Exploring consumers' financial fragility in Europe

Over-indebtedness, rainy day funds and the role of financial literacy

Gianni Nicolini, Ph.D. (Italy) | University of Rome "Tor Vergata"

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1 Introduction

Financial fragility can be defined as a financial status whereby a subject is exposed to a risk that it is not prepared to afford and which could have negative consequences. It differs from financial troubles or financial difficulties in the sense that it is not related to an objective difficulty status—such as lack of payments on mortgages or bankruptcy—and refers to people at (high) risk of financial difficulties. Insufficient savings to cover an unexpected expense (e.g. a medical treatment, the need to repair a car after a car crash) or the extreme use of debt to make ends meet, which cause people to struggle to repay their obligations, are examples of the status of financial fragility. In the meantime, financial fragility involves psychological issues. People that do not show evidence of financial troubles (e.g. lack or delay of payments on monthly bills, foreclosures) can feel stressed anyway and suffer from anxiety because of the awareness of being on the verge of a personal financial crisis.

If the last global financial crisis represented an incentive to study consumers' financial behaviour, most of the research interest was dedicated to financial difficulties, in order to explain the causes of these phenomena and understand how to prevent them in future. Anyway, the study of individuals that have been in financial trouble risks telling only a part of the story, because even people that are not officially in trouble, but have had to rescale their living standards or got very close to bankruptcy, must be taken into account in order to see the bigger picture of consumer protection in finance and to determine how to improve it.

The aim of this study is to analyse consumers' financial fragility in Europe, stressing the role of consumers' financial literacy in explaining over-indebtedness and a lack of funds for 'rainy days'.

2 Literature review

An analysis of the literature on financial fragility shows how debt represents probably one of the most common sources of anxiety and potential financial troubles for people. Brown and Taylor (2008) analysed data from three different countries (Germany, the UK and the US) to identify which households are potentially vulnerable to adverse changes in the economic environment, paying attention mainly to debt-related measures. Faruqui (2008) used data from Canada to assess the vulnerability of households to adverse economic shocks, referring uniquely to a debt-related measure; in another study on Canadian data, Djoudad (2011) proposed a similar approach, also referring to the debt-to-income ratio. Keese (2009), in a study based on a sample of more than 11,000 German households, investigated whether severe household indebtedness is driven by trigger events such as unemployment, childbirth, divorce or the death of a partner, and even in this case (over)indebtedness is considered to be the main cause of financial difficulties. Kida (2009) used different waves[1] of a national representative survey in New Zealand (the Household Economic Surveys) to study the financial vulnerability of households, referring to financial vulnerability as a risk for the mortgage-indebted household. The attitude of referring to debt as the main source of financial fragility is present even in the study of Georgarakos et al. (2010), which analysed data from the European Community Household Panel survey (ECHP) with the aim of investigating households' attitudes towards mortgage indebtedness. In their study the authors refer to a concept of financial distress that is uniquely related to debt. More recently, Jappelli et al. (2013) tried to assess the sensitivity of household arrears and insolvencies to macroeconomic shocks, and defined financial fragility merely as the 'inability to repay financial debt'. Similarly, Cuhna et al. (2013) analysed a sample of 5,179 Dutch households between 1992 and 2005 to study the determinants of the outstanding mortgage loan-to-value (LTV) ratio in The Netherlands, stressing how these high levels of indebtedness can be a source of financial difficulty in debt repayment and generate the over-indebtedness phenomena.

