The Explanatory Power of Financial Literacy on Consumer Financial Behaviors: New Evidence from Europe

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Introduction

In the last 15 years, there was a growing interest on financial literacy with several studies that tried to find a connection between the financial literacy of individuals and their financial behaviors. The main assumption is that the more people are financially literate the more they will be able to achieve their financial goals and show good financial behaviors. Evidences of this relationship have been found in different financial areas. Van Rooj et al. (2011) show how people lacking knowledge on basic financial principles are less likely to invest in the stock market. Arrondel et al. (2013) highlight how people with more financial literacy are more likely to plan their investment. Yoong (2010) has found that ignorance of stock market investment knowledge significantly reduces the propensity to hold stocks. A positive effect of financial literacy on long term financial decisions were fund by Behrman et al. (2010), that showed how individuals with more financial literacy tend to be readier for retirement than others. Similarly, Lusardi and Mitchell (2011) used data from the FINRA National Financial Capability Survey finding how people who score higher on few financial literacy questions are much more likely to plan for retirement. In the meanwhile, Gerardi et al. (2010) arrived at the conclusion that limitations in certain aspects of financial literacy (e.g. numeracy) played an important role in the subprime mortgage crisis. The connection between indebtedness decisions and financial literacy were studied by Lusardi and Tufano (2009). The authors found that individuals with lower levels of debt literacy tend to transact in high-cost manners, incurring higher fees and using high-cost borrowing. Similar results suggesting a positive relationship between financial literacy and positive financial outputs have been found for the use of credit cards (Joo et al. 2003, Robb & Sharpe 2009, Robb 2011).

Therefore, if it is evident that financial literacy helps to explain some financial behaviors, what is less clear is the magnitude of such connection. Sometimes the role of financial literacy in explaining people's financial behaviors is statistically significant but cannot be addressed as one of the main drivers of individual financial decisions. The fact that the effect of financial literacy can be statistically relevant but small can be dramatically relevant in planning any financial education initiative devoted to make consumers readier to deal with their financial needs. If a consumer protection strategy based on the development of individual financial literacy risks not solve the problems related (e.g. the misuse of credit, the lack of planning for retirement, etc.), regulators and supervisory authorities could adopt alternative strategies to protect consumers and work, for instance, on a stronger regulation. Anyway, before arriving to the conclusion that financial literacy only plays a marginal role in explaining consumer financial behaviors, there is the need to investigate how financial literacy were assessed. This is to avoid the risk that a strong correlation between what people know about finance and how they take financial decisions only exists due to the poor quality of the data on financial literacy.

This paper wants to investigate the hypothesis that results from previous studies could be biased by the use of financial literacy measures based on a small number of items (not enough to assess the financial literacy in detail) or the use of items that measure financial principles, that are not suitable to explain the use of a financial product or a specific financial behavior. Using new data from surveys based on a questionnaire that includes 50 items on financial literacy and several others on different financial behaviors, this study compares the explanatory power of different measures of financial literacy, taking into account both the most common measures in previous studies (e.g. the Lusardi-Mitchell questions) and new measures based on a broader set of items. The comparison between results from (1) traditional measures, (2) new measures based on a more generous number of items, and (3) measures based on items that pay attention to a single area of knowledge (e.g. investment,

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debt, payments) and that take into account a different degree of difficulty of the items, will contribute to shed light on the reliability of previous studies and to better understand the magnitude of the relationship between financial literacy and financial behaviors. Results from this study can help regulators, supervisory authorities, and other public entities involved in consumer protection and the development of financial education programs to better pinpoint the importance of the financial literacy and the need of financial education.

Data and Methodology

The data used in this study were provided by the Consumer Finance Research Center (CFRC). The CFRC is a research network that study consumer finance issues. Since 2014, the CFRC has supported a research project on financial literacy in Europe, developing a questionnaire to replicate different national surveys with the aim to assess the financial literacy of European households. The questionnaire has 50 items on financial literacy, 15 items on the socio- demographic characteristics, and around other 40 items on financial behaviors. The 50 items on the financial literacy are organized in ten groups of five questions each, where each of the five questions differ in terms of difficulty. The 10 areas of knowledge include interest rates, inflation, mortgage, loans and debt, bonds, stocks, investment diversification, bank accounts, payments, retirement, and insurance. Three financial literacy measures have been developed. The first one is the sum of correct answers to the five Lusardi-Mitchell questions (inflation, interest rates, bond pricing, diversification, and mortgage). Since this measure was widely used in previous studies, it is considered a reference point. The second measure is the sum of correct answers to all 50 questions on financial literacy. The third measure uses a subset of five questions selected in accordance with the financial behavior taken into account to test the explanatory power of financial literacy on financial behaviors. Hence, in case the financial behavior studied is the use of credit cards, financial literacy will take into account the answers to the five questions on payments tools; in the case of saving for rainy days, financial literacy will be assessed by five questions on savings etc.
Five financial behaviors will be taken into account to assess the explanatory power of each of the three financial literacy measures:

1) the presence of stocks or mutual funds as the main assets in the investment portfolio;
2) the presence of saving for rainy days[1];
3) the fact that the individuals ever tried to figure out his/her retirement needs;
4) the ownership of at least one credit card;
5) the ownership of at least one plastic card (either credit, debit, or pre-paid).

For each financial behavior the analysis will be replicated in different countries (Italy, Germany, the UK, and Sweden). The use of different financial behaviors and different countries should help to increase the robustness of the results. In each case, a regression model will be used in order to explain the financial behavior (dependent variable) by a set of independent variables that include a financial literacy measure and a set of control variables (age, gender, education, and income).

