



# UNDERSTANDING THE DEMAND FOR FINANCIAL LITERACY

Insights from the Theory of Planned Behaviour

**Francesco C. Billari** Bocconi University

**Monica Gentile** CONSOB

**Nadia Linciano** CONSOB

**Francesco Saita** Bocconi University



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

Cherry Blossom Financial Education Institute, April 8-9, 2021

# Introduction

- Empirical literature on financial literacy and financial education has mostly focused (Lusardi and Mitchell 2014) around three key issues
  - (1) measurement of financial literacy (FL), including literacy gaps among subgroups;
  - (2) the ways in which FL impacts actual decisions;
  - (3) the effectiveness of financial education programs.
- From a policymaking perspective, the third stream of empirical literature is particularly important, given continuous efforts to increase the number, diffusion and quality of available financial education programs
- The focus, however, is mostly centered on financial education *supply*



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Introduction

- Less attention however has been paid to the *demand* side of financial education
  - What drives the intention (or lack of) to become financially literate?
  - Do less literate subgroups show less willingness to learn? (Or have they simply failed to be invited to a financial education program?)
  - If a *demand* gap exists and might co-explain literacy gaps, on which levers can we potentially act?

Potentially, motivation to learn may impact on program effectiveness when participation to education programs is compulsory ...

...but is even more crucial if participation is on a voluntary basis (→ adults)



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Results preview and potential implications

- The intention to learn about savings and investments can be explained well through the framework of the Theory of Planned Behaviour (TPB) from the social psychologist Icek Ajzen → attitudes, subjective norms and perceived behavioural control as determinants of intentions (based on data from a survey on 1,601 Italian households by Consob, 2018)
- The low literacy subgroup is actually characterized by weaker intention to learn, and weaker perception of both potential benefits and ability to learn
- Based on the panel component of the survey (2018-2019), we show that intention is positively correlated with ex post self-assessed effort to learn, while no evidence of actual improvement in 5 FL questions
- Future possible developments: conceptual framework to combine financial education programs with demand-side solicitations



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# The Theory of Planned Behaviour (TPB)

- The TPB (Ajzen 1988, 1991), extending the previous Theory of Reasoned Action (Fishbein and Ajzen 1975) assumes that the performance of a behaviour depends on (a) the *behavioural intention* and (b) the ability to perform the behaviour (i.e., *behavioural control*)
- The determinants of behavioural intention can in turn be identified with

Attitudes

Perceived benefits and costs associated to a given behaviour (e.g. «Stopping smoking would make me live longer» × «Living longer is important for me»)

Subjective norms

Beliefs of «important others» concerning the behaviour (e.g. «My parents believe I should stop smoking» × «My parents' opinion is important for me»)

Perceived behavioural control

Perceived ability to perform the behaviour («I could stop smoking if I wanted»)

