THE SURVEY OF FINANCIAL
COMPETENCES: DESCRIPTION
AND METHODS OF THE 2021 WAVE

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Abstract

The Survey of Financial Competences measures the level of financial competence of the Spanish adult population, including their understanding of basic financial concepts, their familiarity with different savings, insurance and debt vehicles, and their holdings, acquisition, and use of such financial vehicles. Between 2021 and 2022 information was collected for a large sample of randomly selected individuals provided by the National Statistics Institute, representative of the Spanish population aged 18 to 79 and of each of its regions. This paper presents a detailed description of the main methodological aspects in the design and implementation of the survey: the sample design, the questionnaire, the data collection process, the validation of the data, the calculation of the weights and the imputation procedure.

Resumen

La Encuesta de Competencias Financieras mide el nivel de competencias financieras de la población adulta española, lo que incluye su comprensión de conceptos financieros básicos, así como su grado de conocimiento, adquisición, tenencia y uso de distintos vehículos financieros de ahorro, seguro y endeudamiento. Entre 2021 y 2022, se ha recogido información de una muestra de gran tamaño, proporcionada por el Instituto Nacional de Estadística, de individuos seleccionados al azar, representativa de la población española de entre 18 y 79 años y de cada una de sus comunidades autónomas. Este documento proporciona una descripción detallada de los aspectos metodológicos más relevantes del diseño y la implementación de esta encuesta: el diseño muestral, el cuestionario, el proceso de recogida de los datos, la validación de dichos datos, el cálculo de los pesos y la imputación.

Palabras clave: competencias financieras, finanzas personales, finanzas del hogar, recogida de datos, imputación, pesos.

Códigos JEL: C81, G53.

Contents

1 Introduction

Evidence from various countries suggests that a sizable fraction of the population has deficient knowledge about basic financial notions on inflation, interest rates, or risk diversification. Furthermore, even when one compares individuals with similar degrees of education or income, those with lower financial knowledge hold lower wealth levels, higher debt, and a higher degree of financial stress.[1] As financial products have become increasingly complex over time, it is important to identify the characteristics and choices of population groups with low financial knowledge.

In 2016, the Banco de España (BdE) and the Comisión Nacional del Mercado de Valores (CNMV) launched the Survey of Financial Competences (ECF, by its Spanish acronym), an initiative aimed at measuring the financial competences of the population aged 18-79 in Spain. Its second edition, conducted by the BdE in 2021, follows the objectives of the first edition. It is used to measure the level of financial knowledge of the adult population in Spain and provides data for each of the 17 Autonomous Communities in Spain (except the Autonomous Cities of Ceuta and Melilla). Representativeness at the regional level is important because the competences about education are transferred to regional authorities and the demographic and socio-economic composition of the population varies widely across Autonomous Communities.

The ECF follows a blueprint questionnaire elaborated by the International Network of Financial Education (INFE), whose aim is to provide an assessment of the financial knowledge, attitudes, and behaviour of representative samples of the adult population. The assessment was recently implemented in many countries under the coordination of the Organization of Economic Cooperation and Development (OECD).[2] The results of the ECF are thus comparable to those in other countries.[3] However, the ECF contains several extensions and adaptations to the Spanish case described in Section 2.

This article is organised as follows. The second section briefly outlines the questionnaire and describes the adaptations of the blueprint questionnaire to the Spanish case. The third section describes the sample design in detail. The fourth section provides relevant information on some aspects of the data collection process, such as monitoring of fieldwork, the editing of the data and the response rates achieved. The fifth section discusses the weighting. Finally, the sixth section presents an analysis of unit non-response and provides some details of the imputation procedures used in the survey in cases of item non-response.

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1   See, for example, Lusardi and Mitchell (2023), Lusardi and Mitchell (2014), Lusardi and Mitchell (2011), Vaan Rooij, Lusardi and Alessie (2011) or Stango and Zinman (2009).

