Why Financial Advice Cannot Substitute for Financial Literacy?

Evidence from France

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Introduction

- In the recent years, households in developed countries have been facing a process of increasing financial responsibility
- Welfare states interventions have decreased given a global trend of public services privatization (e.g. pension systems)
  - Guiso and Sodini (2012)
- Liberalization of some markets (e.g. loans market) rendered financial products more complex and more accessible to low income households
  - Lusardi and Mitchell (2014)
- Credit expansion towards households with low financial sophistication could be at the core of macroeconomic crisis (Shiller 2008)

Introduction

- Do people have the ability to process economic information and *make informed decisions* about financial planning, wealth accumulation, debt, and pensions?

- What remedies can be considered so as to mitigate the adverse effects of poorly informed financial decisions?

Motivation

- **Financial illiteracy correlates with "financial mistakes"**
  - ▶ Financially illiterate households tend to save less than others especially for retirement
    - ⋆ Bernheim and Garrett (2003), Lusardi and Mitchell (2007), Banks et al. (2009), Arrondel et al. (2013)
  - ▶ These households are less prone to invest in the stock market
    - ⋆ Van Rooij et al. (2011), Arrondel et al. (2015)
  - ▶ They also accumulate less wealth and tend to be more often overindebted
    - ⋆ Lusardi and Tufano (2009), Van Rooij et al. (2012)

Motivation

- **Financial illiteracy would not be an issue if households could rely on financial advisors $\Rightarrow$ substituability**

  - Households can seek for advice from qualified sources
    - ⋆ Bernheim (1998)
  - More knowledgeable advisors can mitigate financial mistakes
    - ⋆ Bluethgen et al. (2008)

- **Financial advisors also act as sellers of financial products: asymmetric information $\Rightarrow$ conflict of interest**

Theoretical Models

Financial literacy and Financial advice, are they really substitutes ?

- Mixed results in the theoretical literature:
    - ▶ **Ottaviani (2000)** $\Rightarrow$ least informed investors tend to delegate their decisions rather than asking for advice (complements)
    - ▶ **Georgarakos and Inderst (2011)** $\Rightarrow$ less informed investors follow more often professional advice (substitutes)
    - ▶ **Bucher-Koenen and Koenen (2011)** $\Rightarrow$ more knowledgeable consumers are more likely to consult advisors (complements)
    - ▶ **Calcagno and Monticone (2014)** $\Rightarrow$ less financially literate do not ask for financial advice (complements)

Empirical Evidence

Financial literacy and Financial advice, are they really substitutes ?

- Mixed evidence in the empirical literature too:
    - **Hung and Yoong (2010)** $\Rightarrow$ ALP experimental data: advice seekers tend to have lower financial literacy (substitutes)
    - **Bucher-Koenen and Koenen (2011)** $\Rightarrow$ SAVE data: more knowledgeable consumers are more likely to consult advisors (complements)
    - **Collins (2012)** $\Rightarrow$ FINRA data: individuals with higher financial literacy are more likely to receive financial advice (complements)
    - **Calcagno and Monticone (2014)** $\Rightarrow$ UCS data: less financially literate delegate or invest autonomously (complements)

Theoretical Contribution

- Building on Bolton et al. (2007) and IO (2009, 2012) for customer's settings, I set up a very stylized model in which an uninformed customer can ask for advice to a more informed financial advisor
  $\Rightarrow$ Communication game as in CM (2014)

  - Given commission differential on the different financial products, the advisor has an incentive to missell products
  - Main results $\Rightarrow$ the model predicts a positive relationship between FL and the demand for financial advice

    - more financially literate get informative advice $\Rightarrow$ ask for advice
    - less financially literate do not get informative advice $\Rightarrow$ do not have incentives to ask for advice

  - Conclusion of the model:

    - Complementarity between FL and the RELEVANCE of financial advice
    - Implies that only well financially literate customers ask for advice

Empirical Contribution

- Empirical assessment of the model using a representative survey of French households (PATER 2011)
- Designed by Luc Arrondel and Andre Masson at the Paris School of Economics to assess preferences, financial literacy and financial behaviors
- Findings:
  - Positive and significant relationship between the level of FL and the probability to ask for financial advice
  - Biased compensation structures lead financial advisors to be harmful for less financially literate customers

Outline

1. Theoretical model of demand for advice
   - Overview of the model
   - The Customer
   - The Advisor
   - Resolution of the Model

