This could be the result of several factors. The lack of access could be a due to size, as Israeli LPs are small relative to the average U.S. LPs (the average AUM of the Israeli pension fund, when considering the eight largest funds, is about 60 billion USD, whereas the average US pension fund manages about 200 billion USD in assets, possibly resulting in high fees and limited access to the best performing funds (Dyck and Pomorski (2016)). Moreover, there is evidence that shows that LPs outside North America (US and Canada) may suffer from lack of access to the top quartile funds mainly because they may be perceived by the fund managers as less prestigious. In addition they are geographically further from the majority of private equity funds, and also operate in different legal systems across countries, which may add certain complications (Da Rin and Phalippou (2017)). Furthermore, established LPs often have preferential access to funds, as their prior experience as LPs may provide them with access to established fund groups with high performance (Lerner et al. (2007)), it is important to note in this context that Israeli LPs are new players in the private equity market, mainly due to significant changes in the regulation governing their operations (see the institutional background section. However, a recent paper by (Goyal et al. (2021)) claims that access to high performing funds is unlikely to explain the investment choices of LPs in PE and VC funds, they explain this result by the evolution of the demand for and supply of private equity funds across time, LPs with high growth rates of capital allocated to private equity may be more likely to invest in first-time funds. Another possible reason for the relatively low performance of the Israeli LPs could be their lack of skill in identifying and selecting top performing funds and GPs (Cavagnaro et al. (2019)).

Second, we find that VC performance has generally been poor relative to the appropriate benchmarks (NASDAQ, primarily). Although this result is consistent with the literature (e.g., Korteweg and Westerfield (2022)), it is surprising given Israel's status as a "start-up nation", with the largest concentration of VC funds and VC investments per capita in the world (OECD (2016)).

Third, previous research has documented a home (state) bias for US public pension funds' investments in private equity due to political reasons, resulting in poor performance relative to out-of-state investments (Hochberg and Rauh (2013)). We find in our sample, however, that local investments

outperform investments in foreign funds. This result holds across all types of funds. We attribute this finding to better access to top performing local PE and VC funds, and limited access to the best performing foreign funds.

As a side benefit of the construction of this data set, we are able to estimate the prevalence of biases in Preqin, one of the most commonly used commercial data bases. Although some of the previous literature has argued that the Preqin data set is unbiased (i.e., that performance measures based on this source are not affected by selection bias ([Kaplan and Lerner \(2017\)](#), [Harris et al. \(2014\)](#), [Brown et al. \(2015\)](#))), we find evidence for a large difference between the funds which are held by our LPs and the funds which are included in Preqin. This discrepancy is equally prevalent for Israeli and US-based funds. Funds which are missing in Preqin are usually small and exhibit poor performance relative to the funds which are included in Preqin. This suggests the possibility of an upward bias in performance measures drawn from the Preqin data set.

The bias which we find in Preqin raises many questions about the performance of the Israeli LPs (and more generally, non-US LPs), in comparison to the performance of the US LPs. As mentioned above, much of the vast literature on PE and VC investments from the perspective of the LP is based on the Preqin data base.<sup>2</sup> therefore, in light of our findings a reasonable assumption would be that the performance of the LPs which reported in these papers is upward biased. Therefore, further examination is needed in order to determine whether the source of the differences in the performance between the Israeli LPs and the LPs documented in the literature, is economic (for example: lack of access, or lack of skill of the Israeli LPs) or perhaps it is caused by technical reason - the possibly upward bias in the Preqin data set.

The rest of the paper is organized as follows. Section 2 includes a description of the institutional investors in our data set and the pension system in Israel. Section 3 presents the data and methodology. In section 4 we present the performance of the institutional investors in their PE and VC investments. This section includes also a comparison between the performance of the local (Israeli)

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<sup>2</sup>Papers which investigate the performance of PE and VC funds from the fund perspective are often based on the Burgiss data set, which is supposedly more precise than other commercial data sets, but covers the LP landscape only partially and characterized with anonymity of the funds and the LPs.

funds in comparison with foreign (mainly U.S.) funds. In section 5 we present a comparison between our data set and the Preqin data set and discuss possible biases in Preqin. Section 6 concludes the paper.

## 2. Institutional Background

This study is based on extensive and detailed data provided by institutional investors in Israel as part of their mandatory monthly reports to the Capital Market, Insurance, and Savings Authority at the Ministry of Finance. These reports include the full daily cash flows generated from their investments in PE and VC funds for the period 2005 through 2019. In addition, these institutions provide the NAV of each fund as of the end of 2019 in accordance with the financial statements of the fund. As mentioned above, we use the data of the eight largest institutions that manage 76% of all pension investments in Israel. We use only the eight largest institutions because the smaller institutions have been involved in mergers and splits, impairing the completeness of the cash flows reported by them.

The institutional investors in our data set manage three different saving instruments: pension funds, provident funds and life insurance, which differ in certain dimensions which are not directly relevant to this study (e.g., fee structure, extent of competition, etc.). In terms of asset allocation, life insurance funds have the highest percentage of illiquid assets, including PE and VC funds, mainly because there are no transitions of savers across different funds and a very low level of competition.<sup>3</sup> Provident funds are characterized by a low percentage of illiquid assets and allocation to PE and VC funds., primarily because of the high level of competition in this segment and the frequent transitions of savers across different funds. Finally, pension funds are the fastest growing saving instrument in Israel, mainly due to a law enacted in 2008 which requires individuals to deposit funds into these savings instruments. The institutional investors in our data set manage pension funds, other long-term savings instruments, as well as their own accounts, which we refer to below

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<sup>3</sup>Whereas in most long-term savings instruments in Israel savers can change the investment track or the managing company, in life insurance products there are significant switching costs, see a detailed discussion in ([Hamdani et al. \(2016\)](#)).

as their "nostro" accounts.<sup>4</sup>

The Israeli long-term savings market has undergone significant changes over the last fifteen years, mainly due to a regulation that forced banks to sell their long-term savings products to other institutions, primarily insurance companies and other non-bank investment managers, some of which had managed mutual funds prior to the reform. These institutions experienced rapid growth in their assets under management when they acquired long term savings instruments formerly managed by banks and as a result of a 2008 law mandating savings for retirement by all. Table 1 presents the value of all assets under management (AUM) by institutions in our data set as well as their investments in PE and VC (both local and foreign). The values in parenthesis represent the percentage of assets managed by the institutions in our data set relative to the assets managed by all institutional investors in the long-term savings market in Israel, representing 76% of total AUM, 81% of total investments in private equity funds and about 87% of total investments in venture capital funds. There is no reason to think that they are fundamentally different than the smaller institutions not included in our data set.

