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Abstract

We present and test experimentally a low-cost, Internet-based, literacy intervention program that we designed for implementation with the largest employer-based pension fund in Italy. The Finlife (Financial Education and Planning for a Long Life) program, included: 1) an online instructional video on financial, and demographic, literacy; 2) an experimental design that explicitly allowed evaluating the impact of the online content on financial and demographic literacy, as well as on short-term behavioral changes; 3) a follow-up that allowed assessing the subsequent choice of investment lines within the pension fund. Finlife was designed to be low-cost and scalable approach to increase financial and demographic literacy, consistently with a 'nudge' philosophy. We show that Finlife delivered a substantially and statistically significant increase in financial and demographic literacy, as well as a push towards seeking more information on financial markets and choices related to financial planning, and becoming more active in financial decisions.

JEL Classification: D91

Keywords: Pensions, Financial literacy, Demographic literacy, Field experiment, Finlife, Online financial education

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Online financial and demographic education for workers: experimental evidence from an Italian Pension Fund

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1. Introduction

This paper presents a low-cost, Internet-based, literacy intervention program, designed for implementation with the largest industrial pension fund in Italy. The effects of the program are tested test via an experimental design including a follow-up to measure the effect on observable choices.

Education is of crucial importance for our understanding of the world and the shaping of society, and it includes numeracy and knowledge about the functioning of the world. The opportunity of living longer as a consequence of the demographic transition increases the returns to education (Lee, 2003). At the individual and household level, longer lives bring the added challenge of having to plan for a longer term. At the aggregate level, population ageing – also a consequence of the demographic transition – with an increasing share of older individuals within the population, amplifies the economic consequences of planning decisions and the need for retirement planning. Moreover, there is a trend toward an increase in allowing for bigger personal financial responsibility, within the context of "increasingly complicated financial products" (Hastings et al., 2013, p. 249).

For all these reasons, financial literacy and demographic literacy are fundamental skills in preventing adverse financial, health, and social outcomes in later life for individuals and households, and allow to improve the ability of societies and economies to respond to the challenges of population ageing.[1] Improving financial literacy and demographic literacy should therefore be seen as a desirable and socially beneficial goal (Atkinson and Messy, 2012; Hastings et al., 2013; Lusardi and Mitchell, 2014). With the global population ageing as a megatrend, these two literacies are central in shaping the opportunity to secure retirement.

The goal of achieving greater and widespread financial, and demographic, literacy faces however major challenges.

First, while it is feasible, and highly desirable, to embed these elements of literacy within the mainstream education system and therefore target children and youth, there is a clear need to reach adults as well, efficiently and effectively, as soon as possible. Indeed, the effects of longer lives on economies and societies are already visible in many advanced societies, and for the majority of the workforce, formal education has been completed.

Second, in the provision of literacy programs cost efficiency matters (Ghafoori et al., 2021). More specifically, when targeting adults in order to improve their literacy, sending a large

[1] By analogy to the standard definition of financial literacy, i.e. the "ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions" (Lusardi and Mitchell, 2014, p. 6), demographic literacy can be defined as the awareness of the need to plan for the long term given the chances of living a long life (Pesando et al., 2021) .

share of the working-age population back to traditional education is not a scalable option. It is therefore paramount to find feasible, as well as relatively low-cost and therefore scalable, strategies to improve the financial and demographic literacy of working-age adults. In our contribution, we will explicitly address these two challenges.

1.1 Placing the paper in the Relevant Literature

The literature generally agrees on the desirable outcomes brought by financial literacy, as shown by reviews (Goyal and Kumar, 2021; Hastings et al., 2013; Lusardi and Mitchell, 2011). Yet, the vast majority of available studies is based on observational designs, and it can therefore only provide correlational evidence on the links between financial literacy and outcomes.

If we focus on working-age adults, individuals who are more financially literate are more likely to be planning for retirement (Lusardi and Mitchell, 2007). Guiso and Jappelli (2009) show that higher financial literacy is associated with a greater propensity to diversify one's portfolio. Von Gaudecker (2015) documents that lower financial literacy is related to higher return loss through lower portfolio diversification, and this holds independently on the sources of financial advice. Anderson, Baker, and Robinson (2017) show that even among the generally high-educated population using LinkedIn, average financial literacy is low, with important effects of misperceptions on financial products. Van Rooij, Lusardi, and Alessie (2011) show that financial literacy is linked to wealth accumulation through two documented channels: first, an increase in the likelihood of participating in the stock market, and second, through fostering planning behavior. The linkage between financial literacy and investment in higher-return risky assets is documented also by Calcagno and Monticone (2015), who moreover show that financial advice may not be sufficient to counteract the potential consequences of low financial literacy.

To improve the financial literacy of adults, several programmes have been proposed; traditional programs focussed on the workplace, while there is an up-and-coming literature on online interventions to nudge and guide the choices of individual investors, which is broadly defined as *robo-advising* (See D'Acunto and Rossi(2021) and D'Acunto and Rossi(2022).

In an early study, Bernheim and Garrett (2003) show, using a household survey, that the provision of employer-based financial education is associated with a higher propensity to save, both in general and for retirement. Some programmes have been focused on in-person seminars, documenting associations between seminar participation and desirable outcomes. Bayer, Bernheim, and Scholz (2009) show that the supply of retirement seminars is more strongly associated with participation in savings plans than the provision of written material, and this relationship is stronger for lower-income employees. Participation in retirement seminars has heterogeneous effects, for instance, stronger for women who start from lower levels of literacy (Clark et al., 2006). For what concerns age, Gamble and coauthors (Gamble et al., 2015) provide

indirect evidence for the relevance of financial education for older adults by examining the effect of aging on financial decision-making, and financial literacy declines linearly after age 60 (Finke et al., 2017). They find that a decrease in cognition is associated with a decrease in financial literacy. Interestingly, a decrease in cognition also predicts a drop in self-confidence in general, but it is not associated with a drop in confidence in managing one's finances.

While correlational evidence on the role of retirement seminars is cumulating, designs that allow for the causal identification of effects have been rare (Allen et al., 2016; Clark et al., 2017) before the development of the literature on robo-advising.

Robo-advising deals with any form of advice delivered in an automated format and online through the internet, desktop computer, or personal devices.

This paper contributes to that literature in terms of assessing how the use of online delivery of financial literacy content (rather than physical delivery in person) affects skills and choices. Interestingly, our evidence differs from Chak et al., 2022, who do not find sizable effects of providing individual decision-makers with financial education tips about their planning and choices. Robo-advising relates to this paper also in its effort to provide forms of nudges for individual decision-making that do not require individuals to understand potentially complicated financial literacy concepts (see, for example, Gargano and Rossi (2022) on the role of goal setting in individual saving decisions).

A handful of programs have led to experimental, or quasi-experimental evaluation. Relatively small-scale experiments show that interventions to improve financial literacy or provide better information lead to better retirement planning in university settings (Duflo and Saez, 2003; Goda et al., 2014), or for very low income families (Collins, 2013). A closely related paper to ours is the one by Ghafoori, Ip, and Kabátek (2021), who use a large-scale program administered by the largest Australian superannuation pension fund. The fund provides 90-minute retirement physical seminars, which are free of charge, available all over the major cities of the country, and aimed at pre-retiree fund members aged 53 and above. Using an identification strategy that relies on the differential timing of seminar invitations, the authors find that attending retirement seminars generates, over the course of two years, excess voluntary contributions of about 6% of the total value of the fund, with seminar attendees also displaying more sophisticated portfolio strategies.

Our paper provides a contribution that is complementary to Ghafoori et al. (2021) by analysing the effects of (a) online rather than physical seminars (b) which are aimed at an audience with a wider age range, and includes the young. Our results contribute to support their conclusion that even cost-efficient interventions can result in statistically significant effects on behaviours.

Some empirical evidence led a number of scholars to be sceptical about the importance of increasing the financial literacy of adults. In a meta-analysis on the effect of financial literacy and financial education on behaviors, Fernandes et al. (2014), find that only a tiny proportion of the variance of financial behaviors can be improved by interventions, with a weaker effect for lower-income samples. Financial education tends to decay over time, and, according to Fernandes and colleagues, correlational studies tend to exaggerate the relevance of financial education. We here agree with Meier and Sprenger who, in order to address this scepticism, and to evaluate the effects of educational interventions, suggest that it is essential to start from experimental designs, as voluntary participation in financial literacy programs is selective (Meier and Sprenger, 2013).

Differently from the case of financial literacy, the evidence on what we have defined as demographic literacy and its effects is so far limited. Scholars have focused on subjective perceptions of survival (Hurd, 2009). In the U.S., and among the older population, these perceptions are deemed generally consistent with population-level information (Hurd and McGarry, 2002). Analyses of European data indicate that individuals are "to some extent aware of longevity risk" (Post and Hanewald, 2013, p. 201).

However, there is no evidence so far on demographic literacy programs, nor on whether combining financial literacy with demographic literacy boosts the effects of financial literacy programs.

1.2 Our Contribution

In what follows we present and evaluate a low-cost, Internet-based, financial and demographic literacy program, *Finlife*, which we designed for implementation with the largest employer-based pension fund in Italy, with more than 400,000 members.

Our approach was based on 1) an online seminar on financial and demographic literacy; 2) an experimental design that explicitly allows evaluating the impact of the online seminar on financial and demographic literacy, as well as on (short-term) behavioral changes; 3) a follow-up that allows assessing the subsequent choice of investment lines within the pension fund. As a preview of our findings, *Finlife* delivered a substantially and statistically significant increase in financial and demographic literacy, as well as a push in behaviors involving greater attention to financial markets and choices related to financial planning, and a greater probability of changing one's investment line.

Our experiment, therefore, shows that nudging financial and demographic literacy through Internet-based programmes is an option.

This study contributes to the existing literature in multiple ways. First, it presents and evaluates an Internet-based programme, rather than physical seminars, focused on adult

employees. While the program was implemented before the "great acceleration" of digitalization during the Covid-19 pandemic (Amankwah-Amoah et al., 2021), for both cost and accessibility reasons the provision of online literacy programmes can provide a key solution, in particular, to reach the adult population. Second, it shows the causal impact of a programme on a specific set, Italy.

In terms of global position, Italy is one of the "trendsetting" countries, given its role at the top of population aging together with Japan. The specificity in Italian demographic developments has also significantly contributed to triggering pension reforms since the 1990s and the push towards establishing a second pillar of employer-based funds (Börsch-Supan, 2005; Franco and Tommasino, 2020). Third, our program allows us to study heterogeneous effects, in particular by age. Testing the impact of an educational treatment on individuals with a wide range of ages is also relevant given the importance that enhancing financial literacy in early years can have over an individual's life cycle and specifically on final retirement balances (Lührmann et al., 2015, Ghafoori et al., 2021).

Finally, our approach also brings demographic literacy as a central piece in the discussion on long-term planning, which has mostly focused so far on financial literacy. Demographic literacy might contribute to a more effective financial literacy program as it allows to build on issues that are by definition immediately more visible to each individual.

The remainder of this paper is structured as follows. In Section 2 we introduce our strategy and the setting of our study. In Section 3 we illustrate our program, Finlife, and our experimental design strategy. Results from the treatment in terms of financial literacy, attitudes and self-reported behavior are presented in Section 4, while Section 5 reports the impact on actual behaviors (more precisely, a change of the investment line of the pension fund). Section 6 summarizes and concludes.

2. Setting

Our study and experiment are set in Italy, a leading country in terms of population ageing. According to the most recently available estimates by the United Nations Population Division, with 23.3% of the population aged 65 and over (45.7% aged 50+, and 7.5% aged 80+) in 2020, Italy is following only Japan, and preceding Germany, in the extent of population ageing. In terms of individual ageing prospects, Italy is in the top ten for life expectancy at birth (83.3 years for 2015-20) and at age 65 (21.1 years).

Experts and policy-makers have been aware of Italy's demographic developments for some decades, and this led to a number of pension reforms starting in 1992 (see the review by Franco and Tomassino, 2020). These reforms pushed for a postponement of the age at retirement and a

move towards a notional defined contribution (NDC) system while retaining a pay-as-you-go (PAYG) funding of the public system. A substantial decrease in expected replacement rates as a consequence of these reforms (Oggero, 2022) also allowed for building supplementary funded pension schemes, in a multi-pillar perspective. In addition to the first, public PAYG pillar, the second pillar was built with the development of so-called "closed" pension funds (CPF), "established as non-profit institutions by trade unions and employer representatives via collective agreements, thus according to the social partners' participatory rights" (Jessoula, 2018). The growth of the second pillar has been massive (Franco and Tommasino, 2020), also thanks to the possibility to contribute reserved parts of workers' remuneration (Gallo et al., 2018).

Pension adequacy, also in Italy, requires adequate planning among adults. How is it possible to effectively and efficiently reach higher desirable levels of financial, and demographic, literacy, for the adult population? As we already argued in the introduction, while there is evidence of the effect of specific education programs on behavioral outcomes, this is not yet conclusive (Collins and O'Rourke, 2010; Fernandes et al., 2014).