2. Empirical Analysis
   - Data
   - Descriptive Statistics
   - Econometric Analysis

Overview of the model

- A rational customer B can invest her wealth in two mutually exclusive financial products: $\theta \in \Theta$
- When deciding on which financial product to invest, B can ask for advice to a more informed financial advisor A
- If B (the principal) decides to ask for advice to A (the agent), they engage in an information revelation game
- The model borrows from:
  - Bolton et al. (2007) and IO (2009, 2012) the fact that B does not perfectly observe her type
  - Monticone and Calcagno (2013) the communication process which differs from cheap-talk models
- Additionally, B is uncertain about preferences alignment while A has perfect information

The Customer

- B has preferences represented by $u(.)$ with $u'(.) > 0$ and $u''(.) < 0$
- There exists a product $\theta_B \in \Theta$ such that:

$$\forall\ \theta \in \Theta, \quad 0 \leq u(\theta) \leq u(\theta_B)$$

- B has incomplete information about her true type. She only observes a private signal $\gamma \in \Gamma$ such that:

$$P(\gamma = \theta_B / \theta_B) = p(\varphi) = \varphi + \tfrac{1}{2}$$

with $0 \leq \varphi \leq \tfrac{1}{2}$ being customer's level of financial literacy.

- B has beliefs regarding preferences alignment:

$$\alpha = P(\theta_A = \theta_B)$$

with $\theta_A \in \Theta$, the financial product prefered by A.

The Advisor

- The advisor earns a commission $\delta(\theta) \geq 0$ when selling financial product $\theta \in \Theta$
- There exists a product $\theta_A \in \Theta$ such that:

$$\forall \ \theta \in \Theta, \quad 0 \leq \delta(\theta) \leq \delta(\theta_A)$$

- The advisor cares about reputation and incurs a cost upon misselling:

$$p(\varphi).[u(\theta_B) - u(\theta)]$$

- The higher $p(\varphi)$ i.e. B understands she has been swindled, the more important the reputational cost.
- The higher for B the loss in utility $[u(\theta_B) - u(\theta)]$, the more important the reputation cost.

The Advisor

- A's payoff can be written as a profit-like function:

$$\Pi(\theta) = \delta(\theta) - p(\varphi).[u(\theta_B) - u(\theta)]$$

- To restrict the attention to cases in which a conflict of interest can arise I make the following assumption:

Assumption 1

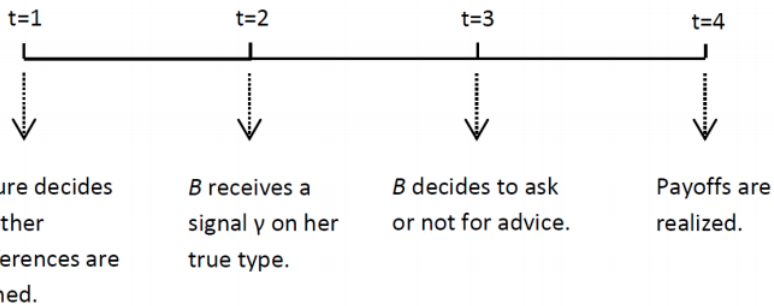$$\delta(\theta_A) - \delta(\theta_B) < u(\theta_B) - u(\theta_A) < 2.[\delta(\theta_A) - \delta(\theta_B)]$$

Timing

Information Sets

We start by analyzing the communication game that occurs at $t = 3$.

- Advisor A perfectly observes:
    - whether preferences are aligned;
    - customer's type θ_B;
    - and level of financial literacy φ.

- Customer B :
    - knows her level of financial literacy φ;
    - and the content of the signal she receives γ.
    - Believes that preferences are aligned with probability α;

Advisor's Behavior

- The behavior of A depends on preferences alignment:
  - If $\theta_A = \theta_B$, A has no incentive to swindle B.
  - If $\theta_A \neq \theta_B$, A may have an incentive to swindle B depending on her level φ. Given assumption 1, A provides relevant information only if:

$$
\begin{aligned}
& \Pi(\theta_B/\theta_A \neq \theta_B) \geq \Pi(\theta_A/\theta_A \neq \theta_B) \\
\Leftrightarrow \quad & \delta(\theta_B) \geq \delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)] \\
\Leftrightarrow \quad & \varphi \geq \frac{\delta(\theta_A) - \delta(\theta_B)}{u(\theta_B) - u(\theta_A)} - \frac{1}{2}
\end{aligned}
$$

- Hence, there exists a threshold φ^* below which the advice is uninformative when $\theta_A \neq \theta_B$:

$$
\varphi^* = \frac{\delta(\theta_A) - \delta(\theta_B)}{u(\theta_B) - u(\theta_A)} - \frac{1}{2}
$$

Customer's Behavior

- The behavior of B depends on her level of financial literacy φ.
- If $\varphi \geq \varphi^*$, B knows she will get relevant information from $A \Rightarrow$ then she always asks for advice.
- If $\varphi < \varphi^*$, and assuming α is low enough, B knows the advice she will get from the A is irrelevant $\Rightarrow$ she does not ask for advice.

