

# **Nudging financial and demographic literacy: experimental evidence from an Italian Trade Union Pension Fund**

Francesco C. Billari, Carlo A. Favero and Francesco Saita  
(Bocconi University)

# Introduction

- We present the results of a low-cost, Internet-based financial and demographic literacy program (*Finlife*), implemented on a sample of workers from the largest industry pension fund in Italy (including blue and white collars from the engineering sector)
- Our approach was based on
  1. An instructional video provided through the Internet in streaming
  2. An experimental design that explicitly allows to evaluate the impact of the program on financial and demographic literacy and on short term behaviours
  3. A follow-up to assess the stability of the effects on some literacy outcomes
- The project delivered a remarkable and statistically significant increase in financial and demographic literacy, and a push to look for more information on pensions and on the pension fund's investment lines and to devote more time to forecasting future pension payments
- Effects generally proved to be homogeneous among sample subgroups and persistent
- *The project was supported by two grants by Citi Foundation, New York*

# Introduction

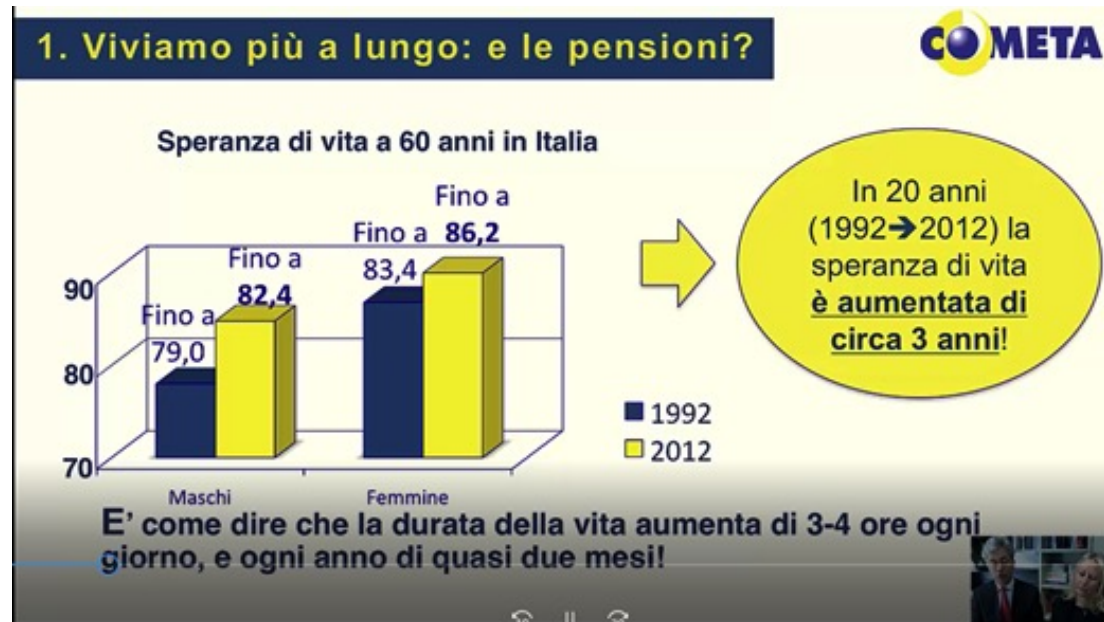
## *Cometa Pension Fund*

- Defined contribution, closed industry pension fund for workers of the engineering and plant installation sector (largest industry pension fund in Italy, 408,797 members at the end of 2014)
- Members include factory workers and (mainly lower level) office workers
- The fund delegates investment choices to professional investment managers, and since 2005 it has offered multiple investment lines with different risk-return profiles
- Very few members invest in the higher risk, higher return investment line

Investment line	Money market +	Safety	Income	Growth
Investment profile	100% bonds	Guaranteed minimum return, max 10% stocks	85% bonds 15% stocks	60% bonds 40% stocks
Number of members (end of 2014)	173,634 (42.47%)	58,057 (14.20%)	160,832 (39.34%)	16,274 (3.98%)

# Program and experimental design (1)

- Video lecture of about 25 minutes presenting demographic trends in life expectancy, basic concepts of financial literacy, and how to get information on Cometa investment lines through Cometa's website



