Internal Governance Mechanisms and Pension Fund Performance

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Abstract

This study provides new empirical evidence on the impact of board structure, as an internal governance mechanism, on privately defined contribution pension fund performance. Using a hand-collected dataset, we find evidence that the chairman, as a motivated insider, plays an important role in determining fund performance. The results also suggest, although with weaker evidence, that outsiders may positively impact fund performance. One explanation for this result is the weaker motivation of the outsiders to monitor fund performance. Consequently, the results show that both the composition of the board and the motivation of the board members are important in explaining pension fund performance, while other governance factors have no impact on its performance. The results provide relevant insights into the current regulatory debate on the reforms of the pension fund industry, arguing that modifying the board structure and its members' motivations may improve its governance and, hence, its performance. Consequently, the overall policy conclusion of this study is that more focus should be put on the board structure of pension funds, taking into account the different interests of the beneficiaries and fund shareholders.

Keywords: Corporate Governance, Pension Funds, Board Structure, Performance

JEL Classification Codes: G23, G28, G30

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1. Introduction

As a result of the current economic crisis, the losses of pension funds in the OECD countries are estimated to be $5.4 trillion or approximately 20% of the value of their assets in 2008 (Antolín and Stewart, 2009). Consequently, in a large number of countries, policy makers are again paying attention to how private pension funds are managed (Rudolph *et al*., 2010) and are taking into consideration different reforms that may dramatically change the pension system in some countries.[1] The main goal of this reform is to increase the investment returns of pension funds and, consequently, their asset value. However, little attention has been paid so far to the pension funds' governance structures and whether they may have an impact on their performance. The main purpose of this study is to address this issue and to analyze whether internal governance mechanism affects the performance of the defined contribution (DC) private pension funds.

In recent decades, various scholars have found positive associations between better governance and public pension fund performance.[2] Surprisingly, the impact of the governance structures in privately managed DC pension funds' on their performance has received little attention in the empirical research, which differs from that of public defined benefit (DB) pension plans.

Besley and Prat (2003) used a theoretical model to show that governance structure matters in both DB and DC pension plans with respect to three potential sources of agency problems: the responsibility for monitoring the asset manager, asset allocation decisions, and the plan's level of funding. The two types of pension plans differ from each other, and the Besley and Prat model presents the different ways that the funds should be governed. In a DB plan, the beneficiary is given a set of retirement benefits based on a formula that considers years of

[1] Extreme examples are Argentina, Bolivia and Hungary, which nationalized their private pension funds in 2008 and 2010, respectively. In 2011, the governments of Bulgaria and Poland decided to nationalize their pension systems by redirecting significant parts of the contributions from private funds to state system.
[2] See Hess and Impavido (2003); Hess (2005); Ambachtsheer, Capelle, and Lum (2006, 2007) for a literature survey on the governance of public pension funds.

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salary, cost of living adjustments, and other factors. As the future benefits of such plans do not change with the performance of their assets, the fund owners bear the risks of poor investment performance. Consequently, the potential conflicts between the beneficiaries and the fund's owner are reduced. In contrast, in a DC plan, the beneficiaries receive retirement pay that is based on their contribution to the fund and its investment performance. At the same time, the fund's profitability depends on the size of the managed assets and is almost independent of the investment performance of the assets that it manages on behalf of the beneficiaries. However, the beneficiaries are dispersed and therefore face a free-riding problem that can reduce the pension fund's performance. According to Besley and Prat (2003) a solution to the problem is the establishment of strong and motivated internal monitors, which in common-law countries are called trustees, while the pension scheme is typically set up as a trust. In other legal systems, however, the monitors can be members of the board of directors or the supervisory board, as in the sample in this study.

The trustees (board members) differ, however, in their backgrounds and motivations. Inside trustees are experts and can therefore effectively monitor the fund's managers. However, insiders have no direct stake in pension schemes, so they are driven only by external incentives. In contrast, outside trustees (independent) have less investment expertise but may have a greater intrinsic commitment to the beneficiaries that might ostensibly mitigate managerial entrenchment. Besley and Prat (2003) suggest that whether the inside or outside trustees are more effective depends strongly on their motivation. Therefore, the selection process of the trustees can be crucial for the performance of pension funds. However, there are no empirical studies that examine the impact of board composition on private pension DC fund performance, especially in emerging markets.

In this article, we close the gap and examine the relationship between board composition and beneficiaries' wealth by using data on virtually all DC private pension funds in Poland

from the beginning of their operations in 1999 until 2010. Using this wide dataset decreases the potential for significant sample selection biases and for problems related to different institutional frameworks and investment policies of pension funds across different countries (Rudolph *et al.*, 2010). During the period of study, the private pension funds underwent significant, dynamic changes of all types, which provided an excellent laboratory for examining the impact of the governance factors on their performance.

Overall, the result of this study confirms that the selection of board members is an important governance factor that determines the return on a pension fund's assets. We find that boards with independent (outside) board members are associated with improved pension fund performance. However, the results also suggest that having an insider as the chairman of the board is of greater importance. We assume that insider chairmen are strongly motivated and that their professional knowledge contributes significantly to their fund's performance. Consistent with the Besley and Prat model, the results imply the importance of not only the selection of board members but also the incentives behind monitoring pension fund managers. Other board attributes that may impact a board's ability to mitigate agency costs were examined, but we did not find any evidence that board size or the diversity or age of independent members impacts pension fund performance. Similarly, fund ownership, behavior, and activism or changes among auditors, which are commonly related to governance, are also not significantly related to pension fund performance.

This study makes several contributions to the literature on the governance of pension funds. Most importantly, it adds to the scarce literature on the governance of private pension funds by documenting the impact of internal mechanisms on their performance. Secondly, this study provides some new evidence on the impact of board structure on fund performance. As such, it provides empirical proof for the theories on governance in DC pension funds outlined by the Besley and Prat model. Third, the study also analyzes other governance factors that

may determine fund performance and that have received limited attention in the literature so far. Finally, the study provides new and relevant insights into the current regulatory debate on the reforms of the pension fund industry, arguing that the board structure and its composition may be a way to improve its governance and, hence, its performance.

The remainder of the paper is organized into several sections. Section 2 reviews some of the research literature on the governance of pension funds and outlines the predictions regarding fund performance. Section 3 gives background information on the pension system in Poland. Section 4 presents the data and the descriptive statistics, and Section 5 displays the empirical results. Section 6 concludes the paper.

2. Corporate governance and pension fund performance

The key focus of corporate governance systems is the agency problem that arises when ownership and control are separated. Because managers and shareholders are not identical, managers may take actions that benefit themselves at the expense of shareholders. Hence, companies' governance systems should create mechanisms by which managers are incentivized to act in the interest of the shareholders. These mechanisms can be either external or internal to the firm, while the interaction of these two controls determines the effectiveness of a firm's entire governance structure (Shleifer and Vishny, 1997).

In the asset management industry, the main external control is the market, which punishes funds that underperform. The beneficiaries of an underperforming fund may leave it for a competitor, which, in a competitive market, should discipline its management. The research on pension funds, however, has not confirmed the significance of markets as external controls (Cronqvist and Thaler, 2004; Kowalewski, 2010). Consequently, for pension funds in which the external governance is weak, as indicated by the flow of assets and pension members, internal governance should hold more importance. Indeed, Gillan *et al.* (2006) found that external and internal governance mechanisms can substitute for one another. While, Brown

and Caylor (2004) documented that internal governance factors, such as board characteristics, are more associated with good firm performance than are most external factors.

