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Impact Evaluation of a Financial Education Experiment

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Abstract

Finanças para Todos is a free program consisting of five in-person classes that aims to increase financial literacy across Portuguese adults. While applicants are, on average, more literate than the Portuguese population and peers in developed economies, a randomized control trial approach reveals improvements on financial literacy of 0.25 and 0.28 standard deviations in knowledge and behaviors, respectively. The program ranks as one of the most effective worldwide based on a comprehensive meta-analysis. Moreover, the program may help shrink the literacy gaps between certain demographic groups, notably gender.

JEL Classification: D14; G51; G53; I21

Keywords: Financial Literacy, Educational Intervention, Randomized Control Trial, Finanças Para Todos

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1. Introduction

We live in a time where making educated and responsible financial decisions can prove to be crucial for households' well-being and stability. Even in most of the developed economies, like those in the European Union (EU), a significant portion of the population remains financially illiterate (Lusardi, Mitchell, and Washington 2011). This lack of knowledge is ever more noticeable in Portugal, where in a study carried out by the European Commission, the country ranked last (European Commission 2023).

Financial literacy is a hard concept to define as it deals with a wide range of knowledge, attitudes, and ultimately, personal preferences. Nonetheless, the Organisation for Economic Co-operation and Development's Programme for International Student Assessment (PISA) has brought forward a definition generally accepted as a great baseline.

"Financial literacy is knowledge and understanding of financial concepts and risks, and the skills, motivation, and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life" (OECD 2014).

Therefore, someone is literate only if they know both the concepts and mechanisms that underlie financial trade-offs and can use that knowledge to make better financial decisions. These decisions ultimately aid in improving their economic position and well-being.

In recent times, financial literacy has been put to the test on several instances. For one, Bucher-Koenen and Ziegelmeier (2011) show that in the Great Financial Crisis, individuals with low financial literacy tended to sell their assets, thus realizing losses at a rate higher than their more literate counterparts. Also, there is an increasing distrust in the ability of the social security systems across the countries to support their retired citizens. That has created the expectation that individuals must take care of their own retirement. As a last example, with rise

of social media in our lives, several people have managed to cultivate large audiences by creating content on specific topics, one of them being personal finance. The so-called “influencers” fill the gap of access to financial information, substituting professional financial intermediaries, especially across young generations (Espeute and Preece 2024). This shift highlights the need for extra caution regarding the recommendations made by the influencers.

The unfavorable results for financial literacy in Portugal have motivated Nova School of Business and Economics’ Finance Knowledge Centre to create a program which aims to expose Portuguese adults to these financial concepts and improve their understanding and decision-making. The purpose of this thesis is therefore two-fold:

First - To analyze the sample of participants that have registered to take part in the program. More specifically, to gauge their baseline in terms of financial knowledge, behaviors and attitudes and then compare it to a representative sample of the Portuguese population and other countries. Moreover, we aim to understand the heterogeneity within our sample and check if it matches with the vast literature on the topic.

Second – To measure the impact of the program, by seeing how going through the course impacts individuals in terms of their financial literacy and compare it against similar interventions made worldwide. Additionally, we break down which specific behaviors/answers respond better to the treatment, to gain a deeper understanding of the program’s effectiveness.

2. Literature Review

2.1 Relationship of literacy and behaviors

The relationship between financial knowledge and better financial behaviors has been widely studied in the past. For instance, lower financial knowledge is linked to an increase in financial fragility, defined as the ability to deal with unexpected expenses. Mostly because more literate individuals save more (Lusardi and Mitchell 2013), and earn greater returns on their

investments (Clark et al, 2017), partly because they are more likely to participate in the stock market, which has generated greater risk adjusted returns when compared to basic savings accounts. These people tend to do it by picking investment vehicles that charge lower fees (Hastings et al, 2011), recognizing that active investing may not outperform index-following strategies. Together, these choices about planning and investing account for 30%-40% of wealth inequality close to retirement (Lusardi et al, 2017).

2.2 Measuring literacy

In a 2004 study conducted in the United States, questions used to assess financial literacy across populations began to be standardized. Lusardi and Mitchell (2011a, 2011b) analyze responses to a set of three foundational questions, now widely referred to as the “big 3.” These questions, focusing on compound interest, inflation, and risk diversification, have become the gold standard for ensuring comparability across countries, samples, and time, and are included in almost every questionnaire on financial literacy today. These 3 questions were expanded in later studies to include topics like the relationship between bonds and interest rates, and mortgage interest, creating the so called “big 5”. This expansion kept brevity while collecting more comprehensive data.

In 2016, with a continued focus on the USA, the TIAA Institute and the Global Financial Literacy Excellence Center developed the Personal Finance Index. The index is a more extensive instrument featuring 28 questions across 8 knowledge areas (Yakoboski, Lusardi, and Hasler 2023). Annual studies using this index observe no significant increases in literacy over time, suggesting the need for further educational interventions.

Regarding international comparisons, the OECD/INFE's 2023 International Survey of Adult Financial Literacy (OECD 2023) and the European Commission's Flash Eurobarometer 525 (European Commission 2023), are the most useful.

The Eurobarometer evaluates both financial knowledge and behaviors, using a version of the “big 5” for the former and 3 questions for the latter. It produces an overall literacy index and ranks EU countries. In the latest study, Portugal ranks second to last in knowledge, eighth in behaviors, and last overall among the 27 countries.

The OECD survey, on the other hand, currently uses the revised version of the Toolkit for Measuring Financial Literacy and Financial Inclusion (OECD 2022). A financial attitudes index is created, together with the knowledge and behavior ones. Detailed information on this methodology is provided in section [3. Methodology](#), as it underpins the framework for the first part of this thesis. Relative placement of Portugal among OECD peers is discussed in section [5. Results](#).

On an extra note, question phrasing matters. Studies like (van Rooij, Lusardi, and Alessie 2011) find that, especially in more complex questions, the order of the words in the sentence is relevant. So, we should be aware that all methodologies involve some noise, and some correct answers may just be the product of luck.

2.3 Demographic differences

Several studies report the existence of a gender gap, especially in terms of financial knowledge (Lusardi and Mitchell 2008). The effect is robust across geographies (OECD 2012) and question complexity. Besides, another result derived from these analyses is that although the overall percentage of people that answer “Don’t Know/Prefer not to answer” is small, women tend to do it more frequently. This can mean that they are, on average, more unsure about their knowledge, that men are less careful when answering and might prefer to take their chances, or simply that women really know less (Lusardi and Mitchell 2013, Bucher-Koenen et al. 2021). Moreover, women tend to exhibit higher risk avoidance preferences (Marlow and Swail 2014), which affect their behaviors and attitudes towards financial topics.

In terms of age, there is a positive relationship with literacy, meaning older people tend to be more literate (Lusardi and Mitchell 2023). In the upper extreme of the age distribution, some studies report a slight decline in literacy. For instance, Finke, Howe, and Huston (2017) report that after 60 years old, knowledge starts to decrease linearly due to a decline in cognitive capacity and not due to a specific cohort difference. Similar positive relationships with financial literacy are found when dealing with formal education, where people that attended college fare better on average (Lusardi and Mitchell 2023), and with income, where people that earn more perform better in these surveys (Klapper, Lusardi, and Van Oudheusden 2015). One should note that it tends to be early in life, especially in school, that individuals acquire certain crucial skills better answer financial literacy questions, such as numeracy capabilities (Bynner and Parsons 1997, Purpura et al. 2011).

2.4 Financial Teaching Interventions

As to no one's surprise, different teaching interventions have been tried around the world to address this lack of literacy, from giving people fliers at employee benefit fairs, to elaborating school-like classes or having one-on-one training. Early efforts to systematize the study of the effectiveness of this wide range of interventions came in the form of a meta-analysis composed mostly by quasi-experimental designs (Fernandes, Lynch, and Netemeyer 2014). This paper concludes that interventions explain virtually 0% of the variance in financial behaviors, suggesting that given its inefficacy, the knowledge is better conveyed on a just-in-time approach. In addition, it is argued that to change behaviors, knowledge is not the best avenue, and that changing the "choice architecture" should be preferred

Not satisfied with the methodology of the previously mentioned study and taking advantage of the exponential increase of papers on the subject, Kaiser et al. (2022) elaborated another meta-analysis. The main differences are that: Only Randomized Control Trials (RCT) are used; More studies are analyzed (76 RCTs vs 13 RCTs); A breakdown of effects per type

of study is shown; And there is a distinction between papers published on top field journals vs other journals. All these differences enhance the study's robustness and detail.

The conclusions are starkly different. On average, financial education interventions have positive effects on both knowledge and behaviors, even when accounting for publication bias and for the heterogeneity of the treatments. The size of these effects is similar to the ones observed across other educational areas, and the persistence of the effects through time and the cost-effectiveness of the interventions are highlighted as focus points for future research, given the small amount of data existing at the time. Information on specific values from this meta-analysis can be found in section [5.3 Program effectiveness analysis](#).

Lastly, recent work by Pires (2024), further expands this meta-analysis by adding 8 RCTs. The results are directionally similar, though marginally lower.