### 4.1. Tenere conto dell'inflazione: rendimenti nominali e rendimenti reali

Comparto	Monetario Plus	Reddito
Grado di rischio	Basso	Medio
In cosa investe il comparto?	100% obbligazioni	85% obbligazioni 15% azioni
<b>Rendimento medio annuo NOMINALE</b>	<b>2,0%</b>	<b>4,1%</b>
Inflazione media annua nel periodo	1,7%	1,7%
<b>Rendimento medio annuo REALE</b>	<b>0,3%</b>	<b>2,4%</b>

Dati basati sul periodo aprile 2005 - dicembre 2014

## Program and experimental design (2)

- Treatment and control samples were generated as follows:
  - 1) The potential target was represented by the about 140,000 pension fund members (out of 408,797) who had given their e-mail address to the fund. We were allowed to contact up to about 28,000 individuals for the experiment
  - 2) We stratified our population according to 1) job type (white vs blue collars); 2) gender; 3) macroregion of birth; 4) age interval
  - 3) We then extracted stratified randomly treated and control samples within each gender/job type/macroregion of birth/age interval
- Full anonymity preserved, while through a unique code we were able to match individual responses with gender, age, qualification and some other individual characteristics within the fund database

## Program and experimental design (3)

- *Treated group*: invited by e-mail to view the video in streaming through a web link + invited to fill in an online questionnaire two weeks after having completed viewing the video (11 demographic and financial literacy questions + 5 questions on behaviours)
- *Control group*: invited by e-mail to fill in an online questionnaire without having had access to the video. The opportunity to view the video has been offered only later to those who completed the questionnaire
- *Second online questionnaire* with 6 of the 11 demographic and financial literacy questions resubmitted after some months
- Invitations for the video (treated) or the questionnaire (controls) sent in buckets between June 2015 and early March 2016. Second online questionnaire sent between June and September 2015 (median distance 8.6 months, 90% b/w 4 and 12.6 months)
- Overall sample for main questionnaire: 1,436 individuals (770 treated, 666 controls)

# Descriptives: treated (n=770) and control (n=666) samples

Characteristic		Sample	Control	Treated	Difference	P-Value <sup>1</sup>
<b>Age</b>		44.48	43.84	45.03	-1.19**	0.0103
<b>Occupation</b>	% of "Blue Collar"	40.04%	45.95%	34.94%	11.01%***	0.0000
<b>Sex</b>	% of Males	70.68%	69.52%	71.69%	-2.17%	0.3683
<b>Place of birth</b>	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
<b>Educational Qualification</b>	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
<b>Years of Paid Contributions</b>		12.62	12.39	12.82	-0.43*	0.0760
<b>Investment line</b>	"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
<b>Extra individual contributions to the fund</b>	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
<b>Anticipations</b>	Total Anticipations	0.39	0.43	0.36	0.07	0.1275

The null hypothesis of randomization is not rejected under most dimensions. Exceptions: in the control group the share of «blue collars» and of investors in safer investment lines is greater, and the share with university degree is lower

All subsequent regressions will also include controls for individual characteristics

# Treatment effect

Treatment effect tested through a difference estimator within a system of 16 linear probability equations (11 literacy + 5 behaviour questions):

$$Y_{li1} = \beta_{l01} + \beta_{l11} X_{li} + \sum_{j=1}^{23} \beta_{lj+11} W_{li} + u_{li1}$$

...

$$Y_{li16} = \beta_{l016} + \beta_{l116} X_{li} + \sum_{j=1}^{23} \beta_{lj+116} W_{li} + u_{li16}$$

Where

$Y_{li1k}$  are binary variables that capture the correct answer to the k-th question

$X_{li}$  is the treatment dummy

$W_{li}$  represent the controls for individual characteristics (all non-dummy controls, e.g. age or years of contributions, are demeaned)

(An alternative logit model tested for robustness confirms the baseline evidence)

Key outcome: treatment significantly effective for 10 out of 11 literacy questions and on the 3 most important questions on behaviours



