Economics Bulletin

Volume 39, Issue 2

# Administrative costs of Dutch pension funds: the impact of fund characteristics

Carlos Heitor Campani
*Professor at The Coppead Graduate School of Business (Federal University of Rio de Janeiro)*

Ian De Ridder
*Researcher at The COPPEAD Graduate School of Business (Federal University of Rio de Janeiro)*

## Abstract

Administrative costs per participant vary widely across pension funds, even when economies of scale are considered. Defining potential sources of these costs is important because such costs decrease the rate of return pension funds achieve on their participants' assets. Consequently, these costs decrease future pensions. This article seeks to gain a better understanding regarding which other factors impact administrative costs incurred by pension funds using data on over 200 Dutch pension funds concerning the year of 2015. The study confirms that scale economies were the most significant indicator of lower administration costs per participant. Furthermore, it is found that the amount of assets per participant held by a fund had a significant positive relation with costs.

The first author is grateful for the financial support from Brasilprev (Cátedra Brasilprev em Previdência), and from the Brazilian Nacional School of Insurance (Escola Nacional de Seguros). He is also a research associate at Edhec-Risk Institute (France).
**Citation:** Carlos Heitor Campani and Ian De Ridder, (2019) "Administrative costs of Dutch pension funds: the impact of fund characteristics ", *Economics Bulletin*, Volume 39, Issue 2, pages 1361-1370
**Contact:** Carlos Heitor Campani - carlos.heitor@coppead.ufrj.br, Ian De Ridder - ridder111@hotmail.com.
**Submitted:** August 15, 2018. **Published:** May 31, 2019.

# 1 Introduction

Administrative operating costs in a pension fund are composed of all incurred costs, except investment costs. Investment costs are defined as any costs related to the management of the funds and investment transactions made. Pension funds in the Netherlands are obliged to publish administrative operating costs and investment costs separately. These costs are reported on a yearly, per participant basis (excluding ex-participants) and therefore reflect how much each participant contributes on a yearly basis. An increase with respect to either one of them will deteriorate returns and in turn, increase the costs of retirement security. Research has shown that the magnitude that these costs have on pension payouts cannot be underestimated. In fact, under representative conditions, an increase in operating costs of 1 percent of the total assets corresponds to a decrease of 27 percent in future pension benefits (Bateman, 2001). A characteristic that is known to impact the relative administrative operating costs is the scale of a pension fund (Bikker, 2013). In the Netherlands it can be found that on average the size of pension fund correlates negatively with the costs incurred per participant. While smaller funds incurred administrative costs of about 0.43 percent of their assets, the largest category of funds reported only 0.17 percent in 2004 (Bikker and Dreu, 2009). Interestingly enough, rather large variations are still present between funds of similar sizes.

Consequently, this study aims to identify which pension fund characteristics can best explain the variations in administrative costs incurred by pension funds. Furthermore, the hypothesis stating that scale is the most important determinant needs to be verified. The study intents to identify if observed cost variations are logically explainable or if managerial inefficiencies are likely to exist. To perform these tasks, a quantitative analysis is carried out with data publicly provided by the Dutch Central Bank. The study uses data from the year 2015 regarding 216 Dutch pension funds in which participants are active on a mandatory basis. Descriptive analysis of the data provides insights in how pension funds differ from each other and regression analysis sheds light on the causes of observed variations.

The paper that mostly relates to ours is Bikker and Dreu (2009): using data on Dutch pension funds regarding the year 2004, these authors investigated several variables which could affect administrative costs per participant. Our study contributes to this literature by investigating several variables which were not used before. Moreover, we use more recent data and perform a comparative analysis with their results: severe changes in the pension system have taken place from 2004 to 2015.

Our study confirms that scale economies are the most significant indicator of lower administration costs per participant. Furthermore, it is found that the amount of assets per participant held by a fund had a significant positive relation with costs.

Previous studies have found wide variations between pension funds regarding the administrative costs per participant. When Bateman and Mitchell (2004) were studying the relations between pension fund characteristics and administrative costs in the Australian market with regards to the year 1999, they encountered significant differences in administrative costs incurred by funds. Although the average percentage of total assets spent on administrative costs came to 1.1%, some funds were observed to incur costs up to 4% of total assets. Similarly, studying Dutch pension funds with data from 2004, Bikker and Dreu (2009) found significant differences between grouped pension funds. Following this, Bikker et al. (2012) carried out a comparative study between different countries to build a better understanding of differences in administrative costs and potential causes. Significant differences were found. These differences not only exist at the individual fund level, but also on aggregated and country level.

