



Job expectations and financial fragility: evidence from pre-COVID Spain

Marcos Álvarez-Espino¹ · Sara Fernández-López² · Lucía Rey-Ares¹

Received: 21 March 2023 / Accepted: 4 September 2023
© The Author(s) 2023

Abstract

Previous research has related household financial fragility (FF) and the employment status of the household members by focusing only on the labour income channel. In contrast, the literature has scarcely addressed the study of this relationship from a psychological perspective that could be related to the theory of bounded rationality. This article aims to analyse how job expectations relate to the level of household FF. Using a sample of 8554 Spanish individuals in the period 2016–2017, we construct a multidimensional index of household FF. The results indicate that households with unemployed, self-employed, or part-time workers have higher levels of FF, but the job expectations of the household and the individual play an even more important role in the level of the FF. These findings suggest that the perception of labour market uncertainty may influence the level of household FF to a greater extent than the objective employment situations of the individuals.

Keywords Employment status · Financial fragility · Job expectations · Part-time employment · Self-employment · Unemployment

✉ Marcos Álvarez-Espino
marcos.alvarez.espino@usc.es

Sara Fernández-López
sara.fernandez.lopez@usc.es

Lucía Rey-Ares
lucia.rey.ares@usc.es

¹ Faculty of Economics and Business, Department of Financial Economics and Accounting, Universidade de Santiago de Compostela, Ave. Burgo das Nacións, S/N. P.C. 15782, Santiago de Compostela, A Coruña, Spain

² Department of Financial Economics and Accounting, ECOBAS, Universidade de Santiago de Compostela, Santiago de Compostela, Spain

1 Introduction

The first decades of the twenty-first century have witnessed a growing concern among policymakers about the financial fragility (FF) of the population (Azzopardi et al. 2019). Microeconomic and macroeconomic factors converge behind this concern. Thus, household FF increases the risk of poverty (Ali et al. 2020) and bank exclusion (Daud et al. 2019), but it also threatens the strength of financial institutions in the face of rising numbers of personal defaults (Azzopardi et al. 2019). These factors can destabilize the economic system as a whole (Ali et al. 2020).

The problem of FF seems to affect the unemployed to a greater extent. Thus, Valdes et al. (2021) find that most unemployed people in the United States “live on the edge” in terms of their financial situation, having limited assets and virtually no emergency funds. Similar evidence is found by Arellano et al. (2019) for different South American countries and Arellano and Cámara (2021) for Spanish households. This situation has even worsened since the COVID-19 crisis, that caused a decrease in the workload and temporary suspensions of employment among many European workers. The damage has been even greater for self-employed people (Demertzis et al. 2020; Graeber et al. 2021), who in many cases they closed their businesses.

However, empirical evidence on this issue still offers an incomplete picture of the relationship between FF and employment status as well as inconclusive results. The incomplete picture is due to the fact that the arguments linking employment status and FF have been based only on the labour income channel (i.e. economic perspective), overlooking potential psychological linkages between both variables. The inconclusive results may be largely explained by the lack of a common definition of FF (Fernández-López et al. 2023a). Thus, a large number of studies have used an FF measure based on a single, primarily objective item, which leads to an understanding of FF as a dichotomous phenomenon (i.e. households “are or are not” financially vulnerable). However, including additional subjective aspects, as well as understanding FF as a gradual phenomenon (O’Connor et al. 2019) is a more appropriate approach when analysing individuals’ job expectations (also gradual and subjective).

This article aims to assess whether individuals’ employment situation is related to the risk of suffering FF. Using data from the Spanish *Survey of Financial Competences* (ECF from its Spanish name), we construct a multidimensional gradual index of household FF similar to those of Anderloni et al. (2012) and Daud et al. (2019). We then explore the relationships between this FF index and employment variables, both from an economic and a psychological point of view.

There are two main contributions of this article to the literature on FF. Firstly, based on Nonlinear Principal Components Analysis, a holistic FF index is proposed, thus offering a more complete characterization of households’ FF (O’Connor et al. 2019). Secondly, this article analyses the relationship between FF and employment status through different approaches. To this end, it explores subjective employment indicators, which capture individuals’ expectations about their future employment situation. Although this approach has hardly been studied in the literature, the influence of job expectations on financial vulnerability is decisive, as stated by Carroll et al. (2012).

After this introduction, the article is structured as follows. Section 2 reviews the relevant literature and Sect. 3 describes the sample and the design of the FF index, besides the evidence of the univariate analysis. Section 4 presents the empirical findings of the multivariate analyses and Sect. 5 summarizes the main conclusions.

2 Financial fragility and employment: literature review

Household FF could arise from the accumulation of outstanding debts (Anderloni et al. 2012) or from other circumstances such as the perceived difficulties in taking on expenses that are relevant for the individuals' satisfaction (Worthington 2006). Traditionally, FF has been conceived as an "ex-post" phenomenon (Brunetti et al. 2016) that avoids the analysis of possible destabilising circumstances, such as the unemployment (Jappelli et al. 2008) or the death (Lin and Grace 2007) of the person who generates most of the household income.

More in detail, in 2018, around one third of European households could be categorized as financially fragile (Demertzis et al. 2020). Thus, 28% of German households recognize that they were be unable to meet an unexpected expense, rising to 50% in countries such as Greece, Lithuania and Romania, and around 35% in Italy, Spain and the UK. This situation leads to an economic context of insolvency and instability (Leika and Marchettini 2017) that constitutes a growing concern among today's policymakers. Despite this, no generalised definition of FF has been arrived at (O'Connor et al. 2019), nor has a clear theoretical framework been developed for its study (Fernández-López et al. 2023b). Most studies analyse FF under the lenses of the life cycle hypothesis, overlooking other theoretical approaches such as the permanent income hypothesis or the behavioural life cycle hypothesis.

Among the microeconomic factors studied as driving forces of FF, sociodemographic and economic factors predominate, and in particular, within the latter group, variables referring to the employment situation of the individual and/or household members have been extensively analysed. Table 1 summarizes the main empirical results obtained by studies of the relationship between FF and employment status.

Most studies focus on the employment status of the respondent only, without taking into account the employment situation of the other household members. In more detail, the former is usually approximated by dichotomous variables reflecting either being employed or being unemployed. Evidence indicates that unemployment status is positively related to household FF (Chen and Jin 2017; Keese 2012; Parise and Peijnenburg 2019; Salgado and Chovar 2010; Taylor 2011). When the employment status variable considers more than two categories (e.g. employed, unemployed, retired or other), the positive relationship between unemployment and FF is maintained (Azzopardi et al. 2019; Del Río and Young 2008; West and Mottola 2016). Income is the channel through which employment status is associated with FF (Anderloni et al. 2012). Unemployment implies the loss or reduction of an income source which, according to the postulates of the permanent income hypothesis and the life cycle hypothesis, negatively impacts the individuals' financial situation and/or may push them into unexpected liabilities.