2   See: https://www.oecd.org

3   For a detailed description of the main results of the ECF 2021, see: https://repositorio.bde.es/handle/123456789/34792

2 The questionnaire and the CAPI interview

2.1 Contents

The questionnaire of the ECF follows the INFE blueprint. Apart from demographic information, that exercise measures what financial products individuals know, hold, or have recently acquired. If respondents have recently acquired one, the blueprint also asks which type of information they used to make that decision. Another main block of the INFE exercise is a series of questions measuring financial knowledge. Those questions measure if the respondent is familiar with the notion of interest rate and can apply it in simple computations. Further questions measure if respondents understand interest rate compounding, risk diversification and the role of inflation. In addition, questions are posed to explore respondents' saving attitudes and behaviours, exploring concepts like impatience and risk aversion. The block on digital financial literacy present in the INFE blueprint, where individuals are asked about sharing financial information publicly online or disclosing bank account passwords and PINs to close friends among other questions, is not included in the ECF, as it was made available only after the start of the fieldwork. However, the ECF questionnaire also includes some adaptations to the Spanish context. Firstly, the ECF asks about labour market status, individual expectations about employment loss (if employed) or employment finding (to both employed and unemployed).

A second feature of the ECF is that it is not only a survey of individuals, but also gathers information about the household's level of financial competence. Namely, the survey asks each individual (sample person) who is the most knowledgeable person about the household's finances. If the individual is not that person, the most informed person provides complementary information about the household portfolio and their own financial competences. Measuring household's competences is especially important in countries where large households with different generations are common.

Thirdly, with the aim of disentangling financial from other generic competences, the ECF also includes items measuring basic reading comprehension (extracted from the 1994 International Adult Literacy Survey), graph comprehension (extracted from the 2012 Program for International Adult Competences, PIAAC), statistical literacy (extracted from, among others, Berlin Numeracy Test and Statistical Reasoning Assessment)[4] and economic understanding (extracted from Public Understanding of Economics and Economic Statistics Survey in the UK).

Finally, the ECF includes a module on housing, given its prominent weight in households' financial decisions. Following surveys like the National Financial Capability Study, Survey of Household Economics and Decisionmaking, and Consumer Financial Literacy Survey in the United States, respondents provide information about whether they

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4 See Schwartz, Woloshin, Black, and Welch (1997), Cokely, Galesic, Schulz, Ghazal, and Garcia-Retamero (2012), or Garfield and Gal (1999).

own or rent their house of main residence, the reasons for their choice and their expectations about the evolution of the price of their dwelling. If they financed the purchase of their house with a loan, the survey collects some information about basic loan characteristics.

The questionnaire remains comparable with the first wave of the ECF conducted in 2016 and includes the changes suggested by the 2018 INFE toolkit. Additionally, questions are added to provide a better understanding of the respondents' competences and their individual and household characteristics. For instance, the survey incorporates questions about individuals' statistical knowledge and obtains more details on the household's composition and decision-making. New questions also delve into details about individuals' partners, including their age, and education. The ECF 2021 also recovers more family background information, such as parents' professions, and involvement in their children's financial education. Another noticeable change is the inclusion of cryptocurrencies as financial assets, reflecting their growing popularity in recent years.

In particular, the ECF questionnaire is divided into the following ten main sections:

A. Basic demographics and labour force status

B. Respondent's portfolio and sources of information

C. (Current or expected) sources of income in old age and if not working

D. Attitudes toward saving

E. Financial literacy

F. Household decision-making

I. Main residence

J. Expenses and economic vulnerability of the household

K. Financial literacy (at the household level)

The first five sections are about the randomly selected person. The information in the following three sections is obtained at the household level. Section K is asked to the most informed household member only when the randomly chosen individual is not the member most knowledgeable about the finances of the household.

2.2   Other characteristics

The information was collected by in-person or telephone interviews with the individuals between November 2021 and July 2022. Priority was given to in-person interviews, but

	Average	Median	Standard deviation	Minimum	Maximum
No. of questions asked	161.3	158	17.9	113	211
No. of questions answered	160.6	157	16.9	96	211
% of questions answered	99.5	100	1.3	79.3	100
No. of questions asked (a)					
to the sample person	153	153	8	121	177
to the informed person	34.1	34	0.3	33	35
No. of questions answered (a)					
by the sample person	152	152	8.5	114	177
by the informed person	34	34	1	1	35
% of questions answered (a)					
by the sample person	99.4	100	1.1	89.8	100
by the informed person	99.8	100	2.6	3	100

SOURCE: Encuesta de Competencias Financieras, Banco de España.

a   In those 1914 cases in which two persons were interviewed.

telephone interviews were also allowed given the restrictions imposed by the COVID-19 pandemic in some locations or the health concerns of some interviewees. The interviews were conducted by interviewers with specific training and were computer-assisted. As discussed below, computer-assisted interviews allowed for the implementation of basic consistency checks. In addition, computer-assisted interviews facilitate data handling and helped interviewers navigate throughout the questionnaire.