1 Data from the 2001, 2004 and 2007 waves of the survey.

If several studies have stressed the role of debt in explaining financial fragility, there are indeed authors that have tried to approach the issue of financial fragility from a broader perspective. Worthington (2006) studied a sample of 3,268 Australians[2] and highlighted how financial stress is defined, among other things, in terms of financial reasons for being unable to have a holiday, to have meals with family and friends, to engage in hobbies and other leisure activities, and general money management. These kinds of deprivation represent a source of (financial) stress, even if they are not necessarily related to the use of debt. The need to extend the concept of financial fragility from over-indebtedness to other sources of financial difficulty is even clearer in Brunetti et al. (2012). In their paper the authors stress how an individual could be free of any debt and be able to pay his/her bills regularly (in case income is sufficient to cover expected expenses), but even in this case a status of financial fragility could arise. The vulnerability of the individual is represented by the chance that an unexpected expense could put him/her in trouble in terms of a lack of available resources to cope with the negative occurred event. The ability to face this lack of available resources is addressed by Brunetti et al. (2012) through an analysis of the role of asset liquidity. For the authors an analysis of financial fragility should be extended from a cost-income perspective to a research framework that takes into account the ability to cope with contingent needs of cash by a decumulation of savings that could be stored in assets with different degrees of liquidity. For the authors, the liquidity risk of some investment options (e.g. real estate properties or OTC trade securities) could represent a source of financial fragility, even for people free of debt. The authors consider as financially fragile not just those that are over-indebted, but also households who are able to afford anticipated expenses but do not have a sufficient liquidity buffer to face unexpected events. The lack of available resources for 'rainy days' was even analysed by Lusardi and De Bassa Scheresberg (2016) in a study of pre-retired Americans. Using data from a sub-group of approximately 5,000 observations extracted from the 2012 National Finance Capability Study (NFCS) and made by individuals aged between 51 and 61, the authors addressed the financial fragility of Americans by asking how confident they were to come up with $2,000 in the case of an unexpected need arising within the next month. In this case, the chance to cash part of their available

2 The data came from the Australian Bureau of Statistics' Household Expenditure Survey (2002) and was collected between 1998 and 1999.

assets was just one of several options, which included the opportunity to borrow, to receive financial support from relatives and friends, and to use pawn shops or some other alternative financial services (e.g. payday loans, auto title loans). West and Mottola (2016) followed the same conceptual framework and, using data from the US,[3] tried to stress how the difficulty of coming up with $2,000 in 30 days in the event of unforeseen need could represent a measure of financial fragility, and highlighted how this latent financial issue could be more likely to come true for renters than homeowners. If previous studies in most cases analysed non-European countries, this study seeks to fill this gap by using data from three European countries. At the same time different measures of financial literacy are used to check how testing financial knowledge on different topics can lead to different conclusions about the relevance of financial literacy on consumer behaviour.

3 Data and methodology

In order to analyse financial fragility in Europe and assess the role of financial literacy in avoiding financial difficulties, this study used data from a survey conducted in 2015 by the Consumer Finance Research Center (CFRC). This survey is part of a research project on the measurement of financial literacy and financial behaviour in Europe, and represents a unique source of data for researchers who are interested in testing different measures of financial literacy and their effect on several types of financial behaviour.[4] While several other databases measure financial literacy using 3 to 5 items, the questionnaire of the CFRC Financial Literacy Survey has 50 items, organised in order to test different areas of knowledge (e.g. payments, debt, investment, retirement), with the questions designed to involve different levels of difficulty. This study analyses financial fragility using two measures: the debt-to-income ratio, and

3 Data came from the 2012 National Financial Capability Study (NFCS), managed by the FINRA Foundation.

4 More information about the survey is available at the following link: www.consumer-finance.org

a lack of savings for the cover of three months of living expenses. The logic of the CFRC research project is to propose the same questionnaire to individuals from different countries, in order to develop different national modules of the database, to be used together or as a standalone database. In this study data from Italy, Sweden and Spain was analysed.

