# CEO Characteristics and Private Equity Performance:

## A Biographical Study of Public Pension Fund Executives

Abstract:

This paper studies the biography of 388 public pension fund CEOs in the United States. It examines the state affiliation, education and occupational experience of executives and the explanatory power towards private equity investments of the pension funds. As dependent variables serve the portfolio performance in terms of investment return and the local overinvestment of the funds. The paper finds that MBA and CFA holders significantly outperform their executive peers. In addition, this paper observes a high degree of public sector background in the sample. It examines the pension fund CEOs that exclusively gained investment experience in this sector and finds that they perform just as well on their investments as colleagues of private sector background. Furthermore, the combination of higher level education and occupational experience significantly increases portfolio performance.

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## 1. Introduction

Nowadays pension funds in the US and around the world are facing vast obstacles to ensure the maintenance of an adequate retirement income for their members. Established problems in industrial countries during the last decades include the risk of unexpected jumps in life expectancy of the population (longevity risk), the decline in birth rates of the western nations and the shift from defined benefit to defined contribution plans. In addition, major events like the financial crisis and the sovereign debt crisis in the Eurozone altered the global economic climate. Confronted with low yields on top of the worsening demographic situation, pension funds are in search of investment opportunities. Since the last two decades, the U.S. retirement system is experiencing an ongoing shift towards riskier asset classes (Andonov, Bauer and Cremers, 2012). Historically speaking, recent years delivered the best environment for alternative investments. Private equity funds are at their all-time peak of demand. From 2013 till 2015 the funds raised more than $500 billion US-dollar in capital worldwide (MacArthur and Evander, 2016). These tendencies result in an increased risk factor for pension fund portfolios. Existing literature points out that a lag of experience in alternative investments like private equity, can have grave consequences for the portfolio return (Phalippou and Gottschalg, 2006). In this paper, I examine the experience of public pension fund CEOs in the U.S. and the effect on the funds private equity investments.

Recent literature explores the characteristics of pension fund board members and their explanatory power on private equity returns (Andonov, Hochberg and Rauh, 2016). The results clearly indicate that financial experience as well as asset management experience is crucial to investment performance. But are these kinds of experience also crucial for pension fund executives? This paper is the first to investigate this relationship.

Furthermore, existing literature also finds that there is a high connection between politics and public pension funds. Andonov, Hochberg and Rauh (2016) find that a lot of board members are of political background and that these boards have a negative impact on portfolio returns for private equity investments. This paper shows similar tendencies for the CEO of public pension funds. Different from other financial institutions, more than half of the sample executives worked during their career exclusively for governmental agencies (e.g. in the office of a state treasurer, as federal accountant or for other public sector pension funds). How important are these differences and does private sector experience matter? Therefore, a second contribution of this paper is to show that investment experience accumulated solely in positions held in the public sector, are just as valuable as those obtained in private entities.

Another topic of interest for research is the explanatory power of education on private equity investment return. A high amount of literature examined the effect of MBAs, CFAs and Ph.D. titles of executives on portfolio performance (Shukla and Singh, 1994; Switzer and Huang, 2007; Su, Kang and Li, 2011; Chaudhuri, Ivkovic, Pollet and Trzcinka, 2013). While many found positive effects in terms of higher return and reduced risk taking behavior, others reported insignificant or even poor portfolio results. A third contribution of this paper is the exploration of pension fund CEO education and portfolio performance. It finds that MBA holders are significantly better in picking well performing private equity funds.

A last contribution of this paper is the investigation of a common investment bias of public pension funds when picking private equity targets. The scientists Hochberg and Rauh (2013) analyzed the portfolios of US public pension funds and their share of PE investments. They found that the funds had a significant proportion of overinvestments shifted towards local (same state) PE funds. In addition to a concentration of geographic risk, these local investments perform fairly bad in comparison to same-state private equity investments, undertaken by out-of-state pension funds. This observation is referred to as the home-state bias and points out that once again institutional investors are far from making optimal investment decisions. I examine the effect of public pension fund CEOs characteristics on the home-state bias and find that holding a CFA can somewhat reduce the local overinvestment of the funds. Eventually, I combine different CEO characteristics and show that a combination of educational and occupational background delivers good preconditions to enhanced performance as well as a reduction of the home-state bias.

In summary, I will answer the research question whether the characteristics of pension fund CEOs influence the performance of the funds private equity investments and reduce the home-state bias.

This paper proceeds as follows. In section 2, I give an introduction to the work of public pension fund CEOs. Section 3 reviews the existing literature in the three main fields of this paper, namely pension funds, private equity and executive characteristics. Section 4 explains the research design. Section 5 presents the empirical results of the analysis and section 6 states the overall conclusion of the paper.

**2. A description of tasks and responsibilities for public pension fund CEOs**

The CEO of a public pension fund holds the highest executive position within the entity. He takes on responsibility for the leadership of the institution as a whole. He is directly accountable for the fund activities to the members of the pension fund board. His tasks include the execution of the strategic pension plan (developed by the board), the management of external stake holders, building up a well-functioning executive team in order to manage the funds daily business and the overseeing of compliance and policies. Furthermore, in most cases he monitors asset managers who in turn oversee the externally managed money of the fund and plays an important part in their hiring and firing decision (OMERS, 2016).

In terms of investment decision making, it is important to note that the influence of the executive various among the different governance models of funds. There are four dominant governance models that US public pension funds follow (Miller and Funston, 2014).

1. <u>Integrated investment and pension administration organization with a single fiduciary board</u>

    The integrated model is the most common form among US public pension plans (applicable for around 60% of all public funds). Under this structure, the board decides about investments and the administration of the plan and delegates its execution to the CEO. As can be seen by figure 1, the executive oversees both, the investments and the administrative work of the plan separately. Therefore, it can be said that in the majority of public pension plans, the executive's influence on investment decision making is directly given through his daily responsibilities and the proposals to the board.

    **Figure 1:**
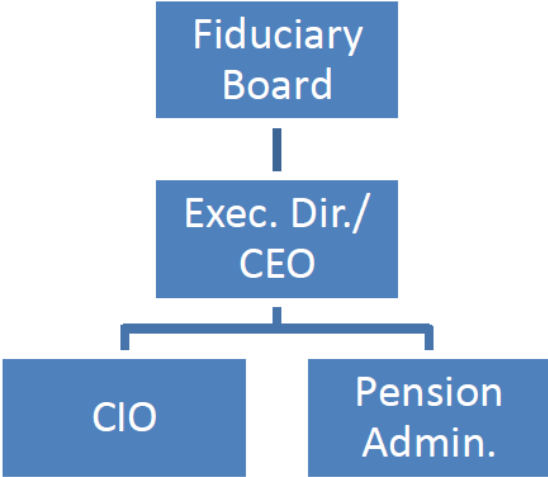
2.  <u>Separate Investment management organization with its own board</u>

In this public pension structure, which is the second most common form, the board is only responsible for the investments of the pension plan and operates entirely separated from the pension administration. Under this structure, the CEO and CIO of the investment management organization are often the same person.[1] This factor gives the executive an even better position in terms of influencing the investment decision process of the fund.

**Figure 2**



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[1] Massachusetts Pension Reserve Investment Management (PRIM) Board serves as a good example.

3. <u>Separate investment and pension administration organizations reporting to the same fiduciary board</u>

This model is characterized by the weakest form of executive influences on investment decision making. On paper, the CEO here, solely manages the administrative work of the fund, while a CIO is responsible for all investment activities. In theory, both report separately to the fund (e.g. CalPERS or CalSTRS). The potential for CEOs to significantly shape the portfolio of the fund can still not be excluded. In practices, it is not uncommon for the CEO to additionally hold an executive position in the investment division of the fund.[2] Furthermore, he still attends regular board meetings in which asset allocation strategies are discussed and approved.[3] Finally, personal interaction with the board and investment proposals cannot be excluded. However, as pointed out by Miller and Funston (2014), only seven out of the 55 largest public pension funds in the US follow this organizational model.

**Figure 3**



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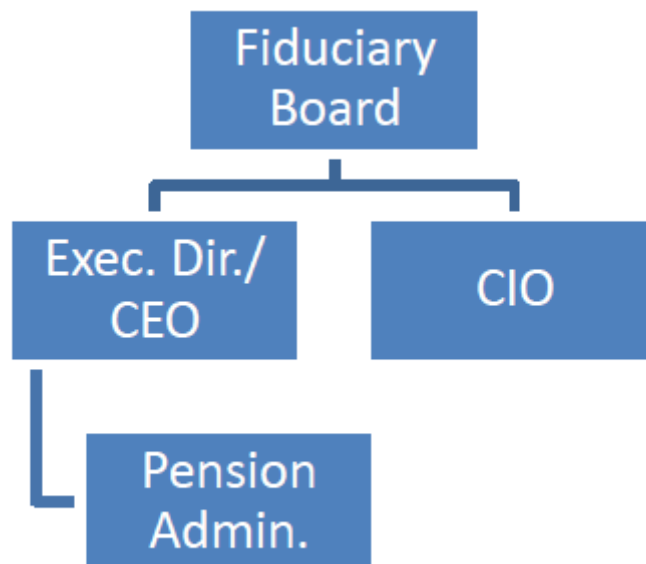
[2] CalPERS serve as good example, where the recent CEO additionally hold the title as Chief Investment Operating Officer during her entire time in the office (2008-2016). In addition, she was appointed interim CIO twice.
[3] Evidence is provided by written board meetings published on the funds webpages

4. Sole Fiduciary

Under this model, there is only one responsible fiduciary. This person has been elected by the state and traditionally holds the position as state treasurer. The position of a CEO does not exist in this case. The executive that oversees the investment activities is usually the CIO. Due to this less bureaucratic format, the investment decision making authority of the executives in comparison to other models is presumably high. Administrative tasks are managed by a separate organization which in some cases, does not even report to the fiduciary. Whenever there is a sole fiduciary pension system in the sample, this study uses the treasurers of public pension funds for examination. Examples can be found in the states of New York, Michigan or Connecticut.

**Figure 4**
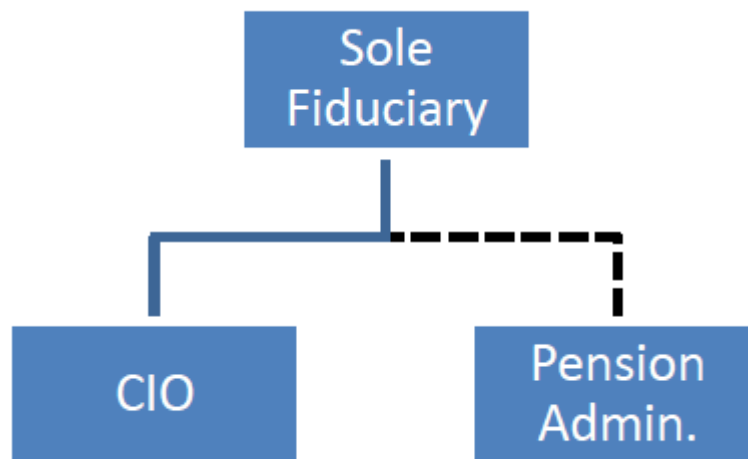
## 3. Literature Review

A growing literature in financial economics examines the investment behavior of domestic investors in alternative asset classes. A topic of high interest within this field is the investment in private equity funds. Related research for this paper is divided into three fields. Namely, private equity as investment target, the general literature on public pension funds and the research of managerial characteristics to explain performance.

