The Role of Investor Type in the Fee Structures of Pension Plans

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Abstract We examine the role of the investor type in the fee structure of pension plans. Our examination uses a data set of employer-sponsored and individual private pension funds in Spain. We find different determinants of the fees between these two pension plans. We find evidence of market penetration strategies in individual plans but none in employer-sponsored plans. In these plans, the fees are negatively related to their financial groups' market share, whereas in individual plans this relation is negative for management fees but positive for custodian fees. Further, except in the case of custodian fees in individual plans, we find that all fees diminish when the custodian and management firms belong to different financial groups.

Keywords Pension plans · Individual vs. employer-sponsored plans · Fee caps · Censored data

JEL Classification G23 · G19 · M31

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1 Introduction

The return on investment in pension plans can vary considerably depending on the amount of fees. This effect is further intensified in the context of long-term investments. As noted by Bateman and Mitchell (2004), pension-plan holders are often unable to assess the extent to which small differences in the administrative fees will affect the ultimate size of their retirement benefits[1].

There is a great deal of literature on the determinants of mutual fund fees and the way that they affect the final returns of investors (e.g., Tufano and Sevick 1997; Gil-Bazo and Martínez 2004; Cullinan and Bline 2005; Moreno and Rubio 2007; Gao and Livingston 2008). However, less attention has been paid to these issues in relation to pension plans (e.g., Bateman and Mitchell 2004; Martí et al. 2007, 2009).

The Spanish market offers an interesting framework with to fill this gap. It enables us to check for variation in fees as a function of the target investor by analysing two specific defined-contribution pension plan categories (individual and employer-sponsored). Although both types of plan are provided and managed primarily by the same agents (banks and savings banks), they involve different types of decision makers. In the case of individual pension plans, the individual directly selects the plan, whereas in employer-sponsored plans the employer selects the specific plan, unlike what happens in other pension plan systems such as the 401(k) plans in the United States. This method removes the potential influence of unsophisticated investors in that segment of the market. This difference in the type of decision maker (an individual versus a firm) permits us to test whether differences in pension plan fee-setting policies result from the use of customer-tailored marketing strategies. The different levels of the investors'

[1] According to the marginal effects for censored observations obtained from the sample of individual and employer-sponsored plans (to be introduced later) over the period of analysis, every monetary unit invested in an employer-sponsored plan will yield 29.84% more after 25 years than if invested in an individual plan. Furthermore, the average pension plan holder investing in an individual plan without ever switching to another newly launched individual plan will lose 7.77% over the period analysed for this example.

sophistication, their bargaining power, and the switching costs[2] suggest that different marketing strategies are used in each context. Specifically, we expect to find that individual pension plans apply similar market penetration strategies to those found by Muga and Santamaría (2010) for retail mutual funds.[3] But these strategies are less likely to be found in employer-sponsored plans because the decision maker is more sophisticated, has more bargaining power, and does not have to bear such high switching costs. The mutual fund literature describes the tendency of institutional fund investors to punish poor performance by pulling out (Salganik and Schreiber 2013). In addition, customers' bargaining power increases with their wealth, as reported in the Morningstar Financial Services Observer (September 2013).

Thus, we present evidence on the determinants of pension plan fees from the point of view of how the plans' marketing policies vary according to the type of target investor. Our first aim is to determine whether pension plan management and custodian firms adopt market penetration strategies. The success of this type of strategy can depend on the nature of the target investor. Khorana et al. (2008) find that fees vary according to the customer profile (institutional versus retail), with higher fees for retail investors. [4] Evans and Fahlenbrach (2012), who analyze mutual fund twins, find a stronger sensitivity to high fees and poor risk-adjusted performance among institutional investors than among retail investors, which is consistent with lower switching costs that affect the former more than the latter. Salganik and Schreiber (2013) also show that the convex nature of the flow-performance relation in mutual funds is driven by retail funds.

Our second aim is to analyze whether fees vary with the market share of the financial group to which the management firm or custodian firm is affiliated and whether the effect of the market share varies between individual and employer-

[2] Switching costs can be defined as the cost of changing services in terms of time, monetary, and psychological costs (Dick and Basu 1994; Guiltinan 1989; Sengupta et al. 1997).

[3] The possibility of funds using market penetration strategies was has already been suggested by Christoffersen and Musto (2002), who noted that a good profit-maximising maximizing strategy for a fund company might be to hold old funds and create new low-fee funds to attract new clients.

[4] The strategy might be to periodically raise or maintain prices, according to factors such as customers' switching costs, firms' marginal costs, or innovation incentives (Schmidt 2013).

sponsored pension plans. The arguments on efficiency claim that a higher market share should mean greater efficiency and, thereby, lower costs that potentially lead to lower fees. However, the market power theory suggests that both management and custodian fees are positively related to the level of concentration in markets. It appears reasonable to assume that neither of these effects will be independent of the type of investor. The more powerful an investor is the better able that investor is in mitigating the potential market power of the management and custodian firms and in benefiting from their higher efficiency.

We also examine whether being affiliated to different financial groups leads management and custodian firms to display different types of fee-setting behavior. The specific issue to be analyzed is whether the cost advantage is transferred in whole or in part to the investor.

There is a legal limit on both pension plan management and custodian fees in Spain. To study the effects of the different variables involved in these fees, this paper uses a Tobit model that is left-censored at zero and right-censored at the fee cap. For greater robustness, we repeat the analyses using the CLAD method.

The remainder of the paper is organized as follows. Section 2 presents a review of the literature on pension plan fees and marketing policies, as well as the working hypotheses. In Section 3, we describe the Spanish pension plan sector and the database used in the analysis. In Section 4, we outline the methodology and summarize the main findings. Section 5 reports the results of the robustness check, and Section 6 presents the main conclusions of the study.

2 Related literature and hypotheses

The body of academic literature on pension plan costs and fees is quite small in comparison to the literature on mutual funds. Most of that research tests for economies

of scale in pension plan costs,[5] although some focuses specifically on the determinants of the levels of pension plan fees. Using individual Spanish pension plan management and custodian fees, Martí et al. (2009) examine the roles of several different variables, irrespective of investor type, that are based on two independent cross-section analyses for the years 2004 and 2005. With respect to management fees, they observe that the funds with the highest category-adjusted returns have lower management fees, that there is a negative relation between the volume of assets per participant and the fees charged, and that the investment policy of the pension plan also has an impact, with equity plans charging the highest management fees. Their results for custodian fees show that they are negatively related with adjusted returns, that they increase with the pension plan's size, and that they are influenced by the type of investment policy, with equity pension plans again charging significantly higher fees. Bateman and Mitchell (2004), who consider the role of the investor type in trying to account for pension plans' administration costs, introduce a dummy variable that makes the distinction between retail plans and employer-sponsored plans. They find that individual plans are more expensive to administer, a finding that they explain by arguing that retail plans need to advertise and compete in the market-place.

Meanwhile, in relation to the variables that might intervene in a finance firm's decisions on marketing policy, various studies report that as a result of recent changes in

[5] By definition, economies of scale exist if the average costs of production decline with increases in the scale of output, holding the product mix constant (Carlton and Perloff 2000). Studies of financial intermediaries have most often taken "output" to mean assets under management. In that case, economies of scale arise if the average cost of managing a dollar of assets declines as assets arise. Among studies testing for economies of scale in pension plan costs, Ambachtsheer (1994), finds a negative relationship between fund size and total operating costs (all direct investment management plus all governance and administrative costs) for a large sample including different types of plan sponsors and both US and Canadian funds. In the case of multi-employer pension plans initiated by unions, Ghilarducci and Terry (1999) find that, as the pension plan increases in size, administrative costs per participant and asset fall, after controlling for the proportion of retirees in a plan. Collins (2003) and Dyck and Pomorski (2011), using data for defined-benefit pension plans, find economies of scale in asset management. Bateman and Mitchell (2004) and Coleman et al. (2006) also find economies of scale for Australian pension plans, while Dyck and Pomorski (2011) report that the ability to take advantages of scale depends on plan governance. According to Coleman et al. (2006), pension funds can benefit in several ways from economies of scale. Firstly, with greater volumes of assets under management, the fixed costs associated with providing pension services are spread over a larger asset base and therefore average costs will be lower in per-dollar terms. Furthermore, pension funds should be able to negotiate lower fees with external investment managers, because their bargaining power will increase with the size of the investment mandates they have to offer.

competitive and market conditions, many commercial banks are placing increasing emphasis on establishing and maintaining relationships with principal corporate customers (Moriarty et al. 1983; Turnbull and Gibbs 2007). Such efforts have often become the primary focus of their corporate banking strategy. In other words, finance firms' marketing policies vary according to the weight of the individual customer. This variation can lead to differences in fee levels between collectively negotiated and individual pension plans. Taking into account these differences we test the following null hypothesis:

H1: *Fee levels in individual plans are equal to fee levels in employer-sponsored plans.*

The literature shows that one of the five forces that determines the competitive intensity of a market is the buyer's bargaining power (Porter 1998), which can be used to reduce prices as long as there are no significant switching costs. Due to the structure of the Spanish pension plan sector, the highest fees should be charged to individual plans by financial institutions (the traditional pension plan providers), thus rejecting H1. But switching costs are implicit, given that there is no explicit cost involved in switching from one pension plan to another in the case of Spanish pension plans.[6] In line with a variety of studies (e.g., Guiltinan 1989; Dick and Basu 1994; Sengupta et al. 1997), we consider switching costs to include the time, money, and psychological cost involved in changing to a different service provider.[7]

The main implication of switching costs, as noted by Morgan and Hunt (1994), is that they can make the consumer dependent on the provider. Gronhaug and Gilly (1991) argue, further, that a dissatisfied customer might remain "loyal" because of high switching costs. In Spain banks and savings banks are the main providers of pension plans. Therefore, in the context of pension plans, Colgate and Lang (2001) identify several factors that pose switching barriers to bank customers. Firstly, they mention

[6] Article 57.1 of Royal Decree 304/2004.

[7] The practical implication of the remarkable importance investors attach to these costs is reflected in the discounts banks in Spain offer in order to capture pension plan assets currently under the management and custody of other financial groups.

what they describe as “relationship investment,” which includes issues such as loyalty, that is the belief that “the staff knows my needs,” and the perception of preferential treatment and receiving the best deal. Some customers are reluctant to leave after putting effort into developing the relationship between themselves and their bank. Making up the second factor are the negative reasons that might oblige customers to stay, such as being locked in, being concerned about negative financial consequences, and being uncertain about the consequences of switching to another provider. A third is the potential apathy that results from the belief that “all banks are the same, so no better off,” or “too much bother in terms of time and effort.” And the fourth and final factor has to do with “service recovery,” which depends on the satisfactory handling of a customer complaint. In fact, according to Gil-Bazo and Martínez (2004), bank customers are more vulnerable to marketing or to advice from their bank than to the temptation to shop for better quality or cheaper funds. Therefore, the average investor maintains a long-term relationship with the bank.