The importance of boards as an internal governance mechanism in the pension funds industry has been noted by Clark (2004), who associated a significant premium with the proper internal governance of pension funds, which can be priced as the beneficiaries' welfare. The premium is associated with the fact that pension funds are not transparent organizations in which systematic problems of asymmetrical information work against the efficiency of fund governance. Moreover, Clark and Urwin (2010) showed that in DC pension funds, the costs of failure are often borne by those who should otherwise benefit from fund decision making, while the trustees do not provide enough protection from the principal-agent problem or the moral hazard problem. Along this line, Shiller (2002) contended that the weak board of trustees in pension funds resulted in the escalations of the speculative dot-com bubble in the US.

Myners Report (2001) suggested that one reason for the weak boards was the inadequate expertise of the trustees. The report analyzed the competence of pension fund trustees in the UK and found that a majority of them had no professional qualifications in finance or investment and had little training prior to or after the appointment. Further, trustees spent hardly any time preparing for pension fund investment decisions. This can be attributed to evidence that trustees often receive their job because of their social and professional roles rather than because of their qualifications. As a result, the report argues that the standards of trustee expertise were less than desirable given their responsibilities, especially with respect to the consequences of their pension investment decisions. Similarly, the weak expertise of trustees was also documented by Ammann and Zingg (2010) in Swiss pension funds and by Hess (2005) in the US. Furthermore, Hess (2005) suggested that in public pension funds, politically appointed trustees often neglect their duties and do not make decisions based on

the interests of their beneficiaries but principally to improve their own political situation. Likewise, Cocco and Volpin (2007) documented that in the UK, inside trustees act in the interest of the shareholders of the sponsoring company and not necessarily in the interest of the members of the DB pension plan. On the contrary, Romano (1993) found that member-elected trustees have a positive and significant impact on performance.

Consequently, while board composition may be important in determining private pension fund performance, the existing results are ambiguous. Mitchell and Hsin (1994), in contrast to Romano (1993), reported that having employees or retired trustees on the boards of public pension funds has a negative impact on their performance. However, Useem and Mitschell (2000) documented that a trustee's status as a plan member or whether the trustee was elected by plan members has no impact on performance. One explanation for the mixed results is that the studies were mainly for public pension funds, which are different from private pension funds. Specifically, in public pensions, trustees must respond to both economic incentives and political pressures (Mitchell and Hsin, 1994). Moreover, 90% of the public pensions are structured as DB plans (Hess, 2005), while private plans are more likely to be DC plans.

The differences between the pension plans, board composition and the motivations of the trustees were emphasized by Besley and Prat (2003), who, using a theoretical model, documented that in pension funds, the conflicts of agency differ from those of other companies, as there is no problem with a separation of ownership and control. With pension funds, it is more important to establish who bears the risk. In DC pension plans, the beneficiaries are typically heavily dispersed but bear the risks of a poor investment performance of the fund. According to the Besley and Prat (2003), the free-rider problem in DC pension funds can be solved by appointing a strong and motivated board of trustees.

The model, however, also showed that there is a great deal of variation in the backgrounds and motivations of both inside and outside trustees, which influences their performance.

Inside trustees are experts who have specific knowledge and expertise about investments. As a result, they can effectively monitor fund performance.

Hypothesis 1: There is a positive relationship between the proportion of insiders on the board and pension fund performance.

Insiders, however, may not have a direct stake in the pension scheme, so they must be driven by external incentives, such as the hope of obtaining prestigious or lucrative positions in the future, to be effective. In contrast, outsiders do not have a lot of expertise in monitoring fund performance, but they might have a greater intrinsic commitment to the beneficiaries. This may be because they are beneficiaries themselves or because they feel a bond to them. As a result, according to Besley and Prat (2003), outsiders are self-motivated and may perform better when their career concerns are weak and when the link between trustee behavior and fund performance is noisy.

Hypothesis 2: There is a positive relationship between the proportion of outsiders on the board and pension fund performance.

These two hypotheses are not mutually exclusive. We assume that it is possible for a board to be composed of insiders and outsiders as long as the motivations of both types of trustees are positively related to pension fund performance.

Hypothesis 3: There is a positive relationship between the proportion of motivated insiders and outsiders on the board and pension fund performance.

Bresley and Prat (2003) suggested that DC plans, as opposed to DB plans, should rely on outsiders as they are more likely to be more strongly motivated than insiders, which will offset their lack of knowledge. In Poland, however, trustees are elected by funds' shareholders, which may decrease their independence and motivation.[3] Hence, neither the

[3] GovernanceMetrics, a leading corporate governance rating agency, does not classify directors as independent who are nominated by an entity whose voting interest in the company exceeds 5%.

number of outsiders nor the number of insiders needs to be positively related to the pension fund performance, and, therefore, other internal governance factors may be important.

Hypothesis 4: There is a positive relationship between other internal governance factors and pension fund performance, whereas the proportion of insiders and/or outsiders on the board is not related to performance.

In this study, following Schmitz (2005), the agency problem between shareholders and fund managers is not analyzed because Polish pension funds, like Austrian funds, are joint stock companies, which does not seem to introduce problems unique to pension funds.

3. The institutional setting

Since 1999, the Polish retirement system has been built on three pillars. The first pillar is the reformed pay-as-you-go system and is managed by a state-owned entity. The second pillar consists of open pension funds (OPFs) that are managed by private asset management companies (PTEs). The third pillar consists of employer-sponsored pension plans and individual pension savings programs. All of the pillars are based on DC plans. The first two are compulsory, and the third is voluntary, which may explain its underdevelopment.

As a testing ground, we used the OPFs operated by the PTEs. In 1999, at the beginning of pension reform, 21 PTEs were set up, mainly by foreign-owned banks or insurance companies. The market share of the newly created OPFs was unequal from the beginning as a result of their different distribution channels and the market power of the founders. As a consequence, a consolidation process among the smaller PTEs began only two years after the initiation of the pension reform, and the number of funds decreased to 14 in 2010. By that time, those PTEs were managing close to 15 million individual pension accounts, while their OPFs assets constituted approximately 16% of GDP. However, the number of members and OPF assets will continue growing until 2050 because only employees born in 1969 and after had to join the new pension system in 1999, while employees born between 1949 and 1969

were given a choice to either join the multi-pillar pension system or stay in the old pay-as-you-go pension system (Kowalewski, 2010).

In the last decade, the consolidation process in the pension industry was induced by the small scale of some of the OPFs. The OPFs' assets do not guarantee profitability for the PTEs, as over 90% of their revenue depends on the value of managed assets and the number of members. In 2010, the asset managing fees contributed, on average, 45% of the revenue of PTEs, while the up-front fees from their members contributed, on average, 39% of their revenue. While the up-front fee was important in the beginning years, its role is now diminishing as the assets of OPFs are growing. Dobronogov and Murthi (2005) presented an extensive analysis of the fees and costs of pension companies in transition countries.

PTEs acquire new members in two main ways. First, every month, new employees enter the pension funds. Second, participants are allowed to change pension funds but, should they do this in the first two years after joining the fund, they are obliged to pay a penalty fee.[4] Hence, changing PTEs is costly and not very popular, as members are not sensitive to the return on invested assets (Kominek, 2006). At the same time, the number of future pensions accumulated depends on an OFE's asset return and member contributions, where employees transfer 7.3% of their gross salaries. The risk of the future pensions is therefore borne by the pension members. PTEs only bear a financial risk when they underperform relative to their sector's benchmark, which is based on a three-year adjusted average return for all funds. By introducing a penalty for underperformance, the regulators tried to provide security to pension members so that the returns on an OPF's assets do not fall significantly below those achieved by their peers. This rule, however, resulted in herding among pension funds (Kominek, 2006). Moreover, restrictions on the portfolio composition of pension funds, especially on investments in foreign markets, results in very similar asset compositions among funds.