The principle of economies of scale, in the pension fund context, implies that if fixed costs can be spread over more participants, the total costs per person will decline. On the other hand, diseconomies of scale may exist as well: they may be present when the increase in scale of the organization creates extra complexity and therefore increases costs per participant. Several studies have confirmed the presence of scale economies regarding administration costs in pension funds, as indicated in figure 1. In Australia, Bateman and Mitchell (2004) found that economies of scale were responsible for over 60 percent of potential cost savings. Moreover, two additional studies confirmed the existence of economies of scale within the pension fund market (Bikker and Dreu, 2009, and Bikker et al., 2012): Results of these studies in the Netherlands, Canada, Australia and in the US indicated economies of scale of up to 37%.

It seems like the optimal size of pension funds has increased over the years. Studying data of three different periods, Bikker (2013) found that the point where diseconomies of scale start appearing had risen to over 2 million participants, while suggesting that the real number is likely to be, in fact, much higher. This represents a significant increase compared to the 80s and 90s, where the optimal size of funds was only a couple of hundreds of thousands. However, most of pension funds are smaller in terms of participants, which leads us to the conclusion that most pension funds in the Netherlands could benefit from expansion, thus leveraging scale economies to reduce administrative costs per participant.

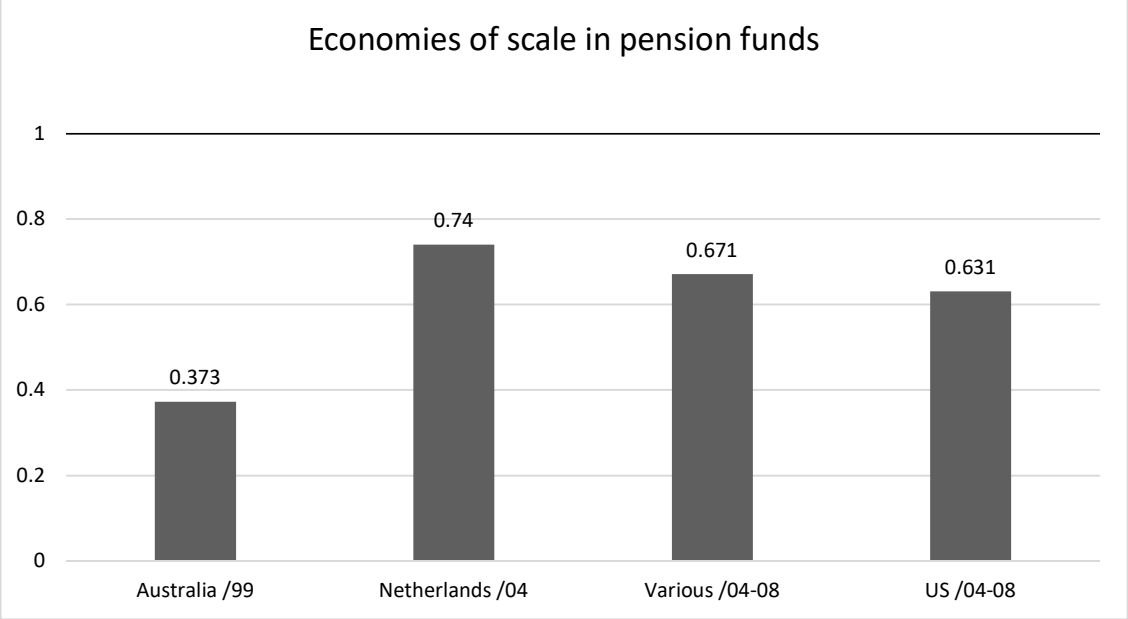


**Figure 1:** Observed economies of scale in prior research.
**Source:** Figure created by authors. Data from Bateman and Mitchell (2004), Bikker and Dreu (2009), Bikker et al. (2012).
**Note:** Stated points should be interpreted as the percentage change in administration costs when the number of participants increases by 1%, such that any value less than 1 represents an economy of scale. The X-axis indicates both the country and the year on which the data is based. Data for "various" is comprised from observations in Canada, Australia and the Netherlands.