The rapid growth in these institutional investors' AUM, as well as the low interest environment of the last decade, have led to an increase in their propensity to invest in alternative assets: real estate, private loans, as well as PE and VC funds. The NAV of the investments in PE and VC funds has grown dramatically from 2 billion ILS (about 500 million USD) in 2005 to 70 billion ILS (about 21 billion USD) in 2019. Much of the growth is driven by investments in foreign funds: Israeli institutional investors have invested twice more in foreign funds than in local ones. Interestingly, only 7% of their investment are in VC funds (93% in PE funds), and most of the VC investments (70%) are local.

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<sup>4</sup>Life insurance is the largest saving instrument in the Israeli long-term savings market and is managed by five of the eight institutions in our data set. In total, there are ten institutions managing life insurance products in Israel. Provident funds include mainly two saving instruments, differentiated by their investment horizon (long-term and medium term). All institutions in our data set manage both types of provident funds. In total, there are about 30 managers offering this saving instrument in Israel. Pension funds mainly include two savings instruments: mandatory pension savings and optional pension funds, the two types of funds are managed by commercial institutional investors, as in our data, and by non-profit organizations.



### 3. Data

In this study we use two main data sources. The first is complete daily cash flows generated from investments in illiquid funds (private equity, real estate, infrastructure, debt, venture capital and hedge funds) by the eight largest institutional investors in Israel. We analyze the performance of about 300 PE funds and 140 VC funds between 2005 - 2019<sup>5</sup> The investments are divided by savings products (i.e., pension funds, provident funds and life insurance), as well as the institutions' own investment ("nostro accounts"). In addition to the full daily cash flows related to each saving product and to the nostro account, our data set contains the NAV for each PE, VC or other funds related to each saving product.<sup>6</sup>

The second data set we use is the Preqin data set, one of the most commonly used data sets in the academic literature on private equity performance (especially from the point of view of the limited partner, see [Harris et al. \(2010\)](#), [Brown et al. \(2015\)](#)). As a side benefit of this study, we compare the PE and VC funds which are included in our first data set to funds listed in Preqin. According to Preqin website, *"We collect our data through a variety of sources. Since 2003, we have built valued relationships with fund managers, institutional investors and other industry professionals who are happy to provide us with data on their activities. We also obtain our data via various FOIA (Freedom of Information Act) requests, public filings and industry-recognized news sources. While FOIA remains an important source of data, Preqin also receives voluntary data contributions from more than 12,000 fund managers, and more than 10,000 funds."* Therefore, there is a concern that the funds which voluntarily report their performance are not a random sample. When analyzing the possible biases in Preqin data set we match each PE and VC fund which the institutions (LPs) in our data set invest in with funds which listed in Preqin. In addition, we calculate the performance of each fund using the cash flows reported by Preqin, following [Begenau et al. \(2020\)](#). After matching the overlapping funds between the two data sets we collect a number of additional characteristics

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<sup>5</sup>Before 2005 the institutional investors in our data set had invested only in a very limited number of funds.

<sup>6</sup>The separation between other people's retirement savings and the institutions' own accounts enables us to investigate possible conflicts of interest. A possible concern could be that institutional investors might choose to invest in well-performing funds through their nostro accounts, given their possibly limited access to the top quartile funds. In practice, we find that there is an overlap of about 90% between the funds associated with nostro and savings accounts, yielding almost equal performance of the PE and VC funds allocated to savers and allocated to the institutions' own accounts.

for each fund (e.g., AUM and GP country).

#### 4. Methodology and research design

We measure fund performance using the public market equivalent (PME) approach of [Kaplan and Schoar \(2005\)](#), as this performance metric is considered superior to other commonly used methodologies such as the internal rate of return (IRR) and the cash multiplies methods ([Gottschalg et al. \(2007\)](#), [Phalippou \(2008\)](#)). These methods involve serious problems including over-estimation of the variation of performance across funds and of the performance of the top quartile of funds. These measures are also amenable to easy manipulation, possibly distorting the fund manager's incentives. ([Phalippou \(2008\)](#)) claims that IRR is probably the worst performance metric one may use in an investment context, whereas the PME method yields more reliable conclusions.

We calculate the PME value for each limited partner by pooling all daily cash flows generated from each of their PE and VC investments. We also compute PME measures for investments by fund type (aggregating across all limited partners). The intuition behind the aggregate performance measurement is the creation of one portfolio for each limited partner, containing all the PE and VC funds in which the limited partner has invested over time. We compute a weighted average measure of limited partner performance where the weights are the amounts invested in each fund in the PE and VC asset classes.

We use several equity and debt indices as benchmarks. For equity, we use tradeable ETFs tracking the following indices: (1) S&P 500: the '[SPDR](#)' ETF; (2) Tel Aviv (TA) 125: the '[KESEM TA 125](#)' ETF; (3) NASDAQ: the '[QQQ](#)' ETF; (4) MSCI World: the '[iShares MSCI World](#)' ETF; (5) MSCI ACWI: the '[iShares MSCI ACWI](#)'. As debt benchmarks, we use tradeable ETFs tracking the following indices: (1) [ICE BofA US High Yield Index Option-Adjusted Spread](#) and (2) [iShares iBoxx \\$ High Yield Corporate Bond ETF](#). All our calculations end in December 2019, so that inferences are not affected by the onset of the COVID-19 pandemic. We compute PME values for both liquidated funds, where the NAV is effectively zero, and for funds which are still alive using

the NAVs reported in the financial statements at the end of 2019.<sup>7</sup> Finally, we follow [Gredil et al. \(2014\)](#) and compute fund performance using their direct alpha metric, representing the annual excess return of the PE and VC funds relative to their benchmarks.