The analysis is based on different regression models. Financial fragility represented the dependent variable and was measured using two items related to: (1) over-indebtedness; and (2) a lack of savings for rainy days. In both cases, the variable is a dummy variable that is equal to one if (1) the debt-to-income ratio of the respondent was greater than five (over-indebtedness), and equal to one if (2) the respondent declared him/herself not to have sufficient savings to cover three months of living expenses (a lack of rainy day funds). Financial literacy has been measured by the sum of correct answers to a set of questions. Two sets of questions were used. The first included answers to five questions on debt and borrowing products. The second was made up of 50 questions on 10 different financial topics (payments, investment, retirement, banking, insurance). The use of these two measures allowed researchers to test the hypothesis that people with more knowledge about finance are less likely to be financially fragile, and the hypothesis that financial fragility is mainly related to the misuse of debt. Therefore, it is not financial literacy in general terms that matters but debt literacy related to financial fragility. A set of control variables included data about age, gender, income, education, marital status and the job status of respondents.

The descriptive statistics of the data for the three countries are summarised in Table 1.

	Italy	Sweden	Spain
Variables	**%**	**%**	**%**
Age1 (18–24)	9.8%	14.2%	5.4%
Age2 (25–30)	9.0%	13.4%	6.8%
Age3 (31–35)	8.6%	11.2%	15.6%
Age4 (36–40)	9.8%	9.3%	17.7%
Age5 (41–45)	11.0%	11.3%	12.9%
Age6 (46–50)	11.2%	10.7%	5.4%
Age7 (51–55)	10.0%	11.2%	12.9%
Age8 (56–60)	10.0%	6.8%	7.5%
Age9 (61–65)	8.2%	7.1%	7.5%
Age10 (65+)	12.7%	0.6%	8.2%
Age (Do not know, or Prefer not to say)	–	4.4%	–
Gender (Male)	49.2%	46.5%	57.8%
Gender (Female)	50.8%	48.0%	42.2%
Gender (Do not know, or Prefer not to say)	–	5.5%	–
Income1 (< 500€)	12.9%	14.0%	10.1%
Income2 (500–749€)	5.0%	10.7%	2.9%
Income3 (750–999€)	8.4%	6.6%	6.5%
Income4 (1,000–1,499€)	21.5%	13.1%	20.9%
Income5 (1,500–1,999€)	16.7%	20.6%	20.9%
Income6 (2,000–2,999€)	12.9%	13.1%	24.5%
Income7 (3,000–3,999€)	0.2%	3.0%	11.5%
Income8 (4,000€+)	7.8%	3.9%	2.9%

	Italy	Sweden	Spain
Variables	**%**	**%**	**%**
Income (Do not know, or Prefer not to say)	14.5%	15.1%	–
Education1 (Primary school or less)	0.4%	0.5%	2.7%
Education2 (Middle school)	11.6%	9.4%	3.4%
Education3 (High school)	42.0%	43.2%	9.6%
Education4 (Some college)	15.9%	13.4%	7.5%
Education5 (University degree)	22.3%	27.5%	48.6%
Education6 (Postgraduate degree)	7.6%	n.a.	28.1%
Education (Do not know, or Prefer not to say)	0.2%	6.0%	–
Marital Status – Single	24.7%	33.3%	22.1%
Marital Status – Cohabitant	11.2%	25.9%	15.9%
Marital Status – Married	56.6%	28.1%	53.8%
Marital Status – Separated	2.0%	3.1%	1.4%
Marital Status – Divorced	3.2%	2.5%	4.8%
Marital Status – Widow	1.2%	0.5%	0.7%
Marital Status (Do not know, or Prefer not to say)	1.2%	6.4%	1.4%
Job – Self-employed	14.7%	4.7%	8.3%
Job – Full-time employee	34.9%	41.0%	53.8%
Job – Part-time employee	6.8%	12.1%	5.5%
Job – Housekeeper	15.3%	1.9%	0.0%
Job – Full-time student	7.4%	11.6%	4.8%
Job – Permanent sick	0.6%	7.7%	0.0%
Job – Unemployed	0.0%	9.0%	9.7%