[4] In 2011, the Polish government proposed a bill that would forbid the changing of pension funds.

Nevertheless, Kominek (2006) documented weak evidence that funds herd more in response to their poor performance relative to their peers.

PTEs are joint stock companies that obtain a license from the Financial Supervision Authority (FSA) that limits their activities to the management of OPF assets. Consequently, their governance structures comprise three elements: (i) general meeting, (ii) supervisory board, and (iii) management board. Thus, the PTEs have a two-tiered board system, which means that all of the members of the supervisory board are non-executives and that CEO duality is prohibited.

The management board is responsible for business conduct, including the investment of the fund’s assets. The management board's decisions are restrained only by the supervisory board, which monitors manager performance and has the power to appoint or dismiss members of the management board at any time. In its business operations, the supervisory board is independent and can request any information that it needs to evaluate a manager’s performance. In the case that a manager misinforms the board, even by accident, he or she can legally be prosecuted.

In Poland, as in many other countries, there is no legal requirement of the supervisory board members to have any level of expertise. However, in pension funds, at least 50% of all of the members need to have a degree in either economics or law. Moreover, at least 50% of the members need to be independent, which is defined as having no professional or economic relationship with the PTE shareholders. These requirements are supervised by the FSA, which approves the members of the supervisory board, who are first elected at the general meeting by the shareholders, who have the right to dismiss them at any time.

The governance structure of the Polish pension funds is similar to those in other continental European countries, especially those with a German legal origin, while differing in the composition of the supervisory board members. In Austria (Schmitz, 2005) and

Switzerland (Ammann and Zingg, 2010), beneficiaries are required to be represented on the supervisory board, while in Poland, the only legal requirement is their independence. As the shareholders appoint all the members of the supervisory board, it can however be assumed that the supervisory board members' independence is weak as the owner can dismiss any of them at any time when they are not dealing in his best interest.

4. Data and statistics

In the present study, we used a detailed dataset with yearly information on all Polish pension funds for the years 1999–2010. The data are from the FSA, which is responsible for the prudential supervision of the pension funds and their regulatory compliance. For each fund, data were available on the OFEs net assets, unit value, and operational expenses. The information about management and board members was hand collected using special reports on the PTEs' management and boards, newspapers, and the Internet.

The final sample is an unbalanced panel because of the mergers and acquisitions of pension funds, yet it includes data on all of the funds. Consequently, the results of this study are not influenced by survival bias. Nevertheless, in a few cases, the firm-year observations in the regression are reduced, as not all information is available for the years 1999–2000.

While a cross-country study may be preferable, the results could be strongly biased, as there are substantial differences in reporting and in the regulatory frameworks in the pension systems of different countries (Tapia, 2008).

4.1 Measuring board and trustee characteristics

In the present study, we employed different variables to measure board structure and its composition. First, following the literature, we measured the *size* of the board, but Useem and Mitschell (2000) found only limited evidence that the number of trustees has a negative impact on performance. Second, board independence was measured using the proportion of outsiders on the board (*outsiders*), whereas the independence of the *chairman* was measured

using a dummy with a value of one if he is an outsider and zero otherwise. We defined outsiders as board members who have never been an employee of the shareholder, an employee's family member, or had any other previous professional affiliation with the fund. Lastly, board-member-level data were used to control for board diversity and composition. The variables employed were *women*, *foreigners*, and *age*. The first two variables show the proportions of women and foreigners on the boards, while the last variable shows the average age of the outsiders. In the literature, board diversity, measured by gender (Carter *et al.*, 2003) and by nationality (Masulis *et al.*, 2010), was found to be positively related to firm performance or value, but little is known about whether board diversity impacts pension fund performance. Core *et al.* (1999) reported that the proportion of independent directors over the age of 69 may determine a firm's valuation. However, in the study, age was additionally used as a proxy for outsider's motivations, as only those who were 30 years old or younger in 1999 were required to join the DC private pension funds. Consequently, we assume that younger outsiders might have greater incentives to monitor a fund's performance, yet we do not have information on whether they are members of the pension plans they supervise.

4.2 Measuring fund performance and fund characteristics

To estimate pension fund performance, we evaluated the risk-adjusted fund performance using the Capital Asset Pricing Model (CAPM) (Jensen, 1968). The single-factor model was obtained by running the CAPM regressions for all available pension funds using ordinary least squares (OLS) with a rolling window over the preceding 36 months:

$$r_{p,t} - r_{i,t} = \alpha_p + \beta_p\left(r_{m,t} - r_{i,t}\right) + \varepsilon_{p,t},$$

where $r_{p,t}$ is the return of pension fund p for month t, $r_{i,t}$ is the risk free rate proxied by the Treasury-bill return, and $r_{m,t}$ is the stock market return proxied by the equity index WIG. The intercept of this model, α_p, gives the Jensen alpha, which is usually interpreted as a measure of the over- or under-performance of the fund relative to the market proxy. We also obtained

each fund's return sensitivity to the market proxy (β_p) and the corresponding coefficient of determination (R_2).

The single-factor model assumes that pension fund's investment behavior can be approximated using only a single market index. It does not, however, account for the fact that pension funds also hold government bonds and cash. For that reason, a multi-factor model was additionally implemented, defined as

$$r_{p,t} - r_{i,t} = \alpha_p + \beta_i(r_{m,t} - r_{i,t}) + \beta_i(r_{b,t} - r_{i,t}) + \varepsilon_{i,t},$$

where $r_{b,t}$ is the medium-term government bond return (three to five years) for month t.

The sample includes all the pension funds, but as a result of mergers and acquisitions, 4 of the 21 funds have only 24 monthly return observations. Therefore, we decided to repeat the calculations for each model using only those pension funds with at least 36 monthly return observations to obtain more precise alphas. All these performance measures have been calculated on an annual basis using monthly returns net of expenses.

We controlled for fund-specific characteristics using *size* and *expenses*. Ambachtsheer *et al.* (1998) found a significant and positive relationship between pension fund size and performance. Hence, fund size as a proxy for economy of scale has been included, which is computed as the natural logarithm of the total net assets. Dobronogov and Murthi (2005) suggested that the fees and costs of pension companies are likely to reduce return on individual account balances on average by approximately 1% per annum. Consequently, expenses can negatively affect performance and have been computed as the ratio of the pension fund's operating costs to the fund's total net assets.

4.3 Measuring other governance characteristics

In the sensitivity analysis, additional governance factors have been employed that might determine pension fund performance. Adams *et al.* (2009) found that, apart from internal governance factors, the organizational form may play an important role in determining a

fund's performance. Hence, we controlled for pension fund ownership by using two dummies, *government* and *foreign*, which indicate state-owned or foreign-owned funds, respectively. These variables equal one if the government or foreign investor owns more than 50% of the equity of asset management companies and zero otherwise. In some of the funds, two different types of owners were present at the same time, both of which had a share of 50% of the equity. In those funds, the ownership dummy variable takes a value of one for each different type of owner, while the domestically owned pension funds are captured in the constant in the regression.

