
POLICY-EFFECTIVE FINANCIAL KNOWLEDGE AND ATTITUDE FACTORS

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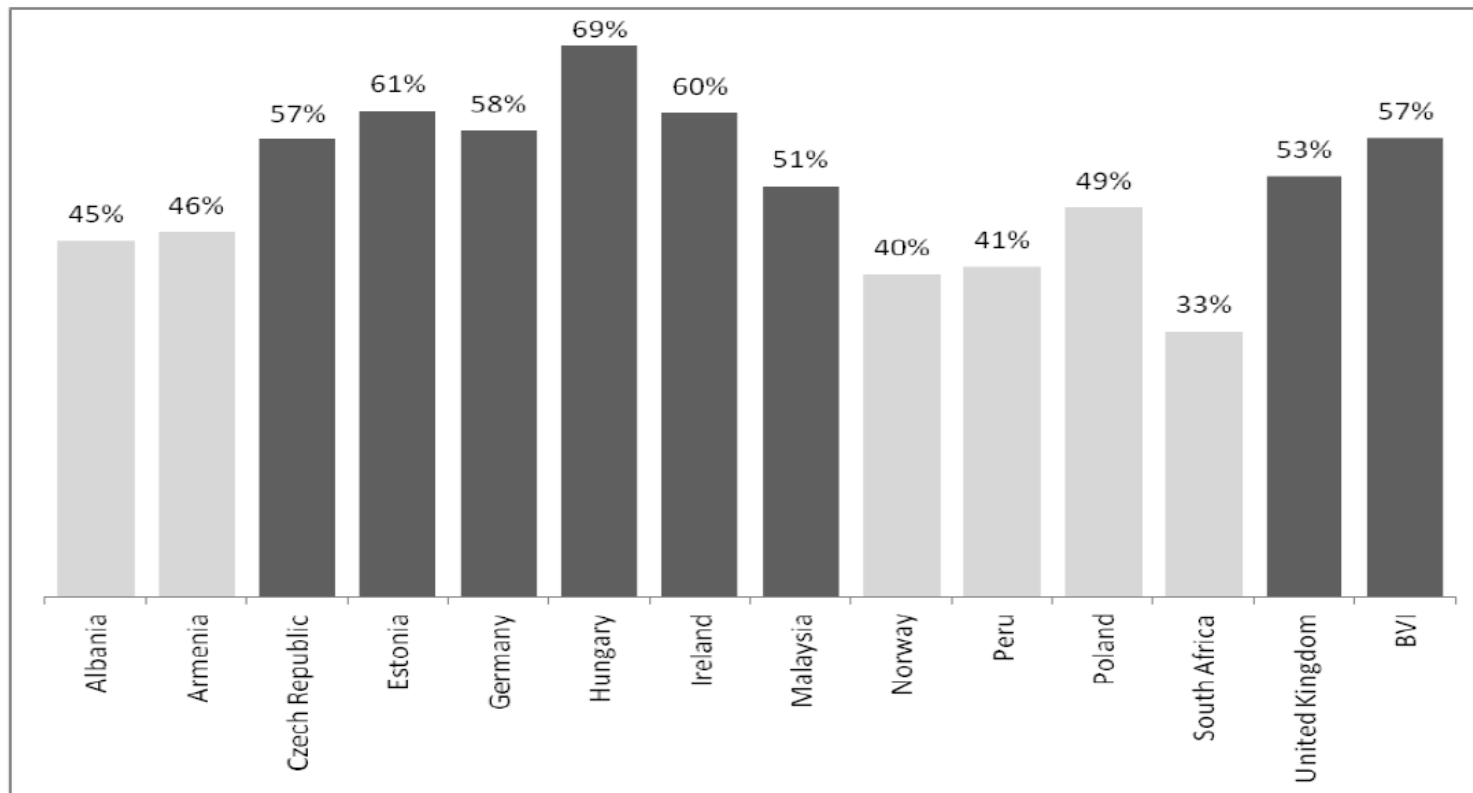
THE VIEWS EXPRESSED IN THIS PAPER ARE THOSE OF THE
AUTHORS AND NOT NECESSARILY REFLECT THOSE OF
THE BANCO CENTRAL DO BRASIL.



Main question:

How to build measures of financial literacy that are intended for policy design?

Figure 3. Financial knowledge: Percentage scoring 6 or more



Base: all respondents. Lighter shaded columns indicate countries where fewer than 50% achieved a score of 6 or more.

