CAMBRIDGE
UNIVERSITY PRESS

ARTICLE

What drives the growth of an open pension fund?

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Abstract

This paper investigates the relationship between growth and quality of pension funds. It measures growth in terms of changes in the number of participants and cash flow transfers and appreciates the quality of the funds through the set of information on past results and costs published in the official prospectuses. The results show that growth rewards the best performing funds in the long term, while annual performance and costs have no relevance. Nevertheless, other factors, such as market power and commercial pressure, appear to be more powerful. The existence of conditions of market power capable of attracting investors beyond the actual quality of pension products is undesirable as it harms future pensioners. These results have implications for the Authority, as mandatory information should be suitable to induce investors to identify the best products and direct individual choices toward the public objective of a more efficient market.

This work aims at investigating the effectiveness of the key information provided in the mandatory prospectuses of open pension funds in steering investors toward high-quality products. In particular, the research question is whether the format of information relating to past performance and costs is suitable for attracting participants and contribution flows toward better quality products.

The relevance of this issue is based on the observation that investors tend to hold onto their initial choice for many years if not forever, even if the originally chosen alternative is no longer the optimal one (Choi *et al.*, 2001; Madrian and Shea, 2001; Choi *et al.*, 2002; Ameriks *et al.*, 2011; Cronqvist *et al.*, 2018). This phenomenon, known as 'inertia' or 'status-quo bias', was first highlighted by Samuelson and Zeckhauser (1988) in their analysis of the pension plan decisions of Harvard employees. Then, Patel *et al.* (1991), Kempf and Ruenzi (2005), and Agarwal and Naik (2004) confirmed this effect in the context of the purchase decision of mutual and hedge funds, while Ameriks and Zeldes (2004) and Agnew *et al.* (2003) reported similar evidences by focusing on the portfolio composition of private investors.

There are very few studies that research whether investors positively react to the performance and costs of pension funds and, as far as we know, the idea of considering the information available in the mandatory prospectus, and thus homogeneously disclosed to all potential investors, is a distinctive feature of our investigation.

The context of the study is the Italian market of open pension funds during the period 2008–2020, in which Italian private pension plans have experienced an exceptional growth driven by various

important regulatory provisions coming into effect. Nevertheless, almost 30 years after the first pension reform, the rate of participation to these plans among the workforce is just equal to 33 percent and a considerable share of adherents (equal to 27%) is inactive (COVIP, 2021).

The uniqueness of these circumstances makes this period the ideal framework for our investigation. In fact, an in-depth understanding of the factors determining the attraction of adherents and contribution flows assumes a particular relevance in those national contexts in which the volumes under management are relatively limited and adequate levels of efficiency have not yet been achieved.

The paper is organized as follows: first, we explain the regulatory framework of the Italian supplementary pension system and the structure of mandatory information; second, we describe the dataset applied for the analysis; third, we present the research hypothesis and the methodology adopted; finally we discuss the main results and conclude.

1. The Italian supplementary pension system

The Italian pension system is based on three pillars. The first pillar is mandatory and publicly managed, while the others are voluntary and privately managed. The second and third pillars offer the same pension benefits and enjoy the same tax advantages provided for by the current national legislation on private pension funds (the Legislative Decree no. 252/2005) but they differ in the rules applied to the adhesion phase.

The second pillar is reserved for workers employed in companies which have signed a collective agreement to join one or more pension funds in the interest of their employees. Joining a collective agreement has two important implications, which constitute the main difference between the second and third pillars. First, the adhesion is restricted to workers who respect specific membership ties which hold investors back from moving to other funds after adhesion. For this reason, these typical pension products are called occupational funds or closed-end funds. Second, after signing a formal agreement, employers have to pay additional contributions to private pension funds in favor of their employees. Employees simply loose these additional contributions if they do not participate to a pension fund endorsed in their firm or move to another pension fund.[1] However, joining the second pillar by employers is voluntary and many Italian companies do not offer any agreement to their employees. This situation concerns most of the Italian small and micro enterprises and implies that millions of Italian workers interested in joining a private pension scheme have the unique possibility of the third pillar.[2]

Participation in third pillar pension funds is not bound by any membership restrictions and investors can switch to another fund at any time, as their investment preferences change and even if the quality of the fund no longer meets their expectations. Moreover, since third pillar's contributions are paid only by employees, members can decide to transfer the accumulated savings without regretting the loss of the employer's contribution, as happens with second pillar investments. It is not a coincidence that third pillar pension funds are called open pension funds.

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[1]Closed-end pension funds have some similarities to American 401(k) plans. The employee who enrolls in an Italian closed pension fund agrees to have a percentage of each paycheck directly paid by the employer into an investment account; another part of the contribution is due payable by the employer. Within each pension fund the employee can choose between different investment options. Occupational pension funds are managed by financial operators using portfolio diversification techniques similar to those of mutual funds. Participation in closed-end pension funds gives investors tax benefits. However, this benefit is not specific to closed pension funds because it is applied for all supplementary pension products.

[2]This problem can be observed by looking at the penetration of employment funds among the groups of workers they are intended for. Those contractual funds dedicated to sectors characterized mainly by large companies show high penetration rates, while those aimed at sectors mainly represented by small or micro companies have very low penetration rates. For example, the first group includes funds such as FONCHIM (chemical sector) and FONDENERGIA (energy sector) which have penetration rates between 80 and 90%, while the second group includes funds such as ARCO (wood and furniture industry), ALIFOND (food industry), and PREVIMODA (textile and footwear sector) with penetration rates lower than 20 percent. Cfr COVIP, 2020.

Since investors' choice is not subject to conditions and implies, at least in theory, an evaluation of market alternatives, open pension funds represent the ideal case study for our investigation.