Prior research found that a positive relation exists between the amount of assets held per participant and the administrative costs incurred by a pension fund (Bikker and Dreu, 2009). This result suggests that higher investments per participant leads to higher administrative costs. Whereas over the entire sample (from 1992 until 2004) the observed effect is quite small, data on Dutch pension funds with regards to 2004 shows a stronger effect. The authors hypothesise that the observed effect may be caused by funds which wrongly report costs related to investments under administrative costs. Another explanation could be the relation between

assets per participant and the total number of participants in funds. Bikker et al. (2012) found that funds which were smaller in terms of participants, on average, managed a higher value of assets per participant. The cost-reducing impact of size in terms of number of participants has been widely discussed. Hence, this could have influenced the effect of assets per participant on administrative operating costs. This study has addressed this issue.

# 2 Methodology

## 2.1 Goal

Both administrative and investment costs can significantly reduce future benefits of participants. Therefore, it is crucial for pension funds to look critically at these costs. The main goal of this study is to focus on the administrative operating costs of Dutch pension funds and provide a better understanding of the characteristics affecting these costs. Prior research has been carried out (Bateman and Mitchell, 2004., Bikker and Dreu 2009., Bikker et al., 2012). However, much has changed in the pension market, internationally as well as in the Netherlands. This study aims at providing comparative data and new insights regarding pension funds' characteristics and their effects on administrative costs.

## 2.2 Data sample

To attain these goals, secondary data has been collected from the Dutch Central Bank, which is a publicly accessible source. Data was available on all Dutch pension funds with mandatory participation on 2015. This amounted to 250 pension funds, which included industry wide, professional and company funds. The dataset provided information on 9 independent variables (listed in the Appendix) which could be valuable to relate to the dependent variable of the study: administrative costs. Out of these nine variables, two of them were not included during the prior study carried out by Bikker and Dreu (2009). The first additional variable is concerned with the entity responsible for the premium payments and the second variable relates to the coverage ratio of pension funds. Observations with missing data regarding key characteristics were eliminated from the sample and two outliers were disregarded (with values one could suspect were not accurately recorded). In the end, 216 pension funds remained, corresponding to 86% of all Dutch mandatory pension funds. This sample size suffices in what concerns regression analysis, since according to Green (1991), two rules of thumb should be followed: The first one states the minimum acceptable sample is $50 + 8k$, where k stands for the number of independent variables included in the model. The second one states that, when testing individual predictors, the minimum suggested sample size is of $(104 + k)$.

## 2.3 Analysis

To get a better insight in the data, descriptive statistics were obtained. Over the entire sample of 216 observations, statistics were derived concerning the following independent variables: type of participants, pension premiums, coverage ratio, assets and assets per contributions ratio. Likewise, statistics were obtained for the dependent variable of the study: administrative operating costs per participant, per year. Thereafter, the data was grouped based on the size of pension funds both in terms of number of participants as well as in terms of total invested assets. This allowed comparison with Bikker and Dreu, (2009).

Correlations were analyzed and a multiple regression analyses (estimated through ordinary least squares method - OLS) were performed to understand which variables could explain the variation in the dependent variable (administrative costs per participant). To

determine the best fitting model, independent variables were entered one by one (and in different orders) until no meaningful change in the adjusted $R^2$ could be achieved by adding any other variable – this is known as the step-wise method to determine which variables best explain the dependent variable (i.e., administrative costs per participant).

It is worth mentioning that we were concerned about the issues and assumptions on the OLS regression estimation technique, especially issues as reverse causality, heteroscedasticity, endogeneity and multicollinearity. We used the standard tools available in the literature to identify these issues and, after careful analysis, we made sure to have all OLS assumptions valid to the final equation presented by this paper.

### 2.4 Limitations

Due to limitations regarding data availability, three variables which appeared in prior studies have not been included here. As a consequence, the scope of this study does not entail the impact of pension plan design, outsourcing of administration and the insurance on liabilities. Notwithstanding, the added variables discussed earlier provide valuable new insights. As the analysis is based on a single year, it does not allow for a time series analysis. The fact that the dataset is limited to a single year also means that the sample size is smaller than in Bikker and Dreu (2009), what can make statistical significance more difficult to be achieved.