Table 1 FF and employment status: measures and relationships

	FF: Subjective	FF: Objective	FF: Subjective & Objective
Employment: Individual	<p>Friedline and West (2016): <i>Ability to raise \$2,000/300 to face a rush next month</i> <i>Cat</i> Employment status: Full-time student (+); Employed (+) [Reference category: Unemployed]</p> <p>West and Mottola (2016)* <i>Cat</i> Employment status: Full time (+); Part time (+); Homemaker (+); Student (+); Disabled or unable to work (+); Unemployed or laid off (+); Retired () [Reference category: Self-employed]</p> <p>Arellano and Cámara (2021): <i>Emergency savings (1-3)</i> <i>Cat</i> Employment status: Employed (+); Self-employed (+); Retired (); Another situation (+) [Reference category: Unemployed]</p> <p>Kleimeier et al. (2023)* <i>Cat</i> Employment status: Retired (-); Not employed (-); Self-employed () [Reference category: Employed]</p> <p>Kleimeier et al. (2023): <i>Average of respondent's answers to five statements reflecting current money management stress</i> <i>Cat</i> Employment status: Retired (-); Not employed (); Self-employed () [Reference category: Employed]</p>	<p>Parise and Peijnenburg (2019): <i>Difficulty paying off debts or bills</i> Unemployed (+)</p> <p>Togba (2012): <i>The household has received a loan</i> Agricultural worker ()/ Civil servant ()/ Private sector employee ()</p> <p>Salgado and Chovar (2010): <i>Debt-to-income ratio (monthly) >50%</i> Employed (-)</p> <p>Marsellou and Bassiakos (2016): <i>Bankrupt household</i> Unemployed (-)</p> <p>Smith et al. (2012): <i>Debt-to-income ratio</i> Employed (+)</p> <p>Chen and Jin (2017): <i>Access to formal credit</i> Employed (+)</p> <p>Bricker and Thompson (2016): <i>Delay in payment of bills >60 days</i> Self-employed ()/ Retired or disabled ()</p> <p>Azzopardi et al. (2019): <i>Debt-to-income ratios following hierarchical grouping techniques</i> <i>Cat</i> Employment status: Self-employed (+); Inactive (+); Not working (+) [Reference category: Employed]</p>	<p>Anderloni et al. (2012): <i>Adjusted financial vulnerability index (0-10)</i> Job loss (+)</p> <p>Chotewattanakul et al. (2019): <i>Income net of debts below poverty line</i> <i>Uncertainty over the next interest payment</i> Agricultural worker (+)/ Non-agricultural worker (+)/ Worker (+)/ Retired (+)</p> <p>Russell et al. (2013): <i>Severity of debt problems (persistent or structural arrears, burden of monthly commitments, illiquidity) (0-3)</i> Unemployed (+)/ Farmer (-)/ Retired (-)/ Ill or disabled (+)</p> <p>Keese (2012): <i>Household debt service ratio and household income related to subsistence level</i> Unemployed (+)</p> <p>Del Río and Young (2008): <i>Perception of financial stress</i> <i>Cat</i> Employment status: Self-employed (-); Unemployed (+); Retired (); Other () [Reference category: Employed]</p> <p>Sánchez-Martínez et al. (2016): <i>Mortgage debt service ratio (interest + principal) (4 categories)</i> <i>Cat</i> Employment status: Self-employed (+); Retired (+); Does not work (+) [Reference category: Wage-earner]</p>

Table 1 (continued)

	FF: Subjective	FF: Objective	FF: Subjective & Objective
Employment: Household		<p>Camões and Vale (2020): <i>Weighted average of debt accumulation variables as a household indebtedness variable</i> <i>Cat</i> No. of employed adults (+)</p> <p>Šubová et al. (2021): <i>Debt-to-income ratio (monthly)</i> <i>Cat</i> No. of employed household members (-)</p> <p>La Cava and Simon (2005): <i>Financial stress (inability to meet expenses, must pawn assets, sought assistance from family, friends, or welfare organizations)</i> <i>Cat</i> No. of employed household members (+)</p>	
Employment: Individual and Household	<p>Giannetti et al. (2014): <i>Capacity to make ends meet</i> No. of work experiences of the head of the family (+) No. of unemployed members (+)/ All members unemployed (+)/ All members self-employed (+)/ All members employed on a part-time basis (+)</p> <p>Philippas and Avdoulas (2020)* <i>Cat</i> Years of work experience: <2 years (); 2-4 years (-); 4-6 years (); >6 years () [Reference category: None] Unemployment of father/mother ()</p>	<p>Cavalletti et al. (2020): <i>Probability of increase in indebtedness between two consecutive waves</i> <i>Cat</i> No. of income earners: 2 earners (); >2 earners (+) [Reference: 1 earner] <i>Cat</i> Employment status: Self-employed (-); Unemployed (-) [Reference category: Employed]</p> <p>Taylor (2011): <i>Level of savings, payment problems, required loans...</i> Part-time worker (-)/ Self-employed ()/ Unemployed (-) <i>Mix of objective variables (level of savings, payment problems, required loans...) through factor analysis</i> <i>Cat</i> No. of employed household members (+)</p>	

The specific measure of FF is indicated in italics. +/–/() reflect, respectively, a statistically positive/negative/non-significant relationship with the employment variable. *Cat* refers to scale measures. * denotes FF measures equal to the one proposed by Friedline and West (2016)

To a lesser extent, some articles delve into the relationship between FF and different types of employment. Thus, household FF is related to part-time jobs to a greater extent than to full-time jobs (Taylor 2011), since the reduction in working hours of the former involves a reduction in income. Further, studies also find a positive relationship between self-employment and FF. The self-employed usually take on a greater debt burden (Azzopardi et al. 2019; West and Mottola 2016), becoming more financially constrained (Sánchez-Martínez et al. 2016), as they are subject to a higher risk of job loss in the event of an adverse circumstance (Berrill et al. 2021). In contrast, Cavalletti et al. (2020) find the opposite result, consistently with the arguments stemming from

permanent income hypothesis: that is, among people with less stable jobs, saving behaviours predominate due to the concern of losing their jobs (Lera 1997).

There are also studies that analyse these relationships by focusing on a single sector of activity, in particular the agricultural sector in rural areas, probably due to the availability of ad hoc data (Chotewattanakul et al. 2019; Russell et al. 2013; Togba 2012). There are fewer studies that extend the level of analysis to household members, either using dichotomous variables similar to those described above (e.g. all household members unemployed) or categorical variables such as the number of employed household members. The underlying arguments for these variables are the same as above: the higher the number of working household members, the higher the volume of income and therefore the lower the probability of experiencing FF situations. The existing evidence does support such arguments (Camões and Vale 2020; La Cava and Simon 2005; Philippas and Avdoulas 2020; Šubová et al. 2021; Taylor 2011).

This literature review shows that the relation between FF and employment status has been intensively researched. The arguments supporting this association are based on the labour income channel (i.e. economic approach), overlooking other channels of a more psychological nature through which the employment status of the individual (or household members) can be related to FF. Thus, the psychological literature points out that personal experiences have a decisive impact on individual decisions (Hertwig et al. 2004). Indeed, job expectations may play a significant role in shaping the confidence and optimism of job seekers, conditioning their financial decisions (D'Acunto et al. 2020). Notably, the loss of jobs of members within a person's inner circle can lead to a traumatic experience, resulting in increased economic instability (Carroll et al. 2012). Within the framework of bounded rationality (Simon 1956, 2000), such circumstances may be perceived as an indication of restricted access to employment opportunities. Consequently, individuals may become discouraged from actively participating in the labour market, regardless of their abilities to do so. However, there is a lack of studies considering employment variables from a psychological perspective, highlighting a notable gap in the literature on this topic. Additionally, while relatively homogeneous measures have been used to approximate employment status, there is a great diversity of variables measuring FF in the empirical literature. Table 1 classifies the FF measures according to their subjective or objective nature. While the former can only be obtained by the individual's self-assessment (O'Connor et al. 2019), the latter can be gathered from external data sources (e.g. credit history or financial assets). Compared to other possible classification criteria, this one may be particularly relevant since unemployment tends to be associated with an increase in self-perceived debt burden, even when the (objective) households' financial situation is stable (Keese 2012).

Table 1 also shows that most papers use a single item to measure FF. The aspect to which this item refers may explain how some findings deviate from the mainstream results, as is the case in Smith et al. (2012). In particular, these authors find that being employed is positively associated with FF measured as "access to debt". This finding can be understood from the credit supply side since financial institutions tend to lend to the employed rather than the unemployed. Therefore, when FF is measured on the basis of a single item that considers debt behaviour, the results associating employment status and FF could be misleading. Instead, FF can be understood as a

multidimensional phenomenon that encompasses various household financial conditions (Anderloni et al. 2012); it can hardly be measured with a single item. Moreover, O'Connor et al. (2019) stress that any household is exposed to some degree of FF. Then, FF should also be understood as a gradual phenomenon rather than a binary one. The lack of multidimensional and scaled measures of FF can be highlighted as another gap in the literature on this topic.

In short, the relationship between FF and employment status has not been completely understood. This article aims to address this issue by constructing a multidimensional and scaled measure of FF, while approaching the study of employment variables also from a psychological perspective.

3 Sample and variables

3.1 The sample

Data was collected from the first edition of the *Survey of Financial Competences* (ECF, from its Spanish name), whose field work was carried out between late 2016 and early 2017. This statistical source, an initiative of the Bank of Spain and the National Securities Market Commission (Banco de España and CNMV 2018), aims to assess the financial aptitude of the adult population in Spain (18–80 years). The survey includes economic and sociodemographic questions, as well as specific questions on financial knowledge for a sample of 8554 individuals. Additionally, it provides sample weights to adjust for the population structure by sex, age, and nationality at the regional level, based on the 2011 population census (Bover et al. 2019). Thus, all the empirical results of this article are adjusted by these transversal parameters.