Individual pension plans (IPPs), which are particular life policies managed through segregated accounts by insurance companies, also fall within the third pillar of the Italian pension system. However, while open pension funds are required to publish annual reporting on members and their movements, allowing the determinants of their growth to be analyzed over time and between funds, insurers are not required to disclose such information for IPPs, making it impossible to extend our analysis to them.

Focusing on the characteristics of open pension funds and their market, it should be remembered that, according to Italian legislation, they can be established and managed by insurance companies, banks, asset management companies and investment companies. However, observing the structure of the market, more than half of them were set up by insurance companies and no investment company appears among the sponsors (COVIP, 2021).

Open pension funds are organized into various sub-funds or investment lines (4.5 on average, COVIP, 2021), characterized by different asset allocation and risk profile. Their configuration in terms of number and characteristics of the sub-funds is chosen by the sponsor and may change over time for organizational reasons of the parent company or following market evolution. For example, over the past decade, more than 30 sub-funds have been merged following corporate finance operations involving the relative sponsors, 70 sub-funds have been terminated and 15 have been created to intercept new demand needs, such as the preference for environmental and socially responsible investments.

Sub-funds need to be classified according to the four investment lines defined by the National Authority (COVIP), which are: guaranteed, fixed return, balanced, and equity. Guaranteed lines offer by law a minimum guaranteed capital preservation return. The other lines do not offer any guarantee and differ in the portion invested in shares, up to 30 percent for fixed return funds, at least 50 percent for equity lines and flexible for balanced.

Investors may independently choose the open pension fund to join and the sub-funds to which their contributions must be allocated, since they can decide to contribute to more than one investment line at the same time. To support their choice they can read the information prospectuses available on the website of each pension fund. In any case, the information prospectus must be delivered by the intermediaries proposing the investment at the time of subscription.

The analysis hereinafter carried out focuses on the period 2008–2020, characterized by an exceptional growth of all pension instruments, driven by the entry into force of two important regulatory interventions: the Legislative Decree 252/2005 and the Law 214/2011, commonly referred to as 'Fornero reform'.[3]

The former increased the tax benefits on private pension investment and reformed the treatment of TFR (Trattamento di Fine Rapporto), which is a component of the salary of Italian employees that the employer has to pay in the event of dismissal or retirement. Starting from July 2007, employees of the private sector have to choose whether to transfer their TFR in a pension plan or to keep it with their employer under the old rules. If they do not express any choice, within a period of six months, the TFR automatically flows into an occupational pension fund following the so-called tacit adhesion, without the possibility of returning to the old rules.

In 2011, the Fornero reform established that the contributory method would be universal for all workers, irrespective of their seniority, from January 2012.[4] This provision, which occurred at a time of widespread concerns about the evolution of the Italian sovereign debt, had a very strong impact on national public opinion and prompted adherence to the second and third pillars.

The above reforms have produced impressive results in terms of members and contributions raised. The number of members of open pension funds has doubled, from 0.7 million in 2008 to 1.59 million in 2020, and the net asset value (NAV) has increased six times, from 4.2 to 25,373 billion euros in the

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[3]The expression derives from the name of the then Minister of Labor and Social Policies, Professor Elsa Fornero.
[4]But it did not change the formula for past accruals.

same period. This circumstance makes this time horizon particularly interesting for the purposes of this analysis.

2. Characteristics of mandatory information

Prospectuses are the official source of information on pension funds in Italy. Following the national regulatory standard, until 2016 the information prospectus was organized into four parts:

- – Section A – Characteristics of the supplementary pension form: purpose, sub-funds, costs, tax regime, membership methods, etc. (approximately 12 pages).
- – Section B – Information on management performance of each sub-fund (3 pages per each sub-fund).
- – Section C – Glossary of technical terms used in the document (2 pages).
- – Section D – Subjects involved in the activity of the supplementary pension product: fund manager, supervisory body, auditor, companies responsible for distribution, etc. (3 pages).

Since 2017, a new section has been included at the top of the prospectus with key information for members. This section dedicates to each sector a summary page of the data already reported in section B. In particular, it includes the following set of information:

- – The graphical representation of medium- and long-term returns (3-, 5-, and 10-year returns) compared to a benchmark chosen by the fund manager and, only for the guaranteed sub-funds to the annual revaluation of TFR.[5]
- – The tabular and graphical representation of costs.

As for the annual returns, these are not published in the opening section and are only available in a graph published in section B (as they have always been).

Beyond the summary of the essential information in the opening section of the prospectus, the main innovation regarding the new format introduced in 2017 concerns the representation of costs.

Until 2016 the synthetic cost indicators (SCIs) were only provided with a table similar to that in Figure 1 (panel A). Starting from 2017, a bar graph like the one represented in Figure 1 (panel B) was added, with which the SCI of the sub-funds are compared with the average cost of the other supplementary pension products belonging to the same investment line.

In Italy, information on pension investment is mainly left to individual initiative. Educational programs that aim to raise public awareness on these issues are not systematic but concentrated in specific moments, for example, after the entry into force of new social security measures. There is also a lack of a national program for school-age youth on this issue.

The National Supervisory Authority (COVIP) dedicates a section of its website to financial education, where videos, questionnaires, tutorials, a cost comparison tool, and an updated list of pension fund returns over different time horizons are available. This section was completely renovated a couple of years ago, improving its usability. Unfortunately, the level of knowledge and use of these information tools among Italian investors is not known.

2.1. Data

The analysis covers the period 2008–2020 and is based on a proprietary dataset of 193 sub-funds belonging to 42 funds (Table 1). Sub-funds are classified according to the four investment lines defined by the National Authority (COVIP): guaranteed, fixed return, balanced, and equity. In more than half of the cases the sponsor is an insurance company, while in the remaining part it is

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[5]Equal to the nominal rate of 1.5 plus 75 percent of Italian inflation in the previous year.