The median time taken to complete the ECF questionnaire was around 45 minutes and 90% of the interviews took less than one hour, approximately. In 2016, those figures were 36 and 52 minutes, respectively. For 25% of the interviews, the duration was above 53 minutes. In cases where two people were asked (24.7% of the cases), the median duration of the part answered by the sample person was 46 minutes, whereas the median duration for the informed person was 14 minutes.[5] The increase in median duration relative to 2016 is concentrated in section A, in which the 2021 wave asks more details on the household's composition.

Table 1 reports some descriptive figures concerning the number of questions individuals were asked. The median number of questions asked to the sample person was 158, followed closely by the median number of questions answered, 157. The maximum and minimum number of questions asked to the sample person was 211 and 113, respectively,

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5   Nearly 47% of the interviews were conducted over the phone. The median time taken to complete the ECF questionnaire was similar for both telephone and in-person interviews, at 46 and 44 minutes, respectively. For 90% of both telephone and in-person interviews, the duration was under 61 minutes. In cases where two people were asked, the median duration of the part answered by the sample person was 46 and 45 minutes for telephone and in-person interviews, respectively. The median duration for the part of the informed person in telephone interviews was 14 minutes, whereas for in-person interviews, it was 13.

whereas in the case of questions answered, it was 211 and 96. In cases where two people were asked, the median number of questions asked and answered by the sample person was slightly lower, 153 and 152, respectively. For the informed one, the median number of questions asked and answered was equal, at 34.

3   Sample design

The National Statistics Institute (INE) drew the sample from the most recent Census updated with the Municipality Population Registry to be representative of the population of individuals aged 18-79 living in private households in Spain. It is also meant to be representative of each of the 17 regions as, to a large extent, the management of the educational system is devolved to Autonomous Communities. The ECF has a probability sample obtained through a two-stage sampling design. The first stage units are the census sections in the country, and the second stage are the people between 18 and 79 who have their main residence in the sections selected for the sample. For each region, an independent sample has been designed, as one of the survey's objectives is to provide data at this level of disaggregation. Within these regions, census sections are grouped into strata based on the municipality size to which the section belongs.

The reference period for the survey was mostly the moment of the interview, but there were exceptions. Some questions referred to the last 12 months (whether household expenses exceeded income or if the household had fallen into arrears). There were also retrospective questions about the previous two years (if the individual had acquired a financial product during that period) or the last five years (if the individual had any disagreement with a financial institution). Finally, some questions were about the interviewee's expectations on the price of the main residence during the 12 months following the survey, or expectations about the probability of losing their job if working during the next 12 months, or of finding a new job if unemployed or if employed upon the event of losing the current job.

4 Fieldwork

The fieldwork was conducted from November 2, 2021, to July 23, 2022.[6] During this period, 7,835 individuals completed an interview, although, after the validation and editing process, 71 interviews were discarded for various reasons (see Section 4 for more details). Table 2 contains the distribution of interviews by month over the fieldwork period, which shows that by the end of May 2022 87% of the total number of valid interviews were already completed.

Special efforts were devoted to specific strategies designed to minimise non-response and measurement errors such as training interviewers, gaining cooperation protocols, allowing for telephone interviews due to health issues, and analysing and validating the data.