3. Methodology

3.1 Finanças para Todos: Program Overview

Finanças para Todos (FPT) is a program hosted by Nova School of Business Economics' (Nova SBE) Finance Knowledge Centre, where adults sign up to receive five classes on a diverse array of personal finance topics, such as budgeting, saving, credit, insurance, investments and retirement planning. The program's contents have been developed with the help of the CFA Society Portugal to follow the Portuguese National Plan for Financial Education. The plan was created with the help of the OECD and was first implemented in Portugal in 2011, having been subject to updates every couple of years to ensure it tackles the ever more recent challenges, such as financial literacy in the digital world. The paper by Pires (2024) goes into a more detailed explanation of the program, namely regarding the contents taught per class, schedules, and timeline of the intervention.

Having started in the Fall of 2022 with a much smaller structure, the program can now count with 20 teachers, whose classes have reached more than 6,000 students both online and in person. Lastly, application data only started to be systematically recorded from the applications that came in for the Fall 2023 cohort onwards. This is not a problem given the exponential growth of the program, where most registrations happened after this time.

3.2 Data sources

The data we use throughout the paper comes mainly from two registry questionnaires sent to every individual who wants to participate in the program.

The first, which is the most comprehensive one, has some demographic information and then has questions in the following areas:

1. Planning & Management of Personal Finances – Who makes the household’s financial decisions; Saving/Borrowing behaviors; Retirement Planning; Financial Resilience.
2. Financial product choices – Product Awareness, Search and Ownership; Sources of Advice; Performance Monitoring.
3. Attitudes & Behaviors – General feelings and actions towards money and saving.
4. Financial Knowledge – Self-Assessment; Seven questions on topics such as inflation, perception of risk, diversification and compound interest.

The second collects information about previous knowledge in the area (either a previous financial literacy course or a high school/university level education in accounting, economics, finance or management). It also contains information on financial products ownership and credit, as well as having the five knowledge questions present in the S&P Global FinLit survey.

Then, in the last class of the program, each student should answer the same set of five knowledge questions. Finally, there is a fourth questionnaire that is sent six months after the program took place. This questionnaire is similar to the first and second entry questionnaires,

containing questions on a variety of areas such as behaviors, retirement planning, resiliency, financial products and credit awareness/possession and finally, the same set of five knowledge questions present in the second and third surveys.

3.3 Baseline Evaluation and Comparison: OECD/INFE 2022 toolkit

To evaluate the literacy amongst the “Finanças para Todos” sample, we follow the framework put forward by the OECD/INFE where respondents are classified in three different literacy areas: 1. Financial Attitudes; 2. Financial Behaviors and 3. Financial Knowledge. From these results, an overall financial literacy score is computed, which can be used to compare countries both with one another and against their past selves. Another alternative would be to use the methodology in the Flash Eurobarometer put forth by the European Commission, however, for our objective, that specific framework has more cons than pros. Firstly it has less information overall given it only contains two categories, namely it drops the attitudes component. Secondly, since FPT’s questionnaire has an outstanding breath of data, it would be a waste not to take full advantage of it. Lastly, it allows an even bigger international comparison in the sense that more countries follow the same framework.

3.4 Baseline indicator composition

The questions and criteria used to compute the indicators follow the methodology in the OECD’s toolkit (OECD 2022), and can be found in the [appendix A.1.](#), together with any compromises made. We consider the latter to not materially impact the conclusions.

The Attitudes indicator is composed by two questions on “not preparing for the future”, where answers span from completely disagree (5 points awarded) to completely agree (1 point awarded). Then an average is calculated, and the score is rescaled to 0-100.

The behavior indicator is a count of “good” financial behaviors in the areas of budgeting, credit, payments, investments and others. The score ranges from 0-9 but is rescaled to 0-100.

The knowledge score is a count of correct answers to seven questions on the time value of money, simple and compound interest, risk/return, inflation and diversification. The score ranges from 0-7 but is rescaled to 0-100.

The Global indicator is a weighted average of the other 3 indicators, where the weights of attitudes, behaviors and knowledge are 20%, 45% and 35%, respectively. The reason for these weights comes from an OECD view on which areas affect relatively more the day-to-day decisions of individuals, and consequently their financial well-being and resilience.

3.5 Program impact measurement

To assess the effectiveness of Finanças para Todos we use an RCT approach. In this study design, we can avoid through statistical properties the fact that there is a big selection bias. More information on this bias is given in section [5.1 Participants literacy levels](#), where we compare the sample of applicants to a representative sample of the Portuguese population.

This methodology requires the entry and exit indicators to be constructed in the exact same way. As such and given that the follow-up survey lacks some questions that are used to build the indicators of the previous sub-section, we use different questions. To that effect we re-compute both a behavior and knowledge indicator with questions that are present both in the entry and follow-up questionnaire. The attitudes indicator is not re-created given that the follow-up does not have questions that fit the purpose. The composition of these new indicators can be found in [appendix A.2](#).

To compute the effect of the program per se, we follow the approach in (Kraft 2020), which involves standardizing our effect size statistic to ensure comparability with other studies. To this effect, we compute *Cohen's d* as:

$$Cohen's\ d\ (d) = \frac{M_t - M_c}{SD_P}, \text{ with } SD_P = \sqrt{\frac{(n_t - 1)SD_t^2 + (n_c - 1)SD_c^2}{n_t + n_c - 2}} \quad (1)$$

Where M_t and M_c are the average improvements for the treatment and control groups, respectively. SD_P is the pooled, baseline standard deviation of both groups. Lastly, n_t and n_c follow a similar rationale as M_t and M_c , but for sample sizes. Studies might report *Hedges' g* instead of *Cohen's d*, however in our case, both estimates are similar given that:

$$Hedges'\ g\ (g) = \left[1 - \frac{3}{4(n_t + n_c - 2) - 9}\right] \times d \approx Cohen's\ d\ \text{as } N \rightarrow +\infty \quad (2)$$

Finally, we run some OLS regressions to observe any heterogeneity in effect size across different demographics and across the different components of the indicators.

4. Data

4.1 Data for the Baseline Characterization

For the analyses regarding the participants' baseline indicators, we use the full sample of 5,240 applications received to date. This includes both the people that have taken part in the program (both in the Fall 2023 and Spring 2024) and the ones who were allocated to the control group.

After excluding participants that did not fully complete the survey or that did not agree to let us use their answers in the scope of this study, we are left with 5,025 observations. We treat answers of "Don't want to answer" or "Prefer not to say" case by case, depending on the variable being studied. Therefore, those are not excluded to begin with. A detailed breakdown of the sample frequencies can be found in [Table B.1.](#) in appendix.

The sample consists of mainly women (65.5%) and the average age is 39.8 years old which can be broken down into 51.4% being younger than the average and, consequently 48.6% being older. However, only 11.4% are older than 55 years old, contrasting with the overall Portuguese population, as reported by (INE 2021) and as seen in [Table B.1.](#) The majority are employed (86.1%), which contains people that answered “Other” (2.35%), given that most answers were specifying an occupation. The unemployed represent 6%, while students 4.9% and the rest being retired. The sample is a lot more educated than the overall Portuguese population, with more than 80% having concluded some form of higher education degree or some technical degree after high school. On the same topic, around 20% have studied something related to this area of knowledge, and 11% have participated in some form of financial literacy intervention before. As for disposable income, at the household level, we see a somewhat homogeneous split between those that earn less than 1,500€/month, more than 1,500€/month but less than 2,500€ and those that earn more than that, at 25.7%, 34.3% and 23.2% respectively. Here we decided to not group participants that responded with “Don’t know/ Prefer not to say” with any income level given that it clearly shows either one of two things. 16.7% of the sample is unaware of how much they bring home every month, which is an important insight given its importance for planning and budgeting, or they are not comfortable sharing that amount, which shows the conservatism that some people have when disclosing their income figure.

4.2 Data for the Randomized Control Trial

In this part of the study, only the information from participants that answered both the entry and the 6-month follow-up surveys is used. The response rates for the different cohorts are similar, with values between 48%-60% as seen in appendix [Table B.2.](#) The control group is essentially double the size of the treatment due to the lack of responses from the Spring, 2024

cohort. This cohort is answering the follow-up survey at the time of writing and so it is not considered in our analysis. Still, we keep the full control group sample to increase robustness.

5. Results

5.1 Participants literacy levels

Using the financial literacy indicators defined in the Methodology section, we arrive at a mean score in Attitudes of 71.2, which is the lowest amongst the 3 indicators calculated, followed by a 72.5 mean score in the Behavior category, and a 77.2 in Knowledge. The breakdown per question can be found in appendix [Table C.5.](#) These values lead to an overall score for the Global Financial Literacy Indicator of 73.7. Basic statistics about these indicators, as well as the international comparisons are shown in [Table 1](#) below. Comparing to a representative sample of the Portuguese population, in both Attitudes and Behaviors FPT's sample is only 12% and 9% better, respectively.

However, in Knowledge, this difference is 27%, which suggests that although FPT's applicants know much more than the average Portuguese, they do not fare proportionally as good in what comes to the other 2 categories, which are arguably the most important.