(a)
Fund "XXXXXX" Synthetic Cost Indicator (SCI)

Sub-Funds	Length of stay			
	2 years	5 years	10 years	35 year
Guaranteed XXXXX	1.36%	0.80%	0.70%	0.66%
Fixed-Return XXXXX	1.70%	1.15%	1.05%	1.01%
Balanced XXXXX	2.00%	1.45%	1.35%	1.31%
Equity XXXXX	2.20%	1.65%	1.55%	1.51%

(b)

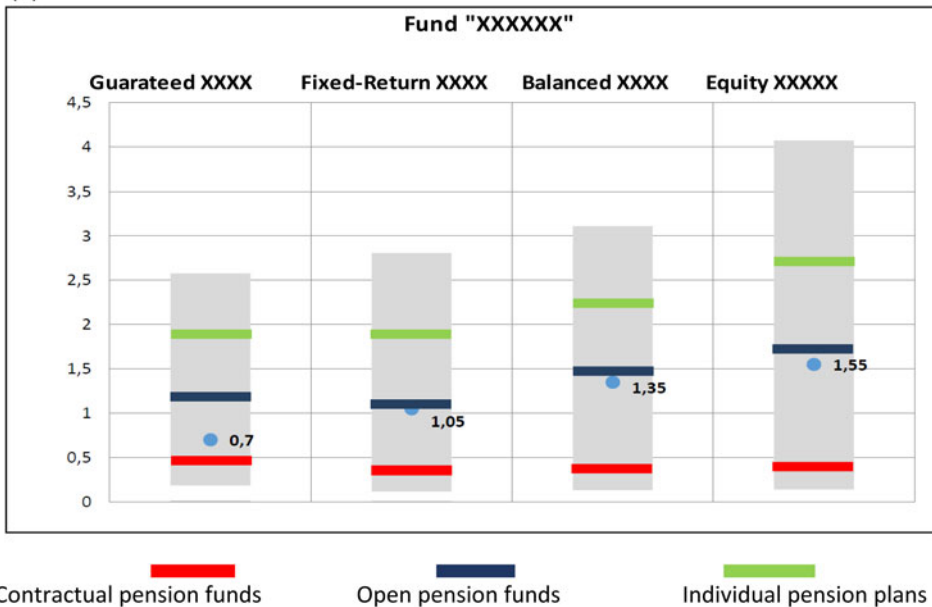**Figure 1.** Example of cost representation in prospectuses before (a) and after (b) 2017.

Table 1. Sample structure

	Description	#
Funds	Number of open-pension funds	42
Sub-funds	Number of sub-funds	193
Terminated sub-funds	Sub-funds terminated during the period of the analysis	70
New sub-funds	Sub-funds founded after 2008	15
Type of investment lines		
Guaranteed	Number of sub-funds offering a nominal investment return of at least 0%	57
Fixed-income	Number of sub-funds with 'fixed income' investment profile	45
Balanced	Number of sub-funds with 'balanced' asset allocation	52
Equity	Number of sub-funds with 'equity' asset allocation	39
Type of sponsor		
Insurance company	Number of funds with insurance companies as sponsors	26
Foreign	Number of funds with foreign players as sponsors	14

mainly an asset management company. A third of the funds are managed by a financial operator belonging to a foreign company.

For each sub-fund we gathered structural information (year of foundation, termination, acquisitions, etc.), data on members and transfer flows, and data on returns and costs. The data were collected from annual reports and investment prospectuses.

In the period under analysis, 70 sub-funds were closed and 15 new ones were established following the reorganization of the parent company's product portfolio. To prevent the transfer of participants and capital caused by these processes from influencing the results of our analysis, closures, foundations, and mergers have been mapped and identified with specific control variables.

The sample corresponds to 85 percent of the reference market in terms of NAV and 83 percent in terms of members (Table 2 – panel A). The test of equality of means carried out on the NAV and the number of adherents confirms the similarity between the sample and the reference market (Table 2 – panel B).

The paper studies the growth of funds by focusing on the attraction of members and capital transfers. The first variable is measured by the annual percentage change in the number of members, while the second by the percentage impact of the annual flow of net transfers on the fund's NAV at the end of the previous year. The Transfer variable includes exclusively the transfer of the capital accrued from an originally chosen sub-fund to another investment line of the same fund or to another supplementary pension product. The capital withdrawn for redemptions and advances are excluded from the calculation because they are due to different reasons from the preference for a specific pension fund or for a particular asset allocation.[6]

As can be observed in Table 3, these two growth indicators present a considerable variability within the sample. In particular, the high minimum and maximum values of their distributions are a consequence of the reorganization process mentioned above.

The growth of the funds is studied with respect to two groups of explanatory variables: the first group is functional to the evaluation of the quality of the funds and refers to performance and cost indicators published in the information prospectus.

The second group refers to structural factors not directly connected to the quality of the financial products.

The quality indicators are the annual and 10-year returns, a dummy that captures whether the manager has exceeded the benchmark in the same time horizon and the SCI, which is a synthetic cost index required by the National Authority, which incorporates both recurring costs and one-off in the event of a 10-year duration of participation in the fund.

The variables indicated in Table 3 as 'structural factors' are: the size of funds (*Size*), the age of sub-funds (*Age*), two dummies for capturing the effect of sub-funds termination (*Termination*) and mergers (*Incorporation*), the price to book value of the sponsor (*PBV*), and two dummies for the type of sponsor (*Foreign* and *Insur*). This set of controls is functional to grasp the possible role of market frictions in attracting investors. In particular, the variable *Size* aims at capturing the role of inertial factors such as the capillarity of the distribution network and long-standing relationships with customers, in consideration of the fact that pension funds require a push-type commercial action to be distributed since it is unlikely that they are directly requested by the average Italian saver.