Our approach builds on earlier results on programs targeted on adults. Bernheim and Garrett (2003), as well as Lusardi (2004), showed that employees exposed to employer-based retirement seminars have larger average savings. However, Duflo and Saez (2003) found opposite evidence. Willis (2008) raised a critical and provocative voice, putting forward three arguments *against* financial education: 1) self-selection into program participation; 2) the lack of focus on behavioral responses in assessments of financial education; 3) the risk that financial education increases confidence to a too great extent, leading to the risk of bad decisions influenced by overconfidence. These critiques are important in informing our approach.

We also build on the behavioral economics' "nudge" approach (Thaler and Sunstein, 2008), in aiming to build a strategy that is relatively low-cost and yet effective, therefore maximizing efficiency. The low-cost approach is important, both in financial terms (as public finance is tight and employers are unlikely to invest huge amounts in financial education), and in terms of fast and large-scale deployability. Indeed, the Internet provides technological platforms that are efficient in terms of scalability.

More specifically, we developed and ran an experiment on workers enrolled with the "Cometa" pension fund in Italy. Cometa is a defined-contribution "closed" employer-based pension fund, i.e. at the level of industry, in particular devoted to workers of the engineering and plant installation sector. It was established as a second-pillar fund in 1997 after a collective agreement among employers' federations and trade unions, and it was later extended to the sector of goldsmiths (who represented however less than 0.4% of members at the end of 2014, and were

excluded from our experiment). Members include factory workers and mostly lower-level clerks/office workers ("impiegati"), while higher-level managers and executives have historically been offered membership in different pension funds. Like most closed funds in Italy, Cometa does not manage funds directly but delegates investment choices to selected professional investment bodies (banks, insurance companies, and/or asset management companies). Since 2005, Cometa has set up multiple investment lines, each with different risk-return profiles, and each member of the fund can freely choose the line to invest funds in. Importantly, the fund member has also the option to change the investment line subsequently.

Our target population is therefore directly involved in actual decision-making about investment lines, at any point in time. At the end of 2014, before *Finlife* started, there were four investment lines, featuring different risk-return profiles, named Money Market Plus, Safety, Income, and Growth. The basic features of the four investments lines are described in Table 1.

[TABLE 1 ABOUT HERE]

In 2014, Cometa accounted for more than 21% of the population of all members of Italian closed pension funds, and it was the largest closed pension fund in Italy[2]. In 2014, the overwhelming majority of Cometa members were enrolled in two investment lines, Income and Money Market Plus (which remarkably was the safest line mostly investing in short term bonds).

This situation was partly due to the fact that Income included many workers enrolled before 2005, when there was only one investment line with a very similar profile. Then, since 2005 Money Market Plus has been the default investment line, i.e. the line to which new members were attributed in absence of an explicit choice. Data are in line with the literature both in the "nudge" tradition and in retirement savings that shows an inertial tendency to stick with default options (Benartzi and Thaler, 2007; Beshears et al., 2009; Brown et al., 2016; Choi, 2015). For instance, in 2014, 78% of the new members were enrolled in the Money Market Plus line, which was the default choice, while 22% had opted for one of the other three lines.

In addition to choosing an investment line, members also have the option to make voluntary extra contributions, or to ask for early withdrawals. Early withdrawals (up to 75% of the accumulated fund savings) have to be motivated by either (a) health-related expenses due to very serious and certified health problems of the member or of close relatives, or (b) first-time home buying or restructuring (for members or their children). Moreover, up to 30% of the accumulated fund savings can be withdrawn without the need of a specific motivation. Early withdrawals for

[2] The size of pension funds in Italy significantly increased in January 2007, as a law gave to employees the choice to invest their severance pay provision (known as Trattamento di Fine Rapporto, or TFR) in a pension plan (typically, an industry-wide pension fund such as Cometa). In absence of an explicit choice, the TFR would have been transferred from the firm to the pension fund, and invested by default in the lowest-risk investment line.

first-time home buyers and for other reasons are available only after at least 8 years of membership in the pension fund, while no such limits exist for health-related early withdrawals.

As of the end of 2014, before our experimental program started, Cometa was the largest closed pension fund in Italy. It had a total of 408,797 members (407,321 from the engineering sector and 1,476 from the jewellery sector). Crucially for the online provision of the seminars and for our design, by 2014, about 140,000 of these members had already accepted to share their e-mail with Cometa in order to receive periodic information and communication from the fund.

3. Program and Experimental Design

We developed an Internet-based, low-cost and scalable demographic and financial literacy program, and we designed a randomized experiment to test the effects of the program on a sample of factory and office workers within the Cometa pension fund.

The main treatment of the program was a relatively short seminar (less than 25 minutes), administered via online streaming. To collect information on outcomes, we: 1) administered a follow-up online questionnaire to test the effectiveness of the online seminar in improving the understanding of demographic trends in life expectancy, of the basic finance concepts behind financial planning, and in increasing the willingness to acquire new information; 2) gathered Cometa administrative data on subsequent financial decision-making by the members involved in the experiment. Furthermore, we studied the heterogeneity of the effects across age, gender, education, and job type.

We discuss in turn the online seminar, the experimental design and the questionnaire that allowed us to assess the outcomes of the program.

3.1 The main treatment: the online seminar

The key treatment of the program is an online seminar, provided as a video streaming over the Internet.[3] The seminar was articulated in four sections: i) expected lifetime and pensions ii) how retirement income guaranteed by pensions can be calculated iii) the importance of investment choices in pension funds to improve life quality during retirement iv) the effects of inflation on investment decisions and the concept of portfolio diversification.

Section i) started by asking two preliminary questions on behaviour: the first one on the attitude towards planning and the second one on trust. Then the presentation gave evidence of the increase in life expectancy at 60 years over time in Italy: the expected lifetime at 60 went up from 79, 0 years to 83,4 years for males and from 82,4 years to 86,2 for females, over the period 1992-2012. It was then illustrated how the reform of the Italian pension system, as stated in Italian

[3] The online seminar was given in Italian, the video of the seminar is available from the authors upon request, we provide an English translation of the slides used in the presentation in an Online Appendix to this paper.

public pension law, combined with the increase in life expectancy brought about a sizeable reduction of the average replacement ratio (Börsch-Supan, 2005; Whitehouse, 2007). Two questions on the awareness of the availability of information on the individual pension position through Cometa were then asked.

Section ii) started with a slide indicating how precise information on individual pension positions could be obtained either online through the Cometa website, or offline, by reading the annual individual report received by Cometa. After the information was delivered, a question on the belief of the importance of the impact of social security choices on retirement quality of life was asked. The presentation then proceeded with Section iii), which introduced three key concepts for investment choices: (i) the time value of money and of compounding over time, (ii) the relation between expected return and risk, and (iii) the main characteristics of the four different investment lines available to Cometa participants.

The time value of money and the effects of compounding were illustrated, both in a table and graphically, considering explicitly the impact on the terminal value of capital of reinvesting the fixed interest (5 per cent) paid on an initial capital of 1000 over an investment period varying from two to forty years. The argument was extended in a further slide on the impact of asking for advances on pension funds. During the presentation of the slides on the time value of money and compounding, a question was asked on the awareness of social security choices.

Section iii) was focussed on the risk return trade-off by considering the case on investing in stocks and bonds. This section started with a question on the perceived relative risk of a government bond and a share of a public company quoted on the Stock Exchange. The relative risk of the two investment strategies was also discussed in a slide.

Successively, a question on the chosen investment line in the Cometa Fund was asked, before showing how the Cometa website could be used to gain information on the composition and therefore on the expected return and risk of the four investment lines available in the Cometa fund. A further slide explicitly considered the risk and return of the Monetary Plus and Income lines. The section was closed by asking participants if they ever tried to gain information on the Cometa investment lines.

Section iv) gave first a simple example of the calculation of real and nominal returns in an environment with 1 per cent inflation and nominal returns of 3 per cent. A further slide illustrated nominal and real returns over the period April 2005- December 2014 for the Monetary Plus and the Income investment lines. Diversification was introduced by a question on the relative risk of two simple betting strategies (betting ten euros on the outcome of a single coin toss versus betting one euro on one each of ten coin tosses). The correct answer was then given and used to illustrate

the concept of diversification. The final slide of the seminar reiterated the importance of long-term planning.

The presentation was closed with a question on the intention to make changes in social security options after the presentation.

3.1.1 Discussion

The design of our treatment is worth some discussion towards the interpretation of the results in terms of economic channels through which the online financial/demographic literacy seminar affects subjects' behaviors and subsequent financial decisions and related potential policy implications.[4]

The financial literacy seminar might be effective either directly or indirectly or both. The direct effect is realized when subjects implement teachings from the seminar when making active choices after the seminar. The indirect effect happens instead when the financial literacy seminar merely increases subjects' interest in the topic of personal finance, making them aware that several complex assessments and choices determine their financial well-being, and hence that ultimately they should be more active in planning their finances.

Our seminar was constructed to illustrate the importance of general key concepts in demographics, finance, and economics in driving the optimal saving for retirement decision to "nudge" participants towards acquiring the relevant information specific to the investment lines made available to them by the Cometa fund.

In other words, the potential effect in terms of gathering more information from the Cometa website on individual pension positions and the Cometa investment line is directly related to the treatment. The seminar highlighted the importance of the information and the specific sources to find it. Its construction makes it different from a generic intervention that can intrigue workers and make them think about their finances, such as a funny video on TikTok about an influencer telling workers they should plan their finances.

We believe that our experiment design, described in the next section, allows us to estimate the causal effect of the specific financial literacy seminar on behaviors and choices.

3.2 Experimental design

To test the effect of the program, we adopted a randomized experimental design by administering to a *treatment* group the online seminar first and the questionnaire after, and to a *control* group the questionnaire first and the online seminar after.

[4] We are grateful to an anonymous referee for raising this point.

All analyses have been conducted preserving the full anonymity of respondents while being able, through a unique code, to reconstruct respondents' key characteristics such as gender, type of occupation (factory vs office workers), age and education, and later financial choices.

The treatment and control groups were generated as follows.

1) We were allowed by Cometa to contact up to 28,000 individuals among the approximately 140,000 (out of the total of 408,797) members who had given their e-mail addresses to the pension fund to receive periodic reports and communications.
2) After excluding goldsmiths to ensure greater homogeneity, we used a stratified sampling approach that used the information available in the Cometa database along four dimensions. More specifically, we stratified: between factory and office workers; between genders (women account for less than 20% of the total number of members); among age brackets (20-39 years; 40-59 years; 60 years and more); among macro-regions of birth (aiming for instance at having about 5% of individuals born outside Italy). We allocated our maximum target of 28,000 individuals to each cluster based on these four dimensions, and then within each cluster, we randomly drew the individuals assigned to the treated and the control group and, by difference, the individuals not involved in the project. The treatment group was given access to the post-seminar questionnaires only conditionally upon following entirely the online seminar.
3) Individuals randomly assigned to either the treatment or the control group received an identical e-mail from the pension fund inviting them to participate in the financial education project. *Treated* individuals, by clicking on the link, could access the online seminar. A member-specific link code allowed us to record individual access to the seminar and the attention was monitored by posing questions at regular intervals during the online seminar. Two weeks after the administration of the seminar, the treated group was asked to fill in a questionnaire about demographic and financial literacy, and about their behaviour in terms of acquiring information for pension planning in the last two weeks.
4) C*ontrol* group individuals, by clicking on the link in the invitation email, had direct access to the same questionnaire as the treated group. The opportunity to view the online seminar was offered only after completing the questionnaire.
5) Invitations with links to either the online seminar or the questionnaires were sent gradually to the different strata between June 2015 and early March 2016. Our initial dataset comprises all questionnaires completed as of April 15, 2016. We ended up with a final sample of 1,436 completed questionnaires, out of which 770 were from the treatment group and 666 were from the control group.

6) Between July and September 2016, six of the demographic and financial literacy questions have been also resubmitted in a second online questionnaire to those who have completed the online seminar and the first questionnaire. The median distance between the first invitation to attend the online seminar and the second questionnaire is of 8.6 months, with 90% of observations between 4 and 12.6 months.

3.3 Outcomes: the questionnaire

The main questionnaire (see Box 1-2) was structured in two blocks, respectively covering demographic and financial literacy as well as attitudes and behaviours. In the former, three questions were asked on life expectancy at 60 years, its evolution over time and the relation between increasing life expectancy at 60 and expected pension payments.

Nine financial literacy questions were then asked, reflecting the format of the basic and advanced literacy questions from Van Rooij, Lusardi and Alessie (2011). In particular, we used questions on numeracy, inflation, interest compounding, the risk/return profile for savings accounts, stocks and bonds over long horizons, the relationship between expected return and risk, and the effects of diversification.

The questions resubmitted in the second online questionnaire were six, selected from the demographic and financial literacy questions (namely, a2-change in life expectancy, a3-life expectancy and pension, a4-numeracy, a5-inflation, a6-interest compounding, a10-diversification 1).

The second section of the questionnaire (see Box 2) investigated behaviours and attitudes. The respondents were asked whether, over the past two weeks, they had looked for information on savings and pensions, discussed savings and pensions in their family, discussed savings and pensions with colleagues, tried to estimate their expected pension using the Cometa website or reading the Cometa annual report, looked for information on the characteristics of the different Cometa investment lines.