In order to compare the performance of the Israeli PE/VC and other funds to that of foreign funds we perform a multivariate regression estimating the performance of each fund, controlling for the fund's geographic location (a dummy variable which take the value 1 when the GP is located in Israel and 0 otherwise), the fund's type (PE, VC, debt, real estate, infrastructure) and also the fund's vintage. We perform this analysis at the the LP-investment level where each observation is the performance of an investment in a fund by a specific LP. We cluster the standard errors by fund and by the limited partner.

After analyzing the performance of the Israeli LPs in their investments in the different PE and VC funds, we manually match the funds in our data set to funds listed in Preqin. In cases where the fund appears in Preqin, we also obtain its size and country of registration. In cases where the fund is not listed in Preqin, we obtain this information from the websites of the funds and from the LPs themselves. In addition, we compute the PME and IRR for the funds which are listed in Preqin (in cases where cash flows data are available). Finally, we perform a probit regression in order to estimate the probability that a fund is absent from Preqin as a function of its size, performance and location.

## 5. Results

We use two main performance measures in order to evaluate the performance of the Israeli LPs in private equity, venture capital, real estate, infrastructure, debt and hedge funds; The first is the PME method ([Kaplan and Schoar \(2005\)](#)), and the second is the direct alpha method ([Gredil et al. \(2014\)](#)). The results in this section are organized as follows. Tables 2 - 4 present our results on the returns realized by Israeli limited partners in their investments in PE and VC funds. Table 2 includes the aggregate performance of each limited partner in the PE and VC asset class, Table 3

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<sup>7</sup>We also perform a robustness test in which we exclude the funds with  $NAV > 0$ ; the results remain the same.

presents the performance of the different fund types (equity and debt), and Table 4 presents the estimation of the returns realized on investments in local funds in comparison to foreign funds.

### *5.1. Unconditional performance*

Overall, investments in the broad PE and VC asset class have not outperformed the S&P 500, but have generated returns exceeding that of non-US benchmarks with PME values of around 1.1 and an average direct alpha value of 3.4% relative to the local benchmark (TA 125), and PME values below 1.0 and negative values of direct alpha relative to the S&p 500. When analyzing the performance relative to other benchmarks we find that the PME values relative to the Russell 2000 are between 0.93 to 1.2, with an average value above 1. Relative to the NASDAQ, the PMEs are much lower — for almost all the LPs they are below 1. When measured against the MSCI global indices, the PMEs are, on average, relatively high, with an average PME value of slightly above 1.1 (see Table 2). Although there is a long debate in the academic literature on the relative performance of PE funds, the evidence we provide here suggests that foreign (non-US-based) LPs earn, on average, returns that are somewhat lower than those reported in the literature using information on limited partners from the U.S. This result may be due to limited access that the institutions based outside the US may have to the best performing US and other global funds (those in the "upper quartile").<sup>8</sup>

### *5.2. Performance of different types of funds*

We examine the performance of limited partners in our sample across different fund types. and different geographical location The results, presented in Table 3, indicate that investments in local (Israeli) funds are associated with in higher PMEs in comparison with investments in foreign (non-Israeli) funds. This result is consistent across all fund types (equity and debt), except for hedge funds. While the average PME of Israeli PE funds relative to the local benchmark, the main Tel Aviv Stock Exchange TA125 Index, is 1.22, the PME of foreign PE funds is about 10 percent lower, 1.09 (the difference is statistically significant, with a p-value < 1%). As for the performance of

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<sup>8</sup>See also Josh Lerner’s testimony at the SEC ([Link](#)), suggesting a PME value of slightly above one for US buyout funds in recent years relative to the Russell 3000 index.

VC funds, we, again, find that investments in Israeli VC funds generate a PME of 1.12 relative to the TA125, whereas investments in foreign VC funds result in an average PME of 0.9. That is, investments in foreign VC funds under-perform relative to the investments in local VC funds and relative to the local benchmark. The difference is statistically significant with a p-value  $< 5\%$ . When analyzing the performance of real estate funds we find again that the Israeli funds (with PME value of 1.09 relative to the TA125 index) had outperform the foreign funds (with PME value of 0.92 relative to the TA125 index). The results remain the same when analyzing the performance of the infrastructure funds, the PME for the local funds relative to TA125 index is equal to 1.11, while the PME value for the foreign infrastructure funds equal to 0.97. The pattern remain the same when analyzing the performance of debt funds, the PME of local debt funds relative to Ishares HY ETF is 1.11, while the PME of foreign debt funds is 0.97. Hedge funds are an exception, foreign hedge funds outperform local hedge funds. It is important to mention that the trend in which local funds outperform foreign funds (except for hedge funds) remain the same when using different benchmarks.

Table 4 presents regression results on the performance of local funds in comparison with foreign funds using three public market benchmarks, controlling for vintage year, and including limited partner and fund-type fixed effects. The coefficient of interest (the dummy variable denoting local funds) is positive and highly significant for all benchmarks and across the different specifications, indicating that local investments in PE and other funds outperform investments in foreign funds. The magnitude of the difference in PME values between local and foreign funds is about 7 - 16 basis points, depending on the benchmark and the specification. In addition, we find that buyout funds (the omitted category) outperform almost all other fund types.

These results differ from those reported by [Hochberg and Rauh \(2013\)](#). In our data set, local investments - which are not driven by political considerations - outperform investments in foreign funds across virtually all fund types. The aggregate weighted-average PMEs relative to the local benchmark (the TA125) for local and foreign funds (PE and VC) are 1.20 and 1.07, respectively. One interpretation of these findings is that Israeli limited partners, and perhaps more generally, non-US limited partners, have limited access to the top performing foreign (notably US-based)

funds. Alternatively, they may have poor skills in selecting foreign PE and VC funds. In both respects, they may be able to do better when investing in local funds.

