

**ADVEQ
Applied
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Series**

**The US Private
Equity Universe:
A Snapshot from
SEC Filings**

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Executive Summary

We present descriptive evidence on the characteristics of a large sample of 3,847 US-based private equity advisors. We also study the factors associated with the commitments of pension funds and non-US investors to these advisors and the determinants of the overall performance of the advisors' private equity funds. This report is the first to provide a comprehensive analysis of the universe of private equity advisors that have recently started to register with the SEC. We document the following two main sets of findings:

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We thank Giorgia Palladini and Boying Xu who helped us to manually retrieve, code, and process the SEC filings data. We are also grateful to Preqin for sharing with us the private equity fund performance data.

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Evidence on commitments by pension funds and non-US investors

- *Pension funds that invest with larger advisors, for which private equity represents a smaller proportion of their overall assets under management, potentially achieve lower returns. Pension funds allocate more capital to the more diversified (across asset classes) and very large private equity firms. This choice comes with a sacrifice in terms of performance as the private equity firms that invest a lower percentage of their total assets under management (AUM) in private equity achieve lower returns.*
- *Pension funds that invest with advisors whose executives have weaker incentives or who have a lower proportion of investment professionals relative to AUM potentially achieve lower returns. We document that pension funds commit more capital to advisors with a lower alignment of interest with investors and those that have fewer investment professionals who manage a greater amount of AUM per capita. These advisor characteristics are associated with a lower return performance.*
- *Non-US investors are now an important source of funding for US-based private equity firms and are sophisticated. Capital contributions by non-US investors range from 17% of AUM for the smallest private equity advisors with AUM below \$100 million, to 29% of AUM for the largest advisors that manage over \$5 billion in assets. Also, non-US investors seem to invest more with advisors that have characteristics associated with better performance (i.e., advisors which have a greater percentage of their AUM in private equity and where investment employees manage less AUM per capita).*

Evidence on the performance of private equity advisors

- *A higher capital commitment by advisors to the private equity funds they manage correlates with better performance. Private equity advisors that contribute more of their own capital to the funds managed outperform their peers with the same vintage, geographical focus and investment strategy, consistent with the view that more “skin in the game” better aligns the incentives of the advisor with the investors.*
- *Specialization in private equity is associated with higher return performance. Advisors who invest a higher share of their capital under management in private equity obtain higher aggregate returns on their private equity funds. This finding suggests that specialization in private equity yields a better private equity performance, all else equal.*
- *Smaller private equity firms have better incentive alignment. At smaller private equity advisors, the firm and the personal reputation are closely aligned, potentially explaining the often superior performance of smaller funds.*
- *Lack of compliance hurts performance. Reported violations of regulations or felonies are correlated with lower performance.*

Introduction

The private equity asset class has become an important destination for the capital of some of the largest institutional investors in the world over the last twenty years. However, despite increasing capital commitments to private equity and the significant role played by private equity funds in providing capital to companies with limited access to public capital markets, empirical findings into the activities of private equity firms remain scarce.

We know the private equity industry has expanded dramatically and we know that large amounts of money have been raised and invested, but what does the landscape look like? A lot of the literature looks at private equity returns, at whether the average private equity funds beat benchmarks, at the performance of the top quartile funds or at the persistence of private equity returns. However, with the exception of fund sizes, very little attention has been paid to whether private equity returns are correlated with certain private equity firm characteristics. We take advantage of the required disclosures filed by private fund advisors with the SEC to construct a large dataset of private equity firms. This data allows us to provide unique evidence on the characteristics of private equity firms, the determinants of capital flows to private equity firms and the cross-sectional drivers of private equity returns.

The private equity industry has continued on an upward trek, with assets under management (AUM) climbing to a record \$3.5 trillion by 2013, according to the latest *Preqin Global Private Equity Report (2014)*, as investors remain attracted by the industry's historic ability to generate returns across various economic environments. Nevertheless, despite this performance, private equity fund advisors are facing intense regulatory, compliance and tax scrutiny as investors and regulators are beginning to take a closer look at the industry's practices. Recent tax and regulatory developments affecting private equity advisers include: in the US, the Securities and Exchange Commission's (SEC) registrations and filings, mandated by the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) and the Foreign Account Tax Compliance Act (FATCA); and in Europe, the Alternative Investment Fund Managers Directive (AIFMD).

While these greater regulatory and compliance demands have been especially challenging and costly for many private equity managers who have yet to achieve full compliance with the new standards, they are contributing to the improved transparency of private equity firms to the outside world. In particular, disclosures in SEC filings mandated by the Dodd-Frank Act allowed us to gain access to unique information about private equity advisors (e.g., location, AUM, ownership, types of investor, employees, business practices, controlling persons, disciplinary events) and the private equity funds they manage (e.g., gross and net AUMs by fund strategy, fund location, types of investor in the fund, use of placement agents, etc.). Our empirical analysis employs these advisor and fund characteristics to provide insights into any associations they may have with the extent to which private equity advisors receive capital from pension funds and foreign investors as well as the overall return performance of private equity advisors.

We run a series of analyses and document some interesting facts. First, we provide graphical descriptive analyses where we split the US-based private equity advisors into five groups based on their AUM. We obtain data on 3,847 US-based advisors. We show that for the largest firms (i.e., the firms with more than \$5 billion of assets under management), the majority (64%) of the assets is invested in funds with a focus that is different from private equity. However, private equity advisors that manage below \$1 billion have less than 40% of assets not in private equity. This descriptive evidence supports what has been argued in the past i.e., that large private equity firms can no longer be strictly defined as private equity.

Furthermore, we find that these large private equity firms have a low percentage of employees that engage in investment activities, at only 47%. By comparison, advisors that manage under \$1 billion have, on average, over 60% of employees that are classified as investment professionals.¹ As a result, each employee with investment responsibilities in the very large private equity fund managers is in charge of a significantly higher amount of capital relative to peers at the smaller private equity firms, suggesting that the investment capability of these firms may suffer. Finally, we document that employees of very large private equity advisors and these firms' affiliates are more likely to face disciplinary events (either felonies or violations of regulatory rules). This result may not be surprising as larger advisors invest in more asset classes and face more scrutiny from both investors and regulators.

Second, we provide tests that investigate the presence of pension fund investments. We pay special attention to pension funds because they are the most important investor in the private equity asset class. They generally invest in traditional, liquid asset classes but also allocate to alternatives such as private equity to achieve higher performance and a better diversification of risk. Consistent with expectations, our results show that pension funds in the aggregate are at the moment an important source of funds for private equity. Pension funds allocate more capital to the more diversified and very large private equity firms.

We document that this choice comes with a sacrifice in terms of performance. We find that private equity firms that invest a lower percentage of their total AUM in private equity achieve lower returns (all else being equal). We also document that advisors with a lower alignment of interest with investors (i.e., where executives are less likely to have significant stakes in the firm and the advisor commits less of its capital to the funds managed) and advisors with investment professionals that manage a greater amount of AUM per capita attract greater investments from pension funds. We find that this lower advisor alignment of interest, coupled with the investment inefficiency caused by each investment professional having greater investment responsibilities, is associated with a lower return performance. Hence, our results suggest that pension funds may not have the necessary abilities or incentives to invest in the right private equity funds as they are short of the skills required to identify successful private equity managers.

Advisors that invest a lower percentage of their capital in private equity achieve lower returns.