The ownership type does not always need to influence the performance of a pension fund. However, Gugler and Yurtoglu (2003) found that multiple shareholders are important in understanding the internal governance in companies characterized by high ownership, which include the pension funds in the sample. Using the dividend policy as a performance measure, the authors argued that the presence of a second large shareholder with a considerable equity stake makes a crucial difference in the governance of a firm. Hence, having a second shareholder may have a positive effect on a pension fund's performance. Therefore, a variable *shareholder* has been employed to control for the number of fund shareholders.

Guercio and Hawkins (1999) documented that pension fund activism can be positively related to performance. However, Romano (2001), in a survey of the vast empirical literature on fund activism, shows that such activism has little or no effect on firms' performance and in fact may be value reducing for pension funds. Therefore, the empirical studies overestimated the impact of fund activism on performance. In the present study, we controlled for fund activism by employing a dummy, *CG investment*, which takes the value of one when the fund has incorporated a corporate governance code for its investment practices and zero otherwise.

Chen *et al.* (2006) found that a higher proportion of outside directors is associated with a lower probability of fraud. However, Park and Shin (2004) suggested that adding outside

directors to the board may not achieve improvements in governance practices by itself, especially in jurisdictions where ownership is highly concentrated and where the outside directors' labor market may not be well developed. Because the pension funds in the sample have highly concentrated ownerships, having outside directors may not lead to the reduction of unethical behavior. We controlled for fund managers' behavior using two different variables. The first variable, *no. of fines*, shows the number of fines that have been imposed on the fund for breaking the law. Because the regulator often imposes small fines for negligence, another important indicator can be the value of fines *(fine value)*. The higher its value, the more likely a fine is to be connected to a fund's investment policy and, hence, to affect the performance of the pension fund.

After the failures of Enron and Arthur Andersen, auditor rotation was seen as a good corporate governance practice in listed companies. Also, in the pension funds industry, it has been emphasized that the external auditor may be a key feature of governance but only when his or her work is not done mechanically (Besley and Prat, 2003). In pension funds, auditor rotation is not obligatory, so it may be a good proxy for governance (Lin and Lu, 2009). In the present study, a dummy variable, *auditor*, has been used, which takes the value of one if there was a change in the external auditor and zero otherwise.

Table 1

4.4 Descriptive statistics

Table 2 reports the descriptive statistics for the variables used in the analysis. Included are the mean, median, and standard deviation for the measures of fund performance, fund characteristics and governance characteristics. The mean and median alphas for the single- and multi-factor models did not differ significantly. However, the alpha in the multi-factor model showed a much larger variation than in the single-factor model. An explanation for this

difference is seen in the larger cross-sectional variations of the beta for bonds than that for stocks, yet the R_2 for both factor modes did not differ significantly.

In terms of boards and member characteristics, the data show significant variations. The mean value for board size was nine members. Only 17% of the boards had independent chairpersons, whereas outsiders represented approximately 44% of the board. The number of outsiders on boards was lower than the legal threshold requiring at least 50% of board members to be independent. The differences could have been caused by two factors. First, a narrower definition was used in the study than the legal definitions. Second, as each board member needs to be approved by the FSA, there are often vacancies for a longer time period.

Only 10% of the board members were women, and 23% were foreigners. The average age of the outsiders was 54 years, while for all of the members, it was 49 years. Hence, most of the outsiders were probably not members of the private pension system, and experience seems to be the main criterion for selection by the fund's shareholders. Over 50% of the outsiders had a degree in economics, while 33% had a degree in law. In the table, however, we did not report the additional board members' characteristics for the sake of brevity. Most of the outsiders were employed at academic institutions, and only 6% were working in the financial sector. The results are similar to the findings of Myners Report (2001), who reported that 62% of trustees have no professional qualifications in finance or in investments in the UK.

The results show that the majority of the pension funds are controlled by foreign companies, but, at the same time, most of them have more than one shareholder. In 2010, however, there were at least two different shareholders in only three pension funds because in many cases, the stronger shareholder bought out the remaining partner within the last decade.

The data also show a large variation in the number of fines and their values, which may signal the different ethical attitudes of pension fund managers. Moreover, only a few of the pension funds accepted corporate governance investment codes. An explanation may be

the fact that pension fund activism is a relatively new phenomenon in Poland. Lastly, the data show that pension funds seldom change auditors.

In terms of fund characteristics, the summary statistics show a large variation in pension fund size and expenses across the funds and over time, which reflects the unequal development of the industry that has prevailed to the present.

Table 2

Table 3 describes the correlations among the variables in the sample. As expected, the two performance measures are positively correlated. The presence of outsiders and an independent chairman are positively correlated with the single-factor alpha and negatively correlated with the multi-factor alpha. In both cases, the correlation is low in absolute terms. Of the three board member characteristics (proportion of women, proportion of foreigners and age), only the proportion of foreigners is positively correlated to the two performance measures, while age is negatively related to both of them. The proportion of women is positively correlated with the single-factor alpha and negatively related to the multi-factor alpha. We found that expenses are positively correlated with the two performance measures. Similarly, size is positively correlated with the multi factor alpha but negatively related to the single-factor alpha.

Table 3

5. Empirical results

In this section, we examine the hypotheses relating board characteristics to pension fund performance. Because the goal of this study is not to predict future performance, the analysis excludes prior performance measures. Prior performance may be highly correlated with current performance, but the relationship is not causal. However, according Besley and Prat (2003) model, performance is a function of governance factors that determine the pension

fund performance. Therefore, in the analysis, we used board characteristics and fund-level factors to examine fund performance.

5.1 Methodology

In the present study, the following model was employed to estimate the impact of internal governance factors on pension fund performance:

$$Performance_{i,t}=\beta_0 + \beta_1 Board_{i,t} + \beta_2 CG_{i,t} + \beta_3 Fund_{i,t} + \epsilon_{i,t}, \quad (1)$$

where *Performance* was measured using the single- and multi-factor alphas, *Board* includes the internal governance variables *size*, *outsiders*, and *chairman* and the board member characteristics *women*, *foreigners* and *age*, and *CG* includes the additional governance variables that were used in the sensitivity analysis such as *government*, *foreign*, *shareholders*, *fines no*, *fines value*, *CG investment*, and *auditor*. *Fund* includes the control variables *size* and *expenses*.

The fixed-effects estimation was used to estimate the model. The regression includes the time-fixed effects and the fund-level clustered robust standard errors. The fixed-effects model has been employed because, as Wooldridge (2003) points out, clustered robust standard errors for pooled OLSs do not work well and may either over- or underestimate the true variability of the coefficient estimates.

One of the primary concerns in the literature is the potential endogeneity between governance measures and performance. Although not reported, we addressed the potential problem in performing the following test.[5] Because having prior internal governance may affect a fund's current performance, we regressed performance measures on lags of governance variables, employing OLS and a fixed-effects model. The coefficients of the lag governance factors are generally statistically weaker, but the results are robust. In addition, we repeated the analysis using OLS and fixed-effects models with robust standard errors

[5] The results are available upon request.

without clustering. The standard error results for the latter methodology are generally lower than those for the clustered approach, but the results are again robust for each methodology.

5.2 Board structure and pension fund performance

Tables 4 and 5 report the results from a regression of the performance measures on the board structure characteristics. We first regressed the dependent variable against the board structure characteristics and then progressively added the board member characteristics. When we regressed the variable age, we excluded the year-fixed effects because of endogeneity concerns. Furthermore, specifications (1) – (3) include all the pension funds, while in regressions (4) – (5), the data were used from only funds from which 36 monthly return observations were available to compute the alphas.