		Sample size	Mean	Median	St. dev	Min	Max	FpT gap to:
Attitude Score	FpT	5,025	71.2	75.0	19.1	0.0	100.0	-
	PT (TC)	1,510	63.4		20.8	0.0	100.0	12%
	OECD (avg)		58.0					23%
Behavior Score	FpT	5,025	71.5	77.8	16.7	11.1	100.0	-
	PT (TC)	1,510	65.6		18.8	11.1	100.0	9%
	OECD (avg)		61.6					16%
Knowledge Score	FpT	5,025	77.2	85.7	19.5	0.0	100.0	-
	PT (TC)	1,510	60.7		25.8	0.0	100.0	27%
	OECD (avg)		66.9					15%
Global Score	FpT	5,025	73.7	75.0	12.5	20.0	100.0	-
	PT (TC)	1,510	63.4		16.0	10.0	97.5	16%
	OECD (avg)		62.7					18%

FpT refers to our sample of applicants; PT (TC) refers to a representative sample of the Portuguese population used in the Todos Contam 2023 report; OECD (avg) refers to the overall average of the countries in the OECD as presented in the OECD 2023 report.

Table 1. Financial Indicators' scores with international comparison

We can confidently say that despite FPT's participants being more knowledgeable than the average Portuguese, they still have room for improvement in this area and even more in the other two. To better understand the heterogeneity of the participants, we computed four Ordinary Least Squares (OLS) regressions with the 4 indicators, present in [Table 2](#).

Scores range from (0-100)	(1) Attitude Score	(2) Behavior Score	(3) Knowledge Score	(4) Global Score
Female	1.44** (0.59)	-1.96*** (0.52)	-10.45*** (0.55)	-4.25*** (0.37)
Age 25-39	-1.13 (1.18)	1.52 (1.08)	4.63*** (1.35)	2.08** (0.83)
Age 40-54	-1.98* (1.20)	-1.90* (1.10)	5.53*** (1.38)	0.68 (0.85)
Age 55-69	-0.35 (1.42)	-0.37 (1.30)	9.52*** (1.57)	3.09*** (0.98)
Age 70 or more	2.35 (4.00)	-1.95 (3.01)	11.79*** (3.75)	3.72* (2.22)
Unemployed	-0.44 (1.20)	-2.80*** (1.05)	0.75 (1.23)	-1.09 (0.75)
Studying	-0.70 (1.38)	-4.45*** (1.28)	2.41 (1.53)	-1.30 (0.94)
Retired	1.32 (1.95)	2.89* (1.64)	-1.38 (1.80)	1.08 (1.20)
High School	1.76 (1.76)	3.58** (1.62)	0.27 (1.87)	2.06* (1.18)
High School Plus	3.05* (1.65)	6.97*** (1.54)	7.53*** (1.77)	6.38*** (1.12)
1500€<x<2500€	1.10 (0.72)	1.74*** (0.64)	3.23*** (0.72)	2.13*** (0.47)
More than 2500€	0.55 (0.80)	2.98*** (0.70)	6.54*** (0.77)	3.74*** (0.51)
Don't know/Prefer not to say	1.35 (0.84)	1.44* (0.75)	2.42*** (0.93)	1.77*** (0.56)
Attended a fin. literacy course	2.75*** (0.83)	4.38*** (0.79)	2.48*** (0.84)	3.39*** (0.58)
Related education background	0.24 (0.68)	1.27** (0.60)	2.93*** (0.65)	1.65*** (0.43)
Constant	67.67*** (2.03)	64.66*** (1.91)	68.69*** (2.22)	66.67*** (1.39)
Observations	5,025	5,025	5,025	5,025
R-squared	0.01	0.04	0.11	0.08
Prob > F	0.00	0.00	0.00	0.00

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The reference individual is a Male, 18–24 years old, employed, that has at most only basic formal education or that answered "Other/Prefer not to say", whose household's net income is less than 1500€ per month or unknown, has never attended a financial literacy course before, nor has related academic background (finance, economics, etc...).

Table 2 – OLS regression of Literacy Indicators by Key Demographics

Our findings go in accordance with the existing body of knowledge in the field. There is a big gender gap in the knowledge department. Women, on average, score 10 points lower than men. However, and this is a big advantage of our multiple indicator analysis, women perform surprisingly close to men in the other 2 areas. This suggests that whilst not fully understanding the risks and benefits of their decisions, they end up on average taking a cautionary approach to their finances. Considering age, older people, on average, have more financial knowledge. We do not observe the decrease for older people as evidenced by the 11.8 coefficient for people aged 70+ being higher than the 9.5 for people aged 55-69 years old. Thus, we do not observe the knowledge depreciation factor.

Additionally, and particularly relevant in Portugal, older people are part of a very different generation with a lower likelihood of having been given a proper education, which can hinder their numerical and reasoning abilities. However, the analysis partially offsets this effect by controlling for “formal education level” and “related education” variables.

Linking to this, we observe a positive and significant correlation of formal education with the outcomes of all the indicators. Moreover, attending higher education seems to be the most important factor in all the indicators, except knowledge where age or being born a male are even more impactful. Surprisingly, even more than having previously attended another financial literacy course or having had schooling in a related field to the topic. This result is fascinating, suggesting that a more basic reasoning/numeric ability that is developed with formal education, may help answer these basic questions.

Income too is statistically relevant and positively associated with an increase in the Behavior and Knowledge scores, while there is not a relevant difference to those that have not disclosed their income. This finding suggests that whatever the reason is for people not disclosing their income (either ignorance or conservatism), it is not relevant. Finally, while the

Behavior and Knowledge scores vary a lot across demographics, the same cannot be concluded for the Attitudes score, where finding a statistically significant characteristic is rare. The only 2 relevant ones are gender and if the participant has received financial literacy training in the past. The female factor goes together with the idea that women, on average, are more risk averse in their thinking and therefore display a more pondered approach to spending money in the present. The relatively high coefficient of 2.75 for people that had some form of financial literacy training highlights the impact of these programs in changing people’s mindset. A role no other characteristic can fulfil with the same level of statistical significance.

5.2 Treatment allocation

By randomly allocating participants to either the treatment or control groups, we arrive at the situation where both groups’ compositions are similar. To test this, t-tests are performed on all four indicators previously mentioned, comparing the mean values for both groups, as shown in [Table 3](#). Having all of them come up with p-values much higher than 0.1, we can confidently say that for any reasonable significance level, both groups depart from a similar baseline.

<i>Same mean test</i> <i>(H0: Diff = 0)</i>	Control (n = 1252)	Treatment (n = 593)	p-value
Attitude Score	71.9	71.0	0.33
Behavior Score	72.5	72.5	0.95
Knowledge Score	77.9	78.4	0.60
Global Score	74.6	74.6	1.00

Table 3 - Same mean test for baseline indicators

Running Chi-squared tests on all the demographic variables, finds that a proportional allocation across treatment and control groups was reached. [Table D.1](#). in appendix synthesis the findings.

5.3 Program effectiveness analysis

As stated in the methodology, we re-create the knowledge and behavior indicators and re-compute their baseline standard deviations and their average improvements for both the control and treatment groups. [Table D.2.](#) in the appendix summarizes the findings.

Overall, we observe that the program has a significant positive effect both on the knowledge and behavior department. The knowledge improvements, in terms of points in our custom indicators, are 0.53 and 0.20 for both the treatment and control groups, respectively. In terms of behavior, in the same order, the values are 1.13 and 0.69. This leads to a difference of differences of 0.32 and 0.44 for knowledge and behavior respectively. We should note that performing t-tests on both variables, shows that these differences are statistically significant, as shown in [Figure D.3.](#) and [Figure D.4.](#), in appendix.

Measuring this change in terms of standard deviations (SD), leads us to values of 0.25 SD for knowledge improvements and 0.28 SD for behavior improvements. Applying Kraft's suggested criteria for effect size evaluation, would characterize the effect as large since it is >0.2 SD. However, these thresholds are based on interventions made in formal K-12 education and measured using test-score data, which discards the behavior component from the analysis.

To further benchmark the effect's magnitudes, we compare it against other financial literacy interventions across the world. Here, Kaiser et al.'s (2022) meta-analysis, expanded by Pires' (2024) work, calculates the average effect size on financial knowledge at 0.174 SD and on financial behaviors at 0.090 SD. Even if we compare against different subsets of studies using data from [Table D.5.](#) the takeaways do not change, highlighting FPT' best-in-class results. Looking through the different subsections, we can characterize the program as: High-income country; General population; Mostly adults; 5-20 hours of treatment (9-10 hours in FPT's case);

≥ 6 months between measurements; Mixture of online and classroom, skewed towards the online. The range of values are [0.09-0.11] for behaviors and [0.14-0.24] for knowledge.

5.4 Heterogeneity of improvements by key demographics

Understanding differences in improvements across different people is as important as knowing average effect sizes. To assess that, [Table 4](#) presents four OLS regressions in which the first two deal with the improvements in knowledge (1) and behavior (2) without controlling for the starting performance of each group in the specific indicator. In these regressions, we are more worried about which subgroups improved more their indicator's values.

For instance, we note that in (1), the coefficient of female is 0.115 and slightly significant, which means that the gender gap in knowledge shrank. This value is the reflection for the pooled sample, not particularly for the people that took the program.

In regression (3), when controlling for baseline performance, the female coefficient turns negative, presenting a value of -0.14. However, a linear regression of the improvement on treatment, gender, and the interaction term while controlling for people's baseline scores shows a positive coefficient of 0.17 for the interaction term, statistically significant at the 90% confidence interval (p -value = 0.1). All in all:

1. The gender gap reduced in terms of financial knowledge.
2. We cannot confidently infer the program benefits more one gender than the other, although the interaction term's coefficient points in that direction.
3. When controlling for their respective baseline performance, men still improve more than women. Point 1 is therefore likely the mathematical consequence of women, on average, starting from a lower level, meaning it is much easier to increase their knowledge.