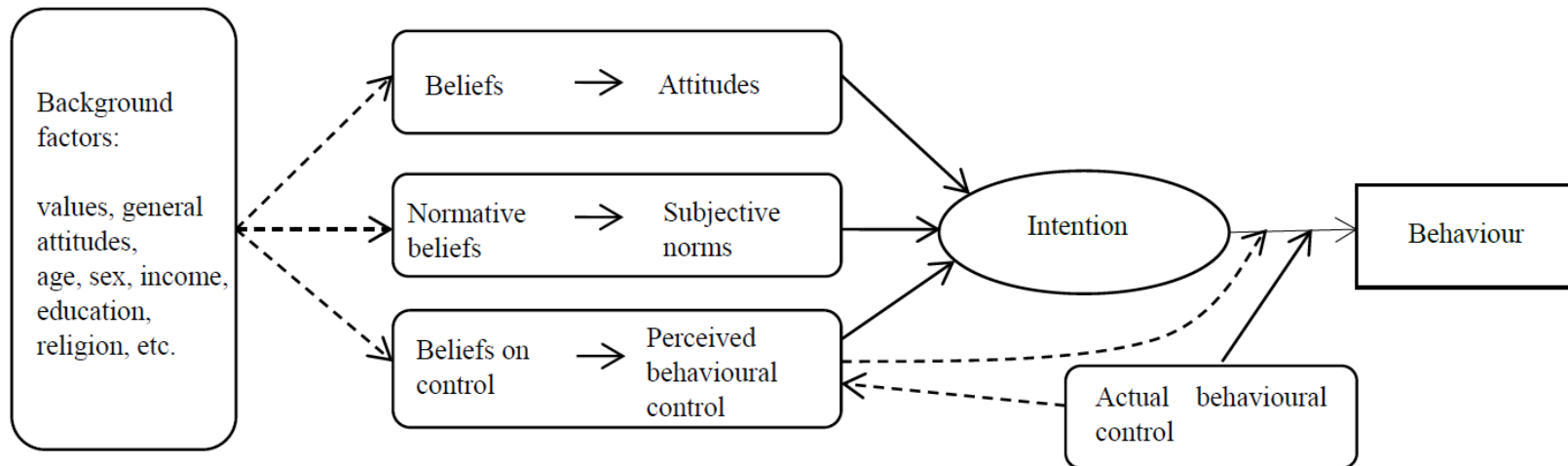


Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# The Theory of Planned Behaviour (TPB)

## A graphical representation



Source: Fishbein and Ajzen, 2005, p. 194.



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Data

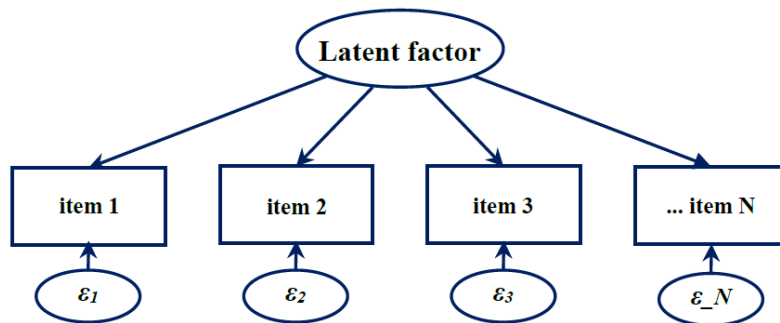
- Consob 2018 (and 2019) surveys on financial investments of Italian households
  - 1,601 financial decision makers (higher income earners), aged 18-74 (workers in the financial industry are excluded), 26% women
  - Representative sample in terms of age bucket and macroregion x size of the town/city
  - Including questions on Big 5 personality traits from a validated, 10-item questionnaire (Rammstedt and John 2007), generalized trust...
  - ... and 7 questions on financial literacy (compound interest, inflation, diversification, risk-return relationship, 15-yr vs 30-yr mortgage + 2 advanced questions on bond rate/price relationship and stock riskiness)
- Individuals assigned to the low financial literacy subsample if the number of correct answers is lower than/equal to the median (i.e.  $\leq 3$ )



# Methodology (1)

- Attitudes, subjective norms and perceived behavioural control as latent variables

- Definition of a set of survey items
- Confirmatory factor analysis (CFA) to identify how the latent variables influence the observable items



Attitudes (11 items)

Potential outcomes of learning more («learning more about savings/investments would...») × outcome evaluation («to me it is important to...»)

Subjective norms (4 items)

Beliefs of relevant people (According to my partner/relatives/friends/colleagues I should learn more about savings/investments) × motivation to comply (importance of others' opinions)

Perceived behavioural control (4 items)