The results in Table 4 reveal that the proportion of outsiders is positively and significantly related to the single-factor alpha. In contrast, the independent chair dummy variable is negative and significant. Adding additional variables barely changes the coefficient on outsiders and chairman. This implies that outsiders are positively associated with the pension fund performance, but the board should be governed by an insider chairman. Those results are in accordance with the model of Besley and Prat (2003), who showed that insiders may improve the performance of pension funds as long as they are motivated.

In a two-tiered board, the work of the supervisory board is heavily influenced by the chairman, who is responsible for organizing the meetings and setting the agenda. Moreover, the chairman is in contact with the management, which provides him with information on topics that require the attention of the board. Consequently, the chairman influences the work and efficiency of the board in monitoring the management. At the same time, the chairman is responsible for the pension fund's performance and gains all of the benefits from a positive performance. As a result, chairman insiders receive strong incentives to monitor the managers and the board, which creates wealth for the pension fund beneficiaries.

In all the regressions, board size was not significant, and the sign of the coefficient was inconsistent in the specifications. The coefficient for women was negative and economically significant. This result is in line with Adams and Ferreira (2009), who found that female directors have better attendance records than male directors and are more likely to join monitoring committees, but their average effect on firm performance is negative.

In specifications (4) – (5) we repeated the regressions (1) and (5) using more precise alphas and found that the variation of the coefficients is very small, so the results are not biased by the performance measure.

The variable expenses were generally negative but insignificant. An explanation for the weak relationship between the variable and performance might be the fact that in Poland, pension fund expenses are regulated. As a result of those regulations, all of the pension funds charge the maximum possible amount for management fees, which represents the largest part of the funds' operational costs. However, against our expectations, the coefficient for pension fund assets was negative and significant in two of the five specifications.

Table 4

Table 5 presents the results for the multi-factor alpha performance measure and the board-structure variables. The estimated coefficients for the outsiders and the chairman are similar to those in Table 4. However, the coefficient for outsiders remains positive but is statistically significant in only two of the five specifications. The independent chairman dummy remained negatively and significantly related to alpha at the 1% level in all the specifications. Hence, the results suggest that having an insider as a chairman has a greater positive impact on performance than does the proportion of independent board members.

Board size remained insignificant, and the signs of coefficients were again inconsistent in the specifications. Further, the estimated coefficient for the proportion of women on the board remained negative and significant. Similarly, we found that having a large number of

foreigners on the board was significantly and negatively related to performance. These results are in line with Masulis et al. (2010), who found that in the US, foreign directors are associated with a significantly poorer performance of firms.

The average age of the independent board members was negatively, but again not significantly, related to performance. The results thus suggest that monitoring experience is not an important contributor to performance. In contrast, the results suggest that younger board members may more effectively monitor the fund performance because the coefficient for age was negative but insignificant. The effectiveness of younger board members can be attributed to their motivation because they are likely to be beneficiaries of the private pension plan, but we were not able to control for whether the younger board members were monitoring their funds, which may explain the weakness of the results.

The control variables are in line with previous findings. In all the specifications, the coefficient for expenses was negative, and in two of them, it was statistically significant. The coefficient for assets was negative and statistically significant in two of the five specifications.

Table 5

5.3 Sensitive analysis

The results in Table 6 and 7 confirm that the main findings, such as the internal governance coefficients, were not altered by additional governance factors. In the regression, the performance measures were regressed again on the main board characteristics and the extensive set of other governance measures. The set of variables includes the government and foreign-owned dummies, number of fund shareholders, number of fines and value imposed on the fund, corporate governance investment dummy, and dummy for auditor change.

In Table 6, the estimated coefficients for outsiders and for the independent chair dummy are similar to those in Table 4. The coefficient for outsiders is positive and significant.

Likewise, the coefficient for the independent chair dummy is negative and significant, while board size remained insignificant in all of the regressions.

The estimated coefficients for the other governance variables were not significant, but most of them had the expected signs. The results suggest that government-owned pension funds tend to have poorer long-term performance on average than foreign-owned funds, consistent with much of the literature (Berger *et al.*, 2005). As expected, we also found that having multiple fund shareholders may improve a pension fund's performance.

Imposed fines and their values were negatively related to performance, which confirms that the fraudulent behavior of mangers may signal bad governance. Those results are in line with the literature that shows that the initial disclosure of illegal corporate activities results in significant negative abnormal returns to the shareholders (Karpoff and Lott, 1993).

In line with the recent literature, we did not find evidence that pension fund activism proxied by the adoption of corporate governance investment codes was positively related to performance. Moreover, the coefficient for CG investment is negative, but insignificant. Likewise, the coefficient for the audit dummy is negative and also not significant. The results are at odds with the idea that auditor change signals better governance and henceforth should be positively related to performance (Lin and Lu, 2009).

The control variables are similar to those in Table 3, but the coefficients for size and expenses were insignificant in all of the regressions.

Table 6

Table 7 presents the regression results for the multi-factor alpha, the internal and the additional governance measures. The internal governance variables have expected signs and coefficients consistent with the previous results. The coefficients for board size and for the proportion of outsiders are positive but insignificant in all the specifications. In contrast, the presence of an independent chair is again negatively related to performance and statistically

significant at the 1% level in five of the six specifications. However, the coefficients for outsiders are positive but not significant in all of the regressions.

Likewise, the other governance variables are similar to those in Table 5. The estimated coefficient for government ownership is negative but insignificant. While, the coefficients for foreign ownership and the number of shareholders are positive, but only the coefficient for the number of shareholders is significantly related to performance. The coefficients for the number of fines and for the dummy variables CG investment and auditor are negative but not significantly related to performance. However, the coefficient for fine values is now positive but remains insignificant.

Finally, the control variables are again in line with those in Table 4. The coefficients for expenses are negative and significant related to performance in all the specifications. In contrast, the coefficient for fund size is positive but remains insignificant.

Table 7

6. Conclusion

This study investigates the association between internal governance and pension fund performance in Poland. The homogeneity of regulations among these funds and the access to data in all of them provides an excellent laboratory for examining the relationship between internal governance factors and fund performance. Internal governance mechanisms have been assumed to be important to substitute for the external mechanisms that do not create enough incentive to discipline managers in the pension fund market.

Central to internal governance effectiveness is the composition of the board, which can consist of either insiders or outsiders. According to Besley and Prat (2003), the choice between professional insiders and caring outsiders on pension boards depends on whether career incentives are expected to motivate insiders, which these authors assume to be rather

ineffective. Therefore, Besley and Prat (2003) suggest that DC pension plans should rely more on outsiders, who are more likely to be motivated to effectively monitor fund performance.

The results of the study show, however, that the presence of an independent board chairman is associated with a lower pension fund performance. Thus, the results suggest that chairmen should be insiders who are able to exercise effective monitoring. However, the analysis also documents that the proportion of outsiders in the supervisory board is associated with an improved pension fund performance.

Combined, the results are consistent with the Besley and Prat (2003) model. Board chairmen have a well-defined job market, and there is a strong link between their behavior and fund performance. Therefore, they are strongly motivated, and their expertise significantly improves the performance of the pension fund. In contrast, because the career paths for other board members are less evident and are less linked to fund performance, outsiders, who have less investment expertise, seem to have a greater intrinsic commitment to monitoring fund performance. However, the results for outsiders are much weaker than those for insider chairmen.