Box1: Demographic and financial literacy questions

a1. *Life expectancy* **- In Italy, today, a man who is already 60 years old, could expect to live until…** *(1) 79 years or more,* (2) between 76 and 78 years, (3) between 73 and 75 years, (4) 72 years or less, (5) Do not know

a2. *Evolution of life expectancy* **- A man or a woman who is 60 years old in Italy has a life expectancy which is :** (1) At least 2 years less than a 60-year-old person that lived 20 years ago, (2) Between 1 and 2 years less than a 60-year-old person that lived 20 years ago, (3) Approximately the same with a 60-year-old person that lived 20 years ago, (4) Between 1 and 2 years more than a 60-year-old person that lived 20 years ago, *(5) At least 2 years more than a 60-year-old person that lived 20 years ago,* (6) Do not know

a3. *Life expectancy and pension* **- Given constant contribution at retirement what is the effect of an increase in life expectancy at retirement on expected public monthly pension payments ?** (1) If life expectancy increases, the *monthly* pension payment increases, *(2) If life expectancy increases, the monthly pension payment decreases,* (3) The monthly pension remains the same, because given the current law, it is independent from life expectancy, (4) Do not know

a4. *Numeracy* **- Suppose you have €100 in a savings account and the interest rate is fixed at 2% per year. After 5 years, how much do you think you would have in the account in absence of withdrawals:** *(1) More than €102,* (2) Exactly €102, (3) Less than €102, (4) Do not know

a5. *Inflation* **- Imagine that the interest rate on your savings account is 1% per year and inflation is 2% per year. After 1 year, how much would you be able to buy with the money in this account?** (1) More than today, (2) Exactly the same, *(3) Less than today,* (4) Do not know

a6. *Interest compounding* **- Suppose you have €100 euro in a savings account and the interest rate is 20% per year. After 5 years, how much would you have on this account in absence of withdrawals?**

(1) More than €200, (2) Exactly €200, (3) Less than €200, (4) Do not know

a7. *Expected return ranking* – **Which of the following assets has historically provided the highest return over a long holding period (from 10 years onwards)?** (1) Saving accounts, *(2) Stocks,* (3) Bonds, (4) Do not know

a8. *Risk ranking* - **Which of the following assets has historically displayed the highest fluctuations over time?** (1) Saving accounts, *(2) Stocks,* (3) Bonds, (4) Do not know

a9. *Risk-return relationship* - **An investment that has a high expected return is more likely to have a high risk: true or false?** *(1) True,* (2) False, (3) Do not know

a10. *Diversification 1* - **If you invest 1000 euro in stocks, is it riskier to invest 1000 euro in only one stock or 100 euro in 10 different stocks?** *(1) It is riskier to invest 1000 euro in only one stock,* (2) It is riskier to invest 100 euro in 10 different stocks, (3) Do not know

a11. *Diversification 2* - **When an investor diversifies his investment among different assets, does the risk of making a loss…** (1) increase, (2) stay the same, *(3) decrease,* (4) Do not know

Box 2 – Questions on Behaviour

b1. **Over the last two weeks, I looked for information on savings and pensions**: (1) Yes, (2) No

b2. **Over the last two weeks, I discussed savings and pensions with my family members**: (1) Yes, (2) No

b3. **Over the last two weeks, I discussed savings and pensions with my colleagues**: (1) Yes, (2) No

b4. **Over the last two weeks, I tried to estimate my expected future pension through the Cometa website or reading my annual personal report from Cometa**: (1) Yes, (2) No

b5. **Over the last two weeks, I looked for information about the investment lines of the Cometa fund**: (1) Yes, (2) No

3.4 Outcomes: financial choices

To collect information on financial choices, we subsequently gathered administrative information from Cometa.

Given the centrality of default choices, we collected data on changes in the investment line within the first year after following the online seminar. As members of the control group were also given access to the online seminar after they responded to the questionnaire, we had to define a different set of treated and controls for this outcome.

For this purpose, we defined the treated group as the sum of the originally treated group (which we label as "T1"), and of those members of the former control group who had followed the seminar after completing the questionnaire. We label this broader treated group as "T2".

We then used an exact matching strategy (Abadie and Imbens, 2006; Stuart, 2010), whereby each member of T2 was matched to two individuals who were enrolled in the fund but were not involved in any stage of the experiment. The matching procedure resulted in groups of one treated (T2) unit and two control units (C2). Individuals belonging to the same triplet have the

same age, gender, job qualification (blue vs. white collar), level of education, and initial investment line (Money Market Plus, Safety, Income or Growth).

Matched individuals were allowed to serve as a match only once, and in case of multiple exact matching, the individuals with the enrolment number closer to the treated individual were chosen.

Despite this restrictive criterion, we obtained 923 perfectly matched triplets out of a sample of 1,140 individuals who could have potentially been used as treated units in a triplet (i.e., 770 participants assigned to T1 and 370 people assigned to the control group who followed the online seminar after having completed the questionnaire).

4. Results: (a) Treatment effect on literacy, attitudes and self-reported behaviors

4.1 Descriptive Statistics

In light of the description of our experimental design provided in the previous section, Table 2 provides the relevant evidence to evaluate whether our randomized treatment (the online seminar) could be related to any observable individual characteristics.

Our final sample contains a total of 1,436 individuals, out of which 770 were treated and 666 were not (we label this first treatment as "T1"). Table 2 reports the mean values of individual characteristics for the total population and for the two groups and a test for the significance of their difference.

We consider age, sex, place of birth and education along with variables describing the choices of individuals with respect to their contribution to the different investment lines made available by Cometa. In particular, we have information on the years of voluntary contribution, the choice of the investment line, the choice of contributing additional deposits and the exercise of the option of asking for anticipated advances.

Overall, the evidence does not lead to the rejection of the null hypothesis of randomization although there are some exceptions.

In particular, the share of "blue collar" workers in the control group is higher than that in the treatment group; the share of individuals with a university degree is also slightly higher (which implies that the percentage of white collar workers with a university degree is significantly higher).

There is also some evidence that members of the control group tilted their choice in favor of safer and lower return strategies for riskier choices. Based on this evidence, our regression analyses will include controls for all relevant characteristics.

[TABLE 2 ABOUT HERE]

We first discuss the results of the regression analysis on the questionnaire, including the study of heterogeneous effects.

Finally, we study the effect of the treatment on the choices of modifying the investment lines.

4.2 Regression analysis of the treatment effect

To assess statistically our treatment effect we consider a difference estimator within a system of linear probability equations. Given the availability of 1,436 answers to 16 questions, our baseline evidence is based on the estimation of the following system of linear probability models:

$$Y_i^1 = \beta_0^1 + \beta_1^1 X_i + \Sigma_{j=1}^{23} \beta_{j+1}^1 W_i + u_i^1$$
$$Y_i^2 = \beta_0^2 + \beta_1^2 X_i + \Sigma_{j=1}^{23} \beta_{j+1}^2 W_i + u_i^2$$

…

$$Y_i^{16} = \beta_0^{16} + \beta_1^{16} X_i + \Sigma_{j=1}^{23} \beta_{j+1}^{16} W_i + u_i^{16}$$

where the Y_i^k are binary variables that capture the correct answer to k-th of the 16 questions in the survey, the X_i separates the control group from the treatment group and the W_i are the controls for the 23 characteristics analyzed in Table 2.

We do not impose any restriction, allowing both the unconditional probability of answering correctly and the treatment effect to be different in each of our questions, given their different nature. All controls that have a non-dummy nature are demeaned so that the constant in each equation can be interpreted as the unconditional probability of giving the correct answer.

The first group of questions is aimed at understanding the effect of the treatment on demographic knowledge, the second group on financial knowledge and the third group on behavior/attitudes.

The linear probability model is estimated at the cost of losing the possibility of sensibly approximating the nonlinear population regression function. In practice, the relevance of this potential cost depends on the number of extreme values in the regressors. We have checked the robustness of the results based on the linear probability model by considering an alternative *logit* specification, which confirms the baseline evidence.

The system is estimated simultaneously using the *Seemingly Unrelated Regression Estimation* (SURE) method.

System estimation is appropriate as a single equation estimation approach would require corrections to take into account the non-diagonal structure of the residuals variance-covariance matrix. Our treatment has many dimensions and each equation in the system measures the effect

of a specific dimension of the treatment on a specific outcome. Therefore, the issue of multiple hypothesis testing, which emerges when the effect of a single treatment is tested on many outcomes or when the effect of multiple treatments is tested on a single outcome, should be of limited relevance. However, the residuals of the equations specified to test the effect of the different dimensions of the treatment on different outcomes might very well be correlated.

A system full-information approach, such as SURE, dominates, in terms of efficiency, a single equation limited information approach with heteroscedasticity corrections in addressing this potential issue.

The results of the system estimation are reported in Table 3. The statistical evidence for the effect of the treatment is uniform across all questions, with only three exceptions that refer to two questions on behavior and attitudes and a question on diversification. Question b2 aimed at knowing if the subject has discussed savings and pensions in the family over the last two weeks and question b3 aimed at knowing if the subject has discussed saving and pensions with colleagues. In question a10 on diversification, the unconditional probability of giving the correct answer stands as high as .94.

Interestingly, the effect of the treatment is not of the same size across different questions and it shows up more strongly in three questions related to basic financial literature and one question related to the effect of an increase in life expectancy on the received monthly pension.

The maximum impact of the treatment stands at an increase of .21 in the probability of looking for information on the different investment lines of the Cometa fund.

The significance of controls broadly reflects the patterns in the data traced by descriptive statistics. We now analyze results disaggregating by the different sections of the questionnaire.

[TABLE 3 ABOUT HERE]

4.2.1 Demographic Literacy and Pension Payments (Questions 1-3)

The first two questions of our survey are aimed at evaluating the knowledge of expected residual life at the age of 60 years and its evolution over the last 20 years, while the third question investigates the knowledge of the relation between life expectancy at 60 and the expected pension payments.

In the first two questions, the unconditional probability of answering correctly stands at .58 and .73 respectively, this probability is little affected by the controls and the treatment raises it significantly by .056 and .078. In the third question, the average probability of answering correctly

is .30, which is raised by .217 in the case of the presence of a university degree and by .173 by the treatment.

Interestingly, the null hypothesis that the effect of the treatment is not significantly different from that of the university degree cannot be rejected.

The third question is also particularly relevant since it checks whether workers have understood or not that after the series of public pension reforms leading to the NDC system, the monthly amount of the public pension at retirement is calculated based on life expectancy at the time of retirement, using mortality tables that are automatically updated (Franco and Tommasino, 2020). Hence, an increase in life expectancy translates into a lower monthly public pension, everything else being equal. Understanding this critical feature of the public pension system may help motivate individuals to improve their financial planning for retirement.

4.2.2 Financial Literacy: interest compounding, inflation, risk, returns and diversification (Questions 4-11)

Questions 4-6 are designed to assess basic financial literacy concerning compounding and nominal versus real interest rates.

We assess numeracy and interest compounding ability (respectively in questions 4 and 6), while question 5 investigates the ability to distinguish between nominal and real returns. In all these questions we use wording very similar to the ones devised for the Health and Retirement Study (HRS) by Lusardi and Mitchell (2007).

Questions 7 and 8 assess the knowledge of the first two moments of the distribution of returns on stock, bonds and saving accounts, question 9 concentrates on the risk-return relationship, while questions 10 and 11 deal with diversification and its impact on risk.

An interesting benchmark to evaluate the answers to all these questions is the one provided by the financial literacy tests included in the 2006 and 2008 SHIW (Survey on Household Income and Wealth) run by the Bank of Italy. Every two years, through the Survey on Household Income and Wealth (SHIW), the Bank of Italy collects detailed data on household demographics, consumption, income, and wealth for a representative sample of the Italian population[5]. In the 2006 and 2008 waves, an extra module on financial literacy was administered to about half of the sample (3,992 households whose head was born on an even year). The module included questions on interest compounding, inflation, risk diversification (based, as our question 10, on the choice between an individual stock and a stock mutual fund) and stocks ("Imagine that you have only

[5]See http://www.bancaditalia.it/statistiche/tematiche/indagini-famiglie-imprese/bilanci-famiglie/documentazione/index.html

equity funds and the stock market price fall. Are you i)Better off, ii)Worse off, iii)As well off as before, iv) don't know").

The analysis of the SHIW answers conducted by Fornero and Monticone (2011) revealed that 40 per cent of the interviewed gives a correct answer to the interest-compounding question. The share of correct answers raised to 60 per cent in the real vs nominal interest rate question; 45 per cent of the whole sample indicated correctly that holding shares of a single company is riskier than diversifying across several companies. Finally, 51 per cent was able to correctly pin down the effect of a fall in the stock on equity funds. The statistical evidence indicated a gender gap in financial literacy, a monotonically increasing relationship between the level of education and financial literacy and significant regional disparities between the North and the South of the country.

Our evidence shows that the level of financial literacy in our sample is in general higher than that of the SHIW as reported by Fornero and Monticone and that the online seminar uniformly raises the probability of answering correctly.