3.2 Dependent variable: the financial fragility index

While a large body of research tends to approximate the FF through dichotomous measures based on a single item, this article is committed to a scale indicator which captures the multidimensionality of household FF. Following Anderloni et al. (2012) and Daud et al. (2019), we constructed an indicator that “summarises” information from six individual items previously used in the measurement of FF by the literature (Table 2). Thus, four variables are related to the consumption and saving capacity, whereas two variables are related to indebtedness. Also, three of these variables can be considered objective measures of the household FF, whereas the remaining three measure the individuals’ perception of his/her financial situation (i.e. subjective measures).

To reduce the dimensionality of the data when some of the variables are categorical, and therefore a linear relationship among them could not be justified, Nonlinear Principal Component Analysis (NLPCA) is a more appropriate method than standard linear PCA (Mastromarco et al. 2014). By applying NLPCA, the six items were grouped into three factors which accounted for 71.43% of the total variance in the underlying data. Table 3 shows the factor loadings obtained by using varimax as the rotation

Table 2 Questions in the ECF referring to household FF

Question	Mean values
(a) My financial situation restricts my possibilities of doing things I consider important	(1) Totally disagree: 11.09% (2) Disagree: 19.32% (3) Average: 18.59% (4) Agree: 25.30% (5) Totally agree: 25.69%
(b) I pay bills on time*	(1) Totally disagree: 0.81% (2) Disagree: 1.46% (3) Average: 5.19% (4) Agree: 15.98% (5) Totally agree: 76.56%
(c) I am too indebted right now	(1) Totally disagree: 55.37% (2) Disagree: 20.03% (3) Average: 11.64% (4) Agree: 7.09% (5) Totally agree: 5.87%
(d) In the past 12 months, has your current expenditure been greater than your income?	(0) No: 71.50% (1) Yes: 28.50%
(e) If you ceased now to receive your main source of house-hold income, for how long could you meet your current expenditure without having to apply for a loan or moving house?*	(1) Less than one week: 7.72% (2) Less than a month: 8.68% (3) Less than three months: 16.78% (4) Less than six months: 13.03% (5) Less than nine months: 10.40% (6) Less than one year: 8.87% (7) One year or more: 34.52%
(f) In the last 12 months, has your household experienced economic difficulties that have given rise to delays in paying any of the debts incurred?	(0) No: 87.88% (1) Yes: 12.12%

Questions (a), (b) and (c) refer to individual's perception of his/her financial circumstances, whereas questions (d), (e) and (f) refer to objective financial circumstances at household-level. Questions (c) and (f) refer to debt-related issues, whereas the remaining questions refer to consumption or saving capacity issues. * In the Nonlinear Principal Components Analysis the responses have been reversely ordered, from the lowest to the highest with respect to the possible impact in terms of household FF

Table 3 NLPCA: Factor loadings

FF question	Factor 1	Factor 2	Factor 3
(1) [Individual's perception of...] current financial situation	0.812	- 0.096	0.245
(2) [Individual's perception of...] paying bills on time	- 0.007	0.826	0.218
(3) [Individual's perception of...] indebtedness	0.189	0.204	0.913
(4) [Household objective circumstance] Overspending	0.682	0.423	- 0.134
(5) [Household objective circumstance] No emergency funds	0.662	0.297	0.223
(6) [Household objective circumstance] Delays in debt payment	0.359	0.738	0.076

The highest loadings for each factor are highlighted in bold

method. These loadings relate each original variable to the different dimensions of FF. The three identified dimensions of FF represent mainly overspending and the lack of emergency funds (factor 1), “delays in the payment” of debts and bills (factor 2), and the “perception of over-indebtedness” (factor 3).

Then, a continuous index of FF was calculated as the sum of the values for each original variable, weighted by the factor loadings reported in Table 3. For convenience, the scores of the continuous FF index were rescaled to take values between 0 (minimum fragility) and 100 points (maximum fragility). Finally, the FF index was transformed from a continuous into a categorical variable, dividing the percentile scores into terciles. Approximately 73% of Spanish households are exposed to a low level of FF, 22% to a medium level of FF and 5% to a high level of FF.

3.3 Main explanatory variables: employment status

Table 4 shows the explanatory variables of interest and provides their mean values.

Regarding employment status, just over half of the respondents (53.07%) were employed, 16.03% were retired, 14.08% were unemployed, and 16.82% were in other labour situations. Focusing on the sample of the employed, one in five Spanish employees managed his/her own business (i.e. self-employed), and of the salaried employees (i.e. non-self-employed), 85.37% had full-time jobs.

To explore the relationship between employment status and FF from a psychological rather than a strictly economic perspective, three variables related to job expectations were considered. In this respect, the ECF contains several questions that can capture such expectations. Thus, there are two questions where the non-self-employed were asked to indicate on a scale of 0 to 100 the probability he/she attributes to the event of (1) “losing his/her job” and (2) “finding a job with wage and working conditions similar to those at present” in the next 12 months. In 2017, the probability that the Spanish non-self-employed self-perceived finding a job was twice as high (41.31%) as the probability of losing a job (19.54%).

Additionally, regardless of their employment status, the individuals should indicate if a household member (including themselves) lost the job or found work in the past 12 months. By combining the answers to both questions, we created a categorical

Table 4 Main explanatory variables: mean values

Variable		Obs.	Global sample	Low FF	Medium FF	High FF
Employment status	(1) Employed	8554	53.07%	55.73%	46.49%	43.13%
	(2) Unemployed		14.08%	9.78%	23.74%	33.87%
	(3) Retired		16.03%	18.39%	10.11%	7.43%
	(4) Other situations		16.82%	16.10%	19.66%	15.57%
Self-employed ¹	(0) Non-self-employed	4545	79.23%	80.38%	76.12%	72.58%
	(1) Self-employed		20.77%	19.62%	23.88%	27.42%
Part-time employee ²	(0) Full-time	3584	85.37%	84.13%	72.01%	73.30%
	(1) Part-time		14.63%	15.87%	27.99%	26.70%
Individual's own job expectations ²	Job loss	3547	19.54 ³	17.55	28.54	38.74
	Finding job	3545	41.31 ³	41.59	42.81	41.27
Household's job expectations	(0) No events	8554	70.48%	76.54%	57.58%	46.85%
	(1) Job loss		7.96%	5.38%	12.36%	19.14%
	(2) Finding job		9.11%	8.64%	9.33%	10.36%
	(3) Losing and finding job		12.45%	9.44%	20.74%	23.65%

Obs. refers to the number of observations. ^{1,2}The figures have been calculated on the subsamples of the employed (i.e. self-employed and non-self-employed) and the non-self-employed, respectively. ³Mean values of the self-reported probabilities (0–100)

variable which takes the following values: 1 if a household member lost a job, 2 for found a job, 3 for lost and found a job, and 0 if none of these events occurred. Almost 1 in 3 Spanish households experienced one or more of these events in the last year.

Compared to respondents with a low level of FF, highly financially fragile individuals are more likely to be unemployed (33.87% versus 9.78%), self-employed (27.42% versus 19.62%) and part-time workers (26.70% versus 15.87%). The latter also perceive themselves to be more than twice as likely to lose their job as the former. Finally, almost 53% of the highly financially fragile individuals lived in a household where a member had recently lost and/or found a job.

3.4 Control variables

Table 5 shows the control variables, along with their main descriptive statistics. The sample was composed of 8554 individuals (4290 women and 4264 men) with an average age close to 47 years. Most people in the sample lived with their partner (65.11%), and around one-third (31.13%) lived in a household with children younger than 18 years. Regarding the educational level, 30.23% of respondents had completed the first stage of secondary education, closely followed by those who had completed the second stage of secondary education (26.04%) and tertiary education (23.68%). Concerning economic variables, apart from those referring to employment status (key

Table 5 Control variables for the overall sample: mean values

Variable		Mean
Age		46.92 years
Gender	(0) Male	50.61%
	(1) Female	49.39%
Marital status	(0) No living together	34.89%
	(1) Living together	65.11%
Child(ren) under 18 years of age in the household	(0) No	68.87%
	(1) Yes	31.13%
Educational attainment	(1) No formal education	2.96%
	(2) Primary education	17.09%
	(3) First state of secondary education	30.23%
	(4) Second stage of secondary education	26.04%
	(5) Higher education (vocational or university education)	23.68%
Gross annual household income	(1) Less than €14,500	36.97%
	(2) €14,500–€45,000	49.42%
	(3) More than €45,000	13.60%
Risk preferences	(0) No risk aversion	56.08%
	(1) Risk aversion	43.92%
Financial knowledge	(0) No correct answer	13.59%
	(1) One correct answer	34.21%
	(2) Two correct answers	34.16%
	(3) Three correct answers	18.04%

Despite the econometric estimates considering the age variable in logarithmic terms, the descriptive results in Table 5 use the untransformed or original age variable to facilitate interpretation by the readers

explanatory variables), 36.97% of the respondents reported having a gross annual household income of less than 14,500 euros.