There are three possible explanations for this weakness. One is that outsiders in the study are less motivated, which can be because of their selection process, as they are elected by the fund owner. Second, the data suggest that most of the outsiders are not beneficiaries themselves and therefore might not be bonded with other beneficiaries, which the Besley and Prat model (2003) assumes. Third, their knowledge may not be sufficient to effectively monitor fund managers, which has been signaled by many studies in the past and would explain why the insider chairman is so important in determining pension fund performance.

The results of this study are important from a policy perspective, as it suggests a way to improve the performance of pension funds, whereas the results confirm that not only board composition but also the motivation of the board members may play an important role. The

results of the study are robust for various specification tests, which also show that other governance factors do not determine fund performance.

Consequently, governments and supervisors should consider a more active role in the selection process of board members, taking into account their roles and motivations. However, this selection process should also take into account the interests of the owners, who provide the capital but do not carry the risk in DC pension funds. A board dominated only by outsiders may not only lead to underperformance but also discourage further investments in the industry, which could negatively affect market competitiveness.

Nevertheless, more research is needed to reveal and confirm the impact of the different governance factors using different institutional frameworks and methodologies to address the potential endogeneity concerns between governance measures and performance, but we leave these questions and problems for future research.

References

Adams, J. C., Mansi, S. A. and Nishikawa, T. 2010. Internal governance mechanisms and operational performance: Evidence from index mutual funds. *Review of Financial Studies***,** 23(3): 1261-1286.

Adams, R. B. and Ferreira, D. 2009. Women in the boardroom and their impact on governance and performance, *Journal of Financial Economics*, 94(2): 291-309.

Ambachtsheer, K., Capelle, R., and Scheibelhut, T. 1998. Improving pension fund performance, *Financial Analysts Journal*, 54(6):15-21.

Ambachtsheer, K., Capelle, R., and Lum, H. 2006. *Pension fund governance today: Strength, weaknesses, and opportunities for improvement*, Working Paper, Rotman International Centre for Pension Management, University of Toronto.

Ambachtsheer, K., Capelle, R., and Lum, H. 2006. *The state of global pension fund governance today: Board competency still a problem*, Working Paper, Rotman International Centre for Pension Management, University of Toronto.

Ammann, M. and Zingg, A. 2010. Performance and governance of Swiss pension funds, *Journal of Pension Economics and Finance*, 9(1): 95-128.

Antolín, P. and Stewart, F. 2009. *Private pensions and policy responses to the financial and economic crisis*. OECD Working Papers on Insurance and Private Pensions No. 36.

Berger, A. N., Clarke, G. R., Udell, G. F., Cull, R. and Klapper, L. F. 2005. *Corporate governance and bank performance: A joint analysis of the static, selection, and dynamic effects of domestic, foreign, and state ownership*. World Bank Policy Research Paper No. 3632.

Besley, T. and Prat, A. 2003. *Pension fund governance and the choice between defined benefit and defined contribution plans*. CEPR Discussion Paper No. 3955.

Brown, L. D. and Caylor, M. L. 2004. Corporate governance and firm performance. Available at SSRN: http://ssrn.com/abstract=586423.

Carter, D. A., Simkins, B. J. and Simpson, W. G. 2003. Corporate governance, board diversity, and firm value. *Financial Review*, 38: 33-53.

Chen, G., Firth, M., Gao, D. N. and Rui, O. M., 2006. Ownership structure, corporate governance, and fraud: Evidence from China, *Journal of Corporate Finance*, 12: 424-448.

Clarke, G. L. 2004. Pension fund governance: expertise and organizational form, *Journal of Pension Economics and Finance*, 3(2): 233-253

Clarke G. L, and Urwin, R. 2010. DC pension fund best-practice design and governance**,** Working Paper, Oxford University for Environment.

Cocco, J. F., and Volpin, P. 2007, The corporate governance of defined benefit pension plans: evidence from the United Kingdom, *Financial Analysts Journal*, 63: 70-83.

Core, J., Holthausen, R. and Larcker, D. 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, 51(3): 371-406.

Cronqvist, H. and Thaler, R. 2004. Design choices in privatized social security systems: Learning from the Swedish experience. *American Economic Review Papers and Proceedings*, 94: 424-428.

Dobronogov, A. and Murthi, M. 2005. Administrative fees and costs of mandatory private pensions in transition economies, *Journal of Pension Economics and Finance*, 4(1): 31-55.

Gillan, S. L., Hartzell, J. C. and Starks, L. T. 2006. Tradeoffs in corporate governance: Evidence from board structures and charter provisions. Available at SSRN: http://ssrn.com/abstract=917544.

Guercio Del, D. and Hawkins, J. 1999. The motivation and impact of pension fund activism. *Journal of Financial Economics*, 52: 293–340.

Gugler, K. and Yurtoglu, B. B. 2003. Corporate governance and dividend pay-out policy in Germany. *European Economic Review*, 47: 731-758.

Hess, D. W. 2005 Protecting and politicizing public pension fund assets: Empirical evidence on the effects of governance structures and practices. University of California-Davis Law Review, 39: 187-227.

Hess, D. and Impavido, G. 2003. Governance of public pension funds: Lessons from corporate governance and international evidence, Policy Research Working Paper Series 3110, The World Bank.

Jensen, M. 1968. The performance of mutual funds in the period 1945–64, *Journal of Finance*, 23: 389–416.

Karpoff, J. M. and Lott Jr., J. R. 1993. The reputational penalty firms bear from committing criminal fraud. *Journal of Law and Economics*, 36, 757-802.

Kominek, Z. 2006. *Regulatory induced herding? Evidence from Polish pension funds*. Working Paper No. 96, European Bank for Reconstruction and Development.

Kowalewski, O. 2010. Corporate governance and pension fund performance. CAREFIN Research Paper No. 26/2010, Bocconi University.

Lin, Z. J. and Liu, M. 2009. The determinants of auditor switching from the perspective of corporate governance in China. *Corporate Governance: An International Review*,17(4): 476-491.

Masulis, R. W., Wang, C., and Xie, F., 2010. Globalizing the boardroom - the effects of foreign directors on corporate governance and firm performance. AFA 2011 Denver Meetings Paper. Available at SSRN: http://ssrn.com/abstract=1572838.

Mitchell, O. S. and Hsin, P.-L. 1994. Public sector pension governance and performance. NBER Working Papers Series 4632, National Bureau of Economic Research.

Myners Report 2001. *Institutional investment in the UK: A review*. London: HM Treasury.

Park, Y. W. and Shin, H. H. 2004. Board composition and earnings management in Canada, *Journal of Corporate Finance*, 10: 431-457.

Romano, R. 1993, Public pension fund activism in corporate governance reconsidered, *Columbia Law Review*, 93: 795-853.

Romano, R. 2001, Less is more: Making shareholder activism a valued mechanism of corporate governance, *Yale Journal on Regulation*, 18(2): 174-252.

Rudolph, H., Hinz, R., Antolín, P., and Yermo, J. 2010. Evaluating the financial performance of pension funds, in: R. Hinz, H.P. Rudolph, P. Antolín, and J. Yermo (Eds.), *Evaluating the Financial Performance of Pension Funds*. Washington: The World Bank.

Schmitz, S. W. 2005. The governance of occupational pension funds and the politico-economic implications: The case of Austria. Available at SSRN: http://ssrn.com/abstract=775325

Shiller, R. J. 2002. Bubbles, human judgement, and expert opinion. *Financial Analysts Journal***,** 58(3):18-26

Shleifer, A., and Vishny, R. W. 1997. A survey of corporate governance. *Journal of Finance*, 52(2): 737-83.