4.1 Efforts to mitigate non-response

Each sample person received an envelope containing an introductory letter signed by the Governor of the BdE. The envelope also contained a letter from the fieldwork agency and a brochure describing the main aims of the study. The introductory letter from Banco de España was anonymous and was included in a separate envelope within the one sent by the fieldwork company to emphasize that only the fieldwork agency knew the identity and address of the potential interviewee. The letter also contained the BdE webpage address and a telephone number to reassure the legitimacy of the survey and to answer any questions. It was written in every co-official language of each region (Catalan and Spanish in Catalonia and the Balearic

Table 2

Number of interviews by month of fieldwork period

Month	No. of completed interviews	No. of valid interviews (a)	Percent (Completed)	Percent (Valid)
November	1,221	1,206	16	16
December	773	760	10	10
January	962	948	12	12
February	1,010	1,004	13	13
March	1,043	1,039	13	13
April	755	748	10	10
May	1,087	1,078	14	14
June	774	772	10	10
July	210	209	03	03
Total	7,835	7,764	100	100

SOURCE: Encuesta de Competencias Financieras, Banco de España.

a 7,835 individuals completed an interview, although after the validation and editing process, 71 interviews were discarded for various reasons, resulting in 7,764 valid interviews..

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6 Kantar Public was selected by BdE to be in charge of programming the questionnaire and conducting the data collection process.

Number of attempted contacts, by type of response

	Number of individuals	Average number of contacts	Percentage during the weekend (%)
Valid completed	7,764	5.42	8.59
Refused	7,828	6.16	10.03
Other non-response (a)	1,083	3.32	10.52
Non-contacted (b)	957	11.17	15.95
Non-eligible (c)	3,368	3.76	9.88
Total	21,000	5.58	9.77

SOURCE: Encuesta de Competencias Financieras, Banco de España.

a It includes prolonged absence, linguistic barrier, mental incapacity, and discarded after supervision and/or revision.
b It includes absent/not available, they do not answer the phone, there was not no face-to-face contact.
c It includes errors in frame, empty houses, moved to an unknown address, inaccessible, unreachable addresses, and deceased.

Islands, Basque and Spanish in the Basque Country, Galician and Spanish in Galicia and Valencian and Spanish in Valencia). Finally, local BdE branches were informed about the ongoing survey in case sample members turned to them for confirmation.

Contractually, each interviewer had to make at least five attempts to locate each sample member in person (at least once on weekends). However, the number of attempts may exceed that threshold, especially for sample members who had not been reached by the end of the fieldwork (see Table 3).

4.2   Training of interviewers

In mid-October 2021, immediately prior to the start of the fieldwork period, 74 interviewers went through a centralized three-day online training about the contents of the survey, the protocols, and the use of support material (answer cards, letters from the BdE, and an institutional gift for participants). Interviewers were divided into four groups, each trained by a member of the fieldwork company. A representative of BdE participated in each group to clarify matters that were to arise during the explanation of the questionnaire. A manual for interviewers was handed out, containing definitions of relevant variables, examples, and some classifications (like four-digit occupations).

Aside from issues general to all surveys, the protocol included training points specific to the ECF. The first training point was the relevance of reading questions exactly as posed in the questionnaire. For example, and unlike financial surveys, when asking if the interviewee has heard of some specific financial product, interviewers were instructed not to provide definitions —as the survey aims to measure knowledge of these products. Interviewers were also instructed to detect basic inconsistences and introduce explanatory comments. Such inconsistencies are especially likely to arise in a sample that is representative of individuals aged 18-79, as some respondents delegated financial matters

to other household members. For example, some individuals answered that they did not have a bank account, but subsequently mentioned that they held financial products that usually require such product. Those comments, especially common in interviews to the least financially literate respondents, proved very useful during the edition phase.

A third training point stressed the role of the interviewer in imposing discipline when measuring competences. Interviewers asked other family members to leave the room during the section measuring financial knowledge or, if that was not possible, they emphasized that no one could assist the sample member. On the other hand, interviewers were instructed to record if the interviewee used items like paper and pencil or a personal calculator in financial competence questions.

A final training point referred the coding of occupation of the interviewee. That variable was included with the double purpose of obtaining information about the socio-economic status of respondents, as well as about the tasks they conducted in their main job. In particular, respondents had to provide a verbal description of their current or main occupation, which the interviewer coded and subsequently introduced into an automatic search algorithm that proposed the corresponding four-digit occupation.[7]

By the end of the three-day training, all interviewers took a test, consisting in conducting a shortened interview where one of the training team members acted like the interviewee. Interviewers either performing poorly in that test, or coding answers incorrectly either underwent additional training before going into the fieldwork or moved to other studies. Eventually, 58 interviewers proceeded to fieldwork.

