CURRENT TRENDS IN PERFORMANCE AND FLOWS IN THE SPANISH PENSION FUND INDUSTRY

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Abstract

This paper provides an analysis of Spanish individual pension funds' financial performance.The evidence presented shows that, like in other investment fund markets around the world, on average individual pension funds do not provide investors with positive risk adjusted returns after subtracting fees. Nevertheless, there is evidence of fund manager skill since, on average, risk adjusted returns before fees are positive and there is persistence in the risk adjusted performance of funds. Additionally, there is evidence that Spanish households respond to fund performance by moving funds to well managed funds.

Keywords: pension funds, defined contribution, mutual funds.

JEL classification: G21.

Resumen

En este documento se presenta un análisis del desempeño financiero de los fondos de pensiones individuales en España. La evidencia presentada muestra que, al igual que en otros mercados de fondos de inversión en todo el mundo, de promedio los fondos de pensiones individuales no proporcionan a los inversores rentabilidades ajustadas por riesgo positivas una vez descontadas las comisiones. No obstante, existe evidencia de la habilidad de los gestores de fondos, ya que, de promedio, las rentabilidades ajustadas por riesgo antes de comisiones son positivas y existe persistencia en el desempeño ajustado por riesgo de los fondos. Adicionalmente, hay evidencia de que los hogares españoles responden al desempeño de los fondos trasladando sus recursos hacia los fondos mejor gestionados.

Palabras clave: fondos de pensión, aportación definida, fondos de inversión.

Códigos JEL: G21.

Contents

1   Introduction

In Spain, households have access to defined contribution schemes[1] to save for retirement. Spanish pension funds are investment vehicles designed for this specific purpose, allowing households to save towards retirement with some tax advantages. The main advantage is that investments into pension funds allow households to defer income taxes from the present to a later moment when they withdraw their investments after retirement.

There are two main types of pension funds in Spain,[2] employer based and individual. Employer based funds pool savings of all their employees into one fund that invests on behalf of the employees. Given that the large firms offering these funds often have large bargaining power with the investment management firms that manage the pension assets, employer-based pension funds typically have lower fees. By the end of 2023, assets in employment-based pension funds reached a total of €36.6 billion (see panel A of Chart 1). Individual pension funds on the other hand are an investment vehicle very similar to mutual funds, where investors have a wide menu of funds that they can freely choose to allocate their savings. Assets in individual pension funds have grown in the last decade to a peak of €87.6 billion at the end of 2021 but have since decreased and now total assets sit at around €84.9 billion at the end of 2023 (see panel A of Chart 1).[3] Given the rich data available for individual pension funds and the fact that they represent almost 70% of the Spanish pension fund market, the analysis of this paper focuses on this subset of the market.

There are two key differences that individual pension funds have relative to other investments in capital markets. First, they have a different tax treatment. Unlike other investments, individual pension funds are not subject to capital gains taxes, instead they are subject to the standard income tax at the time of their withdrawal, usually after retirement. Additionally, investments made in these funds is deductible from taxable income the year it's made. This means that by investing in an individual pension fund today, investors are delaying paying income tax today in exchange for paying it later when funds are withdrawn. Since 2007, investors have been able to deduct from their taxable income investments in pension funds up to 10,000 euros, and up to 12,500 for individuals over 50 years of age. In 2015, this amount was reduced to 8,000 euros for individuals of all ages. More recently, starting in 2021, the maximum amount individuals could deduct from their taxable income for investing in individual pension funds has been reduced to 2,000 euros, and it was further reduced to 1,500 euros in 2023. In panel B of Chart 2, one can see that these recent changes have led to a large decrease in inflows to individual pension funds, going from a peak of just over €4.2 billion in 2022 to €1.5 billion in 2023.

The other key difference between individual pension funds and capital markets investments are the conditions under which investors can withdraw investments to finance consumption. Unlike most assets, investors in pension funds are only able to withdraw funds in case of retirement, long term unemployment, death or in the event of certain illnesses or disabilities. Additionally, starting in January 2025, investors may also freely redeem investments in individual pension funds after a 10-year investment period. While these restrictions do exist, investors may still freely exit positions in individual pension funds to invest in other pension funds. That is, if an individual is unhappy with their current choice of fund, they can transfer their savings to another fund, although they face fees that providers may charge due to this change. Besides these key differences, individual pension funds are very

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1   Type of retirement plan where benefits received are a function of the contributions made and their investment returns.
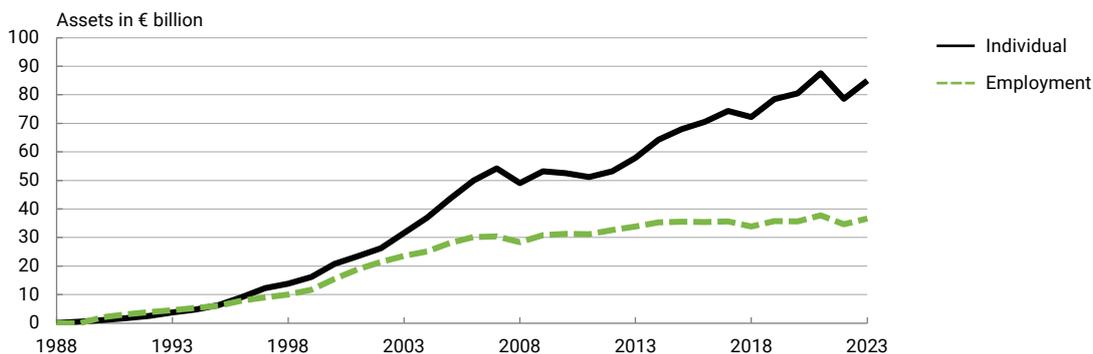
2   There is a third type of pension fund based on professional associations; however, these represent less than 1% of the total share of pension fund assets.