Tapia, W. 2008. Comparing aggregate investment returns in privately managed pension funds: An initial assessment. OECD Working Papers on Insurance and Private Pensions No. 21.

Useem, M. and Mitchell O. S. 2000. Holders of the purse strings: Governance and performance of public retirement systems, Wharton Financial Institutions Center Working Paper No. 00-08, University of Pennsylvania.

Wooldridge, J. 2003. Cluster sample methods in applied econometrics, *American Economic Review*, 93:133–38.

Table 1
Variable definitions

Variable	Explanation
Alpha	Annual fund's excess return relative to the return of the benchmark index
$Beta_1$	Sensitivity of fund's return computed from the stock market index
$Beta_2$	Sensitivity of fund's return computed from the bond market index
R^2	Three-year measure of fund's return model fit
Size	Log of the number of board members
Outsiders	Proportion of board members who are classified as independent (outsider)
Chairman	1 if the chairman of the board is classified as independent (outsider)
Woman	Proportion of board members who are woman
Foreigners	Proportion of board members who are foreigners
Age	Average age of independent (outsiders) board members
Government	1 if governments own 50% or more of equity and 0 otherwise
Foreign	1 if foreign shareholder owns 50% or more of equity and 0 otherwise
Shareholders	Number of shareholders
No. of fines	Number of fines imposed on pension funds
Fine value	Log of the value of fines imposed on pension funds
CG investment	1 if investment corporate government policy present and 0 otherwise
Auditor	1 if auditor is changed and 0 otherwise
Expense	Operating costs to net assets of pension fund
Assets	Log of total net assets of pension fund

Table 2
Descriptive Statistics

	Mean	Median	Std. Dev.	Min.	Max
Single factor model					
$Alpha_1$	0.01	0.01	0.02	-0.09	0.09
$Beta_1$	0.30	0.31	0.07	-0.07	0.54
R^2	0.86	0.87	0.07	0.61	0.96
Multi factor model					
$Alpha_2$	0.01	0.01	0.04	-0.25	0.01
$Beta_1$	0.30	0.31	0.08	-0.09	0.54
$Beta_2$	2.80	0.56	5.41	-10.50	22.59
R^2	0.86	0.88	0.07	0.61	0.96
Governance characteristics					
Size	8.95	9	1.61	6	14
Outsiders	0.44	0.50	0.15	0	0.8
Chairman	0.17	0	0.38	0	1
Woman	0.11	0	0.13	0	0.5
Foreigners	0.23	0.17	0.25	0	1
Age	54.36	55.13	7.57	34	71
Other governance characteristics					
Government	0.16	0	0.37	0	1
Foreign	0.78	1	0.41	0	1
Shareholders	1.67	1	1.09	1	7
No. of fines	0.38	0	0.78	0	4
Fine value	2.71	0	4.97	0	13.91
CG investment	0.13	0	0.34	0	1
Auditor	0.09	0	0.28	0	1
Pension fund characteristics					
Expenses	0.01	0.01	0.00	0.00	0.01
Assets	21.01	21.42	2.08	14.29	24.70

Note: The sample consists of 196 annual observations for 21 pension funds between 1999 and 2010. $Alfa_1$ is the annual excess return from single factor model, $Alfa_2$ is the annual excess return from multi factor model. $Beta_1$ is sensitivity of fund's return to stock market index, $Beta_2$ is sensitivity of fund's return to bond market index, R^2 is the model fit for the asset price model. *Size* is the number of supervisory board members, *Outsiders* is the percentage of independent board members, *Chairman* is the dummy variable for independent chairman, *Woman* is the proportion of female board members, *Foreigners* is the proportion of foreign board members, *Age* is the natural logarithm of the average age of outside board members, *Government* is the dummy variable for state-owned funds, *Foreign* is the dummy variable for foreign-owned funds, *Shareholders* is the number of shareholders, *No. of fines* is the number of fines imposed on pension fund, *Fine value* is the value of fines imposed on pension funds, *CG investment* is the dummy variable for fund's corporate governance investment codex, *Auditor* is the dummy variable for auditor rotation, *Expenses* is the ratio of operating costs to net assets and *Assets* is the natural logarithm of net assets.

Table 3
Correlations

	$Alfa_1$	$Alfa_2$	Size	Outsiders	Chairman	Woman	Foreigners	Age	Expenses	Assets
$Alfa_1$	1									
$Alfa_2$	0.79^{***}	1								
Size	0.02	-0.03	1							
Outsiders	-0.01	0.08	0.04	1						
Chairman	-0.08	0.02	0.30^{***}	0.13^{**}	1					
Woman	0.00	-0.05	0.26^{***}	0.08	0.06	1				
Foreigners	0.05	0.01	-0.30^{***}	-0.28^{***}	-0.22^{***}	-0.32^{***}	1			
Age	0.08	-0.03	0.13^{*}	0.33^{***}	0.13	0.29^{***}	-0.13^{*}	1		
Expenses	0.11	0.06	-0.13^{*}	0.11	-0.02	0.14^{*}	-0.05	0.10	1	
Assets	-0.04	0.28^{***}	0.02	0.28^{***}	0.18^{**}	0.24^{***}	-0.07	0.24^{***}	0.37^{***}	1

Notes: This table reports Pearson correlation coefficients for the main variables in the regression models. $Alfa_1$ is the annual excess return from single factor model, $Alfa_2$ is the annual excess return from multi factor model, *Size* is the number of supervisory board members, *Outsiders* is the percentage of independent board members, *Chairman* is the dummy variable for independent chairman, *Woman* is the proportion of female board members, *Foreigners* is the proportion of foreign board members, *Age* is the natural logarithm of the average age of outside board members, *Expenses* is the ratio of operating costs to net assets and *Assets* is the natural logarithm of net assets. ***, ** and * indicate significance at 1%, 5%, and 10% levels, respectively.

Table 4
Board characteristics and pension fund performance: single factor model

	(1)	(2)	(3)	(4)	(5)
Size	0.001	0.001	-0.000	0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Outsiders	0.024**	0.023***	0.029**	0.024**	0.029*
	(0.010)	(0.008)	(0.014)	(0.010)	(0.014)
Chairman	-0.018**	-0.021***	-0.017**	-0.018**	-0.017**
	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)
Woman		-0.028**	-0.043**		-0.043**
		(0.011)	(0.020)		(0.020)
Foreigners		0.001	-0.017		-0.017
		(0.008)	(0.013)		(0.013)
Age			0.007		0.007
			(0.012)		(0.012)
Expenses	-0.364	-0.252	0.438	-0.364	0.438
	(0.695)	(0.559)	(1.219)	(0.701)	(1.225)
Assets	0.000	-0.000	-0.015***	0.000	-0.015***
	(0.007)	(0.006)	(0.002)	(0.007)	(0.002)
Constant	0.011	0.018	0.295***	0.013	0.297***
	(0.143)	(0.119)	(0.061)	(0.144)	(0.061)
Year dummy	Yes	Yes	No	Yes	No
Firms	21	21	21	17	17
N	156	156	149	152	146
R^2	0.73	0.74	0.43	0.73	0.43
Adjusted R^2	0.70	0.71	0.40	0.70	0.40

Notes: This table reports results of fixed-effects regressions of pension fund performance on internal governance variables. The dependent variable is the single factor alpha. In the specification (1)-(3) the single factor model use all the pension funds, while in specification (4)-(5) only those funds are used that have 36 monthly return observations. *Size* is the number of supervisory board members, *Outsiders* is the percentage of independent board members, *Chairman* is the dummy variable for independent chairman, *Woman* is the proportion of female board members, *Foreigners* is the proportion of foreign board members, *Age* is the natural logarithm of the average age of outside board members, *Expenses* is the ratio of operating costs to net assets and *Assets* is the natural logarithm of net assets. Fund-level clustered robust t-statics are reported in parentheses. The notations ***, ** and * denote significance at 1%, 5%, and 10% levels, respectively.