Equilibria

- A Perfect Bayesian Equilibrium is a set of strategies for A and B, and beliefs $(\alpha, p(\varphi))$ for B so that no player has a profitable deviation.
- Finally the equilibrium of the model depends on customer's level of financial literacy φ.
  - If $\varphi \geq \varphi^*$: there is a unique **fully revealing equilibrium** in which A advises θ_B and B **asks for advice.**
  - If $\varphi < \varphi^{**}$: there is a unique **pooling equilibrium** in which A advises product θ_A and B **does not ask for advice.**

PATER Survey, TNS 2011

Original Household Survey (PATER, wave 2011):

- First wave in 1998 as part of the Wealth survey, INSEE.
- Reconducted by Arrondel and Masson in 2002, 2007, 2009 and 2011 (panel component) with TNS-Sofres.
- Focuses on preferences (risk aversion, time preferences, altruism),
- expectations (income, stock prices, job insecurity),
- financial behaviors and financial literacy (since 2011).
- Paper-based questionnaire, representative sample of 3,616 households.

Measuring Financial Literacy

- Test-based measure using questions à la Lusardi and Mitchell (2011):
  - **Compound interests:**

"Suppose you had 1000€ in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? less than 1100; 1100; more than 1100; DK"

  - **Inflation:**

"Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? less than today; as much as today; more than today; DK"

  - **Risk diversification:**

"Rank these financial products from the less risky to the riskiest, 1 being the less risky: Savings account, Stocks, Bonds, Mutual fund."

Financial Literacy Scores in France

- Percentages of correct answers differ in population subgroups:

		Interest	Inflation	Risk	All 3 correct	N correct
All population	**Correct**	47.98	61.18	66.85	30.92	1.76
	Incorrect	34.80	11.45	18.53		
	DK/RF	17.22	27.37	14.61		
Age 25-65	**Correct**	50.33	61.69	72.13	33.76	1.84
Women	**Correct**	43.98	55.76	63.66	26.04	1.63
College	**Correct**	60.94	74.63	81.05	47.21	2.17
Unemployed	**Correct**	43.34	53.70	66.06	25.32	1.58

Weighted percentages of answers to FL questions, n=3,616 (PATER 2011)

Financial Literacy and the Demand for Advice

"At which frequency do you consult a financial advisor?"

	Frequency	All 3 correct (%)	N correct (mean)
Often	14.66	40.43	2.03
Sometimes	34.07	38.71	2.01
Never	16.17	29.31	1.73
N/a	34.47	20.12	1.42
Total	100	30.92	1.76

Weighted frequencies of financial advice demand and levels of FL, n=3,616 (PATER 2011)

Financial Literacy and the Demand for Advice

- The more FL questions correctly answered, the higher the demand for financial advice:

	0	1	2	3	Total
Advice	64.13	68.67	77.31	80.11	75.08
No Advice	35.87	31.33	22.69	19.89	24.92
Total	9.22	23.65	30.25	36.89	100

Weighted percentages of households asking for advice per number of correct answers, n=2,326 (PATER 2011)

Econometric Strategy

We consider the following dependent variable:

$$y = \begin{cases} 1 & \textit{if investor consults advisor (Often or Sometimes)} \\ 0 & \textit{if investor does not consult advisor (Never)} \end{cases}$$

- Binary Model $\Rightarrow$ Linear Probability Model with robust standard errors
- Explanatory Variables $\Rightarrow$ financial literacy, age, age^2, sex, education, financial wealth, income, occupation, previous experience with advisor, negative impact of the crisis, self-confidence and holding risky assets.
- Index for Financial Literacy:
  - ▶ Number of Correct Answers as in Guiso and Jappelli (2008), CM (2013)
  - ▶ Set of dummy variables for each number of correct answers