Third, we investigate the role of capital committed by non-US investors to private equity advisors.² Non-US investors are now an important source of funding for private equity firms, even smaller and US-based ones. Capital contributions by non-US investors range from 17% of AUM of the smallest private equity advisors (with AUM below \$100 million) to 29% of AUM of the largest advisors (that manage over \$5 billion in assets). In addition, non-US investors prove to be sophisticated. They are investing more heavily in firms with a greater percentage of their AUM in private equity and where investment employees manages less AUM per capita; we find these two advisor characteristics are associated with greater return performance.

¹ In additional analyses, we find that the lower percentage of investment professionals in large advisors is driven by the presence in the sample of very large asset managers with only a small proportion of their capital allocated to private equity.

² It is possible that some of these non-US investors are pension funds. Unfortunately, the SEC filings do not provide information on the types of these investors.

Fourth, we provide multivariate evidence on the drivers of private equity advisors' returns. As stated above, we document that advisors with a greater percentage of their AUM in private equity generate better absolute returns (in terms of cash-on-cash multiples) but also superior internal rate of return (IRR) performance relative to their matched peers. We also document that "older" advisors achieve greater return performance in both absolute and relative terms. This result is consistent with prior findings that returns are persistent but it is also affected by survivorship bias as our cross-sectional sample captures the private equity firms that remain in the market because they have been successful. Interestingly, we show that placement agents are not helping investors choose more successful advisors. There is no association between the absolute cash-on-cash performance and the presence of a placement agent. We find a negative relation between the relative IRR performance and the presence of a placement agent, consistent with the findings in Cain, McKeon and Solomon (2014): they argue that placement agents, with the exception of the very top ones, are associated with lower returns. It is possible that the result is driven by the fact that advisors with previously poor performance are in greater need of placement agents. Finally, another noteworthy result is that a significant number of advisors report felonies and/or violations of SEC rules and that these disciplinary events are associated with lower returns. This finding suggests that SEC rules are not irrational.

Our evidence is likely to inform both investors seeking to better understand the drivers of private equity returns and regulators, who are considering the potential implications of their regulatory activities. First, because prospective investors do not have the necessary information on the performance of private equity advisors, their funds and portfolio companies, they often cannot make objective comparisons across private equity firms when determining their optimal investment strategy.

Also, investors need to better understand the alignment of terms and acquire more insight into the customization of their relationships with private equity advisors. This lack of information has potentially contributed to some investors' reluctance to allocate capital to private equity firms. Our findings highlight some important advisor characteristics that are associated with greater returns. Second, regulators are also struggling to understand the role played by private equity firms in the wider economy as private investments on the buyout side of the industry have grown considerably and carry a large amount of debt. Their concern is that this may increase the possibility of simultaneous defaults associated with large and significant deals and therefore create the potential for significant systemic risks. Our results should help regulators better understand the universe of private equity advisors, their activities and returns.

SEC reporting requirements

As a result of the Dodd-Frank Act, a significant proportion of private equity fund managers have been filing registration forms with the Securities and Exchange Commission (SEC), the main US-based regulator, since March 30, 2012.³

Depending on the size of their assets under management (AUM), private fund advisors need to submit two forms to the SEC: forms ADV and PF. The SEC requires that advisors include in their AUM all assets (including private equity funds, family or proprietary assets managed without receiving compensation and assets of foreign clients) for which they provide continuous and regular supervisory or management services. It also requires them to calculate AUM on a gross basis, without deducting outstanding debt or other accrued, but unpaid, liabilities. In the case of private equity funds, their gross value is investments measured both as fair value and as the amounts of uncalled fund commitments.

Form ADV requires registered firms to disclose material financial and disciplinary information. It consists of two parts and a series of schedules. The first part serves as the registration application with the SEC and provides information about the advisor's location, AUM, ownership, types of investor, employees, business practices, controlling persons as well as any disciplinary events involving the private equity fund manager or its employees. The second part of form ADV contains information about the types of advisory service offered, the fee schedule, material risk factors and conflicts of interest, financial industry affiliations, codes of ethics, brokerage practices, a review of accounts, client referrals, custody, etc. This form covers basic information about the entities in the advisor's organizational structure (including all funds) if the entities share the same employees and personnel and are subject to the same supervision and control.

Form PF provides details about the private equity funds advised, such as gross and net AUM, a breakdown of AUM by type of fund, names of the funds and breakdowns of funds' borrowings, assets and other liabilities. This form must be filed by advisors that advise one or more private funds and manage at least \$150 million of AUM attributable to private funds. Large private equity fund advisors (with at least \$2 billion of regulatory AUM) are required to provide additional detailed information relating to the funds' portfolio companies. While the SEC makes forms ADV available to the public, forms PF are confidential thus we do not have access to them.

All forms are submitted electronically with the SEC through an Internet-based filing system on an annual basis within 90 to 120 days (depending on the AUM of the private equity fund advisor) of the end of the fiscal year. Registered private equity fund managers must update form ADV at least once a year, or more frequently if the information becomes inaccurate.

³ Not all private equity fund managers need to register with the SEC. The following private equity fund advisors qualify for an exemption: (1) advisers with less than \$150 million of assets under management in the US that advise only private funds (these advisers are still required to file some limited disclosures), (2) foreign private advisers if they have no place of business in the US, have fewer than 15 US clients

and investors and manage less than \$25 million; (3) advisers to venture capital funds; and (4) mid-sized advisers that have less than \$100 million of assets under management and are required to be registered as an investment adviser with the state(s) in which they maintain the principal place of business. These advisers may register with the SEC if, for example, they are subject to more onerous state rules.

Prior academic literature and contribution

Stromberg (2007) and Kaplan and Stromberg (2008) provide a general overview of the academic literature on private equity. There is extensive evidence on how the returns achieved by private equity fare in comparison with other benchmarks. Kaplan and Schoar (2005) implement a public market equivalent approach to examine the returns to buyout and venture capital funds and document return persistence across funds of the same private equity advisor .⁴ They also find that buyout funds' returns are slightly lower than those in the public market, while the evidence on venture capital funds' performance relative to the public market equivalent is mixed. Phalippou and Gottschalg (2009) also obtain qualitatively similar results.

More recent evidence by Stucke (2011), however, identifies a significant problem with the fund return data that potentially explains these results. Consistent with this paper, Harris, Jenkinson and Kaplan (2014) use a higher quality dataset and find better buyout fund performance than previously documented. They document that the performance of private equity funds has consistently exceeded that of public markets. Recent evidence has brought different results also about persistence: Harris, Jenkinson, Kaplan and Stucke (2013) and Braun, Jenkinson and Stoff (2014) show that persistence is no longer present in funds with vintages following year 2000.

Most of this literature, however, has focused on the magnitude of overall private equity returns, rather than on which private equity advisor characteristics are driving these returns. An exception is Lopes De Silanes, Phalippou and Gottschalg (2013), who focus on a cross-section of private equity investments. They find that private equity investments underperform during periods when there is a large number of simultaneous investments and provide evidence that this is due to structural features that curtail information flows. They also investigate why some firms choose to increase in size, which negatively affects their returns, and why LPs keep investing in them.