According to McKechnie (1992), before any financial resources change hands, consumers must have confidence and trust not only in the financial institution concerned, but also in its personnel. Apart from relying more on information from personal sources, consumers are likely to consider factors such as the size, longevity, and image of the financial services organization as indicators of whether any promises made are likely to be fulfilled. The establishment of trust can also bring about a degree of inertia in buyer-seller relationships. Since an irreversible amount of time and effort is required by an individual in order to acquire the necessary experience and information on which to assess an institution’s reliability, it is usually the case that once satisfied, a consumer is more likely to remain with that institution than incur the costs of searching for and vetting alternative suppliers.

James and Karceski (2006) point out that in studies of mutual fund selection, it is often assumed that individual investors face significant search and information costs,

while institutional investors and large individual investors are generally assumed to be better informed than smaller "retail" investors, which reflects economies of scale in information production and their continued presence in the market place. They interpret that the lower search costs of institutional investors should lead to different, and presumably more sophisticated, selection criteria for investments. Furthermore, Lamont and Thaler (2003) and Brunnermeier and Nagel (2004) provide empirical evidence of irrational investment decisions by individual or "retail" investors.

As Klemperer (1995) asserts, the most obvious effect of switching costs is to give firms some market power over their existing customers. Thus, switching costs explain why market share can be valuable and, if so, will generate competition.[8] Using a two-period framework, this author shows that in order to gain market share, prices are lower in the first period and higher in the second period than they would be if there were no switching costs in the second period. In a multi-period context, the firm has, in every period, to balance the incentive to exploit its locked-in customers by charging a high price against the incentive to set a low current price to attract new customers and thus increase its market share and future profits. Schmidt (2013) shows that there is no pure strategy equilibrium for this problem. In fact, the result depends on the percentage of customers that are able to switch at no cost, the asymmetries in the firms' marginal costs, and their incentives to innovate.[9] Therefore, both results show that, in the presence of high switching costs, there is an incentive to compete for market share through low prices. Subsequently, as noted by Beggs and Klemperer (1992), prices are higher in markets with than in markets without switching costs.

Market penetration strategies were first described by Ansoff (1957) in a study that discussed various alternative marketing strategies. This particular type of strategy is appropriate for existing products or services in existing markets. However, it can be

[8] Note that, Schmidt (2013) asserts that if an increase in market share induces more intense price competition, a firm might prefer to have a smaller market share in a market with loyal or locked-in consumers.

[9] As noted by Schmidt (2013), this is the reason why firms use mixed pricing strategies in equilibrium and outcomes are characterized by price dispersion.

implemented in a variety of ways; such as, by advertising to encourage more people within your existing market to choose your product, by launching price offers or other special promotions, or by increasing the activities of your sales force. If the selected approach involves price cuts, the necessary conditions for the market penetration strategy to work include price-sensitive demand and the threat of competitive entry (Tellis 1986). Furthermore, having captured customers, a firm needs to have the means to retain them by, for example, identifying and exploiting customer loyalty drivers.

Taking into account all of these arguments, implicit switching costs are expected to be higher in individual pension plans than in employer-sponsored plans because of more sophisticated investment practices and the greater bargaining power of the decision maker in the latter. To analyze this question we test the following null hypothesis:

H2: *Pension plan management and custodian firms do not adopt market penetration strategies.*

We expect to reject H2 in the case of individual plans but not in the case of employer-sponsored plans because it would not necessarily prove optimal for the latter. In fact, the employer-sponsored plan is the less likely to attract such a locked-in customer profile. The reasons include the fact that the plan is chosen by the firm that in the event of a sudden fee hike, will rapidly demand to negotiate and potentially withdraw. As sophisticated decision makers, they can be assumed to be well informed regarding alternative products with which to compare fees and thereby monitor both the management and custodian fees of the pension plan. The existing evidence for mutual funds shows that the flows of institutional investors are more sensitive to high fees than the flows of retail investors (Evans and Fahlenbrach 2012).

Individual pension plans, in contrast, might be vulnerable to this type of marketing practice. Firstly, the average customer in this case is not a sophisticated investor and exhibits low bargaining power. In addition, the switching costs are high because the pension plan forms part of a product portfolio. The customer is also unlikely to have

checked the current costs of alternative products, given the scant probability of his/her withdrawing from the plan. Furthermore, the very strong fiscal implications of investing in an individual pension plan have a strong effect.[10] As a result of these circumstances in conjunction with the standard product-introduction strategies, an individual's choice of pension plan depends on the banking network with which he or she has the closest customer ties to. While in the presence of high switching and search costs, subsequent decisions regarding the amount and frequency of contributions are more or less automatic.

Our second aim is to analyze whether fees vary with the market share of the financial group and whether this market-share effect varies between individual and employer-sponsored pension plans. Traditional industrial organization theory indicates that the market's structure determines its conduct, and thereby sets the level of performance. There are two competing hypotheses. The first is the "efficient structure hypothesis." This hypothesis states that performance is positively related to efficiency. The market share is positively related to efficiency because efficient firms increase profits by reducing prices and, consequently, increasing market share. This relation means that if the efficient structure hypothesis is confirmed, we should find a negative relation between the market share and the fee's size for both custodian and management firms. The alternative hypothesis is the "structure-performance hypothesis." This hypothesis states that the degree of the market's concentration is inversely related to the degree of competition. According to this hypothesis, there is a positive relation between the market's concentration and the firm's performance, irrespective of its efficiency. Confirmation of this second hypothesis, therefore, would imply a positive relation between the market's concentration and fee size. The working null hypothesis to be tested is the following:

H3: *Fees do not vary with the market share of the financial group*.

[10] According to the Household Finance and Consumption Survey, the second most common reason for taking out a pension plan is to obtain a tax rebate (27%).

We also expect to reject H3. In fact, the industrial organization theory indicates that the firm's behavior interacts with the market's structure, which motivates our analysis of individual and employer-sponsored pension plans because they involve the same custodian and management firms. The level of concentration in the supply market (the financial groups to which the management and custodian firms are affiliated) is also quite similar. However, the concentration and typology of the buyers are clearly different. Employer-sponsored plans, by their very nature, have a much more concentrated buyer structure because it is made up of firms rather than individuals. They also contrast sharply in terms of the decision makers' sophistication, which is greater than in individual pension plans where the investors have to make their own decisions. This has a further impact on switching costs, which can be bargained downwards thanks to the pooled negotiating power and stronger information-handling skills of the sophisticated investors. Thus, there is much more room for negotiation for decision makers in employer-sponsored pension plans because their decisions hold considerably more sway than those of the individual investor.

Therefore, we expect the management and custodian firms to behave differently in employer-sponsored versus individual pension plans. Thus, the fourth null hypothesis to be tested is the following:

H4: *The type (individual or employer-sponsored) of pension plan does not affect the way fees vary with the market share of the financial group*.

We expect to reject H4. In the case of employer-sponsored plans, despite slightly higher concentration on the supply side (management and custodian firms), markedly higher buyer concentration together with a higher level of decision-making sophistication will drive the kind of behavior that is consistent with the "efficient structure hypothesis." As a result, we should find a negative relation between market share (of the management or custodian financial groups) and the fee charged to investors. Because individual pension plans have very low buyer concentration and a

majority of unsophisticated investors faced with high switching costs, this scenario is more likely to be supported by the classic "structure-performance hypothesis." This hypothesis states that markets with high seller concentration should show a positive relation between concentration and performance, irrespective of efficiency.

In Spain, pension plans and mutual funds are provided mainly by banks and savings banks, who also provide management and custodian services, that can play decisive roles in shaping the determinants of the fees. It is important to note that custodian firms have to maintain a degree of independence from management firms, since one of their functions is to supervise the formal aspects of the pension plan's management. Despite this rule of independence, the two firms can still be affiliated to the same financial group. Indeed, the custodian and the management firm are frequently affiliates of the same financial group, which is the case with 79% of the employer-sponsored and 70% of the individual plans in the sample.

Our third aim is to test whether this relation has a significant impact on fees. The reasons why the management and custodian firms can be affiliated to different financial groups include both independence requirements and cost issues. When the reason the custodian and management firms are affiliates of different financial groups is to reduce costs to the customer, we should observe a lower average fee. To analyze this question we test the following null hypothesis:

H5: *Setting fees is not affected by the management and custodian firms being affiliated to different financial group.*

The strategies adopted by pension plan providers need not necessarily be independent of the type of pension plan, given the substantial differences in the market's structure and investor type between the two. In the case of employer-sponsored plans, it is reasonable to suppose that the decision to work with a management firm and a custodian firm from different financial groups must be aimed at cost saving and that this should be transferred effectively to the investor in order to offer a competitive product

and guarantee long-term loyalty. The argument is less straightforward in the case of the individual plan where the market's structure and investor type make any cost savings more likely to remain largely with the pension plan provider's financial group with no significant transfer to the investor. In fact, Liu and Arnold (2010) find that retail related-party service providers tend to charge higher fees than their independent counterparts to Australian "superannuation" fund trustees.

3 The database

3.1 Structure of the Spanish pension plan industry

As in the rest of the world, the private pension plan sector in Spain has experienced major growth in recent years. According to OECD data, in 2001, the sector was worth 35.1 billion US dollars, while representing only 0.32% of the world total and 0.49% of the Euro zone. The available data for 2011 show that the weight of the sector remains relatively low[11] at 116.1 billion US dollars, that is, 0.66% of the world total and 1.10% of the Euro zone. Nevertheless, the Spanish private pension sector has grown more in recent years than either the European or world average with a growth rate of 12.53% versus a world rate of 0.08% and a Euro zone rate of 1.06%.

In Spain there are three types of private pension plans: Individual, occupational (employer-sponsored), and associated plans.[12] According to data supplied by the Spanish Association of Investment and Pension Funds (INVERCO),[13] in terms of assets invested in 2011, individual plans accounted for 61.56%, employer-sponsored plans for 37.43%, and associated plans for a mere 1.01% compared with ten years earlier when these percentages stood at 55.26%, 42.97%, and 1.77% respectively. In December 2011 (2001),

[11] It should be noted that in Spain, unlike other countries, participation in private pension plans is voluntary.
[12] An associated pension plan is one that is founded by an association or union, where all participants must be associates, members, or affiliates of the promoting body.
[13] INVERCO represents Spanish Investment and Pension Funds, and the foreign-domiciled UCITS registered at the CNMV (Spanish Supervisory Authority) for its distribution in Spain.

private pension plan management involved a total of 65 (84) financial groups,[14] with 56 (63) engaged in the management of individual plans, 41 (53) in employer-sponsored plans, and 32 (32) in associated plans.