# Treatment effect (1): Demographic literacy

VARIABLES	a1	a2	a3
	Life Expectancy.	Evolution. of L.E.	L.E. and Pensions
Constant	0.574*** (0.0492)	0.716*** (0.0408)	0.295*** (0.0481)
TREATMENT	0.0559** (0.0261)	0.0780*** (0.0217)	0.173*** (0.0255)
WHITE COLLAR	0.0571* (0.0319)	0.0531** (0.0265)	0.0232 (0.0312)
FEMALE	0.0351 (0.0289)	0.0110 (0.0240)	-0.0355 (0.0283)
AGE	0.00277 (0.00198)	0.00360** (0.00164)	-0.000293 (0.00193)
AGE_SQUARED	-3.12e-05 (0.000162)	-0.000205 (0.000134)	-0.000111 (0.000158)
CENTRE	0.0271 (0.0324)	-0.0106 (0.0269)	-0.0767** (0.0317)
SOUTH	0.00639 (0.0338)	-0.0420 (0.0281)	-0.0423 (0.0331)
UNIV DEGREE	-0.0248 (0.0488)	0.0666 (0.0405)	0.217*** (0.0477)
HS DEGREE	-0.0247 (0.0374)	0.0178 (0.0310)	0.0733** (0.0365)
NO_SCHOOL	0.0188 (0.0763)	0.0227 (0.0633)	0.0934 (0.0746)
Observations	1,436	1,436	1,436
R-squared	0.021	0.039	0.092

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

**a2. Evolution of life expectancy - A man or a woman that are 60 years old in Italy, with respect to 20 years ago, can expect to live:** (1) At least 2 years less (2) 1-2 years less (3) More or less as much as 20 years ago, (4) 1-2 years more (5) At least 2 years more (6) Do not know

**a3. Life expectancy and pension - Given the same quantity of contribution years and of paid contributions, if life expectancy increases, what happens on the public monthly pension that a retired person can expect to receive?** (1) increases (2) decreases, (3) remains the same, because given the current law it is independent from the expectation of life, (4) Do not know

- The average probability to answer correctly the first and the second question is 57.4% and 71.6% and is significantly increased by the treatment
- The third question is particularly important in order to be motivated to plan. The baseline of 0.295 is very low, and is raised by 0.217 by a university degree and by 0.173 by the treatment
- Note: the null that the effect of the treatment is not significantly different from that of the university degree cannot be rejected

# Treatment effect (2): Financial literacy I

VARIABLES	a4	a5	a6
	Numeracy	Inflation	Interest Compounding
Constant	0.734*** (0.0358)	0.808*** (0.0296)	0.534*** (0.0446)
TREATMENT	0.119*** (0.0190)	0.0524*** (0.0157)	0.174*** (0.0237)
WHITE COLLAR	0.0580** (0.0232)	0.0631*** (0.0192)	0.158*** (0.0290)
FEMALE	-0.0413** (0.0211)	-0.0404** (0.0174)	-0.126*** (0.0263)
AGE	-0.00466*** (0.00144)	0.00367*** (0.00119)	0.00296* (0.00180)
AGE_SQUARED	-2.54e-05 (0.000118)	7.38e-05 (9.75e-05)	-2.25e-05 (0.000147)
CENTRE	-0.0187 (0.0236)	-0.0154 (0.0195)	-0.00392 (0.0294)
SOUTH	0.00169 (0.0246)	-0.0411** (0.0204)	-0.0371 (0.0307)
UNIV DEGREE	0.0998*** (0.0355)	0.0651** (0.0294)	0.127*** (0.0443)
HS DEGREE	0.0286 (0.0272)	0.00491 (0.0225)	-0.00289 (0.0339)
NO_SCHOOL	0.0946* (0.0555)	0.0472 (0.0460)	-0.0438 (0.0692)
Observations	1,436	1,436	1,436
R-squared	0.083	0.089	0.143

Basic financial literacy questions on numeracy, inflation and compounding (van Rooij Lusardi Alessie 2011)

**a4. Numeracy - Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: (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 was 1% per year and inflation was 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 had €100 euro in a savings account and the interest rate is 20% per year and you never withdraw money or interest payments. After 5 years, how much would you have on this account in total? (1) More than €200, (2) Exactly €200, (3) Less than €200, (4) Do not know**

- Both the treatment and a university degree have a clear positive effect, and the null that the effect of the treatment is not significantly different from that of the university degree cannot be rejected
- Statistically significant gender gap
- For numeracy and inflation, average percentage of correct answers (73% and 81%) is markedly higher than the ones from Bank of Italy's Survey on Households in 2006 reported by Fornero and Monticone (2011): 40% and 59% for the whole sample, 45% and 67% for employed