As our report investigates, where pension funds and non-US investors commit their capital, our analysis is also related to the literature focusing on LPs, in particular Lerner, Schoar Wongsunwai (2007) and Sensoy, Wang and Weisbach (2013). Lerner, Schoar, Wongsunwai (2007) show that endowments' performance in the private equity asset class is far superior to the performance of any other category of LPs. However, Sensoy, Wang and Weisbach (2013) in their more recent research, show that this superior performance disappears when analyzing funds with a vintage from 1998 onwards. Their interpretation is that private equity as an asset class is maturing, with more sophisticated investors, and therefore no single type of LP has an advantage over the others. Finally, Cain, McKeon and Solomon (2014) study the role of placement agents (which we also document in this report) and show that there is high heterogeneity among placement agents. The top agents have a positive impact but all other placement agents are associated with lower returns.

⁴The public market equivalent approach has certain limitations. First, finding a perfect match in terms of both financial and operational risk in the public market is challenging. Second, depending on the evolution of the public market index, the hypothetical investment in the public market might end up in a negative (i.e., short) position. Comparing a long position taken by a private equity fund with this short position is not appropriate. Third, leverage taken in the public market is at the account level (i.e., fund level) while a private equity fund typically puts leverage at the portfolio company, not the fund level.

Sample Selection and Data

We start by retrieving the full lists of investment advisers that registered and filed ADV forms with the SEC in 2012 and 2013. The advisor specific information disclosed in the ADV forms does not change much from one year to another, and so we create a list of unique SEC registered advisers by combining these two annual lists. We then select only the advisers that advise private equity funds (i.e., advisers that answer “yes” to the question required by Item 7.b in form ADV). As a result, we obtain a total sample of 4,156 advisers (8% of these advisers are private equity funds-of-funds). Out of this sample, 3,847 advisers report that they are domiciled in the US.

We code all items in each of these advisers' ADV forms. The data items cover information that is mainly at the private equity advisor level (part 1 of form ADV); however, they also cover information about each fund advised by the firms in the sample. The fund level information is coded from schedule D, part 2 of form ADV as the advisers are required to disclose fund-specific information for each of the funds they advise.

This includes: the location of the advisor; the number of its employees (and whether they have investment responsibilities); the types of investor and the amount they have committed to the advisor; discretionary and non-discretionary AUM; felonies involving the advisor's employees or its affiliates; violations of SEC and Commodity Futures Trading Commission (CFTC) rules; and the extent to which key executives have significant or controlling stakes in the advisor. We also aggregate (at the advisor level) information disclosed for each of the private equity funds advised or controlled by the advisor. We compute: the number of private equity funds disclosed; the average size of these funds; the average investment by funds-of-funds and non-US investors in the funds; the average commitment made by the advisor to its own private equity funds; and the extent to which an advisor is using placement agents for any of its funds. This information is available for a subset of our US-based advisers (1,136 advisers).

We also obtain a complete dataset of private equity fund performance from Preqin, the private equity data provider. This dataset provides information about the historical reported performance of private equity funds (net IRRs, multiples, IRR benchmarks) as well as identification information for each fund and its advisor. We manually match this dataset with our hand-collected dataset and obtain a final sample of 407 advisers with performance data available.

Descriptive evidence

We start by providing a series of descriptive analyses on the US-based private equity firms in our sample and by providing information on the composition of the full sample of advisors.

In Figure 1, we show that a large majority of the private equity advisors are based in the US (93%), with very small proportions of advisors from Europe (5%) and other regions, including South America, Africa, Asia and Australia (3%). This is not surprising, since only firms that raise money from US individuals or entities need to register with the SEC. Figure 2 illustrates that this is true for any advisor size, but it is particularly strong for advisors with AUM between \$100-500 million. This is probably because private equity advisors from Europe or from other regions raising money from US investors are likely to be larger; the smaller ones will not have enough resources to fundraise in the US. Since the non-US sample is small and not representative, we focus only on the US-based private equity advisors in the report (we have 3,847 advisors in this sample).

In Figure 3, we present the extent to which US-based private equity advisors receive capital commitments from pension funds by partitioning the sample based on the size of AUM. We find that the majority of these advisors do not have pension fund commitments. Not surprisingly, pension funds tend to be more heavily present in large private equity firms.

Figure 4 shows that large firms also tend to have a large percentage of non-US investors. Again this is not surprising since these advisors are more likely to have the resources to fundraise abroad. Also, because they are raising larger amounts they also need to diversify their investor base more. We note that the amount raised from non-US investors varies, depending on the AUM size, from 17% to 29%. This illustrates that these days US private equity firms, even the small ones, rely on money raised from international investors. To

the extent that a significant proportion of the capital raised by the US-based firms is invested in the US, the evidence suggests that private equity can attract large amounts of money from abroad to be invested in the US.

One recent trend has been for private equity firms, especially larger ones, to diversify outside traditional private equity-type investments towards other areas, such as real estate, special situations, infrastructure, or even hedge funds. Figure 5 clearly documents this fact: as AUM size increases, the proportion of private equity assets in the portfolio decreases. For instance, among advisors with AUM above \$5 billion, only 36% of AUM is invested in traditional private equity; the remaining AUM includes areas such as real estate, hedge funds, liquidity funds, securitized asset funds and other private funds. This raises the question of how we should think of, or categorize, these firms.

In figure 6, we provide information on the percentage of advisors' investment-focused employees. Our results indicate that a large proportion of advisors' employees are now focused on other activities, such as investor relations, compliance, human resources, back office operations, etc. This evidence is consistent with private equity practitioner claims that the recent increase in regulation has driven their costs up considerably by adding to their headcount. Smaller firms have 66% of their employees focused on investments, but this percentage decreases to 47% for larger firms. As AUM increases, firms are more likely to have internal teams to deal with various functions such as fundraising, marketing compliance and consulting, rather than outsourcing them. In support of this interpretation, we plot the amount of capital per investment employee: each individual investment professional ends up being responsible on average for \$946 million dollars at the largest firms (with more than \$5 billion under management.⁵) We have performed an additional sensitivity analysis by further splitting the sample of

⁵ It is important to mention here that this large amount of capital per investment employee covers also non-private equity assets.

large advisors, based on the size of their AUM. We find that this large number is driven by 25 advisors with AUM of between \$25 billion and \$50 billion and 35 advisors with AUM above \$50 billion. Most of these advisors are very large asset management firms that also manage some private equity funds (i.e., these are not the typical large private equity firms).

The SEC asks private equity firms to report whether they have violated SEC or CFTC regulations and whether they or their employees committed felonies. In Figure 7, we show that the incidence of disciplinary events increases with the size of AUM almost monotonically. As the operations become more complex, the likelihood of mistakes - intentional or not - increases. Perhaps surprisingly, we find that about 12% of the very large private equity advisors report violations of regulations. By any standard, this is a very high percentage, which justifies these firms' continuous investment in compliance departments.

Figure 8 provides descriptive evidence on the alignment of interest between advisors and their investors by plotting the extent to which executives own significant stakes in the firm (between 25% and 50% of the shares) or control the firm (i.e., own more than 50% of the shares). We find that large advisors are characterized by lower management stakes as a percentage (although it is worth considering that the amount of their wealth tied to the firm is likely to be much larger in absolute terms because of the sheer size of the firm); only 17% (14%) of these advisors have executives with controlling (significant) stakes in the firm. In contrast, over 50% (20%) of the smaller advisors (i.e., AUM below \$500 million) have executives with controlling (significant) shares in the firm. This evidence is interesting in that it points out that reputational costs for failure are higher for smaller advisors. This potentially explains why the return performance of small advisors is often superior to that of larger advisors. We next investigate the return performance of these advisors.