The only financial question in which the probability of answering correctly is lower than 50 per cent, independently from the treatment is the one on the long-run returns from investing in shares. The comparison of our data with those of the SHIW suggests that the financial crisis has increased the interest of the public in basic financial concepts but it has also generated a pessimistic view of stock market returns. We also find statistical evidence for a gender gap, a monotonically increasing relationship between the level of education and financial literacy and significant regional disparities between the North and the South of the country.

In particular, in questions 4-6, which assess basic financial literacy concerning compounding and nominal versus real interest rates, the average probability of answering correctly is .7 which is raised by .12 in case of the presence of a university degree and by .11 by the treatment. Again the null that the treatment effect is not significantly different from that of a university degree cannot be rejected. The particularly strong effect in question 6 that deals with the effects of discrete compounding are of interest. The low awareness of compounding might lead young individuals to underestimate the risk that an investment strategy based on low-risk-low-return long-term investments may result in insufficient payments from the industry pension fund after retirement.

Questions 7-11 assess financial literacy concerning expected returns and risk.

Here estimates for question 7 that concentrates on expected returns are very different from those for the other three questions that concentrate on risk. In question 7, which assesses the knowledge about long run returns, the average probability of answering correctly is slightly above .5 and it is drastically raised by about .2 by the treatment. Answers on the risk of different types of investment produce a much higher unconditional probability of being correct, slightly above.85.

The effect of the treatment is still significant here, albeit small at an average marginal effect (.03). The treatment is not significant in the case of question 10 (which is on the impact of diversification on risk) where the probability of answering correctly unconditionally stands at .95.

The location dummy has a significant effect in that respondent of the South have a lower probability of assessing correctly risk (with a reduction in probability of answering correctly that ranges from -.05 to -.08 being always significantly different from zero).

4.2.3 Attitudes and behavior (Questions 12-16)

Questions 12-16 concentrate on attitudes and behavior, assessing them along a number of dimensions, with reference to the behavior in the last two weeks.

In particular, the questions assessed the general interest in saving and pensions (Q12), the frequency of discussion on savings and pensions with family members (Q13) and colleagues (Q14), whether the respondent had tried to estimate his or her future pension through the Cometa website or the Cometa annual individual report (Q15), and whether the respondent had looked for information on the different investment lines offered by the Cometa fund (Q16).

The answers reveal an interesting pattern: the treatment does not push individuals to discuss pensions within the family or with colleagues, but it significantly and strongly pushes them to look for more information on pensions in general, on the specific forecast of future pension payments and the differences among the investment lines of the pension fund.

The remarkable effect of the treatment in moving individuals to look for information about the four different investment lines of Cometa (the coefficient is .221, while the constant is .131) in the two weeks after the online seminar is particularly important considering the tendency of many workers to stick to the default investment line. This (non-) choice is often likely to hide the unwillingness to gather information or the inability to take a conscious decision for the long-run risk-return profile of their pension investment.

4.3 Does the treatment effect depend on individual characteristics?

The baseline results discussed in the previous section provide confirmatory evidence of previous results on financial literacy in Italy and new evidence on the statistical impact of the online seminar on financial and demographic literacy.

In particular, we find statistical evidence for a gender gap, a monotonically increasing relationship between the level of education and financial/demographic literacy, as well as significant regional disparities between the North and the South of the country and a uniformly significant coefficient on the treatment for nearly all the questions in our survey.

In light of this evidence, it is worthwhile assessing if the effect of the treatment is related to the heterogeneous initial level of literacy.

To this end, we estimate a richer specification by augmenting our initial system with interactions between the treatment and the significant individual dummies.

Key results of the SURE estimation of the extended linear probability model are reported in Tables 4a and 4b.

Our results strongly indicate that the effect of the treatment is not affected by the individual characteristics that generate heterogeneity in financial literacy. The interaction between treatment and the dummies that capture heterogeneity due to gender, education, and geographical location are jointly not significantly different from zero.

Moreover, if we consider the four cases in which an interaction is significant at least at the 5 per cent level (university degree in questions 1 and 6, South in question 8 and white collar in question 9). The effect goes in the direction of *reducing* rather than increasing the literacy gap among the subgroups having different ex-ante levels of literacy.

The only case in which the positive effect of the treatment is more positive for university degree holders is in the behavior question, checking whether more information has been looked for about the different investment lines of the fund. This result echoes recent findings in the literature that cognitive abilities make individuals more prone to understand economic incentives and more receptive to economic information when planning their economic decisions (see D'Acunto et al(2022)).

However, even in this case, the treatment effect remains significant also for the overall sample. Apart from these exceptions, nudging seems to work uniformly for agents heterogeneous concerning many characteristics and with a very heterogeneous pre-treatment level of financial literacy.

This evidence has relevant policy implications in terms of the effect of financial literacy programs in closing knowledge gaps and contributing to reducing wealth inequalities.

The general effect of the financial literacy online program to provide information that transmits into decision-makers' choice dominates the second-order effect of making more educated individuals more interested in finance and research about them.

This speaks in favour of the potential for financial literacy programs for closing existing knowledge gaps be relatively more beneficial to the less sophisticated individuals and therefore eventually contribute to reducing wealth inequalities.

[TABLES 4a AND 4b ABOUT HERE]

4.4 Does the treatment effect last in time?

To assess the lasting effect of our nudging experiment, we exploited the evidence from a second questionnaire administered online about nine months after the first questionnaire to those who have completed the online seminar and the first questionnaire.

The second questionnaire focused on a subset of questions, namely six of the demographic and financial literacy questions (namely, a2-change in life expectancy, a3-life expectancy and pension, a4-numeracy, a5-inflation, a6-interest compounding, a10-diversification 1). We rerun our model with interactions using as treatment group the respondents to the second questionnaire (results are shown in Table 5).

The evidence rejects the null of a temporary effect of the nudging experiment. For five of the six questions, the impact of the treatment is statistically significant, the only exception being the question on life expectancy.

The long-term effect of the treatment is more uniform than the short-run impact.

We also checked whether the distance between the invitation to participate in the video and the completion of the second questionnaire has an impact on the probability of answering correctly.

For the five questions for which the treatment proved to be significant even in the follow-up questionnaire the interaction between the treatment and the demeaned distance between the video and the second questionnaire is not statistically significant.

[TABLE 5 ABOUT HERE]

4.5. Robustness checks

A potential threat to the internal validity of results is posed by attrition, which might have acted differently on the treatment and control group, thus leading to an overestimation of the treatment effect on literacy and active behaviours.

One may argue that the participants assigned to the treatment group, who had to follow the entire seminar before accessing the questionnaire, might have had a stronger motivation than people in the control group (who immediately found the questionnaire) and would have found it easier to complete the task.

This difference in motivation and engagement could justify a positive difference in the probability of giving correct answers between the treatment and the control group, and it deserves further attention.

To address this shortcoming, we exploit the fact that the control group was invited to follow the seminar after completing the questionnaire, and 370 participants out of 666 (i.e. 56%) seized the opportunity.

Therefore, we repeat the analysis comparing the 770 treated units to the 370 people from the control group who followed the seminar after having completed the questionnaire. This restricted sample should not display differences in interest in the topic or accuracy in filling out the questionnaire.

The results are presented in Table 6.

Despite the smaller sample size, most of the coefficients remain significant, and effect sizes are comparable with the ones previously described. In particular, the effects on all the questions about demographic knowledge remain statistically significant with comparable effect sizes. The same holds for financial literacy questions, most of which remain significant, except the ones on risk and diversification. As for the questions on behaviors, the treatment effect on the propensity to look for information and estimate one's pension remains significant and comparable in size, while we find again no effect on the propensity to discuss those matters with family members or colleagues.

Table 7 shows the estimates with interactions. This time, the smaller sample size undermines the possibility to obtain precise estimates for all the coefficients. Still, the coefficients on behaviours remain significant, as well as those of the four financial literacy questions. Treated graduates are more likely to collect information on investment lines than treated units without a university degree, which widens the information gap. However, many other significant interaction terms close initial gaps, especially the disadvantages associated with gender and the lack of a university degree.

[TABLES 6 and 7 ABOUT HERE]

5. Results: (b) Treatment effect on actual financial choices

We measure the effect of the treatment on observable choices by investigating whether our financial and demographic literacy program affected the investment and saving decisions of participants in the experiment.

The outcome of interest is the probability of changing the investment line within 3 months after following the online seminar.

As described earlier in Section 3.4, for the treated and control sample we adopt here an exact matching strategy, whereby each individual who followed the seminar was matched to two individuals who were enrolled in the fund but were not involved in any stage of the experiment,

with the same age, gender, job qualification (blue vs. white collar), level of education, initial investment line (e.g. Money Market Plus, Income,…).

We obtained a total of 923 perfectly matched triplets. When considering the potential change of investment line within three months following the seminar, for control units we look at the same time window as the matched treated unit.

We choose a relatively narrow time interval to observe a behavioural response which is most likely to be stimulated by treatment and not by other concurrent drivers; however, the results are robust when a 12-month time window is considered (see later).

We first present some descriptive evidence in the form of a transition matrix and then estimate a linear probability model that exploits variation within triplets. The baseline model is the following:

$$Y_i = \beta_0 + \sum_{j=1}^{4} \beta_j C_{ij} X_i + \underline{\beta}_5' \underline{w} + \underline{\beta}_6' \underline{X}_i' \underline{w} + FE(Triplet_i) + u_i$$

where Y_i is the probability of changing the investment line within 3 months, C_{ij} takes value 1 if individual i was originally in investment line j, X_i equals unity if individual i was treated (i.e. watched the video), $\underline{w}$ is a vector of controls, some of which are demeaned for the sake of interpretation.

We start with a description of the transition matrix (Table 8).

By looking at the aggregate matrix, one can see that the probability to switch is less than 1 per cent for people who have chosen one of the three investment lines with the highest risk-return profiles, while it is equal to 3.6 per cent for those originally assigned to the safest investment line (i.e. Money Market Plus, which was the default choice until February 2017).
Focusing on the subjects enrolled therein, the probability to change is as low as 0.6 per cent in the control group, while it is as large as 9.6 per cent for treated units. Approximately 60 per cent of changing subjects opt for the investment line Income, with a medium-high level of risk-return, 30 per cent select Growth, with the highest level of risk-return, whereas the remaining 10 per cent pick a moderate level of risk-return, choosing the investment line Safety. As for the other investment lines, we stress that there are virtually no switches to safer investment profiles.

Overall, the descriptive analysis seems to suggest that the video stimulates people to reconsider their investment decisions, in particular by pushing people in a default line to select a more suitable profile, which can offer higher returns.

[TABLE 8 ABOUT HERE]

We now turn to the estimates of the linear probability model, displayed in Table 9.

The regressors included in the baseline model, shown in Column 1, are the interactions between treatment (T2) and investment line, and controls for job qualification, gender, age (demeaned), level of education, macro-region of birth and investment line. The estimated effects indicate that the probability that treated people initially enrolled in the default investment line switch is 9.04 per cent higher than for the matched control units. This coefficient is significant at the 1 per cent level, and it is consistent with the previously discussed evidence from the transition matrix. Then, the treatment effect for people initially enrolled in "Income" is 1.18 per cent, significant at 10 per cent, while we do not find any significant effect for the other investment lines, Safety and Growth. Column 2 allows for a quadratic relationship between age and the dependent variable, adding the square of the demeaned age among the regressors. However, this term turns out not to be significant and the other coefficients are unaffected, so the subsequent analysis assumes a linear effect of age.

Since investment strategies - and the consequent decision to switch – should vary with individuals' time horizon, column 3 adds an interaction term between treatment and age (demeaned), to test whether treatment triggers different behavior across age categories. However, the interaction Treatment*Age is not significant, while the coefficient on Treated*Money Market Plus declines to .086 and the one on Treated*Income increases to .0135. Column 4 includes interactions between treatment and all the controls (i.e. demeaned age, gender, job qualification, level of education and macro-region of birth), to extensively test for differences in treatment effectiveness across population subgroups. The interaction terms are not statistically significant, and the treatment effect for people in the Income investment line loses significance, whereas the treatment effect for units in the default line equals 0.0746 and it remains significant at the 1 per cent level. Column 5 includes additional controls related to people's past investment decisions: a dummy variable for voluntary extra contributions to the fund, years of contribution (demeaned), and the number of early withdrawals (demeaned). Here again, the only significant effect is that of treatment on people in the default investment line, and it equals .0749.

While this evidence suggests a strong significance of such an effect, the lack of significance of the other interactions might also be due to the small sample size, or to the absence of an effect for people who have already chosen more complex investment profiles.

To address this issue, Column 6 tests for heterogeneity in treatment effects by age only for those originally enrolled in the default line. Both Treatment*Money Market Plus and the three-way interaction are significant at any conventional confidence level, and the effect is substantial: the probability of switching to riskier investment profiles for a person with an average age (44.4 years in our sample) is 6.36 per cent, and it decreases by 0.342 per cent for every additional year

of age. As an example, the value of the probability is close to 11.3 per cent for a 30-year-old, and it drops to about 1 per cent for a 60-year-old.