The market has become a highly concentrated supply structure. Of all the pension plans listed in December 2011, the top-5 financial groups managed 57.18%, and the top-10 managed 82.24% of the total assets. A very similar picture emerges with respect to the number of plans. The top-5 own 47.82%, and the top-10 own 70.55%. Bank- and savings bank-owned financial groups manage approximately 80% of the total volume of assets and 75% of the pension plans. Most of the remainder is managed by insurance firms.[15] Banks and savings banks have the advantage of a widespread network of branch offices from which to sell financial products. Their relationship with investors is further strengthened by the fact that they handle many other financial products for them. Although, as already noted, there are more financial groups offering individual plans, the supply structure is very similar. Indeed, the Herfindahl indices of the individual plans in terms of the number of plans and volume of assets are 0.09 and 0.13 respectively, which is very similar to the indices for employer-sponsored plans (0.08 and 0.13 respectively).

3.2 Database

The data base for this study includes all Spanish individual and employer-sponsored defined-contribution private pension plans over the period from 2008 to 2011 according to data supplied by the Spanish General Insurance Authority (*Dirección General de Seguros y Fondos de Pensiones, DGS*). These data comprise for each plan: the year; name of pension fund; name of pension plan; custodian firm; management firm; type of plan (1.1: employer-sponsored with defined benefit; 1.2: employer-sponsored with defined contribution; 1.3: hybrid employer-sponsored; 2.1: associated with defined benefit; 2.2:

[14] The various pension plans were sorted by financial group based on data provided by INVERCO.
[15] Some pension funds are managed by specific groups (Telefonica's Fonditel, the engineer's mutual fund, the brotherhood of architects, etc.).

associated with defined contribution; 2.3: hybrid associated; and 3.2: individual); the past 1, 3, 5, 10, and 15-year returns; type of investment policy (1: short-term fixed income; 2: long-term fixed income; 3: mixed fixed income; 4: mixed equity; 5: equity and 6: guaranteed); the custodian fee; the management fee; the number of fund participants; and assets under fund management in Euros. The information provided by the database does not enable the identification of indexed funds.

Further, a pension fund can include one or several pension plans, which are the basic unit of management. In fact, plans within the same fund can have different management and custodian fees. The data regarding the number of investors and assets under management are given in aggregate form for each fund. Unfortunately, it is not possible to break the data down to the plan level and thus obtain more accurate measures of these variables.[16] The variables that result from the above-mentioned data are as follows: average investment per participant, market share of management firm, market share of custodian firm, market share of the financial group to which the management firm is affiliated, and market share of the financial group to which the custodian firm is affiliated.[17] Although the database also contains data for the years 2006 and 2007, for the sake of uniformity[18] these are used in only two aspects of the analysis: to calculate the past 12-month returns to plans ongoing in 2008 and to calculate the market penetration dummies (exclusively for the purpose of analyzing the possible product introduction policies).

To compare employer-sponsored and individual pension plans as accurately as possible, the plans in our analysis are 1.2-type (employer-sponsored with defined contribution) and 3.2-type (individual plans, which are always defined-contribution). The

[16] This does not hamper the computation of financial groups' market shares that are based on aggregate data on assets under management and assets under custody. It does, however, affect the computation of the plan size or the average amount invested. Because the database does not report which financial group the funds are affiliated with, we drew on INVERCO data. Other gaps in the database worth noting are the lack of data on both plan- and fund-level monetary flows.

[17] The computation of the market share of the financial group to which the management and custodian firms are affiliated was complicated by the large number of mergers that took place during the sample period and the fact that only annual data were available.

[18] 2007 saw the introduction of a regulatory change in Spain (Royal Decree 439/2007 and Royal Decree 1684/2007)

investment categories included are all those except guaranteed plans (6). The sample includes all of the plans fulfilling the above characteristics and ongoing during every year of the sample period, even those that had disappeared by 2011. Thus, the database is free of survivorship bias. After screening for the above mentioned criteria, the sample comprises a total of 266 employer-sponsored funds with 1,200 plans in all, and 654 individual funds comprising 1,004 plans in all.

Table 1 shows the descriptive statistics of the sample. Of the 1,200 employer-sponsored plans, 45 are fixed-income, 854 are mixed-income, 286 are mixed-equity, and only 15 are equity plans; while of the 1,004 individual plans, 234 are fixed-income, 304 are mixed-income, 223 are mixed-equity, and 243 are equity plans. Despite being larger on average than the employer-sponsored plans, the minimum value of individual plans is clearly lower. On the other hand, both types show quite similar average investment per participant. Overall, the maximum fees across the sample are within the legal limits and lower for employer-sponsored plans, as expected. These plans also exhibit a smaller return spread, probably because they include fewer equity funds. Further, Spanish pension funds produce negative returns over the study period, probably as a result of the international financial crisis.

4 Methodology and results

The purpose of this paper is to examine the role played by investor type in pension plan marketing strategies as manifested in the fees paid by investors. The current fees include a management fee and a custodian fee, the first of which is the more significant. This is the fee received by the management firm for managing and administering the plan's assets. Under Spanish legislation,[19] the annual management fee cannot exceed 2%

[19] Article 84 of Royal Decree 304/2004. These limits have been recently changed (Royal Decree 681/2014). The management fee cannot exceed 1.5% of the assets under management (or 1.2% of the assets under management, "asset-based fee", + 9% on the returns, "performance-based fee") and the custodian fee cannot exceed 0.25% of a plan's assets.

of the assets under management. The custodian fee is paid to custodian firms in exchange for the custody and deposit of the securities and other financial assets included in the pension plan. This fee cannot exceed 0.5% of the of a plan's assetsper annum.

To analyze the variation in the determinants of custodian and management fees in individual and employer-sponsored plans, this section examines three key factors: first, any potential market penetration strategies that might exist; next, the relation between the market share of the financial groups of the custodian and management firms and the fees; and, lastly, whether the fees' size is influenced by the custodian and the management firms that are affiliates of different financial group.

4.1 General assumptions in market penetration strategies

From a more formal viewpoint, the use of market penetration strategies carries certain requirements.[20] First of all, in the pension plan market, the relation between fees and market share in the segment with high switching costs should be negative at the moment the plan is launched. To analyze this question we estimate the following regression:

$$MkS_t = \propto + \beta_1 \cdot FEE_{t-1} + Control\,Variables + FixedYearEffects + \varepsilon_t \quad (1)$$

The dependent variable is the market share (MkS) of the financial group to which the management or custodian firm is affiliated with in a one-year-old plan (period t). The independent variables are fees and the control variables SIZE, RETURN1YEAR, and AVGINV are measured at the beginning of this period (period t-1). The SIZE is the log of the pension plan assets, RETURN1YEAR is the past 12-month pension plan returns, and AVGINV is the log of the average investment per participant. The fixed year effects are dummy variables for the calendar years 2009, 2010, and 2011 respectively. Table 2 shows the results from the OLS estimation using White's standard errors. We find a

[20] We are grateful for comments made by an anonymous referee on this question.

negative relation in all of the samples analyzed, although the intensity varies based on the type of plan and fee.[21]

A second requirement is that demand should be more elastic for plans with lower switching costs, irrespective of their age, and become increasingly less elastic with the plan's age for plans with higher switching costs. To test the fulfilment of this requirement, we compute the proxy for monetary flows (FLOW) in the style of papers such as Sirri and Tufano (1998); although in our case the monetary flows are measured in absolute terms as $FLOW_{i,t}=TNA_{i,t}-TNA_{i,t-1}\cdot(1+RET_{i,t})$, where TNA_{it} is fund i's total net assets and RET_{it} is the fund's return during the year t. Because the data are for funds only, we estimate the annual average of the custodian and management fees across all of the pension plans (AFEE).[22] Using this information, we use a log transformation to obtain a demand elasticity estimate:

$$\ln(FLOW)_t = \beta_0 + \beta_1 \cdot \ln(AFEE)_{t-1} + \beta_2 \cdot DYEAR1 \cdot \ln(AFEE)_{t-1} + \beta_3 \cdot DYEAR2 \cdot \ln(AFEE)_{t-1} + \beta_4 \cdot DYEAR3 \cdot \ln(AFEE)_{t-1} + Control\,Variables + u_t \qquad (2)$$

Our sample reasonably satisfies this requirement throughout the period of analysis (see Table 3). In particular, the results show that demand in individual plans becomes less elastic as the fund's age increases, whereas in employer-sponsored plans it does not vary significantly. Further, the results for individual funds are consistent with the presence of switching costs in funds of this type. In fact, we find high negative elasticity in the first year, decreasing to a level not significantly different from zero from the third year onwards. The results for employer-sponsored funds present negative values but no

[21] We also estimate a Tobit model using the fees charged as the dependent variable and the lagged market shares as the independent variable. The results show that the initial market share has a negative relation with fees during the first year in both types of pension plans. However, whereas this negative relation holds throughout for employer-sponsored plans, in line with the "efficient structure hypothesis", it is negative only in the first year and occasionally in the second year for individual plans, in line with the hypothesis of a market penetration strategy effect. The results are available on request.

[22] Unfortunately, it is impossible to obtain a weighted average, because we only have fund-level asset and participant data.

overall significance. Thus, there is a total lack of significance for β_2, β_3, and β_4, and very low values for β_1.

The results, overall, are consistent with the requirements, thus supporting that the conditions in the market for individual pension plans encourage the use of market penetration strategies.[23] The conclusions also hold when the control variables SIZE, RETURN, and AVGINV are added to the regression.

4.2 Pension plan market penetration strategies and fees

We begin this analysis with a descriptive analysis of the average fees and average relative fees during the first years of the plan's life cycle in both the individual and the employer-sponsored pension plans (see Table 4). These results confirm that the size of the fee charged to participants varies with investor type. In particular, the fees for employer-sponsored plans are lower than those for individual plans in contrast with H1.

The results also show that in employer-sponsored plans, both custodian fees and management fees remain very stable as the plan's age increases, whereas, in individual plans, both fees increase with the plan's age during the introduction stage. This relation is even more apparent for relative fees (which are the fees charged by the custodian/management firm in relation to the average of the fees charged by all custodian/management firms in this calendar year). But, as the plan's age increases, the values exceed unity because the average decreases due to a rising percentage of newer plans charging lower fees than more established ones. These results suggest evidence of the presence of market penetration strategies in individual pension plans (rejection of H2) and an absence of such strategies in employer-sponsored plans.

To study the determinants of the management and custodian fees in pension plans, we set up a linear relation. Given that there is a legal maximum for both management

[23] The model estimates are used to test the hypothesis that the demand elasticity is higher for employer-sponsored plans, regardless of age. The results confirm that elasticity varies from its baseline values during the first two years, but does not change significantly throughout the rest of the life cycle. The results of these tests are available on request.

and custodian fees, the observed dependent variable is censored. A natural way to deal with this problem is to fit a Tobit model[24] to the data with the lower censoring at zero and the upper censoring at the fee cap: 0.5% for custodian fees and 2% for management fees.

Model 1 is:

$$\begin{aligned} y_i &= \alpha + \beta' x_i + u_i \quad \text{if} \quad \underline{y} \le \alpha + \beta' x_i + u_i \le \bar{y} \\ y_i &= \underline{y} \quad \text{if} \quad \alpha + \beta' x_i + u_i < \underline{y} \\ y_i &= \bar{y} \quad \text{if} \quad \alpha + \beta' x_i + u_i > \bar{y} \end{aligned} \tag{3}$$

where y_i is the management fee or custodian fee decision; $\underline{y}$ is the minimum fee (zero); $\bar{y}$ is the maximum legal fee; β is a kx1 vector of unknown parameters; and x_i is a vector of the same size that contains all of the explanatory variables for the management fee decision.