# Treatment effect (3). Financial literacy II

VARIABLES	a7	a8	a9	a10	a11
	Expected Returns	Risk	Risk>Returns	Diversification 1	Diversification 2
Constant	0.499*** (0.0465)	0.876*** (0.0237)	0.930*** (0.0246)	0.947*** (0.0208)	0.782*** (0.0302)
TREATMENT	0.196*** (0.0247)	0.0342*** (0.0126)	0.0537*** (0.0130)	0.0153 (0.0111)	0.0568*** (0.0160)
WHITE COLLAR	0.00190 (0.0302)	0.0555*** (0.0154)	0.0316** (0.0159)	0.0138 (0.0135)	0.0529*** (0.0196)
FEMALE	-0.0240 (0.0274)	-0.0205 (0.0140)	-0.0538*** (0.0144)	-0.0127 (0.0123)	-0.0226 (0.0178)
AGE	-2.61e-05 (0.00187)	-0.00127 (0.000954)	0.00108 (0.000988)	0.00133 (0.000838)	0.00251** (0.00121)
AGE_SQUARED	9.78e-05 (0.000153)	3.38e-05 (7.80e-05)	7.19e-05 (8.08e-05)	1.49e-06 (6.85e-05)	4.01e-05 (9.92e-05)
CENTRE	-0.0109 (0.0307)	-0.00333 (0.0156)	-0.00889 (0.0162)	-0.0168 (0.0137)	-0.0295 (0.0199)
SOUTH	-0.0406 (0.0320)	-0.0583*** (0.0163)	-0.0562*** (0.0169)	-0.0445*** (0.0143)	-0.0839*** (0.0208)
UNIV DEGREE	0.117** (0.0462)	0.0288 (0.0236)	0.0222 (0.0244)	0.0454** (0.0207)	0.139*** (0.0300)
HS DEGREE	-0.000404 (0.0354)	0.00880 (0.0180)	-0.0268 (0.0187)	0.0183 (0.0158)	0.0841*** (0.0229)
NO_SCHOOL	-0.0379 (0.0722)	-0.0205 (0.0368)	-0.0300 (0.0381)	-0.0213 (0.0323)	0.0543 (0.0468)
Observations	1,436	1,436	1,436	1,436	1,436
R-squared	0.109	0.060	0.062	0.040	0.112

**a7. Expected return ranking** - Considering a long time period (for example 10 or 20 years), which asset normally provides the highest return? (1) Saving accounts, (2) Stocks, (3) Bonds, (4) Do not know

**a8. Risk ranking** - Normally, which asset displays 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 losing money... (1) increase, (2) stay the same, (3) decrease, (4) Do not know

- The treatment is effective in all questions except a10, where the unconditional probability of answering correctly is already 94.7%
- The effect on a7-expected returns is particularly strong and relevant, given the low average level and its importance for long-term investment decisions → overall underinvestment in stocks
- Location dummy significantly negative for Southern Italy

# Treatment effect (4). Behaviours

VARIABLES	b1	b2	b3	b4	b5
	Info on pensions	Discussion Family	Discussion Colleagues	Estimate my pension	Info on invest.lines
Constant	0.338*** (0.0494)	0.517*** (0.0502)	0.595*** (0.0494)	0.207*** (0.0458)	0.131*** (0.0456)
TREATMENT	0.121*** (0.0262)	-0.0121 (0.0266)	-0.0358 (0.0262)	0.169*** (0.0243)	0.221*** (0.0242)
WHITE COLLAR	0.0273 (0.0320)	-0.000439 (0.0326)	0.0237 (0.0321)	0.0287 (0.0297)	0.00458 (0.0296)
FEMALE	-0.0320 (0.0291)	0.0381 (0.0295)	-0.0869*** (0.0291)	-0.0360 (0.0270)	-0.0468* (0.0268)
AGE	0.00664*** (0.00199)	0.00392* (0.00202)	0.00516*** (0.00199)	0.00176 (0.00184)	-0.00183 (0.00183)
AGE_SQUARED	0.000446*** (0.000162)	0.000391** (0.000165)	-0.000251 (0.000163)	0.000372** (0.000151)	0.000260* (0.000150)
CENTRE	-0.0260 (0.0325)	-0.00555 (0.0331)	0.0466 (0.0326)	0.00534 (0.0302)	0.0461 (0.0300)
SOUTH	-0.00187 (0.0340)	0.0110 (0.0345)	0.0407 (0.0340)	0.00826 (0.0315)	0.0960*** (0.0314)
UNIV DEGREE	0.0329 (0.0490)	-0.0693 (0.0498)	-0.119** (0.0491)	-0.0287 (0.0455)	-0.0381 (0.0453)
HS DEGREE	0.0108 (0.0375)	-0.0277 (0.0381)	-0.0126 (0.0376)	0.0296 (0.0348)	-0.00698 (0.0346)
NO_SCHOOL	-0.0638 (0.0766)	0.00134 (0.0778)	0.0122 (0.0767)	-0.0423 (0.0711)	-0.0233 (0.0707)
Observations	1,436	1,436	1,436	1,436	1,436
R-squared	0.050	0.020	0.047	0.056	0.074