3   Data provided by INVERCO, an association for Spanish asset management firms.
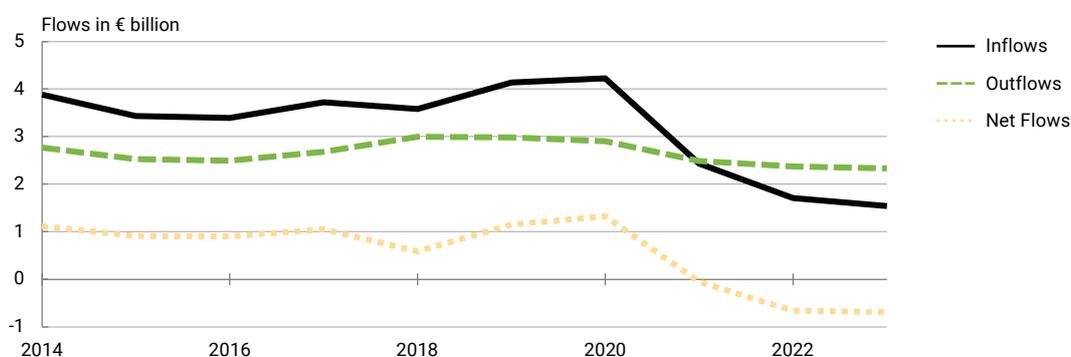
Chart 1
Aggregate pension fund assets and flows

1.a Pension fund assets (a)

Assets in € billion

1.b Fund flows (b)

Flows in € billion

SOURCE: INVERCO.

a A displays the total pension funds assets of individual and employer provided pension funds from 1988 to 2023.
b Shows inflows, outflows and net flows to individual pension funds from 2014 to 2023.

similar to mutual funds in that they're a vehicle for delegated asset management that offers investors the option to redeem fund shares daily.

This paper does not analyze the effect of the regulatory changes described above on the evolution of the pension fund industry, given that it would require the need of more granular data that is not available. On the contrary, after illustrating the evolution of these investment vehicles, this paper aims to provide an in-depth description of the current landscape of the individual pension fund market, documenting fund performance and investor choices in this market.

This paper finds that on average individual pension funds are unable to provide, after fees, positive risk adjusted returns. Depending on the type of assets, average risk adjusted performance for individual pension funds ranges from -1.37% to 0.01% per year,[4] after fees. Additionally, exploiting rich data on individual pension fund flows

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4   Nominal rates, for the period of 2006 until 2022.

it is found that investors are sensitive to fund performance when allocating savings. Response to fund performance comes both from inflows and outflows, that is, investors allocate savings to funds that perform well in a similar way in which they remove their savings from funds that perform poorly.

Negative risk adjusted returns of investment funds after subtracting fees is commonly found in the broader investment management literature. For example, Fama and French (2010) find this for a large sample of US mutual funds while Ferreira et al. (2013) find the same for a large sample of equity mutual funds from 27 countries. Furthermore, this paper extends what is known on the specific performance of Spanish individual pension funds. While Andreu, Sarto and Gimeno (2009) and Alda, Ferruz and Gallagher (2013) study performance for a subset of equity funds in this market, this paper extends this to include all equity, fixed income and mixed funds. Additionally, this paper also studies how flows to individual pension funds vary conditional on their performance.

The rest of the paper is structured as follows: section 2 describes the data and main methodology to evaluate fund performance and section 3 analyzes the performance of individual pensions funds. Section 4 then studies investor responses to fund performance and section 5 gives a brief overview of mutual fund performance in Spain. Section 6 concludes.

2   Data and decomposing fund returns

The main data on individual pension funds used in the paper comes from INVERCO, an industry association of Spanish asset management firms. From their website several data from individual pension funds are collected. The key variables collected are monthly returns, monthly net assets, monthly number of fund investors and fund age from 2006 to 2021. Additionally, INVERCO also has monthly fund inflows and outflows since January 2016. This dataset is then matched to data from the Spanish General Directorate of Insurance and Pension Funds, where yearly data are obtained on the total expense ratios[5] of individual pension funds, age distribution of each fund's investors and the distribution of investors by the amount invested in the fund. Finally, these data are complemented with several market indices obtained from Refinitiv Datastream listed in Table 1.

To perform the main analysis on the investment performance of individual pension funds, one key ingredient is to decompose returns of funds into returns earned from bearing market risk and those that reflect manager skill or risk adjusted returns. To do this the standard methodology in the investment fund literature[6] is used, estimating fund exposure to a set of factors. Additionally, since available fund returns are already net of the fund's total expense ratio (TER), these fees are added back to obtain the fund's returns gross of fees (i.e. before fees).

For the decomposition, the fund return $r_{f,t}$, gross of fees is written as:

$$r_{f,t} = \alpha_{f,t} + \sum_k \beta_{f,k}\, r_{k,t} + TER_{f,t} \tag{1}$$

where $\alpha_{f,t}$ is the risk adjusted return of fund f after fees in month t, $\beta_{f,k}$ is the exposure of fund f to market factor k, $r_{k,t}$ is the return of market factor k in month t, and $TER_{f,t}$ is the total expense ratio of fund f in month t. To estimate market factor exposures for each fund, Equation (1) is rearranged and returns net of the total expense ratio are regressed on market factors using a rolling window of 36 months[7] of returns:

$$r_{f,t} - TER_{f,t} = a_f + \sum_k \beta_{f,k}\, r_{k,t} + e_{f,t} \tag{2}$$

Once fund risk exposures to market factors, $\beta_{f,k}$, are estimated, Equation (1) is rearranged to back out the monthly risk adjusted returns of each fund, $\alpha_{f,t}$, since the remaining components of Equation (1) are directly observed.