In addition, local investments may outperform foreign investments due to different contractual agreements that non-US limited partners and US-based limited partners sign up with the funds' general partners. Our evidence may therefore have implications for how limited partners with constrained access to the best performing funds outside their home country (i.e., non-US limited partners) should design their PE and VC portfolios (and other funds), especially when determining the composition of local and foreign funds. The results may also form the basis for further research regarding the role of intermediaries in the PE and VC markets in providing access to non-US based institutional investors whose limited access to the top quartile of funds outside their home country may affect their portfolio's performance. This evidence may also inform limited partners as to the decision whether to employ the services of such intermediaries (e.g., fund of funds, or separately managed accounts (SMAs)), when investing in foreign PE and VC markets.

## **6. Comparing our data to Preqin data base**

As mentioned earlier, our dataset is derived from highly detailed data provided by the limited partners themselves. It is therefore likely to be superior (more accurate, more comprehensive, free of biases) in comparison with data collected by commercial data providers, which a substantial part of the empirical literature has used. The fact that biases in these datasets have been documented in the literature raises a significant concern about possible inaccuracies in some of the empirical literature.

In order to analyze the potential biases in the Preqin data set, we document the extent of overlap between investments in PE and VC, as reported by the limited partners in our dataset, with the fund-level data as reported by Preqin. The matching process was done manually, we matched funds that limited partners in our data set have invested in to investments by these limited partners as reported by Preqin. The results of this analysis ought to shed light on the quality and completeness of the Preqin data, one of the most extensively used data sets in the literature.

After matching the funds, we evaluate each fund's performance (PME and IRR) according to Preqin, using the available cash flow data. It is important to mention that, in many cases, even though a fund is listed in Preqin, there is no information about the fund's cash flows, in which case we cannot calculate its performance.

Table 5 provides a comparison between the performance (public market equivalent relative to the 'SPDR' ETF to benchmark against the S&P 500) of private equity and venture capital funds (local and foreign) in our data set and the Preqin data set. Panel A includes the average PME value for funds which are included in both our data set and in Preqin under the exact same LP and have cash flows reported in Preqin. Panel B includes funds included in our data set and in Preqin under the exact same LP for which there are no cash flows reported in Preqin. Panel C includes the funds included in our data set but not in Preqin. The columns contain the PME value according to each data set and the number of funds.

When comparing the overlapping funds which have cash flow on Preqin (panel A) the PMEs of the foreign (non-Israeli) PE funds are essentially the same (82 overlapping funds); other types of funds include only a few overlapping funds, so it is hard to draw unequivocal conclusions from this analysis. The fact that we observe the same average PME value over almost 100 overlapping funds, can suggest that there are no major differences in the fees that Israeli institutional investors pay in comparison with the LPs on which Preqin data are based.

When analyzing funds included in our data set and in Preqin under the exact same LPs for which there are no cash flows reported in Preqin (panel B), we find that the average PMEs, which are derived from the cash flows in our data set, are lower (except for the Israeli PE funds) relative to the funds in panel A (which have their cash flows reported on Preqin): the average PME drops from 1.03 in panel A to 0.94 in Panel B. One interpretation for this result could be that funds with poor performance do not share their cash flow data with Preqin.

The last part of comparison deals with the funds included in our data set but not in Preqin (panel C): there is a significant number of such funds (219 funds, in comparison to 274 overlapping funds). The PE funds in this category (Israeli and foreign) have lower PMEs in comparison to the funds

in panel A, but the foreign VC funds (which are located mainly in the US, see below) have higher performance measures than the foreign VC funds in Preqin, perhaps because of the absence of the top tier VC funds in Preqin database, as described by (Kaplan and Lerner (2017)).

Table 6 presents the IRR values of the different funds, divided as in table 5. Again, we can observe the similarity in the performance (using the IRR measure) in our data set and Preqin when both sources include cash flows. Note that the extreme IRR values of the Israeli PE and VC funds among the overlapping funds which have cash flow data in Preqin (panel A) is caused by the fact that Preqin has data on a very limited number of funds (only five Israeli funds from each category); therefore, the average performance is greatly affected by extreme values. For example, the Israeli PE funds have an average IRR value of -6.79%, a result which is driven from one famous Israeli fund with an IRR value of -90%. When examining the funds that do not have cash flow data in Preqin (panel B), we find an IRR of 10.4%, which is higher than all other private equity categories. This could raise substantial concerns about using Preqin data base for analyzing the performance of Israeli funds, and possibly non-US funds more generally. Once again we observe dramatic differences between the IRRs of the funds which are listed in Preqin and the missing funds.

Next, we examine whether there are any other systematic characteristics which are relevant to the PE and VC funds which are missing in Preqin. Table 7 presents the comparison between the fund's country of incorporation and the average AUM of the overlapping funds and the funds that are not listed in Preqin. Table 7 includes four panels: Panels A and B present funds by country of incorporation (the U.S, Israel, UK and other countries, especially Europe and the far east) for overlapping funds and funds that are not listed in Preqin. Panels C and D compare the average fund size (in millions of dollars) of the two fund groups. According to panels A and B, Preqin seems to miss not only funds located outside the US — the absence rate among funds located in the US is similar to general rate of absence (about 60%). In addition, the general absence rate of PE funds (68%) is higher than the absence rate of VC funds (43%), even though the absence rate of the VC funds located in the US is only 15%, while the absence rate of the Israeli VC funds is much higher (above 50%). Panel B and C present the average fund size in the different groups of