Results - Probability of Consulting a Financial Advisor

Determinants of the probability to ask for advice

	OLS (1)		OLS (2)		OLS (3)	
	Coef.	Std. Error	Coef.	Std. Error	Coef.	Std. Error
Financial Literacy (n correct)	**0.060*****	**(0.010)**	**0.032*****	**(0.011)**		
FL - 1 correct					**-0.008**	**(0.039)**
FL - 2 correct					**0.073***	**(0.038)**
FL - 3 correct					**0.071***	**(0.038)**
Male			-0.049**	(0.019)	-0.049**	(0.019)
Age			0.006*	(0.003)	0.006*	(0.003)
Age²/100			-0.007**	(0.003)	-0.007**	(0.003)
Not working			-0.048*	(0.027)	-0.050*	(0.027)
Fin. Wealth [3k;15k[			0.072**	(0.030)	0.071**	(0.030)
Fin. Wealth [15k;75k[			0.100***	(0.029)	0.099***	(0.029)
Fin. Wealth ≥ 75k			0.146***	(0.034)	0.147***	(0.034)
Risky assets			0.032	(0.024)	0.032	(0.024)
Self-confidence			0.041***	(0.010)	0.041***	(0.010)
Good prev. exp.			0.112***	(0.019)	0.113***	(0.019)
Neg. impact of the crisis			0.042*	(0.022)	0.044**	(0.022)
Other controls	No		Yes		Yes	
R^2	0.019		0.084		0.086	
N	2,127		2,127		2,127	

Source: PATER 2011. Dep. Var.: =1 if consult fin. advisor, =0 otherwise. Significant at: * 10%, ** 5%, *** 1%.

Robustness Checks

- Endogeneity of FL may arise from two sources:
    - Reverse causality: getting advice may increase investor's FL
    - Ommited variable: a variable may influence both demand for advice and FL leading to a spurious correlation

  ⇒ IV regression using maths level at school and a dummy indicating whether parents held stocks
  ⇒ No endogeneity detected, FL related to cognitive abilities? (Christelis et al. 2010)
- Other indices of FL: var. one by one, all correct.
- Econometric sample: no significant difference in FL between the original and the econometric sample.

Conclusion

- Theoretical model predicts that only customers with high FL receive informative advice, customers with low FL do not ask for advice
- Empirical evidence in the PATER 2011 survey for France show that the relationship between FL and the demand for financial advice is positive.
- The higher the level of the FL the higher the probability to ask for advice
- Policy implications:
  - financial advisors are not useful for those who need them the most
  - financial advisors increase the information gap between customers
  - need for better regulation of advisors in the spirit of MiFID
  - need for financial education to lower advisor's incentives to missell

Appendix

Appendix: Customer's behavior no restriction on beliefs

- B compares her expected utilities when she asks for advice and when she does not.
- Then when $\varphi < \varphi^*$, B asks for advice only if:

$$
\begin{aligned}
EU(\text{Advice} \,/\, \varphi < \varphi^*) &\geq EU(\text{No Advice} \,/\, \varphi < \varphi^*) \\
\Leftrightarrow \quad \alpha.u(\theta_B) + (1-\alpha).u(\theta_{-B}) &\geq p(\varphi).u(\theta_B) + [1-p(\varphi)].u(\theta_{-B}) \\
\Leftrightarrow \quad \varphi &\leq \alpha - \frac{1}{2}
\end{aligned}
$$

- Hence, there exists a threshold φ^{**} below which B asks for advice because she is better off in expectation:

$$
\varphi^{**} = \alpha - \frac{1}{2}
$$

Appendix: IV regression

Two-step GMM estimation of the probability to ask for advice1st step

	Coef.	Std. Error	Coef.	Std. Error
Financial Literacy (n correct)			0,028	(0,068)
Maths level	0,120***	(0,019)		
Parents' stocks	0,141***	(0,045)		
Male	0,057	(0,041)	-0,049**	(0,020)
Age	0,013*	(0,007)	0,006*	(0,003)
Age^2/100	-0,014**	(0,007)	-0,007**	(0,003)
Job Not work.	0,067	(0,056)	-0,048*	(0,027)
Fin. Wealth [3k;15k[	0,244***	(0,058)	0,073**	(0,033)
Fin. Wealth [15k;75k[	0,316***	(0,057)	0,101***	(0,036)
Fin. Wealth $\geq$ 75k	0,542***	(0,070)	0,148***	(0,051)
Risky assets	0,213***	(0,051)	0,033	(0,029)
Self-confidence	0,070***	(0,020)	0,041***	(0,011)
Good prev. exp.	-0,042	(0,039)	0,112***	(0,019)
Neg. impact of the crisis	-0,018	(0,046)	0,042*	(0,022)
F test	24.04			
Sargan test p-value			0.483	
Endogeneity test p-value			0.917	
R^2	0.216		0.084	
N	2,127		2,127	

Source: PATER 2011. Significant at: * 10%, ** 5%, *** 1%. Other controls = YES