Two behavioural variables were considered. First, the individual's risk preferences were measured through a dummy variable that takes the value 1 if the individual disagrees or strongly disagrees (4 or 5 in a 5-point Likert scale) with risking money when saving or investing, and 0 otherwise (1–3). In this respect, 43.92% of the respondents could be considered financially risk-averse individuals. Second, the individual's financial knowledge was measured through an ordinal variable (0–3) that aggregates the number of correct answers to the *Big Three* questions proposed by Lusardi and Mitchell (2011). In general, the level of financial knowledge of Spaniards could be considered low, with almost 50% of the sample answering correctly to one or none of the three questions.

4 Multivariate analyses

The multivariate analyses were performed in two steps. In a first step, we explored the relationship between individuals' employment status and the level of FF by using the categorical FF index obtained from the factorial reduction technique. The ordinal scale nature of the dependent variable led us to opt for ordered probit regressions. The ordered probit model assumes that FF_i^* depends linearly on the set of explanatory variables, assuming that the random disturbance (u_i) follows a standard normal distribution, according to Eq. (1):

$$FF_i^* = \beta_1 ES_i + \beta_2 JE_i + \beta_3 C_i + u_i$$

$$u_i \sim N(0, 1) \quad (1)$$

where $i = 1, \dots, n$ stands for each individual, FF_i for the individual i 's response to the survey question on financial fragility (that can take integer values), FF_i^* ($-\infty < FF_i^* < +\infty$) for the underlying latent variable denoting respondents i 's propensity to agree with the statement on financial fragility, β is a vector of parameters not containing an intercept, and ES_i , JE_i y C_i stand for, respectively, the variables related to employment status, job expectations and the remaining control variables. See Long and Freese (2014) for a more detailed description of the model.

In a second step, additional analyses were performed to test the robustness of the results to readjustment in estimation techniques and alternative definitions of the dependent variable.

The existence of multicollinearity was examined by calculating the Variance Inflation Factors (VIFs). The highest VIF was 1.49, which is significantly lower than 6 (Hair et al. 1998), which suggests the non-existence of this statistical obstacle.

4.1 Relationship between employment status and FF

To determine to what extent the employment situation is related to FF, different models have been estimated. Table 6 summarizes the results of these estimates. All the models include the set of control variables and the categorical variable of household's job expectations. Whereas Model 1 is performed on the global sample by considering the employment status variable, Model 2 focuses on the subsample of the employed and considers the self-employment variable, and Model 3 focuses on the subsample of the non-self-employed and includes the part-time employment variable and the individual's job expectations.

The estimates in Table 6 evidence that individuals' employment status is associated with their FF. Consistently with the mainstream results (see Table 1), the unemployed are more likely to suffer FF than the employed. While these estimated coefficients allow for the interpretation of their sign and statistical significance, they are not appropriate for gaining a deeper understanding of the differences regarding the explanatory variables, particularly those related to employment situation and job expectations, which constitute the primary focus of interest in this article. To address this limitation and provide a more comprehensive analysis, the Average Adjusted Predictions (AAPs)

Table 6 Categorical FF Index: *Oprobit* regressions (estimated coefficients)

	Global sample Model 1	Employed subsample Model 2	Non-self-employed subsample Model 3
<i>Employment status [Reference category: (1) Employed]</i>			
(2) Unemployed	0.231*** (0.055)		
(3) Retired	- 0.373*** (0.073)		
(4) Other situations	0.019 (0.056)		
<i>Household's job expectations [Reference category: (0) No events]</i>			
(1) Job loss	0.439*** (0.066)	0.641*** (0.109)	0.421** (0.135)
(2) Finding job	0.107 (0.072)	0.227** (0.087)	0.126 (0.099)
(3) Losing & finding job	0.433*** (0.055)	0.558*** (0.077)	0.442*** (0.091)
Job loss			0.004*** (0.001)
Finding job			- 0.00002 (0.001)
Self-employed		0.142* (0.069)	
Part-time employee			0.143 [†] (0.080)
Gender: Woman	- 0.103* (0.040)	- 0.068 (0.057)	- 0.100 (0.067)
Age (ln)	- 0.052 (0.068)	0.160 (0.113)	0.262* (0.132)
Educational attainment	- 0.105*** (0.021)	- 0.086** (0.031)	- 0.113** (0.036)
Child(ren) under 18 years of age in the household	0.325*** (0.048)	0.308*** (0.061)	0.353*** (0.070)
Marital status: living together	- 0.093 [†] (0.049)	- 0.033 (0.072)	- 0.041 (0.082)
<i>Gross annual household income [Reference category: < €14,500]</i>			
(2) €14,500-€45,000	- 0.644*** (0.043)	- 0.619*** (0.062)	- 0.573*** (0.074)

Table 6 (continued)

	Global sample	Employed subsample	Non-self-employed subsample
	Model 1	Model 2	Model 3
(3) > €45,000	− 1.203*** (0.099)	− 1.109*** (0.120)	− 1.082*** (0.144)
Risk preferences: Aversion	0.126** (0.041)	0.127* (0.057)	0.145* (0.064)
<i>Financial knowledge [Reference category: (0) Very low]</i>			
(1) Low	0.009 (0.057)	− 0.033 (0.084)	− 0.017 (0.096)
(2) Medium	0.019 (0.059)	− 0.057 (0.085)	− 0.055 (0.099)
(3) High	− 0.049 (0.073)	− 0.219* (0.100)	− 0.205 [†] (0.117)
cut1	− 0.251 (0.270)	0.693 (0.444)	1.091* (0.532)
cut2	0.880** (0.268)	1.800*** (0.440)	2.227*** (0.527)
Wald $X^2(d.f.)$	801.29 (17)	343.78 (15)	296.46 (17)
Pseudo R^2	0.1225	0.1047	0.1167
Obs	6,404	3,289	2,588

***p < 0.001, **p < 0.01, *p < 0.05, †p < 0.1

Obs. refers to the number of observations. Robust standard errors are shown in parentheses. Age is expressed in logs to avoid problems in the estimations related with measuring scales (Long and Freese 2014). There are two subsamples: the one of the employed (i.e. self-employed and non-self-employed) and the one of the non-self-employed

were computed (Williams 2020) and graphically summarised in Fig. 1. Particularly, the AAPs were computed for the main explanatory variables, i.e. employment situation (Fig. 1a), household's job expectations (Fig. 1b), self-employment (Fig. 1c), and employment status: part-time vs. full-time (Fig. 1d).

These data reflect the probability that an individual, with a given employment status or job expectation, may report a low, medium or high level of FF. More in detail, the AAPs in Fig. 1 reveal that, ceteris paribus, retired Spaniards are 17.60 percentage points more likely to report a low level of financial fragility compared to the unemployed (80.70% vs. 63.10%) and 10.20 percentage points more likely than the employed (80.70% vs. 70.50%). Conversely, the employed and those in other employment situations are roughly twice as likely as the retired to report a high level of financial fragility, while the unemployed are three times more likely (9.20% vs. 3.10%). These findings support the economic arguments linking employment status and FF. The unemployed suffer from the loss of their main source of income and tend to assume a lower income stream at the time of returning to work (Bernhardt et al. 2001).