funds. The average PE fund size is much smaller among the funds that are not listed in Preqin in comparison to the overlapping funds. In US funds, the average absent fund is half the size of the average overlapping fund. The opposite is true for VC funds, where the average absent VC fund is dramatically larger than the average overlapping fund: Preqin misses US VC funds which are six times larger than the average US overlapping VC fund. This phenomenon is possibly related to the literature that suggests that large funds tend to exhibit better performance ([Kaplan and Schoar \(2005\)](#)), and to the literature that suggests that Preqin is missing some top tier VC funds ([Kaplan and Lerner \(2017\)](#)), possibly because a number of leading VC funds have pressured pension funds not to post on-line, or to otherwise report their performance to data providers such as Preqin. Some VC funds even drop institutions that cannot make such commitments as limited partners. They do that in order to keep their performance information confidential. At this stage, the question whether there is a difference between the coverage by Preqin of VC funds in comparison to PE funds is still unanswered. Finally, the low rate of absence among US VC funds (only 15%) could indicate that the Israeli LPs gain access only to a limited portion of the top tier US VC funds, and as we discuss below we didn't find any characteristics which would significantly affect the probability of a VC fund to be listed in Preqin, therefore we reduce the sample in the analysis below to PE funds only.

Table 8 presents Probit regressions estimating the effect of PE fund characteristics on the probability of being listed in Preqin. We estimate the effect of fund performance using PME (according to the 'SPDR' ETF tracking the S&P 500), and IRR. In addition we estimate the effect of fund size (in millions of Dollars), and vintage year (funds established before 2008 are the omitted category) and the fund's country of incorporation (funds which are located in the US are the omitted category). We perform this estimation using three sub-samples: PE funds located in the US; PE funds located outside the US; and the whole sample. Better performance increases the probability of being included in Preqin: the results are highly significant in all specifications, and are similar for funds which are located in the US and outside the US. When analyzing the effect of fund size on the probability of being listed in Preqin, we find that larger funds are more likely to appear in the Preqin data set; the effect is twice as strong for non-US funds in comparison to funds which are

based in the US. Another interesting finding is that funds established before 2008 (the omitted vintage group) have a higher probability of being listed in Preqin relative to late funds. This result might be a little bit puzzling, mainly because Preqin’s coverage ratio is unlikely to have dropped in the last decade, therefore, a plausible explanation would be that the massive growth in the AUM of the Israeli LPs and their investments in illiquid funds effect their access to top performance funds in two ways; On the one hand, this has improved their access to better funds due the fact that they become larger and also increased their reputation. On the other hand, the increase in their investments in PE and VC funds force to invest more in first-time funds, which have lower probability to be listed in Preqin data base. This explanation is in line with (Goyal et al. (2021)) which find that LPs with high growth rates of capital allocated to private equity may be more likely to invest in first-time funds.

After evaluating the probability of a private equity fund to be included in Preqin, we analyze the effect of the fund characteristics on the probability of having cash flow data on Preqin. In this analysis the sample includes only funds that are listed in Preqin and the dependent variable takes the value 1 if the fund has cash flow reported on Preqin, and 0 otherwise. The model is similar to the model used in table 8. The results, presented in table 9 indicate that performance and size play an important rule in determining whether a fund would have cash flow data on Preqin data base, higher performance and bigger size increase the probability for having cash flow data on Preqin. In addition, we find that funds which are located in the US are more sensitive to performance, while for funds which are located outside the US, size has a larger effect on the probability to have cash flows reported in Preqin.

We conclude that the Preqin data set suffers from a substantial systematic bias. In addition to the substantial number of funds that do not appear in Preqin, we find that the absent PE funds’ performance is systematically poorer, while for absent VC funds we find that Preqin misses the better performing funds. When analyzing where the missing funds are located, we find that, surprisingly, the bias is similar for US and non-US funds, and the absence rate is similar across countries. In addition, we find that while the missing PE funds are mostly smaller than the overlapping funds, the average missing VC fund is larger then the average overlapping VC fund.

## 7. Conclusion

In this study we use a newly-assembled data set on all investments by Israeli pension providers in PE and VC funds over the last 15 years. Our detailed data contain complete cash flows to and from each fund and each investor, allowing us to evaluate fund performance using PME (rather than IRR or cash multiples) measures, which have been hitherto unavailable for non-US-based limited partners (LPs). We utilize this data set to analyze the Israeli LPs performance in PE and VC funds and also to evaluate possible biases in the Preqin data set. This study contributes to the small literature on investments by non-US LPs in PE and VC funds, especially in the context of performance comparisons between local and foreign funds. In addition, we try to shed a light on some of the biases in Preqin.

Our main findings are as follows. First, fund performance, based on Israeli LP returns in this data set, is slightly lower than the estimates in the US-based literature, these differences in performance could be caused by economic reasons (for example: limited access by foreign LPs to top performing US funds, or lack of skill of the Israeli LPs) or maybe it is caused by technical reasons, which are the possible biases in the Preqin data set. In addition, despite Israel's image as the "Startup Nation", the performance of VC funds (both Israeli and foreign) has generally been poor relative to the appropriate benchmarks (NASDAQ, primarily). This result raises the question who are the funds that invest in the top quartile Israeli high-tech companies. A plausible answer would be that top US VC funds take part in funding these companies. Second, we find that, in contrast to [Hochberg and Rauh \(2013\)](#), investments in local (Israeli) funds, both PE and VC, have outperformed investments in foreign (non-Israeli) funds, possibly because of better access to local funds. We suggest several interpretations for this result: non-US limited partners may have limited access to the top performing foreign (notably US-based) funds; alternatively, they may have poor skills in selecting foreign PE and VC funds.

Finally, we compare our data and performance measures to those derived from Preqin, one of the most commonly used commercial data bases, and evaluate possible biases in it. We find that Preqin tends to omit small PE funds, as well as PE funds with poor performance, both within and outside the US, at roughly the same rate. This may lead to an upward-bias in estimates of

PE fund performance based on this source. In addition, we find that performance and size play an important role in determining whether a fund would have cash flow data on Preqin data base, higher performance and bigger size increase the probability for having cash flow data on Preqin. These findings could affect the interpretation of results in studies relying on the Preqin data set.