	Italy	Sweden	Spain
Variables	**%**	**%**	**%**
Job – Retired	15.3%	5.2%	12.4%
Job (Do not know, or Prefer not to say)	5.0%	6.8%	–
Mortgage – Yes	22.9%	42.0%	62.2%
Mortgage – No	76.9%	46.5%	31.8%
Mortgage (Do not know, or Prefer not to say)	0.2%	11.5%	6.1%
Debt1 (No debts)	49.2%	39.2%	60.8%
Debt2 (Less than 3 times monthly income)	21.8%	14.0%	13.5%
Debt3 (3-to-6 times monthly income)	8.0%	7.2%	6.8%
Debt4 (6-to-12 times monthly income)	5.6%	6.9%	2.7%
Debt5 (1-to-5 times annual income)	2.8%	8.3%	6.1%
Debt6 (More than 5 times annual income)	0.8%	4.4%	2.0%
Debt (Do not know, or Prefer not to say)	11.8%	20.0%	8.1%
FinLit_Debts – '0 on 5'	14.9%	18.1%	8.8%
FinLit_Debts – '1 on 5'	14.7%	24.2%	8.1%
FinLit_Debts – '2 on 5'	23.9%	23.7%	20.9%
FinLit_Debts – '3 on 5'	29.1%	21.1%	26.4%
FinLit_Debts – '4 on 5'	14.1%	10.4%	25.0%
FinLit_Debts – '5 on 5'	3.2%	2.5%	10.8%
FinLit_Total – [0–10] on 50	0.0%	23.7%	3.4%
FinLit_Total – [11–20] on 50	2.4%	36.0%	14.2%
FinLit_Total – [21–30] on 50	12.4%	29.6%	32.4%

	Italy	Sweden	Spain
Variables	**%**	**%**	**%**
FinLit_Total – [31–40] on 50	39.8%	10.5%	45.9%
FinLit_Total – [41–50] on 50	45.4%	0.2%	4.1%
	# Obs.	# Obs.	# Obs.
	502	636	148

Table 1: Descriptive statistics of the data

Both dependent variables are dichotomous; hence, a logistic regression model was used.

$$\operatorname{logit}(\mathbb{E}[Y_i \mid x_{1,i}, \ldots, x_{m,i}]) = \operatorname{logit}(p_i) = \ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 x_{1,i} + \cdots + \beta_m x_{m,i}$$

For each of the two dependent variables (over-indebtedness, lack of emergency funds), two different specifications of the model were used. The main difference between the two sets of variables is the measure of financial literacy. In the first model financial literacy was measured by the number of correct answers to 50 questions on different topics. In the second model it was the number of correct answers to five questions about debt that were taken into account.

4 Results

The results of the empirical analysis are reported in the following tables (Tables 2 (*Over-indebtedness – results of the logistic regression*, http://www.verbraucherzentrale.nrw/978-3-86336-918-7_5_table2) and 3 (*Lack of emergency funds – results of the logistic regression,* http://www.verbraucherzentrale.nrw/978-3-86336-918-7_5_table3).

Table 2 presents the results on over-indebtedness, measured by the debt-to-income ratio. People are considered to be over-indebted if the ratio is more than five.

The results from Italy, Sweden and Spain show how some differences between countries exist. Financial literacy seems to play a relevant role in explaining over-indebtedness only in Sweden. The two measures, FinLit-Debt (which takes into account only knowledge about debt) and FinLit-Total (which represents broader measures and involves knowledge on 10 topics), are statistically relevant and suggest that the more knowledgeable people are, the less they are at risk of over-indebtedness. This result confirms the hypothesis of the paper and is coherent with previous studies. What is interesting is that financial literacy has a strong explanatory power when measured by financial knowledge that refers only to debt (FinLit-Debt –.45), and if we compare this financial literacy measure with one that involves different topics (FinLit-Total –.08), it is evident how financial knowledge about debt is related more to over-indebtedness than to general measures. The fact that the two measures are based on different scales (the range of possible values are 0–5 for FinLit-Debt, and 0–50 for FinLit-Total) does not affect the core of this result, especially if we consider that the 5 questions about debt are included in the 50 questions used in the second financial literacy measure. The data from Italy and Spain does not support the hypothesis that financial literacy is relevant in explaining over-indebtedness. In the case of Spain, the small sample size is possibly the reason behind the non-statistical significance of the results, while in Italy it seems that the decision to take on debt is driven by other variables. In any case, the signs of the coefficient for financial literacy measures in Italy are negative—as in Sweden—even if the results are not statistically significant.