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

- The treatment has not fostered discussion with relatives/colleagues (not to be expected as an effect)...
- ... but it has had a significant impact on
  - Looking for information on pensions/savings
  - Trying to estimate the expected pension through the fund's website or the individual annual report
  - Looking for information on the four investment lines of the pension fund
- This last effect is particularly strong (constant=0.131, treatment dummy=0.221) and relevant (considering how workers tend to remain in the default investment line)

# Are treatment effects heterogeneous?

- Our baseline regressions, on top of showing a significant effect of the treatment on 10 out of 11 literacy questions, and on the 3 key questions on behaviours, confirm the existence of significant differences among subgroups, and in particular
  - (a) a gender gap
  - (b) a higher percentage of correct answers for white collars and for people with a university degree
  - (c) a gap for Southern Italy
- This is why it is crucial to check if treatment effects are heterogeneous among groups. Is the treatment able to generate significant improvements for all participants or only for those subgroups who are already more literate *ex ante*?
- We tested for this by adding to the baseline regression an interaction effect between the treatment and the relevant dummies (female, white collar, university degree and South)

# Does treatment effect depend on individual characteristics?

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	Diversification 1	Diversification 2	Info on pensions	Discussion Family	Discussion Colleagues	Estimate my pension	Info on invest.lines
Constant	0.576*** (0.0523)	0.696*** (0.0434)	0.299*** (0.0511)	0.726*** (0.0381)	0.801*** (0.0315)	0.516*** (0.0472)	0.526*** (0.0495)	0.880*** (0.0252)	0.923*** (0.0261)	0.935*** (0.0221)	0.779*** (0.0320)	0.332*** (0.0526)	0.503*** (0.0534)	0.629*** (0.0525)	0.221*** (0.0487)	0.154*** (0.0483)
TREATMENT	0.0465 (0.0461)	0.121*** (0.0383)	0.168*** (0.0451)	0.133*** (0.0336)	0.0717*** (0.0278)	0.199*** (0.0416)	0.133*** (0.0436)	0.0300 (0.0222)	0.0769*** (0.0230)	0.0386** (0.0195)	0.0653** (0.0283)	0.131*** (0.0464)	0.0187 (0.0471)	-0.107** (0.0463)	0.139*** (0.0430)	0.173*** (0.0426)
TREATMENT_UNIV DEGREE	-0.152** (0.0686)	-0.0921 (0.0570)	-0.0779 (0.0671)	-0.0581 (0.0500)	0.0143 (0.0414)	-0.254*** (0.0620)	-0.0298 (0.0650)	-0.0471 (0.0331)	0.0293 (0.0342)	-0.0408 (0.0290)	-0.0687 (0.0421)	0.0126 (0.0690)	-0.0296 (0.0701)	0.0862 (0.0690)	0.0532 (0.0640)	0.207*** (0.0634)
TREATMENT_SOUTH	0.0622 (0.0639)	-0.0102 (0.0531)	0.0191 (0.0626)	0.0112 (0.0466)	-0.00166 (0.0386)	-0.0109 (0.0578)	-0.00695 (0.0605)	0.0668** (0.0308)	0.0154 (0.0319)	0.00208 (0.0271)	0.0671* (0.0392)	-0.0256 (0.0643)	0.0254 (0.0654)	0.0711 (0.0643)	-0.0330 (0.0596)	-0.0481 (0.0591)