Once $\beta_{f,k}$ has been estimated for every fund, net-of-fee returns of each fund can be decomposed into their risk exposure (RE) and a risk adjusted (RA) components for each period t. The RE component is estimated by multiplying the fund's exposure to a risk factor with that factor's return, adding across factors (Equation (3)). Once the RE component is obtained from Equation (3), Equation (1) can be rearranged, to obtain the RA returns (Equation (4)):

$$RE\ returns \equiv \sum_k \beta_{f,k}\, r_{k,t} \tag{3}$$

$$RA\ returns \equiv \alpha_{f,t} = r_{f,t} - \sum_k \beta_{f,k}\, r_{k,t} - TER_{f,t} \tag{4}$$

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5 The total expense ratio is the ratio of the management fees that are subtracted directly from fund assets divided by the fund's total net assets. These do not include any sales or distribution fees which are not observable in this paper.

6 See Barber, Huang and Odean (2016) for example.

7 The choice of a 36-month rolling window strikes the balance of having a large enough sample to accurately estimate fund risk exposures while at the same time ensuring the data used to in the estimation is not too old.

Table 1
Benchmark list

Market factor	Asset Class	Description
MSCI World	Equity	Global equity index that includes large and mid-cap firms from 23 developed markets.
STOXX Europe 600	Equity	European equity index representing large, mid and small cap stocks from 17 European countries.
IBEX 35	Equity	Index with 35 constituents representing the largest liquid stocks traded on the Madrid Stock Exchange.
ICE BofA Euro Government Index	Fixed Income	Index tracking bond returns of highly rated European government bonds with maturities greater than 2 years.
ICE BofA Euro Treasury Bill Index	Fixed Income	Index tracking bond returns of highly rated European government bonds with maturities less than 1 year.
ICE BofA BBB Euro Corporate Index	Fixed Income	Index tracking bond returns of investment grade corporate bonds from European firms.
ICE BofA 1-10 Year Spain Government Index	Fixed Income	Index tracking bond returns of Spanish government bonds with maturities between 1 and 10 years.

SOURCE: Banco de España.
NOTE: List of market indices used as fund benchmarks to estimate individual pension fund risk adjusted returns. We use the total return version of these indices which include dividend and coupon payments for stocks and fixed income instruments respectively. For non-Euro denominated indices, returns have been converted to Euros.

Since the total expense ratio of the fund is given directly from the data, we can combine that together with RA and RE returns to obtain a decomposition of the investment returns of each fund before fees into these three components. To evaluate investment skill of the fund manager, it is also useful to define risk adjusted returns gross of fees, which can be done by re-writing Equation (4):

$$\text{RA returns (gross)} \equiv \alpha_{f,t} + TER_{f,t} = r_{f,t} - \sum_k \beta_{f,k} \, r_{k,t} \qquad (5)$$

Finally, the market factors needed to estimate Equation (3) are defined. Given that there are funds in the sample that span both fixed income and equity asset classes, indices from both these asset classes are used as market factors (see Table 1). In particular, all bond indices from Table 1 are used as market factors for funds that only invest in fixed income, all equity indices for funds that only invest in stocks and all indices for funds that invest in both.[8] Finally, because some of these factors are highly correlated, there can be large estimation errors when estimating fund exposures to factors. To solve for this, for equity market factors, the first factor is the return of the MSCI World Index in excess of the risk-free rate,[9] while the remaining factors consist of a long-short portfolio that takes a long position in all remaining equity indices in Table 1 and a short position in the MSCI World Index. The same is done for bond market factors where the reference index is the ICE BofA Euro Government Index.

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8   Similarly to Dietze et al. (2009) who study European bond funds, European bond factors are used.

9   The Eurobor 1-month rate is used as the risk-free rate.

3 Pension fund performance and persistence

3.1 Fund performance

This section documents the average performance of individual pension funds from 2013 to 2021. To summarize performance, it is useful to first split funds by the type of assets they invest in. Funds that according to INVERCO invest in short term, long term and mixed fixed income securities are grouped into the fixed income category, funds that invest in both fixed income and equity are mixed funds and equity funds are those that exclusively invest in equity. Using the methodology described in section 2, risk adjusted returns are estimated for each individual fund and are then aggregated across each of these 3 categories.

In Table 2, average total returns and risk adjusted returns are reported on a yearly basis for each of the three investment categories. From 2013 to 2021, fixed income funds have shown the lowest total net return at an average of 0.88% per year, equity funds have earned an average of 6.55% per year, while mixed funds sit in the middle at 3.77% per year. This ordering makes sense since expected returns increase in the riskiness of the fund and equity is typically riskier than fixed income intruments. Risk adjusted returns before fees are positive on average ranging from 0.30% to 1.04% per year, indicating some evidence of managerial skill. Howerer, after subtracting fees, all categories earn negative risk adjusted returns on average. Fixed income funds have on average earned, in risk-adjuested terms and after fees, -0.20% per year, mixed funds -0.91% and equity funds -1.32%. Nevertheless, it's important to note that risk adjusted returns don't account for investors preferences, as investors may prefer a fund with higher risk and return even if risk adjusted returns are negative.[10]

Additionally, in Table 2 we can also see that there is a larger market share for the less risky fixed income funds. By the end of 2024, not only was there a more varied offering of 315 funds compared to the 222 mixed funds and 185 equity funds, but also fixed income funds represent 36 billion euros of total net assets, or 41% of this magnitude for the whole sector of individual pension funds.

The average returns of these 3 types of funds before fees are also compared to simple benchmarks. Starting with fixed income funds, Panel A of Chart 2 shows the cumulative average yearly gross returns of fixed income individual pension funds against two relevant benchmarks, the ICE BofA Euro Government Index and the ICE BofA BBB Euro Corporate Index which tracks bond portfolios of highly rated EU government bonds and BBB rated or higher rated European corporate bonds respectively. In Panel B, total returns gross of fees of fixed income funds are decomposed into the RA and RE components, as explained in Section 2.