In the first specification of the Model 1 (Model 1A) the dependent variables are management fees (MF) or custodian fees (CF) respectively. The independent variables are three dummies representing the first (DYEAR1), second (DYEAR2), and third (DYEAR3) years of the plan[25] (in order to control for market penetration strategies); the log of the pension plan assets (SIZE); the past 12-month pension plan returns (RETURN1YEAR); the log of the average investment per participant (AVGINV); and dummy variables for the non-fixed-income investment categories of mixed fixed income (DMFI), mixed equity (DMEQ), and equity (DEQ).

The model parameters are estimated with a maximum likelihood that assumes the u_i are normally distributed residuals with a zero mean and a constant standard deviation. However, the Huber/White estimator is used to compute the heteroscedasticity robust standard errors for the estimated coefficients.

[24] We will perform a CLAD estimation of this model in the robustness section.

[25] The partial data available for years 2006 and 2007 enabled us to fully identify funds introduced in one year (DYEAR1) and those introduced the previous year (DYEAR2). Consideration of funds introduced 3 years previously (DYEAR3) raises a problem in the year 2008, since we are only able to assert that the plan is 3 years old or more, not that it is exactly 3 years old in 2008. Consideration of more years (DYEAR4 or DYEAR5) would therefore raise a problem of identification, not only in 2008, but also in 2009 or 2010, respectively, and this could complicate the variable identification process. For this reason, this study considers only DYEAR1, DYEAR2 and DYEAR3.

We test whether a low-price market penetration strategy is used in pension plans and, if so, whether the decision to use it depends on the investor's characteristics. The results of the Tobit estimation are given in Table 5.

The highly significant, negative sign of the first- and second-year dummies shows that both management and custodian fees for individual pension plans are lower in the first year than in the subsequent years. The third-year dummy is only significant for management fees. However, the main impact on both fees occurs in the first year. This is confirmed by the Chi-square tests that show that the first year's effect is significantly different from the second year's effect for both fee types, while the third year's effect does not differ significantly from the second year's effect for either fee type. The observations of the Model 1A (see Table 5) show decreases of 17.94% in the management fee and 14.71% in the custodian fee during the first year, versus decreases of only 5.96% and 5.48%, respectively, during the second year. Further, there is no evidence of this type of strategy being used for employer-sponsored plans. In fact, the first-year dummy is not statistically significant and the sign on the second-year and third-year dummies is positive but not significant.[26]

These results reject H2 only for individual plans.[27] Our results appear to differ from those reported by Martí et al. (2009) in that they fail to find a significant link between fees and the age of the plan. We do not see this as a contradiction because our results show that the first and second year fees are lower than the average for the plan (this effect occurs mainly in the first year). Age is a continuous variable that if significant, would enable us to conclude that the relation behaves uniformly in terms of its value. If

[26] We observe a positive and significant effect at a 5% significance level for custodian fees in the simplest model (Model 1A), but it disappears in the Models 1B and 1C. Furthermore, the Chi-square tests fail to reject the hypothesis of the equality of the year dummies at the conventional levels.
[27] The results of the marginal effects lead to the same conclusions.

the effect is concentrated exclusively in the first two years, we should not find a significant relation between the age of the plan and the fees charged.[28]

An alternative explanation, which is consistent with the detection of a positive relation between fees and the plan's age, is that both conditions are present: a) the market's structure is such that successful funds charge higher fees, and b) underperforming funds are terminated and successful funds charge higher fees. An analysis of the relation between fees and past returns shows a significantly negative relation, thus failing to provide empirical support for this alternative explanation.[29]

We also test for fee differences in the employer-sponsored and individual plans by stages in the plan's life cycle. Our results show that, whereas no statistically significant differences can be found in the first year, from the second year onwards, the fees for employer-sponsored plans are significantly lower than for individual plans.[30] Taking into account these results, we reject H1.

In summary, the results yield two main conclusions. Firstly, fees for employer-sponsored pension plans in Spain are not significantly linked to the number of years the plan has been in existence, whereas fees for individual pension plans are clearly lower during the first and second years of their life cycle, which is consistent with the use of market penetration strategies. Secondly, fees for employer-sponsored plans are significantly lower than for individual plans, except in the first year of the latter. This is because they try to gain market share by initially charging fees of a level similar to that offered to buyers with strong bargaining power. This finding is consistent with the idea

[28] Unfortunately, since the DGS database does not contain data on plans' ages, we are unable to test the validity of this argument.

[29] We thank the referee for this suggestion. We analyzed the relation between fees and current and one-year past returns, finding a statistically significant and negative relation in all cases. The results are available on request.

[30] We test this by jointly estimating both samples (individual and employer-sponsored) for the three Tobit models (shown in Tables 5, 6, and 7). In the last case (Table 7), the statistics are: dummy for employer-sponsored (custodian fees) δ=-0.11338; t=-3.04; p=0.00; first year: f(1,7731)=0.98; p=0.32; second year: f(1,7731)=2.90; p=0.09; third year: f(1,7731)=2.72; p=0.10. dummy for employer-sponsored plans (management fees) δ=-0.6820; t=-3.59; p=0.00; first year: f(1,7676)=2.33; p=0.13; second year: f(1,7676)=8.07; p=0.00; third year: f(1,7676)=6.76; p=0.01. The results for the models in Table 5 and 6 are available on request.

that the buyer's bargaining power is stronger in the case of employer-sponsored pension plans.

Further, the SIZE and AVGINV's influence on fees is robust in all of the tests performed throughout the paper (See Tables 5, 6, and 7). In line with much of the literature on employer-sponsored plans (e.g., Ambachtsheer 1994; Bateman and Mitchell 2004; or Coleman et al. 2006), we observe a negative sign for SIZE,[31] which is consistent with the transfer of economies of scale from the management and/or custodian firm to investors. However, in the case of individual plans, not only is the negative sign absent, but we find a positive and significant sign for both fees. These results are consistent with the possibility that, irrespective of possible economies of scale, management and custodian firms might wield their market power by charging higher fees for this type of plan.

Meanwhile, we find a significant link between higher average investment per participant and a lower fee in both fee types and both pension plan types. This finding shows that pension plan fees are not exactly the same for all investors but that within the legal maxima, there is some scope for pension plan providers to negotiate in order to capture the more profitable, and probably the more sophisticated, type of investor by reducing the costs charged. In the case of employer-sponsored plans, this finding is consistent with the idea of lower fees in plans with higher average investment per participant, not necessarily moderated by investor type, given that the conditions are usually more transparent than in individual pension plans.

The results obtained for these two variables are largely consistent with the previous evidence for individual pension plans in Spain. Martí et al. (2009) report a positive relation between the fund's size and fees and a negative relation between the average investment and fees. However, these relations are not always significant because the

[31] Although in the initial Tobit analysis the plan's size is significant only in the case of custodian fees, in the Model 1A, it is significant in all cases in the subsequent robustness test.

authors analyze two cross-sections of data (years 2004 and 2005) by using a different methodological approach in each case.

4.3 Market share and fees

This section analyzes the impact of the market share of the financial group to which the custodian (or management) firm is affiliated on the size of the fee charged to pension plan investors.

To test H3 and H4 for both types of pension plan, we add a new variable to Model 1A: the market share of the financial group to which the management (MMkS) or custodian firm (CMkS) is affiliated.[32] This is now Model 1B. We opt to use the financial group rather than the firm itself because the financial group is the key factor determining the actual market structure for this type of product.[33]

The test estimates of Model 1B are shown in Table 6. The results confirm that the fees vary with the market share, thus rejecting H3. In employer-sponsored pension plans, the market share of the management or custodian firm has a negative impact on the respective fee's size. These results are all the more revealing when taken in conjunction with those found for the variable for the pension plan's size because in employer-sponsored plans, both the market share and the size show a negative relation with fees, in line in both cases, with the "efficient structure hypothesis." Furthermore, although the seller concentration is higher in the custodian than in the management market, the results do not show that this variable plays a significant role in the fee and market share relation. Thus this finding clearly confirms that in employer-sponsored pension plans, the most plausible explanation for the results lies in the "efficient

[32] There are potential problems in the estimation that arise from endogeneity, particularly in relation to the market share and fees. However, given that we are using the market share of the financial group, not that of the pension plan and that the financial group might use different strategies for different plans, in line with the market penetration strategies described in the paper, it is unclear how much of a problem these endogeneity issues might create. Indeed, given that a fund might use a high-fee strategy for one plan and a low-fee strategy for another, it is hard to say what impact this might have on the market share of the fund, much less on that of the financial group to which the fund provider is affiliated.

[33] In any event, the analysis replacing the market share of the financial group with that of the management or custodian firm itself leads to the same conclusions.

structure hypothesis." This explanation suggests that the achieved savings are wholly or partially transferred to the investor, which is in line with the findings for employer-sponsored pension plans in the United Kingdom made by Blake et al. (1999). They claim that large management firms use their reputation to acquire new clients and retain old ones, as opposed to increasing their fees.

On the other hand, in the case of individual pension plans, the market share's effect is different for management firms (negative) and custodian firms (positive). In the latter case, the results are not consistent with the "efficient structure hypothesis." Furthermore, the difference in the market share's effects between the management and custodian firms is consistent with their level of concentration, which is clearly higher in the case of custodian firms. Thus, taking into account these results, we reject H4 because the type of pension plan affects the relation between the fees and the market share of the financial group.

Thus, the results for individual pension plans are in line with those of Liu and Arnold (2010) who state that service providers with high market share are associated with lower fees in more competitive markets (administration and investment management) and higher fees in more concentrated markets (custodian, actuarial, and auditing). However, in the case of employer-sponsored plans, despite the difference in concentration, we find no difference in the market share and fee relation between the two types of firm. In this case, a buyer's stronger bargaining power might prevent firms from using their market power in price setting.

If we assume employer-sponsored and individual pension plans to be homogeneous goods for both types of firms (management and custodian), they will have the same economies of scale (or lack of) in both products. Thus, in the presence of economies of scale, part of any cost savings will be transferred to the investor in employer-sponsored plans (in line with the "efficient structure hypothesis"), while investors in individual pension plans will only benefit from management cost savings, because any custodian

cost savings will be retained by the custodian firm (consistent with the structure-performance hypothesis). These differences could also be due to the need to offset the higher costs involved in advertising and competing in the market place (see Liu and Arnold 2010).