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Table 1: **Asset allocation in the long-term savings market in Israel**

This table provides descriptive statistics on total assets under management (in billions of ILS) and net asset values of private equity and venture capital funds held by institutional investors in our sample. Each column represents a different savings product. *Life Insurance* is the largest savings instrument in the Israeli long-term savings market and is managed by five of the institutions in our dataset. In all, there are ten institutions managing life insurance products in Israel. *Provident funds* include mainly two savings instruments differentiated by their investment horizon, long-term and medium term. All institutions in our data set manage both types of provident funds. There are about 30 managers offering this instrument in Israel. *Pension funds* mainly include two savings instruments: mandatory pension funds and optional pension funds, the two types of funds are managed by commercial institutional investors, as in our data, and by non-profit organizations. All institutions in our data set manage pension funds. *Nostro* allocations represent the institutions' own investments; we have data on Nostro investments for five institutions. We report allocations to venture capital and private equity for each of the four investment categories. Private equity includes buyout funds, real estate funds, and infrastructure funds. The percentage of total assets associated with the universe of Israeli long-term savings managers is in parenthesis.

	Life Insurance	Nostro	Provident Funds	Pension	Total
AUM	375.8 (99%)	155.8 (87%)	321.1 (60%)	673.4 (75%)	1526.1 (76%)
Private Equity	19.3 (99%)	6.1 (91%)	12.6 (61%)	26.6 (81%)	64.6 (81%)
Israel	4.4 (97%)	1.9 (87%)	3.8 (55%)	4.6 (76%)	20.2 (75%)
Foreign	14.9 (100%)	4.1 (94%)	8.7 (64%)	22.0 (82%)	49.7 (83%)
Venture Capital	1.5 (99%)	0.3 (95%)	0.8 (60%)	2.0 (94%)	4.6 (87%)
Israel	1.0 (98%)	0.2 (99%)	0.6 (62%)	1.4 (92%)	3.2 (86%)
Foreign	0.5 (100%)	0.1 (100%)	0.2 (52%)	0.6 (98%)	1.4 (88%)
Hedge Funds	3.8 (99%)	0.4 (95%)	3.3 (49%)	1.3 (71%)	8.8 (69%)
Israel	0.7 (95%)	0.3 (99%)	1.1 (52%)	0.4 (64%)	2.5 (68%)
Foreign	3.1 (100%)	0.1 (100%)	2.2 (48%)	0.9 (75%)	6.3 (70%)



Table 2: **Performance of private equity and venture capital funds**

This table provides estimates of the relative performance of private equity and venture capital investment by each of the institutions in our sample. We label the six institution A to F so as not to reveal their identity. In panel A we report public market equivalent measures (PME), calculated by pooling all cash flows (calls and distributions) and net asset values for all the funds for each institutional investor for the entire sample period. For benchmarks we use tradeable ETFs tracking the following indices: (1) S&P 500: the 'SPDR' ETF; (2) Russell 2000: the 'iShares Russell 2000' ETF; (3) TA 125: the 'KESEM TA 125' ETF; (4) NASDAQ: the 'QQQ' ETF; (5) MSCI World: the 'iShares MSCI World' ETF; (6) MSCI ACWI: the 'iShares MSCI ACWI' ETF. Panel B provides estimates of Direct Alpha. Estimates in columns 2-7, reported in percent, are calculated by pooling the cash flow of all funds in each year and summing the NAVs at the end of the period (for funds that have not yet been liquidated). When computing PMEs and direct alpha for funds that report in a foreign currency, we first convert the cash flows, NAVs, and the benchmark return to local currency.

<i>Panel A: Public market equivalent</i>							
Institution	S&P 500	Russell 2000	TA 125	NASDAQ	MSCI World	MSCI ACWI	Num.of Funds
A	1.00	1.09	1.10	0.92	1.11	1.12	87
B	0.93	0.98	1.10	0.83	1.09	1.10	245
C	0.91	0.98	1.07	0.79	1.08	1.09	260
D	0.89	0.93	1.01	0.78	1.03	1.04	240
E	0.99	1.05	1.05	0.90	1.11	1.12	170
F	0.98	1.03	1.06	0.85	1.15	1.17	338
G	0.97	1.06	1.04	0.89	1.08	1.09	21
H	1.11	1.20	1.17	1.04	1.21	1.22	103

<i>Panel B: Direct alpha</i>							
Institution	S&P 500	Russell 2000	TA 125	NASDAQ	MSCI World	MSCI ACWI	Num.of Funds
A	0.59	4.43	5.06	-3.77	5.84	6.35	87
B	-2.08	-0.53	4.03	-6.39	2.83	3.22	245
C	-2.09	0.02	2.73	-6.47	2.76	3.19	260
D	-4.58	-2.75	0.80	-8.61	0.60	1.14	240
E	-0.82	0.40	2.41	-5.61	3.34	3.73	170
F	-0.76	0.36	1.68	-5.21	4.06	4.32	338
G	-0.97	3.31	2.70	-5.67	4.23	4.78	21
H	2.18	5.35	7.86	-1.88	7.53	8.01	103

Table 3: **Public market equivalent by fund type**

This table provides PME by pooling all cash flows (calls and distributions) and net asset values of each fund type. We report performance separately for local and foreign funds. A fund is defined as local if it is incorporated in Israel. That is, a local fund can invest in foreign assets. Panel A provides information on different types of equity-related funds and the PMEs are based on the S&P 500 and Tel Aviv 125 indices as benchmarks. We use ETFs tracking these indices. The 'SPDR' ETF to benchmark against the S&P 500 and 'KESEM TA 125' to benchmark against the TA 125. The ETFs can be found on 'investing.com'. Panel B provides information on the performance of debt funds which we benchmark using ETFs of two high yield debt indices: (1) ICE BofA US High Yield Index Option-Adjusted Spread and (2) iShares iBoxx \$ High Yield Corporate Bond ETF.