Atkinson, A. and F. Messy (2012)

Table 1 – OLS Regressions of Retirement Planning on Financial Literacy Variables

Reference	Alessie, <i>et al.</i> (2011b)	Lusardi and Mitchell (2011)	Bucher-Koenen, and Lusardi (2011)	Agnew <i>et al.</i> (2013)
Country	Netherlands	USA	Germany	Australia
Coefficients				
(1) All correct criterion	0.126***	0.091***	0.06	0.123***
(2) Count of right answers criterion	0.101***	0.043**	0.04**	0.059***
(3) Separate dummies for right answers (included simultaneously)				
Interest question	0.173***	0.009	0.01	0.054
Inflation question	-0.00621	0.042	0.04	-0.022
Risk diversification question	0.142***	0.078**	0.06	0.135***

Note: OLS estimates with controls. ***P<0.01, **P<0.05, *P<0.1.

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→ 0.10 Interest + 0.10 Inflation + 0.10 Risk

→ **0.17 Interest + 0 Inflation + 0.14 Risk**

Many targets....

$$y_1 = g_1(a_{11}x_1 + a_{12}x_2 + \cdots + a_{1m}x_m) + \varepsilon_1$$

$$y_2 = g_2(a_{21}x_1 + a_{22}x_2 + \cdots + a_{2m}x_m) + \varepsilon_2$$

⋮

$$y_n = g_n(a_{n1}x_1 + a_{n2}x_2 + \cdots + a_{nm}x_m) + \varepsilon_n$$



Targets



Financial literacy

Assuming away controls for simplicity

Getting one factor while using many targets....

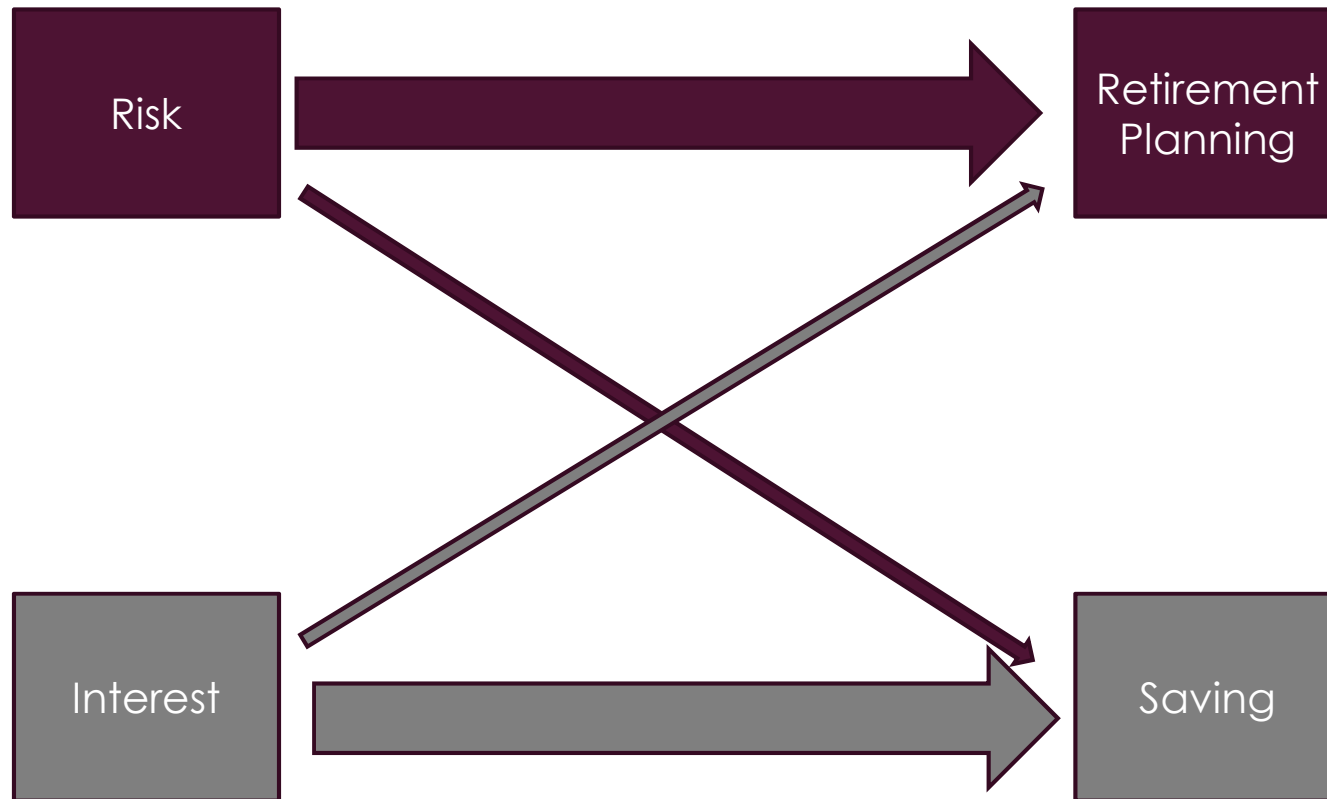
$$y_1 = g_1(\gamma_1 [c_1 x_1 + c_2 x_2 + \cdots + c_m x_m]) + \varepsilon_1$$