Table 5
Board characteristics and pension fund performance: multi factor model

	(1)	(2)	(3)	(4)	(5)
Size	0.001	0.002	-0.001	0.001	-0.001
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Outsiders	0.008	0.010	0.042*	0.008	0.042*
	(0.014)	(0.014)	(0.023)	(0.014)	(0.023)
Chairman	-0.025***	-0.028***	-0.024***	-0.025***	-0.024***
	(0.005)	(0.005)	(0.003)	(0.005)	(0.003)
Woman		-0.040*	-0.081*		-0.081*
		(0.023)	(0.042)		(0.042)
Foreigners		0.008	-0.042*		-0.042*
		(0.010)	(0.021)		(0.021)
Age			-0.042		-0.042
			(0.027)		(0.027)
Expenses	-2.074*	-1.965	-2.427	-2.074*	-2.427
	(1.087)	(1.190)	(1.835)	(1.095)	(1.844)
Assets	0.006	0.005	-0.010***	0.006	-0.010***
	(0.011)	(0.010)	(0.003)	(0.012)	(0.003)
Constant	-0.079	-0.061	0.401***	-0.075	0.405***
	(0.229)	(0.194)	(0.120)	(0.232)	(0.121)
Year dummy	Yes	Yes	No	Yes	No
Firms	21	21	21	17	17
N	156	156	149	152	146
R^2	0.71	0.72	0.21	0.71	0.21
Adjusted R^2	0.68	0.69	0.17	0.68	0.17

Notes: This table reports results of fixed-effects regressions of pension fund performance on internal governance variables. The dependent variable is the multi factor alpha. In the specification (1)-(3) the multi factor model use all the pension funds, while in specification (4)-(5) only those funds are used that have 36 monthly return observations. *Size* is the number of supervisory board members, *Outsiders* is the percentage of independent board members, *Chairman* is the dummy variable for independent chairman, *Woman* is the proportion of female board members, *Foreigners* is the proportion of foreign board members, *Age* is the natural logarithm of the average age of outside board members, *Expenses* is the ratio of operating costs to net assets and *Assets* is the natural logarithm of net assets. Fund-level clustered robust t-statics are reported in parentheses. The notations ***, ** and * denote significance at 1%, 5%, and 10% levels, respectively.

Table 6
Other governance factors and pension fund performance: single factor model

	(1)	(2)	(3)	(4)	(5)	(6)
Size	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Outsiders	0.025**	0.023**	0.025**	0.024**	0.022**	0.024**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Chairman	-0.017*	-0.018**	-0.016**	-0.018**	-0.019**	-0.018**
	(0.009)	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)
Government	-0.003					
	(0.007)					
Foreign	0.007					
	(0.011)					
Shareholders		0.005				
		(0.003)				
No. of fines			-0.002			
			(0.002)			
Fine value				-0.000		
				(0.000)		
CG investment					-0.003	
					(0.005)	
Auditor						-0.002
						(0.005)
Expenses	-0.398	-0.314	-0.242	-0.341	-0.554	-0.435
	(0.672)	(0.693)	(0.674)	(0.734)	(0.607)	(0.668)
Assets	0.001	0.001	0.002	0.000	-0.001	0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Constant	-0.011	-0.021	-0.018	0.008	0.034	-0.011
	(0.147)	(0.138)	(0.142)	(0.144)	(0.142)	(0.151)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firms	21	21	21	21	21	21
N	156	156	156	156	156	156
R^2	0.74	0.74	0.73	0.73	0.73	0.73
Adjusted R^2	0.70	0.71	0.71	0.70	0.70	0.70

Notes: This table reports results of fixed-effects regressions of pension fund performance on internal and other governance variables. The dependent variable is the single factor alpha. In the specification (1)-(3) the single factor model use all the pension funds, while in specification (4)-(5) only those funds are used that have 36 monthly return observations. *Size* is the number of supervisory board members, *Outsiders* is the percentage of independent board members, *Chairman* is the dummy variable for independent chairman, *Government* is the dummy variable for state-owned funds, *Foreign* is the dummy variable for foreign-owned funds, *Shareholders* is the number of shareholders, *No. of fines no* is the number of fines imposed on pension fund, *Fines value* is the value of fines imposed on pension funds, *CG investment* is the dummy variable for funds corporate governance investment codex, *Auditor* is the dummy variable for auditor rotation, *Expenses* is the ratio of operating costs to net assets and *Assets* is the natural logarithm of net assets. Fund-level clustered robust t-statics are reported in parentheses. The notations ***, ** and * denote significance at 1%, 5%, and 10% levels, respectively.

Table 7
Other governance factors and pension fund performance: multi factor model

	(1)	(2)	(3)	(4)	(5)	(6)
Size	0.001	0.000	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Outsiders	0.011	0.007	0.009	0.007	0.005	0.008
	(0.014)	(0.015)	(0.015)	(0.015)	(0.016)	(0.014)
Chairman	-0.020**	-0.023***	-0.023***	-0.025***	-0.026***	-0.024***
	(0.008)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)
Government	-0.005					
	(0.009)					
Foreign	0.026					
	(0.016)					
Shareholders		0.012*				
		(0.007)				
No of fines			-0.001			
			(0.002)			
Fine value				0.000		
				(0.000)		
CG investment					-0.009	
					(0.007)	
Auditor						-0.006
						(0.005)
Expenses	-2.193**	-1.949*	-2.003*	-2.117*	-2.576**	-2.267**
	(1.046)	(1.014)	(1.085)	(1.076)	(1.092)	(1.074)
Assets	0.009	0.009	0.007	0.005	0.003	0.009
	(0.011)	(0.010)	(0.012)	(0.012)	(0.012)	(0.012)
Constant	-0.153	-0.160	-0.096	-0.073	-0.020	-0.138
	(0.217)	(0.204)	(0.234)	(0.242)	(0.242)	(0.233)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firms	21	21	21	21	21	21
N	156	156	156	156	156	156
R^2	0.73	0.72	0.71	0.71	0.71	0.71
Adjusted R^2	0.70	0.69	0.67	0.67	0.68	0.68

Notes: This table reports results of fixed-effects regressions of pension fund performance on internal and other governance variables. The dependent variable is the multi factor alpha. In the specification (1)-(3) the multi factor model use all the pension funds, while in specification (4)-(5) only those funds are used that have 36 monthly return observations. *Size* is the number of supervisory board members, *Outsiders* is the percentage of independent board members, *Chairman* is the dummy variable for independent chairman, *Government* is the dummy variable for state-owned funds, *Foreign* is the dummy variable for foreign-owned funds, *Shareholders* is the number of shareholders, *No. of fines* is the number of fines imposed on pension fund, *Fine value* is the value of fines imposed on pension funds, *CG investment* is the dummy variable for funds corporate governance investment codex, *Auditor* is the dummy variable for auditor rotation, *Expenses* is the ratio of operating costs to net assets and *Assets* is the natural logarithm of net assets. Fund-level clustered robust t-statics are reported in parentheses. The notations ***, ** and * denote significance at 1%, 5%, and 10% levels, respectively.