Looking at the control variables, education seems to be related to over-indebtedness. Both in Italy and Sweden an increase in education increases the likelihood of being over-indebted. This result, which seems to be counterintuitive, could be explained by differences in access to credit. One possible explanation is that lower-educated people are less prone to take on debt or less likely to receive credit, with the consequence of not being over-indebted. In any case, further analysis could be done to support this hypothesis. Regarding income, it is clear that people with high incomes are less likely to be over-indebted. The results are not always statistically significant, but people with high incomes seem to be much less likely to have an over-indebted status. Another socio-demographic variable that is related to over-indebtedness is age. Again, the data from Sweden demonstrates this more clearly than the data from Italy and Spain. The results from Sweden show how, in particular, respondents aged over 60 and over 65 are more likely to be over-indebted than others. The fact that having a mortgage increases the chance of being over-indebted only in Italy provides further evidence that differences between the three countries exist. The fact that people in Italy tend to be more likely to be over-indebted when they have a mortgage can be interpreted as a different attitude to taking on debt, which in Italy is strongly related to the desire to be homeowners.

Table 3 reports the results from regressions when the dependent variable is the lack of savings for at least three months of living expenses.

The evidence about financial literacy matters explaining consumers' financial behaviour is widely confirmed by the results for the lack of savings for 'rainy days'. In five of the six regressions financial literacy is a significant variable. The evidence shows that the more people know about finance, the less they lack savings for emergencies. The hypothesis that financial literacy is more relevant when measured by items that are logically related to the financial behaviour investigated is also confirmed. Knowledge about debt is relevant in two cases out of three and, in the case of Sweden, the coefficient for the FL-Debt (–0.43) is much larger than the coefficient of FL-Total (–.05). In this case, the greater explanatory power of the debt-related measure remains even after taking into account the different scales (FinLit-Debt 0–5, FinLit-Total 0–50).

The presence of debt is another variable that is relevant when explaining the lack of emergency funds. The more that people are in debt, the higher the

chance that they will not be able to afford three months of living expenses in the case of an emergency. The fact that the presence of mortgages is not relevant confirms the different nature of this kind of indebtedness to other sources of debt. What seems to emerge is that the use of mortgages and other loans is driven by different criteria, and only the use of debt is related to the lack of emergency funds.

The results for the control variables show how an increase in income decreases the chances of not having emergency funds. This result is coherent with the hypothesis that a more generous income gives more flexibility to people when planning their spending and managing their savings. The lack of savings seems to be equally distributed across people with different educations, with only a few exceptions in Spain. The last difference between countries is a gender effect in Italy, where males are more likely not to be ready for emergencies than females (male coeff. .53, and .71).

5 Conclusions

Using data from three European countries (Italy, Sweden and Spain), this study analysed the role of financial literacy in explaining two statuses of financial fragility: over-indebtedness, and a lack of emergency funds. The results confirm the hypothesis that people with more knowledge about finance are less likely to become over-indebted, and less likely to lack savings for emergencies. Moreover, the results highlight how measures of financial literacy that use a small number of items, but which take into account financial knowledge that has a logical connection to the financial behaviour analysed (e.g. knowledge about debt in the analysis of over-indebtedness), work as well as broader measures that include more items that concern knowledge of different financial topics (e.g. knowledge about investment and insurance in the analysis of a lack of rainy day funds). The results from this study confirm the chance to prevent financial fragility and other critical financial behaviours by increasing consumers' financial literacy, which can be seen as a pivotal consumer protection tool.

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