<i>Panel A: Equity Funds</i>			
	S&P 500	TA 125	Num. of Funds
Private Equity			
Foreign	0.96	1.09	337
Israel	0.98	1.22	184
Venture Capital			
Foreign	0.84	0.9	62
Israel	0.86	1.12	167
Real Estate			
Foreign	0.8	0.92	120
Israel	0.93	1.09	12
Infrastructure			
Foreign	0.91	0.97	22
Israel	0.98	1.11	13
Hedge Funds			
Foreign	1.03	0.99	189
Israel	0.92	0.98	42
Other Funds	1.14	1.31	17
<i>Panel B: Debt Funds</i>			
	High Yield Bond	ishares HY	Num. of Funds
Foreign	0.93	0.97	73
Israel	1.08	1.11	7

Table 4: **Foreign and Israeli fund performance**

This table provides estimates of heterogeneity in fund performance across Israeli and foreign funds. The dependent variable is the public market equivalent of each fund utilizing three benchmarks: Tel Aviv 125, S&P 500, and the Russell 2000. We use the ETFs which track these indices, 'KESEM TA 125' ETF to benchmark against the TA 125; the 'SPDR' ETF to benchmark against the S&P 500; and 'iShares Russell 2000' ETF to benchmark against the Russell 2000. The dummy variable *Israel* equals one if the fund is local and zero otherwise. We include controls for the vintage year of the fund, the identity of the limited partner, and the type of the fund (buyout, VC, infrastructure, hedge fund, real estate, and debt). Buyout funds are the omitted category. Standard errors clustered at the fund level are reported in parentheses. \*, \*\*, and \*\*\* represent significance at the 0.1, 0.5, and 0.01 levels, respectively.

	TA 125			S&P 500			Russell 2000		
Israel	0.164*** (0.0316)	0.157*** (0.0325)	0.131*** (0.0362)	0.0937*** (0.0282)	0.0875*** (0.0289)	0.0764** (0.0322)	0.120*** (0.0289)	0.115*** (0.0296)	0.0939*** (0.0330)
Debt Funds			-0.220*** (0.0641)			-0.141** (0.0571)			-0.159*** (0.0585)
Hedge Funds			-0.157*** (0.0447)			-0.0551 (0.0398)			-0.0684* (0.0407)
Infrastructure Funds			-0.139 (0.0960)			-0.146* (0.0855)			-0.146* (0.0875)
VC Funds			-0.114** (0.0466)			-0.0855** (0.0416)			-0.0653 (0.0425)
Real Estate Funds			-0.165*** (0.0525)			-0.167*** (0.0468)			-0.168*** (0.0478)
Other Funds			-0.0947 (0.0804)			0.00518 (0.0716)			-0.00982 (0.0733)
Vintage Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
LP FE	NO	YES	YES	NO	YES	YES	NO	YES	YES
Observations	1371	1371	1371	1371	1371	1371	1371	1371	1371
$R^2$	0.118	0.129	0.145	0.048	0.068	0.081	0.073	0.092	0.105

Table 5: **Comparison with the Preqin data set**

This table provides a comparison between the performance (public market equivalent relative to the 'SPDR' ETF to benchmark against the S&P 500) of private equity and venture capital funds (local and foreign) in our data set and the Preqin data set. Panel A includes the average PME value for funds listed in our data set and in Preqin under the exact same LP and have cash flows reported in Preqin. Panel B includes funds listed in our database and in Preqin under the exact same LP for no cash flows are reported in Preqin. Panel C includes the funds listed in our data set but not in Preqin. The columns present the PME value in each data set and the number of funds.

<i>Panel A: Funds listed in our data set and in Preqin under the same LP and have cash flow in Preqin</i>			
	PME In Our Dataset	PME In Preqin Dataset	Num. of Funds
PE Foreign	1.02	1.02	82
PE Israel	0.97	1.02	5
VC Foreign	0.93	0.84	6
VC Israel	1.41	1.19	5
All Funds	1.03	1.02	98

  

<i>Panel B: Funds listed in our data Set and in Preqin under the same LP but do not have cash flows in Preqin</i>			
	PME In Our Dataset	PME In Preqin Dataset	Num. of Funds
PE Foreign	0.91	-	63
PE Israel	1.15	-	27
VC Foreign	0.82	-	33
VC Israel	0.93	-	53
All Funds	0.94	-	176

  

<i>Panel C: Funds listed in our Database but not in Preqin</i>			
	PME In Our Dataset	PME In Preqin Dataset	Num. of Funds
PE Foreign	0.91	-	99
PE Israel	0.94	-	28
VC Foreign	0.96	-	6
VC Israel	0.99	-	38
All Funds	0.97	-	219

Table 6: **Comparison of fund IRR in Preqin and in our data set**

This table provides a comparison between the performance (IRR - Internal Rate of Return) of private equity and venture capital funds (local and foreign) in our data set and the Preqin data set. Panel A includes the average IRR value for funds which are listed in our data set and also in Preqin and have cash flow data in Preqin. Panel B includes the funds which are listed in our data set and also in Preqin, but do not have cash flow data in Preqin, Panel C includes the funds which are held by our LP's but are not listed in Preqin.

<i>Panel A: Funds listed in our data set and in Preqin under the same LP and have cash flows in Preqin</i>			
	IRR In Our Dataset	IRR In Preqin Dataset	Num. of Funds
PE Foreign	12.06 %	12.38 %	72
PE Israel	-6.79%	-6.46%	5
VC Foreign	6.87%	6.64%	4
VC Israel	26.1%	19.05%	5
All Funds	11.54%	11.41%	86

  

<i>Panel B: Funds listed in our data set and in Preqin under the same LP and do not have cash flow in Preqin</i>			
	IRR In Our Dataset	IRR In Preqin Dataset	Num. of Funds
PE Foreign	3.74%	-	72
PE Israel	10.40%	-	27
VC Foreign	2.36%	-	35
VC Israel	2.27%	-	53
All Funds	4.03%	-	187

  

<i>Panel C: Funds listed in our data set but not in Preqin</i>			
	PME In Our Dataset	PME In Preqin Dataset	Num. of Funds
PE Foreign	2.57%	-	99
PE Israel	4.93%	-	28
VC Foreign	7.77%	-	6
VC Israel	4.06%	-	38
All Funds	3.85%	-	179

Table 7: **Fund size and country comparison**

This table presents a comparison between the country of incorporation and the average fund size (in millions of U.S. dollars) of private equity and venture capital funds in our data set and in Preqin. Panels A and C present the distribution of countries and average fund size for funds which are listed in our data set and in Preqin. Panels B and D include the distribution of countries and average fund size for funds included in our data set but not listed in Preqin. The fund size and country for overlapping funds are collected from Preqin. The data for the non-overlapping funds are collected from our LP's and the missing information is hand-collected from the fund websites.