TREATMENT_FEMALE	-0.0187 (0.0570)	0.00719 (0.0473)	0.0549 (0.0557)	-0.0332 (0.0415)	0.0223 (0.0344)	-0.0531 (0.0515)	0.0257 (0.0539)	0.0156 (0.0275)	0.0436 (0.0284)	-0.0457* (0.0241)	-0.0134 (0.0349)	-0.0173 (0.0573)	-0.0227 (0.0582)	0.0360 (0.0573)	0.0157 (0.0531)	0.0326 (0.0526)
TREATMENT_WHITE COLLAR	0.0618 (0.0590)	-0.0374 (0.0490)	0.00328 (0.0577)	0.0106 (0.0429)	-0.0486 (0.0356)	0.0858 (0.0533)	0.107* (0.0558)	-0.00605 (0.0284)	-0.0775*** (0.0294)	-0.00103 (0.0250)	-0.00453 (0.0362)	-0.00533 (0.0593)	-0.0376 (0.0603)	0.0434 (0.0593)	0.0343 (0.0550)	0.00148 (0.0545)
WHITE COLLAR	0.0211 (0.0447)	0.0710* (0.0371)	0.0225 (0.0438)	0.0498 (0.0326)	0.0897*** (0.0270)	0.106*** (0.0404)	-0.0530 (0.0424)	0.0584*** (0.0216)	0.0744*** (0.0223)	0.0114 (0.0189)	0.0533* (0.0274)	0.0295 (0.0450)	0.0175 (0.0457)	0.00452 (0.0450)	0.0126 (0.0417)	0.00940 (0.0413)
FEMALE	0.0464 (0.0420)	0.00586 (0.0349)	-0.0648 (0.0411)	-0.0234 (0.0306)	-0.0544** (0.0253)	-0.0939** (0.0379)	-0.0326 (0.0397)	-0.0306 (0.0202)	-0.0808*** (0.0209)	0.0114 (0.0178)	-0.0173 (0.0257)	-0.0225 (0.0422)	0.0479 (0.0429)	-0.106** (0.0422)	-0.0421 (0.0392)	-0.0630 (0.0388)
SOUTH	-0.0240 (0.0476)	-0.0368 (0.0396)	-0.0532 (0.0466)	-0.00285 (0.0347)	-0.0416 (0.0287)	-0.0273 (0.0430)	-0.0359 (0.0451)	-0.0935*** (0.0230)	-0.0667*** (0.0238)	-0.0443** (0.0202)	-0.118*** (0.0292)	0.0118 (0.0479)	-0.00218 (0.0487)	0.00257 (0.0479)	0.0254 (0.0444)	0.119*** (0.0440)
UNIV DEGREE	0.0632 (0.0627)	0.119** (0.0521)	0.260*** (0.0614)	0.134*** (0.0457)	0.0558 (0.0378)	0.274*** (0.0567)	0.135** (0.0594)	0.0554* (0.0302)	0.00369 (0.0313)	0.0696*** (0.0266)	0.178*** (0.0385)	0.0260 (0.0631)	-0.0524 (0.0641)	-0.168*** (0.0631)	-0.0590 (0.0585)	-0.157*** (0.0580)
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

- Apart from 5 cases, interactions are not significant at the 1% or 5% level...
- ... and they generally show that the literacy gap among subgroups is reduced rather than increased
- Treatment effect remains significant in 9 out of 11 literacy questions and in the 3 key ones on behaviours

# Do treatment effects last in time?

- In order to test whether the effects of treatment lasted in time, we also had the chance to submit a (much shorter) second online questionnaire to the treated individuals who had completed the video lecture and the second questionnaire
- The median distance between the two questionnaires is between 8 and 9 months
- Six questions tested comparing *only* the 392 treated who completed the second questionnaire with the 666 control individuals:
  - a2 – Evolution of life expectancy over time
  - a3 – Impact of increase of life expectancy on pensions
  - a4 – Numeracy
  - a5 – Inflation
  - a6 – Interest compounding
  - a10 – diversification 1