Lastly, although our results do not entirely coincide with those of Martí et al. (2009), nor are they wholly contradictory. In fact, although Martí et al. find no link between fees and assets under management, it does not necessarily follow that there is none between the fees and the market share. Further, assets under management is an absolute measure referring to a single management firm, not to all those of a particular financial group. However, the market share is a relative measure and, in our case, it refers to what we consider the relevant unit, that is, the financial group.4.4 The relationship between custodian and management firms and how this affects the fee structure

In this section we analyze H5 that tests whether pension plan fees are affected by the management and the custodian firms being affiliated to different financial group. To do this, we add to Model 1B a dummy variable, DIFF, that takes a value of one if they are not affiliates (but could be[34]) of the same financial group and zero otherwise, and call it Model 1C. We perform this test for both types of fees and both types of pension plans (see Table 7).

The results of Model 1C show that in employer-sponsored pension plans, the dummy variables for the custodian and the management fees are negative and significant at conventional levels, thus rejecting H5. This rejection suggests, in line with the results shown above, that efficiency issues prevail and that cost advantages are passed on, wholly or partially, to the end investor. In the case of individual pension plans, the dummy variable is negative only for the management fee, while for the custodian fee it is

[34] Note that, if the management firm is affiliated to the financial group of a bank or savings bank, the same group could be providing both custodian and management services. However, custodian services can only be provided by banks or savings banks; therefore, in cases where the management firm is not affiliated to a banking group, both services could not possibly be provided by the same group. Thus, whether or not this is the chosen option is no longer an issue.

positive and significant. This result coincides with those shown above, which show that the explanatory factor behind the behavior of custodian fees in individual plans is market power. This is supported by the coefficients of the market share of the financial group and the fund's size, which are also positive and significant.[35] In summary, in the case of individual plans we reject H5, although the coefficient of the relation shows a different sign for the custodian fee than for the management fee.

5 Robustness checks

The classic Tobit model assumes homoscedasticity and normality in the error distribution. To overcome this constraint, in this section we use the CLAD procedure as proposed by Powell (1984) that provides robust estimators if these assumptions are not met. For the estimation we use Stata, which allows only a lower limit or upper limit. In our case, we use a CLAD model that is right-censored at the fee cap: (2% for management fees and 0.5% for custodian fees). We therefore assume that the observed custodian and management fees are set according to Model 2:

$$\begin{aligned} y_i &= \alpha + \beta' x_i + u_i \quad \text{if} \quad \underline{y} \le \alpha + \beta' x_i + u_i \le \bar{y} \\ y_i &= \bar{y} \quad \text{if} \quad \alpha + \beta' x_i + u_i > \bar{y} \end{aligned} \tag{4}$$

where y_i is the management fee or custodian fee decision, $\bar{y}$ is the maximum legal fee, β is a kx1 vector of unknown parameters, and x_i is a vector of the same size containing all of the explanatory variables of the management fee decision. In the first specification of the Model 2 (Model 2A) the dependent variables are the same as in the Model 1A.

Table 8 gives the results of the estimation of Model 2A for the pension plans' marketing strategies and their impact on the fees charged by custodian and management firms. In line with the results of the Tobit model (Model 1A), the fees for

[35] Martí et al. (2009) show that if the custodian firm is a bank, the fee is higher on average. We do not investigate this issue. The positive sign of the DIFF variable in the case of custodian fees for individual pension plans enables us to assert that the fee is higher if the custodian firm is not affiliated to the same financial group as the management firm. This holds whether the custodian firm is a bank, a savings bank, or a credit cooperative.

employer-sponsored plans are lower than for individual plans and market penetration strategies can be observed for the individual plans but not for the employer-sponsored plans, thus rejecting H1 and H2.

The analysis of the effect of the market share on the respective fees (Table 9) adds the market share of the financial group, MMks, and the CMkS variables to Model 2A (now called Model 2B). This addition also leads to very similar results as those obtained from the Tobit model (Model 1B), thus rejecting H3 and H4. Notably, it has a significantly negative effect on both the custodian and management fees in employer-sponsored plans but only on management fees in individual plans. In contrast with the results of the Tobit estimation, its effect on the custodian fee is nonsignificant.

Meanwhile, taking into account the results from the estimation of Model 2C (adding the DIFF to Model 2B), no differences emerge from the analysis of the impact on the fees due to the management and custodian firms being affiliates of different financial groups (Table 10). That is, there is a significantly negative effect on both types of fees in the employer-sponsored pension plans but only on management fees in individual plans. The effect on custodian fees in individual plans, as already noted, shows a positive and significant effect that is consistent with market power-based arguments. As was obtained using the Tobit estimation, these results reject H5.

Further, the analysis of the effect of the pension plan's size on the fees produces similar results to those obtained from the Tobit estimation, that is, a significantly negative impact on both fee types in employer-sponsored plans and a significantly positive impact on both fee types in individual plans.[36] The significantly negative effects of the average investment size observed in the Tobit estimation also hold.

In short, the CLAD and Tobit estimations produce very similar results and lead to the same conclusions. This consistency enables us to conclude that neither the non-

[36] The negative impact of size on custodian fees in employer-sponsored plans appears only when using the CLAD procedure.

fulfilment of the constraints in the Tobit estimation nor the fact that the sample is not left-censored has any significant impact on the estimation in this case.

6 Conclusions

In view of the scant attention given to the determinants of pension plan fees in the existing literature, this paper tackles a novel issue by analyzing the role of investor type in the fee structures of pension plans. We focus on two specific types of defined-contribution private pension plans: individual and employer-sponsored. In Spain, these are both marketed mainly by banks and savings banks. The service providers and levels of market concentration are very similar, albeit slightly higher in employer-sponsored plans, while the type of investor is markedly different. In an employer-sponsored plan, the decisions are made by a sophisticated decision maker faced with low switching costs and strong bargaining power. This situation contrasts sharply with the case of the individual plan where the decisions are made by a relatively uninformed decision maker faced with higher implicit switching costs and scant bargaining power. These disadvantages are intensified by the fact that the pension plan is just one of a number of contracts the person has with the bank.

Furthermore, the demand for employer-sponsored plans is markedly more concentrated than for individual plans. These contrasts lead us to question whether there could be major differences in the fee-setting strategies used for each type of plan. We explore the potential effects of three variables: low-price market-penetration strategies, the market share of the management/custodian financial group, and the management and custodian firm being affiliates of different financial groups.

In line with our expectations, we find highly relevant differences between the two types of plan. Firstly, there is significant evidence of market penetration strategies in individual plans, and none in the case of employer-sponsored plans, which is clearly

consistent with the fact that these products target different types of customers who, in turn, face different levels of switching costs. We also show that these strategies do not benefit the buyers of individual plans. Although the fees for each type of plan do not differ significantly in the first year, providers of individual plans are able to increase their fees significantly from the second year onwards to levels above those charged for employer-sponsored plans because their customers face higher switching costs and have less bargaining power. This finding might suggest that a mechanism for the joint choice and monitoring of pension plans might be a useful way to reduce switching costs, increase bargaining power, and, ultimately, lower fees.

Secondly, the results for employer-sponsored plans are consistent with the "efficient structure hypothesis," in that the larger the plan and the higher the market share of the financial group providing the management or custodian services, the lower the fee charged to the investor. This result shows that all or part of the economies of scale achieved by the management and custodian firms are transferred to the investor. There are no such observations for individual plans. The reason in the case of the management fee is because, whereas the relation between the market share and the management fee is negative, the relation between the pension plan's size and the management fee is positive. The custodian fee, meanwhile, is positively related to both the market share and the plan's size, suggesting that in individual plans, the savings in custodian costs due to economies of scale are not transferred to the customer.

It is important to note the effect of concentration on the market share and fee relation. In line with Liu and Arnold (2010), we find this relation to be negative in the less highly concentrated pension plan management sector, and positive in the more highly concentrated custodian sector. However, employer-sponsored plans do not show this pattern of relations, probably due to the effect of the decision maker's bargaining power on the providers of this type of plan.

Lastly, we test to determine whether the fee charged to customers is lower when the management and custodian firms are affiliated to different financial groups. We find it to be the case for management fees in both types of pension plans and for custodian fees in employer-sponsored plans. This finding suggests that the purpose of selecting a management or a custodian firm from a different financial group is to achieve cost savings, which are, at the least, partially transferred to the investor. In the case of custodian fees in individual plans, the sign is positive and significant that is consistent with the positive sign of the market share of the financial group and the size of the pension plan, and supportive of market power-based argument.

All of these findings highlight the important influence of the supply and demand markets' concentration and the investor type on the choice of marketing strategy for pension plans. Despite appearing to be homogeneous products designed to meet investors' retirement needs, marked distinctions between individual and employer-sponsored plans lead to different marketing strategies, which have a significant impact on fees that are one of the key determinants of long-term returns in this type of financial product.

References

Ambachtsheer KP (1994) The economics of pension fund management. Fin Anal J 50:21–31.

Ansoff I (1957) Strategies for diversification. Harvard Bus Rev 35:113–124.

Bateman H, Mitchell OS (2004) New evidence on pension plan design and administrative expenses: the Australian experience. J Pension Econ Finan 3:63–76.

Beggs A, Klemperer P (1992) Multi-period competition with switching costs. Econometrica 60:651–666.

Blake D, Lehmann BN, Timmermann A (1999) Asset allocation dynamics and pension fund performance. J Bus 4:429–461.

Brunnermeier M, Nagel S (2004) Hedge funds and the technology bubble. J Financ 59:2013–2040.

Carlton DW, Perloff JM (2000) Modern Industrial Organization. Addison-Wesley.

Coleman A, Esho N, Wong M (2006) The impact of agency costs on the investment performance of Australian pension funds. J Pension Econ Finan 5:299–324.

Christoffersen S, Musto D (2002) Demand curves and the pricing of money management. Rev Financ Stud 15:1499–1524.

Collins S (2003) The expenses of defined-benefit pension plans and mutual funds. Perspective 9:1–19.

Colgate M, Lang B (2001) Switching barriers in consumer markets: An investigation of the financial services industry. J Consum Mark 28:332–347.

Cullinan CP, Bline DM (2005) An analysis of mutual fund custodial fees. J Appl Bus Res 21:13–22.

Dick AS, Basu K (1994) Customer loyalty: Toward an integrated conceptual framework. J Acad Market Sci 22:99–113.

Dyck A, Pomorski L (2011) Is bigger better? Size and performance in pension plan management. Available at SSRN: http://ssrn.com/abstract=1690724.

Evans RB, Fahlenbrach R (2012) Institutional investors and mutual fund governance: evidence from retail – institutional fund twins. Available at SSRN: http://ssrn.com/abstract=1907149.

Gao X, Livingston M (2008) The components of mutual fund fees. Financ Mark Inst Instrum 17:197–223.

Ghilarducci T, Terry K (1999) Scale Economies in Union Pension Plan Administration: 1981 – 1993. Ind Relat 38:11–17.

Gil-Bazo J, Martínez MA (2004) The black box of mutual fund fees. Rev Econ Financ 4:54–83.

Gronhaug K, Gilly MC (1991) A transaction cost approach to customer dissatisfaction and complaint actions. J Econ Psychol 12:165–183.

Guiltinan JP (1989) A classification of switching costs with implications for relationship marketing. In: Childers TL, Bagozzi RP, Peter JP (eds) 1989 AMA Winter Educators' Conference: Marketing Theory and Practice, American Marketing Association. pp 216–220.