## 3 Analysis and Results

### 3.1 Analysis of descriptive statistics

The dependent variable of this study is administrative operating costs. On average, recorded operating costs per person amounted to €114 and the total incurred operating costs in this sample amounted to € 1.9 billion in the year of 2015. It needs to be noted that Bikker and Dreu (2009) argued that the lower extremes could be affected by under-reporting of administrative costs. Two factors could have played a role here. Firstly, costs might have been allocated wrongly and reported as investment costs. Secondly, in case of company funds, administrative pension related costs might have been accounted for under regular company expenses. Figure 2, presented below, shows that the number of pension funds reporting administrative costs of less than € 50 per participant was less than 3 percent of the sample. Hence, the conclusion that can be drawn is that this is not the norm. The mode administrative costs in the sample is the group representing administrative costs between € 150 and € 200.

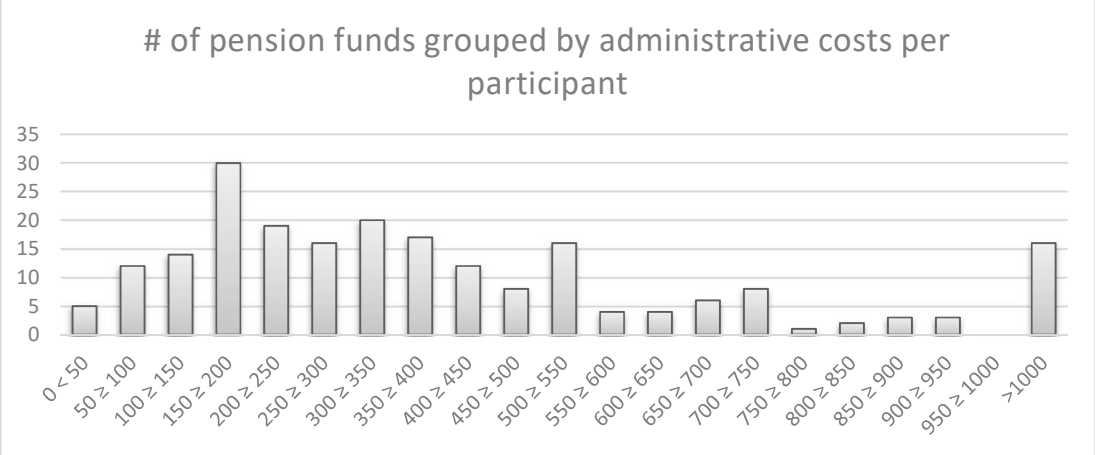


**Figure 2:** Number of pension funds, grouped by administrative costs per participant.
**Source:** Figure created by author. Data from the Dutch Central Bank.

Figure 3 shows that cases with administrative costs per participant over € 1000 were only observed for funds with a relatively low number of total participants. In general, a clear pattern of diminishing costs can be observed in the scatterplot below. This is in line with Bikker (2013).

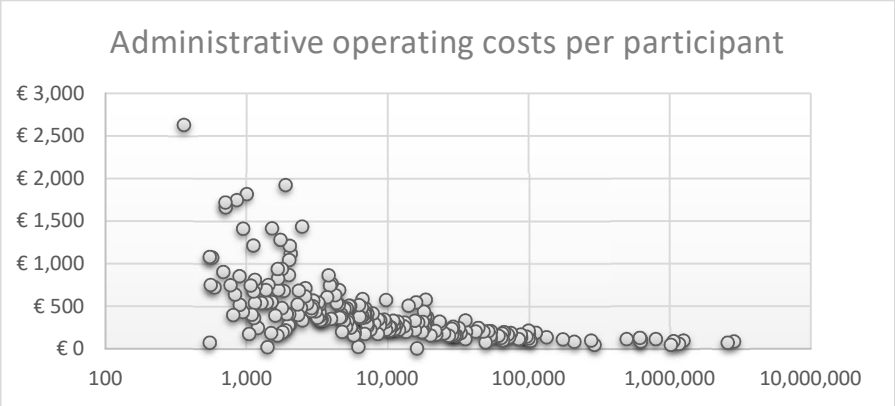


**Figure 3:** Administrative operating costs per participant, per year, in relation to the number of participants in a pension fund.
**Source:** Figure created by authors. Data from the Dutch Central Bank.