The *PBV* variable aims at evaluating the market power of the fund sponsor (Tobin, 1969; White, 2012). We identify market power with PBV values greater than one,[7] indicating companies with above average expected profitability. Financial firms for which the market expects higher profitability are likely to attract and retain the most profitable customers typically identified by as 'private' or 'affluent'. In fact, these profitable investors are characterized not only by a high financial capacity, but also by an above-average level of financial education and sensitivity to long-term financial planning issues such as accumulation of private pensions.

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[6]Italian regulation discourages redemptions before retirement, limiting full and partial redemption to specified cases. For total redemption: death, permanent disability with consequent reduction of working capacity to less than a third and unemployment beyond 48 months. For partial redemption: the purchase or renovation of a house for oneself or for children, medical expenses or other reasons not specified within the limit of 30% of the accrued capital.

[7]In using the PBV, we have to exclude three unlisted financial intermediaries from the sample. The PBV value is also missing for two sponsors for three and four years, respectively.

Table 2. Representativeness of the sample – year 2020

	Whole market	Whole sample	Sample coverage
Panel A – sample coverage			
Net asset value (million)	25,373	21,528	85%
Number of adherents (thousand)	1,590	1,326	83%
	Market average (a)	Sample average (b)	Diff = mean (a)–mean (b) *t*-stat
Panel B – test on the equality of means			
Net asset value (million)			
All sub-funds	134.26	185.73	−1.865
Guaranteed	112.64	167.33	−0.959
Fixed-return	37.35	87.68	−2.253*
Balanced	171.45	250.04	−1.415
Equity	141.05	221.95	−1.410
Number of adherents (thousand)			
All sub-funds	10.20	14.30	−1.526
Guaranteed	8.81	13.20	−1.035
Fixed-return	3.77	6.74	−1.484
Balanced	13.03	20.64	−1.180
Equity	9.87	15.19	−1.601

*Significant at 10% level; **significant at 5% level; ***significant at 1% level.

Table 3. Descriptive statistics of dependent and explanatory variables

	Description	Mean	Median	Std Dev.	Min	Max	Obs
Growth indicators							
Δadherents	(#adherentst–#adherentst-1/ #adherentst-1) × 100	9.68	3.22	28.9	−100.00	553.76	1,665
Net transfers	((Transfer_intt–Transfer_outt)/NAVt-1)×100	2.43	0.19	13.7	−27.26	221.84	1,354
Quality indicators							
Annual return	*t*–1 annual return of the fund	3.01	2.57	7.3	−36	26.01	1,956
10y return	Compound return of the fund over the last 10 years	2.72	2.82	1.55	−4.5	8.69	1,299
Outperformer_1y	Equal to 1 if the manager beat the annual return of the benchmark at *t*–1	0.31	0	0.46	0	1	1,888
Outperformer_10y	Equal to 1 if the manager beats the benchmark's compound return over the last 10 years	0.21	0	0.41	0	1	1,268
SCI	Synthetic cost indicator in the hypothesis of conventional participation of 10 years	1.21	1.22	0.41	0.15	2.82	1,854
Market friction proxies							
Size	Natural logarithm of the funds' NAV at *t*–1	18.66	18.68	1.61	13.73	22.13	1,964
Age	Age of the sub-funds	18.82	12	5.17	0	22	1,968
PBV	Sponsor's price to book value at *t*–1	0.82	0.69	0.59	0.10	4.61	1,626
Foreign	Equal to 1 if the pension plan sponsor is in the orbit of a foreign financial group and 0 otherwise	0.28	0	0.43	0	1	1,956
Insur	Equal to 1 if the pension plan sponsor is an insurance company and 0 otherwise	0.46	0	0.50	0	1	1,956
Termination	Equal to 1 in the year before termination	0.05	0	0.21	0	1	1,968
Incorporation	Equal to 1 in the year of the incorporation	0.02	0	0.13	0	1	1,968

3. Research hypotheses

Measuring whether investors are able to support the efficiency of the supplementary pension market by identifying the better quality products is not simple. In this regard, the literature on pension funds offers few contributions and no dominant methodological approach (Lakonishok *et al.*, 1992; Dahlquist and Martinez, 2015, Petraki and Zalewska, 2017).

Based on the similarities between defined contribution pension funds and mutual funds, these works draw inspiration from the broader literature on mutual funds, in which a positive relationship between fund performance and growth emerges, although not linear (Smith, 1978; Capon *et al.*, 1996;

Patel *et al.*, 1991; Ippolito, 1992; Sirri and Tufano, 1998; Agarwal *et al.*, 2009). In particular, Lakonishok *et al.* (1992) and Dahlquist and Martinez (2015) analyze fund quality based on short-term returns. Unlike the mutual fund literature, the authors found that retirement investors do not appear to react to performance. As a result, pension investors are at greater risk of being involved in poorly performing funds than mutual fund investors.

This difference could be explained by the fact that mutual funds and pension funds differ substantially in terms of the purpose and time profile of the investment. In general, retirement investors need long contribution periods to accumulate sufficient capital to maintain the same standard of living after retirement. Furthermore, in some countries, the long duration of the supplementary pension investments is encouraged with specific regulatory limits or tax breaks. This is the case of Italy, where regulatory provisions paternalistically discourage redemption before retirement, limiting full redemption to three specified cases (death, permanent disability with consequent reduction of working capacity to less than a third, and unemployment beyond 48 months) and making partial redemption conditional on remaining in a pension fund for at least eight years. Requesting partial redemption may also result in the loss of part of the tax benefits.

For these reasons, we believe that the evaluation of the quality of pension funds based on short-term returns is not very representative in Italy, as it emerges for the United States and the United Kingdom in the works of Lakonishok *et al.* (1992) and Dahlquist and Martinez (2015).

As explained previously, the Italian prospectuses provide information on medium- and long-term returns, which can be compared in a dedicated section of the Authority's website.