$$y_2 = g_2(\gamma_2 [c_1 x_1 + c_2 x_2 + \cdots + c_m x_m]) + \varepsilon_2$$

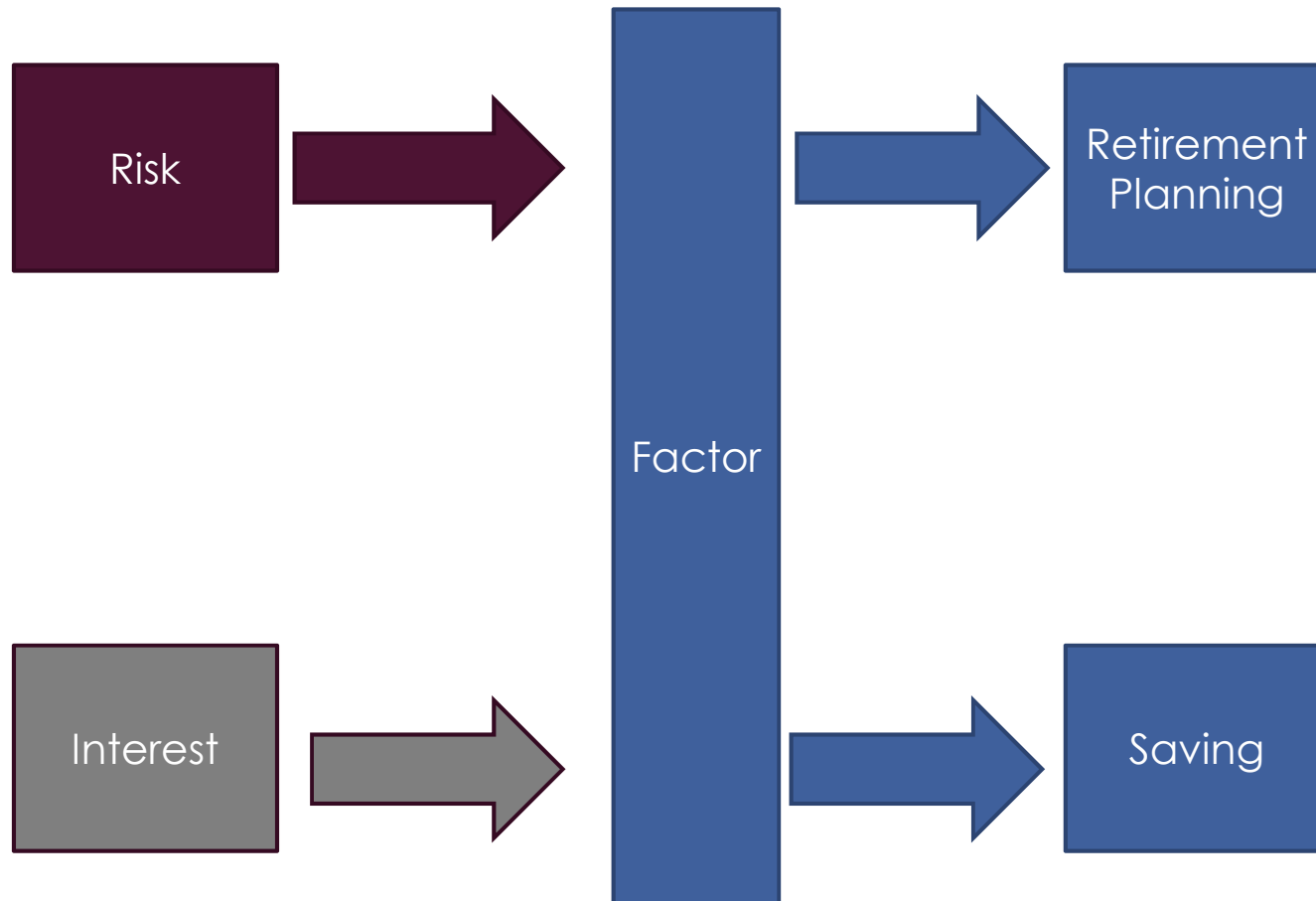
⋮

$$y_n = g_n(\gamma_n [c_1 x_1 + c_2 x_2 + \cdots + c_m x_m]) + \varepsilon_n$$

We want to get as close as possible to this, without imposing any restriction rejected by the data.