In Figures 9-11, we provide evidence on the average aggregate return performance of the advisors using different return metrics. Since the returns are not reported in the SEC filings, we match the advisors with the Preqin database and we are left with 356 advisors with aggregate IRR data available. Figures 9 (average IRR across all current and liquidated funds) and 10 (average IRR across all current and liquidated buyout funds) show no significant differences in the average performance across different AUM size groups, although it is interesting to note that the variation in returns provided by the large advisors is more limited.

In the next set of figures we divide the private equity advisors according to the proportion of assets raised from pension funds. In Figure 11, we examine their performance and do not find any evidence that pension funds are able to select the best performing GPs, presumably because there is a lot of variance among them. In Figure 12, we show that private equity advisors without access to pension funds (which are known to be steady providers of capital once they decide to invest), are more likely to use the services of placement agents. About 8% of the advisors without pension investors use placement agents to raise private equity funds. Finally, in Figure 13, we document that pension funds provide a greater proportion of capital to advisors that commit less to their own private equity funds or are less likely to have executives with controlling stakes (i.e., firms with a lower incentive alignment). One potential explanation for this result is that pension funds target larger advisors that are less able to provide strong alignment incentives because of their size.

Figure 1:
Percentages of PE Fund Advisors (By Region)

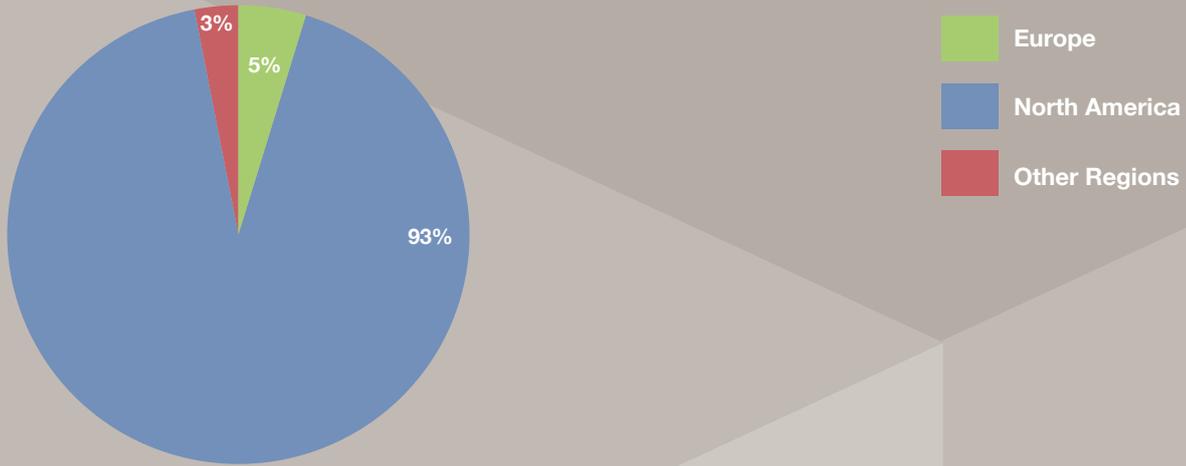


Figure 2:
Sample observations by region and the size of the advisor's AUM

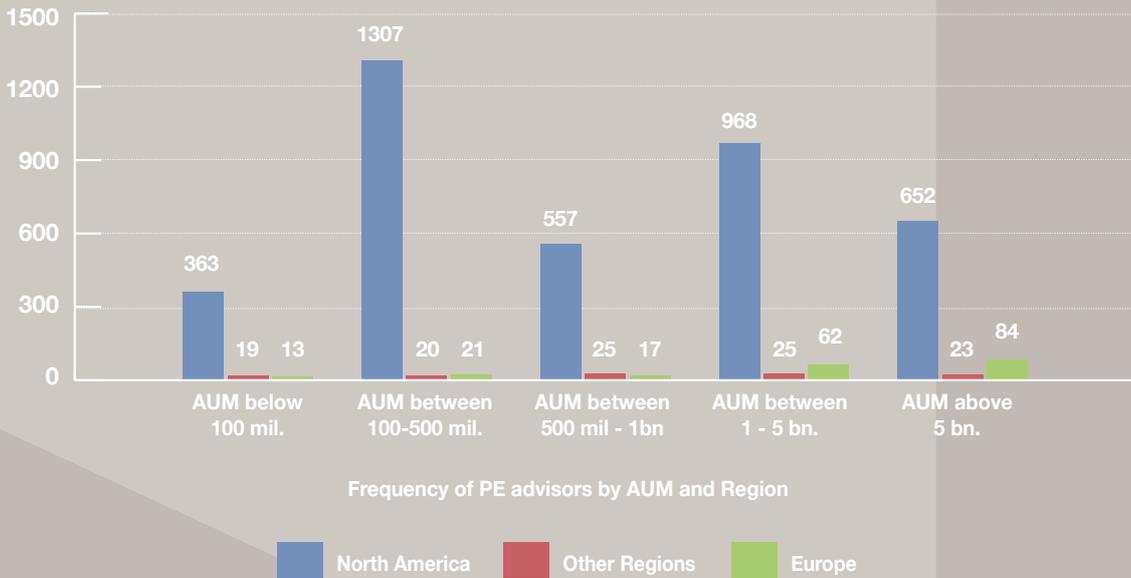


Figure 3:
Extent of pension fund commitments to PE advisors

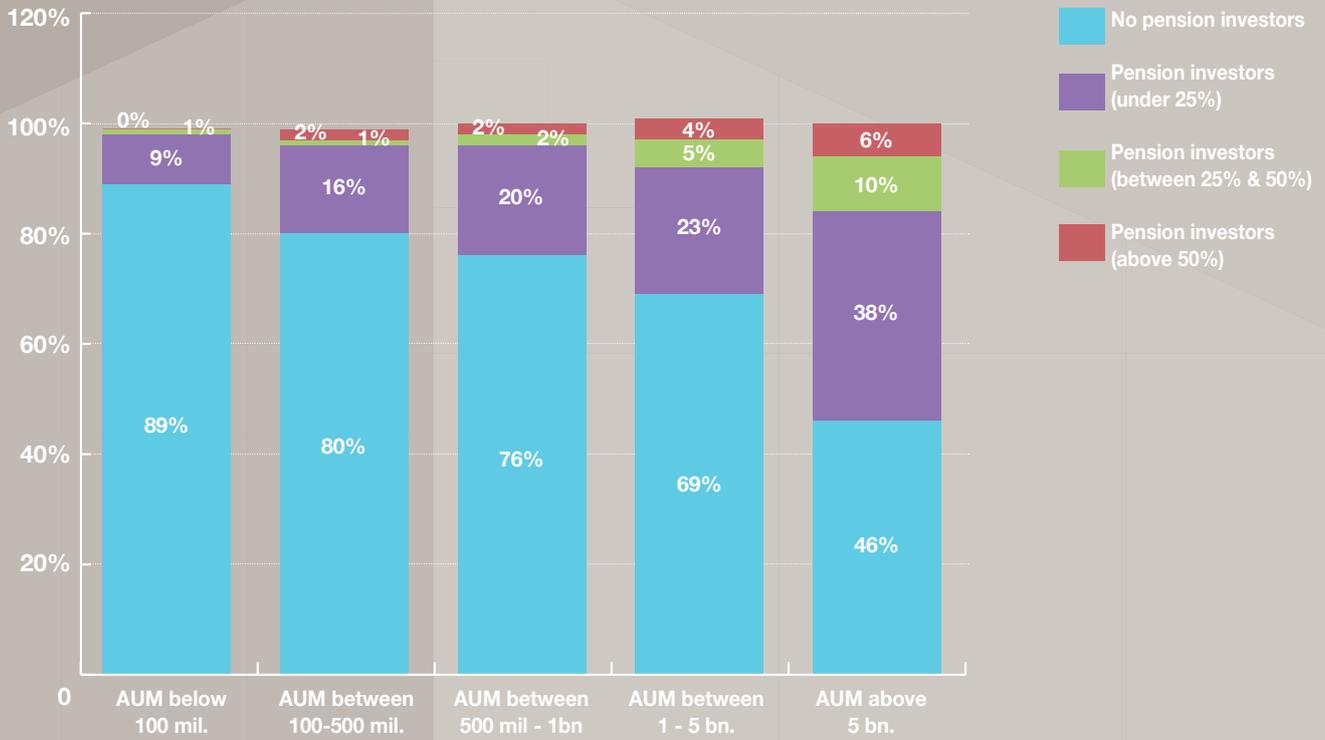


Figure 4:
Percentage of AUM provided by Non-US investors

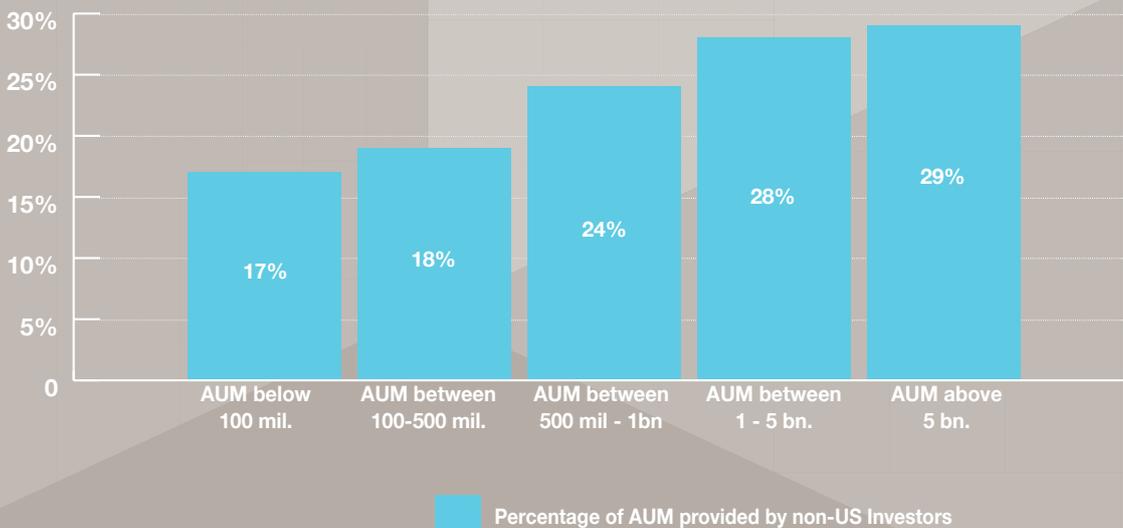


Figure 5:
Average PE assets as a percentage of AUM



Figure 6:
Investment professionals hired by US PE advisors (by AUM)

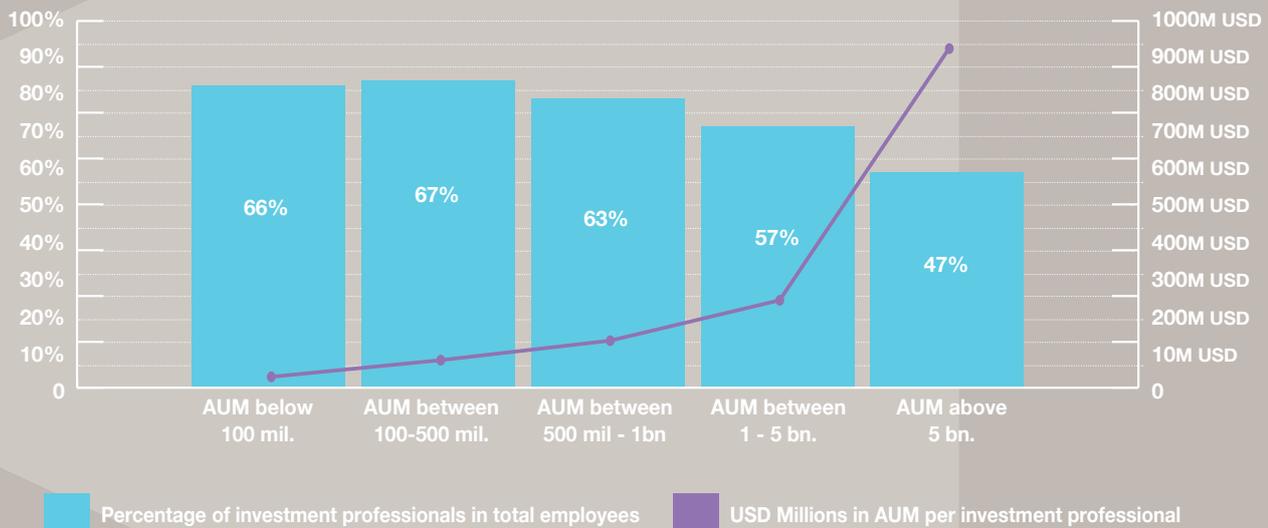


Figure 7:
Extent of criminal and regulatory actions affecting US PE advisors (by AUM)