Based on the considerations set out above, it is likely that if Italian investors used the information tool provided by the supervisory authority they would prefer funds with high long-term returns and disregard short-term returns.

We formulate the first hypothesis using the variables *1Y-RETURN* and *10-Y RETURN* to test the relevance of short-term and long-term returns, respectively.

H1 Annual growth rates of pension funds depend on their respective long-term return, rather than by their short-term return

Petraki and Zalewska (2017) and Del Guercio and Tkac (2002), studying pension funds in the UK and US, respectively, follow another common approach in the mutual fund literature that analyzes fund quality in terms of managers' ability to outperform their benchmarks (for instance Ippolito, 1992; Hendricks *et al.*, 1993; Brown *et al.*, 1999; Bollen and Busse, 2004; Babalos *et al.*, 2008; Fortin and Michelson, 2010). Both analyses show no significant relationship with fund growth. As explained by the authors, this result suggests that short-term performance evaluation is not as informative for pension fund adherents as it is for fund investors. However, this could also be due to the lack of financial education of most investors and the difficulty of making comparisons between funds.

Managers of Italian pension funds are required to identify benchmarks against which they must compare the returns of the funds over different time horizons. Benchmark information is published in the official prospectus. However, the large variety of benchmarks adopted makes their use to perform comparisons between different funds complex. Not even the authority's website supports such assessment, as it does not provide a summary of the benchmarks identified by all the funds and the related returns. We therefore believe that even in Italy the current system of benchmarks is ineffective in terms of choosing a pension fund.

We test our second research hypothesis using the dummies *OUTPERFORMER_1Y* and *OUTPERFORMER_10Y*, which take on the value 1 if the manager has beaten the benchmark over a 1- or 10-year horizon, respectively.

H2 The ability of managers to outperform the benchmark does not influence the growth of the funds.

The cost of pension funds is the subject of a thriving line of studies aimed at analyzing the efficiency of pension funds (Bateman and Mitchell, 2004; Sy, 2007; Bikker and De Dreu, 2009;

Bikker, 2017). The relationship between costs and growth is conversely the subject of few contributions, which do not offer clear indications. On the one hand, Kasanen *et al.* (2001) and Acikgoz *et al.* (2015) for the Finnish and Turkish markets, respectively, find no relationship between costs and pension fund growth. On the other hand, the contribution of Qayyum *et al.* (2023), based on the evidence deriving from the questionnaires distributed to managers of Egyptian funds, highlights a positive impact exerted by operational efficiency on the growth of pension funds.

In Italy, cost information is published in prospectuses and compared on the authority's website, so, at least from a theoretical point of view, it could be used by investors in their decision-making process. Since June 2017, the introduction in the prospectus of a bar graph in which the cost of the fund is compared with the average cost of the other private pension products (occupational pension funds, open pension funds, and IPPs) has further facilitated the use of this indicator.

Since the level of costs affects the final capital accrued, investors should be sensitive to the cost of funds and, within the same investment profile, should prefer the least expensive ones.

We test this hypothesis with the 10-year SCI which incorporates both recurring and one-off fees in the hypothesis of 10-year participation in the fund.

H3 The cost negatively affects the growth of the funds.

3.1. Methodology and results

The paper analyzes the growth of Italian open-end pension funds by running a series of panel regressions. The panel base is unbalanced because 15 sub-funds were founded after 2008 and 70 closed before 2020. The period under analysis was in fact characterized by a profound reorganization of the product portfolio of many financial parent companies, which led to a significant reduction of the number of funds offered.

The analysis conceptualizes the growth of the fund according to the following function:

$$growth\ indicators_{jt} = F(quality\_indicators_{jt},\ structural\ factor_{jt},\ controls) \tag{1}$$

where:

i stands for sub-funds; t stands for years; *growth indicators* is a vector containing the dependent variables *ΔParticipants* and *Net Transfers*; *quality indicators* is a vector containing the variables *1-y_Return, 10-y_Return, Outperformer_1y, Outperformer_10y*, and *SCI*; *structural factors* is a vector containing the variables *size, age, termination, incorporation, pbv* and the dummies *Insur* and *Foreign*.

We then add controls by including a variable for the lagged change of the number of adherents (LAGGED_ΔPARTICIPANTS) and four dummies for the investment lines in which the funds are classified (GUARANTEED, FIXED RETURN, BALANCED, EQUITY). Furthermore, time controls are carried out.

We use a separate equation to evaluate the influence of annual and 10-year performance because many sub-funds had not yet reached 10-year duration in 2008, so short-term performance is evaluated on the entire sample while long-term performance is evaluated on a restricted database.

The results of the regressions with ΔPARTICIPANTS as the dependent variable are presented in Table 4, in section (a) regarding annual performances and in section (b) for long-term ones.

As can be observed, short-term returns are not significant, while long-term returns positively affect the growth of participants. The results on short-term returns confirm the evidence of previous research works focused on data from the United Kingdom and the United States (Lakonishok *et al.*, 1992; Dahlquist and Martinez, 2015).

The result obtained on long-term returns provides a further contribution to the pension fund literature since, to the best of our knowledge, long-term returns are being tested for the first time.