Preliminary results

The use of different regression models to analyze five financial behaviors rotating three measures of financial literacy for each of the four countries, generated overall 60 outputs. Each of the financial behaviors were assessed by a dummy variable that assessed the presence or not of such behavior. According to the dichotomy nature of these dependent variables, all of the cases used a logistic regression model.

In order to stress the comparison between the different financial literacy measures in explaining the different financial behaviors in the different countries, Table 1 shows the value of the coefficients and their statistical significance (p-values) only for the financial literacy variables, omitting all the control variables (age, gender, education, income).

When financial literacy is measured using items related to topics that show a logic connection to the financial behavior considered in the analysis, the explanatory power of financial literacy is greater than the case where financial literacy is assessed by the Lusardi-Mitchell questions in 13 out of 20 cases (5 behaviors × 4 countries). Hence, a preliminary result could be that **financial literacy is**

Table 1 - Results from regression models related to the explanatory power of financial literacy on financial behaviors

		ITA		GER		UK		SWE	
		coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
Investment (A2) *(stocks or mutual funds as main assets in portfolio)*	Lusardi-Mitchell	0.07	*0.558*	**0.28**	***0.024***	0.13	*0.212*	**0.35**	***0.000***
	5specific	**0.31**	***0.013***	**0.25**	***0.012***	**0.18**	***0.045***	**0.39**	***0.000***
	50items (overall score)	**0.04**	***0.038***	**0.05**	***0.003***	**0.03**	***0.022***	**0.07**	***0.000***
Investment (B) *(saving for rainy days)*	Lusardi-Mitchell	**0.30**	***0.004***	**0.24**	***0.008***	**0.21**	***0.008***	**0.46**	***0.000***
	5specific-Investment	**0.38**	***0.000***	**0.15**	***0.032***	**0.12**	***0.080***	**0.30**	***0.000***
	5specific-Savings	**0.46**	***0.000***	**0.34**	***0.000***	**0.32**	***0.000***	**0.54**	***0.000***
	50items (overall score)	**0.07**	***0.000***	**0.06**	***0.000***	**0.04**	***0.000***	**0.08**	***0.000***
Retirement (C) *(figure out retirement needs)*	Lusardi-Mitchell	**0.25**	***0.044***	**0.28**	***0.003***	**0.22**	***0.017***	**0.33**	***0.003***
	5specific-Retirement	**0.26**	***0.026***	**0.24**	***0.003***	**0.25**	***0.015***	**0.56**	***0.000***
	50items (overall score)	**0.05**	***0.009***	**0.04**	***0.007***	**0.04**	***0.000***	**0.07**	***0.000***
Payments (D) *(at least 1 credit card)*	Lusardi-Mitchell	**0.34**	***0.001***	**0.53**	***0.000***	**0.42**	***0.000***	**0.28**	***0.003***
	5specific-Payments	**0.30**	***0.003***	**0.68**	***0.000***	**0.48**	***0.000***	**0.56**	***0.000***
	50items (overall score)	**0.08**	***0.000***	**0.09**	***0.000***	**0.07**	***0.000***	**0.06**	***0.000***
Payments (E) *(at least one card; credit/debit/pre-paid)*	Lusardi-Mitchell	**0.39**	***0.058***	**0.27**	***0.009***	**0.67**	***0.000***	**0.75**	***0.000***
	5specific-Payments	**0.47**	***0.018***	**0.23**	***0.018***	**0.83**	***0.000***	**1.04**	***0.000***
	50items (overall score)	**0.09**	***0.006***	**0.06**	***0.000***	**0.11**	***0.000***	**0.16**	***0.000***

more relevant in explaining financial behaviors when it is assessed by items that have a logical connection with the behavior. Anyway, this result deserves additional analysis in order to deal with the hypothesis of a reverse-causality, where the bigger knowledge on a topic could be the result (not the cause) of a certain financial behavior.

In the remaining 7 cases (out of 20) the differences between coefficients of the Lusardi-Mitchell score and the topic-based score are small, even if in 3 of the 7 cases the "topic-based scores" still perform better.

The comparison of the Lusardi-Mitchell score with the "overall score" – based on the sum of correct answers to all the 50 questions on financial literacy – needs to keep in mind that these two financial literacy measures have different scales (0-50 for the overall score, 0-5 for the Lusardi-Mitchell), hence the values of the coefficients are not directly comparable. Anyway, even if we simply rescale the overall score by multiplying the coefficients by 10 (50 items / 5 items), the evidence is that the overall score is much more powerful than the Lusardi-Mitchell in explaining financial behaviors. The five items of the Lusardi-Mitchell scale are included in the 50 items of the overall score. So, the evidence that the overall score is a more powerful measure of financial literacy can be explained by the broader set of information used. Anyway - beyond the technicalities of the two measures - there is the evidence that using the overall score financial literacy becomes a statistically significant variable in cases where - according to the Lusardi-Mitchell - was not. Moreover, when both the Lusardi-Mitchell and the overall score are significant variables, the use of 50 items is related with a clearer evidence that financial literacy is useful to explain consumer financial behaviors.

Conclusions

The main (preliminary) conclusions of the study can be summarized as follow. The use of just few items in the assessment of financial literacy risks underestimating the relevance of financial literacy in explaining consumer financial behaviors. The use of more items (50) provides more clear evidence that financial literacy is relevant in explaining different financial behaviors. Moreover, results suggest that there is the chance to improve the quality of the financial literacy measures adopted in previous studies by using a relatively small number of items, selecting items that address the same topic of the specific financial behavior analyzed (e.g. financial knowledge on investment to study the use of stocks). Anyway, further analysis is required to investigate the chance that these results could be affected by reverse causality.

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Note - [1] The threshold to separate individual with or without enough savings for rainy days is an amount of cash (or other liquid asset) equal to three months of living costs.