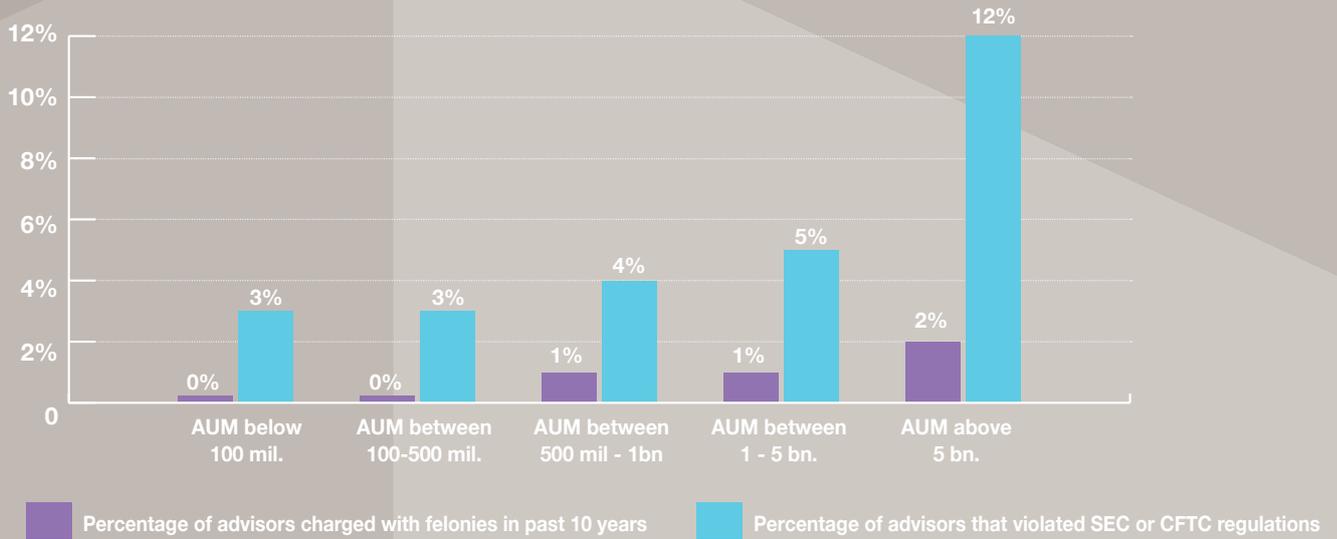


Figure 8:
Extent to which top management owns shares in the PE advisor

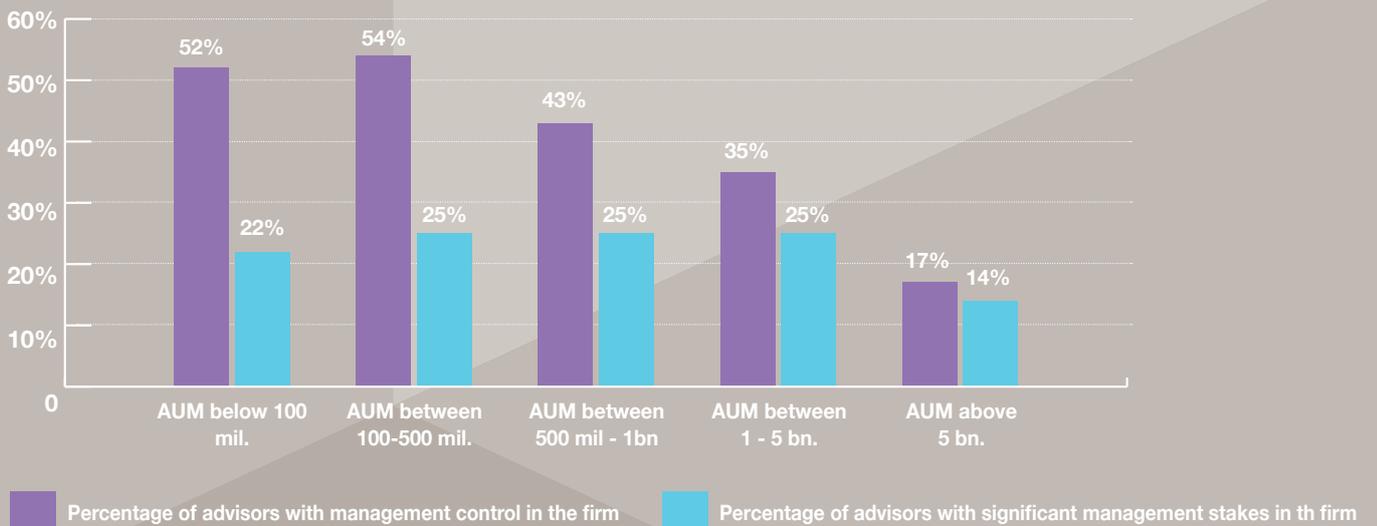


Figure 9:
Average Benchmark Adjusted IRRs of All PE funds (by AUM)

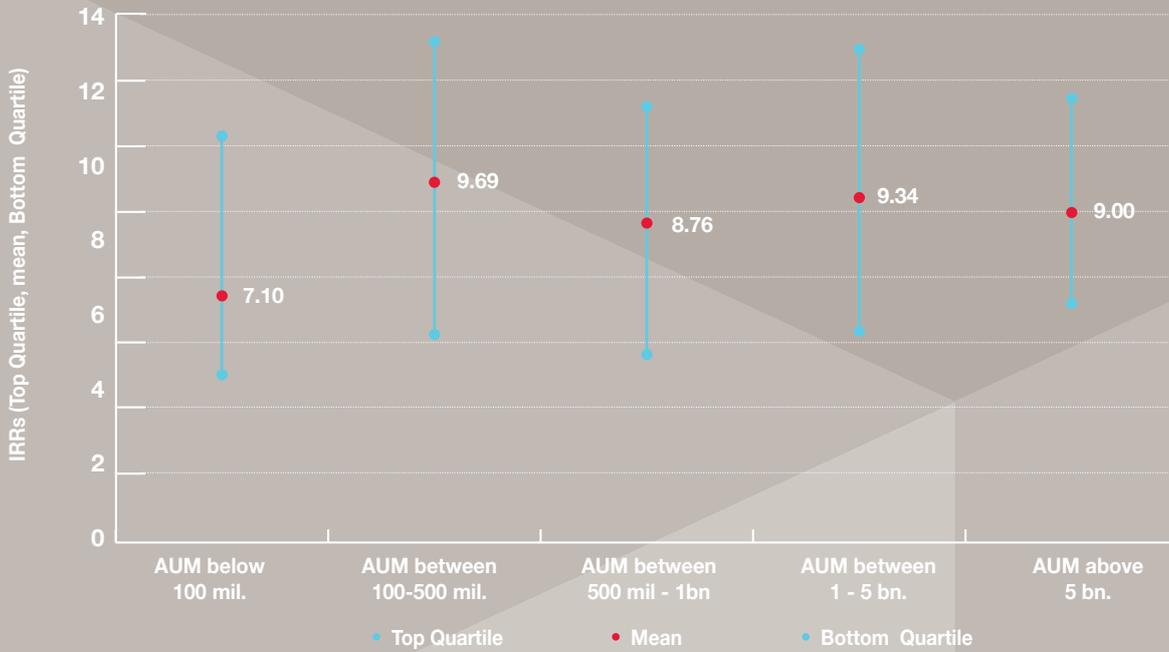


Figure 10:
Average Benchmark Adjusted IRRs of Buyout PE funds (by AUM)