Control beliefs about the difficulty of learning



Università  
Bocconi

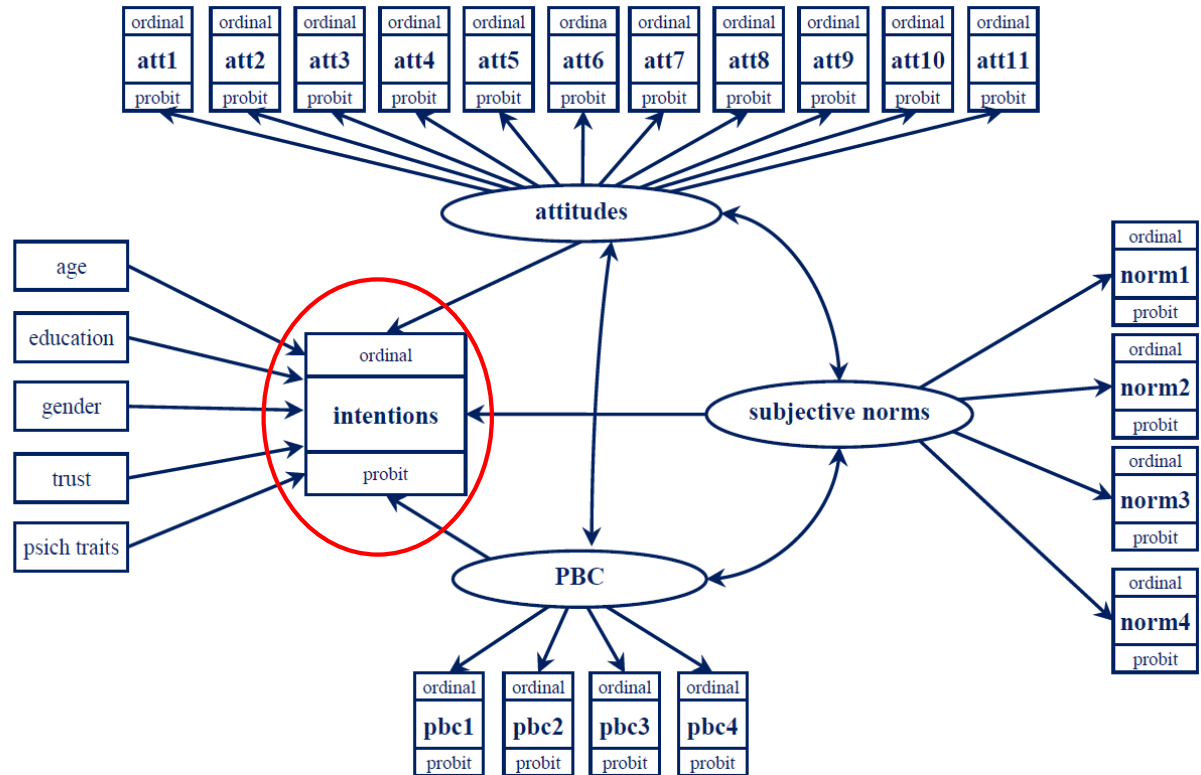
BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation



# Methodology (2)

Generalized structural equation model to estimate the impact of attitudes, subjective norms and PBC on intentions

(controlling for exogenous background factors, including psychological traits)

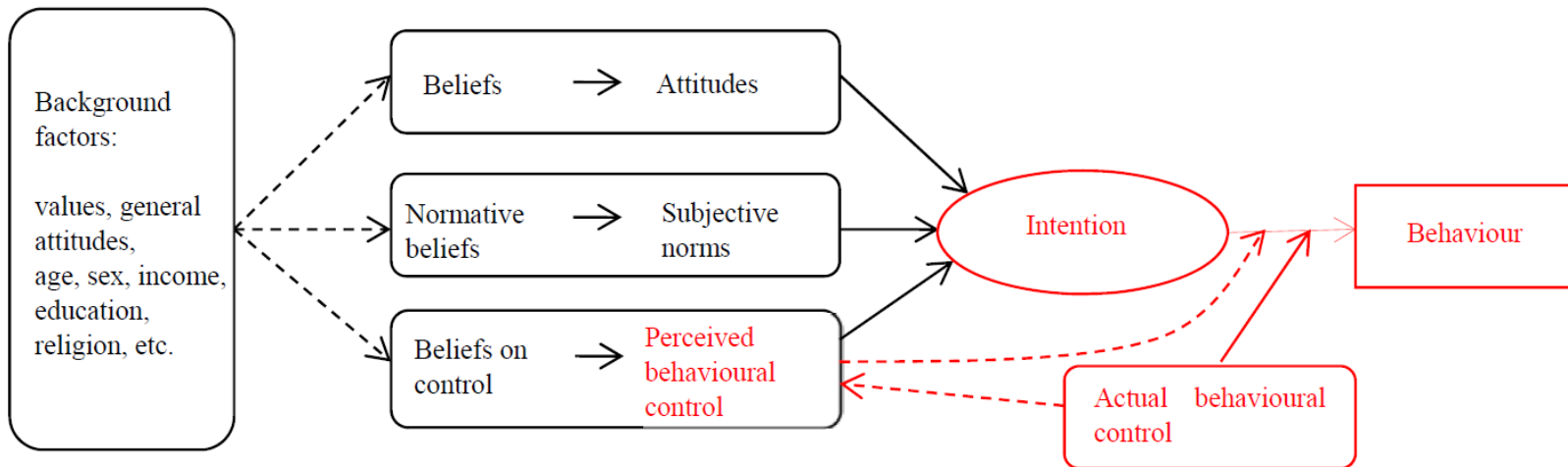


Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Methodology (3)