Since the size of a fund affects the administrative costs per participant, funds were grouped according to their size. Both in terms of number of participants and invested assets. Tables 1 and 2, presented below, show that administrative costs per participant, on average, decline when the number of participants or invested assets increases. Simultaneously, the reported assets per participant were lower when the fund consisted of more participants. However, administrative costs as a percentage of the total assets was lower for funds consisting of more participants. Similar results were obtained when looking at the total invested assets of a fund: Funds with more assets reported lower administrative costs per participant.

**Table 1:** Administrative operating costs grouped by number of participants.

| ***Number of Participants*** | ***Operating Costs per Participant*** | ***Assets per Participant*** | ***Adm. Costs as % of Total Assets*** |
|---|---|---|---|
| *<1,000* | €1,019 | €242,510 | 0.42% |
| *1,000 – 10,000* | €519 | €167,162 | 0.31% |
| *10,000 – 100,000* | €230 | €115,053 | 0.20% |
| *100,000 – 1,000,000* | €113 | €39,915 | 0.28% |
| *> 1,000,000* | €74 | €42,971 | 0.17% |

**Source:** Table created by authors. Data from the Dutch Central Bank.

The relevancy of which entity was responsible for what percentage of the premium payments becomes clear when looking at figure 4. This figure shows the connection with administrative costs. It shows that, when grouped by the percentage premium paid by the employer, on average, a higher percentage of the premium paid by employers coincided with higher administrative costs per participant. The group where employees contributed relatively the most, administrative costs per participant were on average € 298. On the other hand, in the

group where almost the entire premium was paid by the employer, the administrative costs per participant were on average € 595 per participant, per year. In general, the data shows that when an increasing percentage of the contributions were funded by the employer, on average, the administrative costs per participant were higher. One could infer that fund participants who are paying for pension premiums by themselves, are more concerned with how effectively these contributions are managed.

**Table 2:** Administrative operating costs grouped by invested assets.

| *Invested Assets in million Euros* | *Operating Costs per Participant* | *Assets per Participant* | *Adm. Costs as % of Total Assets* |
|---|---|---|---|
| *<100* | €418 | €47,327 | 0.88% |
| *100 – 1,000* | €553 | €137,583 | 0.40% |
| *1,000 – 10,000* | €281 | €174,382 | 0.16% |
| *>10,000* | €132 | €155,309 | 0.09% |

**Source:** Table created by authors. Data from the Dutch Central Bank.

The real coverage ratio can be defined as the assets of a pension fund divided by its liabilities. This ratio takes the future value of the two into account by considering the expected long-term rate return on investments and liabilities correcting the liabilities for expected future inflation. A ratio below 100% means the fund is insolvent and corrective action is required. On the other hand, a ratio above 100 percent signifies solvency towards its future liabilities. Figure 5 shows that only 11 percent of the pension funds in the sample could be classified as solvent in the year 2015. Roughly two thirds of the funds recorded a real coverage ratio of below 90 percent.

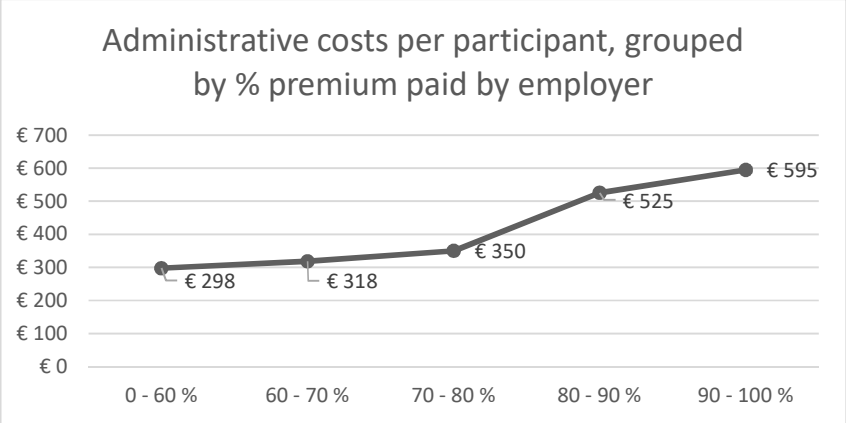


**Figure 4:** Administrative costs per participant, grouped by % premium paid by employer.
**Source:** Figure created by authors. Data from the Dutch Central Bank.