Khorana A, Servaes H, Tufano P (2008) Mutual fund fees around the world. Rev Financ Stud 22:1279–1310.

Klemperer P (1995) Competition when consumers have switching costs: An overview with applications to industrial organization, macroeconomics, and international trade. Rev Econ Stud 62:515–539.

James C, Karceski J (2006) Investor monitoring and differences in mutual fund performance. J Bank Financ 30:2787–2808.

Lamont OA, Thaler RH (2003) Can the market add and subtract? Mispricing in tech stock carve-outs. J Polit Econ 111:227–268.

Liu K, Arnold BR (2010) Australian superannuation outsourcing: Fees, related parties and concentrated markets. Available at SSRN: http://ssrn.com/abstract=1661488.

Martí CP, Fernández MA, Matallín JC (2007) Análisis de las variables que determinan las comisiones en los planes de pensiones. Rev Econ Financ 11:38–63.

Martí CP, Fernández MA, Matallín JC (2009) Determinants of pension plan fees in Spain. Appl Econ 41:2153–2168.

McKechnie S (1992) Consumer buying behavior in financial services. An overview. Int J Bank Market 10:4–12.

Moreno M, Rubio G (2007) Some insights on the behavior of the mutual fund industry in Spain. In: Gregoriou G (ed) Diversification and portfolio management of mutual funds. Palgrave Macmillan Publisher, pp 272–311.

Morgan R, Hunt S (1994) The commitment-trust theory of relationship marketing. J Marketing 58:20–38.

Moriarty RT, Kimball RC, Guy JH (1983) The management of corporate banking relationships. Sloan Manage Rev 24:3–16.

Morningstar Financial Services Observer September 2013 (2013). http://corporate.morningstar.com/us/documents/PR/Financial-Services-Observer-Sept-2013.pdf.

Muga L, Santamaría R (2010) Market penetration strategies and the fee-performance relationship: The case of the Spanish money mutual funds. Serv Ind J 30:1529–1547.

Porter ME (1998) Competitive strategy: Techniques for analyzing industries and competitors. New York: Free Press.

Powell JL (1984) Least absolute deviations estimation for the censored regression model. J. Econometrics 25:303–325.

Salganik G, Schreiber A (2013) The determinants of investment flows: Retail versus institutional mutual funds. Available at SSRN: http://ssrn.com/abstract=2296508.

Schmidt RC (2013) Price competition and innovation in markets with brand loyalty. J Econ 109:147–173.

–Sengupta S, Krapfel RE, Pusateri MA (1997) Switching costs in key account relationships. J Pers Selling Sales Manage 17:9–16.

Tellis GJ (1986) Beyond the many faces of price: An integration of pricing strategies. J Marketing 50:146–160.

Tufano P, Sevick M (1997) Board structure and fee-setting in the U.S. mutual fund industry. J Financ Econ 46:321–355.

Turnbull PW, Gibbs ML (2007) Marketing bank services to corporate customers: The importance of relationships. Int J Bank Market 5:19–26.

Table 1 Descriptive statistics. The table shows the number of plans in the sample (employer-sponsored and individual); the average, minimum and maximum size (assets per plan in euros); the average investment per participant (euros); the custodian and management fees (%); and the annual return (%).

	Min	**25th**	**50th**	**Average**	**75th**	**Max**
Size						
Employer-Sponsored	255828	8576304	19232742	17817913	47577801	573308317
Individual	50460	9735146	37859810	31809314	122565599	1080191893
AvgInv						
Employer-Sponsored	629	3413	5016	5409	8688	44788
Individual	1031	4293	6221	6658	10573	40086
Custodian Fee						
Employer-Sponsored	0.00%	0.05%	0.09%	0.10%	0.10%	0.50%
Individual	0.00%	0.10%	0.16%	0.20%	0.31%	0.50%
Management Fee						
Employer-Sponsored	0.00%	0.25%	0.40%	0.50%	0.68%	2.00%
Individual	0.00%	1.10%	1.50%	1.45%	2.00%	2.00%
Return						
Employer-Sponsored	-27.92%	-7.89%	-0.83%	-0.87%	3.13%	14.74%
Individual	-41.92%	-5.52%	-0.19%	-2.31%	2.93%	28.11%

Number of Plans				
	FI	MFI	MEQ	EQ
Employer-Sponsored	45	854	286	15
Individual	234	304	223	243

Table 2 Fees-Market share association at inception. The results from the OLS estimation. Coef is the coefficient estimate, and SE is the standard error of the estimate. The dependent variable is the market share of a one-year-old plan (period t). The independent variables are all measured at the beginning of this period (period t-1). FEE is the custodian (management) fees applied by the custodian (management) firm. SIZE is the log of pension plan assets in Euros, RET is the fund's year return, and AVGINV is the log of average investment size per participant. Fixed years effects are also included in the estimation. Standard errors are computed using White's procedure.

	Custodian Fees			**Management Fees**		
	Employer-Sponsored					
	Coef	**SE**		**Coef**	**SE**	
C	-0.164	0.064	**	-0.126	0.043	**
FEE	-4.354	2.210	**	-6.799	2.621	**
SIZE	0.023	0.007	**	0.012	0.004	**
RET	0.000	0.000		-0.002	0.001	**
AVGINV	0.002	0.011		0.011	0.006	*
R-squared	0.179			0.293		
F-Stat (pval)	124.931	(0.000)		172.772	(0.000)	
	Individual					
C	-0.040	0.015	**	-0.023	0.012	*
FEE	-1.960	0.473	**	-0.322	0.116	**
SIZE	0.007	0.002	**	0.007	0.002	**
RET	0.000	0.000		0.000	0.000	
AVGINV	-0.001	0.002		-0.005	0.002	**
R-squared	0.142			0.150		
F-Stat (pval)	87.695	(0.000)		94.336	(0.000)	

The ** and * denote 1%, and 5% levels of significance, respectively.

Table 3 Demand Elasticity and plan age. The results from the OLS estimation. Coef is the coefficient estimate, and SE is the standard error of the estimate. The dependent variable is the log of monetary flows (FLOW) of the pension fund. $FLOW_{i,t}=TNA_{i,t}-TNA_{i,t-1}\cdot(1+RET_{it})$, where TNA_{it} is fund i's total net assets, and RET_{it} is the fund's return during the year *t*. RET_1 is the lag of RET. AFEE_1 is the log of average (custodian or management) fees across all pension plans (lagged one period). The dummy variables DYEAR1, DYEAR2, and DYEAR3 represent the first, second, and third year of the pension fund life cycle respectively. SIZE_1 is the log of pension fund assets in Euros (lagged one period), and AVGINV_1 is the log of average investment size per participant (lagged one period). Standard errors are computed using Newey and West's procedure.

	Custody fees						**Management fees**					
	Employer-Sponsored											
	Coef	**SE**		**Coef**	**SE**		**Coef**	**SE**		**Coef**	**SE**	
C	11.067	1.078	**	4.732	2.001	**	10.847	0.889	**	11.555	1.094	**
AFEE_1	-0.141	0.150		0.065	0.167		-0.215	0.161		-0.143	0.187	
AFEE_1*DYEAR1	-0.056	0.062		0.047	0.047		-0.092	0.085		0.004	0.072	
AFEE_1*DYEAR2	-0.063	0.046		-0.077	0.050		-0.096	0.059		-0.132	0.086	
AFEE_1*DYEAR3	0.074	0.048		0.097	0.061		0.077	0.064		0.138	0.086	
SIZE_1				0.510	0.120	**				0.529	0.123	**
RET_1				-0.044	-1.312					-0.046	0.033	
AVGINV_1				0.000	0.000					0.000	0.000	
Adj.R-squared	0.021			0.308			0.025			0.317		
F-Stat (pval)	1.952	(0.104)		11.029	(0.000)		2.171	(0.074)		11.454	(0.000)	
	Individual											
C	14.157	0.897	**	16.328	1.109	**	13.276	0.779	**	15.559	0.936	**
AFEE_1	0.092	0.138		0.038	0.089		-0.069	0.175		-0.142	0.100	
AFEE_1*DYEAR1	-0.271	0.096	**	-0.199	0.068	**	-0.403	0.149	**	-0.289	0.109	**
AFEE_1*DYEAR2	-0.207	0.069	**	-0.154	0.053	**	-0.286	0.099	**	-0.233	0.081	**
AFEE_1*DYEAR3	-0.019	0.044		-0.012	0.030		-0.027	0.067		-0.027	0.042	
SIZE_1				0.784	0.057	**				0.781	0.056	**
RET_1				0.013	0.010					0.013	0.010	
AVGINV_1				-0.273	0.100	**				-0.284	0.101	**
Adj.R-squared	0.039			0.512			0.036			0.499		
F-Stat (pval)	4.063	(0.003)		40.259	(0.000)		3.752	(0.005)		39.749	(0.000)	

The ** and * denote 1%, and 5% levels of significance, respectively.

Table 4 Fees and relative fees by age. Custodian and management fees by age of plan. Relative custodian fees [RelCustFee] (relative management fees [RelManagFee]) are the custodian (management) fees applied by the custodian (management) firm relative to the average of the fees charged for all the custodian (management) firms for all plans in that year. %Plans is the percentage of plans for each age.

Age	% Plans	Cust.Fee	ManagFee	RelCustFee	RelManagFee
Employer-Sponsored					
1	24.76%	0.11%	0.54%	98.41%	98.91%
2	22.37%	0.10%	0.52%	98.87%	100.83%
3	24.15%	0.10%	0.53%	101.50%	98.65%
>3	28.71%	0.10%	0.53%	101.22%	101.60%
Individual					
1	17.18%	0.19%	1.32%	88.77%	89.65%
2	15.06%	0.19%	1.38%	96.21%	98.09%
3	24.12%	0.23%	1.48%	106.08%	103.93%
>3	43.62%	0.22%	1.51%	108.94%	108.33%

Table 5 Market penetration strategies and types of pension plans (Tobit). The results of the estimation of the Tobit Model 1A for employer-sponsored and individual plans. Coef is the coefficient estimate, and SE is the standard error of the estimate. The dependent variables are custodian fees and management fees, respectively, expressed in basis points. The independent variables are three dummy variables representing the first (DYEAR1), second year (DYEAR2) and third year (DYEAR3) of a pension plan; the log of fund assets in Euros (SIZE); the past 12-month returns of the fund (RET); and the log of average investment size per participant (AVGINV). Fixed year effects and dummy variables representing other than fixed income investment categories (mixed fixed income, mixed equity, and equity) are also included in the estimation. The table also shows the number of observations (N), the F-test for the model tested (K=N-12), and the chi-square statistic of the mean differences between Dyear1 and Dyear2, and Dyear2 and Dyear3 and their respective p-values in parentheses. Panel B: Marginal Effects I: Tobit Estimation. E(y/a<y<b); Specifically E(CF/0<CF<0.5) and E(MF/0<MF<2.0); where y is the censored dependent variable. Panel C: Marginal Effects II. Tobit Estimation. E(y*/a<y<b); Specifically E(CF*/0<CF<0.5) and E(MF*/0<MF<2.0); where y* is the latent dependent variable.