Units are number of points in each indicator	(1)	(2)	(3)	(4)
	Knowledge_Diff No control	Behavior_Diff No control	Knowledge_Diff Control	Behavior_Diff Control
Treatment	0.33*** (0.06)	0.44*** (0.07)	0.32*** (0.05)	0.41*** (0.06)
Female	0.11* (0.06)	-0.04 (0.07)	-0.14*** (0.05)	-0.17*** (0.06)
Age 25-39	0.18 (0.18)	0.17 (0.17)	0.22 (0.17)	0.26* (0.15)
Age 40-54	0.19 (0.19)	-0.02 (0.17)	0.11 (0.17)	-0.05 (0.15)
Age 55-69	0.07 (0.20)	-0.25 (0.19)	0.09 (0.18)	-0.22 (0.17)
Age 70 or more	-0.18 (0.36)	-0.75 (0.62)	0.18 (0.30)	-0.79 (0.54)
Unemployed	-0.16 (0.12)	0.01 (0.15)	-0.11 (0.12)	-0.03 (0.13)
Studying	-0.22 (0.22)	0.29 (0.21)	-0.23 (0.20)	0.11 (0.18)
Retired	0.04 (0.22)	0.16 (0.24)	0.03 (0.17)	0.27 (0.20)
High School	0.17 (0.17)	0.41* (0.23)	0.16 (0.16)	0.45** (0.22)
High School Plus	0.04 (0.16)	0.28 (0.22)	0.19 (0.15)	0.48** (0.21)
1500€<x<2500€	-0.08 (0.08)	0.20** (0.09)	0.00 (0.07)	0.27*** (0.08)
More than 2500€	-0.13 (0.09)	0.10 (0.10)	0.06 (0.07)	0.30*** (0.09)
Don't know/Prefer not to say	0.15 (0.09)	0.02 (0.10)	0.08 (0.08)	0.10 (0.09)
Attended a fin. literacy course	-0.04 (0.09)	-0.02 (0.10)	0.05 (0.08)	0.22** (0.09)
Related education background	-0.10 (0.07)	0.00 (0.08)	-0.01 (0.06)	0.05 (0.07)
Constant	-0.02 (0.24)	0.29 (0.29)	1.98*** (0.32)	0.82* (0.42)
Observations	1,845	1,845	1,845	1,845
R-squared	0.03	0.04	0.33	0.28

Robust standard errors in parentheses *** p<0.01, **p<0.05, * p<0.1

Regression (1) and (2) do not contain the control variable for the number of correct questions / good behaviors verified in the baseline. (3) and (4) evaluate the changes in learning and behaviors for each given "starting" point. Control uses each baseline score, not a dummy for literate or not.

The reference individual is a Male, 18–24 years old, employed, that has at most only basic formal education or that answered "Other/Prefer not to say", whose household's net income is less than 1500€ per month or unknown, has never attended a financial literacy course before, nor has related academic background (finance, economics, etc...).

Table 4 – OLS regressions of Improvements by key demographics

A similar dynamic applies to the behaviors, with the only difference being that point 1 does not hold. Even though on average women start from a lower baseline, this effect is not sufficient to counterbalance the phenomenon alluded to in point 3.

As for the other demographic variables, the more relevant ones are formal schooling and income levels. When not controlling for baseline performance (regression 1), lower income presents the same mechanical effect in terms of knowledge as previously mentioned, though not significant. However, controlling for the starting point, both more educated and higher-earning individuals improve more their knowledge and behaviors than their less well-off counterparts. Nonetheless, the significance of these variables only becomes really relevant in regression 4. These conclusions further support the trend mentioned above, where individuals that start from a better baseline have more tools to take advantage of new information and navigate novel financial problems.

5.5 Effect breakdown per question

The improvement on each question composing the respective indicator is not homogeneous. All the linear regressions of each question's improvement on "treatment", controlling for baseline performance exhibit statistically significant coefficients at the 95% confidence level. [Graph D.7.](#) and [Graph D.8.](#) in the appendix, breakdown the percent improvement in each component, relative to their baseline average value. Note that the values presented are the "premium" of the treated group over the control. For instance, in the inflation question, the value of 8.2% means that the treated group improved 8.2% in excess of the control group relative to their corresponding starting points. This enables us to attribute the values to differences in learning rather than to the previously mentioned mathematical effect of starting from a lower average score on the question at hand. [Table D.9.](#) in appendix shows the average baseline score per question.

On the knowledge questions, the biggest improvements are seen in the compound interest area (Q4=10.9% and Q5=15.1%), whereas the smallest improvement is registered in the numeracy department (Q3=4.5%). Though we do not possess clear explanations as to why, the reason might have to deal with the time/emphasis given to the different topics. In session 3

of the program there is a good amount of time spent in explaining compound interest both mathematically and intuitively. In the numeracy question, it does not deal with a financial concept *per se*, but with basic math skills that tend to be acquired earlier in life (usually in school). That paired with the fact that it was already the question with the highest average starting point of 0.82, leads us to expect a small impact after the program.

On the behaviors front and keeping in mind that our study is not designed to assess why some behaviors change more than others, it is useful to think about the saving/investment decision path that households go through. First, people need to save some income out of their pay checks, then choose to invest that income (maybe even in more risky assets) and finally keep up with the results over time. We would expect the level of “attrition” to increase marginally along the journey, meaning that it is easiest to save than to save and invest in financial products. And it is easiest to do the latter, when compared to saving, investing and monitoring the performance. It then naturally follows that even though the program has a positive impact across the tested behaviors, the impacts on savings/investments are bigger (16.1%), than those in financial market participation (10.5%), which are in turn bigger than those on keeping track of the performance of the investments (8.6%).

The improvement regarding the detail to which people read the information on financial contracts (11%) also increases similarly to the market participation. On a different note, the improvement on the “Resources used when faced with a shortfall” question is the lowest at 4.6%. Looking at the improvement by group, they are 0.2% and 4.8% for the control and treatment group, respectively. This means the program is still highly relevant, but the underlying behavior can be hard to change, given how it is graded. Before the treatment, a small minority of 8% of the 1,845 individuals faced a shortage of funds relative to their lifestyle and used some type of credit or paid late, as seen by the 0.92 average score in [table D.9](#) in appendix.

After the treatment, this number only dropped to 7% showing that in these cases, the problem may be much deeper than some financial illiteracy.

6. Discussion and Further Research

6.1 Participant characteristics

The possible criticism about the program attracting the more educated population to begin with certainly has some basis. However, the goal is not to cater specifically to this more educated stratum of society. The fact that the program is conducted partly in person, in Nova SBE's campus, and that individuals need to self-enroll to participate has made the ability to reach the people more in need harder. Nonetheless, there are two main points to be made in response to this observed phenomenon.

1. Firstly, FPT is making an effort to reach these underserved communities mainly through partnerships with local institutions by giving classes on their sites. Secondly, as of the beginning of next year, FPT is expanding to Porto with the hopes of reaching even more people. Lastly, by giving more classes online, it also helps reach more people that live further away from the big metropolitan areas, in a cost-effective way.

2. Even with the "above average" sample of participants, there is still a big room for improvement, especially given that the concepts tested are fairly simple.

6.2 Completeness of the questionnaires

Comparing FPT's surveys with the other major questionnaires referred to in the literature review, we find some areas for improvement. For instance, data on digital financial behaviors is not collected, which as mentioned in the beginning of the paper, is becoming ever more present in our lives. In this area, the European barometer contains questions pertaining to the comfort level in using digital financial services, where Portugal ranks last in the proportion that answered "Very Comfortable" (20%). The OECD toolkit (2022) methodology has similarly

introduced questions regarding digital financial literacy, whilst adding others regarding sustainable investments and the interpretation of a basic bank statement. The latter can function as a great way to understand if people fully understand basic financial documents such as pay slips, end of year tax returns and bank statements.

On a different note, the follow-up survey is much shorter than the entry surveys. Thus, some data points could not be used in our RCT experiment. Though the impact study can still be made, the follow-up lacks essential data pertaining to the attitudes towards money and finances. Clearly there is a balance to be found between more data and keeping the response rate high, but two more questions or so about attitudes should not tilt the plates much one way.

6.3 Effectiveness of the program

Resorting to an RCT structure makes the results as valid as any study could achieve. Moreover, participants in the treatment group were analyzed on an intention-to-treat basis, meaning that these results apply to people that were simply allocated to the program and answered the follow-up survey. This enables us to better assess if the program is having a positive impact in a real-world scenario where people cannot make it to all classes or simply do not comply with the whole treatment. We would expect that conducting the same analysis on a per-protocol-analysis, meaning people who actually follow all the treatment protocol, would result in even bigger effects. Moreover, we should discuss the effect sizes considering Kraft's (2020) 5 guidelines:

1. We conducted our study in an RCT fashion, which is the golden standard format.
2. The exit responses are recorded 6 months after the intervention, as opposed to right after it. Specifically, in the behavior department, the results show cumulative efforts rather than just short-term changes. People make more decisions, read contracts more carefully, track the performance of their investments, between others. This gives more robustness to our estimates.

The fact that literature tends to point to changes in knowledge and behaviors fading away with time reinforces the need to conduct further surveys to these same participants.