From panel A of Chart 2, we can see that over an 8-year period, the average fixed income individual pension fund has underperformed before fees the two benchmarks by at least 15 percentage points. Given that this class had, on average, slightly positive gross RA returns, the underperformance comes mostly because of a low-risk exposure of these funds to the benchmark portfolios (i.e. betas below 1). As can be seen both on Table 2 and panel B of Chart 2, fixed income pension funds consistently generate positive RA returns.

In Chart 3, the same analysis is performed for mixed individual pension funds. Because each individual mixed fund may have different allocations to fixed income and equity there's no clear benchmark for this type of

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10 See for example Frazzini and Pedersen (2014). They document that retail investors with preferences for high risk and limited access to leverage are willing to earn lower risk adjusted returns by investing in high beta stocks.

Table 2
Pension fund summary statistics

|	Net Avg. Total Return (%)	Gross Avg. Risk Adj. Return (%)	Net Avg. Risk Adj. Return (%)	Net Risk Exposure Return (%)	Total Expense Ratio (%)	Number of funds	TNA (€ billion)	Share (%)
Fixed Income	0.88	1.04	-0.20	1.10	1.24	315	36.46	41
Mixed	3.77	0.64	-0.91	4.58	1.55	222	33.12	37
Equity	6.50	0.30	-1.32	7.89	1.62	185	18.88	21

SOURCES: INVERCO, Datastream and author's calculations.
NOTE: Summary statistics on average pension fund returns for each broad category. Net average total returns are the average yearly returns of funds net of fees in that category, gross average risk adjusted returns are the yearly risk adjusted returns estimated using the methodology described in section 2, before subtracting the total expense ratio. The net average risk adjusted returns is gross average risk adjusted minus fees. Net risk exposure Returns are the yearly returns funds obtain due to risk exposure to market factors (net of fees) and the total expense ratio is the total fees subtracted from fund assets on a yearly basis. This table also reports the total number of funds, total net assets (TNA) and the TNA share of each category at the end of 2024.
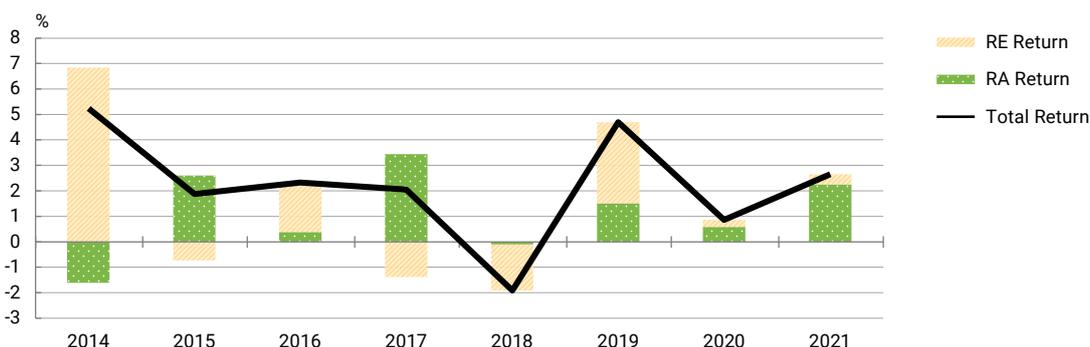
Chart 2
Cumulative returns of fixed income funds and return decomposition by year before subtracting fees

2.a Cumulative returns of fixed income funds (a)
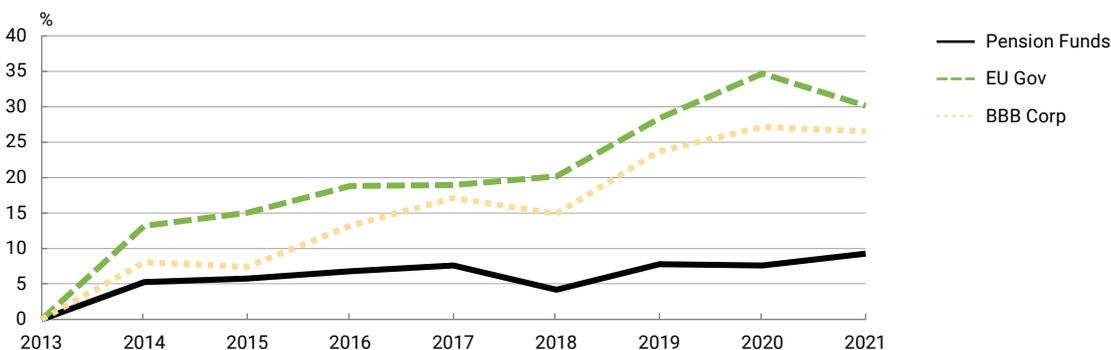
2.b Return decomposition (b)

SOURCES: INVERCO, Datastream and author's calculations.

a Displays the average cumulative returns of individual fixed income pension funds and the cumulative return of the ICE BofA Euro Government Index and ICE BofA BBB Euro Corporate Index benchmarks.
b Shows the average returns by year before subtracting fees of individual fixed income pension funds by year and decomposed into 2 components: gross risk adjusted returns (RA) and returns from bearing risk (RE).