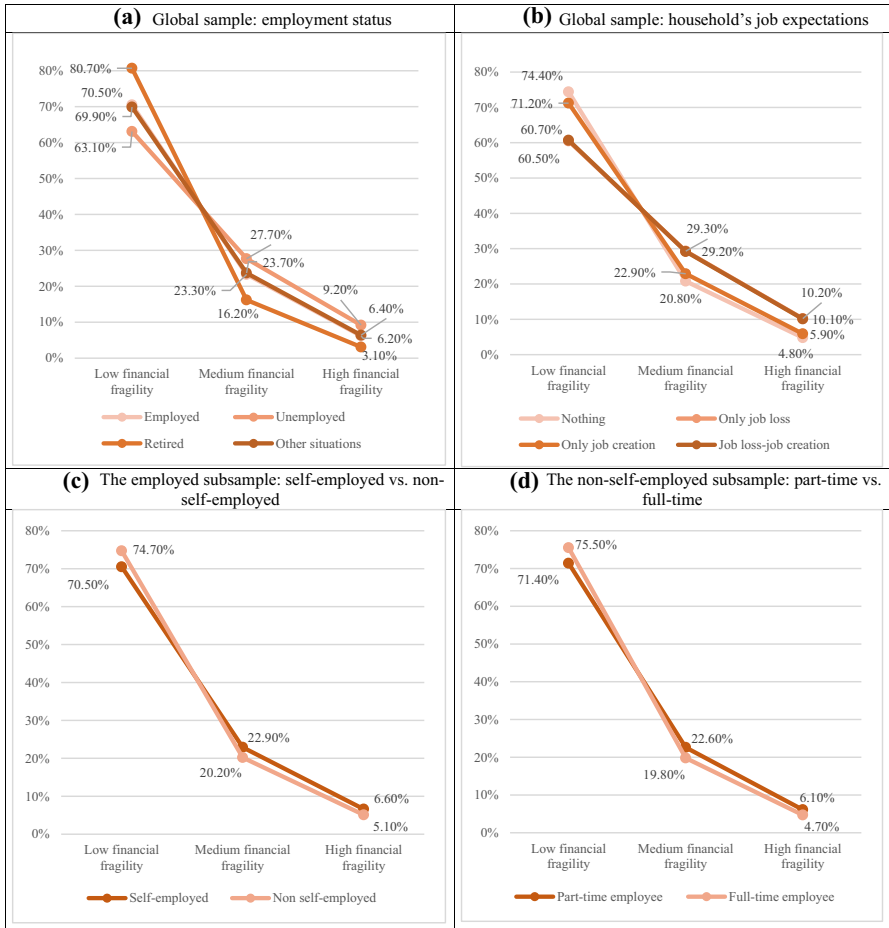


Fig. 1 Average adjusted predictions for *oprobit* estimations. *Notes:* The Average Adjusted Predictions reflect, for each of the different categories of the main explanatory variables considered [i.e., employment situation (a); household’s job expectations (b); self-employment (c); employment status: part-time vs. full-time (d)], the probability that an individual in that particular situation, ceteris paribus, reports a low, medium or high level of financial fragility

Moreover, they find it difficult to reduce their expenses, especially if this circumstance becomes structural (Yusof et al. 2015), leading to a situation of “financial stress” that often translates into unpaid bills and less healthy household financial behaviour (Del Río and Young 2008; Warren and Warren 2003). Contrarily, retirees appear to exhibit lower levels of financial fragility, as they generally experience lower levels of indebtedness (Chotewattanakul et al. 2019) and lower arrears in outstanding payments (Aristei and Gallo 2016).

Empirical evidence also suggests that the self-employed are more likely to report higher levels of financial fragility than the non-self-employed. AAPs in Fig. 1c show that, on average, the non-self-employed are about 4 percentage points more likely

than the self-employed to exhibit a low FF. Many self-employment projects are characterized by a high volatility of income (Terraneo 2018), that pushes away alternative financing mechanisms other than mortgage credit (Sánchez-Martínez et al. 2016).

The AAPs also point to a positive relationship between part-time employment and FF in the subsample of the non-self-employees: 75.50% of full-time employees report a low level of FF, compared to 71.40% of part-time employees (Fig. 1d). These results are consistent with those obtained by West and Mottola (2016) in the United States, and Taylor (2011) in the United Kingdom.

Concerning job expectations, the AAPs indicate that recent job loss of one or more household members is also positively associated with FF. Figure 1b shows that living in a household where one of its members has recently lost his or her job increases the probability of experiencing a high level of FF (10.20% compared to 4.80% for a household whose members have not experienced changes in their employment status). The number of unemployed in a household is directly related to liquidity problems (La Cava and Simon 2005) and to difficulties in coping with external shocks (Šubová et al. 2021). Other authors also link job losses to increased indebtedness, in particular consumer borrowing (Baldini et al. 2020; Giannetti et al. 2014), to cope with long periods of job instability (Arellano and Cámara 2020).

Reduced income and higher indebtedness may explain this positive association between the household's job expectations and FF from an economic perspective. However, the fact that the other categories of the household's job expectations variable also show a positive sign with FF suggests that this variable reflects other channels of a psychological nature through which employment is associated with FF, in addition to the labour income channel. Job instability could be behind these results. Thus, uncertainty about future income affects subjective poverty (Filandri et al. 2020) and the ability to make appropriate consumption decisions (Worthington 2006). People with more difficulties in accessing employment or with unstable jobs feel more at risk of losing their source of income. This perception of economic uncertainty restricts household spending (Broadway and Haisken-DeNew 2019) and makes it more difficult for households to maintain their standard of living (O'Connor et al. 2019).

The estimated coefficients for the individual's job expectations variables (Table 6) confirm the previous results. While the probability that a non-self-employed person attributes to the event of "losing his/her job" increases the probability of suffering a high degree of FF, the self-reported probability of "finding a job" is not statistically significantly associated with FF. These findings are in line with those of Carroll et al. (2012), who note that job expectations may even be a more important driver of economic instability than unemployment situation itself.

The estimated coefficients for the control variables help to outline the profile of the financially fragile Spanish population, reaching similar evidence to that obtained by previous studies. Educational attainment (Anderloni et al. 2012) and household income (Daud et al. 2019; Friedline and West 2016) are factors inversely related to FF, unlike the variables that reflect the presence of underage children in the household (Šubová et al. 2021) and risk aversion (Loke 2017).

4.2 Robustness analyses

With the aim of determining whether previous results are robust to readjustment in estimation techniques and alternative definitions of the dependent variable, we conducted additional estimations (Table 7). First, we used the continuous FF index as dependent variable and applied OLS regressions, which are suitable for continuous dependent variables (Dismuke and Lindrooth 2006) such as the FV index. Second, we constructed two alternative variables to the categorical FF index by aggregating the dichotomised responses to three of the questions employed in the construction of the FF index (see Table 2). While the first variable (household objective FF index) aggregates the responses referring to objective household financial circumstances, the second variable (individual subjective FF index) aggregates those referring to the individual's perceptions. Both are categorical variables (with values ranging from 0 to 3) and ordered probit regressions were applied in the estimations. In all three cases the models estimated in Table 6 were repeated.

The estimates in Table 7 are quite similar to those obtained in Table 6, thus demonstrating that, a priori, the results are robust to different estimation techniques and alternative definitions of the dependent variable.¹

Empirical evidence in Table 7 reveals that the unemployed are more likely to suffer FF than the employed, whereas retirees seem less likely. Spaniards in other employment situation, such as students, do not seem more likely than employees to suffer FF (if so, only when FF is measured by means of objective indicators).

Job expectations, and particularly job losses experienced by the respondent or by members of respondent's household, have a clear and negative relationship with FF. Similarly, Kleimeier et al. (2023) found that individuals who experienced a negative labour shock during the pandemic (i.e. stopped working or experienced reduced employment) were more likely to become financially fragile. The arguments behind the relationship between job expectations and FF may be grounded within the theory of bounded rationality (Simon 1956, 2000). This theory suggests that humans face cognitive limitations that prevent them from making fully rational decisions (Simon 1956). Therefore, in contexts with information asymmetries and time constraints (Simon 1956), as is the case of the labour market, individuals who are aware of job losses within their inner circle may be discouraged from actively participating in it. Such discouragement can be attributed to their perception of restricted access to employment opportunities, even if they possess the skills and abilities necessary to participate.

Income level and educational attainment seem to clearly reduce the risk of FF of Spanish households. However, having underage children at home has the opposite effect, and there is hardly any statistically significant relationship between FF and financial knowledge (Fernandes et al. 2014). Thus, following Fernández-López et al. (2023a) and Friedline and West (2016), future studies might benefit from including comprehensive measures of financial capability that encompass the availability of objective financial literacy ("ability to act") and financial inclusion ("opportunity to put it into practice").

¹ The AAPs were also calculated for the employment and job expectation variables included in the ordered probit regressions in Table 7, but the results found are consistent with those of Fig. 1 and are therefore not included in the article.