3. Starting with a more literate sample than the average population might reduce the study's external validity. However, even if not significantly, the selected panel of demographic characteristics shows that groups starting from a lower baseline show the biggest improvements. This fact should aid in the extrapolating exercise, given that by expanding, we will approach people with below average literacy.

4. Costs are another area where further studies ought to be focused on. It is crucial to understand if the great results come with a big cost, thus reducing its expansion potential. The proposed framework for this future work would be to divide costs in 2 categories: The ones supported by the participant, including time, to assess individual investment needs in the course and the ones supported by FPT as an organization, to assess if this a net positive program in a cost-benefit analysis.

Furthermore, we want to put forward an idea for future research to measure the benefits of the program, besides benchmarking against other ones. Given the specificity of the topic, it is possible to evaluate incremental changes in credit card late payments, types of credits contracted, vehicles used to save or invest money and pair those changes with the average interest charged/earned on the products. Under some simplifying assumptions it is possible to infer the impact on wealth stemming from the program.

5. While scalability is not directly tested in this paper, the expansion to Porto with a similar model starting in 2025, presents a great opportunity to evaluate it.

7. Conclusion

Finanças para Todos was created to aid in the improvement of financial literacy in Portugal, by offering a five-class educational intervention for free. While participants score higher than the country's general population in the 3 tested areas, indicating a selection bias, our analysis still concludes that FPT is very effective. The registered improvements in knowledge and behaviors are respectively 0.25 SD and 0.28 SD, placing the program as one of the most effective in the world, even when accounting for the intervention specificities. Moreover, while barely statistically significant, the program also seems to aid in reducing inequalities across different demographics, especially in terms of gender.

This study further adds to the existing literature that financial education works by both increasing knowledge and causing behavior changes. However, there are some limitations to our analysis, namely the study of the permanence of effects through time and the program's cost-effectiveness.

Further research about FPT, should keep updating the sample with more participants, and keep studying the same participants over time to infer effect persistence. With the expansion to Porto, it is important to study if meaningful differences arise to ensure that the expansion is at least not reducing the program's effectiveness. Finally, the costs of the program to both the participants and the organization should be measured to evaluate its efficiency and effectiveness from an economic standpoint.

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Appendices

A. Methodology

A.1 Baseline indicator composition

Knowledge Indicator

Question	Criteria	Notes/Differences between FPT and OECD
Q1	Statement 3 gets 1 point. Otherwise gets 0.	OECD asks about 1,000€'s buying power in one year's time. Same rational and possible answers.
Q2	Answer: "0" gets 1 point. Otherwise gets 0.	None.
Q3	Answer: "102" gets 1 point. Otherwise gets 0.	None.
Q4	Statement 1 and Q3 correct gets 1 point. Otherwise gets 0.	None.
Q5	If True gets 1 point. Otherwise gets 0.	None.
Q6	If True gets 1 point. Otherwise gets 0.	None.
Q7	If True gets 1 point. Otherwise gets 0.	None.
Total	Sum of Q1, Q2, Q3, Q4, Q5, Q6 and Q7. (Min=0, Max=7)	

Statement # refers to the statement in the # position. For instance, in Q1, statement 3 is: "Less than you could buy today" and statement 4 is: "I don't know".

Q1. If the inflation rate is 2%, with the same money, in one years' time you can buy:

- More than you could buy today.
- The same as you could buy today.
- Less than you could buy today.
- I don't know.

Q2. You lend \$25 to a friend one evening and he gives you \$25 back the next day. How much interest has he paid on this loan?

Written answer

Q3. Assume you deposit 100 euros in a term deposit account with an annual interest rate of 2%. How much will you have in the account at the end of one year? (Assume no fees or taxes are applied.)

Written answer

Q4. And after 5 years? (Assume no fees or taxes are applied and that at the end of each year, the interest earned remains in the same term deposit until the end of the 5th year.)

- More than 110€.
- 110€
- Less than 110€.
- It is impossible to answer with the information provided.
- I don't know.

Q5. True or False: An investment with a high return is likely to be high risk.

Q6. True or False: High inflation means that the cost of living is increasing rapidly.

Q7. True or False: It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares, as opposed to buying just one company's stock.

Behavior Indicator

Question	Criteria	Notes/Differences between FPT and OECD
Q1	If Q1.1=1 and Q1.2=1 => Q1 gets 1. Otherwise gets 0.	None.
<i>Q1.1</i>	<i>Statements 1, 2 and 4 get 1 point. Otherwise gets 0.</i>	"Other" is 0.6% of the answers and the most frequent was: "Each of us takes care of their own finances, but we have shared goals".
<i>Q1.2</i>	<i>Has at least 2 out of 4 chosen gets 1 point. Otherwise get a 0.</i>	None.
Q2	Any option besides "Other" gets 1 point.	"Other" is +55% did not save. The rest that saved are likely to have also answered positively to any other option.
Q3	Statements 6, 7, 8, 9 and 10 get 0 if person has faced a shortfall. Otherwise get a 1.	Full breakdown below, next to the question.
Q4	If Q4.1=1, get 2 points. If either Q4.1 or Q4.2= 1, gets 1 point. Otherwise get 0.	None.
<i>Q4.1</i>	<i>Statements 1 and 3 get 1 point. Otherwise get 0.</i>	None.
<i>Q4.2</i>	<i>Statements 3 and 4 get 2 points. Other statements get 1 point. 0 if none was chosen</i>	"Other" is mostly podcasts, influencers, and books. Full breakdown below, next to the question.
Q5	If >3 on the scale, gets 1 point. Otherwise gets 0.	None.
Q6	If >3 on the scale, gets 1 point. Otherwise gets 0.	None.
Q7	If >3 on the scale, gets 1 point. Otherwise gets 0.	None.
Q8	If >3 on the scale, gets 1 point. Otherwise gets 0.	None.
Total	Sum of Q1, Q2, Q3, Q4, Q5, Q6, Q7 and Q8. (Min=0, Max=9)	

Statement # refers to the statement in the # position. For a specific example see the Knowledge Indicator table caption.

Q1.1. Who is responsible for making day-to-day decisions about money in your household?

I make these decisions on my own.

I make these decisions together with someone else.

Someone else makes these decisions for me.

Other.

Q1.2. Do any of the following statements apply to you or your household? Select the options that apply.

You make a plan to manage your income and expenses.

You keep track of your expenses.

You set aside money for bills separately from money for daily spending.

You have automatic payments (direct debits) for regular expenses.

None of the above applies.

Q2. In the last year, did you save money in any of these ways, regardless of whether you have already spent it? Select the options that apply.

I kept money at home or in my wallet.

I put money in a checking account.

I put money in a term deposit account.

I bought bonds or savings/treasury certificates.

I invested in stocks on the stock market.

I bought investment funds.

I made contributions to a retirement savings plan (PPR) or a capitalization insurance policy.

I invested in another way (e.g., buying gold, properties, art objects, etc.).

Other.

Q3. If the situation described above happened to you, what would you do to resolve the problem? Select the options that apply.

I would use money from my savings.

I would reduce my expenses.

OECD Methodology's options

Existing Resources

Existing Resources

I would sell an asset I owned.	Existing Resources
I would work more hours to earn more money.	New Resources
I would ask for help from family, friends, or the community.	New Resources (FPT does not distinguish between help in the form of gift or loan)
I would request a salary advance or a loan from my employer.	Access credit by using existing contacts or resources
I would pawn assets.	Access credit by using existing contacts or resources
I would use credit I already had (e.g., salary account, credit card, overdraft, etc.).	Borrow from existing credit line
I would take out a new loan.	Access additional credit
I would pay my bills late/not pay my bills.	Fall behind

Q4.1. If you hold any of the financial products mentioned above, which of the following statements best describes how you chose the most recently contracted product? Select the options that apply.

- I considered several options from different institutions before making my decision.
- I considered several options from the same institution.
- I researched but did not find any options to consider.
- I did not research or consider any other options.
- Not applicable. I do not hold any of the financial products mentioned above.

Q4.2. What sources of information do you typically use when seeking information about financial products? Select the options that apply.
Account manager/banker or information gathered at the institution's counter (e.g., brochures, pamphlets, etc.).

Advice from family or friends.	OECD Methodology's options
Advice from specialized entities (other than the institution where you purchased the product).	Recommendation from independent financial advisor
Recommendations in specialized newspapers and magazines.	Best buy guidance
Information on the internet.	Other information (FPT has internet separate. OECD does not)
Programs or advertising on television, radio, newspapers, etc.	
Other.	Other information
	Price comparison website (FPT has no direct comparison)

Possible answers for the following questions: (1-Fully disagree to 5-Fully agree) or (1-Never to 5-Always)

- Q5. I personally and systematically manage my personal finances.
- Q6. I set long-term savings goals and do everything to achieve them.
- Q7. Before buying anything, I carefully consider whether I can afford that expense.
- Q8. I pay my bills on time.

Attitudes Indicator

Question	Criteria	Notes/Differences between FPT and OECD
Q1	Vary from 1 if "Totally agree" to 5 if "Totally disagree".	None.
Q2	Vary from 1 if "Totally agree" to 5 if "Totally disagree".	None.
Total	Average of Q1 and Q2. (Min=1, Max=5)	

Scale: 5 levels from "Totally disagree to "Totally agree"

- Q1. I find it more satisfying to spend money than to save it for the long term.
- Q2. I tend to live for today and let tomorrow take care of itself.