Chart 3
Cumulative returns of mixed funds and return decomposition by year before subtracting fees

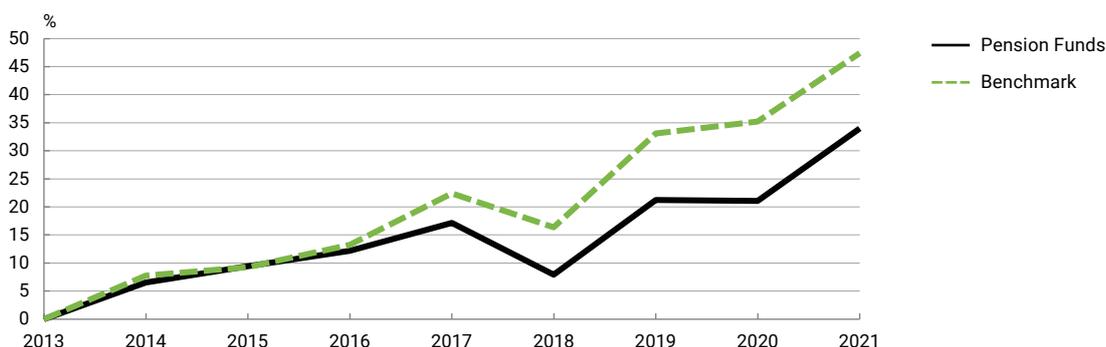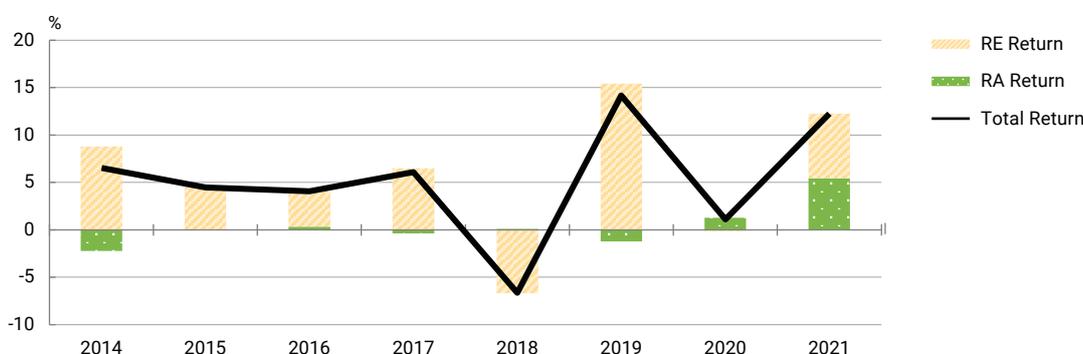3.a Cumulative returns of mixed funds (a)

3.b Return decomposition (b)

SOURCES: INVERCO, Datastream and author's calculations.

a Displays the average cumulative returns of individual mixed asset class pension funds and the cumulative return of a portfolio of benchmark portfolios.
a Shows the average returns by year before subtracting fees of individual mixed pension funds by year and decomposed into 2 components: gross risk adjusted returns (RA) and returns from bearing risk (RE).

fund. To make up for this, a composite benchmark that includes all benchmarks listed in Table 1 is constructed. This composite benchmark has weights on each index that represent the average exposure of all mixed funds to those factors and those weights are normalized such that they add up to 1. In Chart 3, we can see that over the analyzed 8 year period, on average mixed funds have underperformed the composite benchmark by 13 percentage points before subtracting fees. Similarly to fixed income funds, this mainly comes as a result of low risk exposure to the composite benchmark. Before subracting fees, these funds have on average positive risk adjusted returns as we can see from Table 2. In panel B of Chart 3, we can see that for mixed funds, although RA is on average positive, it is not persistently positive as is the case for fixed income funds.

Finally, the same analysis is carried out for equity funds in Chart 4. Panel A compares the average cumulative returns of these funds to the Europe STOXX 600 and the IBEX 35 indices. While equity funds have had negative risk adjusted returns after fees as shown in Table 2, they have earned slightly positive risk adjusted returns before fees. For example in 2016, equity funds earned on average 5.88% before fees. Of that return, 3.52 percentage points came from risk adjusted returns and the remaining 2.36 percentage points stemmed from the funds' risk exposure. Equity pension funds have outperformed the IBEX 35 local benchmark. However, despite the positive risk adjusted
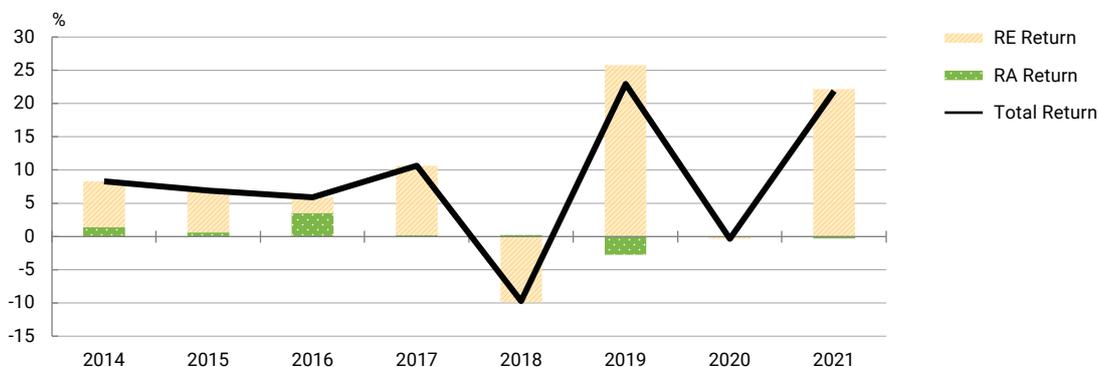
4.a Cumulative returns of equity funds (a)
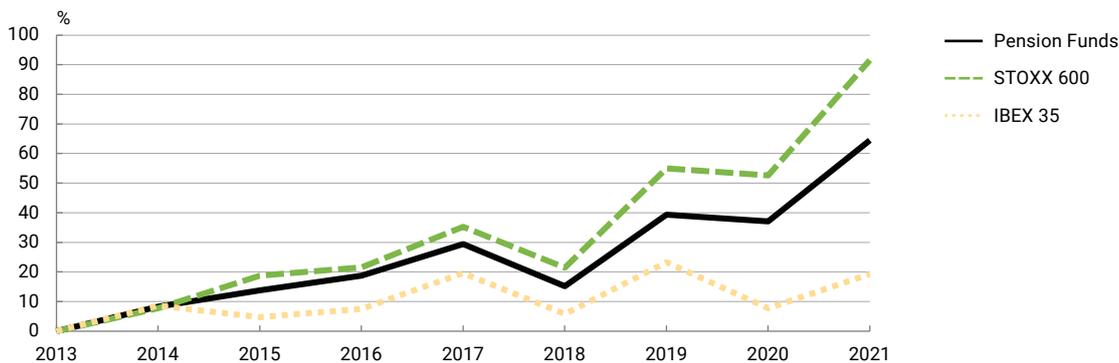
4.b Return decomposition (b)