Impact of intention on behaviour (measured through answers to the Consob 2019 survey for the panel component of the survey – 1,311 individuals)



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Confirmatory factor analysis estimates

The level of correlation among responses justifies the application of CFA

For attitudes/subjective norms/PBC Cronbach's  $\alpha$  among items is 0.95, 0.91 and 0.85, and the first component explains 67%, 80% and 70% of sample variance of items.

## Confirmatory factor analysis estimates: (1) attitudes

### Attitudes: learning more about savings and investments would...

att2: make me feel more secure	1.00		
att1: help me to save	0.99***	att5: be a way to learn new things	0.65***
att9: improve my understanding of financial information	0.75***	att7: be important for choosing better who can support me	0.64***
att8: help me to invest better	0.74***	att6: be useful to choose on my own	0.53***
att10: help me to plan better for retirement	0.74***	att11: make me feel more appreciated	0.44***
att3: avoid unnecessary expenses	0.68***	att4: be boring (reverse coded)	0.17***



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Confirmatory factor analysis estimates

## Confirmatory factor analysis estimates: (2) subjective norms

**Subjective norms: I should improve my knowledge regarding savings and investments according to my...**

norm3: friends	1.00
norm4: colleagues	0.86***
norm2: close relatives	0.63***
norm1: partner	0.34***

## Confirmatory factor analysis estimates: (3) perceived behavioural control

**Perceived behavioural control: learning more about savings and investments is difficult because...**

pbc1: topics are too complex (reverse coded)	1.00
pbc2: I do not know who can help me /source of information (reverse coded)	0.80***
pbc4: it takes too long (reverse coded)	0.72***
pbc3: people who can help me are not on my side (reverse coded)	0.57***



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# The intention to learn more about finance

«I intend to learn more about savings and investments right now or within 12 months at latest»  
(level of agreement assessed on a 5-point Likert scale)

agreement categories	all sample	gender		financial literacy	
		men	women	low	high
strongly disagree	13.2	12.0	16.5	15.5	10.4
disagree	16.7	15.5	19.9	14.7	19.2
neither agree nor disagree	46.8	48.0	43.3	50.0	43.0
agree	19.3	20.7	15.4	16.2	23.3
strongly agree	4.0	3.7	4.9	4.0	4.2
<b>t-test men – women</b>		<b>1.9*</b>			
<b>t-test low FL – high FL</b>				<b>-2.7***</b>	

Weaker intention for women (note: despite being financial decision makers) and the lower literacy subsample



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# The determinants of the intention to learn finance

Ordered probit model. Independent variables: latent factors + exogenous background factors (gender, age, education, trust and psychological traits)

variable	estimates
<b>attitudes</b>	0.32***
<b>subjective norms</b>	0.16***
<b>perceived behavioural control</b>	0.10***
<b>woman</b>	-0.22***
<b>age</b>	-0.01
<b>age squared</b>	0.00
<b>high school</b>	-0.06
<b>at least bachelor degree</b>	0.13

variable	estimates
<b>trust</b>	0.00
<b>extroversion</b>	-0.05**
<b>openness</b>	0.07***
<b>conscientiousness</b>	-0.06**
<b>agreeableness</b>	0.02
<b>emotional stability</b>	0.01

All latent factors are significant in explaining intention

Significant impact of gender as well



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Determinants of intention: low/high FL subsample

(based on below or at/above median number of correct FL answers out of 7)

	Complete sample	Low FL	High FL
<b>attitudes</b>	0.32***	0.37***	0.27***
<b>subjective norms</b>	0.16***	0.23***	0.11***
<b>perceived behavioural control</b>	0.10***	0.12***	0.07**
<b>woman</b>	-0.22***	-0.34***	-0.07
<b>Other controls (age, education, trust, psychological factors)</b>	Yes	Yes	Yes
<b>number of observations</b>	1,601	844	757