This finding is particularly interesting, in that only younger people, who have a longer investment horizon than those about to retire, prefer investments with higher volatility and return. It also points out that, despite the potentially lower interest of younger audiences for seminars about retirement planning, it is indeed possible to have a material impact on young workers' behaviours, with potentially large effects on their well-being after retirement.

Column 7 presents the same model, with additional controls for past investment decisions. Coefficients are significant for people originally enrolled in Money Market Plus: the effect at mean age is estimated at 6.40 per cent, and the three-way interaction suggests a decline of .338 per cent per year of age.

[TABLE 9 ABOUT HERE]

As a robustness check, we repeated the analysis by considering the probability of switching investment lines within 12 months of following the online seminar. The results (shown in Table 9) are similar to the ones previously obtained. The probability of switching is estimated at 11.6 per cent for individuals originally enrolled in Money Market Plus, while it equals 1.6 per cent for people enrolled in Income. When interaction terms between treatment and controls are added, the interaction Treated*Money Market Plus is significant, the effect size is 9.1 per cent, and effects are significantly stronger for individuals with a high school degree and born outside Italy. Finally, interacting treatment with enrolment in the default line and with demeaned age yields an effect equal to 7.58 per cent for a person with average age, and a 0.48 per cent decline for every additional year of age. For ease of interpretation, the estimated effect is 14.5 per cent for a 30-year-old, and 0.1 per cent for a 60-year-old.

[TABLE 10 ABOUT HERE]

Finally, also considering the possible concerns deriving from attrition, we ran an intention-to-treat analysis.

We, therefore, considered the full database of the pension fund members who had given their e-mail to the pension fund (excluding goldsmiths), considering the effects of the simple e-mail invitation to participate. The following specification has been adopted:

$$Y_i = \beta_0 + \beta_1 X + \underline{\beta_2}\ \underline{w} + u_i$$

where X is equal to 1 for fund participants that were invited by email to be involved in the experiment, and $\underline{w}$ is the vector of controls, where the key elements used earlier to form the triplets (gender, blue/white collar, education, area of birth, investment line, and age in deviation) have been considered in factorial format, i.e., considering all possible interactions.

Y is equal to 1 if the individual has switched his or her investment line within three months from having access to the online seminar (at least potentially, since many individuals were simply invited but did not participate). For individuals that were not invited (since invitations were sent in different rounds between June 2015 and March 2016 for different clusters of gender/occupation/macro-region of birth/age bucket), then for each cluster, there was a single date of the invitation, we considered the same date also for non-invited individuals. In those cases when larger clusters (e.g., male blue collars born in Northern Italy and aged between 21 and 40) were split among multiple dates, we randomly extracted for non-treated individuals a date among those used for invited individuals (with the same proportions if different dates had different proportions of invited individuals for the cluster).

In Table 11 we report the results of 1,000 and 2,000 simulations based on different simulated dates for non-invited individuals. When considering 2,000 simulations, coefficient β_1 associated with the invitation to participate in the treatment is significant at 10% in 91% of simulations and 5% for 60% of the simulations. The mean beta is 0.109%, which compared to a mean constant of 0.154% implies an increase of more than 70% in the probability to change the investment line in the three months following the invitation.

These results, combined with the fact that no preselection of potential participants was made, confirm the strength of the results of this low-cost intervention on the population of pension fund participants.

5.1 Discussion

Overall, our results reported in this section show that those who were exposed to the online financial literacy treatment were more likely not only to gather additional information about their finances and the options available with the Cometa fund but also to move out of default option choices and make active choices in terms of choosing their investment line.

Since the initial evidence on the strong role of inertia in retirement savings choices in the US and hence the powerful role of default options (see, Madrian-Shea(2001), the literature hasn't yet provided an answer on the relative importance of two alternative explanations.

Inertia can be mostly due to agents' deliberate avoidance to approach financial decisions about which they are worried (a form of "Ostrich effect" discussed by Galai and Sade(2006)) or instead to the fact that agents are simply unaware that they need to make choices and what those choices are because they do not read or focus on the letters and emails they receive from their employers and retirement funds.

Our experiment shows that nudging agents by making them aware of their options and the importance of actions and choices does effectively induce actions and choices.

6. Conclusions

This paper described the introduction of a new, Internet-based, financial education program for workers, *Finlife* (Financial Education and Planning for a Long Life).

Finlife was designed to be a low-cost, online, easily scalable approach to increase the financial and demographic literacy of adults enrolled in a pension fund.

Given its ease of access and low complexity, Finlife was built consistently with the "nudge" approach that has been introduced in behavioral economics.

The importance of such a program is clear if we consider that even among pension fund members the percentage of individuals who invest in an investment line with more than 15 per cent of stocks was below 4 per cent at the end of 2014 and that only a small percentage has shown a clear understanding of a cornerstone of recent pension reforms in Italy, i.e. the indexation of pension payments to average life expectancy at retirement.

The results assessed through our experimental design showed that Finlife delivered a substantially and statistically significant increase in financial and demographic literacy, combined with a push to put more effort into estimating an individual's pension and looking for information on alternative investment lines of the pension fund.

Remarkably, our evidence also shows that this treatment effect was largely homogeneous among subgroups, proving to be effective also for subgroups with a lower ex-ante level of financial and demographic literacy, and sometimes reducing the initial gap among subgroups. Moreover, we provided evidence that the treatment effect has remained significant even months after the treatment.

Secondly, we found evidence that the treatment has led to actual behavioral change, with particular strength for workers who adopted the safest investment line, which was the default option in case of no explicit choice. Considering both a 3-month and a 12-month horizon after the online seminar, we provided evidence of a significant effect on the migration of workers towards higher-risk, higher-return investment lines. This effect was stronger for younger workers, who are precisely those for whom a very low risk-very low return asset allocation would be most detrimental over the long run.

While it is not possible to assess the longer-run effects of these changes at the individual level, we can estimate using data on actual Cometa investment lines' performance the impact on retirement wealth of switching assets over a 5-year horizon, comparing the value of the safe Money Market Plus with the Income option between December 2016 (after the end of the last online seminar), and December 2021.

During this period, EUR 100 invested in Money Market Plus has delivered 99.75—a negative return also in nominal terms. On the contrary, the same amount in the Income line has delivered EUR 111.88

While our experiment has taken place before the “great acceleration” in digitalization provided by Covid-19, it shows that online seminars could have an impact.

Overall, our results contribute to the literature along four specific dimensions.

First, the seminar highlighted the importance of the information and the specific sources to find it. Its construction makes it different from a generic intervention that can intrigue workers and make them think about their finances. The potential effect in terms of gathering more information from the Cometa website on individual pension positions and the Cometa investment line is directly related to the treatment.

Second, the general effect of the financial literacy online program to provide information that transmits into decision-makers’ choices dominated the second-order effect of making more educated individuals more interested in finance and research about them. This speaks in favour of the potential of financial literacy programs for closing existing knowledge gaps and reducing wealth inequalities.

Third, our results show that making agents aware of their investment options and the importance of making them leads to actual actions and choices and limits the relevance of the “Ostrich effect” in finance.

Fourth, our results are in line with the idea of giving demographic literacy a central role in the discussion on long-term planning, especially relevant in the Italian context, characterized by high levels of population aging. Demographic literacy might contribute to a more effective financial literacy program as it directly draws the attention of individuals on more visible issues (how long will I live after retirement?) and it elicits indirectly a stronger interest in their economic and financial consequences.

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Table 1: Investment Lines of the Cometa pension fund.

Name of the investment line	Money market plus	Safety	Income	Growth
Investment profile	100% short-term bonds; 0% stocks	Minimum guaranteed return, maximum 10% of stocks	85% bonds 15% stocks	60% bonds 40% stocks
Number of members (end of 2014)	173,634 (42.5%)	58,057 (14.2%)	160,832 (39.3%)	16,274 (4.0%)

Source: Cometa.

Table 2: Descriptive Statistics

Sample Size: **1436,** Treated Group Size: **770,** Control Group Size: **666**

Characteristic		Sample	Control	Treated	Difference	P-Value[1]
Age		44.48	43.84	45.03	-1.19**	0.0103
Occupation	% of "Blue Collar"	40.04%	45.95%	34.94%	11.01%***	0.0000
Sex	% of Males	70.68%	69.52%	71.69%	-2.17%	0.3683
Place of birth	Northern Italy	51.18%	50.30%	51.95%	-1.65%	0.5337
	Central Italy	23.54%	22.82%	24.16%	-1.33%	0.5530
	Southern Italy/Islands	20.68%	21.62%	19.87%	1.75%	0.4142
	Abroad	4.60%	5.26%	4.03%	1.23%	0.2676
Educational Qualification	Univ. Degree	23.33%	20.12%	26.10%	-5.98%***	0.0075
	High School	52.92%	52.55%	53.25%	-0.69%	0.7929
	Compulsory Education	20.19%	23.42%	17.40%	6.02%***	0.0046
	No School	3.55%	3.90%	3.25%	0.65%	0.5026
Years of Paid Contributions		12.62	12.39	12.82	-0.43*	0.0760
Investment line	"Monetario Plus" (Money market +)	20.68%	25.23%	16.75%	8.47%***	0.0001
	"Sicurezza" (Safety)	14.28%	14.86%	13.77%	1.09%	0.5532
	"Reddito" (Income)	48.47%	45.95%	50.65%	-4.7%*	0.0754
	"Crescita" (Growth)	16.57%	13.96%	18.83%	-4.87%**	0.0134
Extra individual contributions to the fund	No	97.21%	97.00%	97.40%	-0.40%	0.6416
	Occasional Extra Contributions	2.72%	2.85%	2.60%	0.25%	0.7667
	Regular Extra Contributions	0.07%	0.15%	0%	0.15%	0.2824
Anticipations	Total Anticipations	0.39	0.43	0.36	0.07	0.1275
	Anticipation for purchase of the first house	0.06	0.06	0.06	0	0.9527
	Anticipation for restoring the first house	0.02	0.02	0.01	0.01	0.2612
	Anticipations for Sanitary Expenses	0.02	0.03	0.02	0.01	0.4271
	Anticipations for other reasons	0.29	0.32	0.26	0.06	0.1493

1: Two-sample t-test with equal variances
*: indicates that the difference is significant at a 10% level of confidence
**: indicates that the difference is significant at a 5% level of confidence
***: indicates that the difference is significant at a 1% level of confidence