SOURCES: INVERCO, Datastream and author's calculations.

a Displays the average cumulative returns of individual equity pension funds and the cumulative return of the STOXX 600 and IBEX 35 benchmarks.
b Shows the average returns by year before subtracting fees of individual equity pension funds by year and decomposed into 2 components: gross risk adjusted returns (RA) and returns from bearing risk (RE).

performance over the last 8 years, they underperformed the STOXX 600 index. This is because Spanish individual pension funds place more weight on Spanish stocks than the STOXX 600.

3.2 Performance persistence

While there is some evidence of positive manager skill from the previous section, this section also analyzes whether this skill is persistent at the fund level. In other words, the question is whether it would be possible for investors to select funds with better risk adjusted performance by looking at their past risk adjusted performance. Since individual funds may obtain positive risk adjusted returns in any given period simply due to random chance, evidence of outperformance in consecutive periods is an additional piece of evidence of manager skill in the pension fund market.[11]

To study the performance persistence of individual pensions funds for each of the 3 main asset class categories, funds are ranked in each quarter as above or below the median in terms of their net risk adjusted return

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11 See for example Fama and French (2010).

Performance persistence

5.a Sorting on past RA returns (a)
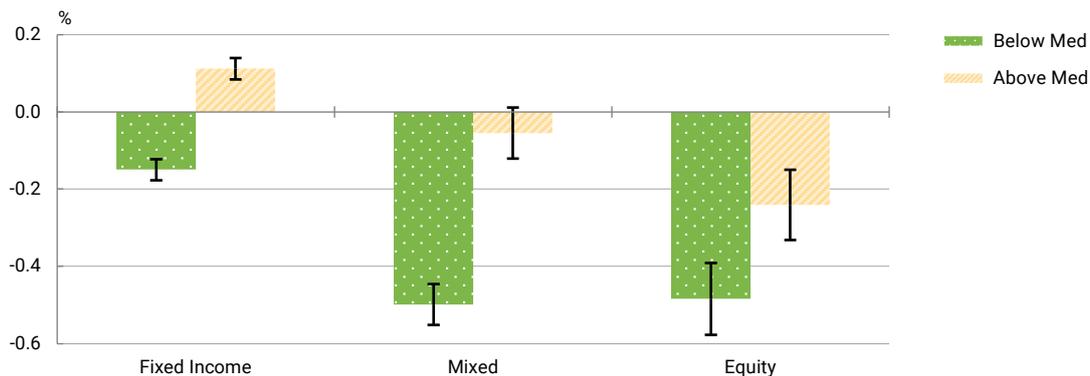
5.b Sorting on past fees (b)

SOURCES: INVERCO, Directorate-General for Insurance and Pension Funds (DGSFP, by its Spanish acronym) and author's calculations.
NOTE: These graphs show the average risk adjusted performance net of fees of funds below or above the median of a particular metric.
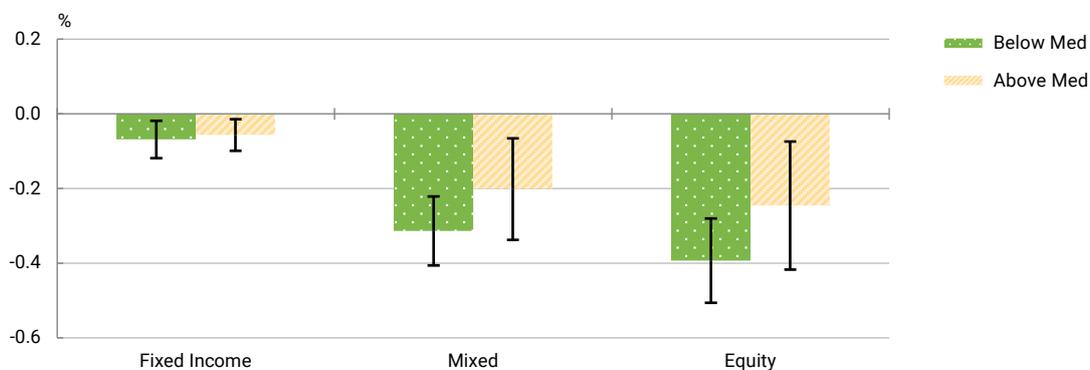
a Funds are sorted as below or above the median in terms of risk adjusted performance net of fees, and the vertical axis shows the risk adjusted performance net of fees of those funds in the following quarter.
b Does the same except that funds are sorted into above or below the median fee in a given quarter. Both panels include 95% confidence bands.

or total expense ratio in each quarter. Then the fund's risk adjusted returns, net of fees, of each of these groups are evaluated in the following quarter.[12]

In Panel A of Chart 5, we can see the average risk adjusted returns net of fees of funds ranked above or below the median in terms of risk adjusted performance in the previous quarter. Investing in funds with above median performance has historically resulted in higher risk adjusted returns in the following quarter compared to investing in funds that have performed below the median for all fund categories. For example, while investing in fixed income pension funds with past risk adjusted returns below the median has earned an average of -0.15% risk adjusted returns over the following quarter, investing in funds above the median has earned an average of 0.12%. For all categories, the differences are statistically significant at a 95% confidence level.