Table 7 Robustness regressions (estimated coefficients)

	Continuous FF index (OLS)			Household objective FF index (Oprobit)			Individual subjective FF index (Oprobit)		
	Global sample	Employed subsample	Non-self-employed subsample	Global sample	Employed subsample	Non-self-employed subsample	Global sample	Employed subsample	Non-self-employed subsample
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<i>Employment status [Reference category: (1) Employed]</i>									
(2) Unemployed	0.048*** (0.010)			0.211*** (0.050)			0.270*** (0.049)		
(3) Retired	-0.058*** (0.009)			-0.129* (0.057)			-0.322*** (0.056)		
(4) Other situations	0.004 (0.008)			0.111* (0.049)			0.067 (0.049)		
<i>Household's job expectations [Reference category: (0) No events]</i>									
(1) Job loss	0.085*** (0.012)	0.124*** (0.021)	0.074*** (0.022)	0.424*** (0.062)	0.760*** (0.105)	0.581*** (0.119)	0.348*** (0.061)	0.341*** (0.109)	0.216† (0.130)
(2) Finding job	0.028** (0.010)	0.036** (0.013)	0.022 (0.013)	0.213*** (0.060)	0.310*** (0.074)	0.236** (0.083)	0.169** (0.055)	0.209** (0.071)	0.132† (0.078)
(3) Losing & finding job	0.076*** (0.010)	0.087*** (0.013)	0.064*** (0.015)	0.420*** (0.051)	0.472*** (0.071)	0.391*** (0.082)	0.364*** (0.049)	0.452*** (0.066)	0.377*** (0.075)
Job loss			0.001*** (0.000)			0.003** (0.001)			0.003*** (0.001)
Finding job			-0.0001 (0.000)			0.0004 (0.001)			-0.002* (0.001)
Self-employed		0.020* (0.010)			0.071 (0.061)			0.071 (0.061)	
Part-time employee			0.008			0.095			0.07

Table 7 (continued)

	Continuous FF index (OLS)			Household objective FF index (<i>Oprobit</i>)			Individual subjective FF index (<i>Oprobit</i>)		
	Global sample	Employed subsample	Non-self-employed subsample	Global sample	Employed subsample	Non-self-employed subsample	Global sample	Employed subsample	Non-self-employed subsample
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Gender: Woman	-0.016** (0.006)	-0.012 (0.008)	-0.015† (0.009)	-0.003 (0.035)	-0.006 (0.050)	-0.032 (0.058)	-0.108** (0.035)	-0.093† (0.048)	-0.116* (0.055)
Age (ln)	-0.013 (0.010)	0.012 (0.015)	0.022 (0.017)	-0.183** (0.060)	-0.081 (0.099)	-0.032 (0.114)	0.153** (0.058)	0.313*** (0.092)	0.276* (0.107)
Educational attainment	-0.022*** (0.003)	-0.019*** (0.004)	-0.024*** (0.005)	-0.100*** (0.019)	-0.066* (0.027)	-0.103*** (0.031)	-0.115*** (0.018)	-0.123*** (0.026)	-0.127*** (0.029)
Child(ren) under 18 years of age in the household	0.055*** (0.007)	0.046*** (0.008)	0.053*** (0.009)	0.240*** (0.043)	0.199*** (0.053)	0.243*** (0.060)	0.226*** (0.042)	0.219*** (0.052)	0.267*** (0.059)
Marital status: living together	-0.015* (0.007)	-0.01 (0.010)	-0.008 (0.011)	-0.078† (0.041)	-0.038 (0.061)	-0.04 (0.069)	-0.098* (0.041)	-0.108† (0.059)	-0.078 (0.068)
<i>Gross annual household income [Reference category: < €14,500]</i>									
(2) €14,500-€45,000	-0.116*** (0.007)	-0.117*** (0.010)	-0.109*** (0.012)	-0.690*** (0.038)	-0.696*** (0.056)	-0.637*** (0.065)	-0.456*** (0.037)	-0.463*** (0.053)	-0.458*** (0.061)
(3) > €45,000	-0.182*** (0.009)	-0.180*** (0.012)	-0.172*** (0.014)	-1.284*** (0.080)	-1.182*** (0.099)	-1.111*** (0.116)	-0.876*** (0.070)	-0.873*** (0.089)	-0.951*** (0.109)
Risk preferences: Aversion	0.015* (0.006)	0.013 (0.008)	0.014 (0.009)	0.113*** (0.036)	0.125* (0.050)	0.149** (0.056)	0.024 (0.035)	-0.026 (0.048)	-0.008 (0.054)

Table 7 (continued)

	Continuous FF index (OLS)			Household objective FF index (<i>Oprobit</i>)			Individual subjective FF index (<i>Oprobit</i>)		
	Global sample	Employed subsample	Non-self-employed subsample	Global sample	Employed subsample	Non-self-employed subsample	Global sample	Employed subsample	Non-self-employed subsample
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<i>Financial knowledge [Reference category: (0) Very low]</i>									
(1) Low	0.002 (0.009)	-0.008 (0.012)	-0.006 (0.014)	0.014 (0.051)	-0.058 (0.075)	-0.013 (0.085)	-0.001 (0.050)	-0.07 (0.073)	-0.092 (0.083)
(2) Medium	0.001 (0.009)	-0.014 (0.012)	-0.014 (0.014)	-0.019 (0.053)	-0.119 (0.077)	-0.076 (0.087)	-0.018 (0.051)	-0.135 [†] (0.074)	-0.183* (0.085)
(3) High	-0.004 (0.010)	-0.031* (0.013)	-0.026 (0.015)	-0.110 [†] (0.064)	-0.199* (0.089)	-0.146 (0.101)	-0.023 (0.061)	-0.171* (0.085)	-0.146 (0.097)
Cons	0.437*** (0.039)	0.340*** (0.061)	0.304*** (0.070)						
cut1				-1.293*** (0.239)	-0.777* (0.387)	-0.571 (0.459)	-0.331 (0.229)	0.179 (0.363)	0.007 (0.433)
cut2				-0.442 (0.239)	0.039 (0.386)	0.248 (0.457)	1.088*** (0.230)	1.506*** (0.363)	1.347** (0.433)
cut3				0.283 (0.238)	0.758* (0.384)	0.981* (0.455)	2.100*** (0.233)	2.477*** (0.368)	2.407*** (0.438)
Wald χ^2 (d.f.)				1108.48 (17)	488.32 (15)	388.11 (17)	738.50 (17)	303.73 (15)	271.50 (17)
R ² (Pseudo R ²)	0.226 6,404	0.188 3,289	0.207 2,588	0.1015 6,404	0.0896 3,289	0.0926 2,588	0.0748 6,404	0.0628 3,289	0.075 2,588

***p < 0.001, **p < 0.01, *p < 0.05, †p < 0.1

Cons. refer to the number of observations and the constant, respectively. Robust standard errors are shown in parentheses. Age is expressed in logs to avoid problems in the estimations related with measuring scales (Long and Freese 2014). There are two subsamples: the one of the employed (i.e. self-employed and non-self-employed) and the one of the non-self-employed

In sum, evidence from robustness analyses reflects that while some objective employment conditions such as self-employment or part-time work lose statistical significance in the models referring to the objective and subjective indices of financial FF as compared to evidence in Table 6, the variables capturing the psychological perspective maintain, and even gain, statistical significance. This reinforces the need to consider the psychological perspective in the study of the relationship between FF and employment status.

By and large, our evidence is compatible with that of authors who have analysed a single dimension of FF. Namely, from a subjective perspective, previous research also found that unemployment is related to a drastic increase in self-perceived debt (Del Río and Young 2008; Keese 2012) and the greater inability to face unexpected expenses (Arellano and Cámara 2021; Friedline and West 2016; Kleimeier et al. 2023; West and Mottola 2016) due to instability of income. From an objective perspective, existing evidence remains less conclusive. Our findings indicate that the unemployed are more likely to experience FF compared to those who are employed or self-employed. This evidence is consistent with the research of Azzopardi et al. (2019), Parise and Peijnenburg (2019), Salgado and Chovar (2010), and Šubová et al. (2021). However, other authors found that the employed are more likely to suffer FF because they have greater access to formal credit (Chen and Jin 2017) and, consequently, are more susceptible to bankruptcy (Marsellou and Bassiakos 2016).

5 Conclusions

The great uncertainty of the current economic environment has significantly eroded the financial resilience of many households in Spain and worldwide. Households need to manage their budgets more efficiently to cope with high inflation rates that put at risk the consumption of basic goods such as energy. In this context, financial fragility (FF) puts at risk the solvency of households and, ultimately, of the financial system.

Employment has been identified as one of the main mitigators of household FF through income generation; at least, this is the conclusion of studies that measure FF from a unidimensional and objective perspective. In contrast, FF is a multidimensional and, to a large extent, psychological phenomenon: that is, the individual's perception of FF may matter more than his or her objective situation of FF, since the former will have an impact on consumption and saving decisions and, consequently, on the economy as a whole. Therefore, the relationship between employment and FF has to be analysed also from a psychological perspective in order to achieve a better understanding of the phenomenon. This implies considering psychological issues also from the employment side, such as job expectations.