Table 3– Linear Probability baseline model, first questionnaire

VARIABLES	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	b1	b2	b3	b4	b5
	Life Expectancy.	Evolution. of L.E.	L.E. and Pensions	Numeracy	Inflation	Interest. Compound	Expected Returns.	Risk	Risk-Returns	Diversifi-cation 1	Diversifi-cation 2	Info on pensions	Discussion Family	Discussion Coll.	Estimate my pension	Info on invest.lines
Constant	0.582***	0.729***	0.300***	0.733***	0.807***	0.531***	0.510***	0.886***	0.930***	0.952***	0.783***	0.346***	0.514***	0.582***	0.208***	0.139***
	(0.0488)	(0.0406)	(0.0477)	(0.0355)	(0.0294)	(0.0442)	(0.0462)	(0.0236)	(0.0243)	(0.0207)	(0.0299)	(0.0490)	(0.0498)	(0.0491)	(0.0454)	(0.0452)
Treated	0.0561**	0.0782***	0.173***	0.119***	0.0524***	0.174***	0.196***	0.0344***	0.0537***	0.0154	0.0568***	0.121***	-0.0121	-0.0360	0.169***	0.221***
	(0.0261)	(0.0217)	(0.0255)	(0.0190)	(0.0157)	(0.0237)	(0.0247)	(0.0126)	(0.0130)	(0.0111)	(0.0160)	(0.0262)	(0.0266)	(0.0263)	(0.0243)	(0.0242)
Female	0.0347	0.0104	-0.0357	-0.0413*	-0.0403**	-0.126***	-0.0245	-0.0209	-0.0538***	-0.0129	-0.0227	-0.0324	0.0383	-0.0864***	-0.0361	-0.0471*
	(0.0290)	(0.0241)	(0.0283)	(0.0211)	(0.0174)	(0.0263)	(0.0274)	(0.0140)	(0.0144)	(0.0123)	(0.0178)	(0.0291)	(0.0295)	(0.0291)	(0.0270)	(0.0268)
White collar	0.0565*	0.0522**	0.0229	0.0581**	0.0632***	0.158***	0.00113	0.0548***	0.0316**	0.0134	0.0528***	0.0267	-0.000234	0.0245	0.0286	0.00403
	(0.0319)	(0.0265)	(0.0312)	(0.0232)	(0.0192)	(0.0290)	(0.0302)	(0.0154)	(0.0159)	(0.0135)	(0.0196)	(0.0321)	(0.0326)	(0.0321)	(0.0297)	(0.0296)
Age dev.	0.00281	0.00367**	-0.000271	-0.00466***	0.00366***	0.00294	2.74e-05	-0.00122	0.00108	0.00135	0.00251**	0.00668***	0.00391*	0.00510**	0.00177	-0.00179
	(0.00198)	(0.00165)	(0.00193)	(0.00144)	(0.00119)	(0.00180)	(0.00187)	(0.000957)	(0.000988)	(0.000839)	(0.00121)	(0.00199)	(0.00202)	(0.00199)	(0.00184)	(0.00183)
Age dev. Squared	-4.48e-05	-0.000226*	-0.000118	-2.31e-05	7.51e-05	-1.74e-05	7.94e-05	1.84e-05	7.16e-05	-6.20e-06	3.96e-05	0.000433***	0.000396**	-0.000231	0.000371**	0.000247*
	(0.000162)	(0.000134)	(0.000158)	(0.000117)	(9.73e-05)	(0.000146)	(0.000153)	(7.81e-05)	(8.06e-05)	(6.84e-05)	(9.90e-05)	(0.000162)	(0.000165)	(0.000162)	(0.000150)	(0.000150)
Univ. Degree	-0.0249	0.0664	0.217***	0.0998***	0.0651**	0.127***	0.117**	0.0286	0.0222	0.0454**	0.139***	0.0328	-0.0693	-0.119**	-0.0287	-0.0383
	(0.0489)	(0.0406)	(0.0477)	(0.0355)	(0.0294)	(0.0443)	(0.0463)	(0.0236)	(0.0244)	(0.0207)	(0.0300)	(0.0491)	(0.0498)	(0.0491)	(0.0455)	(0.0453)
High School	-0.0229	0.0207	0.0743**	0.0282	0.00473	-0.00358	0.00208	0.0109	-0.0268	0.0193	0.0841***	0.0126	-0.0284	-0.0153	0.0298	-0.00520
	(0.0374)	(0.0311)	(0.0365)	(0.0272)	(0.0225)	(0.0339)	(0.0354)	(0.0181)	(0.0186)	(0.0158)	(0.0229)	(0.0375)	(0.0381)	(0.0376)	(0.0348)	(0.0346)
No School	0.0218	0.0274	0.0951	0.0940*	0.0469	-0.0449	-0.0337	-0.0170	-0.0299	-0.0195	0.0544	-0.0609	0.000240	0.00764	-0.0420	-0.0204
	(0.0763)	(0.0634)	(0.0745)	(0.0555)	(0.0459)	(0.0692)	(0.0722)	(0.0369)	(0.0381)	(0.0323)	(0.0468)	(0.0766)	(0.0778)	(0.0767)	(0.0710)	(0.0707)
South	0.00443	-0.0450	-0.0434	0.00202	-0.0409**	-0.0364	-0.0433	-0.0605***	-0.0563***	-0.0456***	-0.0840***	-0.00376	0.0117	0.0436	0.00808	0.0941***
	(0.0338)	(0.0281)	(0.0330)	(0.0246)	(0.0204)	(0.0307)	(0.0320)	(0.0164)	(0.0169)	(0.0143)	(0.0207)	(0.0340)	(0.0345)	(0.0340)	(0.0315)	(0.0313)
Observations	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436
R-squared	0.020	0.035	0.092	0.083	0.089	0.143	0.107	0.054	0.062	0.038	0.112	0.049	0.020	0.044	0.056	0.073

Other control variables are: a dummy for the birth in Central Italy or outside the country, dummies for investment lines and for voluntary extra contributions, years of contribution in deviation from their mean, the number of early withdrawals in deviation from their mean. Estimation method: Seemingly Unrelated Regressions. Standard errors in parentheses below coefficients.

* p<0.1; ** p<0.5; *** p<0.01.

Table 4. Linear probability model with interaction variables, first questionnaire

VARIABLES	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	b1	b2	b3	b4	b5
	Life Expectancy.	Evolution. of L.E.	L.E. and Pensions	Numeracy	Inflation	Interest. Compound	Expected Returns.	Risk	Risk-Returns	Diversifi-cation 1	Diversifi-cation 2	Info on pensions	Discussion Family	Discussion Coll.	Estimate my pension	Info on invest.lines
Constant	0.612***	0.725***	0.335***	0.735***	0.800***	0.514***	0.553***	0.897***	0.928***	0.944***	0.774***	0.353***	0.506***	0.623***	0.221***	0.172***
	(0.0534)	(0.0444)	(0.0522)	(0.0389)	(0.0322)	(0.0483)	(0.0507)	(0.0258)	(0.0266)	(0.0226)	(0.0328)	(0.0535)	(0.0546)	(0.0538)	(0.0498)	(0.0494)
Treated	0.000371	0.101**	0.116**	0.114***	0.0751**	0.201***	0.107**	0.0156	0.0711***	0.0302	0.0735**	0.123**	0.0129	-0.112**	0.145***	0.164***
	(0.0512)	(0.0425)	(0.0501)	(0.0373)	(0.0309)	(0.0463)	(0.0486)	(0.0248)	(0.0255)	(0.0217)	(0.0315)	(0.0513)	(0.0524)	(0.0516)	(0.0478)	(0.0474)
Treated x Female	-0.00400	0.0258	0.0685	-0.0307	0.0260	-0.0499	0.0337	0.0206	0.0484*	-0.0453*	-0.0152	0.00839	-0.0160	0.0420	0.0228	0.0468
	(0.0572)	(0.0475)	(0.0559)	(0.0417)	(0.0345)	(0.0517)	(0.0542)	(0.0277)	(0.0285)	(0.0242)	(0.0351)	(0.0572)	(0.0585)	(0.0575)	(0.0533)	(0.0528)
Treated x White Collar	0.0535	-0.0342	-0.00606	0.00626	-0.0431	0.0914*	0.0978*	-0.0119	-0.0749**	-0.00671	-0.00295	0.0123	-0.0315	0.0545	0.0431	0.00698
	(0.0593)	(0.0492)	(0.0580)	(0.0432)	(0.0358)	(0.0536)	(0.0563)	(0.0287)	(0.0296)	(0.0251)	(0.0364)	(0.0593)	(0.0606)	(0.0597)	(0.0553)	(0.0548)
Treated x Age dev.	-0.00385	-0.00729***	-0.00368	-0.000465	-0.00287	-0.00298	-0.000340	0.000116	-0.00266*	0.00158	0.000461	-0.0138***	-0.00463	-0.00648**	-0.00472*	-0.00625**
	(0.00306)	(0.00254)	(0.00299)	(0.00223)	(0.00185)	(0.00277)	(0.00291)	(0.00148)	(0.00153)	(0.00130)	(0.00188)	(0.00307)	(0.00313)	(0.00308)	(0.00286)	(0.00283)
Treated x Age dev. squared	0.000649**	0.000258	0.000730**	0.000278	-6.54e-05	-3.64e-05	0.000381	0.000211	6.88e-05	0.000132	-0.000117	3.83e-05	5.63e-05	2.83e-05	-0.000118	9.61e-05
	(0.000324)	(0.000269)	(0.000317)	(0.000236)	(0.000195)	(0.000293)	(0.000307)	(0.000157)	(0.000162)	(0.000137)	(0.000199)	(0.000324)	(0.000331)	(0.000326)	(0.000302)	(0.000299)
Treated x Univ. Degree	-0.173**	-0.128**	-0.0974	-0.0606	0.00239	-0.266***	-0.0357	-0.0497	0.0176	-0.0356	-0.0663	-0.0496	-0.0490	0.0613	0.0328	0.177***
	(0.0698)	(0.0580)	(0.0683)	(0.0509)	(0.0421)	(0.0631)	(0.0662)	(0.0338)	(0.0348)	(0.0296)	(0.0429)	(0.0699)	(0.0714)	(0.0702)	(0.0651)	(0.0645)
Treated x South	0.0722	-0.00263	0.0286	0.0137	-0.00254	-0.0122	0.00114	0.0721**	0.0162	0.00504	0.0657*	-0.0215	0.0252	0.0676	-0.0336	-0.0437
	(0.0639)	(0.0531)	(0.0625)	(0.0466)	(0.0386)	(0.0578)	(0.0606)	(0.0309)	(0.0319)	(0.0271)	(0.0392)	(0.0640)	(0.0654)	(0.0643)	(0.0596)	(0.0591)
Female	0.0335	-0.00987	-0.0772*	-0.0260	-0.0576**	-0.0970**	-0.0393	-0.0345*	-0.0851***	0.0113	-0.0157	-0.0445	0.0417	-0.112***	-0.0481	-0.0749*
	(0.0422)	(0.0351)	(0.0413)	(0.0308)	(0.0255)	(0.0382)	(0.0401)	(0.0204)	(0.0211)	(0.0179)	(0.0259)	(0.0423)	(0.0432)	(0.0425)	(0.0394)	(0.0391)
White Collar	0.0234	0.0657*	0.0256	0.0519	0.0857***	0.102**	-0.0492	0.0610***	0.0721***	0.0147	0.0526*	0.0145	0.0126	-0.00310	0.00614	0.00358
	(0.0449)	(0.0373)	(0.0439)	(0.0327)	(0.0271)	(0.0406)	(0.0426)	(0.0217)	(0.0224)	(0.0190)	(0.0276)	(0.0449)	(0.0459)	(0.0452)	(0.0419)	(0.0415)
Age dev.	0.00491*	0.00748***	0.00178	-0.00454**	0.00522***	0.00427*	0.000405	-0.00116	0.00257**	0.000313	0.00230	0.0142***	0.00634**	0.00911***	0.00447*	0.00188
	(0.00260)	(0.00216)	(0.00255)	(0.00190)	(0.00157)	(0.00235)	(0.00247)	(0.00126)	(0.00130)	(0.00110)	(0.00160)	(0.00261)	(0.00266)	(0.00262)	(0.00243)	(0.00241)
Age dev. Squared	-0.000426*	-0.000361*	-0.000560**	-0.000179	0.000116	4.66e-05	-0.000163	-0.000114	2.54e-05	-7.25e-05	0.000114	0.000421*	0.000373	-0.000280	0.000434*	0.000160
	(0.000254)	(0.000211)	(0.000248)	(0.000185)	(0.000153)	(0.000230)	(0.000241)	(0.000123)	(0.000127)	(0.000108)	(0.000156)	(0.000254)	(0.000260)	(0.000256)	(0.000237)	(0.000235)
Univ. Degree	0.0740	0.138***	0.270***	0.135***	0.0626	0.281***	0.138**	0.0564*	0.0101	0.0665**	0.177***	0.0603	-0.0416	-0.154**	-0.0476	-0.141**
	(0.0631)	(0.0524)	(0.0617)	(0.0460)	(0.0381)	(0.0571)	(0.0599)	(0.0305)	(0.0315)	(0.0267)	(0.0387)	(0.0631)	(0.0645)	(0.0635)	(0.0589)	(0.0583)
High School	-0.0200	0.0207	0.0759**	0.0289	0.00421	-0.00450	0.00483	0.0115	-0.0273	0.0189	0.0837***	0.0160	-0.0278	-0.0104	0.0316	-0.00125
	(0.0373)	(0.0310)	(0.0365)	(0.0272)	(0.0225)	(0.0337)	(0.0354)	(0.0180)	(0.0186)	(0.0158)	(0.0229)	(0.0373)	(0.0381)	(0.0375)	(0.0348)	(0.0345)
No School	0.0223	0.0264	0.0874	0.0941*	0.0465	-0.0388	-0.0370	-0.0170	-0.0327	-0.0190	0.0593	-0.0558	0.00338	0.0124	-0.0406	-0.0230
	(0.0762)	(0.0633)	(0.0745)	(0.0555)	(0.0460)	(0.0689)	(0.0723)	(0.0369)	(0.0380)	(0.0323)	(0.0468)	(0.0763)	(0.0779)	(0.0767)	(0.0711)	(0.0704)
South	-0.0353	-0.0474	-0.0635	-0.00519	-0.0416	-0.0266	-0.0447	-0.0994***	-0.0682***	-0.0470**	-0.117***	0.00281	-0.00310	0.00512	0.0243	0.112**
	(0.0476)	(0.0396)	(0.0466)	(0.0347)	(0.0287)	(0.0431)	(0.0452)	(0.0230)	(0.0238)	(0.0202)	(0.0292)	(0.0477)	(0.0487)	(0.0479)	(0.0444)	(0.0440)
Observations	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436	1,436
R-squared	0.025	0.043	0.094	0.084	0.090	0.154	0.112	0.065	0.068	0.044	0.116	0.050	0.021	0.050	0.057	0.083

Other control variables are: a dummy for the birth in Central Italy or outside the country, dummies for investment lines and for voluntary extra contributions, years of contribution in deviation from their mean, the number of early withdrawals in deviation from their mean. Estimation method: Seemingly Unrelated Regressions. Standard errors in parentheses below coefficients.
* p<0.1; ** p<0.5; *** p<0.01.

Table 6– Linear Probability baseline model, restricted sample

The table reports the outcome of the baseline linear probability model relative to the restricted sample comprising (a) the 770 treated (T1) individuals and (b) only the 370 control individuals who have first filled the questionnaire and who have subsequently viewed the entire online seminar.