One direction of research examines the question of return appropriateness of private equity investments in comparison to a benchmark. Kaplan and Schoar (2005) conduct a research in which they test the performance of 746 private equity funds against an investment in the S&P 500 and find that LBO fund returns are lower than benchmark returns net of fees. Phalippou and Gottschalg (2006) extend the data set used by Kaplan and Schoar. In addition, the scientists correct for overstated accounting values of the GP and bias of the sample. They come to the conclusion that the average underperformance of private equity funds in comparison to the benchmark (S&P 500) is as high as 3.8% per year. Phalippou and Gottschalg further point out that the payoffs of the alternative asset class in their sample is highly screwed and mention mispricing[4] next to learning[5] and side benefits[6] as potential explanation for the findings.

In consideration of the stunning results above, it is important to draw the connection to pension funds in the current market environment. In 2011 R. Novy-Marx and J. Rauh published a study in which they estimate the present value of US state employee pension liabilities to be around $4.4 trillion using zero-coupon treasury yields as discount rate[7] in 2009. Assets in state pension funds in the study are worth only $1.94 trillion by the time, leaving a deficit of approximately $2.5 trillion in public pension obligations. One of the implications of these findings for public pension funds is the high importance of effective asset management decision making. Choosing the right investment classes and targets within classes is part of the key for the US public pension system to sustain these high liabilities.

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[4] Phalippou and Gottschalg (2006) refer to the study of Lerner, Schoar and Wong (2007) and argue that a mispricing of PE investments may be explained by insufficient skill of investors.

[5] By participating in negative returns of inexperienced funds, investors ensure the privilege of participating in higher future returns as established GPs tend to be oversubscribed and able to choose investors.

[6] Reference to Hellmann et al. (2005) who describes strategic interaction of banks in the venture capital market as foundation for relationship building to sell additional services to the GP.

[7] Using zero-coupon treasury as a proxy for the risk-free rate in an attempt to correctly price obligations (see Modigliani and Miller, 1958; Treynor, 1961; Sharpe, 1964; Lintner, 1965).

The combination of the two paragraphs in the beginning of the section, may let the reader jump to the conclusion that the asset allocation towards private equity fund investments is far from optimal. Nevertheless, Andonov, Bauer and Cremers (2012) point out that during the last two decades US public pension funds further increased their asset holdings of risky assets including private equity funds. They argue that the funds behave differently from their international peers as well as against economic theory because of the incentives set by national policy.[8]

These observations underline the relevance for the research in the field of public pension fund investments, in particular in asset classes with high risk involvement. Rather than addressing the question of "why" pension funds still act in this hazardous environment, this paper seeks to follow recent literature that addresses the question of "who survives" in this environment and "who does clearly not".

In their study of US money managers, Moskowitz and Coval (1999) measure the degree of preference for geographical proximity of investors towards equity investment targets and find that on average one out of ten investment choices is made because the headquarter of the firm is located in the same city. Extending their research, Moskowitz and Coval (2001) show that these local investments are characterized by substantial abnormal returns. The researchers argue that geographic information advantages of local managers play a major role in their findings.[9] Brown, Pollet and Weisbenner (2011) were the first to apply the home bias puzzle directly to the public pension sector. They monitor the portfolios of 20 state pension plans that actively manage their holdings. As a result of the study, they point out that plans hold an average of almost 10 percent in stocks located in the same state. Next to information advantages (witnessed by enhanced performance of local stock picks in direct comparison to local stocks the funds did not pick) the study mentions corruption as potential explanation. The observation that high ranks on the corruption-index (used from Glaser and Saks, 2006) of the states are associated with a higher percentage of in-state portfolio investments lead to this assumption.

Hochberg and Rauh (2013) directly target private equity investments while analyzing the home state bias of US institutional investors. The implications their paper draws for public pension

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[8] US Public pension funds are entitled to discount their balance sheet pension obligations by the estimated rate of return from their asset investments, which in turn is higher for riskier asset classes. Therefore, funds are able to potentially understate the pension liabilities by investments in, among others, private equity funds.
[9] Supported by the findings of Baik, Kang and Kim (2009).

plans are crucial. Public pension plans face an average over allocation towards in-state invest-ments of 9.7 percentage points of the private equity portfolio. This number is higher than for all other institutions observed by the paper (namely, private sector pension funds, endowments and foundations)[10]. In addition, Hochberg and Rauh measure the performance of the funds on these home state investments. Unlike previous papers, they find that on average public pension funds underperform in same-state holdings by around 5.5 percentage points in comparison to their out-of-state holdings. On top of these results, the researchers point out that these funds perform by 3.6 percentage points worse on their local investments than out-of-state pension plans that invest in the same state. The finding rejects the hypothesis of regional information advantages for local pension fund LPs explained earlier. As potential explanation for the results, Hochberg and Rauh follow the corruption explanation of Brown, Pollet and Weisbenner (2011).

One contribution of this paper is to further investigate the potential sources for the home state bias as pointed out by Hochberg and Rauh (2013). It analyzes the characteristics of pension fund staff, more specifically the biography of public pension fund CEOs.
In order to further examine corruption and self-dealing, with regards to the preference of local overinvestments in private equity firms, I test whether local ties of CEOs are linked to the home state bias and negatively affect the investment performance of these funds. Even though the CEOs of public pension funds usually did not work directly at private equity firms prior to their job as pension fund head,[11] there might be the chance of social connections which result in local investment activity. I therefore test whether CEOs that were born or have studied in the same state the fund is located in, will encounter a higher degree of the home-state bias.

The approach is inspired by the research field of behavioral science. The academic paper of Cohen, Frazzini and Malloy (2009) finds evidence that sell-side analysts who developed social ties through their educational background to employees in firms they monitor, significantly outperform on their share recommendations. The same educational tie that links the analyst with the firm employee here, may lead the pension fund CEO to generously invest in local PE firms, where perhaps old class mates work. Other research (e.g. Pool, Stoffman and Yonker 2015) show that social networks which influence investment behavior, develop by the level of proximity to investment colleagues. Being born in the local environment of the pension fund

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[10] The average over allocation of other public institutions lies between 3-7%
[11] Only about 2.6 percent of all sample CEOs gathered occupational experiences in the combined field of private equity, M&A or venture capital.

therefore leaves a lot of development opportunities for social connections to local private equity employees. Furthermore, general state affiliation (without particular person-to-person relationship) due to local origins may also play a major role in choosing PE investment targets. With regards to these arguments, the first variable this paper includes, will examine the state affiliation of public pension fund CEOs with regards to birth state and former university state.

Hochberg and Rauh (2013) additionally find that public pension funds that overinvest in local private equity funds are also characterized by a worse overall return on their investments. They thereby suggest that there is a correlation between bad performance and the home-state bias. In consideration of this finding and in light of the current importance of the private equity investments of public pension funds, a second contribution of this paper is the investigation of the overall performance of public pension fund CEOs on private equity investments. Next to birth state and college state, it examines other biographical attributes in the past of pension fund CEOs that potentially enhance or worsen investment decision making within the hazardous environment of alternative assets.

 To my knowledge, there has no other paper been published so far that examines the governance of public pension funds from a CEO perspective. Andonov, Hochberg and Rauh (2016) made a contribution to the academic literature in the field of public pension fund governance in a similar matter. They analyze the effect of political representatives on the investment performance of the fund. In particular, the paper examines the high number of state officials within public pension boards. While a not insignificant number of studies suggest that political connection adds value to a firm (Fisman, 2001; Faccio 2006; Cooper, Gulen and Ovtchinnikov, 2010, Wu, Wu and Rui, 2010), they find that the number of these politicians is negatively correlated to overall fund performance. Public pension funds with high levels of political representatives are worse at picking well performing asset categories (e.g. fund of funds, venture capital, natural resources) and also make poorly decisions in picking the right money managers within these categories. In addition, boards with state officials and ex office members overinvest more funds in home state LPs.

While investigating potential roots for these findings, Andonov, Hochberg and Rauh (2016) follow the three sources of poor political decision making, first developed by Shleifer (1996). These are the following.

*Control:* The non-optimal decision making process due to political favoritism of interest groups (e.g. entities or industries within election areas)

*Confusion:* Occurrence due to a lack of field expertise or ability

*Corruption:* The practice to involve in bribes or quid pro quo activities

They find that *Control* plays an important role in the underperformance of funds as boards with political members experience a higher tendency to shift their investments towards local investments (perceived as state support). *Corruption* is also partially witnessed as poorly performing funds tend to have board members that receive higher contributions from the financial industry.[12] However, even though their paper proves that financial, asset management or related experience of board members is perceived with enhanced fund performance, they do not advocate the *Confusion* channel for boards with high degrees of political representatives. This conclusion is built on the grounds that sample representatives of political background do not appear to have a lack of financial expertise.

This paper builds on the evidence found in Andonov, Hochberg and Rauh (2016) by examining whether financial, asset management and other industry experiences of public pension fund CEOs correlate with higher investment performance of the fund (as the evidence already exists for board members) and potentially decrease the home-state bias. Furthermore, it touches the point that Andonov, Hochberg and Rauh (2016) make by stating that *Confusion* does not explain poor investment returns for political representatives in pension fund boards. The researchers note that the results are possibly due to representatives having relatively high financial skills and experiences. This paper further analysis this statement by breaking down financial expertise into experience made in government positions (governmental entities of financial background like state pensions or state treasury) and the experience gathered from holding a financial position in the private sector, to see whether one of the two (supposedly private sector experiences) positively affects CEO capabilities.

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[12] Also extensively studied from an investment perspective by Bradley, Pantzalis and Yuan (2016) who found evidence that state pension plans with political-affiliates on the board shift investment activities towards politically connected stocks.

Lerner, Schoar and Wong (2007) deliver additional contribution to the literature justifying the research of experiences in the field of finance and investments. Their paper analyses the investments of different institutional investors in private equity funds and finds significant differences in performance. Besides the main finding that certain LPs (in particular endowment funds) perform better than the average institutional private equity investor, the authors also examine that older LPs perform better. They partially explain this finding by a higher level of experience of older institutional investors with private equity firms.

Phalippou (2009) analyses the fee structure of private equity funds and comes to the conclusion that the average fund only provides low rates of return for its investors net of fees. He estimates that fees tend to be higher than 7 percent on an annual basis. Reasons for an ongoing investment in these funds sees the researcher in hidden costs that cannot easily be identified by the LP. He argues that contracts are oftentimes complex and mislead the investors. This paper therefore examines whether occupational experiences in the specific field of private equity, add value to overcome contracting and other industry related pitfalls of private equity investing. It therefore breaks down financial experiences of pension fund CEOs into the category of private equity experience and analyses potential correlation with overall fund performance and the home state bias.[13]

This paper also belongs to the field of academic literature that examines the characteristics of managers and their explanatory power on fund performance. Similar research within this field examines the influence of education and degrees on investment decision making. Golec (1996) was the first to examine that holding an MBA significantly enhances the investment return of money managers. He finds that the portfolios of these managers have higher excess returns and incorporate less risk.[14] He further points out that funds managed by an MBAs charge smaller management fees. Golec argues that MBAs investment knowledge and ability to identify good management practices may lead to his findings.

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[13] One limitation of this approach however, is the low number of private pension fund CEOs with occupational background in this particular category within the sample. As mentioned before only 8 CEOs (roughly 2.6 percent) can be counted having the applicable prerequisites.

[14] Golec (1996) argues that money managers who obtained MBAs provide relatively large betas without an increase in residual risk as it is the case for non-MBA money managers.