$$\frac{\sum_{i=1}^n \left(\frac{\partial Y(\cdot)}{\partial y_i} g'_i(\cdot) a_{ij} \right)}{\sum_{i=1}^n \left(\frac{\partial Y(\cdot)}{\partial y_i} g'_i(\cdot) a_{ik} \right)} = \frac{p_j}{p_k}$$



$$\frac{c_j}{c_k} = \frac{p_j}{p_k}$$

Getting one factor while using many targets....

$$\begin{aligned}y_1 &= g_1(\gamma_1[c_1x_1 + c_2x_2 + \dots + c_mx_m]) + \varepsilon_1 \\y_2 &= g_2(\gamma_2[c_1x_1 + c_2x_2 + \dots + c_mx_m]) + \varepsilon_2 \\&\vdots \\y_n &= g_n(\gamma_n[c_1x_1 + c_2x_2 + \dots + c_mx_m]) + \varepsilon_n\end{aligned}$$

We want to get as close as possible to this, without imposing any restriction rejected by the data.

→ Start from an unrestricted form;

→ Stepwise specification based on testing proportionality of coefficients;

→ Take out controls which are not significant;

RESULTS – OECD 2015 BRAZIL

- Toolkit + extra questions;
- 2002 individuals;
- 12 target behaviors;

Saving last 12 months Saving last 12 months (instruments)	Retirement planning Having a savings account	Use of general purpose financial system loans Using checking account overdraft
Making household budget	Having a credit Card	Using merchant credit (carnê de loja)
Prepared for unexpected negative income shocks	Using payroll consigned credit (wage collateralized)	Vehicle financing

- Logistic function: $E(y_i/X) = g_i(X) = g(X\beta_i) = \frac{1}{1+e^{-X\beta_i}}$

$$X\beta_i = a_{i0} + D\beta_{Di} + K\beta_{ki} + A\beta_{ai}$$

- One knowledge factor and two attitude factors
- Two “sorts” of results

RESULTS – OECD 2015 BRAZIL KNOWLEDGE FACTOR

Question	Value assigned	Coefficient (Std. Dev.)	OECD survey
Suppose 3 friends win together R\$1500 in a lottery. If they decide to share the money equally, how much does each one get? (3 alternatives or not know)	dummy =1 if right	0.9841652**** (0.2397367)	Yes
A good way to control monthly expenditure is to make a budget. (True or false)	dummy =1 if right	0.2699594* (0.1585419)	No
Having the information about the interest included if a sale is made in instalments is a basic consumer right. (True or false)	dummy =1 if right	0.7296669**** (0.2271173)	No
In Brazil, in 2013 what was the level of inflation? (3 alternatives or not know)	dummy =1 if right	0.4625293**** (0.0978709)	No
How would you rate your level of financial knowledge on a scale of 1 to 5 where 1 is not at all knowledgeable and 5 is very knowledgeable? (1 through 5, not know or refusal)	1 through 5	0.2480314**** (0.0506277)	Yes
Suppose you borrow R\$100 from a friend and pay him back R\$100 after a week. How much interest have you paid on this loan? (3 alternatives or not know)	dummy =1 if right	0.3791915*** (0.1286657)	Yes
An investment with a high return is likely to be high risk. (True or false)	dummy =1 if right	0.3570646*** (0.1301839)	Yes

Table 5.1.1 – Questions entering the Financial Knowledge Factor

significant at: **** 0.1%, ***1%, **5%, *10%

RESULTS – OECD 2015 BRAZIL

ATTITUDE FACTOR 1: IMPULSIVENESS X CONTROL

Question	Value assigned	Coefficient (Std. Dev.)	OECD survey
How would you rate your level of financial stress? (not know or refusal)	1 through 5	0.2529825**** (0.0498475)	No
I keep a close personal watch on my financial affairs (How much do you agree)	1 through 5	0.1129368*** (0.0437404)	Yes
I prefer to pay for a purchase in instalments than to wait until I have the money to pay for it upfront. (How much do you disagree)	1 through 5	0.0636214** (0.0315477)	No
I find it more satisfying to spend money than to save it for the long term (How much do you disagree)	1 through 5	0.1067229**** (0.0333349)	Yes
I have too much debt right now (How much do you disagree)	1 through 5	0.1110599*** (0.0350242)	Yes
I am satisfied with my present financial situation (How much do you agree)	1 through 5	0.1346513**** (0.0353915)	Yes