# Do treatment effects last in time?

VARIABLES	a2	a3	a4	a5	a6	a10
	Evolution of Life Exp.	L.E. and Pensions	Numeracy	Inflation	Interest Compound.	Diversification
Constant	0.732*** (0.0505)	0.342*** (0.0551)	0.720*** (0.0433)	0.807*** (0.0351)	0.461*** (0.0536)	0.925*** (0.0243)
TREATMENT	-0.0618 (0.0499)	0.101* (0.0545)	0.169*** (0.0428)	0.0901*** (0.0347)	0.167*** (0.0529)	0.0409* (0.0241)
TREATMENT_UNIV DEGREE	-0.138* (0.0719)	-0.0675 (0.0785)	-0.0528 (0.0617)	-0.0335 (0.0500)	-0.174** (0.0763)	-0.0461 (0.0347)
TREATMENT_SOUTH	0.0659 (0.0690)	0.0469 (0.0753)	-0.0240 (0.0591)	0.0140 (0.0480)	-0.0373 (0.0731)	0.0220 (0.0332)
TREATMENT_FEMALE	0.101 (0.0630)	0.0949 (0.0688)	-0.00773 (0.0540)	0.00152 (0.0438)	0.0121 (0.0668)	-0.0484 (0.0304)
TREATMENT_WHITE COLLAR	0.0874 (0.0641)	0.0317 (0.0700)	-0.0302 (0.0550)	-0.0339 (0.0446)	-0.00567 (0.0680)	0.00572 (0.0309)
WHITE COLLAR	0.0766* (0.0402)	0.0317 (0.0439)	0.0629* (0.0345)	0.0963*** (0.0280)	0.0913** (0.0427)	0.0132 (0.0194)
FEMALE	-0.00228 (0.0374)	-0.0688* (0.0409)	-0.0271 (0.0321)	-0.0601** (0.0260)	-0.0942** (0.0397)	0.0129 (0.0180)
AGE	0.00435** (0.00206)	-0.00165 (0.00225)	-0.00449** (0.00177)	0.00432*** (0.00143)	0.00481** (0.00218)	0.000714 (0.000992)
AGE_SQUARED	-0.000329* (0.000169)	-0.000335* (0.000185)	-2.75e-05 (0.000145)	7.03e-05 (0.000118)	2.03e-05 (0.000179)	-1.08e-06 (8.15e-05)
CENTRE	-0.0214 (0.0341)	-0.0733** (0.0373)	-0.0349 (0.0293)	-0.0171 (0.0238)	-0.0412 (0.0362)	-0.0162 (0.0164)
SOUTH	-0.0494 (0.0428)	-0.0635 (0.0467)	-0.00395 (0.0367)	-0.0437 (0.0298)	-0.0456 (0.0454)	-0.0483** (0.0206)
UNIV DEGREE	0.101* (0.0583)	0.261*** (0.0637)	0.100** (0.0500)	0.0532 (0.0406)	0.299*** (0.0619)	0.0783*** (0.0281)
HS DEGREE	0.00610 (0.0383)	0.0743* (0.0419)	-0.0129 (0.0329)	-0.00231 (0.0267)	0.0195 (0.0407)	0.0276 (0.0185)
NO_SCHOOL	0.0138 (0.0776)	0.0952 (0.0847)	0.185*** (0.0666)	0.0205 (0.0540)	0.0849 (0.0823)	-0.00241 (0.0374)
Observations	1,058	1,058	1,058	1,058	1,058	1,058
R-squared	0.042	0.098	0.085	0.094	0.138	0.040

- The treatment dummy is significant at 1% for 3 questions (numeracy and interest compounding, with a coefficient of 0.167-0.169, and inflation)...
- ...and at 10% for the impact of changes of LE on pensions and diversification
- The only significant interaction is for a6 – interest compounding b/w treatment and university degree, but the coefficient is negative (the treatment helps to close and not to widen the literacy gap)



# Conclusions

- Planning for retirement is crucial in all countries, especially for lower income workers
- Multiple pension reforms in Italy over time have created a system which is sustainable but that will imply that future generations of retired people will receive less than their parents, given the same level of contributions
- Experiment on members of the largest industry pension plan in Italy, aiming at testing large scale but economically feasible financial education efforts
- Evidence of better-than-average (with respect to the country) understanding of inflation and numeracy, but very limited understanding of the effects of the increase of life expectancy over public pensions
- The treatment has proved to be significantly effective in 10 out of 11 demographic and financial literacy outcomes, and in motivating to look for more information on pensions and a more conscious decision when selecting the investment line
- Treatment effect mostly homogeneous among subgroups (and sometimes reducing ex ante literacy gaps) + lasting over time