Chevalier and Ellison (1999) perform a similar study in which they test 492 money managers' characteristics including MBA, SAT score[15] and age in an attempt to explain investment performance. They partially confirm the findings of Golec (1996), in the sense that within their raw data, portfolio managers holding MBAs outperform colleagues by 63 basis points. However, the researchers find that all return differentials in the sample are due to a higher level of systematic risk of MBA manager portfolios.

Obtaining an MBA can have several benefits for the holder. Generally speaking, MBA courses provide the participants with a broad range of advanced knowledge in business, including finance, business strategy and organizational leadership (MBA, 2016). Following the argument applied in Golec (1996), this paper examines the impact of public pension fund CEOs holding an MBA on their private equity fund investments.

Overall, one can say that the academic literature about the performance of title holders is divided. Shukla and Singh (1994) were the first to examine that one of the most regarded titles in the asset management industry, the Chartered Financial Analyst (CFA) designation, enhances investment decision making. The scientists therefore analyze the performance of equity portfolios managed by two groups between the years of 1988 and 1993. One group in which managers are title holders and one in which they are not. Their paper shows that the holder group is characterized by higher risk (in systematic and total risk measures). However, they also obtain higher average returns and risk-adjusted returns than the non-holder group.

Switzer and Huang (2007) address the investment performance of MBA and CFA holders on a sample of 1004 small and mid-cap funds. They find that MBAs significantly underperform in these investment categories, whereas holding a CFA appears to have a positive effect (however, not consistently significant). Also to mention here are the papers of Arif and Jawaid (2011) and Su, Kang and Li (2011) which both witness positive performance effects of CFA programs. The latter explicitly points out that CFA holders are less likely to bias behavior and reduce risk taking significantly. However, other studies (Dincer, Gregory-Allen and Shawky, 2010) examine that CFA or MBA designation does not have any positive effect on portfolio return. Therefore, another contribution of this paper is to examine the relationship between pension

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[15] Test for the admission at US colleges.

fund CEOs that are CFA or MBA holder and their explanatory power to enhance investment return in the field of private equity and to lower the home-state bias.

In a similar matter, while looking at the investment activity of pension funds, the impact of Ph.D. degrees needs to be examined. Chaudhuri, Ivkovic, Pollet and Trzcinka (2013) study the performance of Ph.D. holders on US domestic equity investments gross of fees. They find that funds managed by academics experience higher cash flows for their investments from a client perspective (more than 18 percent higher than the average non-Ph.D. managed fund) and deliver higher risk-adjusted returns. The researchers point out that there seems to be a clear relation between educational achievements and performance.

In consideration of these findings, the next contribution of this paper is the examination of the benefits for public pension funds, hiring CEOs with PhDs titles.

Additionally, a last contribution of this paper is to examine the relationship between public pension fund CEOs that studied finance, business or economics at university and their private equity investment performance in comparison to peers of non-convential educational backgrounds. While analyzing my data set and in particular table 4, column 3, it is clear to see that one third of the sample CEOs did not obtain a business related degree.  In support of this observation, Andonov, Hochberg and Rauh (2016) note that they find a high number of politicians sitting on the boards of public pension funds. Since the average politician is not expected to have a business education, it appears that public pension funds relatively often hire people of non-business backgrounds in direct comparison to other financial institutions. Therefore, it is important to examine whether university education in business or investment related subjects can make a difference. Finally, I therefore test the impact of CEOs with business related college education on public pension funds private equity investments.

In summary, this paper initiates the academic examination of public pension fund CEO characteristics to test their influence on the fund's private equity investments. In particular, it investigates the explanatory power of the CEOs' biographical data on private equity return and the home-state bias of public pension funds (found by Hochberg and Rauh, 2013). Consequently, it will analyze the state affiliation of CEOs in terms of local background. In addition, it examines the impact of occupational experience in related industries, thereby distinguishing between

private sector and government related experience. Furthermore, it investigates the impact of education (basic and advanced) on investment decision making.

## 4. Research Design

### 4.1 Data and Variable Introduction

This paper obtains its data concerning the pension funds and corresponding private equity investments over the last decades from the online data base preqin. I match the information with the performance data of the private equity funds also obtained from preqin and end up with a data set of the limited partner, the general partner and the performance of the pension fund (over 35,000 observations of raw data). As a next step, information concerning the CEOs that were in office at the time of the investments is needed. Therefore, I focus on a list of the 188 largest public pension funds within the United States displayed by table 1.

For the funds, I determine the CEOs that were in charge from 1990 till 2011. I do so by screening the Comprehensive Annual Financial Report (CAFR), which public pension funds in the United States are required to publish every year. Retaining the data on a yearly basis, whenever there is a CEO switch within a financial year, I assign the year to the CEO that spent the majority of months in office. Interim CEOs (by definition pension fund employees that are temporary used to replace a CEO until the board of directors found a successor) are also recorded in this data set. This paper eventually matches the executives with the pension funds and corresponding investments by vintage year[16] of the private equity fund.

Furthermore, the biographical data of the pension fund executives is aggregated by collecting the individual CEO data manually from several sources. The Bloomberg Professional Service delivers detailed information in text form about former employment, education, academic titles and sometimes the origins of a pension fund CEO. In addition, I use generally accessible sources that provide pension fund information like the home page of the concerning fund, the web pages of pension wire services like Pensions & Investments[17] and search providers to screen the open internet for reliable references. The latter often gives access to information from secondary sources like former employers, universities and other affiliated organizations.

For my research topic, I record information about 388 CEO positions and 13235 diverse investments, ranging through all categories of private equity funds as denoted by table 2.

Throughout this paper while analyzing the sample data, I always talk about "CEO positions

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[16] The vintage year of a private equity fund refers to the year in which the fund is officially closed for investors. Meaning that no further investor capital is excepted and the first cash flows to projects are prepared.

[17] Pensions and Investments refers to the webpage *www.pionline.com*

held" rather than actual people. This linguistic distinction is necessary in order to regard double counts of executives that have been in office more than once during the observation period.[18] From the biographical data found, this paper creates the following variables.

State affiliation of the CEO – *State Affiliation*

In order to determine a potential link between the evidence of a home state bias as found in Hochberg and Rauh (2013) and a CEOs affiliation with the state of his pension fund, I gather biographical information with regards to the state of birth of the CEO and the state/s he or she studied in. As described earlier, a CEO that was born in the state of his pension fund established social ties to other people within that state. Family members or close friends may have followed a financial career path and are working at potential local investment targets of the CEOs fund. Especially in university, the CEO should have met other influential people who later in life obtained top positions of local private equity firms or other potential business partners for the pension fund. The executive might favor investments in these local firms, where his acquaintances work. Thus, a recognition of the regional background of a CEO accounts as potential explanation for the home-state bias and non-optimal asset allocation, resulting in worse overall performance.

As can be seen in table 3, I collect data on the birth place of 33 executive positions of which roughly 58 percent (19 CEOs) are born in the state of their pension fund location. Furthermore, out of 208 executives for which I gather information concerning the location of their former university, 129 (or more than 62 percent) studied at least at one university that is located in the same state as the fund they are managing. The high percentages display the need for an examination with regards to pension state affiliation and bad performance. This paper therefore creates a binary variable called pension fund *State Affiliation*, which indicates one if a CEO was born and/or studied in the state of his pension fund and zero otherwise. In total I find the data on birth and/or university location for 212 CEOs, of which 134 (63 percent) have a past affiliation with their pension fund state.

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[18] For example, the recent CEO of the Richmond Retirement System, served between 2005 and 2012 as pension fund executive of the Spokane Employees' Retirement System and therefore appears twice in the sample (holds 2 CEO positions during the sample period). Overall 29 CEOs hold two and 3 CEOs hold three positions in the sample.

Business related University Education – *Business Education*

I gather information on the field of study and the degree (undergraduate or graduate) a CEO obtained in his university career. Intuitively, a CEO who took business classes in school could be more opposed to basic investment mistakes like underdiversification or high correlation among investment assets of his fund. These in turn are related to home-state bias and underperformance.

Table 4 shows under the columns *Undergrad* and *Graduate* the different fields of studies, that the CEOs in the sample chose. A first remark is directed towards the number of CEOs that took basic business classes. It is reasonable to assume that a person who works as head of a financial institution, responsible for the retirement of a large number of people should have an undergraduate study in a business related field. However, it appears that the board of directors, who are in charge of appointing the CEO, think about this matter differently. Out of 132 executive positions for which I obtain undergraduate study information, only 70 CEOs or a bit more than half (53 percent) studied a college subject that is related to business (e.g. finance, accounting, economics or others) for their Bachelor's degree. Almost 20 percent (24 CEOs) studied a subject of political background and 28,8 percent of the CEOs studied fields that are completely unrelated to the job description of executives (like geography, arts, physics or philosophy).

For graduate studies, the numbers get even smaller. Out of the 98 observed degrees, only 46 were in the fields of business or economics. In order to see the consequences on the investment behavior of CEOs, I create a variable measuring *Business Education* (depicted by table 4, column 3). This binary variable indicates whether the CEO obtained a business related university degree. It incorporates all business studies (finance, marketing, accounting etc.) as well as economics. Furthermore, it incorporates postgraduate degrees, meaning it does not differentiate between bachelor, master or MBA studies. As displayed by column 3, 44 of the 132 CEO positions are held by a person without such an education, making up one third of all observations.

Occupational Experience – *Financial Experience, Private Sector Fin. Exp., Asset Management Experience, Private Equity Experience, Public Sector Asset Management Experience*

While going through the biography of a pension fund CEO in order to determine his level of qualification, on-the-job experience measured by previous occupations plays a major role. Not only previous jobs as pension fund executive but also industry and investment related positions contribute positively to the CEO's CV. This paper collects data on all jobs the CEO held during his career prior to the employment as fund executive. Looking at table 5, I obtained the past employment data for 307 CEOs and created the following 9 binary variables:

1. *Financial Experience*

   The variable determines whether the CEO obtained any kind of finance related experience during his life. Examples include, but are not limited to, the fields of investment management, treasury, auditing, accounting, taxation or asset management. As can be seen in table 5, more than 76 percent (235 observations) of the sample CEOs have experience in the broad field of finance from previous jobs.

2. *Private Sector Financial Experience*

   Did the executive work at any point of his life for a financial company held by private individuals? Here the terminology attempts to differentiate these companies from government entities in the field of finance. This variable determines potential differences in the level of financial expertise gathered from working in the private sector versus working in the public sector. The variable indicates 1 if the CEO held a financial position for a privately owned corporation and 0 if he only gathered financial experience, working for government entities or if he did not obtain any related experience. A relatively small fraction of only 24 percent of the sample gained financial experience in the private sector. A lot of the executives worked exclusively in the public pension sector or came from other government offices to the job.

3. *Asset Management Experience*

   This variable indicates whether the pension fund CEO ever worked in a position where he managed a security portfolio or where he was actively involved in the decision making process of investing cash flows. Andonov, Hochberg and Rauh (2015) point out the

necessity to distinguish between general finance areas and fields in which common investment knowledge is practiced. Following this variable methodology, I exclude jobs in the finance industry that are not investment related. As example for this variable to indicate 1 serve asset manager, investment banker and fund manager.[19] Occupations like Accountant, Controller or Retail/Mortgage Banker are considered 1 (applicable) under the variables of financial experience but are now considered 0 (not applicable) under this variable. In the sample, almost two thirds (66,1%) of the participants gathered experience in the field of asset management.