	Employer-Sponsored				**Individual**			
	Custodian Fees		**Management Fees**		**Custodian Fees**		**Management Fees**	
	Coef	**SE**	**Coef**	**SE**	**Coef**	**SE**	**Coef**	**SE**
Panel A: Tobit Estimation								
C	0.341	0.023 **	1.737	0.101 **	0.431	0.046 **	2.344	0.153 **
DYEAR1	-0.003	0.006	0.021	0.030	-0.064	0.009 **	-0.410	0.036 **
DYEAR2	0.000	0.006	0.007	0.027	-0.023	0.008 **	-0.152	0.027 **
DYEAR3	0.014	0.007 *	0.044	0.028	-0.011	0.010	-0.148	0.032 **
SIZE	-0.006	0.003 *	-0.094	0.012 **	0.014	0.004 **	0.031	0.012 *
RET	-0.001	0.000 **	-0.004	0.001 **	0.000	0.000	0.000	0.001
AVGINV	-0.027	0.004 **	-0.122	0.019 **	-0.081	0.008 **	-0.272	0.029 **
N and F(12,K)	4062	14.78 **	4036	18.68 **	3694	22.68 **	3673	72.63 **
DYEAR1-DYEAR2 Chi2 (p)	0.22	(0.635)	0.14	(0.712)	9.90	(0.002) **	17.69	(0.000) **
DYEAR2-DYEAR3 Chi2 (p)	2.40	(0.122)	1.20	(0.273)	1.38	(0.241)	0.30	(0.581)
Panel B: Marginal Effects I. Tobit Estimation. E(y/a<y<b)								
DYEAR1	0.000	0.004	0.015	0.022	-0.035	0.005 **	-0.261	0.024 **
DYEAR2	0.000	0.004	0.005	0.020	-0.013	0.005 **	-0.092	0.017 **
DYEAR3	0.010	0.005	0.032	0.021	-0.006	0.005	-0.089	0.020 **
SIZE	-0.004	0.002 *	-0.068	0.009 **	0.008	0.002 **	0.018	0.007 *
RET	0.000	0.000 **	-0.003	0.001 **	0.000	0.000	0.000	0.000
AVGINV	-0.018	0.003 **	-0.089	0.014 **	-0.045	0.005 **	-0.159	0.017 **
Panel C: Marginal Effects II. Tobit Estimation. E(y*/a<y<b);								
DYEAR1	0.000	0.005	0.019	0.027	-0.054	0.008 **	-0.357	0.032 **
DYEAR2	0.000	0.005	0.006	0.024	-0.020	0.007 **	-0.128	0.023 **
DYEAR3	0.012	0.006 *	0.040	0.026	-0.009	0.008	-0.124	0.028 **
SIZE	-0.005	0.002 *	-0.085	0.011 **	0.012	0.003 **	0.025	0.010 *
RET	-0.001	0.000 **	-0.003	0.001 **	0.000	0.000	0.000	0.000
AVGINV	-0.023	0.004 **	-0.111	0.017 **	-0.070	0.007 **	-0.223	0.024 **

The ** and * and denote 1%, 5%, and 10% levels of significance respectively.

Table 6 Market share and pension plan fees. The results of the estimation of the Tobit Model 1B for employer-sponsored and individual plans. Coef is the coefficient estimate, and SE is the standard error of the estimate. The dependent variables are custodian fees and management fees, respectively, expressed in basis points. The independent variables are three dummy variables representing the first (DYEAR1), second year (DYEAR2) and third year (DYEAR3) of a pension plan; the market share of the financial group to which the management firm (MMkS) or the custodian firm (CMkS) is affiliated; the log of fund assets in Euros (SIZE); the past 12-month returns of the fund (RET); and the log of average investment size per participant (AVGINV). Fixed year effects and dummy variables representing other than fixed income investment categories (mixed fixed income, mixed equity, and equity) are also included in the estimation. The table also shows the number of observations (N), the F-test for the model tested (K=N-13), and the chi-square statistic of the mean differences between Dyear1 and Dyear2, and Dyear2 and Dyear3 and their respective p-values in parentheses. Panel B: Marginal Effects I: Tobit Estimation. E(y/a<y<b); Specifically E(CF/0<CF<0.5) and E(MF/0<MF<2.0); where y is the censored dependent variable. Panel C: Marginal Effects II. Tobit Estimation. E(y*/a<y<b); Specifically E(CF*/0<CF<0.5) and E(MF*/0<MF<2.0); where y* is the latent dependent variable.

	Employer-Sponsored						**Individual**					
	Custodian Fees			**Management Fees**			**Custodian Fees**			**Management Fees**		
	Coef	**SE**		**Coef**	**SE**		**Coef**	**SE**		**Coef**	**SE**	
Panel A: Tobit Estimation												
C	0.302	0.022	**	1.450	0.104	**	0.463	0.046	**	2.131	0.157	**
DYEAR1	-0.005	0.006		0.026	0.029		-0.071	0.010	**	-0.383	0.036	**
DYEAR2	-0.001	0.006		0.010	0.027		-0.025	0.008	**	-0.128	0.027	**
DYEAR3	0.012	0.007		0.046	0.027		-0.013	0.010		-0.134	0.032	**
MMkS(CMkS)	-0.070	0.007	**	-0.787	0.081	**	0.110	0.041	**	-1.352	0.192	**
SIZE	-0.001	0.003		-0.062	0.012	**	0.012	0.004	**	0.069	0.014	**
RET	-0.001	0.000	**	-0.004	0.001	**	0.000	0.000		0.000	0.001	
AVGINV	-0.025	0.004	**	-0.095	0.019	**	-0.086	0.008	**	-0.282	0.029	**
N and F(13,K)	4044	23.11	**	4033	23.82	**	3654	21.60	**	3672	72.23	**
DYEAR1-DYEAR2 Chi2 (p)	0.32	(0.568)		0.15	(0.381)		12.25	(0.000)	**	19.11	(0.000)	**
DYEAR2-DYEAR3 Chi2 (p)	2.07	(0.150)		1.14	(0.286)		1.50	(0.219)		0.05	(0.823)	
Panel B: Marginal Effects I. Tobit Estimation. E(y/a<y<b)												
DYEAR1	-0.001	0.004		0.019	0.022		-0.039	0.005	**	-0.245	0.024	**
DYEAR2	0.000	0.004		0.008	0.020		-0.014	0.005	**	-0.077	0.017	**
DYEAR3	0.008	0.005		0.034	0.021		-0.007	0.005		-0.081	0.020	**
MMkS(CMkS)	-0.047	0.005	**	-0.579	0.060	**	0.062	0.023	**	-0.793	0.113	**
SIZE	-0.001	0.002		-0.046	0.009	**	0.007	0.002		0.040	0.008	**
RET	-0.001	0.000	**	-0.003	0.001	**	0.000	0.000		0.000	0.000	
AVGINV	-0.017	0.003	**	-0.070	0.014	**	-0.048	0.005	**	-0.165	0.017	**
Panel C: Marginal Effects II. Tobit Estimation. E(y*/a<y<b);												
DYEAR1	-0.001	0.005		0.024	0.027		-0.060	0.008	**	-0.334	0.032	**
DYEAR2	-0.001	0.005		0.010	0.024		-0.022	0.007	**	-0.107	0.023	**
DYEAR3	0.010	0.006		0.042	0.025		-0.011	0.008		-0.113	0.028	**
MMkS(CMkS)	-0.061	0.006	**	-0.719	0.074	**	0.095	0.036	**	-1.111	0.158	**
SIZE	-0.001	0.002		-0.057	0.011	**	0.010	0.003	**	0.057	0.011	**
RET	-0.001	0.000	**	-0.004	0.001	**	0.000	0.000		0.000	0.000	
AVGINV	-0.022	0.003	**	-0.087	0.018	**	-0.074	0.007	**	-0.232	0.024	**

The ** and * and denote 1% and5% levels of significance respectively.

Table 7 Financial Group and fees. The results of the estimation of the Tobit Model 1C for employer-sponsored and individual plans. Coef is the coefficient estimate, and SE is the standard error of the estimate. The dependent variables are custodian fees and management fees, respectively, expressed in basis points. The independent variables are three dummy variables representing the first (DYEAR1), second year (DYEAR2) and third year (DYEAR3) of a pension plan; a dummy variable that takes a value of 1 if the management firm and the custodian are affiliates of different financial group (DIFF); the market share of the financial group to which the management firm (MMkS) or the custodian firm (CMkS) is affiliated; the log of fund assets in Euros (SIZE); the past 12-month returns of the fund (RET); and the log of average investment size per participant (AVGINV). Fixed year effects and dummy variables representing other than fixed income investment categories (mixed fixed income, mixed equity, and equity) are also included in the estimation. The table also shows the number of observations (N), the F-test for the model tested (K=N-14), and the chi-square statistic of the mean differences between Dyear1 and Dyear2, and Dyear2 and Dyear3 and their respective p-values in parentheses. Panel B: Marginal Effects I: Tobit Estimation. E(y/a<y<b); Specifically E(CF/0<CF<0.5) and E(MF/0<MF<2.0); where y is the censored dependent variable. Panel C: Marginal Effects II. Tobit Estimation. E(y*/a<y<b); Specifically E(CF*/0<CF<0.5) and E(MF*/0<MF<2.0); where y* is the latent dependent variable.