<b>Number of funds from each country</b>					
<i>Panel A: Funds listed in our data set and in Preqin</i>					
	U.S.	Israel	UK	Other	Total
Private Equity	105	37	35	31	208
Venture Capital	20	70	2	5	98
<i>Panel B: Funds listed in our data set but not in Preqin</i>					
	U.S.	Israel	UK	Other	Total
Private Equity	76	41	7	20	142
Venture Capital	3	38	-	1	42
<b>Average Fund Size (Millions of dollars)</b>					
<i>Panel C: Funds listed in our data set and in Preqin</i>					
	U.S.	Israel	UK	Other	Total
Private Equity	4,050	312	4,788	2,470	3,243
Venture Capital	545	131	2,202	193	257
<i>Panel D: Funds listed in our data set but not in Preqin</i>					
	U.S.	Israel	UK	Other	Total
Private Equity	1,920	191	322	451	1,342
Venture Capital	3,206	167	-	730	405

Table 8: **Probability of being included in the Preqin data set**

This table presents Probit regressions estimating the effect of private equity fund characteristics on the probability of being listed in the Preqin. data set. We estimate the effect of fund performance using the PME (relative to the 'SPDR' ETF which benchmark against the S&P 500), and the IRR. We estimate the effect of fund size (in millions of dollars), vintage year (funds established before 2008 are the omitted category) and country of incorporation (funds located in the US are the omitted category). We perform this estimation on three sub -samples: private equity funds located in the US; private equity funds located outside the US and the whole sample. Standard errors are reported in parentheses. \*, \*\*, and \*\*\* represent significance at the 0.1, 0.5, and 0.01 levels, respectively.

	PME			IRR		
	(US)	(Non-US)	(ALL Funds)	(US)	(Non-US)	(All Funds)
Performance	1.607*** (0.422)	1.345** (0.571)	1.615*** (0.386)	0.0124** (0.00586)	0.0284** (0.0111)	0.0170*** (0.00560)
Log(AUM)	0.192*** (0.0572)	0.471*** (0.0989)	0.265*** (0.0613)	0.141** (0.0582)	0.449*** (0.105)	0.252*** (0.0634)
Vintage (2008 - 2010)	-1.059** (0.469)	-0.984 (0.744)	-0.814** (0.414)	-1.039** (0.455)	-1.292* (0.768)	-0.796* (0.408)
Vintage (2011 - 2013)	-0.865** (0.437)	-1.635** (0.640)	-0.889** (0.381)	-0.607 (0.445)	-1.808*** (0.687)	-0.732* (0.388)
Vintage (2014 - 2019)	-0.737* (0.378)	-1.693*** (0.576)	-0.797** (0.331)	-0.651* (0.378)	-1.678*** (0.613)	-0.629* (0.334)
Europe			0.537** (0.232)			0.500** (0.241)
Israel			0.160 (0.269)			0.424 (0.278)
Other			1.378** (0.599)			1.101* (0.588)
Observations	183	116	251	167	106	231

Table 9: **Probability of having cash flows reported in Preqin**

This table presents Probit regressions estimating the effect of private equity and venture capital funds characteristics on the probability of having cash flow information reported in Preqin (the sample include only funds listed in Preqin). We estimate the effect of fund performance using the PME (relative to the 'SPDR' ETF which benchmark against the S&P 500), and the IRR. We estimate the effect of fund size (in millions of dollars), vintage year (funds established before 2008 are the omitted category) and country of incorporation (funds located in the US are the omitted category). In addition, we include a dummy variable for the type of the fund (PE or VC). We perform this estimation on three sub-samples: private equity funds located in the US; private equity funds located outside the US; and the whole sample. Standard errors are reported in parentheses. \*, \*\*, and \*\*\* represent significance at the 0.1, 0.5, and 0.01 levels, respectively.

	PME			IRR		
	(US)	(Non-US)	(All Funds)	(US)	(Non-US)	(All Funds)
Performance	1.058** (0.536)	0.470* (0.278)	0.410* (0.238)	0.0145* (0.00804)	0.00988 (0.00725)	0.0112** (0.00545)
Log(AUM)	0.532*** (0.128)	0.894*** (0.153)	0.641*** (0.0958)	0.572*** (0.136)	0.836*** (0.141)	0.720*** (0.106)
Vintage (2008 - 2010)	0.820 (0.748)	0.356 (0.491)	0.517 (0.399)	0.521 (0.765)	0.242 (0.490)	0.251 (0.411)
Vintage (2011 - 2013)	1.992*** (0.695)	0.437 (0.429)	0.973*** (0.360)	1.482** (0.718)	0.309 (0.457)	0.639* (0.379)
Vintage (2014 - 2019)	1.584*** (0.591)	-0.415 (0.409)	0.499 (0.308)	1.271** (0.632)	-0.479 (0.423)	0.231 (0.324)
PE	-0.169 (0.478)	-0.399 (0.367)	-0.0981 (0.280)	-0.256 (0.509)	-0.310 (0.361)	-0.0961 (0.287)
Europe			-0.386 (0.271)			-0.606** (0.283)
Israel			-0.211 (0.311)			-0.168 (0.322)
Other			-0.452 (0.438)			-0.679 (0.474)
Observations	99	155	254	93	154	247