4. *Public Sector Asset Management Experience*

   This variable groups all CEOs who gained investment experience exclusively at government entities. I include this variable in consideration of the high percentage of CEOs who gathered investment experiences only at public entities. Taking a look at table 5 again, it is remarkable that more than half of the sample executives never gained investment experience outside of government entities. As a matter of fact, a lot of US public pension fund CEOs only make such experience at other public pension funds or even solitarily at the fund they are currently employed for (e.g. working as analyst or CIO before). Others worked as a treasurer for the municipal or as federal financial analyst. The variable Public Sector Asset Management Experience examines whether these CEOs face differences in performance in comparison to their peers.

5. *Private Equity Experience*

   Breaking investment experience one step further down, I separate experience gathered in private equity firms and related industries.[20] Having a higher level of industry related experience for a CEO, may result in an enhanced investment performance due to potentially better contract understanding and enhanced GP picking abilities. Depicted in table 6, in the sample only 2.6 percent of CEOs (8 Observations) worked in the industry prior to their pension fund employment.

Advanced Education – *MBA, CFA & Doctor*

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[19] Under the variable, pension fund managers are also considered if they worked on the investment side (not administrative section) of the fund.

[20] This paper considers Venture Capital and Mergers & Acquisitions as related industries

Motivated by previous research on the explanatory power of advanced education on investment performance, this section introduces the three variables of the category that are examined in the paper.

1.  Master of Business Administration - *MBA*

    Even though already included in the *Business Education* variable of this paper, I separate MBA degrees and create a single variable to measure the effect of the postgraduate business study on its own. The MBA is a broad management degree that requires a significant amount of experience in both an academic and an occupational perspective. Generally, it delivers a broad range of business knowledge for the student and serves as prestigious title that prepares the holder for a wide range of management functions. MBA holders can be found at all management positions in every field of business. Usually the study consists of a broad curriculum, covering all important business subjects, however there are field specific variations, that go into debt on specific topics like Financial Management (AMBA, 2016). In summary, not only does the MBA cover financial education, it also potentially equips a pension fund CEO with management qualities that could be crucial to manage his daily operations. Taking a look at table 4, one can see that out of the 388 sample executives, 34 (9,6 percent) obtained such a post graduate degree.

2.  Chartered Financial Analyst - *CFA*

    The chartered financial analyst (CFA) is a three level program which is based on a distance study in the field of finance and investments. It potentially prepares the holder for a financial career as portfolio manager, financial advisor or chief-level executive. It thereby covers topics like equity investments, portfolio management and corporate finance. One building block of the CFA is called "alternative investments". In consideration of this curriculum one may assume that a holder obtained the right set of capabilities to govern an investment oriented pension fund. 20 CEOs in the sample (table 4) are entitled to call themselves CFA. These make approximately 5,2 percent of the sample.

3. Doctor Title - *Ph.D.*

   Inspired by the literature about portfolios managed by Ph.D. and the superiority in performance when directly compared to their non-academic portfolio-manager peers (Chaudhuri, Ivkovich, Pollet and Trzcinka, 2013), this paper creates the "doctor variable" that indicates one if a CEO holds such a degree. It is important to note that I did not differentiate between the different fields of study while obtaining the data, as often times the title was mentioned only in front of the CEOs name without any further elaboration. However, following the literature mentioned above, there might be significant impacts of holding any kind of a doctor title, as it potentially changes working approaches, investment styles and management patterns. As can be seen by table 4, 44 CEOs or roughly 13 percent of the sample hold a doctor title. This means that among the three advanced titles, a Ph.D. is the most popular among public pension fund CEOs.

## 4.2 Methodology

Considering the cross-sectional nature of the data collected, this paper uses the above mentioned explanatory variables to perform a linear regression analysis in order to display the relation between the CEO characteristics and the performance of the underlying pension fund. I use the internal rate of return (IRR) after all applicable costs and commissions (Net IRR) as main performance measure. The Net IRR equates all cash flows to the investment costs, thereby enabling the comparison of investments with different sizes and time horizons. The basic regression therefore looks accordingly:

$$y_{Net\ IRR} = \beta_0 + \beta_{State\ Affiliation} + \beta_{Business\ Education} + \beta_{Fin.Exp.} + \beta_{Private\ Sector\ Fin.Exp.} \quad (1)$$
$$+ \beta_{Asset\ Mgmt\ Exp.} + \beta_{Public\ Sector\ Asset\ Mgmt\ Exp.} + \beta_{Private\ Equity\ Exp.}$$
$$+ \beta_{MBA} + \beta_{CFA} + \beta_{Ph.D.} + \varepsilon$$

Furthermore, this paper will use a second proxy for performance namely the multiple on invested capital (MOIC). This multiple simply shows all net cash flows received from the investment over the initial amount invested.

$$Multiple\ on\ Invested\ Capital = \frac{(initial\ capital\ invested + return - investment\ fees\ )}{initial\ capital\ invested} \quad (2)$$

Similarly, the multiple does not account for differences in time horizons or investment size. The second regression equation looks as follows.

$$
\begin{aligned}
y_{MOIC} = \beta_0 +\ &\beta_{State\ Affiliation} + \beta_{Business\ Education} + \beta_{Fin.Exp.} + \beta_{Private\ Sector\ Fin.Exp.} \quad (3) \\
&+ \beta_{Asset\ Mgmt\ Exp.} + \beta_{Public\ Sector\ Asset\ Mgmt\ Exp.} + \beta_{Private\ Equity\ Exp.} \\
&+ \beta_{MBA} + \beta_{CFA} + \beta_{Ph.D.} + \varepsilon
\end{aligned}
$$

As a next step, this paper will examine the effects of the CEO characteristics on the home-state bias. Table 6 depicts the overinvestment per state in terms of number of investments, volume and performance in the sample. While column one shows the total investments over the time period of 1980 to 2016, column two only considers same-state investments of the funds. Even though the data for a lot of states is incomplete, comparing the numbers with the out-of-state investments of column 3, a relatively poor performance is observed. In-state investments perform on average 1,8 percent worse. Measuring the effect by the median of returns even amplifies the result up to a performance differential of 2,8 percent per investment.

In order to examine the effects on a pension fund level, an indicator for in-state investments is needed. As displayed by table 7, one drawback of the sample is that the data on investment size (the fund commitment) is incomplete. Therefore, I determine the numbers of in-state investments per pension fund for each year, divide them by the overall number of investments within that particular year and use them as proxy for in-state investments. In addition, I construct a benchmark to measure the extent to which this in-state investment proxy is out of proportion. This benchmark refers to the method used by Hochberg and Rauh (2013) named "*the state's share of all out-of-state investments*". It simply reflects the share of the same-state investments of all non-state pension funds. In summary, the construction of a home-state bias for *Pension fund$_i$* looks as follows.

$$HSB_i = \frac{no\ of\ in-state\ investments_{it}}{no\ of\ all\ investments_{it}} - \Sigma(\frac{no\ of\ state_i\ investments_{jt}}{no\ of\ all\ investments_{jt}} \qquad (4)$$

$$+ \frac{no\ of\ state_i\ investments_{kt}}{no\ of\ all\ investments_{kt}} \ldots + \frac{no\ of\ state_i\ investments_{nt}}{no\ of\ all\ investments_{nt}}) * \left(\frac{1}{n}\right)$$

where $HSB_i$ denotes the home-state bias of $Pension\ fund_i$, the first fraction displays the proportion of i's in-state investments for time period (t) and the second part of the equation denotes the average private equity investment share of all non-state pension funds (j, k…n) in the same state. Thus, the third basic regression of this paper examines the explanatory power of CEO characteristics on the home-state variable above.

$$y_{HSB} = \beta_0 + \beta_{State\ Affiliation} + \beta_{Business\ Education} + \beta_{Fin.Exp.} + \beta_{Private\ Sector\ Fin.Exp.} \qquad (5)$$

$$+ \beta_{Asset\ Mgmt\ Exp.} + \beta_{Public\ Sector\ Asset\ Mgmt\ Exp.} + \beta_{Private\ Equity\ Exp.}$$

$$+ \beta_{MBA} + \beta_{CFA} + \beta_{Ph.D.} + \varepsilon$$

## 4.3 Further methodology and assumption tests

Following the methodology applied in Andonov, Hochberg and Rauh (2016), I independently double cluster the standard errors in each model into subgroups of the limited partner and the vintage of the private equity fund. These robustness tests account for a potentially high inter-cluster similarity, meaning that clustering excludes the effect of relatively high or relatively low returns achieved in a certain pension fund over time e.g. due to an ongoing fund investment culture that is followed by every CEO in office, which in the end would not reflect his capabilities. Similarly, clustering for vintage accounts for return similarities that share the same year. In each model I also account for vintage year fixed effects and for fixed effects due to the size of pension funds by including vintage year and the logarithm of assets under management (AUM) as additional variables.

In order to ensure that there is no functional misspecification in terms of the appropriateness of the methodology, I test the models used in this thesis for heteroscedasticity, as it is a big concern while using the linear regression model. There was no indication of heteroscedasticity at any stage during the testing process. Furthermore, I check for the assumption of normality. Since most of my data is binomial, the only variables that have to satisfy the normality assumption

are my dependent variables. Even after standardizing and winsorizing the data, it was not possible to achieve a normal distribution of the return measures (Net IRR and MOIC). However, considering the relativization effect of the large amount of observations, this assumption might be neglected. By nature, investment returns are not normally distributed.[21]

In order to see whether a linear approach of my variable always makes sense, I conduct a multilinear regression, combining different CEO experiences with each other to check their joined impact on the overall explanatory power of the model.

In addition, the nature of my test and especially the relatively high amount of different variables implies the conduction of several robustness checks for all variables and test results.

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[21] This phenomenon has been witnessed by different literature and is extensively summarized by Sheikh and Quiao (2010).

# 5 Empirical results

## 5.1 Business education and state association

Performance Measures

I begin my empirical analysis by a linear regression of the explanatory variables *Business Education* and *State Association*, using the Net IRR as well as the MOIC as dependent variables in table 8. I consciously separate these two variables from my main test, due to the relatively small number of observations and the high linkage of the observation count for the two in direct comparison to the other independent variables. This linkage results from the fact that very frequently, when I obtain information concerning the study program a CEO took (Business Education) I also receive information with regards to the destination of his former university (State Affiliation) and therefore collected data for both variables at the same time. As can be seen in table 7, the overall explanatory power of the model, depicted by the R-squared is relatively low.

Also, in consideration of the common benchmarking p-values 0.01, 0.05 and 0.10 there is no significant relation between the variables and the return proxies displayed. This observation leaves me with the impression that the state background in terms of birth place or former university location of CEOs does not directly matter for the performance of the funds private equity investments. In a same manner, basic university Business Education does not seem to affect the fund's return on alternative investments. The outcome is unfavorable for the hypothesis stating that the local background of CEOs results in higher in-state investments, as these are characterized by lower returns. It therefore raises the question of whether *State Affiliation* and *Business Education* do not explain the home-state bias either.

The home-state bias

For table 8, I used the constructed home-state bias of all funds as dependent variable and the same model prerequisites. The outcome looks similar to the one obtained above.
Even though the explanatory power of the adjusted $R^2$ slightly increases by 0.1, the results for both variables stay insignificant at the scientific benchmarks. This result further supports the outcome above, finding that *State Affiliation* and *Business Education* of CEOs do not negatively impact investment returns.

It appears that the personal background of a certain US state in terms of an executive's birth-place, does not increase an overinvestment in private equity partners located in that particular state. Similarly, according to my results the hypothesis that a CEO who studied business subjects during his university career, reduces the likelihood of a home-state bias within the alternative investment portfolio of his fund, can be rejected.