A.2 RCT Indicator composition

Knowledge Indicator

Question	Criteria
Q1	Statement 3 gets 1 point. 0 otherwise.
Q2	Statement 2 gets 1 point. 0 otherwise.
Q3	Statement 2 gets 1 point. 0 otherwise.
Q4	Statement 1 gets 1 point. 0 otherwise.
Q5	Statement 1 gets 1 point. 0 otherwise.
Total	Sum of Q1, Q2, Q3, Q4 and Q5. (Min=0, Max=5)

Statement # refers to the statement in the # position. For instance, in Q1, statement 1 is: "In one business/investment." and statement 2 is: "In several businesses/investments."

Q1. Suppose you have some savings. Is it safer to invest your money in one business/investment or in several businesses/investments?

In one business/investment.

In several businesses/investments.

I don't know.

I prefer not to answer

Q2. Suppose that in the next 10 years, the prices of the products you buy double. If your income also doubles in those 10 years, will you be able to buy less than what you can buy today, the same as what you can buy today, or more than what you can buy today?

Less.

The same.

More.

I don't know.

I prefer not to answer.

Q3. Suppose you need to borrow 100 Euros. Which of the following amounts would be less when it comes time to pay back the person who lent you the money: 105 Euros or 100 Euros plus 3% interest?

Pay 105 Euros.

Pay 100 Euros plus 3%.

I don't know.

I prefer not to answer.

Q4. Suppose you put your savings in the bank for two years and the bank agreed to add 15% per year to your account. How much will the bank add to your account?

More money in the second year than in the first.

The same amount in both years.

I don't know.

I prefer not to answer.

Q5. Suppose you have 100 Euros in a savings account and the bank adds 10% to the account each year. How much money would be in the account at the end of five years if you don't withdraw any money from this account?

More than 150 Euros.

Exactly 150 Euros.

Less than 150 Euros.

I don't know.

I prefer not to answer.

Behavior Indicator

Question	Criteria
Q1	If Q1.1=1 and Q1.2=1 => Q1 gets 1. Otherwise gets 0.
Q1.1	Statements 1, 2 and 4 get 1 point. Otherwise gets 0.
Q1.2	Has at least 2 out of 4 chosen gets 1 point. Otherwise gets 0.
Q2	Option 3 gets 1 point. If not gets a 0.
Q3	Statements 6, 7, 8, 9 and 10 get 0 if person has faced a shortfall. Otherwise get a 1.
Q4	If statement 1 gets a 2. If statement 2 gets a 1. Otherwise gets a 0.
Q5	Statements 5 and 6 get 0 points. Otherwise gets 1.
Q6	If any of products 4, 5, 6, 7 and 9 register "ii or iii" gets 1 point. Otherwise gets a 0.
Total	Sum of Q1, Q2, Q3, Q4, Q5 and Q6.

Statement # refers to the statement in the # position. For a specific example see the Knowledge Indicator table caption.

Q1.1. Who is responsible for making day-to-day decisions about money in your household?

I make these decisions alone.

I make these decisions together with someone else.

Someone else makes these decisions for me.

Other:

Q1.2. Do any of the following statements apply to you or your household? Please select the options that apply.

Make a plan to manage your income and expenses.

Keep track of your expenses.

Separate money for paying bills from money for daily expenses.

Have automatic payments (direct debits) for regular expenses.

None apply.

Q2. What actions do you take to achieve your financial goals (for example, buying a car, paying university tuition, or paying off loans)? Please select the options that apply.

I prepared an action plan

I increased the credit card limit or loan payment instalments

I saved or invested money

I sought new/different/additional sources of income

I identified a way to access credit

I reduced spending

I do not take any action / I do not have financial goals

Other:

Q3. If the situation described above happened to you, what would you do to resolve the problem? Please select the options that apply.

I would use money from my savings

I would reduce expenses

I would sell an asset that I own

I would work more hours to earn more money

I would ask for help from family, friends, or the community

I would request a salary advance or a loan from my employer

I would pawn belongings

I would use credit that I already have (e.g., salary account, credit card, overdraft, etc.)

I would take out new credit

I would pay my bills late / I would not pay my bills

Q4. Before taking out a financial product (e.g., savings accounts, investments, loans, insurance...), do you read the information that the institution provides about the product conditions?

Yes, I read it in detail

Yes, I skim it

No, I trust what the staff member at the counter tells me orally

No, I don't read it; I don't consider it very important

Q5. How often do you check the information regarding the returns on your financial products?

Very frequently (e.g., weekly)

Moderately frequently (e.g., monthly)

Occasionally (e.g., quarterly)

Rarely (e.g., annually)

I do not monitor

Not applicable. I do not have financial products that generate returns

Q6. Which of the following financial products do you currently hold or have held in the last two years? (For each financial product, select (i) "I do not hold"; (ii) "I held at only one financial institution"; (iii) "I held at more than one financial institution"; or (iv) "I do not know the product")

Current accounts

Term deposits

Savings/Treasury certificates

Investment funds

Bonds

Stocks

ETFs (Exchange Traded Funds)

Cryptocurrencies or NFTs

Savings and retirement plans (PPR) or pension funds

Financial insurance (e.g., unit-linked insurance/ capitalization insurance)

Non-financial insurance (e.g., health insurance, car insurance, home insurance)

Question	Reasoning
Q1.1	Makes decisions either alone or with someone else. "Other" is overwhelmingly when a couple makes some decisions together and others separate.
Q1.2	Demonstrates basic financial behaviors.
Q2	Proxy to check if the person saved similar to the question used in the first set of indicators. Other is usually "Could not save".
Q3	Resorting to external resources (either new or existing) is not accepted.
Q4	Gauge if people carefully read financial contracts.
Q5	Check if the person monitors their investments. Any frequency is accepted.
Q6	Gauge if people invest in the stock market's main products (stocks and bonds, through various vehicles).

B. Data

Sample Demographic Breakdown	FpT full sample (n = 5025)		Portugal (Censos INE, 2021) ²	
	#	%	#	%
Gender				
Male	1 734	35	4 920 220	48
Female	3 291	65	5 422 846	52
Age¹ (Average = 39.8 years)				
Age 18-24	392	8	550 879	5
Age 25-39	2 190	44	1 757 196	17
Age 40-54	1 868	37	2 301 524	22
Age 55-69	541	11	2 104 545	20
Age 70 or more	34	1	1 769 545	17
Employment Status				
Employed	4 326	86	4 426 461	49
Unemployed	300	6	391 517	4
Studying	246	5	676 812	8
Retired	153	3	2 383 397	26
Formal Education				
Primary School	147	3	4 477 240	50
High School	827	16	2 223 662	25
High School Plus	4 051	81	1 782 888	20
Household net monthly income				
Less than 1500€	1 291	26	n/a	n/a
1500€<x<2500€	1 725	34	n/a	n/a
More than 2500€	1 168	23	n/a	n/a
Don't know/Prefer not to say	841	17	n/a	n/a
Has prior financial literacy training				
No	4 466	89	n/a	n/a
Yes	559	11	n/a	n/a
Related academic background				
No	3 986	79	n/a	n/a
Yes	1 039	21	n/a	n/a

1. The reported brackets by INE are 10-19; 20 – 29; 30 – 39; 40 – 49; 50 – 59; 60 – 69; 70+. We considered half the people from a category if our category ends halfway. For example, for our category of 40-54, we considered the full number from 40-49 as reported by INE and then half of the reported value for 50-59. Percentages in the columns from 2. Censos' values may not add up to 100% given categories do not match fully with ours and were therefore not used.

Table B.1. – Sample Frequency Table

Follow-up response rate	Sample size	Responses #	Response rate %
Fall, Control	974	470	48%
Fall, Treatment	995	593	60%
Spring, Control	1 539	782	51%
Spring, Treatment	1 517	0	0%

Spring, Treatment shows a value of 0 because at the time this work was developed, the results were still being collected.

Table B.2. - Follow-up response rate per semester per group

C. Baseline

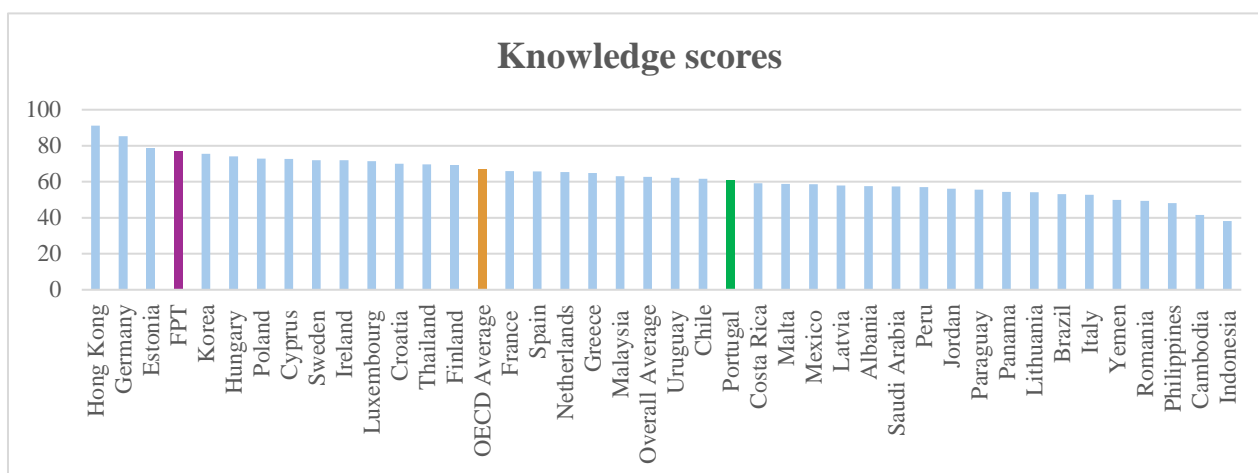


Figure C.1. Graph with the knowledge indicator's value for each country in the OECD report. Data of 2023. Values in a 0-100 scale