Both short-term and long-term returns are key data in the Italian pension fund prospectus and the comparison between funds can be easily made using the information tool provided by the National

Table 4. The determinants of membership growth

	(a)				(b)			
1y_Return	−0.016	0.016	0.043	−0.031				
	0.128	0.135	0.154	0.154				
Outperformer_1y	−0.834	0.681	−0.917	−0.357				
	1.569	1.637	1.83	1.823				
10y_Return					1.402***	1.193***	0.830*	0.824*
					0.451	0.437	0.453	0.455
Outperformer_10y					−2.838*	−2.622*	−1.296	−1.21
					1.654	1.486	1.616	1.616
SCI	−2.244	0.424	0.87	0.611	−1.959	−1.044	−1.245	−0.794
	2.419	2.456	2.753	2.786	2.134	1.786	2.013	2.061
Size		2.577***	2.548***	3.452***		2.874***	2.624***	3.326***
		0.666	0.735	0.854		0.489	0.571	0.708
PBV		7.938***	7.793***	12.582***		3.341***	3.162**	3.36
		1.539	1.797	2.229		1.265	1.465	2.099
Insur		0.965	0.834	1.328		5.369***	4.186***	4.425***
		1.828	2.046	2.052		1.375	1.54	1.548
Foreign		5.134***	4.721**	5.083**		4.329***	4.498***	4.740***
		1.792	2.007	2.017		1.261	1.455	1.463
Age		−1.180***	−0.833***	−1.023***		−0.049	−0.003	−0.05
		0.233	0.237	0.242		0.35	0.311	0.313
Termination		−9.122*	−7.072	−7.821		−8.942**	−6.624*	−6.818*
		4.71	4.886	4.859		3.54	3.584	3.599
Incorporation		92.384***	92.393***	91.566***		73.953***	74.850***	74.572***
		4.994	5.144	5.118		4.25	4.264	4.267
Lagged_ΔParticipants			0.066***	0.063***			0.028	0.027
			0.023	0.022			0.031	0.031
New_format			−2.812	49.633**			−3.616**	26.698
			2.253	25.028			1.802	18.186
Size*new_format				−2.195*				−1.548*
				1.279				0.93
PBV*new_format				−11.123***				−0.158
				3.118				2.655
Cons	4.995	−36.846**	−39.693***	−58.300***	0.91	−59.279***	−48.725***	−62.193***
	4.406	14.356	13.947	16.176	3.919	11.699	11.048	13.669
Sub-sample control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-control	Yes	Yes	No	No	Yes	Yes	No	No
Rho	0.07	0.03	0.04	0.05	0.14	0.004	0.04	0.04
Prob>χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1,564	1,278	1,120	1,120	1,038	844	795	795

Estimation results are obtained using panel regressions with random effects. The dependent variable is ΔParticipants. Section (a) shows the results of the regressions run on the entire sample. Section (b) shows the results of the regressions carried out on the sub-funds with 10 years duration minimum. The independent variables are described in Table 3. Standard errors are reported in small print below the coefficients. *Significant at 10% level; **significant at 5% level; ***significant at 1% level.

Authority on its website. The fact that only long-term returns appear to significantly influence participant variation could hide two different situations:

(a) that investors use the information tools provided by the Authority and rationally focus on long-term returns;
(b) that long-term returns are used as a competitive lever by sales forces of the best performing funds to offer their products.

Although these two interpretations are not mutually exclusive, various considerations lead us to conclude that Italian investors' choices are strongly influenced by proactive commercial actions undertaken by the fund sponsors, rather than being based on the autonomous search for information.

First of all, the periodic surveys on financial literacy conducted by the OECD place Italy at the bottom in the international distribution.

Second, the pension reforms of 2005 and 2011 opened market opportunities that were seized by financial intermediaries through commercial campaigns characterized by aggressive budgets and economic incentives for the sales network. This means that, when many customers received the offer of a supplementary pension product, the information provided by their trusted intermediary was often the first source of information on pension investment to reach them.

Other results of our analysis also seem to support the idea that the choice of pension fund is mainly determined by distribution policies.

The attraction of adherents, in fact, is not influenced by the other key quality indicators published in the pension fund prospectus, which are the ability of managers to outperform the benchmark (in the short and long term) and the cost of the funds.

Although it is not known whether the result on manager quality is due to the limited informative value of the current evaluation system based on benchmarks or to the objective difficulty in using such information in the decision-making process, two crucial aspects must be underlined. First, the information on benchmarks is published in the prospectus but is not reported on the national Authority's website, making comparisons between funds objectively difficult. Second, since financial managers are well aware that they will not be able to outperform the benchmark on a regular basis, it may be reasonable for them not to focus on this information when selling their funds.

From a regulatory point of view, our results suggest the opportunity to reconsider the structure of public information on benchmarks. If the Authority believes that the current benchmark system is an effective tool for evaluating the performance of pension funds, then it should facilitate the comparison of data as already happens for absolute returns. Instead, if it finds that the current model is not effective, it should propose a different approach. For example, Petraki and Zalewska (2017) suggest comparing the performance of pension funds to the performance of short-term Treasury securities, which are less volatile than stocks and even bonds, and may be more informative for better understanding retirement benefits that an investor can hope to have upon retirement.

The cost of pension funds, represented by the 10-year SCI, is not significant in any regression although, as can be seen in Figure 2,[8] the level of SCI shows significant variation not only between investment lines but also within the lines. The irrelevance of costs in this financial decision is not trivial because pension investments have a long duration and costs significantly affect the final benefit (Bikker and de Dreu, 2009; Dyck and Pomorski, 2015; Alserda *et al.*, 2017).

Although the National Authority offers the possibility to compare the costs of pension funds on its website, our results suggest that the use of this tool is not widespread.