## 5.2 Occupational experience and advanced education

Performance Measures

Coming to the main regression of this paper (table 9), I test the impact of the explanatory variables of occupational experience and advanced education from this paper. As dependent variable for performance, I use the Net IRR for models 1, 2, 3 and 4 as well as the multiple on invested capital for models 5, 6, 7 and 8. I divide each of the two different dependent variable regressions into four sub models in order to account for the multicollinearity arising from the occupational experience variables.

Looking at the outcome of the linear regression for the Net IRR, the only significant variable that endures all 4 models at a significance level ranging from 90 to 95 percent confidence, is MBA. The coefficient ranges from 1.1 to 1.4, meaning that obtaining an MBA increases the annual performance of investments to private equity by 1.1-1.4 percent, measured in Net IRR. The observation further supports the finding of Golec (1996), who argues that MBA holders' broad knowledge of investments and superior management practices may make a difference. Intuitively, an advanced educational degree in the wide area of management can equip the executive with the right amount of knowledge to successfully govern a pension fund and deliver superior portfolio return. The result may arise directly from the finance knowledge gained, but can also be due to better management practice of the holders. Following the argument of Golec (1996), MBA holders may be better at picking well performing private equity firms because of the ability to identify good management practice within the partner firms.

Surprisingly, the trend of MBA outperformance is not valid for any of the models 5, 6, 7 or 8, using the multiple on invested capital as dependent variable. For these models, no variable seems significant. The finding is unexpected in the sense that Net IRR and multiple of invested

capital measure the same thing, namely the return of the pension funds investment. One difference however is the property of the sample: some observations of investment returns are only stated in Net IRR and have blank cells for the multiple on invested capital and others are stated vice versa. However, after an additional data test, I can conclude that the results do not arise from these observation differences within the sample.[22] Further testing lies beyond the scope of this paper, therefore I will accept the outcome and remark that additional research with regards to the MBA variable in a different sample needs to be done in order to confirm the results.

Furthermore, in the analysis *Financial* and *Asset Management Experience* does not have a statistically significant impact on investment performance. One possibility is the literally executive work of CEOs in public pension funds, who may not have too much influential power on individual investment decisions but rather execute board orders and manage the fund. Another possibility for the finding is that CEOs without these characteristics have more experienced executive peers (investment officers or advisors) who balance this lack of knowledge. As mentioned in section 2, in practice even while looking at organizational charts, the CEOs linkage to investments can be hard to identify.

In addition, it is important to note that the outcome for the variable *Public Sector Asset Management Experience* is among the insignificant variables. There is no negative impact on portfolio returns for CEOs that are coming from financial institutions of governmental background in the sample. Public pension funds should take this outcome with a certain sense of relief, considering the high percentage of executives, that only obtained their occupational experience from government entities. Finally, the overall explanatory power for all 8 models is not very big as denoted by a continuously low adjusted R-squared.

Table 10 controls for investment categories of private equity funds while examining the explanatory power of MBA holders. This test is appropriate to see whether the enhanced performance comes from a better allocation among the different private equity categories or from a better approach of individual private equity fund picking. I therefore add the following private equity categories: buyout funds, venture capital funds, fund of funds, other private equity investments

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[22] In order to account for the potential pitfalls, I run a separate test, only including "complete observations" that state the return of pension funds in Net IRR and MOIC. However, as depicted by table 14, the results are the same. MBA stays significant at a confident range from a 90 - 95 percent, depending on the Net IRR model and is still insignificant for all models that use multiple on invested capital as dependent variable.

as well as the investment in natural resources and real estate funds. The differences in model 1 and 2 arises from the inclusion of the under 1 omitted variable Fund of Funds. Even after controlling for asset allocation within the subcategories, MBA holders clearly outperform their CEO peers. Comparing the coefficients of the variable in table 11 model 1 and 2 with the results of table 10 models 1, 2, 3 and 4, one can conclude that almost all differences in performance are due to enhanced individual private equity funds picking of MBA holders. Only up to 10 percent of the observations are explained by better asset allocation decision making. The result favors the argument explained earlier, which states that MBA holders are able to identify good practice of individual firms due to the management knowledge and experience obtained through the educational program.

The home-state bias

For the home-state bias (table 11), the picture of the main regression looks slightly different. Almost all occupational and degree variables are insignificant. However, there is some indication that a CFA could reduce the bias of overinvesting in the home state in certain occasions as it is significant on a 90 percent confident level for models 1 and 3. The slope of the variable ranges in the applicable models from -0.3 to -0.4, meaning that obtaining a CFA for a CEO potentially reduces the overinvestment in certain occasions by 30 to 40 percent. This finding would support the argument of Su, Kang and Li (2011), who find that CFA holders are less likely to bias behavior. Taking into consideration that the CFA program is designed to prepare the holder to optimize investment decision making, it seems reasonable to assume that a CFA is more aware of such a bias. Nonetheless, as this finding is based on a relatively low confident level and does not withstand all robustness checks (see Model 2 and 4), the validity should be strongly questioned and further investigated. The adjusted $R^2$, indicating the explanatory power of the model here stays at a range level from 0.11 to 0.12.

## 5.3 A non-linear approach

Performance measures

After analyzing the different CEO characteristics and their explanatory power on investment performance and the home state bias, I now look at reasonable combinations of variables to see whether they have some significance in explaining the return performance.

Looking at table 12, one can see that the combination of *Asset Management Experience* and having an MBA significantly increases the investment return by approximately 1,7 percent on an alpha level of 0,01. This combination can be found for 29 sample CEOs. Furthermore, being in possession of the seldom combination of MBA and a doctor title, can enhance investment returns of the underlying fund by almost 3 percent. However, this result is clearly limited to the fact that out of our 388 sample CEOs, there was only one holder of both titles. Another limitation here is based on the low explanatory power of the overall model, which lies between 0,08 and 0,09 measured by the adjusted R-squared.

The home-state bias

For the home-state bias (table 13), the combination of variables resulted in a higher quantity of explanatory variables with relevant significance levels. The combination of *Asset Management Experience* and holding a Ph.D. reduces the home-state bias measured by 32% based on a 95 percent confident level. This finding applies to 22 CEOs. Furthermore, holding a Ph.D. and financial experience in the private sector reduces the home-state bias by almost 80 percent in our sample based on an alpha level of 5 percent. In the sample, 11 executives are able to call themselves Ph.D. and additionally possess this sort of financial experience. And lastly, private sector experience and the possession of a CFA decreases the common investment mistake by 28 percent but only based on a 90 percent confident level (applicable for 10 sample CEOs). Again, it is important to state that the adjusted R-squared never exceeded 0,1.

To summarize this section, it can be said that a combination of occupational experience and advanced education clearly enhances the decision making process for private equity investments. The finding is not surprising. However, it displays the need for the pension board to hire CEOs with a good mixture of field experience and theoretical knowledge in order to achieve optimal portfolio return.

**6. Conclusion**

This paper extensively examines the effect of pension fund CEO characteristics on their private equity investments. It relates the state affiliation, education and occupational experience of executives to the investment performance in the alternative asset class. My major findings are as follows.

Firstly, using the Net IRR as performance measure, holding an MBA significantly enhances the investment performance in private equity investments. The finding withstands several robustness checks and follows the observation of previous research in the field. It appears that the MBA program provides a broad range of useful tools for pension fund CEOs. However, in consideration of the insignificant results using the multiple on invested capital, further research needs to be done to fully confirm the finding.

Secondly, in half of the models, holding a CFA reduced the likelihood of an overinvestment in the home state of a pension fund. The result contributes to previous literature that find a reduced risk taking behavior and higher reluctance to investment bias of CFAs. A big part of the curriculum for CFA students involves financial ethics and debasing, which may contribute to a reduction of the home-state bias. After all, the findings were based on a relatively low confidence level and should be further examined.

Thirdly, in the sample financial or asset management experience does not appear to explain investment performance. One potential explanation here is a limited stake of CEOs in the investment decision making process as it is officially carried out by the board of directors. Another potential explanation for this finding is the knowledge coverage through colleagues (e.g. investment officers), who may advise the CEO or take direct executive responsibility for the investments.

Fourthly, this paper finds that having only a governmental background in terms of investment experience for CEOs, does not negatively affect the performance on private equity investments or their likelihood to overinvest in the home state. This finding should be seen as a relief by many public pension funds in the US, considering the high number of CEOs that exclusively

worked in political positions of financial background prior to their fund employment.

Finally, this paper combines different CEO characteristic and finds that the unification of occupational experience and advanced education delivers the best conditions to perform well on private equity investments. In particular, the combination of having investment experience and holding an MBA, significantly increases portfolio returns. Similarly, holding a CFA or Ph.D. in combination with occupational experience lowers the home-state bias.
Drawbacks of this study include the continuously low explanatory power of the models and the inconclusive differences between the two return measures.

In summary, this paper is the first to analyze the characteristics of public pension fund CEOs on investment performance. It can be said that the biography of the executives seems to deliver some explanatory power to the overall performance of the funds' private equity portfolios. In light of the current market environment in terms of rising pension liabilities, unfavorable demographic tendencies and low interest rates, this field is highly important to optimize pension performance. One possible direction for further research is the examination of pension fund staff characteristics in relation to equity security investments, as there are still a lot of dark spots to discover.