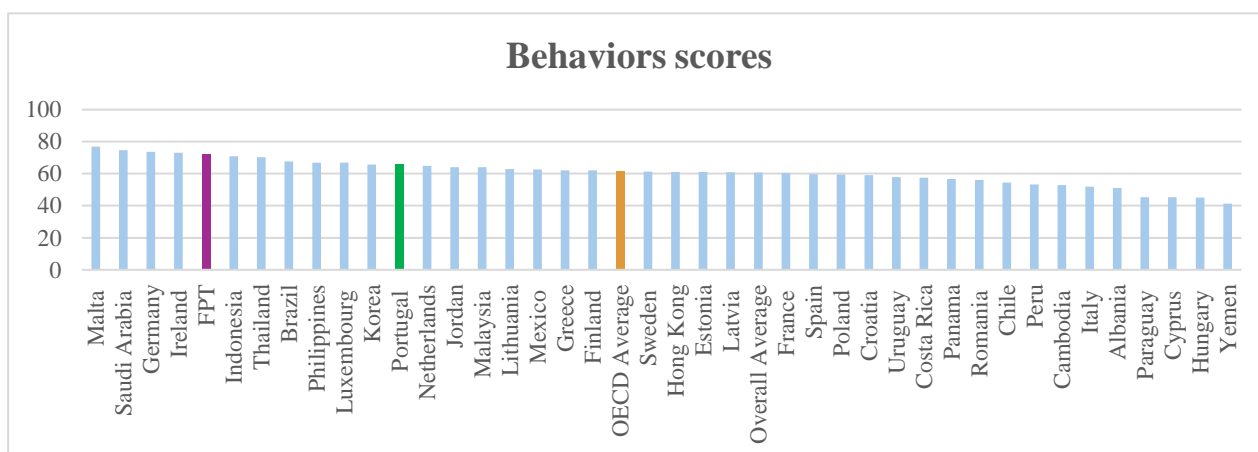


Figure C.2. Graph with the behavior indicator's value for each country in the OECD report. Data of 2023. Values in a 0-100 scale

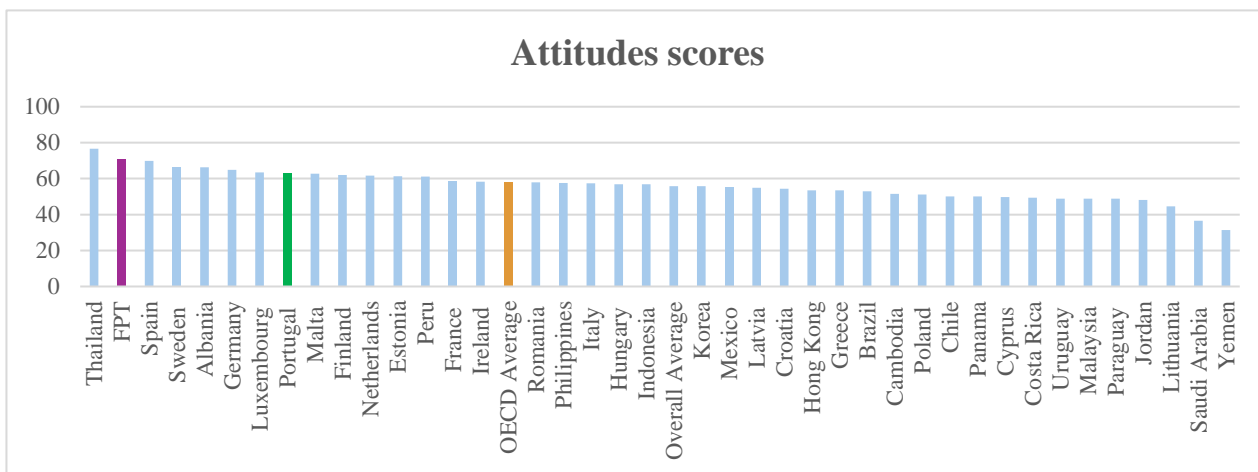


Figure C.3. Graph with the attitudes indicator's value for each country in the OECD report. Data of 2023. Values in a 0-100 scale

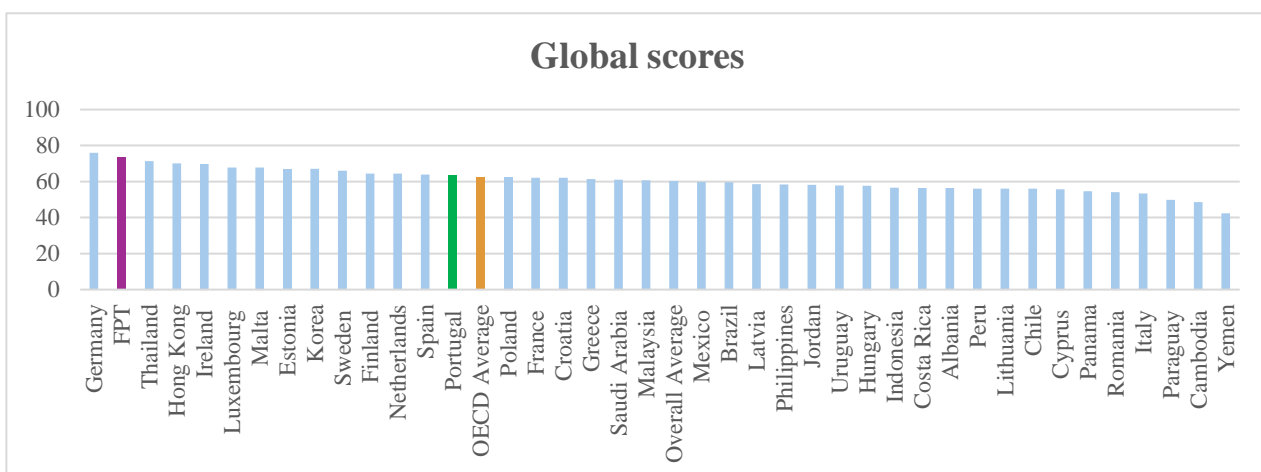


Figure C.4. Graph with the knowledge indicator's value for each country in the OECD report. Data of 2023. Values in a 0-100 scale

Average scores (n = 5,025)	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Knowledge	0.71	0.98	0.78	0.42	0.92	0.88	0.72	
Behaviors	0.48	0.95	0.91	1.34	0.63	0.42	0.75	0.95
Attitudes	3.61	4.09						

Note: To relate questions with the numbering, refer to section A.1.

Table C.5. - Average score per question for each indicator in the baseline assessment

D. Effects of the program

<i>Same mean test</i> ($H_0: Diff = 0$)	Control (n = 1,252)	Treatment (n = 593)	p-value
Male	408	205	0.40
Female	844	388	
Age 18-24	79	41	0.31
Age 25-39	535	233	
Age 40-54	500	241	
Age 55-69	133	72	
Age 70 or more	5	6	
Employed	1,100	513	0.528
Unemployed	68	35	
Studying	54	24	
Retired	30	21	
Less than High School	29	16	0.838
High School	196	96	
High School Plus	1,027	481	
Less than 1500€	350	145	0.423
1500€<x<2500€	414	212	
More than 2500€	290	142	
Don't know/Prefer not to say	198	94	
Did not attend a fin. literacy course before	1,113	526	0.901
Attended a fin. literacy course before	139	67	
No related background	995	470	0.915
Related background	257	123	

Table D.1. – Chi-squared test for demographic variables

	Behavior	Knowledge
Sd. Control (n=1,252)	1.552	1.323
Sd. Treatment (n=593)	1.523	1.289
Average improv. control	0.69	0.20
Average improv. treatment	1.13	0.53
Pooled Sd. formula	1.543	1.312
Difference in improv.	0.44	0.32
SD effect	0.28	0.25

Table D.2. – SD effect size standardization

Knowledge improvement

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
Control	1,252	.201278	.0350421	1.239916	.1325302	.2700257
Treatment	593	.5261383	.0522892	1.273326	.4234433	.6288333
Combined	1,845	.3056911	.0293243	1.259582	.2481787	.3632034
diff		-.3248603	.0623502		-.4471447	-.2025759

diff = mean(Control) - mean(Treatment) t = -5.2103
H0: diff = 0 Degrees of freedom = 1843

Ha: diff < 0 Pr(T < t) = 0.0000
Ha: diff != 0 Pr(|T| > |t|) = 0.0000
Ha: diff > 0 Pr(T > t) = 1.0000