4.3 Fieldwork controls

4.3.1 Immediate follow-up after each interview

Within 48 hours after each interview had been conducted, the supervisors of the fieldwork company phoned the interviewee to check that the guidelines had been implemented. The phone supervisor asked the interviewee the recalled duration of the interview, whether the interviewer asked for the consent to be recorded, used a tablet, showed cards, or gave a small gift. In addition, the supervisor confirmed selected responses in the interview using a pre-defined script —for example, household composition and housing tenure were confirmed during phone supervision.

In specific cases when the phone supervision was not able to confirm the information reported in the interview, the fieldwork company sent another interviewer to verify in person that the interview had taken place. BdE was immediately told about any incidence.

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7   The intention was to obtain a classification of occupation up to two-digits (level at which information is publicly released) as accurate as possible. Whereas in panels it is possible to obtain proxies for lifetime resources, that information is typically harder to obtain in a cross-sectional surveys. Occupation measures lifetime resources, while it also conveys information about the type of tasks conducted on the job and the skills acquired.

4.3.2 Time and audio recording

The time duration of every question was recorded, however for the interviewer and the interviewee it was only evident that this was the case for a question on reading comprehension, where interviewers measured the time required to read and understand a written text unrelated to financial matters.

In addition, interviewers asked all interviewees their consent to be recorded. The wording of the question clarified that the purpose of the audio was to check whether the interview was following the protocol. Upon acceptance, the tablet recorded 10% of the questions, and neither the interviewer nor the interviewee knew which ones. 89% of interviewees gave their consent, and the fraction was larger for telephone interviews (92%) than for those face-to-face (86%).

Audio recording is useful for reasons beyond fieldwork control. It allows a better understanding of how interviewees receive complex questions. A first example is a question about the main occupation of the respondent. There, respondents described the tasks they did at their jobs and their level of responsibility. The interviewer then assigned a four-digit ISCO code using an automated search tool provided by National Statistics Institute. Audios were very useful in guaranteeing that interviewers were eliciting the information needed to code occupation correctly.

A second example refers to the measurement of expectations about the evolution of the house of residence price over the next year. In that question, respondents allocated 10 points to five possible price increases. Audios were again crucial to monitor if the interviewee understood the question correctly.

Duration and audio recording were important monitoring tools that allowed for the detection of anomalous interview durations or audio recording rates once we used cases in similar locations as a benchmark. Monitoring interviews during the fieldwork was crucial to provide quick feedback when errors were detected.

4.4 Refusals and non-contacted

BdE required that all individuals were visited in person by interviewers even in cases for which the interview end up being conducted by telephone. As an additional requirement, a minimum of five in-person contacts distributed among different times and days of the week had to be made for each sample member. BdE and the fieldwork company closely monitored the fieldwork process using the data on contacts entered by the interviewers in their case management application. Interviewers were instructed to register detailed information on all contacts and incidences for each individual. Overall, of the original sample of 21,000 individuals, 16,675[8] individuals were contacted during the fieldwork period (see

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8   Out of the 4,325 individuals who were not contacted, 3,368 were ineligible for the study. Certain participants were ineligible due to the age restrictions of the survey, because they were deceased by the time of the fieldwork or because they do not reside in private dwellings.

Measures of non-participation (%)

Response rate (a)	44.03
Contact rate (b)	94.57
Cooperation rate (c)	46.56
Refusal rate (d)	44.40
Non-eligibility rate (e)	16.04

SOURCE: Encuesta de Competencias Financieras, Banco de España.

a Computed as (Valid completed)/(Eligible). Eligible includes valid completed, refused, other non-response, and non-contacted.
b Computed as (Contacted)/(Eligible). Contacted includes valid completed, refused, and other non-response.
c Computed as (Valid completed)/(Contacted).
d Computed as (Refused)/(Eligible).
e Computed as (Non-eligible)/(Eligible+Non-eligible). Non-eligible cases include errors in frame, empty houses, inaccessible and unreachable addresses, or individuals that have moved to an unknown address.

Table 3). The final data on contacts showed that the average number of in-person visits was 5.58 (the median was four) and across individuals the percentage of those visits conducted during weekends was 9.77% on average. By type of response, we obtain that valid completed cases received 5.42 in-person visits on average and that 8.59% of these individuals received at least one in-person visit during weekends. Refusal cases received on average 6.16 in-person visits, whereas 10.03% of them received at least one visit during the weekend; while for other non-response they receive on average 3.32 in-person visits, 10.52% of them during the weekend. Finally, those cases that were not finally contacted personally received on average 11.17 in-person visits and 15.95% were visited at least once during the weekend.