	Employer-Sponsored				**Individual**			
	Custodian Fees		**Management Fees**		**Custodian Fees**		**Management Fees**	
	Coef	**SE**	**Coef**	**SE**	**Coef**	**SE**	**Coef**	**SE**
Panel A:Tobit Estimation								
C	0.311	0.023 **	1.498	0.107 **	0.425	0.052 **	2.280	0.184 **
DYEAR1	-0.006	0.006	0.020	0.030	-0.070	0.010 **	-0.383	0.042 **
DYEAR2	-0.001	0.006	0.005	0.027	-0.025	0.009 **	-0.155	0.033 **
DYEAR3	0.011	0.007	0.042	0.028	-0.010	0.011	-0.156	0.038 **
DIFF	-0.011	0.004 **	-0.059	0.022 **	0.022	0.008 **	-0.095	0.028 **
MMkS(CMkS)	-0.072	0.007 **	-0.814	0.082 **	0.200	0.046 **	-1.443	0.230 **
SIZE	-0.001	0.003	-0.064	0.012 **	0.017	0.004 **	0.088	0.016 **
RET	-0.001	0.000 **	-0.004	0.001 **	0.000	0.000	0.000	0.000
AVGINV	-0.026	0.004 **	-0.100	0.020 **	-0.089	0.009 **	-0.345	0.034 **
N and F(14,K)	4044	21.42 **	4033	20.19 **	3654	20.38 **	3672	64.63 **
DYEAR1-DYEAR2 Chi2 (p)	0.71	(0.398)	0.44	(0.507)	11.75	(0.000) **	20.49	(0.000) **
DYEAR2-DYEAR3 Chi2 (p)	1.10	(0.295)	1.38	(0.241)	1.13	(0.287)	0.00	(0.998)
Panel B: Marginal Effects I. Tobit Estimation. E(y/a<y<b)								
DYEAR1	-0.004	0.004	0.015	0.022	-0.034	0.005 **	-0.203	0.024 **
DYEAR2	-0.001	0.004	0.004	0.020	-0.012	0.005 **	-0.079	0.017 **
DYEAR3	0.008	0.005	0.031	0.021	-0.005	0.005	-0.079	0.020 **
DIFF	-0.007	0.003 **	-0.042	0.015 **	0.011	0.004 **	-0.048	0.014 **
MMkS(CMkS)	-0.049	0.005 **	-0.598	0.060 **	0.099	0.023 **	-0.710	0.114 **
SIZE	-0.001	0.002	-0.047	0.009 **	0.009	0.002 **	0.043	0.008 **
RET	-0.001	0.000 **	-0.003	0.001 **	0.000	0.000	0.000	0.000
AVGINV	-0.017	0.003 **	-0.074	0.015 **	-0.044	0.005 **	-0.170	0.017 **
Panel C: Marginal Effects II. Tobit Estimation. E(y*/a<y<b);								
DYEAR1	-0.005	0.005	0.019	0.027	-0.057	0.008 **	-0.306	0.035 **
DYEAR2	-0.001	0.005	0.005	0.025	-0.020	0.008 **	-0.120	0.026 **
DYEAR3	0.010	0.006	0.039	0.026	-0.008	0.009	-0.120	0.030 **
DIFF	-0.010	0.003 **	-0.053	0.019 **	0.018	0.007 **	-0.072	0.021 **
MMkS(CMkS)	-0.063	0.006 **	-0.744	0.075 **	0.166	0.039 **	-1.076	0.172 **
SIZE	-0.001	0.002	-0.059	0.011 **	0.014	0.003 **	0.065	0.012 **
RET	-0.001	0.000 **	-0.004	0.001 **	0.000	0.000	0.000	0.000
AVGINV	-0.023	0.004 **	-0.092	0.018 **	-0.074	0.008 **	-0.257	0.026 **

The ** and * and denote 1% and 5% levels of significance respectively.

Table 8 Market penetration strategies and types of pension plans (CLAD). The results of the estimation of the CLAD Model 2A for employer-sponsored and individual plans. Coef is the coefficient estimation, and SE is the standard error of this estimation. The dependent variables are custodian fees and management fees, respectively, expressed in basis points. The independent variables are three dummy variables representing the first (DYEAR1), second year (DYEAR2) and third year (DYEAR3) of a pension plan; the log of fund assets in Euros (SIZE); the past 12-month returns of the fund (RET); the log of average investment size per participant (AVGINV); and dummy variables representing mixed fixed income (DMFI), mixed equity (DMEQ), and equity (DEQ). D2009, D2010, and D2011 are dummy variables for calendar years 2009, 2010, and 2011, respectively. The table also shows the number of observations (N) and the pseudo-R^2 for the model tested.

	Employer-Sponsored						**Individual**					
	Custodian Fees			**Management Fees**			**Custodian Fees**			**Management Fees**		
	Coef	**SE**		**Coef**	**SE**		**Coef**	**SE**		**Coef**	**SE**	
C	0.292	0.034	*	1.011	0.112	*	0.369	0.064	*	2.199	0.259	*
DYEAR1	-0.007	0.005		0.036	0.027		-0.060	0.009	*	-0.227	0.039	*
DYEAR2	-0.002	0.004		0.022	0.019		-0.025	0.008	*	-0.116	0.037	*
DYEAR3	0.013	0.006	*	0.059	0.033		-0.019	0.009	*	-0.082	0.036	*
SIZE	-0.008	0.002	*	-0.028	0.011	*	0.007	0.003	*	0.063	0.017	*
RET	0.000	0.000	*	-0.003	0.001	*	0.000	0.001		-0.013	0.006	
AVGINV	-0.031	0.005	*	-0.094	0.018	*	-0.069	0.012	*	-0.356	0.040	*
DMFI	-0.029	0.018		-0.124	0.029	*	0.042	0.008	*	0.351	0.032	*
DMEQ	-0.019	0.018		-0.099	0.029	*	0.024	0.011	*	0.534	0.038	*
DEQ	-0.021	0.018		-0.197	0.042	*	0.044	0.013	*	0.817	0.057	*
D2009	-0.002	0.006		0.066	0.036	*	-0.029	0.018		0.017	0.082	
D2010	-0.028	0.008	*	0.013	0.035		-0.018	0.011		-0.118	0.047	*
D2011	-0.005	0.005		0.044	0.028		-0.033	0.011	*	-0.150	0.043	*
N	4062			4036			3694			3125		
PseudoR2	0.0294			0.0149			0.0329			0.1445		

The * denotes the 5% level of significance using standard bootstrap estimates of the standard errors.

Table 9 Market share and pension plan fees (CLAD). The results of the estimation of the CLAD Model 2B for employer-sponsored and individual plans. Coef is the coefficient estimate, and SE is the standard error of the estimate. The dependent variables are custodian fees and management fees, respectively, expressed in basis points The independent variables are three dummy variables representing the first (DYEAR1), second year (DYEAR2) and third year (DYEAR3) of a pension plan; the market share of the financial group to which the management firm (MMkS) or the custodian firm (CMkS) is affiliated; the log of fund assets in Euros (SIZE); the past 12-month returns of the fund (RET); the log of average investment size per participant (AVGINV) and dummy variables representing mixed fixed income (DMFI), mixed equity (DMEQ), and equity (DEQ). D2009, D2010, and D2011 are dummy variables for calendar years 2009, 2010, and 2011 respectively. The table also shows the number of observations (N) and the pseudo-R^2 for the model tested.

	Employer-Sponsored						**Individual**					
	Custodian Fees			**Management Fees**			**Custodian Fees**			**Management Fees**		
	Coef	**SE**		**Coef**	**SE**		**Coef**	**SE**		**Coef**	**SE**	
C	0.289	0.031	*	0.935	0.136	*	0.396	0.070	*	2.004	0.219	*
DYEAR1	-0.007	0.005		0.034	0.025		-0.063	0.010	*	-0.243	0.058	*
DYEAR2	-0.004	0.005		0.034	0.022		-0.023	0.010	*	-0.070	0.030	*
DYEAR3	0.011	0.007		0.064	0.033		-0.018	0.010		-0.068	0.034	*
MMkS(CMkS)	-0.017	0.008	*	-0.199	0.076	*	0.068	0.059		-1.546	0.317	*
SIZE	-0.008	0.002	*	-0.019	0.009	*	0.005	0.004		0.099	0.016	*
RET	0.000	0.000	*	0.000	0.001	*	0.000	0.000		-0.011	0.006	
AVGINV	-0.031	0.005	*	-0.094	0.019	*	-0.071	0.013	*	-0.356	0.039	*
DMFI	-0.029	0.013	*	-0.107	0.037	*	0.038	0.007	*	0.340	0.033	*
DMEQ	-0.015	0.014		-0.061	0.039		0.016	0.009		0.539	0.039	*
DEQ	-0.011	0.014		-0.174	0.043	*	0.038	0.013	*	0.819	0.056	*
D2009	0.002	0.005		0.070	0.034	*	-0.033	0.022		-0.030	0.096	
D2010	-0.025	0.007	*	0.020	0.029		-0.019	0.011		-0.137	0.065	*
D2011	-0.002	0.005		0.060	0.025	*	-0.037	0.012	*	-0.136	0.052	*
N	4044			4033			3654			3188		
PseudoR2	0.0309			0.0165			0.0341			0.1456		

The * denotes the 5% level of significance using standard bootstrap estimates of the standard errors.

Table 10 Financial Group and fees (CLAD). The results of the estimation of the CLAD Model 2C for employer-sponsored and individual plans. Coef is the coefficient estimate, and SE is the standard error of the estimate. The dependent variables are custodian fees and management fees, respectively, expressed in basis points. The independent variables are three dummy variables representing the first (DYEAR1), second year (DYEAR2) and third year (DYEAR3) of a pension plan; a dummy variable that takes a value of 1 if the management firm and custodian firm are affiliates of different financial group (DIFF); the market share of the financial group to which the management firm (MMkS) or the custodian firm (CMkS) is affiliated; the log of fund assets in Euros (SIZE); the past 12-month returns of the fund (RET); log of average investment size per participant (AVGINV); and dummy variables representing mixed fixed income (DMFI), mixed equity (DMEQ), and equity (DEQ). D2009, D2010, and D2011 are dummy variables for calendar years 2009, 2010, and 2011, respectively. The table also shows the number of observations (N) and the pseudo-R^2 for the model tested.

	Employer-Sponsored				**Individual**			
	Custodian Fees		**Management Fees**		**Custodian Fees**		**Management Fees**	
	Coef	**SE**	**Coef**	**SE**	**Coef**	**SE**	**Coef**	**SE**
C	0.323	0.035 *	0.940	0.108 *	0.337	0.070 *	2.270	0.318 *
DYEAR1	-0.007	0.005	0.025	0.021	-0.061	0.010 *	-0.217	0.056 *
DYEAR2	-0.003	0.005	0.026	0.021	-0.023	0.009 *	-0.072	0.038 *
DYEAR3	0.011	0.007	0.059	0.042	-0.014	0.010	-0.071	0.036 *
DIFF	-0.010	0.004 *	-0.094	0.013 *	0.034	0.010 *	-0.081	0.029 *
MMkS(CMkS)	-0.014	0.009 *	-0.339	0.101 *	0.088	0.051 *	-1.617	0.326 *
SIZE	-0.009	0.003 *	-0.009	0.011	0.009	0.004 *	0.084	0.022 *
RET	0.000	0.000 *	-0.003	0.001 *	0.000	0.001	-0.012	0.006
AVGINV	-0.036	0.005 *	-0.113	0.019 *	-0.066	0.013 *	-0.397	0.051 *
DMFI	-0.030	0.015 *	-0.073	0.033 *	0.038	0.008 *	0.337	0.037 *
DMEQ	-0.020	0.016 *	-0.033	0.035	0.016	0.011	0.550	0.049 *
DEQ	-0.019	0.016 *	-0.163	0.037 *	0.043	0.012 *	0.821	0.065 *
D2009	-0.002	0.006	0.052	0.029 *	-0.028	0.018	-0.004	0.094 *
D2010	-0.024	0.008 *	0.008	0.027	-0.020	0.012 *	-0.099	0.059
D2011	-0.005	0.005	0.056	0.020 *	-0.036	0.011 *	-0.096	0.054
N	4044		4033		3654		3152	
PseudoR2	0.0325		0.0223		0.0367		0.1498	

The * denotes the 5% level of significance using standard bootstrap estimates of the standard errors.