This article analysed the relationship between employment and FF by jointly considering (objective) employment status and (subjective) job expectations. While the former is related to FF consistently with the mainstream literature results, job expectations have been shown to have a consistent relationship with household FF as well, especially when these job expectations are biased towards job loss.

This finding on the potential role of job expectations is important in redirecting the research agenda on the relationship between employment status and household FF. On

the employment status side, it is necessary to include variables capturing aspects of a more psychological and behavioural nature such as job expectations and stability (Carroll et al. 2012). On the FF side, household FF should be seen as a multidimensional, holistic and gradual phenomenon (O'Connor et al. 2019), which considers different perspectives (viz., objective and subjective ones) to proxy for household FF.

This research has also provided evidence that will help to establish some recommendations to support household financial resilience. Enabling the stability of labour markets appears to be the most appropriate tool to reduce household FF. Nevertheless, given the difficulty of achieving that goal in itself, policymakers need to provide a “minimum resilience” to the most financially fragile households. In this respect, robust social safety net programs need to be promoted, including unemployment benefits, affordable housing, or policies such as a guaranteed minimum income. These programs and policies for those households at risk of financial exclusion must be stabilized and effectively reach those citizens who need it most, in less time and with fewer bureaucratic obstacles. Investing in education and training becomes also crucial to enhance individuals’ employability and make them more resilient to economic fluctuations and labour market changes. Moreover, job orientation courses should put more emphasis on developing and promoting the skills and abilities of those who are unemployed or at higher risk of unemployment, thereby increasing their self-confidence. This could mitigate the risk that a person, because of his/her labour situation or the one of his/her peers, might exclude him/herself from the labour market. All these measures would contribute to reducing FF both through the income channel and by mitigating the “fear” of job loss (i.e. improving self-perceived financial resilience).

Other policies such as lowering the cost of energy, or even guaranteeing its consumption under certain circumstances, are also necessary while energy prices remain high. Similar policies regarding housing and mortgage loans will be equally useful in an environment of rising interest rates (Euribor). It should be noted that these last two recommendations would encourage households to pay their bills and debts on time (i.e. reduce the household FF). Such measures, far from being indiscriminate, must be focused on households at higher risk of FF, since the results also showed that households are heterogeneous, with income being one of the factors most positively associated with financial resilience.

The article is not exempt from limitations which may lead to future studies. The availability of more variables about job expectations or job stability would allow for a deeper understanding of the role of these factors in household FF. Additionally, this article is based on cross-sectional data collected in 2016–2017, as only one edition of the *Survey of Financial Competences* was released so far. The availability of data related to post-COVID Spain will not only make possible to analyse the consequences of the pandemic on job uncertainty and households’ FF, but also to perform longitudinal analyses that would allow a deeper analysis of causal relationships.

Funding Open Access funding provided thanks to the CRUE-CSIC agreement with Springer Nature. Marcos Álvarez-Espino acknowledges financial support from the Spanish Ministry of Universities through the FPU grant (Ayudas para la Formación del Profesorado Universitario) [FPU grant: FPU21/03287]. The authors acknowledge the support of the Consellería de Cultura, Educación e Universidade through the “Axudas para a consolidación e estruturación de unidades de investigación competitivas”. The authors acknowledge the funding of the Universidade de Santiago de Compostela/CISUG for open access charge.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Ali L, Khan MKN, Ahmad H (2020) Financial fragility of Pakistani household. *J Fam Econ Issues* 41(3):572–590. <https://doi.org/10.1007/s10834-020-09683-y>
- Anderloni L, Bacchocchi E, Vandone D (2012) Household financial vulnerability: an empirical analysis. *Res Econ* 66(3):284–296. <https://doi.org/10.1016/j.rie.2012.03.001>
- Arellano A, Cámara N, Mejía D (2019) “Disentangling vulnerability through consumer behavior: The role of financial health” Working Paper 19/11. BBVA Research. Madrid.
- Arellano A, Cámara N (2020) Vulnerabilidad financiera de los hogares ante la COVID-19. <http://hdl.handle.net/11531/51154>
- Arellano A, Cámara N (2021) Vulnerabilidad financiera de los hogares: evidencia para el País Vasco y el resto de España. *EKONOMIAZ Revista Vasca De Economía* 100(2):94–119
- Aristei D, Gallo M (2016) The determinants of households’ repayment difficulties on mortgage loans: evidence from Italian microdata. *Int J Consum Stud* 40(4):453–465. <https://doi.org/10.1111/ijcs.12271>
- Azzopardi D, Fareed F, Lenain P, Sutherland D (2019) Assessing household financial vulnerability: empirical evidence from the US using machine learning. In: Sutherland D (ed) *OECD Economic Survey of the United States: key research findings*. OECD Publishing, Paris, pp 121–142
- Baldini M, Gallo G, Torricelli C (2020) The scars of scarcity in the short run: an empirical investigation across Europe. *Economia Politica* 37(3):1033–1069. <https://doi.org/10.1007/s40888-020-00187-4>
- Banco de España and Comisión Nacional del Mercado de Valores –CNMV (2018) *Plan de Educación Financiera 2018–2021*
- Bernhardt A, Martina M, Mark S, Handcock AS, Marc AS (2001) *Divergent paths: economic mobility in the New American Labor Market*. Russell Sage Foundation, New York
- Berrill J, Cassells D, O’Hagan-Luff M, Van Stel A (2021) The relationship between financial distress and well-being: exploring the role of self-employment. *Int Small Bus J* 39(4):330–349. <https://doi.org/10.1177/0266242620965384>
- Bover O, Hospido L, Villanueva E (2019) The survey of financial competences (ECF): description and methods of the 2016 wave. Banco de España
- Bricker J, Thompson J (2016) Does education loan debt influence household financial distress? An assessment using the 2007–2009 survey of consumer finances panel. *Contemp Econ Policy* 34(4):660–667. <https://doi.org/10.1111/coep.12164>
- Broadway B, Haisken-Denew JP (2019) Keep calm and consume? Subjective uncertainty and precautionary savings. *J Econ Finance* 43(3):481–505. <https://doi.org/10.1007/s12197-018-9451-0>
- Brunetti M, Giarda E, Torricelli C (2016) Is financial fragility a matter of illiquidity? An appraisal for Italian households. *Rev Income Wealth* 62(4):628–649. <https://doi.org/10.1111/roiw.12189>
- Camões F, Vale S (2020) I feel wealthy: A major determinant of Portuguese households’ indebtedness? *Empir Econ* 58(4):1953–1978. <https://doi.org/10.1007/s00181-018-1602-9>
- Carroll CD, Slacalek J, Sommer M (2012) Dissecting saving dynamics: measuring wealth, precautionary and credit effects. *European Central Bank Working Paper* 1474: 1–50. <https://www.ecb.europa.eu/pub/research/authors/profiles/christopher-carroll.en.html>
- Cavalletti B, Lagazio C, Lagomarsino E, Vandone D (2020) Consumer debt and financial fragility: evidence from Italy. *J Consum Policy* 43(4):747–765. <https://doi.org/10.1007/s10603-020-09458-w>
- Chen Z, Jin M (2017) Financial inclusion in China: use of credit. *J Fam Econ Issues* 38(4):528–540. <https://doi.org/10.1007/s10834-017-9531-x>