Table 3 shows that higher real coverage ratios were on average related to higher administrative costs per participant. Hence, a positive correlation exists between the real coverage ratio and the administrative costs per participant of a fund. This leads to an interesting finding that higher expenditure on administrative costs was related to more solvent policies. Hence, in other words, participants which pay more also get more.

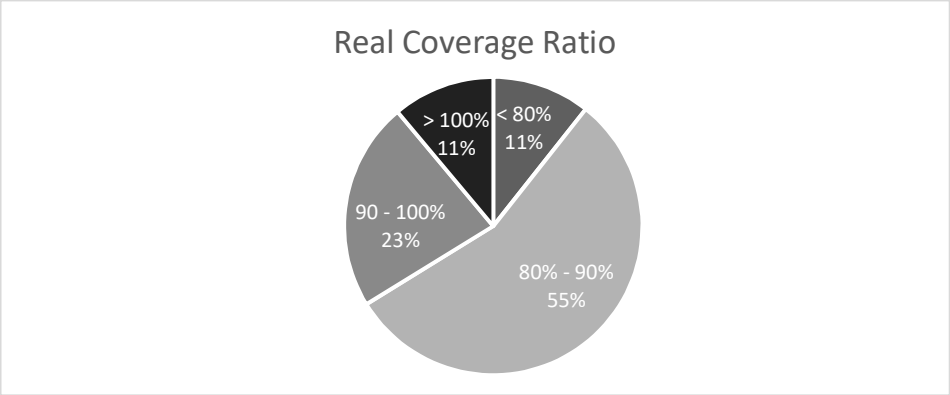


**Figure 5:** Percentage of pension funds, grouped by real coverage ratio.
**Source:** Figure created by authors. Data from the Dutch Central Bank.

**Table 3:** Mean administrative costs for pension funds, grouped by real coverage ratio.

| ***Real Coverage Ratio*** | ***Average Administrative Costs*** |
|---|---|
| *< 80%* | € 310 |
| *80% - 90%* | € 436 |
| *90 - 100%* | € 449 |
| *> 100%* | € 487 |

**Source:** Table created by authors. Data from the Dutch Central Bank.

3.2 Comparative analysis: Prior Dutch pension funds research

Bikker and Dreu (2009) analysed administrative operating costs in the Dutch pension system. Figures 6 and 7 provide evidence that administrative costs had risen disproportionally even when adjusted for inflation, for all categories. A potential explanation for this increase was presented by the original authors. They found that many funds underreported administrative costs by not accounting for salary expenses. Hence, the increase could be related to the inclusion of these costs in this new set of data.

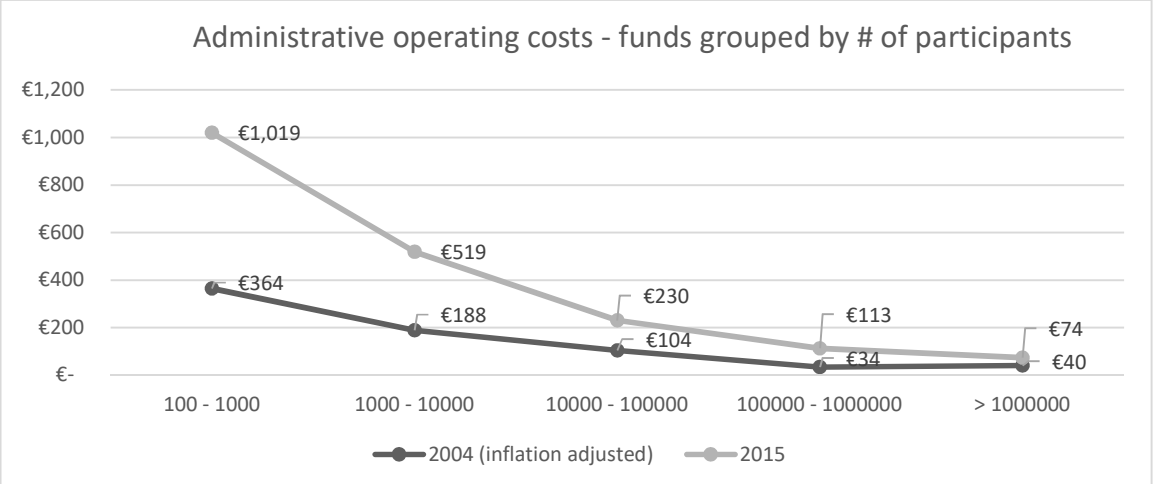


**Figure 6:** Administrative operating costs per participant, per year, grouped by fund size (number of participants).
**Source:** Figure created by authors. Data from the Dutch Central Bank and Bikker and Dreu (2009).