VARIABLES	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	b1	b2	b3	b4	b5
	Life Expectancy	Evolution. of L.E.	L.E. and Pensions	Numeracy	Inflation	Interest. Compound	Expected Returns	Risk	Risk-Returns	Diversifi-cation 1	Diversifi-cation 2	Info on pensions	Discussion Family	Discussion Coll.	Estimate my pension	Info on invest.lines
Constant	0.552***	0.790***	0.337***	0.750***	0.794***	0.579***	0.568***	0.925***	0.955***	0.966***	0.842***	0.370***	0.555***	0.595***	0.167***	0.113**
	(0.0571)	(0.0464)	(0.0566)	(0.0389)	(0.0326)	(0.0506)	(0.0531)	(0.0250)	(0.0259)	(0.0216)	(0.0314)	(0.0580)	(0.0585)	(0.0580)	(0.0545)	(0.0545)
Treated	0.0633**	0.0626**	0.183***	0.106***	0.0523***	0.128***	0.167***	0.0212	0.0496***	-0.00201	0.0160	0.112***	-0.0392	-0.0168	0.180***	0.227***
	(0.0311)	(0.0252)	(0.0308)	(0.0211)	(0.0177)	(0.0275)	(0.0289)	(0.0136)	(0.0141)	(0.0117)	(0.0171)	(0.0315)	(0.0318)	(0.0315)	(0.0296)	(0.0296)
Female	0.0457	-0.00211	-0.0519	-0.0483**	-0.0550***	-0.122***	-0.0234	-0.0316**	-0.0404***	-0.0232*	-0.0388**	-0.0358	0.0470	-0.0831**	-0.0376	-0.0490
	(0.0329)	(0.0267)	(0.0326)	(0.0224)	(0.0188)	(0.0291)	(0.0306)	(0.0144)	(0.0149)	(0.0124)	(0.0181)	(0.0334)	(0.0337)	(0.0334)	(0.0314)	(0.0314)
White Collar	0.0561	0.0376	0.00680	0.0602**	0.0519**	0.146***	-0.00458	0.0437***	0.00705	0.0145	0.0471**	0.0362	-0.0289	0.0208	0.0358	0.0188
	(0.0359)	(0.0292)	(0.0356)	(0.0244)	(0.0205)	(0.0318)	(0.0334)	(0.0157)	(0.0163)	(0.0135)	(0.0197)	(0.0364)	(0.0368)	(0.0365)	(0.0342)	(0.0343)
Age dev.	0.00121	0.00161	-8.97e-06	-0.00484***	0.00243*	0.00207	-0.00120	-0.00151	0.000465	0.00167**	0.00231*	0.00463**	0.00279	0.00352	0.00148	-0.00257
	(0.00221)	(0.00179)	(0.00218)	(0.00150)	(0.00126)	(0.00195)	(0.00205)	(0.000964)	(0.000998)	(0.000832)	(0.00121)	(0.00224)	(0.00226)	(0.00224)	(0.00210)	(0.00210)
Age dev. Square	0.000178	-0.000155	-9.99e-05	5.75e-05	8.07e-05	-8.49e-05	0.000214	4.99e-05	0.000133*	9.44e-06	3.95e-05	0.000446**	0.000457**	-0.000229	0.000427**	0.000310*
	(0.000177)	(0.000143)	(0.000175)	(0.000120)	(0.000101)	(0.000156)	(0.000164)	(7.72e-05)	(8.00e-05)	(6.66e-05)	(9.70e-05)	(0.000179)	(0.000181)	(0.000179)	(0.000168)	(0.000169)
Univ. Degree	-0.0167	0.0106	0.211***	0.100***	0.0806***	0.139***	0.130**	0.0181	0.0302	0.0364*	0.114***	0.0370	-0.0668	-0.101*	-0.0210	-0.0122
	(0.0547)	(0.0444)	(0.0542)	(0.0372)	(0.0312)	(0.0485)	(0.0508)	(0.0239)	(0.0248)	(0.0206)	(0.0300)	(0.0555)	(0.0560)	(0.0555)	(0.0522)	(0.0522)
High School	0.0104	0.000186	0.0756*	0.0305	0.0129	0.0115	0.00966	-0.00257	-0.0216	0.0197	0.0734***	0.0176	-0.0260	-0.00994	0.0315	-0.00368
	(0.0430)	(0.0349)	(0.0425)	(0.0292)	(0.0245)	(0.0381)	(0.0399)	(0.0188)	(0.0194)	(0.0162)	(0.0236)	(0.0436)	(0.0440)	(0.0436)	(0.0410)	(0.0410)
No School	-0.0267	-0.0137	0.0882	0.0418	0.0453	-0.121	-0.117	-0.0287	-0.0547	-0.00746	0.0465	-0.0521	-0.0743	-0.0249	-0.0154	-0.0120
	(0.0888)	(0.0721)	(0.0879)	(0.0604)	(0.0507)	(0.0787)	(0.0825)	(0.0388)	(0.0402)	(0.0335)	(0.0488)	(0.0901)	(0.0909)	(0.0901)	(0.0847)	(0.0847)
South	0.00758	-0.0374	-0.0432	0.0178	-0.0234	-0.0299	-0.0646*	-0.0483***	-0.0673***	-0.0383***	-0.0529**	-0.00611	0.0206	0.0563	0.00625	0.0769**
	(0.0382)	(0.0310)	(0.0378)	(0.0260)	(0.0218)	(0.0338)	(0.0355)	(0.0167)	(0.0173)	(0.0144)	(0.0210)	(0.0388)	(0.0391)	(0.0388)	(0.0364)	(0.0364)
Observations	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
R-squared	0.023	0.018	0.083	0.085	0.075	0.119	0.101	0.044	0.056	0.042	0.088	0.039	0.018	0.036	0.049	0.064

Other control variables are: a dummy for the birth outside the country, dummies for investment lines and for voluntary extra contributions, years of contribution in deviation from their mean, the number of early withdrawals in deviation from their mean. Estimation method: Seemingly Unrelated Regressions. Standard errors in parentheses below coefficients.
* p<0.1; ** p<0.5; *** p<0.01.

Table 7 – Linear Probability model with interaction variables, restricted sample

The table reports the outcome of the linear probability model with interaction variables relative to the restricted sample (defined as for Tables 6a and 6b).

VARIABLES	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	b1	b2	b3	b4	b5
	Life Expectancy	Evolution. of L.E.	L.E. and Pensions	Numeracy	Inflation	Interest. Compound	Expected Returns	Risk	Risk-Returns	Diversifi-cation 1	Diversifi-cation 2	Info on pensions	Discussion Family	Discussion Coll.	Estimate my pension	Info on invest.lines
Constant	0.561***	0.808***	0.423***	0.741***	0.790***	0.578***	0.639***	0.955***	0.952***	0.958***	0.843***	0.361***	0.553***	0.647***	0.160**	0.145**
	(0.0663)	(0.0538)	(0.0654)	(0.0451)	(0.0378)	(0.0581)	(0.0616)	(0.0289)	(0.0300)	(0.0250)	(0.0365)	(0.0669)	(0.0680)	(0.0673)	(0.0632)	(0.0629)
Treated	0.0451	0.0415	0.0588	0.120***	0.0647*	0.121**	0.0549	-0.0245	0.0552**	0.00947	0.0130	0.134**	-0.0381	-0.0974	0.191***	0.187***
	(0.0609)	(0.0494)	(0.0601)	(0.0415)	(0.0347)	(0.0534)	(0.0566)	(0.0266)	(0.0276)	(0.0230)	(0.0335)	(0.0615)	(0.0625)	(0.0618)	(0.0581)	(0.0578)
Treated x Female	-0.0230	0.0696	0.154**	-0.0154	0.0722*	-0.0728	0.0780	0.0562*	0.0142	-0.0359	0.0153	0.0219	-0.0461	0.0455	0.0330	0.0875
	(0.0697)	(0.0566)	(0.0688)	(0.0475)	(0.0398)	(0.0611)	(0.0648)	(0.0304)	(0.0316)	(0.0263)	(0.0384)	(0.0704)	(0.0715)	(0.0708)	(0.0665)	(0.0662)
Treated x White Collar	0.0469	-0.000939	0.0352	0.00117	-0.0168	0.163***	0.118*	0.0212	-0.0252	-0.00959	0.0261	-0.0199	0.0466	0.0801	0.0369	-0.0337
	(0.0712)	(0.0578)	(0.0703)	(0.0485)	(0.0406)	(0.0625)	(0.0662)	(0.0311)	(0.0322)	(0.0269)	(0.0392)	(0.0719)	(0.0731)	(0.0723)	(0.0679)	(0.0676)
Treated x Age dev.	-0.000852	-0.00622**	-0.00481	-0.00180	-0.000583	-0.00279	-0.000664	-0.000676	-0.00218	0.00147	0.000622	-0.0147***	-0.00405	-0.00488	-0.00507	-0.00940***
	(0.00366)	(0.00297)	(0.00361)	(0.00249)	(0.00209)	(0.00321)	(0.00340)	(0.00160)	(0.00166)	(0.00138)	(0.00201)	(0.00369)	(0.00375)	(0.00371)	(0.00349)	(0.00347)
Treated x Age dev. squared	0.000309	0.000222	0.000976**	0.000185	-4.80e-05	0.000387	0.000251	0.000251	-0.000128	0.000155	-0.000118	-5.29e-05	3.67e-05	-1.02e-05	-0.000516	-0.000152
	(0.000388)	(0.000315)	(0.000383)	(0.000264)	(0.000221)	(0.000340)	(0.000360)	(0.000169)	(0.000175)	(0.000146)	(0.000213)	(0.000391)	(0.000398)	(0.000393)	(0.000370)	(0.000368)
Treated x Univ. Degree	-0.168**	-0.0516	-0.108	-0.0781	-0.0315	-0.363***	-0.0383	-0.0603*	0.0148	-0.0241	-0.0333	-0.0546	-0.0834	0.0482	0.0133	0.172**
	(0.0818)	(0.0664)	(0.0807)	(0.0557)	(0.0466)	(0.0717)	(0.0760)	(0.0357)	(0.0370)	(0.0309)	(0.0450)	(0.0826)	(0.0839)	(0.0830)	(0.0780)	(0.0776)
Treated x South	0.0773	-0.0302	0.0505	-0.0304	-0.0571	-0.0419	0.0548	0.0661*	0.0482	-0.00176	0.00569	-0.0478	-0.00229	0.0275	-0.0475	-0.0137
	(0.0776)	(0.0630)	(0.0765)	(0.0528)	(0.0442)	(0.0680)	(0.0721)	(0.0338)	(0.0351)	(0.0293)	(0.0427)	(0.0783)	(0.0795)	(0.0787)	(0.0739)	(0.0736)
Female	0.0605	-0.0538	-0.163***	-0.0385	-0.104***	-0.0683	-0.0761	-0.0718***	-0.0528**	0.00181	-0.0478	-0.0596	0.0774	-0.116**	-0.0602	-0.116**
	(0.0584)	(0.0474)	(0.0576)	(0.0398)	(0.0333)	(0.0512)	(0.0543)	(0.0255)	(0.0264)	(0.0220)	(0.0321)	(0.0590)	(0.0599)	(0.0593)	(0.0557)	(0.0554)
White Collar	0.0208	0.0374	-0.0160	0.0564	0.0639*	0.0267	-0.0811	0.0302	0.0247	0.0193	0.0299	0.0457	-0.0639	-0.0306	0.0119	0.0459
	(0.0601)	(0.0488)	(0.0593)	(0.0409)	(0.0343)	(0.0527)	(0.0558)	(0.0262)	(0.0272)	(0.0227)	(0.0330)	(0.0606)	(0.0616)	(0.0610)	(0.0573)	(0.0570)
Age dev.	0.00183	0.00587**	0.00343	-0.00380*	0.00284	0.00361	-0.000431	-0.000832	0.00215	0.000504	0.00199	0.0146***	0.00547	0.00713**	0.00513	0.00413
	(0.00336)	(0.00273)	(0.00332)	(0.00229)	(0.00192)	(0.00295)	(0.00312)	(0.00147)	(0.00152)	(0.00127)	(0.00185)	(0.00339)	(0.00344)	(0.00341)	(0.00320)	(0.00319)
Age dev. Squared	-4.68e-05	-0.000304	-0.000823**	-6.06e-05	0.000117	-0.000334	5.36e-06	-0.000148	0.000222	-9.80e-05	0.000119	0.000527	0.000449	-0.000231	0.000809**	0.000424
	(0.000332)	(0.000269)	(0.000328)	(0.000226)	(0.000189)	(0.000291)	(0.000308)	(0.000145)	(0.000150)	(0.000125)	(0.000183)	(0.000335)	(0.000340)	(0.000337)	(0.000316)	(0.000315)
Univ. Degree	0.0989	0.0449	0.281***	0.154***	0.1000**	0.392***	0.156**	0.0577*	0.0192	0.0535*	0.136***	0.0757	-0.00723	-0.133*	-0.0296	-0.131*
	(0.0784)	(0.0637)	(0.0774)	(0.0534)	(0.0447)	(0.0688)	(0.0729)	(0.0342)	(0.0355)	(0.0296)	(0.0431)	(0.0792)	(0.0804)	(0.0796)	(0.0748)	(0.0744)
High School	0.0117	0.000274	0.0752*	0.0305	0.0102	0.0120	0.0101	-0.00252	-0.0205	0.0198	0.0727***	0.0211	-0.0238	-0.00755	0.0319	-0.00122
	(0.0429)	(0.0348)	(0.0424)	(0.0292)	(0.0245)	(0.0376)	(0.0399)	(0.0187)	(0.0194)	(0.0162)	(0.0236)	(0.0433)	(0.0440)	(0.0436)	(0.0409)	(0.0407)
No School	-0.0249	-0.0145	0.0728	0.0416	0.0394	-0.118	-0.122	-0.0324	-0.0495	-0.00921	0.0467	-0.0356	-0.0658	-0.0195	-0.00538	-0.00442
	(0.0890)	(0.0723)	(0.0879)	(0.0606)	(0.0508)	(0.0781)	(0.0827)	(0.0388)	(0.0403)	(0.0336)	(0.0490)	(0.0899)	(0.0913)	(0.0904)	(0.0849)	(0.0845)
South	-0.0421	-0.0200	-0.0832	0.0387	0.0141	0.00653	-0.102*	-0.0939***	-0.101***	-0.0365	-0.0554	0.0229	0.0242	0.0364	0.0392	0.0794
	(0.0650)	(0.0528)	(0.0642)	(0.0443)	(0.0371)	(0.0570)	(0.0604)	(0.0284)	(0.0294)	(0.0245)	(0.0358)	(0.0657)	(0.0667)	(0.0660)	(0.0620)	(0.0617)
Observations	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140	1,140
R-squared	0.028	0.024	0.093	0.088	0.080	0.141	0.106	0.053	0.060	0.046	0.089	0.053	0.020	0.041	0.053	0.078

Other control variables are: a dummy for the birth outside the country, dummies for investment lines and for voluntary extra contributions, years of contribution in deviation from their mean, the number of early withdrawals in deviation from their mean. Estimation method: Seemingly Unrelated Regressions. Standard errors in parentheses below coefficients.
* p<0.1; ** p<0.5; *** p<0.01.