Table 5.1.2 – Questions entering the Financial Attitude Factor 1

significant at: **** 0.1%, ***1%, **5%, *10%

RESULTS – OECD 2015 BRAZIL

ATTITUDE FACTOR 2: SHORT-SIGHTEDNESS X PLANNING

Question	Value assigned	Coefficient (Std. Dev.)	OECD survey
In general, I feel capable of managing my personal finances by myself (How much do you agree)	1 through 5	0.1002954*** (0.0345982)	No
How confident are you that you have done a good job of making financial plans for your retirement? (How much do you agree)	1 through 5	0.0875806*** (0.0314241)	Yes
I set long term financial goals and strive to achieve them (How much do you agree)	1 through 5	0.0573925** (0.026377)	Yes
Money is there to be spent (How much do you disagree)	1 through 5	0.0738186*** (0.0285882)	Yes
I pay my bills on time (How much do you agree)	1 through 5	0.0988449*** (0.0351348)	Yes
My financial situation limits my ability to do the things that are important to me (How much do you disagree)	1 through 5	0.0672984** (0.0271841)	Yes
I must admit that I purchase things because I know they will impress others (How much do you disagree)	1 through 5	0.0662278** (0.0265752)	Yes

Table 5.1.3 – Questions entering the Financial Attitude Factor 2

significant at: **** 0.1%, ***1%, **5%, *10%

RESULTS – OECD 2015 BRAZIL

COEFFICIENTS OF FACTORS IN BEHAVIOR EQUATIONS

Dependent Variable	Knowledge Factor	Attitude Factor 1 (Control)	Attitude Factor 2 (Planning)
Saving last 12 months	1 (fixed)	1 (fixed)	1 (fixed)
Saving last 12 months (instruments)	0.810809**** (0.0974260)	0.5789455**** (0.1027399)	0.9293637**** (0.2131022)
Making household budget	0.4281325**** (0.0923696)		1.3091600**** (0.3887332)
Prepared for unexpected negative income shocks	0.5211094**** (0.1249246)	1.3130260**** (0.2191498)	0.8395531*** (0.3274245)
Retirement planning	0.1898849** (0.0887439)		1.6243480**** (0.4734712)
Having a savings account	0.9408200**** (0.1690471)	0.3341289** (0.1349187)	
Having a credit Card	0.6478369**** (0.1289552)		
Using payroll consigned credit (wage collateralized)	2.207925**** (0.6258796)	-2.738474**** (0.6613689)	4.4134010*** (1.5049140)
Use of general purpose financial system loans	0.7825438*** (0.2810842)	-1.6565480**** (0.3757118)	1.3940450** (0.6436855)
Using checking account overdraft	0.7450375*** (0.2705077)	-0.9196547*** (0.2930178)	
Using merchant credit (carnê de loja)	0.2668460*** (0.0963622)	-0.2741989** (0.1275451)	
Vehicle financing	0.7496158** (0.3106971)	-0.9374941*** (0.3226879)	1.3069650** (0.6113097)

APR

(general idea)

25-50%

70-100%

300-400%

significant at:
**** 0.1%, ***1%,
**5%, *10%

RESULTS – OECD 2015 BRAZIL

COEFFICIENTS OF FACTORS IN BEHAVIOR EQUATIONS

Dependent Variable	Knowledge Factor	Knowledge Factor instrumented
Saving last 12 months	1 (fixed)	1 (fixed)
Saving last 12 months (instruments)	0.810809**** (0.0974260)	0.8604073**** (0.2217725)
Making household budget	0.4281325**** (0.0923696)	0.7621918*** (0.283045)
Prepared for unexpected negative income shocks	0.5211094**** (0.1249246)	0.8257046** (0.3586319)
Retirement planning	0.1898849** (0.0887439)	-.0241579 (0.3079852)
Having a savings account	0.9408200**** (0.1690471)	1.090267**** (0.2336668)
Having a credit Card	0.6478369**** (0.1289552)	3.64547*** (1.175741)
Using payroll consigned credit (wage collateralized)	2.207925**** (0.6258796)	1.439248 (79.09333)
Use of general purpose financial system loans	0.7825438*** (0.2810842)	0.9357506 (1.983203)
Using checking account overdraft	0.7450375*** (0.2705077)	2.176868 (12.69759)
Using merchant credit (carnê de loja)	0.2668460*** (0.0963622)	0.3241551 (0.234084)
Vehicle financing	0.7496158** (0.3106971)	5.157396 (93.91503)

significant at:
 **** 0.1%, ***1%,
 **5%, *10%



THANK YOU!

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