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# 8. Appendix

## Table 1: A list of the 188 sample public pension funds and belonging states

| Pension fund name | State | | Pension fund name | State | | Pension fund name | State | | Pension fund name | State |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 Alameda County Employees' Retirement Association | CA | 51 | Fort Worth Employees' Retirement Fund | TX | 101 | Nebraska Investment Council | NE | 151 | Seattle City Employees' Retirement System | WA |
| 2 Anne Arundel County Retirement System | MD | 52 | Fresno County Employees' Retirement Association | CA | 102 | New Bedford Retirement Board | MA | 152 | Shelby County Tennessee Retirement System | TN |
| 3 Arizona Public Safety Personnel Retirement System | AZ | 53 | Georgia Firefighters' Pension Fund | GA | 103 | New Hampshire Retirement System | NH | 153 | South Carolina Retirement Systems | SC |
| 4 Arizona State Retirement System | AZ | 54 | Hampden County Regional Retirement Board | MA | 104 | New Jersey State Investment Council | NJ | 154 | South Dakota Retirement System | SD |
| 5 Arkansas Public Employees' Retirement System | AR | 55 | Hampshire County Retirement System | MA | 105 | New Mexico Educational Retirement Board | NM | 155 | Spokane Employees' Retirement System | WA |
| 6 Arkansas Teacher Retirement System | AR | 56 | Haverhill Retirement System | MA | 106 | New Mexico Public Employees' Retirement Asso- | NM | 156 | St. Paul Teachers' Retirement Fund Association | MN |
| 7 Arlington Contributory Retirement Board | MA | 57 | Holyoke Retirement Board | MA | 107 | New York City Employees' Retirement System | NY | 157 | State Teachers' Retirement System of Ohio | OH |
| 8 Austin Police Retirement System | TX | 58 | Houston Firefighters' Relief and Retirement Fund | TX | 108 | New York City Fire Department Pension Fund | NY | 158 | State Universities Retirement System of Illinois | IL |
| 9 Baltimore City Employees' Retirement System | MD | 59 | Houston Municipal Employees' Pension System | TX | 109 | New York City Police Pension Fund | NY | 159 | State of Connecticut Retirement Plans and Trust | CT |
| 10 Baltimore Fire & Police Employees' Retirement Sys- | MD | 60 | Houston Police Officers' Pension System | TX | 110 | New York State Common Retirement Fund | NY | 160 | State of Delaware Board of Pension Trustees | DE |
| 11 Barnstable County Retirement System | MA | 61 | Illinois Municipal Retirement Fund | IL | 111 | New York State Teachers' Retirement System | NY | 161 | State of Wisconsin Investment Board | WI |
| 12 Belmont Contributory Retirement System | MA | 62 | Illinois State Board of Investment | IL | 112 | Newton Retirement Board | MA | 162 | Tacoma Employees' Retirement System | WA |
| 13 Bristol County Retirement System | MA | 63 | Imperial County Employees' Retirement System | CA | 113 | Norfolk County Retirement System | MA | 163 | Taunton Contributory Retirement System | MA |
| 14 Brockton Contributory Retirement System | MA | 64 | Indiana Public Retirement System | IN | 114 | North Carolina Department of State Treasurer | NC | 164 | Teacher Retirement System of Texas | TX |
| 15 Brookline Retirement System | MA | 65 | Iowa Public Employees' Retirement System | IA | 115 | North Dakota State Investment Board | ND | 165 | Teachers' Retirement System of Louisiana | LA |
| 16 Burlington Employees' Retirement System | VT | 66 | Kansas Public Employees' Retirement System | KS | 116 | Ohio Police & Fire Pension Fund | OH | 166 | Teachers' Retirement System of the State of Illinois | IL |
| 17 California Public Employees' Retirement System | CA | 67 | Kentucky Retirement Systems | KY | 117 | Ohio Public Employees' Retirement System | OH | 167 | Teachers' Retirement System of the City of New | NY |
| 18 California State Teachers' Retirement System | CA | 68 | Kentucky Teachers' Retirement System | KY | 118 | Ohio State Highway Patrol Retirement System | OH | 168 | Tennessee Consolidated Retirement System | TN |
| 19 Cambridge Retirement System | MA | 69 | Kern County Employees' Retirement Association | CA | 119 | Oklahoma City Employees Retirement System | OK | 169 | Texas County & District Retirement System | TX |
| 20 Chicago Park Employees' Annuity & Benefit Fund | IL | 70 | Laborers' & Retirement Board Employees' Annuity | IL | 120 | Oklahoma Firefighters Pension & RS | OK | 170 | Texas Municipal Retirement System | TX |
| 21 Chicago Transit Authority Employees Retirement Plan | IL | 71 | Los Angeles City Employees' Retirement System | CA | 121 | Oklahoma Law Enforcement Retirement System | OK | 171 | Town of Lexington Retirement System | MA |
| 22 City of Aurora General Employees' Retirement Plan | CO | 72 | Los Angeles County Employees' Retirement Asso- | CA | 122 | Oklahoma Police Pension and Retirement System | OK | 172 | Tulare County Employee Retirement Association | CA |
| 23 City of Detroit General Retirement System | MI | 73 | Los Angeles Fire and Police Pension System | CA | 123 | Oklahoma Teachers Retirement System | OK | 173 | Ventura County Employees' Retirement Associa- | CA |
| 24 City of Detroit Police and Fire Retirement System | MI | 74 | Los Angeles Water & Power Employees' Retire- | CA | 124 | Orange County Employees' Retirement System | CA | 174 | Vermont Pension Investment Committee | VT |
| 25 City of Grand Rapids General Retirement System | MI | 75 | Louisiana School Employees' Retirement System | LA | 125 | Oregon State Treasury | OR | 175 | Virginia Retirement System | VA |
| 26 City of Lowell Retirement Plan | MA | 76 | Louisiana State Employees' Retirement System | LA | 126 | Pennsylvania Public School Employees' RS | PA | 176 | Washington State Investment Board | WA |
| 27 City of Miami Fire Fighters' & Police Officers' Retire- | FL | 77 | Lynn City Public Pension Plan | MA | 127 | Pennsylvania State Employees' Retirement System | PA | 177 | Watertown Contributory Retirement System | MA |
| 28 City of Phoenix Employees' Retirement System | AZ | 78 | MWRA Retirement System | MA | 128 | Philadelphia Board of Pensions & RS | PA | 178 | West Virginia Investment Management Board | WV |
| 29 City of Quincy Contributory Retirement Board | MA | 79 | Maine Public Employees' Retirement System | ME | 129 | Plymouth County Retirement Association | MA | 179 | Weymouth Retirement System | MA |
| 30 City of Waltham Retirement System | MA | 80 | Manchester Employees Contributory RS | NH | 130 | Plymouth Retirement System | MA | 180 | Worcester Regional Retirement System | MA |
| 31 City of Woburn Retirement Board | MA | 81 | Marin County Employees' Retirement Association | CA | 131 | Policemen's Annuity and Benefit Fund of Chicago | IL | 181 | Worcester Retirement System | MA |
| 32 Colorado Fire and Police Pension Association | CO | 82 | Maryland State Retirement and Pension System | MD | 132 | Public Employees' Retirement System of Idaho | ID | 182 | Wyoming Retirement System | WY |
| 33 Colorado Public Employees' Retirement Association | CO | 83 | Massachusetts Bay Transportation Authority Re- | MA | 133 | Public Employees' Retirement System of Missis- | MS | 183 | Alameda-Contra Costa Transit District Employees' | CA |
| 34 Contra Costa County Employees' Retirement Associa- | CA | 84 | Massachusetts Housing Finance Agency RB | MA | 134 | Public Employees' Retirement System of Nevada | NV | 184 | Braintree Contributory Employees' RS | MA |
| 35 Cook County Pension Plan | IL | 85 | Massachusetts Pension Reserves Investment Man- | MA | 135 | Public School Retirement System of Missouri | MO | 185 | Danvers Retirement System | MA |
| 36 Dallas Employees' Retirement Fund | TX | 86 | Melrose Retirement Board | MA | 136 | Public School Teachers' Pension & Retirement | IL | 186 | Southbridge Retirement Board | MA |
| 37 Dallas Police & Fire Pension System | TX | 87 | Merced County Employees' Retirement Associa- | CA | 137 | Regents of the University of California | CA | 187 | Swampscott Retirement System | MA |
| 38 Denver Employees' Retirement Plan | CO | 88 | Methuen Contributory Retirement System | MA | 138 | Richmond Retirement System | VA | 188 | Town of Palm Beach Retirement System | FL |
| 39 District of Columbia Retirement Board | DC | 89 | Michigan Department of Treasury | MI | 139 | SEPTA Pension and Retirement | PA | | | |
| 40 Duluth Teachers' Retirement Fund | MN | 90 | Milwaukee County Employees' Retirement System | WI | 140 | Sacramento County Employees' Retirement Sys- | CA | | | |
| 41 El Paso Firemen & Policemen's Pension Fund | TX | 91 | Minnesota State Board of Investment | MN | 141 | San Antonio Fire and Police Pension Fund | TX | | | |
| 42 Employees' Retirement System of Rhode Island | RI | 92 | Missouri Department of Transportation & Patrol | MO | 142 | San Bernardino County Employees' RA | CA | | | |
| 43 Employees' Retirement System of Texas | TX | 93 | Missouri Local Government Employees RS | MO | 143 | San Diego City Employees' Retirement System | CA | | | |
| 44 Employees' Retirement System of the City of Milwau- | WI | 94 | Missouri State Employees' Retirement System | MO | 144 | San Diego County Employees RA | CA | | | |
| 45 Employees' Retirement System of the State of Hawaii | HI | 95 | Mobile Police and Firefighters Pension Fund | AL | 145 | San Francisco Employees' Retirement System | CA | | | |
| 46 Employees' Retirement System of Baltimore County | MD | 96 | Montana Board of Investments | MT | 146 | San Joaquin County Employees' RA | CA | | | |
| 47 Falmouth Contributory Retirement System | MA | 97 | Municipal Employees' Annuity & BFund of CHI | IL | 147 | San Luis Obispo Pension Trust | CA | | | |
| 48 Firefighters' Retirement System of Louisiana | LA | 98 | Municipal Employees' RS of Michigan | MI | 148 | San Mateo County Employees' RA | CA | | | |
| 49 Fitchburg Retirement Board | MA | 99 | Municipal Fire and Police RS of Iowa | IA | 149 | Santa Barbara County Employees' RS | CA | | | |
| 50 Florida State Board of Administration | FL | 100 | Natick Retirement Board | MA | 150 | School Employees' Retirement System of Ohio | OH | | | |

Table 2: **Summary Statistics: No. of Investments by Type and Year**

This Table represents the number of investment observations of the sample, grouped by limited partner type during the observation period. The time line displayed is divided into decades. The category *Others* to a large extend includes late stage funds and investments in the private equity secondary market.

| LP Type | 1990 - 1999 | 2000 - 2009 | 2010 - 2011 | Total |
|---|---|---|---|---|
| Buyout | 817 | 3003 | 509 | **4329** |
| Co-Investment | 2 | 64 | 11 | **77** |
| Early Stage | 167 | 399 | 20 | **586** |
| Fund of Funds | 109 | 699 | 149 | **957** |
| Growth | 34 | 267 | 88 | **389** |
| Mezzanine | 124 | 222 | 92 | **438** |
| Natural Resources | 124 | 222 | 92 | **438** |
| Real Estate | 262 | 2060 | 432 | **2754** |
| Ventures | 397 | 891 | 94 | **1382** |
| Others | 213 | 1339 | 333 | **1885** |
| **Total** | **2249** | **9166** | **1820** | **13235** |

Table 3: **Summary Statistics: State affiliation of CEOs**

This table represents the state affiliation of public pension fund CEOs in the sample. The first column depicts the sample executives born in the state of the fund. The second column shows the number of CEOs that studied in the pension fund state. The third column represents CEO positions in which the person was born and studied in the home state of the fund. The fourth column represents the variable *State Affiliation* which accounts for all CEOs who are born and/or studied in the pension fund state. The numbers in the table represent CEO positions rather than people, taking into account that executives may hold multiple positions during the sample period.

|                | Local birthplace | Local education | Both | State Affiliation |
|----------------|------------------|-----------------|------|-------------------|
| Applicable     | 19               | 129             | 14   | 134               |
| Not applicable | 14               | 79              | 8    | 78                |
| **Total**      | **33**           | **208**         | **22** | **212**         |

Table 4: **Summary Statistics: Educational background of CEOs**

This table presents the educational background of public pension fund CEOs from the sample. The first and second column show the scientific fields of undergraduate and graduate studies of the CEOs. The third column depicts the variable *Business Education*, which indicates whether an executive studied a business related topic in a broad sense (finance, economics and all fields of business) in undergraduate or graduate studies (including MBA). The fourth column represents the number of people that obtained a Ph.D. title. The fifth column displays all sample CEOs with are certified Chartered Financial Analysts (CFA). The sixth column presents the number of CEOs that obtained an MBA. The row *Business* refers to all Business programs (Accounting, Marketing, Management, MBA studies etc.) excluding finance. The numbers in the table represent CEO positions rather than people, taking into account that executives may hold multiple positions during the sample period.

|                | Undergrad | Graduate | Business Education | Ph.D. | CFA | MBA |
|----------------|-----------|----------|--------------------|-------|-----|-----|
| Finance        | 7         |          |                    |       |     |     |
| Business       | 53        | 41       |                    |       |     |     |
| Economics      | 10        | 5        |                    |       |     |     |
|                |           |          |                    |       |     |     |
| Law            |           | 31       |                    |       |     |     |
| Politics       | 24        | 11       |                    |       |     |     |
| Other          | 38        | 10       |                    |       |     |     |
|                |           |          |                    |       |     |     |
| Applicable     |           |          | 88                 | 44    | 20  | 34  |
| Not Applicable |           |          | 44                 | 344   | 368 | 354 |
| **Total**      | **132**   | **98**   | **132**            | **388** | **388** | **388** |