Table 4 shows different indicators of the fieldwork result based on the final state of each contacted individual.

First, the "response rate" indicates the proportion of achieved valid completed interviews in all the eligible cases. Eligibility is defined as the sum of all those valid completed interviews, plus the refusals, other response type and the non-contacted individuals. It is 44% in our sample.

Second, the "contact rate" measures the proportion of sample members contacted by the interviewer, even though they subsequently refused to answer or they were unable to give any type of information. It is calculated by dividing the sum of all the completed valid interviews, plus the refusals, and other non-response type by the eligible population, and it is 94.6% in our sample (the ineligible population is not taken into account).

Third, the "cooperation rate" indicates the proportion of completed valid interviews achieved among those successfully contacted by an interviewer. Thus, it might be considered as a measure of the success in the implementation of gaining cooperation strategies. It is

calculated by dividing the sum of all the completed interviews by the sum of all the completed valid interviews, plus the refusals, and other forms of non-response, and it is 46.6% in our sample.

Fourth, the "refusal rate" indicates the proportion of individuals that refused to answer in all the eligible cases. It is calculated by dividing the sum of refusals by the eligible population, and it is 44.4% in our sample.

Finally, the "Non-eligibility rate" indicates the proportion of individuals over the total of 21,000 cases that are out of the sample because of errors in frame, empty houses, inaccessible and unreachable addresses, or individuals that have moved to an unknown address. It is 16% in our sample. This rate is around eight p.p. lower than the one observed in the previous wave (23.7% in 2016). Still, the number is relatively higher than that in conventional households' surveys (for instance, it was 11% in the last two waves of the Spanish Survey of Household Finances, 2017 and 2020). One reason for that relatively number of high non-eligibility in the ECF is that a particular person with a given name may be more difficult to reach than any member of a household living in a given address —as it is the case in the Spanish Survey of Household Finances. Furthermore, during the fieldwork, the fieldwork company reported an unusually high fraction of individuals no longer residing in the address specified in the register —either because they had permanently left the country or because of other reasons. For that reason, at the end of the fieldwork, further efforts were made to reverse weak refusals and locate sample members not yet located.

To further explore unit non-response, Table 5 presents estimates from a linear regression model for the individual probability of acceptance to participate in the ECF using the information available for all successfully contacted individuals (with not missing information on any control variable considered). In particular, the list of regressors includes measures of the building condition, type of area, municipality size, and region of residence of the interviewee, as well as the gender and age of the sample individual.[9] In addition, interviewers' characteristics collected during their training and selection such as gender, age, educational attainment, number of years of experience working as an interviewer, and grades received during the accreditation test are also included. We additionally control for the total number of cases assigned to each interviewer.

Regarding location characteristics, the main findings suggest that, overall, the probability of co-operating decreases with the municipality size and the type of area. With regards to the interviewee characteristics, the probability of cooperation is lower for females, and also decreases with the age of the sample individual. Regarding the interviewers, keeping the number of assigned cases constant, none of their characteristics (gender, level of education, experience) are significantly correlated with cooperation.

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9 Type of area measures the appearance of the area around the interviewee residence.

Table 5
Parameter estimates of a linear regression model for the probability of acceptance