Table 8 – 3-month Migration matrix

The table reports the unconditional migration behavior of the treated ("T2") sample and of matched individuals over three months after the online seminar. Initial investment lines are reported on rows, final investment lines on columns.

			Matched sample					Treated sample				
			Final investment line					Final investment line				
			1-Money market	2-Safety	3-Income	4-Growth	Total	1-Money market	2-Safety	3-Income	4-Growth	Total
Initial investment line	1-Money market	N	352	0	2	0	354	160	2	10	5	177
		% initial	99,4%	0,0%	0,6%	0,0%	100,0%	90,4%	1,1%	5,6%	2,8%	100,0%
	2-Safety	N	0	215	0	1	216	0	106	2	0	108
		% initial	0,0%	99,5%	0,0%	0,5%	100,0%	0,0%	98,1%	1,9%	0,0%	100,0%
	3-Income	N	0	1	935	0	936	0	1	462	5	468
		% initial	0,0%	0,1%	99,9%	0,0%	100,0%	0,0%	0,2%	98,7%	1,1%	100,0%
	4-Growth	N	0	2	0	338	340	0	0	1	169	170
		% initial	0,0%	0,6%	0,0%	99,4%	100,0%	0,0%	0,0%	0,6%	99,4%	100,0%

Table 9 – Linear Probability model – Actual change of investment line (over 3 months from the video)

The table reports the outcome of (seven) alternative specifications for the linear probability model where the dependent variable is equal to 1 for those individuals who have changed their investment lines over three months from viewing the video. The sample is composed by 923 triplets where one treated individual is matched with two control individuals with the same age, gender, job qualification (blue vs. white collar), level of education, initial investment line ("Money Market Plus", "Growth" etc.). Matched individuals are allowed to serve as a match only once.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	-0.00542	-0.0644	-0.0106	-0.00990	-0.00176	-0.00522	0.00160
	(0.162)	(0.292)	(0.162)	(0.162)	(0.163)	(0.162)	(0.163)
Treated x "Money Market Plus"	0.0904***	0.0905***	0.0860***	0.0746***	0.0749***	0.0636***	0.0640***
	(0.00983)	(0.00984)	(0.0102)	(0.0149)	(0.0149)	(0.0156)	(0.0156)
Treated x "Money Market Plus" x Age dev.						-0.00342**	-0.00338**
						(0.00144)	(0.00145)
Treated x "Income"	0.0118*	0.0118*	0.0135**	-0.000582	1.86e-05	0.00165	0.00224
	(0.00606)	(0.00606)	(0.00615)	(0.0126)	(0.0126)	(0.0126)	(0.0126)
Treated x "Safety"	0.00927	0.00939	0.0113	-0.00302	-0.00248	-0.00102	-0.000442
	(0.0126)	(0.0126)	(0.0126)	(0.0167)	(0.0168)	(0.0167)	(0.0168)
Treated x "Growth"	2.67e-05	0.000175	-0.00152	-0.0158	-0.0153	-0.0111	-0.0107
	(0.0100)	(0.0101)	(0.0101)	(0.0150)	(0.0151)	(0.0151)	(0.0152)
Treated x Female				-0.00590	-0.00575	-0.00604	-0.00593
				(0.0111)	(0.0111)	(0.0111)	(0.0111)
Treated x White Collar				0.000682	-5.71e-05	0.000867	0.000143
				(0.0112)	(0.0112)	(0.0111)	(0.0112)
Treated x University Degree				0.0106	0.0112	0.00557	0.00618
				(0.0171)	(0.0171)	(0.0172)	(0.0172)
Treated x High School				0.0183	0.0185	0.0150	0.0152
				(0.0136)	(0.0136)	(0.0137)	(0.0137)
Treated x No School				0.00967	0.00972	0.00317	0.00335
				(0.0303)	(0.0303)	(0.0304)	(0.0304)
Treated x Central Italy				0.00263	0.00246	0.00236	0.00218
				(0.0110)	(0.0110)	(0.0110)	(0.0110)
Treated x Southern Italy				0.00515	0.00527	0.00451	0.00460
				(0.0116)	(0.0116)	(0.0116)	(0.0116)
Treated x Born Abroad				-0.00610	-0.00457	-0.00885	-0.00741
				(0.0283)	(0.0283)	(0.0283)	(0.0283)
Treated x Age Dev.			-0.000868	-0.000742	-0.000751	-0.000196	-0.000213
			(0.000535)	(0.000557)	(0.000558)	(0.000602)	(0.000603)
Female	-0.00604	-0.0197	-0.0125	-0.0150	0.00171	-0.00793	0.00641
	(0.128)	(0.140)	(0.128)	(0.129)	(0.131)	(0.129)	(0.131)
White Collar	-0.0408	-0.181	-0.0841	-0.115	-0.0819	-0.0674	-0.0375
	(0.653)	(0.875)	(0.653)	(0.659)	(0.660)	(0.658)	(0.659)
Age Dev.	0.00151	0.00964	0.00340	0.00448	0.00364	0.00255	0.00180
	(0.0235)	(0.0410)	(0.0236)	(0.0238)	(0.0238)	(0.0238)	(0.0238)
Squared Age Dev.		-0.000358					
		(0.00148)					
Controls: education level (no school, high school, university degree)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for area of birth (Centre, South, Born Abroad)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for initial investment line (Money market plus, Safety, Income)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls	No	No	No	No	Yes	No	Yes
Triplet FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,769	2,769	2,769	2,769	2,769	2,769	2,769
R-squared	0.356	0.356	0.357	0.358	0.359	0.360	0.361
F-test	1.098	1.096	1.100	1.092	1.089	1.100	1.097
Prob > F	0.0491	0.0518	0.0449	0.0592	0.0640	0.0460	0.0505

Additional controls: dummy for the birth outside the country, dummies for investment lines and for voluntary extra contributions, years of contribution in deviation from their mean, the number of early withdrawals in deviation from their mean. Standard errors in parentheses below coefficients.

* p<0.1; ** p<0.5; *** p<0.01.

Table 10 – Linear Probability model – Actual change of investment line (over 12 months from the video)

The table reports the outcome of (seven) alternative specifications for the linear probability model where the dependent variable is equal to 1 for those individuals who have changed their investment lines over twelve months from viewing the video. The sample is composed by 923 triplets where one treated individual is matched with two control individuals with the same age, gender, job qualification (blue vs. white collar), level of education, initial investment line ("Money Market Plus", "Growth" etc.). Matched individuals are allowed to serve as a match only once.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	-0.00560	-0.0760	-0.0107	-0.0352	-0.0265	-0.0286	-0.0217
	(0.220)	(0.399)	(0.220)	(0.221)	(0.222)	(0.221)	(0.222)
Treated x "Money Market Plus"	0.116***	0.116***	0.112***	0.0912***	0.0916***	0.0758***	0.0761***
	(0.0134)	(0.0134)	(0.0139)	(0.0203)	(0.0203)	(0.0212)	(0.0213)
Treated x "Money Market Plus" x Age dev.						-0.00479**	-0.00480**
						(0.00197)	(0.00197)
Treated x "Income"	0.0160*	0.0161*	0.0177**	-0.00197	-0.00185	0.00116	0.00131
	(0.00826)	(0.00826)	(0.00838)	(0.0171)	(0.0172)	(0.0172)	(0.0172)
Treated x "Safety"	0.00464	0.00479	0.00664	-0.0117	-0.0112	-0.00891	-0.00834
	(0.0172)	(0.0172)	(0.0172)	(0.0228)	(0.0228)	(0.0227)	(0.0228)
Treated x "Growth"	2.75e-05	0.000205	-0.00149	-0.0204	-0.0198	-0.0137	-0.0132
	(0.0137)	(0.0137)	(0.0137)	(0.0204)	(0.0205)	(0.0206)	(0.0207)
Treated x Female				-0.00128	-0.00128	-0.00147	-0.00153
				(0.0151)	(0.0151)	(0.0151)	(0.0151)
Treated x White Collar				-0.0217	-0.0219	-0.0214	-0.0216
				(0.0152)	(0.0152)	(0.0152)	(0.0152)
Treated x University Degree				0.0341	0.0341	0.0270	0.0270
				(0.0232)	(0.0232)	(0.0234)	(0.0234)
Treated x High School				0.0421**	0.0420**	0.0374**	0.0373**
				(0.0186)	(0.0186)	(0.0186)	(0.0187)
Treated x No School				0.0244	0.0245	0.0153	0.0155
				(0.0413)	(0.0413)	(0.0414)	(0.0415)
Treated x Central Italy				-0.000665	-0.000519	-0.00105	-0.000917
				(0.0150)	(0.0150)	(0.0150)	(0.0150)
Treated x Southern Italy				0.000934	0.00100	3.92e-05	5.68e-05
				(0.0158)	(0.0158)	(0.0158)	(0.0158)
Treated x Born Abroad				0.0687*	0.0690*	0.0649*	0.0650*
				(0.0385)	(0.0386)	(0.0385)	(0.0386)
Treated x Age Dev.			-0.000849	-0.000600	-0.000604	0.000164	0.000160
			(0.000730)	(0.000759)	(0.000760)	(0.000820)	(0.000821)
Female	-0.00624	-0.0226	-0.0125	-0.0464	-0.0405	-0.0365	-0.0338
	(0.175)	(0.191)	(0.175)	(0.176)	(0.178)	(0.175)	(0.178)
White Collar	-0.0421	-0.210	-0.0845	-0.309	-0.306	-0.243	-0.243
	(0.890)	(1.192)	(0.891)	(0.897)	(0.899)	(0.896)	(0.898)
Age Dev.	0.00156	0.0113	0.00341	0.0119	0.0117	0.00920	0.00911
	(0.0321)	(0.0559)	(0.0321)	(0.0324)	(0.0324)	(0.0323)	(0.0324)
Squared Age Dev.		-0.000427					
		(0.00202)					
Controls: education level (no school, high school, university degree)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for area of birth (Centre, South, Born Abroad)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for initial investment line (Money market plus, Safety, Income)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls	No	No	No	No	Yes	No	Yes
Triplet FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,769	2,769	2,769	2,769	2,769	2,769	2,769
R-squared	0.367	0.367	0.367	0.370	0.370	0.372	0.372
F-test	1.147	1.145	1.148	1.149	1.142	1.157	1.150
Prob > F	0.00747	0.00804	0.00732	0.00683	0.00908	0.00475	0.00639

Additional controls: dummy for the birth outside the country, dummies for investment lines and for voluntary extra contributions, years of contribution in deviation from their mean, the number of early withdrawals in deviation from their mean. Standard errors in parentheses below coefficients. * p<0.1; ** p<0.5; *** p<0.01.

Table 11 – Intention to treat analysis – Effect of the invitation to participate on actual change of investment line (over 3 months)

Number of simulations	1000	2000
Mean Alpha	0,00156	0,00154
Mean Beta (Invited)	0,00108	0,00109
Mean S.E. (Invited)	0,00054	0,00054
Mean p-value (Invited)	0,05273	0,05015
Proportion significant at 10% (Invited)	90,0%	91,4%
Proportion significant at 5% (Invited)	58,0%	60,3%
Proportion significant at 1% (Invited)	2,5%	2,7%
Number of observations	133731	133731

Controls: all interactions between gender, white/blue collar, education, macroregion of birth, initial investment line and age in deviation; years of contribution in deviation from their mean, number of early withdrawals in deviation from their mean