Various surveys conducted on a national scale (CONSOB, 2021) show that the main interlocutor of Italian savers for every financial decision is the neighborhood bank or the 'family' bank with which

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[8]As an example, we have shown in Figure 2 the distribution of costs by investment line in 2020. This representation is similar for all years. We focused on a specific year, taking the perspective of the investor who evaluates membership by looking at the costs published in that specific year.
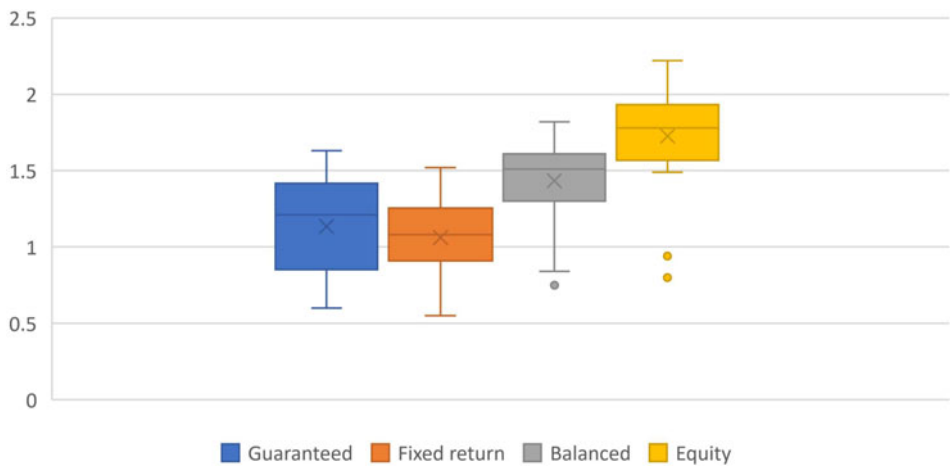
Figure 2. Synthetic cost index per investment line (2020).

they have had relationships for many years if not for generations. Using the 'family' bank means that Italian savers base their investment decisions on a much narrower range of alternatives than the investment options offered by the market. This evidence is not in itself negative because it is the basis of the relationship of trust between bank and customer. However, it may not be optimal in the field of supplementary pension investments, given the long duration of such investments and the limited ability of members to reconsider their choice over time, as will be explained later by analyzing the results for the dependent variable on transfer flows.

Unlike what was found on the quality indicators, four of the variables on the structural or inertial factors are significant in both the full and restricted samples: SIZE, PBV, FOREIGN, and INCORPORATION. They all show a positive sign indicating a positive influence on the change in adherents. While the effect of the INCORPORATION dummy is obvious, the influence of the other three variables is more interesting because it shows that aspects linked to the structure of the retail market and the competitive strength of the sponsor affect the choice that the investor makes more than the characteristics of the financial product.

These results are consistent with the literature on mutual funds which states the importance of the size of funds and the media attention they receive (Sirri and Tufano, 1998; Gil-Bazo and Ruiz-Verdù, 2009).

Foreign players show greater ability to attract participants than domestic ones. This result could be due to their experience in offering supplementary pension products gained in more mature markets. But it is also possible that they use pension products as a spearhead to penetrate the Italian market by defining more aggressive commercial targets. The Italian supplementary pension market offers, in fact, ample room for development, if we consider that, in 2020, the participation rate stood at only 33 percent of the workforce (COVIP, 2021).

Since starting from June 2017 the representation of costs in prospectuses is changed (with the addition of a comparative bar graph that indicates the positioning of a fund compared to the average cost of other types of private pension products), we add the 'NEW-FORMAT' dummy[9] to test for possible influences on adherents variation. To this end we calculate a set of interaction variables, by multiplying the NEW-FORMAT dummy with the variables: 1y-return, 10y-return, SCI, Size, and PBV. Only the interaction terms with Size and PBV were significant, although the one with PBV only on the entire sample. Since they all have a negative sign, it means that the positive influence exerted by these factors has reduced in intensity over the last four years. Naturally, it cannot be said that this effect is the direct

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[9]Equal to one starting from 2017 and zero otherwise.

consequence of the new format of prospectuses; however, it offers a signal of reduction in the attractive force of inertial factors. It also suggests that pension investment decision-making would need thorough investigation.

Table 5 shows the result of the regressions with Transfer as the dependent variable. Also for transfer flows, the results on the short-term performance evaluation variables are not significant. Focusing on long-term performance, the ability to outperform the benchmark is significant while the absolute return is not. The negative sign of the dummy 10y-outperformer suggests that this information is used to decide when to exit the investment.[10] However, in a scenario where investors with low financial education risk are being dragged by sponsors' distribution policies, the fact that they independently redefine their pension investments on the basis of the out-performance of the fund is not convincing. In contrast, the result for the 10-year dummy may be influenced by the life-cycle investment policies implemented by managers for wealthy clients.

The idea of the lack of periodic reconsideration of the choice by investors is also supported by the irrelevance of the SCI variable in all the regressions carried out. Aside from INCORPORATION, the variables that positively influence the attraction of transfer flows are the size of the fund and the fact of having a foreign parent company. Therefore, even to explain transfer flows, market frictions prevail over product characteristics.

We believe that the results of this work should attract the attention of the Supervisory Authority, because the fact that the information in the prospectuses appears almost irrelevant for the purposes of choosing the fund raises doubts as regards the usefulness of such documents. Since many human and financial resources are used to write, validate, update, and distribute prospectuses, we believe that the final outcome of this work should be usable and useful even by non-experts.

Some other indications can be drawn from the results of this analysis:

- prospectuses should direct investors' attention to issues relevant to a pension investment, which are not necessarily the same provided for mutual funds;
- the current system of benchmarks chosen by managers shows limited effectiveness;
- prospectuses should provide informative tools for positioning pension funds relative to similar products from other operators;
- the impact of costs on the final benefit should be the subject of a specific information campaign to raise investor awareness on this aspect.

In our opinion, the inclusion in prospectuses of a comparative cost table starting from 2017 goes in the right direction. The same graph should be made available to investors not only at the time of subscription but every year.

Of course there will always be a share of investors who will completely forego any individual assessment, but with more effective official information it is likely that a greater number of investors would be able to make an informed decision.

Greater comparability would also be desirable from a systemic perspective, as it would highlight inefficient fund managers and could reduce the strength of the inertial factors from which they gain undue competitive advantages. In fact, despite the notable simplification of the offer of open pension funds achieved in the 2008–2020 period, many funds continue to suffer from the lack of economies of scale (COVIP, 2021).