Table 5: **Summary Statistics: Occupational experiences of CEOs**

This table shows the five explanatory variables for occupational experience and their representation in the sample in terms of numbers and percentages. *Financial Experience and Private Sector Financial Experience* are variables, measuring broad industry experience (the latter specifically for non-government entities). *Asset Management Experience* specifically describes experience in investment functions. *Public Sector Asset Management Experience* depicts the CEOs that exclusively gained their asset management experience at public entities. *Private Equity Experience* indicates whether a CEO worked in the industry prior to joining the fund. The numbers in the table represent CEO positions rather than people, taking into account that executives may hold multiple positions during the sample period.

| | Applicable | | Not Applicable | | Total | |
|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % |
| Financial Experience | 235 | 76.5 | 72 | 23.5 | 307 | 100,0 |
| Private Sector Fin. Exp. | 73 | 23.8 | 234 | 76.2 | 307 | 100,0 |
| Asset Mgmt Experience | 203 | 66.1 | 104 | 33.9 | 307 | 100,0 |
| Public Sector AM Exp. | 156 | 50.8 | 151 | 49.2 | 307 | 100,0 |
| Private Equity Experience | 8 | 2.6 | 299 | 97.4 | 307 | 100,0 |

## Table 6: **Summary Statistics: The Home-State Bias per State from 1980 till 2016**

This table depicts the PE-investments per state in numbers, volume, average and median Net IRR . The first column shows all investments, the second only same-state and the third out-of-sate investments.

| State | Total Investments | | | | In-State Investments | | | | Out-of-state Investments | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | Volume (mn $) | Average Net IRR % | Median % | Count | Volume (mn $) | Average Net IRR % | Median % | Count | Volume (mn $) | Average Net IRR % | Median % |
| AL | | | | | | | | | | | | |
| AR | 24 | 879 | 14.7 | 0.0 | 1 | 4 | 9.5 | 9.5 | 23 | 875 | 14.9 | 14.5 |
| AZ | 130 | 6500 | 11.4 | 11.5 | 2 | 42 | -18.1 | -18.1 | 128 | 6458 | 11.7 | 11.5 |
| CA | 3014 | 177561 | 10.4 | 9.0 | 852 | 39399 | 9.2 | 8.3 | 2162 | 138162 | 10.9 | 9.5 |
| CO | 196 | 7185 | 10.1 | 8.5 | 8 | 269 | -0.7 | 0.9 | 188 | 6916 | 10.6 | 8.9 |
| CT | 175 | 8943 | 15.2 | 10.0 | 25 | 2464 | 6.4 | 6.8 | 150 | 6478 | 16.6 | 10.4 |
| DC | 12 | 484 | 7.1 | 5.0 | 2 | 84 | 1.2 | 1.2 | 10 | 400 | 8.4 | 5.0 |
| DE | 21 | 1217 | 14.0 | 9.2 | | | | | | | | |
| FL | 173 | 18922 | 10.6 | 11.3 | | | | | | | | |
| GA | 2 | 6 | 20.8 | 20.8 | | | | | | | | |
| HI | 138 | 1098 | 11.8 | 10.3 | | | | | | | | |
| IA | 187 | 6323 | 11.6 | 10.8 | | | | | | | | |
| ID | 53 | 1800 | 12.8 | 9.9 | 2 | 25 | 7.6 | 7.6 | 51 | 1775 | 12.9 | 10.0 |
| IL | 694 | 15508 | 11.3 | 10.3 | 189 | 3806 | 6.8 | 8.6 | 505 | 11702 | 12.9 | 10.8 |
| IN | 32 | 1308 | 13.7 | 12.5 | | | | | | | | |
| KS | 108 | 2722 | 7.7 | 9.0 | | | | | | | | |
| KY | 72 | 3647 | 12.0 | 11.6 | | | | | | | | |
| LA | 240 | 6612 | 13.5 | 9.3 | 1 | 10 | 14.4 | 14.4 | 239 | 6602 | 13.4 | 9.2 |
| MA | 165 | 4300 | 11.3 | 10.0 | 67 | 778 | 7.5 | 4.8 | 98 | 3522 | 14.5 | 11.5 |
| MD | 169 | 7602 | 10.1 | 10.8 | 8 | 187 | 7.5 | 5.2 | 161 | 7415 | 10.2 | 10.9 |
| ME | 17 | 560 | 11.8 | 11.1 | | | | | | | | |
| MI | 429 | 27389 | 11.9 | 10.0 | 23 | 644 | 8.8 | 8.9 | 406 | 26745 | 11.9 | 10.1 |
| MN | 216 | 13910 | 12.6 | 11.0 | 29 | 1406 | 6.2 | 8.7 | 187 | 12504 | 13.6 | 11.3 |
| MO | 106 | 4460 | 10.1 | 10.0 | 1 | 10 | 16.0 | 16.0 | 105 | 4450 | 10.1 | 10.0 |
| MS | 5 | 950 | 7.5 | 8.0 | | | | | | | | |
| MT | 102 | 2302 | 9.8 | 9.9 | | | | | | | | |
| NC | 186 | 15938 | 9.7 | 10.9 | 18 | 367 | 7.8 | 3.6 | 168 | 15571 | 9.8 | 11.0 |
| ND | 10 | 325 | 1.9 | 7.4 | | | | | | | | |
| NE | 33 | 850 | 8.9 | 10.6 | | | | | | | | |
| NH | 54 | 898 | 7.6 | 12.0 | | | | | | | | |
| NJ | 135 | 16258 | 9.8 | 10.0 | 4 | 385 | 9.0 | 6.4 | 131 | 15873 | 9.8 | 10.2 |
| NM | 103 | 2888 | 12.2 | 12.1 | | | | | | | | |
| NV | 91 | 1293 | 12.5 | 11.6 | | | | | | | | |
| NY | 1256 | 79871 | 10.0 | 10.3 | 523 | 33934 | 10.9 | 10.9 | 733 | 45937 | 9.3 | 9.5 |
| OH | 442 | 27872 | 9.1 | 9.7 | 41 | 875 | 5.5 | 5.2 | 401 | 26997 | 9.5 | 10.0 |
| OK | 37 | 960 | 13.2 | 12.2 | | | | | | | | |
| OR | 233 | 30633 | 11.8 | 10.9 | 5 | 285 | 18.4 | 17.9 | 228 | 30348 | 11.7 | 10.9 |
| PA | 722 | 51900 | 10.4 | 9.7 | 82 | 3509 | 4.1 | 5.8 | 640 | 48390 | 11.1 | 9.9 |
| RI | 84 | 1451 | 9.0 | 8.7 | 5 | 99 | 11.3 | 6.5 | 79 | 1352 | 8.9 | 9.4 |
| SC | 27 | 1978 | 15.3 | 11.6 | 1 | 20 | 77.7 | 77.7 | 26 | 1958 | 12.4 | 11.6 |
| SD | 0 | 0 | | | | | | | | | | |
| TN | 11 | 404 | 10.9 | 12.5 | | | | | | | | |
| TX | 680 | 49555 | 10.3 | 10.2 | 100 | 5609 | 9.4 | 9.9 | 580 | 43945 | 10.4 | 10.3 |
| VA | 226 | 13284 | 17.8 | 9.2 | 4 | 355 | 8.4 | 7.8 | 222 | 12930 | 18.0 | 9.2 |
| VT | 6 | 27 | 9.6 | 8.8 | 1 | 1 | 5.6 | 5.6 | 5 | 27 | 10.9 | 12.0 |
| WA | 311 | 44004 | 12.0 | 8.9 | 8 | 242 | 5.2 | -5.1 | 303 | 43762 | 12.2 | 9.0 |
| WI | 364 | 19354 | 11.1 | 10.5 | 13 | 369 | 13.1 | 12.2 | 351 | 18986 | 11.0 | 10.3 |
| WV | 27 | 997 | 15.6 | 15.1 | | | | | | | | |
| WY | 5 | 282 | 11.6 | 11.6 | | | | | | | | |
| **Total** | **11523** | **683206** | **11.4** | **10.3** | **2015** | **95177** | **10.0** | **7.6** | **8280** | **540079** | **11.8** | **10.2** |

Table 7: **Regressions: Business education, state affiliation and performance**

This table represents regressions in which the dependent variable measures performance in terms of Net IRR (1) and the multiple on invested capital (2). *State Affiliation* is a binary variable, representing the regional background of a CEO in terms of birthplace and university studies in the state of his pension fund. *Business Education* is a binary variable, indicating one if a CEO studied a business related subject during his undergraduate or graduate studies (including MBAs). I control for the logarithm of assets under management of the pension fund (fund size) and the year of the investment. I double cluster the standard errors by the investment fund vintage and by pension fund. Standard errors are reported in brackets. Significance levels of 0.10, 0.5 and 0.01 are represented by stars behind the coefficient (*, **, *** respectively).

|  | (1) Net IRR | (2) Multiple on Invested capital |
| --- | --- | --- |
| State Affiliation | -0.990 | -0.091 |
|  | [0.833] | [0.053] |
| Business Education | -0.152 | 0.016 |
|  | [0.622] | [0.035] |
| Log AUM | 0.139 | 0.009 |
|  | [0.273] | [0.012] |
| Vintage FE | yes | yes |
| Observations | 3673 | 3757 |
| Adjustd R-squared | 0.098 | 0.111 |

Table 8: **Regressions: Business education, state affiliation and local overinvestment**

This table represents a regression in which the dependent variable measures the home-state bias based on a home-state overinvestment differential of public pension funds in direct comparison to non-home state peers. *State Affiliation* is a binary variable, representing the regional background of a CEO in terms of birthplace and university studies in the state of his pension fund. *Business Education* is a binary variable, indicating one if a CEO studied a business related subject during his undergraduate or graduate studies (including MBAs). I control for the logarithm of assets under management of the pension fund (fund size) and the year of the investment. I double cluster the standard errors by the vintage of the private equity fund and by pension fund. Standard errors are reported in the second column. The respective P-values are displayed in the third column.

| | Home-state bias | | |
| --- | --- | --- | --- |
| | Coefficient | Std. Error | P-Value |
| State Affiliation | 0.012 | 0.189 | 0.950 |
| Business Education | -0.041 | 0.186 | 0.827 |
| Log AUM | 0.043 | 0.075 | 0.57 |
| Vintage FE | yes | | |
| Observations | 2980 | | |
| Adjusted R-squared | 0.197 | | |

Table 9: **Regression: Occupational experience, advanced education and performance**

This table represents regressions in which the dependent variable measures performance in terms of Net IRR in models (1) to (4) and the multiple on invested capital in models (5) to (8). All independent variables stated are of binary nature. *Financial Experience* and *Private Sector Financial Experience* are variables, measuring broad industry experience (the latter specifically for non-government entities). *Asset Management Experience* specifically describes experience in investment functions. *Public Sector Asset Management Experience* depicts the CEOs that exclusively gained their asset management experience at public entities. *Private Equity Experience* indicates whether a CEO worked in the industry prior to joining the fund. Ph.D., CFA and MBA measure advanced education of the executives. I control for the logarithm of assets under management of the pension fund (fund size) and the year of the investment. I double cluster the standard errors by the investment fund vintage and by pension fund. Standard errors are reported in brackets. Significance levels of 0.10, 0.5 and 0.01 are represented by stars behind the coefficient (*, **, *** respectively).