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12 One caveat is that this effect may be weaker at longer horizons; however, this sample is too short to test at these longer horizons.

Since the total expense ratio is often a large component of the fund's risk adjusted return net of fees for investors, it is also analyzed whether current fund fees are predictive of future performance in Panel B of Chart 5. Unlike the Panel A of the same chart, there's no statistical difference in future risk adjusted returns net of fees between funds below or above the median in terms of their current total expense ratio. This result holds across all fund categories and does not change if risk adjusted returns before subtracting fees are analyzed instead, meaning that there's no evidence of a strong positive relationship between the management fees charged by pension funds and manager skill.[13]

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[13] In a sample of US mutual funds, Gil-Bazo and Ruiz-Verdú (2009) also find that fund fees are not positively related to manager skill.

4 Flow to performance sensitivity

Given the evidence that there is some performance persistence of individual pension funds, it's natural to ask whether investors respond to fund performance. This can be done by exploiting two interesting features of INVERCO fund data. First, since 2016, INVERCO provides separate fund inflows and outflows, allowing us to measure net flows directly without approximations as commonly done in the mutual fund literature. Additionally, this also allows us to measure whether there's any asymmetries in the responses to performance between fund inflows versus outflows. The second aspect is that the total number of fund participants in each fund is also observable, allowing us to measure how the number of clients each fund has responds to the fund's performance.

The response of fund flows and fund participant growth to past returns is estimated following a procedure similar to Barber, Huang and Odean (2016) where past returns are separated into the 3 components described in Equation (1): their net risk adjusted (RA) returns, risk exposure-based (RE) returns and the total expense ratio (TER). The main outcome variables are then regressed on these 3 main components as well as on a set of controls[14] and investment type and month fixed effects ($\eta_{s,t}$):

$$Y_{f,t} = \delta_1 \text{ RA Return}_{f,t-1} + \delta_2 \text{ RE Return}_{f,t-1} + \delta_3 \text{ TER}_{f,t-1} + \gamma \text{ Controls}_{f,t-1} + \eta_{s,t} + \varepsilon_{f,t} \tag{4}$$

Table 3
Pension fund flows

Dependent Variable	(1) Net Flows	(2) Participant Growth	(3) Log(Inflows)	(4) Log(Outflows)
RA Return (t-1)	0.028***	0.113***	0.020***	-0.017**
	(0.009)	(0.027)	(0.007)	(0.008)
RE Return (t-1)	0.006	0.070***	0.001	-0.001
	(0.006)	(0.024)	(0.005)	(0.006)
Total Expense Ratio (TER) (t-1)	-0.061	0.85	0.368*	-0.109
	(0.208)	(0.735)	(0.214)	(0.266)
Fund Vol (t-1)	-0.018*	-0.064*	-0.032**	-0.008
	(0.010)	(0.036)	(0.014)	(0.019)
Log TNA (t-1)	0.204***	0.975	0.967***	0.642***
	(0.071)	(0.637)	(0.077)	(0.088)
Older 5 years	-0.696***	-0.530*	-0.588***	0.019
	(0.202)	(0.296)	(0.202)	(0.201)
Log Participants (t-1)	-0.161**	-0.987	0.118	0.360***
	(0.066)	(0.741)	(0.077)	(0.083)
Log investor age (t-1)	-0.084***	-0.209**	-0.124***	0.070***
	(0.014)	(0.090)	(0.017)	(0.021)
Investment Type X Time FE	Yes	Yes	Yes	Yes
N	10,922	10,922	10,922	10,922
R²	0.26	0.04	0.81	0.65

SOURCES: INVERCO, Datastream, Directorate-General for Insurance and Pension Funds (DGSFP, by its Spanish acronym) and author's calculations.
NOTE: This table presents the coefficient of regressions of fund flows on the 2 main return components of fund returns, RA and RE returns, and the fund's total expense ratio. In Column 1 the dependent variable is monthly net flows to funds, in Column 2 the percentage growth in the number of participants, in Column 3 the log amount of monthly inflows to a fund and in Column 4 the log of the monthly outflows. Controls include fund total return volatility measured over 36 months, the log of the fund's total net assets (TNA), a dummy variable indicating the fund is older than 5 years, the log amount of fund participants and the log of the average age of a fund's investors. All regressions include fund investment style-month fixed effects. Standard errors are in brackets and are clustered at the fund level. Significance levels: ***99%, **95%, *90%.

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14 The following set of control variables are included: fund total return volatility measured over 36 months, the log of the fund's total net assets (TNA), a dummy variable indicating the fund is older than 5 years, the log amount of fund participants and the log of the average age of a fund's investors.

The results are presented in Table 3. Column 1, where the dependent variable is the net flows as a percentage of the fund's total net assets, shows that investors have a positive response to the fund's net risk adjusted returns over the past year. A one standard deviation increase in a fund's risk adjusted return (3.56%) results in an increase of net flows by 0.11 percentage points per month. Given that the average fund receives, on average, net flows of 0.14% per month, this is quite a large effect in economic terms. Additionally, the results show that investors do not respond to the risk exposure component of returns and neither do they respond to fees. In Column 2, where the dependent variable is the monthly growth in fund participants there is also a positive relationship between net risk adjusted returns and the growth of fund participants.

Inflows and outflows are also separately analyzed in columns 3 and 4 of Table 3. Similarly to the analysis of net flows, investors respond to risk adjusted returns by both allocating their savings to funds with higher risk adjusted returns as well as leaving underperforming funds. The size of the effect is similar in both directions indicating that the effect in column 1 is not primarily driven by either inflows or outflows. Together, these results suggest that investors in the individual pension fund market are quite active and attentive, allocating their savings to funds that have shown evidence of managerial skill.