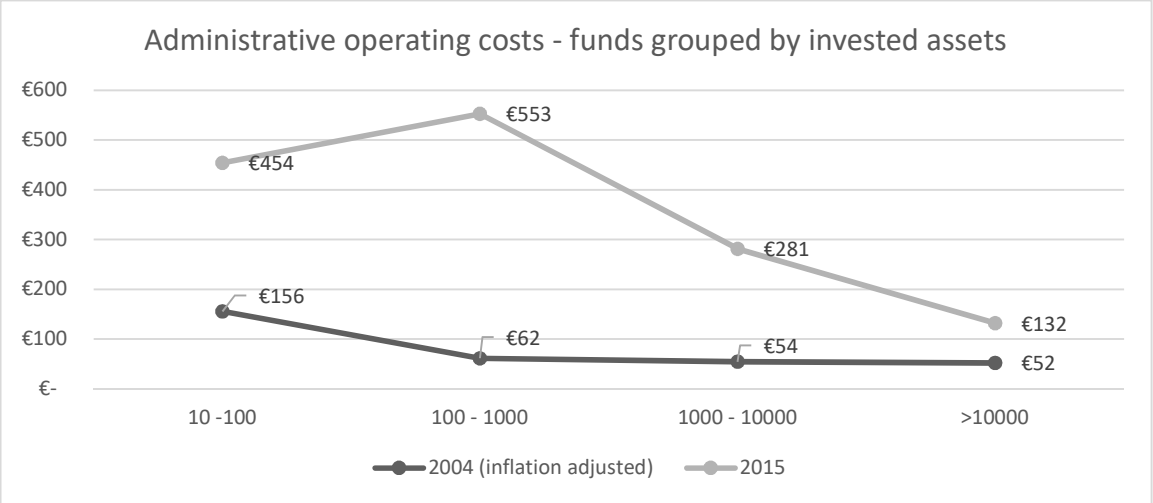


**Figure 7:** Administrative operating costs per participant, per year, grouped by fund size (invested assets).
**Source:** Figure created by authors. Data from the Dutch Central Bank and Bikker and Dreu (2009).

## 4.3 Regression Analysis

In this section, we want to investigate which characteristics, independently or jointly, help to explain administrative costs. To perform this investigation, we run an OLS regression analysis. This type of analysis might shed some light on the relative contribution of different predictor variables on the dependent variable.

As a first step, all the predictor variables were simultaneously entered in a multiple linear regression model. Of course, complementary variables (i.e., with perfect correlation) did not enter the regression together. This first multiple regression analysis is carried out to evaluate which variables are suggested to explain better the dependent variable variation.

**Table 4:** We present below the multiple regression results, in which the dependent variable is the administrative costs per participant. All variables entered at the same time.

| | ***B*** | ***SE B*** | ***t*** | ***p-value*** |
|---|---|---|---|---|
| Constant | 3.664 | 0.864 | 4.241 | 0.001 |
| Number of participants (log) | -0.611 | 0.062 | -9.901 | 0.001 |
| Premium employer (ratio) | 0.033 | 0.198 | 0.168 | 0.867 |
| Ex-contributors (ratio) | 0.963 | 0.324 | 2.974 | 0.003 |
| Retirees (ratio) | -0.046 | 0.413 | -0.111 | 0.912 |
| Real coverage ratio | 0.010 | 0.004 | 2.269 | 0.024 |
| Assets per participant (log) | 0.671 | 0.115 | 5.815 | 0.001 |
| Assets / contributions | -0.003 | 0.002 | -1.581 | 0.115 |

**Source:** Table created by authors based on the regression performed.
**Note:** $R^2 = 0.545$ and adjusted $R^2 = 0.530$. In the regression table, *B* represents the OLS regression coefficients and *SE B* represents their standard errors. The t-test statistic is denoted by *t* and the p-value is shown at the last column. Sample size = 216.