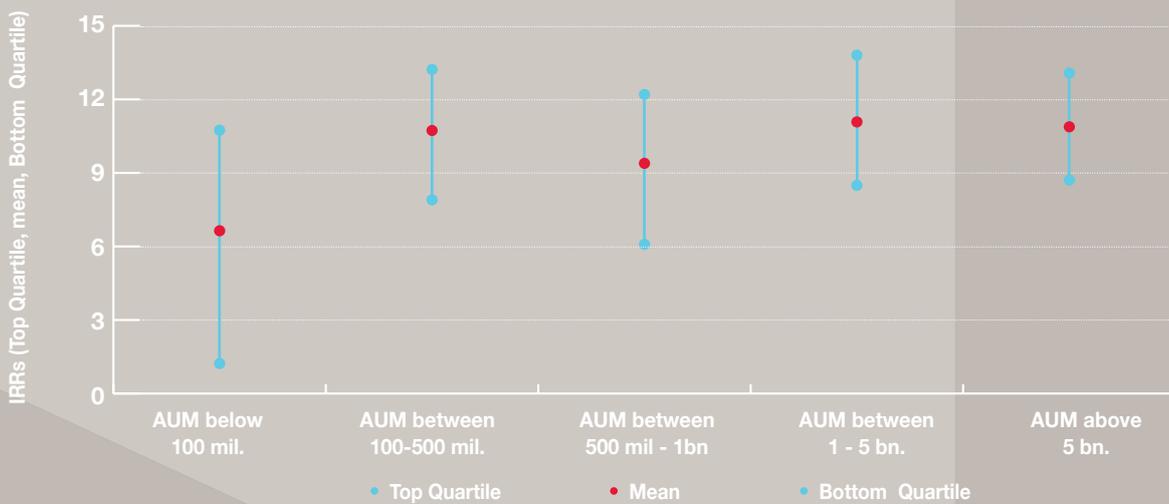


Figure 11:
IRR performance based on pension fund commitments

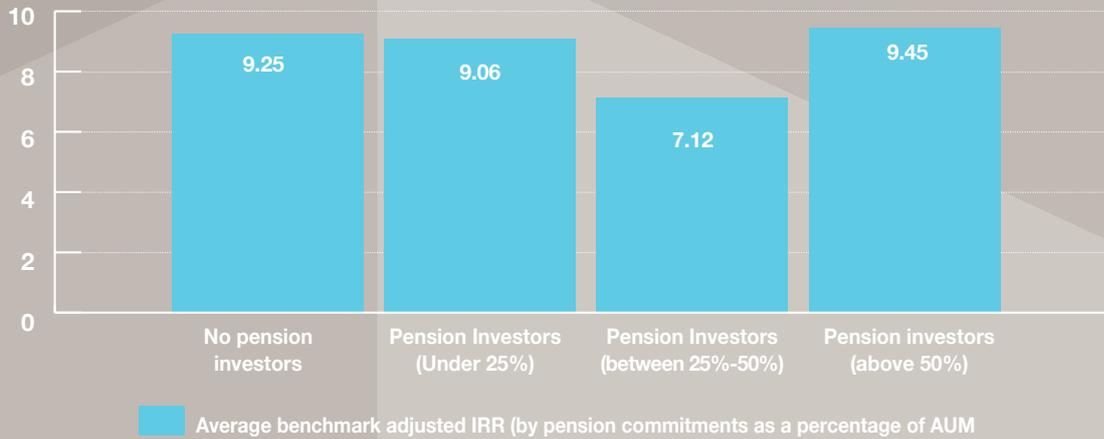


Figure 12:
Percentage of PE advisors that use placement agents

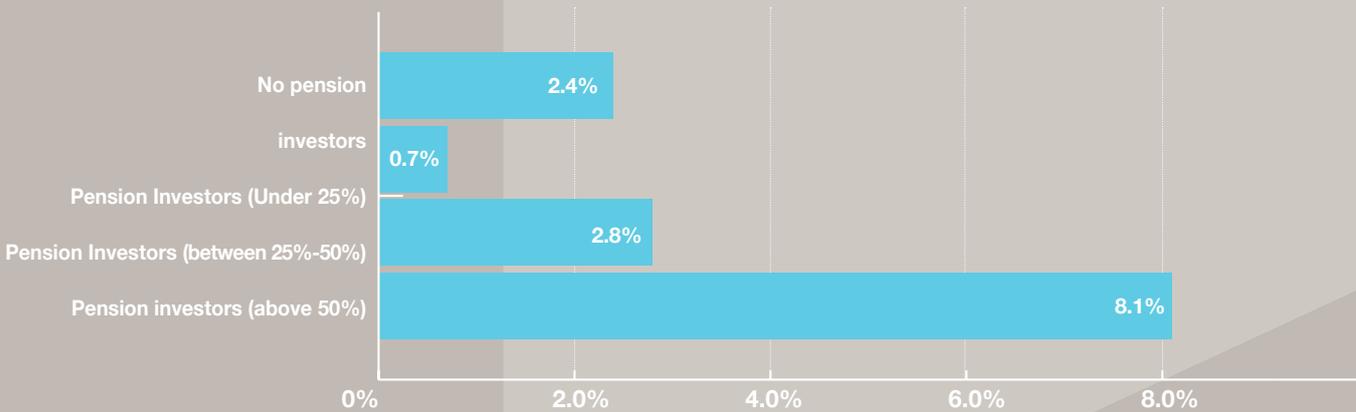
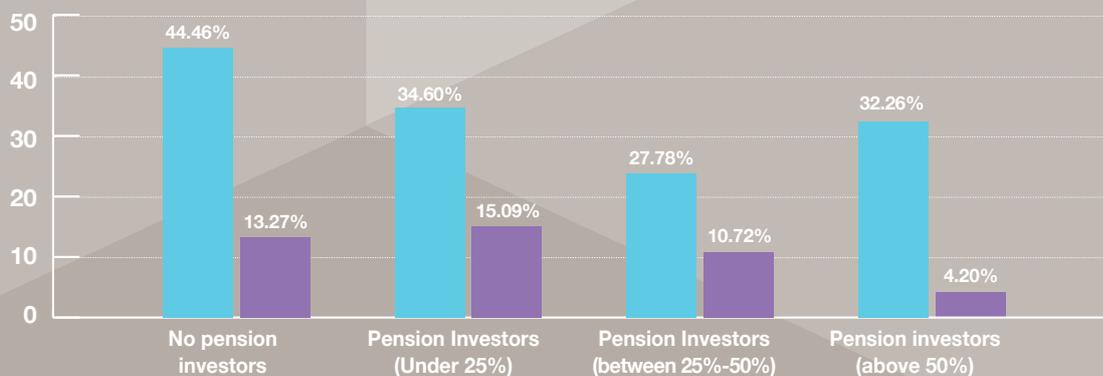


Figure 13:
Extent of alignment between top management in the PE firm and investors



Multivariate Evidence

We first run a series of multivariate analyses to investigate the determinants of investors' commitments to US-based private equity fund advisors. In particular, we focus on the factors that are associated with the capital commitments of pension funds as well as non-US investors. We note that the pension funds can be based in the US and abroad. Non-US-based investors might also be pension funds. Unfortunately, the SEC filings data does not allow us to observe these finer partitions.

Table 1 presents the results where the dependent variable is the extent to which a private equity fund advisor has received capital from pension funds. The dependent variable takes values from 0 to 3, depending on the percentage of AUM provided by pension funds (0 for 0% of AUM; 1 for up to 25% of AUM; 2 for up to 50% of AUM; and 3 for more than 50% of AUM). We run the model using both ordinary least squares regressions but also Poisson regressions, given that the dependent variable is a count variable. Standard errors are clustered by advisor.

Across all specifications we provide evidence that pension funds provide a greater share of the capital managed by large advisors: the coefficients of variables that proxy for the size of the advisor, AUM and firm age, are positive and generally significant. The coefficient of AUM per investment employee is positive and significant, indicating that pension funds might care about the cost of managing the funds rather than the capability with which the funds are invested. More interestingly, however, we document that private equity fund advisors that have more private equity assets as a percentage of total AUM have a lower proportion of their capital provided by pension funds. One interpretation for this result is that pension funds might prefer to provide more capital to asset managers that invest across a greater range of asset classes as opposed to just private equity. Certainly, the very large buyout firms have trimmed their reliance on the private equity asset class. Given the increasing demand for alternative assets from pension funds, these firms started to raise and manage significant funds in real estate, infrastructure, energy, hedge funds, distressed

funds and structured-credit funds. This expansion is clearly aimed at meeting large investors' objective of diversifying their exposure to multiple asset classes while reducing the number of relationships with different asset managers.