Figure D.3. – T-test on the effect of the treatment on knowledge

Behavior improvement

Group	Obs	Mean	Std. err.	Std. dev.	[95% conf. interval]	
Control	1,252	.6932907	.0395846	1.400646	.6156312	.7709503
Treatment	593	1.131535	.0613599	1.494212	1.011025	1.252044
Combined	1,845	.8341463	.0336539	1.44555	.7681427	.90015
diff		-.4382438	.0713543		-.5781875	-.2983001

diff = mean(Control) - mean(Treatment) t = -6.1418
H0: diff = 0 Degrees of freedom = 1843

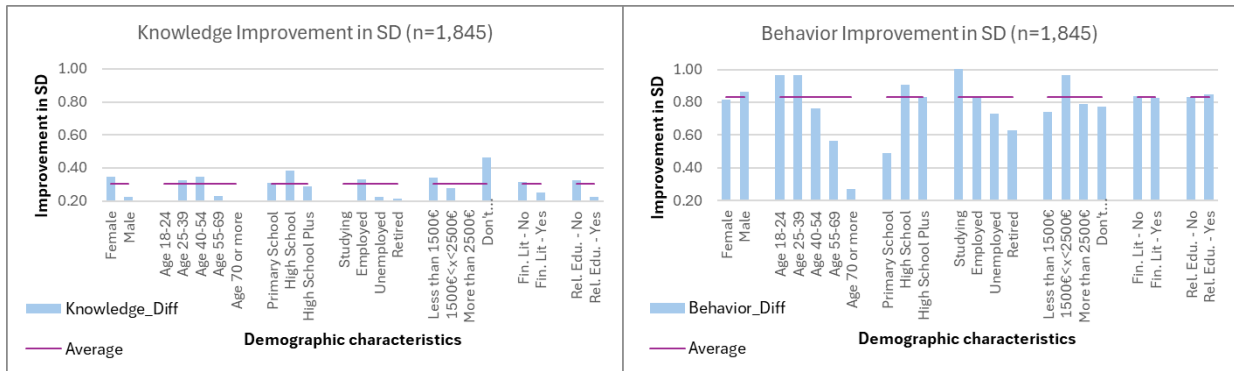
Ha: diff < 0 Pr(T < t) = 0.0000
Ha: diff != 0 Pr(|T| > |t|) = 0.0000
Ha: diff > 0 Pr(T > t) = 1.0000

Figure D.4 - T-test on the effect of the treatment on behaviors

Subgroup	Effect size (g)	SE	CI Lower bound	CI Upper bound	n(studies)	n(effects)
Panel A: Treatment effects on financial behaviors						
(a) By country income						
High income economies	0.11	0.03	0.05	0.17	35	144
Developing economies	0.09	0.01	0.07	0.12	34	377
(b) By respondent income						
Low-income individuals	0.10	0.02	0.06	0.14	46	389
General population	0.10	0.02	0.05	0.14	23	132
(c) By age of participants						
Children (< age 14)	0.06	0.02	0.02	0.10	10	41
Youth (age 14-25)	0.11	0.04	0.03	0.19	12	128
Adults (> age 25)	0.11	0.02	0.07	0.15	47	352
(d) By intensity of treatment						
< 5 h	0.08	0.02	0.04	0.12	23	129
≥ 5 and < 20 h	0.10	0.02	0.06	0.14	33	309
≥ 20 h	0.23	0.07	0.07	0.39	8	54
(e) By delay between measurements						
< 6 months	0.10	0.02	0.07	0.13	38	207
≥ 6 and < 18 months	0.09	0.02	0.05	0.12	24	229
≥ 18 months	0.06	0.02	0.02	0.10	11	67
(f) By type of intervention						
Classroom	0.10	0.02	0.07	0.14	54	360
Online	0.09	0.03	0.00	0.17	6	57
Counseling	0.14	0.02	0.06	0.23	3	51
Educative Nudge	0.06	0.02	0.02	0.10	10	53
Panel B: Treatment effects on financial knowledge						
(a) By country income						
High income economies	0.24	0.04	0.16	0.31	33	147
Developing economies	0.13	0.02	0.09	0.18	23	95
(b) By respondent income						
Low-income individuals	0.22	0.04	0.14	0.30	31	129
General population	0.16	0.03	0.11	0.22	25	113
(c) By age of participants						
Children (< age 14)	0.24	0.09	0.03	0.44	9	21
Youth age (age 14-25)	0.17	0.04	0.09	0.25	18	50
Adults (> age 25)	0.19	0.03	0.14	0.25	30	171
(d) By intensity of treatment						
< 5 h	0.20	0.02	0.15	0.25	27	96
≥ 5 and < 20 h	0.18	0.04	0.09	0.27	24	97
≥ 20 h	0.19	0.09	-0.03	0.42	6	9
(e) By delay between measurements						
< 6 months	0.21	0.03	0.16	0.27	41	163
≥ 6 and < 18 months	0.14	0.03	0.08	0.19	16	59
≥ 18 months	0.14	0.05	-0.05	0.23	1	1
(f) By type of intervention						
Classroom	0.18	0.03	0.13	0.24	42	129
Online	0.23	0.04	0.14	0.32	12	101
Counseling (not significant)	0.24	0.09	-0.91	1.39	2	5
Educative Nudge (not significant)	0.00	0.01	-0.07	0.08	3	8

Source: Work project by Pires: “An Analysis of the Benefits of Finanças Para Todos towards Financial knowledge.”

Table D.5. – Breakdown of SD effect size by characteristics of the intervention



Note: Average refers to the pooled improvement, not the effect of the program.

Figure D.6. – Breakdown of the improvement per indicator per demographic.

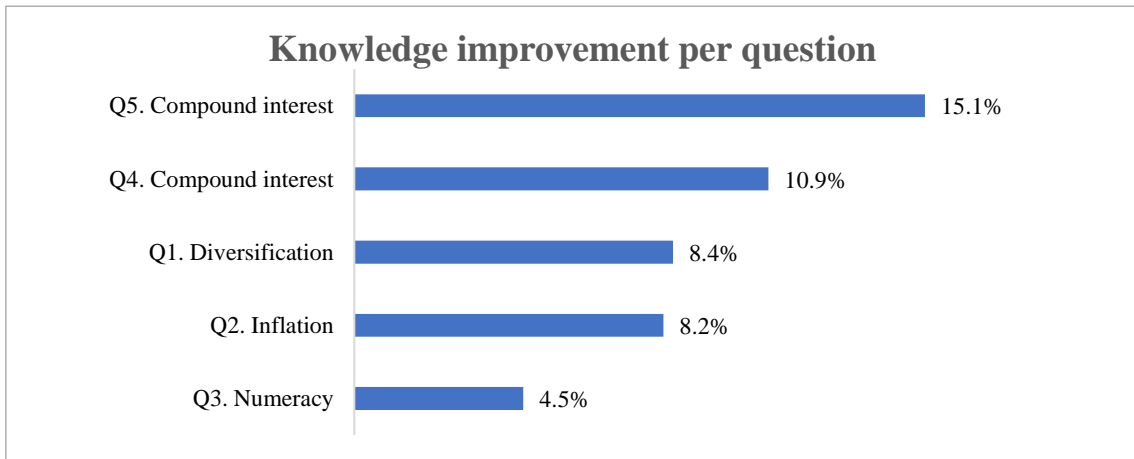


Figure D.7. – Spread in p.p. of the treatment over the control group. Percentage is calculated with the initial score as the base.

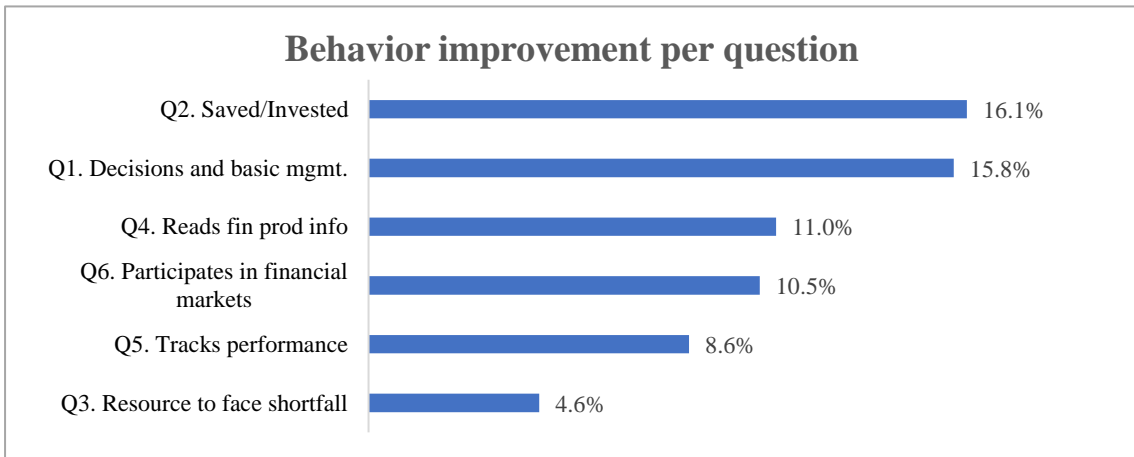


Figure D.8. - Spread in p.p. of the treatment over the control group. Percentage is calculated with the initial score as the base.

Average scores	Q1	Q2	Q3	Q4	Q5	Q6
Knowledge	0.74	0.70	0.82	0.69	0.64	
Behaviors	0.52	0.57	0.92	1.28	0.65	0.38

Note: To relate questions with the numbering, refer to section A.2.

Table D.9. – Average starting score per question for each recreated indicator (n=1,845)