Table 4 shows that the p-value cannot be considered statistically significant for the variables premium employer (ratio), retirees (ratio) and assets/contributions. Both the predictor variables describing the size of a pension fund (in terms of participants and in terms of assets per participant) indeed presented a significant relationship with administrative costs. The analysis shows that the ratio of ex-contributors also presents a significant t-stat. Furthermore, the variable regarding the real coverage ratio could potentially explain some of the variation, given its p-value was found to be 2.4%.

Based on the results of the preceding analysis, a new multiple linear regression was calculated to estimate administrative costs per participant by following a step-wise method for entering variables. In this method, variables are added to the model until the addition of another variable does no longer increase the adjusted $R^2$ value significantly. This procedure was repeated entering the variables in different orders. As a result, the final model included 3 predictor variables: (log of) number of participants, (log of) assets per participant and ex-contributors (ratio). A significant regression equation was found (all p-values < 1%), with an $R^2$ of 0.527 (adjusted $R^2$ of 0.521). Pension funds' predicted log of administrative costs per participant ($ac^{(log)}$) is best described as follows:

$$ac^{(log)} = 5.039 - 0.623\, n^{(log)} + 0.574\, a^{(log)} + 0.732\, e$$

It can be concluded that administrative costs are mainly dependent on the size of a fund, here proxied by number of participants. In fact, size explained 46% of the variation in the sample used. Additionally, the value of assets managed by a fund (on a per participant basis) and the ratio of ex-contributors of a fund help to explain further of the variation. Altogether, these three predictors account for over 52% of the administrative cost variation in the sample analysed.

## 4 Conclusion

This study confirms that administrative costs per participant vary widely between pension funds in the Netherlands. It reemphasises that the size of a fund, in terms of its number of participants, is still the main determinant of administrative costs. Economies of scale, reducing the per individual administrative costs, are present in the Dutch pension market. This study also presents evidence that the value of the assets managed by a fund on a per-participant basis can increase administrative operating costs. This effect is somewhat surprising since costs associated with managing and investment costs are (or at least should be) reported separately.

Relating to historical data, we also show that administrative costs per participant have increased from 2004 to 2015 in Netherlands. This is especially noteworthy because the scale advantages pension funds obtained also increased significantly. We thus recommend that the sources of the increased administrative costs should be investigated closer. Case specific analysis on individual funds could provide relevant insights.

### References

Bateman, H., Kingston, G., and Piggott, J. (2001) "Forced saving: Mandating private retirement incomes" *Cambridge University Press*.

Bateman, H. and Mitchell, O. S. (2004) "New evidence on pension plan design and administrative expenses: the Australian experience" *Journal of Pension Economics and Finance* **3** (1), 63-76.

Bikker, J. (2013) "De optimale schaal van pensioenfondsen" *Economisch Statistische Berichten* **98**, 14-21.

Bikker, J. A. and Dreu, J. De (2009) "Operating costs of pension funds: the impact of scale, governance, and plan design" *Journal of Pension Economics and Finance* **8** (1), 63-89.

Bikker, J. A., Steenbeek, O. W., and Torracchi, F. (2012) "The Impact of Scale, Complexity, and Service Quality on the Administrative Costs of Pension Funds: A Cross-Country Comparison" *Journal of Risk and Insurance* **79** (2), 477-514.

Green, S. B. (1991) "How many subjects does it take to do a regression analysis" *Journal of Multivariate Behavioral Research* **26** (3), 499-510.

## Appendix

**Table 5:** List of variables extracted from the publicly accessible data set from the Dutch Central Bank.

| *#* | ***Variables*** | ***Type*** |
|---|---|---|
| 1 | Premium Employees (ratio) | Independent |
| *2* | Premium Employer (ratio) | Independent |
| *3* | Contributors (ratio) | Independent |
| *4* | Ex-Contributors (ratio) | Independent |
| *5* | Retirees (Ratio) | Independent |
| *6* | Total Participants | Independent |
| *7* | Real Coverage Ratio | Independent |
| *8* | Assets per Participant | Independent |
| *9* | Asset / Contributions | Independent |
| *10* | Administrative Operating Costs | Dependent |

**Source:** Table created by authors.