Finally, while there's no investor sensitivity to fees for net flows, there is evidence that higher expense ratios are associated with more inflows. This is an economically large effect: a one standard deviation increase in TER is associated with inflows increasing by 13%. However, there should be some caution not to interpret this in a causal sense. One possible explanation is that funds with higher fees may spend more on advertising and distribution, which may attract new investors. On the other hand, these types of activities may not affect investor retention and in fact no relationship between fund fees and investor outflows is found.

5 Performance of alternatives to individual pension funds

Despite some of the fiscal advantages to investing in individual pension funds, Spanish investors have other alternatives in terms of professionally managed investment funds. Mutual funds are a much larger investment vehicle for investors in Spain. Whereas the individual pension fund market managed €84.9 billion by the end of 2023, mutual funds domiciled in Spain managed €347.8 billion.[15] Given that this is a larger market with many more funds on offer, funds may face more competition, which could improve the average performance of the fund offerings.[16]

In Table 4, the same performance statistics presented in Table 2 for pension funds are replicated for mutual funds domiciled in Spain for comparison. For the same period of 2014 to 2021, mutual funds domiciled in Spain earned average yearly returns after fees of 0.71%, 2.55% and 6.31% for fixed income, mixed and equity funds, respectively. In all cases, each class of mutual fund underperforms their individual pension fund counterparts, both in terms of total returns and risk adjusted returns. While for fixed income and equity the difference in total net returns is small (less than 0.2 percentage points per year), the differences for mixed funds are larger. In particular, mixed pension funds earned on average 1.22 percentage points more than mixed mutual funds.[17]

The comparison of the 3 return components in Equation (1) of mutual funds and individual pension funds reveals that the differences described above come from two main sources: risk taking, and risk management skill. For fixed income mutual funds, risk adjusted returns before fees are an average of -0.2% per year, 1.31 percentage points lower than for individual pension funds. This difference decreases once we net out the expense ratio, since on average fixed income mutual funds have lower expense ratios than individual pension funds of the same category. Additionally, fixed income mutual funds take on more risk as they have earned higher returns from the risk exposure component.

In the case of equity funds, while mutual funds earned an average of -0.27% per year in risk adjusted returns before fees, individual pension funds earned 0.30%, a 0.57 percentage point difference. The difference between the

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Table 4
Mutual fund summary statistics

	Net Avg. Total Return (%)	Gross Avg. Risk Adj. Return (%)	Net Avg. Risk Adj. Return (%)	Net Risk Exposure Return (%)	Total Expense Ratio (%)	Number of funds	TNA (€ billion)	Share (%)
Fixed Income	0.71	-0.20	-1.03	1.76	0.82	436	101.30	35
Mixed	2.55	-0.14	-1.71	4.27	1.57	534	129.42	45
Equity	6.31	-0.27	-2.27	8.60	2.00	312	57.63	20

SOURCES: Refinitiv Lipper, Datastream and author's calculations.
NOTE: Summary statistics of average mutual fund returns for each broad category. Net average total returns are the average yearly returns of funds net of fees in that category, gross average risk adjusted returns are the yearly risk adjusted returns estimated using the methodology described in section 2, before subtracting the total expense ratio. The net average risk adjusted returns gross average risk adjusted minus fees. Net Risk Exposure Return are the yearly returns funds obtained due to risk exposure to market factors (net of fees) and the total expense ratio is the total fees subtracted from fund assets on a yearly basis. This table also reports the total number of funds, total net assets (TNA) and the TNA share of each category at the end of 2024.

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15   Source: INVERCO.

16   See Cremers, Ferreira, Matos and Starks (2016).

17   Because the mutual fund market is larger, it could be that mixed mutual funds may have exposure to risk factors such as commodities that we do not cover here and could result in some measurement error of the return decomposition.

two widens after netting out fees to 0.94 percentage points, as equity mutual funds charge higher annual fees than their individual pension fund counterparts. However, the total return difference between equity mutual funds and pension funds is once again reduced, since equity mutual funds take on more risk than pension funds, consequently earning 0.71 percentage points more in returns from risk exposure.

Finally, in the case of mixed funds, mutual funds earn lower risk adjusted returns, in both net and gross terms, and take less risk as their returns from risk exposure are also lower than those from mixed pension funds.

6 Conclusion

In this paper, several features of the Spanish individual pension fund market are documented. Fund returns are decomposed into their main return components. Findings show that individual pension funds display average positive risk adjusted returns before fees, reflecting managerial skill. However, after subtracting fund expenses this is no longer the case for mixed and equity pension funds, where risk adjusted returns after fees are around -1% per year. This is in line with international evidence for the investment management industry (Fama and French, 2010; Ferreira et al. 2013). Additionally, evidence of performance persistence is found across all three types of pension funds, as past risk adjusted returns net of fees are predictive of the fund's future risk adjusted returns relative to other funds.

There is also evidence that investors in this market are in general attentive to fund performance and managerial skill as proxied by risk adjusted performance. This is both the case when it comes to investing savings into funds that display higher risk adjusted performance as well as divesting from funds that have performed relatively poorly.

Finally, the average performance of individual pension funds is compared to that of mutual funds domiciled in Spain, a much larger market for delegated asset management. In general, individual pension funds outperform mutual funds, due to their higher risk adjusted returns, however this difference is mitigated by mutual funds taking more risk and subsequently earning higher returns from this risk exposure.

While individual pension funds and mutual funds are similar investment vehicles, it is important to note that from the perspective of the individual investor there are key differences that may cater to different investor clienteles with different preferences. The fiscal advantage of individual pension funds over mutual funds can vary a lot depending on the post-retirement income of a given individual and how often an individual liquidates their funds to finance consumption, to the point that individual pension funds may not be fiscally advantageous to certain investors. Additionally, the liquidity restrictions imposed on individual pension funds may drive away certain investor types. These differences may partly reflect different levels of risk taken by funds in these two sectors as well as their fee structure. These are questions left for future research on this topic.

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