- Chotewattanukul P, Sharpe K, Chand S (2019) The drivers of household indebtedness: evidence from Thailand. *Southeast Asian J Econ* 1–40
- D'Acunto F, Malmendier U, Ospina J, Weber M (2020) Exposure to grocery prices and inflation expectations. *J Polit Econ* 129(5):1615–1639. <https://doi.org/10.1086/713192>
- Daud SNM, Marzuki A, Ahmad N, Kefeli Z (2019) Financial vulnerability and its determinants: survey evidence from Malaysian households. *Emerg Mark Finance Trade* 55(9):1991–2003. <https://doi.org/10.1080/1540496X.2018.1511421>
- Del Río A, Young G (2008) The impact of unsecured debt on financial pressure among British households. *Appl Financial Econ* 18(15):1209–1220. <https://doi.org/10.1080/09603100701604233>
- Demertzis M, Domínguez-Jiménez M, Lusardi A (2020) The financial fragility of European households in the time of COVID-19. *Policy Contribution 2020/15*, Bruegel. <https://www.econstor.eu/handle/10419/237650>
- Dismuke C, Lindrooth R (2006) Ordinary least squares. In: Chumney ECG, Simpson KN (eds) *Methods and designs for outcomes research*, pp 93–104
- Fernandes D, Lynch JG, Netemeyer RG (2014) Financial literacy, financial education and downstream financial behaviors. *Manag Sci* 60(8):1861–1883. <https://doi.org/10.1287/mnsc.2013.1849>
- Fernández-López S, Álvarez-Espino M, Castro-González S, Rey-Ares L (2023a) Financial capability and households' financial vulnerability: evidence for the Spanish case. *Manag Finance* 49(4):679–702. <https://doi.org/10.1108/MF-02-2022-0086>
- Fernández-López S, Álvarez-Espino M, Rey-Ares L, Castro-González S (2023b) Consumer financial vulnerability: review, synthesis, and future research agenda. *J Econ Surv*. <https://doi.org/10.1111/joes.12573>
- Filandri M, Pasqua S, Struolino E (2020) Being working poor or feeling working poor? The role of work intensity and job stability for subjective poverty. *Soc Indic Res* 147(3):781–803. <https://doi.org/10.1007/s11205-019-02174-0>
- Friedline T, West S (2016) Financial education is not enough: millennials may need financial capability to demonstrate healthier financial behaviors. *J Fam Econ Issues* 37(4):649–671. <https://doi.org/10.1007/s10834-015-9475-y>
- Giannetti C, Madia M, Moretti L (2014) Job insecurity and financial distress. *Appl Financial Econ* 24(4):219–233. <https://doi.org/10.1080/09603107.2013.872759>
- Graeber D, Kritikos AS, Seebauer J (2021) COVID-19: a crisis of the female self-employed. *J Popul Econ* 34:1141–1187. <https://doi.org/10.1007/s00148-021-00849-y>
- Hair J, Anderson R, Tatham R, Black W (1998) *Multivariate analysis*, 4th edn. Englewood Cliffs, Prentice-Hall
- Hertwig R, Barron G, Weber EU, Erev I (2004) Decisions from experience and the effect of rare events in risky choice. *Psychol Sci* 15:534–539. <https://doi.org/10.1111/j.0956-7976.2004.00715.x>
- Jappelli T, Padula M, Pistaferri L (2008) A direct test of the buffer-stock model of saving. *J Eur Econ Assoc* 6(6):1186–1210. <https://doi.org/10.1162/JEEA.2008.6.6.1186>
- Keese M (2012) Who feels constrained by high debt burdens? Subjective vs. objective measures of household debt. *J Econ Psychol* 33(1):125–141. <https://doi.org/10.1016/j.joep.2011.08.002>
- Kleimeier S, Hoffmann AOI, Broihanne M-H, Plotkina D, Göritz AS (2023) Determinants of individuals' objective and subjective financial fragility during the COVID-19 pandemic. *J Bank Finance* 153:106881. <https://doi.org/10.1016/j.jbankfin.2023.106881>
- La Cava G, Simon J (2005) Household debt and financial constraints in Australia. *Aust Econ Rev* 38(1):40–60. <https://doi.org/10.1111/j.1467-8462.2005.00351.x>
- Leika M, Marchettini D (2017) A generalized framework for the assessment of household financial vulnerability. *International Monetary Fund Working Paper* 2017/228
- Lera F (1997) Insuficiencias de la teoría del ciclo vital en el comportamiento ahorrador. El caso de la Comunidad Foral de Navarra. *Universidad Pública de Navarra Working Paper* 9705. <https://hdl.handle.net/2454/206051>
- Lin Y, Grace MF (2007) Household life cycle protection: life insurance holdings, financial vulnerability, and portfolio implications. *J Risk Insur* 74(1):141–173. <https://doi.org/10.1111/j.1539-6975.2007.00205.x>
- Loke YJ (2017) Financial vulnerability of working adults in Malaysia. *Contemp Econ* 11(2):205–218. <https://doi.org/10.5709/ce.1897-9254.237>
- Long JS, Freese J (2014) *Regression models for categorical dependent variables using stata*, 3rd edn. Stata Press, College Station

- Lusardi A, Mitchell OS (2011) Financial literacy around the world: an overview. *J Pension Econ Finance* 10(4):497–508. <https://doi.org/10.1017/S1474747211000448>
- Marsellou EG, Bassiakos YC (2016) Bankrupt households and economic crisis. Evidence from the Greek courts. *J Consum Policy* 39(1):41–62. <https://doi.org/10.1007/s10603-015-9309-1>
- Mastromarco C, Peragine V, Russo F, Serlenga L (2014) Poverty, inequality and growth in Albania: empirical evidence, 2002–05. *Econ Transit* 22(4):635–682. <https://doi.org/10.1111/ecot.12048>
- O'Connor GE, Newmeyer CE, Wong NYC, Bayuk JB, Cook LA, Komarova Y, Warmath D (2019) Conceptualizing the multiple dimensions of consumer financial vulnerability. *J Bus Res* 100(1):421–430. <https://doi.org/10.1016/j.jbusres.2018.12.033>
- Parise G, Peijnenburg K (2019) Noncognitive abilities and financial distress: evidence from a representative household panel. *Rev Financial Stud* 32(10):3884–3919. <https://doi.org/10.1093/rfs/hhz010>
- Philippas ND, Avdoulas C (2020) Financial literacy and financial well-being among generation-Z university students: evidence from Greece. *Eur J Finance* 26(4–5):360–381. <https://doi.org/10.1080/1351847X.2019.1701512>
- Russell H, Whelan CT, Maître B (2013) Economic vulnerability and severity of debt problems: an analysis of the Irish EU-SILC 2008. *Eur Sociol Rev* 29(4):695–706. <https://doi.org/10.1093/esr/jcs048>
- Salgado H, Chovar A (2010) ¿Cuánto influyen las tarjetas de crédito y la deuda hipotecaria en el sobre endeudamiento de los hogares en Chile? Universidad de Concepción Working Paper 12
- Sánchez-Martínez MT, Sánchez-Campillo J, Moreno-Herrero D (2016) Mortgage debt and household vulnerability: evidence from Spain before and during the global financial crisis. *Int J Hous Mark Anal* 9(3):400–420. <https://doi.org/10.1108/IJHMA-07-2015-0038>
- Simon HA (1956) Rational choice and the structure of the environment. *Psychol Rev* 63(2):129–138. <https://doi.org/10.1037/h0042769>
- Simon HA (2000) Bounded rationality in social science: today and tomorrow. *Mind Soc* 1(1):25–39. <https://doi.org/10.1007/BF02512227>
- Smith HL, Finke MS, Huston SJ (2012) Financial sophistication and housing leverage among older households. *J Fam Econ Issues* 33(3):315–327. <https://doi.org/10.1007/s10834-012-9293-4>
- Šubová N, Mura L, Buleca J (2021) Determinants of household financial vulnerability: evidence from selected EU countries. *EM Econ Manag* 24(3):186–207. <https://doi.org/10.15240/tul/001/2021-3-011>
- Taylor M (2011) Measuring financial capability and its determinants using survey data. *Soc Indic Res* 102(2):297–314. <https://doi.org/10.1007/s11205-010-9681-9>
- Terraneo M (2018) Households' financial vulnerability in southern Europe. *J Econ Stud* 45(3):521–542. <https://doi.org/10.1108/JES-08-2016-0162>
- Togba EL (2012) Microfinance and households access to credit: evidence from Côte d'Ivoire. *Struct Chang Econ Dyn* 23(4):473–486. <https://doi.org/10.1016/j.strueco.2012.08.002>
- Valdes O, Mottola G, Armeli S (2021) Bouncing Back? The Financial Resilience of Americans. FINRA Investor Education Foundation report
- Warren E, Warren AT (2003) *The two-income trap: why middle-class mothers and fathers are going broke*. Basic Books, New York
- West S, Mottola G (2016) A population on the brink: American renters, emergency savings, and financial fragility. *Poverty Public Policy* 8(1):56–71. <https://doi.org/10.1002/pop4.130>
- Williams R (2020) Adjusted predictions & marginal effects for multiple outcome models & commands (including ologit, mlogit, oglm, & gologit2). University of Notre Dame, Handout, France
- Worthington AC (2006) Debt as a source of financial stress in Australian households. *Int J Consum Stud* 30(1):2–15. <https://doi.org/10.1111/j.1470-6431.2005.00420.x>
- Yusof SA, Rokis RA, Jusoh WJW (2015) Financial fragility of urban households in Malaysia. *Jurnal Ekonomi Malaysia* 49(1):15–24. <https://doi.org/10.17576/JEM-2015-4901-02>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.