Therefore, without deluding ourselves that a change to the mandatory disclosure could generate a subversion of the current situation, we believe that there is room for improvement. Institutional communication plan aimed at filling some specific knowledge gaps could also increase the level of investor awareness. The main point, in our opinion, is therefore to draw investors' attention to specific

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[10]The Transfer variable includes exclusively the transfer of the capital accrued from the originally chosen sub-fund to another investment line of the same fund or to another supplementary pension product.

Table 5. The determinants of the attraction of transfer flows

	(a)				(b)			
1y_Return	−0.093	−0.059	−0.061	−0.067				
	0.067	0.072	0.051	0.051				
Outperformer_1y	1.125	1.398	1.24	1.356				
	0.798	0.85	0.834	0.833				
10y_Return					0.25	0.209	0.085	0.048
					0.217	0.244	0.232	0.232
Outperformer_10y					−1.426*	−1.975**	−1.541*	−1.640*
					0.795	0.885	0.87	0.869
SCI	−0.185	0.599	0.485	0.439	−1.809	−0.89	−0.616	−0.988
	1.109	1.205	1.245	1.264	1.107	1.275	1.25	1.259
Size		0.895***	0.798**	1.075***		0.894**	0.800**	0.626
		0.33	0.328	0.387		0.367	0.355	0.428
PBV		2.663***	2.628***	3.680***		1.064	0.522	1.382
		0.724	0.709	0.81		0.843	0.778	0.908
Insur		−0.032	−0.42	−0.142		0.556	0.101	0.241
		0.920	0.935	0.941		0.995	0.965	0.971
Foreign		2.775***	2.746***	2.777***		2.595***	2.516***	2.349**
		0.892	0.922	0.93		0.964	0.946	0.947
Age		−0.455***	−0.537***	−0.597***		−0.188	−0.458***	−0.455***
		0.115	0.107	0.11		0.233	0.165	0.166
Termination		−2.347	−1.875	−1.946		−0.263	−1.033	−1.23
		2.205	2.15	2.142		1.831	1.777	1.777
Incorporation		48.011***	47.216***	46.830***		27.532***	27.563***	27.484***
		2.897	2.881	2.876		2.295	2.263	2.267
New_format			0.521	14.362			1.612*	−6.41
			1.007	11.118			0.929	9.281
*Size*new_format*				−0.547				0.501
				0.569				0.473
*PBV*new_format*				−3.435***				−2.064*
				1.241				1.12
Cons	2.344	−11.486	−9.094	−14.646**	2.681	−13.524	−7.104	−4.023
	2.018	7.107	6.202	7.277	1.94	8.55	6.776	8.156
Sub-sample control	yes	yes	yes	yes	yes	yes	yes	yes
Time-control	yes	yes	no	no	yes	yes	no	no
Rho	0.05	0.05	0.06	0.06	0.24	0.21	0.19	0.18
Prob>χ^2	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000
Observations	1,258	996	996	996	881	703	703	703

Estimation results are obtained using panel regressions with random effects. The dependent variable is Transfer. Section (a) shows the results of the regressions run on the entire sample. Section (b) shows the results of the regressions carried out on the sub-funds with 10 years duration minimum. The independent variables are described in Table 3. Standard errors are reported in small print below the coefficients.
*Significant at 10% level; **significant at 5% level; ***significant at 1% level.

indicators over others, encouraging decisions that are more consistent with individual needs and with the collective interest in the efficiency of the system.

5. Conclusions

The article questions the effectiveness of the official information available for choosing the pension fund to contribute to. The quality of pension funds was appreciated based on a set of key indicators present in the information prospectuses. Investor preferences are assessed in terms of changes in the number of members and net transfer flows (excluding redemptions and advances).

To the best of our knowledge, no previous work focuses on the effectiveness of mandatory key information.

Our results lead us to conclude that the key information contained in the prospectuses does not reward/penalize the best/worst managers in a significant and generalized way, neither through the attraction of new participants nor through capital transfers. Only high long-term performances

seem to reward funds, but exclusively in terms of attracted members. In any case, other factors linked to the size of the funds, the market power of the sponsor and the commercial pressure exerted on the sales networks have a greater weight.

These results have implications for the national authority because, in the well-known trade-off between abundance and clarity of information, it would be desirable for the information provided to be able to orient individual behavior toward the collective objective of a more effective and efficient market, but information in prospectuses appear almost irrelevant for the purposes of choosing a pension fund. This issue is important because the supplementary pension market performs a function of general interest and, given the long duration of this investment and the limited ability of members to reconsider their choice over time, the dominance of market power could damage investors that have unknowingly chosen under-performing solutions or overly expensive products.

Drawing inspiration from the experiments conducted by Schwartz (2004) in various decision-making areas, including pension investments, it is noted that the presence of a wide range of similar investment alternatives can represent a factor that inhibits the ability to choose rather than facilitate it. The Italian market of open pension funds, despite having undergone considerable simplification in the period under analysis, still offers a very wide range of similar products, amounting to 42 funds and 193 investment lines.

The lessons learned from behavioral finance by Mitchell and Utkus (2003) teach us that prospectus design has a profound effect on investor choices and that policy makers can radically change behavior by choosing different default structures. Considering the expenditure of human and financial resources for the drafting, validation, and distribution of mandatory statements, we believe that the information provided should be more useful and usable by non-experts.

In particular, we believe that a priority aspect is to facilitate the comparison between different pension products. In this regard, the current model based on benchmarks chosen by financial managers is not very effective for both managers and investors and should be reconsidered. One possibility is to propose a common indicator for all funds (or a series of indicators for each investment line). Another approach, already pursued by the Italian Authority to improve cost comparison, could be to offer competitive benchmarks based on the performance of all the supplementary products competing in the same investment line.

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