All latent factors remain significant in both subsamples

Higher coefficients in the low FL one



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Determinants of intention: focus on attitudes

- Weaker perceived benefits + lower importance of potential benefits for the low FL subsample (for all items)

Attitudes' items	Latent variable coefficients	Learning more about finance would...		For me it is important to...	
		Average value (full sample)	Low FL subgroup vs full sample	Average value (full sample)	Low FL subgroup vs full sample
att2: make me feel more secure	1.00	3.29	<b>-0.12</b>	3.43	<b>-0.15</b>
att1: help me to save	0.99	3.31	<b>-0.14</b>	3.45	<b>-0.13</b>
att9: improve my understanding of financial information	0.75	3.28	<b>-0.17</b>	3.19	<b>-0.14</b>
att8: help me to invest better	0.74	3.32	<b>-0.19</b>	3.28	<b>-0.16</b>
att10: help me to plan better for retirement	0.74	3.28	<b>-0.17</b>	3.29	<b>-0.12</b>





# Determinants of intention: focus on perceived behavioural control

Greater perceived difficulty (i.e., weaker perceived behavioural control) for low literacy subsample *(note: items are not reverse coded in this table)*

Perceived behavioural control	Latent variable coefficients	Learning more about savings and investments is difficult because...*	
		Average value (full sample)	Low literacy subgroup vs full sample
Topics are too complex	1	3.05	0.12
I do not know who can help me /source of information	0.80	2.92	0.09
People who can help me are not on my side	0.57	2.91	0.08
It takes too long	0.72	3.09	0.03



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Does intention predict behaviour?

- In order to test the relationship between intention and behaviour, we use the panel component of the 2018 and 2019 Consob surveys
- Two possible measures of behaviour:
  - A) «Over the last 12 months, I tried to learn more about savings and investments» (1 to 5 Likert scale for the level of agreement)
  - B) Change in the number of correct answers in the five financial literacy questions included in both surveys (risk-return tradeoff, inflation, interest compounding, mortgages and bond yield-price relationship) (note: no education/training was offered between the two surveys)



# Does intention predict behaviour?

Dependent variable = effort to learn over the last 12 months

Statistically significant impact on self-declared effort to learn

Perceived behavioural control is also significant

## Intention to learn finance

attitudes	0.27***
subjective norms	0.14***
perceived behavioural control	0.10***
Background factor controls (gender, age, education, Big5)	Yes
Number of observations	1.214

## Effort to learn finance

intention to learn finance	0.53***
perceived behavioural control	0.08***



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Does intention predict behaviour?

Dependent variable = change in the number of correct answers

Neither intention nor PBC have a significant impact

## Intention to learn finance

attitudes	0.27***
subjective norms	0.14***
perceived behavioural control	0.10***
Background factor controls (gender, age, education, Big5)	Yes
Number of observations	1.311

## Changes in FL scores (2019 vs 2018)

intention to learn finance	-0.07
perceived behavioural control	-0.01

There is no significant relationship even restricting the analysis to the three basic FL questions (compound interest, inflation, risk-return tradeoff)...

...or considering only high FL or low FL subsamples



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation

# Does intention predict behaviour?

## Interpreting results

- Possible interpretation #1: overestimation of self-declared effort, since no effect is visible on the number of correct answer
- Possible interpretation #2: considering that no education was offered between the two surveys, individual efforts may have been true and sincere but might have been devoted to different topics from compound interest or inflation
- As for other learning objectives, combined results remind that demand for financial education is probably a necessary but not a sufficient condition in order to learn (i.e., supply matters too!)



# Conclusions

- General need to understand more the demand side of financial education (aims: reduce program self-selection/ increase program effectiveness)
- The theory of planned behaviour proved to be effective in explaining intentions to learn about finance.
- Intention, in turn, appears to be associated to higher ex post (at least self-assessed) effort...
- ...even if no linkage with improvements on 5 FL questions (supply matters)
- The low literacy subsample shows weaker intention to learn, weaker perceived benefits and greater perceived difficulty associated to learning about finance
- Policy/research implications: possible TPB-based interventions aimed at strengthening intentions of target learners→perceived benefits or PBC



Università  
Bocconi

BAFFI CAREFIN  
Centre for Applied Research  
on International Markets, Banking,  
Finance and Regulation