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | | | Net IRR | | | Multiple of Invested Capital | | |
| Financial Experience | -1,663 | | | | -0.047 | | | |
| | [0,645] | | | | [0,031] | | | |
| Private Sector Fin. Exp. | | -0.895 | | | | -0.003 | | |
| | | [0,670] | | | | [0,030] | | |
| Asset Mgmt Exp. | | | -0.003 | | | | -0.022 | |
| | | | [0,640] | | | | [0,041] | |
| Private Equity Exp. | | | | 0.694 | | | | 0.090 |
| | | | | [1,833] | | | | [0,104] |
| Public Sector AM Exp. | | | | 0.702 | | | | 0.019 |
| | | | | [0,391] | | | | [0,028] |
| Ph.D. | 0.300 | 0.480 | 0.567 | 0.588 | 0.026 | 0.033 | 0.032 | 0.032 |
| | [0,606] | [0,655] | [0,669] | [0,657] | [0,028] | [0,030] | [0,030] | [0,030] |
| CFA | 1.289 | 1.128 | 0.738 | 0.658 | 0.134 | 0.119 | 0.120 | 0.111 |
| | [0,800] | [0,859] | [0,667] | [0,749] | [0,123] | [0,120] | [0,119] | [0,125] |
| MBA | 1,333** | 1,397** | 1,168** | 1,129* | 0.035 | 0.031 | 0.034 | 0.036 |
| | [0,570] | [0,610] | [0,579] | [0,589] | [0,037] | [0,038] | [0,038] | [0,039] |
| Log AUM | 0.195 | 0.127 | 0.129 | 0.122 | 0.003 | 0.002 | 0.001 | 0.001 |
| | [0,180] | [0,213] | [0,194] | [0,200] | [0,011] | [0,011] | [0,011] | [0,011] |
| Vintage FE | yes | yes | yes | yes | yes | yes | yes | yes |
| Observations | 10223 | 10223 | 10223 | 10223 | 10449 | 10449 | 10449 | 10449 |
| Adjusted R-squared | 0.093 | 0.092 | 0.091 | 0.092 | 0.119 | 0.119 | 0.119 | 0.119 |

Table 10: **Regression: MBA holders and performance within fund types**

This table represents regressions in which the dependent variable measures performance in terms of Net IRR. MBA is a binary variable measuring whether the CEO is a holder of the title Master in Business Administration. I control for various investment classes of private equity, the logarithm of assets under management of the pension fund (fund size) and the year of the investment. Model (2) includes the in model (1) omitted control variable *PE fund of funds*. I double clustered the standard errors by investment fund vintage and by pension fund. Standard errors are reported in brackets. Significance levels of 0.10, 0.5 and 0.01 are represented by stars behind the coefficient (*, **, *** respectively).

| | (1) | (2) |
|---|---|---|
| | Net IRR | |
| MBA | 1,307** | 1,326** |
| | [0,628] | [0,616] |
| PE Buyouts | 3,673*** | |
| | [1,200] | |
| PE Venture Capital | 0.386 | -3.300 |
| | [2,801] | [3,602] |
| PE Fund of Funds | omitted | -3,670*** |
| | | [1,199] |
| PE other | 2,581*** | -1.098 |
| | [0,859] | [0,930] |
| Natural Funds | 5.212 | 1.544 |
| | [2,794] | [2,347] |
| RE Funds | -2.873 | -6,551*** |
| | [2,471] | [2,541] |
| Log AUM | -0.067 | -0.067 |
| | [0,195] | [0,195] |
| Vintage FE | Yes | yes |
| Observations | 10223 | 10223 |
| Adjusted R-squared | 0.111 | 0.111 |

## Table 11 : Regression: Occupational experience, advanced education and local overinvestment

This table represents a regression in which the dependent variable measures the home-state bias based on a home-state overinvestment differential of public pension funds in direct comparison to non-home state peers. All independent variables stated are of binary nature. *Financial Experience and Private Sector Financial Experience* are variables, measuring broad industry experience (the latter specifically for non-government entities). *Asset Management Experience* specifically describes experience in investment functions. *Public Sector Asset Management Experience* depicts the CEOs that exclusively gained their asset management experience at public entities. *Private Equity Experience* indicates whether a CEO worked in the industry prior to joining the fund. Ph.D., CFA and MBA measure advanced education of the executives. I control for the logarithm of assets under management of the pension fund (fund size) and the year of the investment. I double cluster the standard errors by the investment fund vintage and by pension fund. Standard errors are reported in brackets. Significance levels of 0.10, 0.5 and 0.01 are represented by stars behind the coefficient (*, **, *** respectively).

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | | | Home-state Bias | |
| Financial Experience | 0.159 | | | |
| | [0,192] | | | |
| Private Sector Financial Experience | | -0.304 | | |
| | | [0,231] | | |
| Asset Management Experience | | | -0.287 | |
| | | | [0,236] | |
| Private Equity Experience | | | | -0.109 |
| | | | | [0,339] |
| Public Sector AM Experience | | | | -0.303 |
| | | | | [0,289] |
| Ph.D. | 0.001 | -0.084 | -0.059 | -0.032 |
| | [0,166] | [0,164] | [0,164] | [0,172] |
| CFA | -0,366* | -0.141 | -0.277 | -0,331* |
| | [0,209] | [0,242] | [0,198] | [0,172] |
| MBA | -0.047 | 0.116 | 0.049 | -0.006 |
| | [0,190] | [0,201] | [0,205] | [0,222] |
| Log AUM | -0.096 | -0.079 | -0.102 | -0.091 |
| | [0,052] | [0,057] | [0,059] | [0,063] |
| Vintage FE | yes | yes | yes | yes |
| Observations | 7306 | 7306 | 7306 | 7306 |
| Adjusted R-squared | 0.107 | 0.117 | 0.115 | 0.107 |

## Table 12 : **Regression: Nonlinear factors and performance**

This table represents regressions in which the dependent variable measures performance in terms of Net IRR. *MBA & Asset Management Experience* in model (1) represents a combined variable of occupational experience and a Master of Business Education for CEOs. *MBA & Ph.D.* represents CEOs who obtained both degrees. I control for the logarithm of assets under management of the pension fund (fund size) and the year of the investment. I double cluster the standard errors by the investment fund vintage and by pension fund. Standard errors are reported in brackets. Significance levels of 0.10, 0.5 and 0.01 are represented by stars behind the coefficient (*, **, *** respectively).

|                                      | (1)        | (2)        |
|--------------------------------------|------------|------------|
|                                      | Net IRR    |            |
| MBA & Asset Management Experience    | 1,714***   |            |
|                                      | [0,660]    |            |
| MBA & Ph.D.                          |            | 2,837***   |
|                                      |            | [0,453]    |
| Log AUM                              | 0.080      | 0.072      |
|                                      | [0,213]    | [0,228]    |
| Vintage FE                           | Yes        | Yes        |
| No. Of Observations                  | 10223      | 11236      |
| adj. R²                              | 0.091      | 0.080      |

Table 13: **Regression: Nonlinear factors and local overinvestment**

This table represents a regression in which the dependent variable measures the home-state bias based on a home-state overinvestment differential of public pension funds in direct comparison to non-home state peers. *Ph.D. & Asset Management Experience* in model (1) represents CEOs with a combination of occupational experience and a Ph.D.. The variable *Ph.D. & Private Sector Fin. Exp* (2) represents CEOs who obtained a doctor degree and worked in the private sector. *CFA & Private Sector Fin. Exp* (3) combines private sector experience with the title Chartered Financial Analyst (CFA). I control for the logarithm of assets under management of the pension fund (fund size) and the year of the investment. I double cluster the standard errors by the investment fund vintage and by pension fund. Standard errors are reported in brackets. Significance levels of 0.10, 0.5 and 0.01 are represented by stars behind the coefficient (*, **, *** respectively).

| | (1) | (2) | (3) |
|---|---|---|---|
| | | Home-state bias | |
| Ph.D. & Asset Management Experience | -0,320** | | |
| | [0,167] | | |
| Ph.D. & Private Sector Fin. Exp. | | -0,785** | |
| | | [0,356] | |
| CFA & Private Sector Fin. Exp. | | | -0,245* |
| | | | [0,148] |
| Log AUM (LP size effects) | -0.064 | -0.063 | -0.067 |
| | [0,065] | [0,063] | [0,065] |
| Vintage FE | Yes | Yes | Yes |
| No. Of Observations | 7270 | 7270 | 7270 |
| adj. R² | 0.092 | 0.095 | 0.087 |

**Regression: Occupational experience, advanced education and performance (only data obtained for both dependent variables)**

This table represents regressions in which the dependent variable measures performance in terms of Net IRR (1) to (4) and the multiple on invested capital (5) to (8). All independent variables stated are of binary nature. *Financial Experience* and *Private Sector Financial Experience* are variables, measuring broad industry experience (the latter specifically for non-government entities). *Asset Management Experience* specifically describes experience in investment functions. *Public Sector Asset Management Experience* depicts the CEOs that exclusively gained their asset management experience at public entities. *Private Equity Experience* indicates whether a CEO worked in the industry prior to joining the fund. *Ph.D., CFA* or *MBA* represent postgraduate titles obtained. I control for the logarithm of assets under management of the pension fund (fund size) and the year of the investment. I double clustered the standard errors by the investment fund vintage and by the pension fund. Standard errors are reported in brackets. Significance levels of 0.10, 0.5 and 0.01 are represented by stars behind the coefficient (*, **, *** respectively).

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | | | Net IRR | | | Multiple on Invested Capital | | |
| Financial Experience | -0.989 | | | | -0.036 | | | |
| | [0.560] | | | | [0.027] | | | |
| Private Sector Fin. Exp. | | -0.652 | | | | -0.016 | | |
| | | [0.617] | | | | [.031] | | |
| Asset Mgmt Exp. | | | 0.264 | | | | -0.007 | |
| | | | [0.470] | | | | [0.031] | |
| Private Equity Exp. | | | | 0.550 | | | | -0.026 |
| | | | | [1.700] | | | | [0.106] |
| Public Sector AM Exp. | | | | 0.099 | | | | -0.008 |
| | | | | [0.438] | | | | [0.028] |
| Ph.D. | 0,372 | 0.551 | 0.632 | 0.606 | 0.027 | 0.034 | 0.034 | 0.031 |
| | [0.666] | [0.667] | [0.701] | [0.674] | [0.030] | [0.029] | [0.031] | [0.030] |
| CFA | 0,507 | 0.638 | 0.339 | 0.247 | 0.144 | 0.145 | 0.137 | 0.143 |
| | [0.658] | [0.901] | [0.470] | [0.753] | [0.126] | [0.129] | [0.122] | [0.129] |
| MBA | 1.560** | 1.437** | 1.221* | 1.280* | 0.017 | 0.012 | 0.012 | 0.024 |
| | [0.730] | [0.765] | [0.698] | [0.749] | [0.040] | [0.042] | [0.040] | [0.046] |
| Log AUM | 0.148 | 0.139 | 0.154 | 0.131 | 0.009 | 0.008 | 0.008 | 0.008 |
| | [0.202] | [0.229] | [0.153] | [0.217] | [0.023] | [0.009] | [0.008] | [0.028] |
| Vintage FE | yes | yes | yes | yes | yes | yes | yes | yes |
| Observations | 9714 | 9714 | 9714 | 9714 | 9714 | 9714 | 9714 | 9714 |
| Adjusted R-squared | 0.096 | 0.096 | 0.096 | 0.095 | 0.123 | 0.123 | 0.123 | 0.123 |