Starting with model (2), we add variables that proxy for a stronger alignment between investors and the management of the advisory firm. We add an indicator that equals one if key management personnel own significant (or controlling) equity stakes in the private fund advisor and the average investment made by the advisor in the fund it controls or manages. Surprisingly, we find a negative association between the extent of pension fund commitments to these advisors and the variables that proxy for better alignment with investors. This result reveals that other, more sophisticated, institutional investors (e.g., sovereign wealth funds, financial institutions, family offices or high net worth individuals) may be more likely to provide capital to these advisors and suggests that pension fund managers may not be able to gain access to these advisors. Finally, we do not find any results on variables that capture the advisor's involvement in disciplinary events (either felonies or violations of regulatory rules).

In Table 2, we replace the dependent variable in Table 1 with the proportion of non-US investors in the total number of investors that have contributed capital to the advisor. In contrast with the findings above, we document that advisors that manage a greater proportion of private equity assets receive more capital from foreign investors. Interestingly, the proportion of foreign investors is lower if the advisor is older or the AUM per employee is higher. This suggests that foreign investors are potentially more sophisticated as they appear to be sensitive to the amount of capital that each investment employee is managing. We continue to find evidence that foreign investors are more likely to invest in advisors that are bigger.

Table 1:
Dependent variable is the extent to which pension funds have invested with a PE advisor

Parameter	Ordinary Least Squares Regression						Poisson Regression	
	(1)		(2)		(3)		(4)	
	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	Wald - chi squared
Intercept	0.11	1.35	0.208**	2.37	0.201***	2.28	-1.699***	21.68
AUM	0.021**	2.00	0.016	1.44	0.017	1.51	0.093***	5.62
Private equity assets in AUM	-0.375***	-10.07	-0.386***	-10.31	-0.386***	-10.28	-2.688***	117.38
AUM per investment employee	0.001***	3.96	0.001***	3.75	0.001***	3.7	0.001***	6.52
Firm age	0.058***	2.81	0.066***	3.11	0.066***	3.07	0.264***	11.42
Use of placement agent	-0.008	-0.29	-0.007	-0.23	-0.008	-0.26	0.125	0.42
Firm management alignment			-0.082***	-2.55	-0.080**	-2.45	-0.320***	5.56
Average firm investment in funds			-0.196***	-3.00	-0.184***	-2.81	-0.860***	7.63
Reported felonies					-0.159	-1.31	-0.133	0.05
Reported violations of rules					0.046	0.55	-0.134	0.36
No Observations	1,136		1,136		1,136		1,136	
R Squared	22.24		23.12		23.23			

Table 2:
Dependent variable is the extent to which non-US based investors have invested with a PE advisor

Parameter	Ordinary Least Squares Regression					
	coeff	t-stat	coeff	t-stat	coeff	t-stat
Intercept	-0.087**	-2.16	-0.064	-1.49	-0.058	-1.34
AUM	0.048***	9.54	0.045***	8.64	0.044***	8.44
Private equity assets in AUM	0.043*	1.83	0.044*	1.89	0.044*	1.88
AUM per investment employee	-0.001***	-2.59	-0.001**	-2.50	-0.001**	-2.48
Firm age	-0.041***	-4.05	-0.038***	-3.69	-0.038***	-3.68
Use of placement agent	-0.009	-0.48	-0.006	-0.32	-0.005	-0.27
Firm management alignment			-0.029*	-1.71	-0.029*	-1.69
Average firm investment in funds			0.041	0.97	0.030	0.72
Reported felonies					0.159*	1.78
Reported violations of rules					-0.012	-0.37
No Observations	1136		1136		1136	
R Squared	6.78		7.15		7.51	

Table 3:
Dependent variable is the weighted average IRR of the PE advisor, adjusted for a matched benchmark IRR (weights are based on the sizes of the funds managed by the advisor)

Parameter	Ordinary Least Squares Regression					
	coeff	t-stat	coeff	t-stat	coeff	t-stat
Intercept	6.165***	5.36	6.496***	5.46	6.476***	5.43
AUM	0.037	0.31	-0.039	-0.31	-0.041	-0.33
Private equity assets in AUM	1.814***	3.48	1.807***	3.52	1.738***	3.38
AUM per investment employee	-0.001	-0.38	-0.001	-0.07	-0.001	-0.19
Firm age	0.705***	2.64	0.613**	2.27	0.608**	2.24
Use of placement agent	-0.774**	-2.14	-0.753**	-2.08	-0.756**	-2.08
Firm management alignment			0.008	0.02	0.085	0.22
Average firm investment in funds			4.190***	3.69	4.790***	4.34
Reported felonies					-4.688***	-4.13
Reported violations of rules					0.617	0.62
No Observations	365		365		365	
R Squared	5.72		8.40		8.97	

Table 4:
Dependent variable is the weighted average cash-on-cash multiple of the PE advisor (weights are based on the sizes of the funds managed by the advisor)

Parameter	Ordinary Least Squares Regression					
	coeff	t-stat	coeff	t-stat	coeff	t-stat
Intercept	0.902***	11.97	0.865***	10.48	0.851***	10.30
AUM	0.030***	3.39	0.032***	3.39	0.034***	3.60
Private equity assets in AUM	0.113***	3.03	0.116***	3.15	0.118***	3.21
AUM per investment employee	-0.001**	-2.21	-0.001*	-1.79	-0.001*	-1.65
Firm age	0.060***	3.14	0.055***	2.82	0.054***	2.78
Use of placement agent	0.009	0.37	0.005	0.19	0.003	0.12
Firm management alignment			0.043	1.64	0.041	1.55
Average firm investment in funds			0.128	1.22	0.130	1.24
Reported felonies					0.006	0.06
Reported violations of rules					-0.135***	-3.20
No Observations	407		407		407	
R Squared	6.82		7.82		8.84	

In Table 3, we investigate whether the determinants of pension fund capital commitments or of the presence of foreign investors are associated with the performance of the private equity fund advisors. The dependent variable is a weighted average net IRR computed at the advisor level (as of 2013), which is adjusted for the weighted average performance of a similar benchmark index of private equity funds (with the same investment focus and vintage). The weighted average is computed across all the funds managed in the past or that are currently under management by the advisor with the fund sizes as the weights.

We document that advisors with more private equity funds under management relative to other asset classes generate significantly higher benchmark-adjusted IRRs. Similarly, we find that older firms report significantly better performance; this result might not be surprising, given that our dataset suffers from survivorship bias. We also find strong results that indicate that advisors that are in need of placement agents to raise private equity funds underperform the benchmarks on average. Potentially, these underperforming advisors are either inexperienced and are raising private equity funds for the first time or have some poor recent performance and are in need of external advice: both reasons suggest a negative association between performance and the use of placement agents. Further, we document that when advisors contribute more of their own capital to the funds managed, they outperform their peers. This suggests that greater capital commitments increase the alignment of incentives with investors. Finally, we show, maybe not surprisingly, that advisors that faced disciplinary actions such as felonies underperform their peers.

In Table 4, we rerun the analysis in Table 3 by replacing the IRR measure with a weighted average cash-on-cash multiple, which is an absolute measure of performance. The results suggest that indeed, larger and older advisors generate better returns to their investors consistent with prior evidence of survivorship bias and persistence in the performance of successful private equity managers. As in Table 3, we document again that advisors who manage more private equity assets generate higher absolute returns to their investors. We also show that the performance is negatively affected when an individual investment employee needs to manage more assets. This suggests that the investment efficiency decreases when there are fewer investment professionals managing more assets. Finally, advisors that have previously violated regulatory rules underperform. We do not find any significant results on felonies.

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