	Coef,	Standard Error	t-ratio
Building condition			
Good	0.035	0.029	1.20
In need of some maintenance	0.022	0.032	0.69
Very poor	0.029	0.054	0.54
Type of area			
High-standing	0.026	0.071	0.36
Medium	0.003	0.074	0.04
Medium-low	-0.049	0.078	-0.63
Low	-0.098	0.082	-1.20
Size of municipality			
2,000<inhabitants=<10,000	-0.005	0.023	-0.21
10,000<inhabitants=<50,000	-0.025	0.023	-1.09
50,000<inhabitants=<100,000	-0.016	0.022	-0.73
100,000<inhabitants=<500,000	-0.011	0.029	-0.37
500,000<inhabitants=<1,000,000	0.023	0.064	0.37
inhabitants>1,000,000	0.025	0.054	0.45
Region			
Aragon	-0.019	0.087	-0.22
Asturias	0.062	0.092	0.68
Balearic Islands	0.048	0.112	0.43
Canary Islands	0.148	0.068	2.16
Cantabria	0.142	0.053	2.69
Castile-La Mancha	0.106	0.062	1.72
Castile and Leon	0.060	0.053	1.12
Catalonia	-0.067	0.065	-1.03
Valencia	-0.050	0.046	1.09
Extremadura	0.116	0.053	2.19
Galicia	0.053	0.058	0.92
Madrid	0.046	0.072	0.63
Murcia	0.079	0.077	1.02
Navarre	0.051	0.099	0.52
Basque Country	0.071	0.095	0.75
La Rioja	0.020	0.203	0.10
Interviewees' characteristics			
Female	-0.052	0.007	-7.70
Age:			
30-40	-0.075	0.014	-5.51
41-50	-0.071	0.012	-6.16
51-60	-0.097	0.013	-7.59
61-79	-0.221	0.015	-15.03

SOURCE: Encuesta de Competencias Financieras, Banco de España.
Notes: The omitted categories are: luxury building, very high-standing neighbourhood, municipalities with 2000 inhabitants or less, Andalusia, for interviewees' characteristics: male, aged less than 30, and for interviewers' characteristics, male, aged less than or equal to 35, lower secondary education or less, and hired just for the project with a temporary contract. Standard errors are clustered at the interviewer level and adjusted by heteroscedasticity. The sample excludes non-eligible cases.

Table 5
Parameter estimates of a linear regression model for the probability of acceptance (cont'd)

	Coef,	Standard Error	t-ratio
Interviewers' characteristics			
Female	-0.054	0.034	-1.60
Age:			
36-45	0.012	0.075	0.16
46-55	-0.013	0.068	-0.19
56-65	-0.084	0.092	-0.91
Number of assigned cases	0.000	0.000	-4.62
Standardised final grade at training test	0.023	0.017	1.31
Experience as interviewer:			
Years of experience	-0.005	0.007	-0.64
Years of experience squared	0.000	0.000	0.85
Highest level of education:			
Upper secondary	0.026	0.053	0.49
Vocational training	-0.029	0.055	-0.53
University	-0.003	0.051	-0.06
Number of observations	16643 of which 7764 are valid interviews (46,7%)		
R2	0.067		

SOURCE: Encuesta de Competencias Financieras, Banco de España.
Notes: The omitted categories are: luxury building, very high-standing neighbourhood, municipalities with 2000 inhabitants or less, Andalusia, for interviewees' characteristics: male, aged less than 30, and for interviewers' characteristics, male, aged less than or equal to 35, lower secondary education or less, and hired just for the project with a temporary contract. Standard errors are clustered at the interviewer level and adjusted by heteroscedasticity. The sample excludes non-eligible cases.

4.5   Interviewer incentives and production

In addition to the training, selection and supervision of interviewers, the reward system for interviewers represents another important aspect that should be considered when trying to improve productivity and data quality. In particular, the optimal strategy would be to design an interviewer pay system not only based on response rates and productivity indicators but also on the quality of the data.

Payment per completed case, as opposed to fixed weekly/monthly pay, is the system used by most survey agencies in Spain. However, given the complexity of the study, it was deemed important for interviewers to earn some fixed pay, despite the fact that such a scheme requires a closer monitoring of personnel by the survey agency. Additionally, and to reward production, the interviewers earned a bonus per interview completed, which varied according to the number of completed interviews they achieved and depended on whether they interviewed only the sample member or this individual plus another informed person. Interviewers were also aware that they were closely monitored, and their interviews were fully reviewed and supervised.

In the ECF 2021, 58 interviewers completed at least one valid interview. The distribution of completed cases among them was as follows: only one interviewer completed

Interviewers' characteristics	Percentage (%)
Female	74.14
Male	25.86
Age	
≤35	13.79
36-45	25.86
46-55	34.48
56-65	25.86
Education	
Lower secondary education or less (Inferior a bachillerato)	8.62
Upper secondary education (Bachillerato)	29.31
Vocational training (Formación Profesional)	18.97
College education (Estudios universitarios)	43.10
Experience as interviewer	
Less than a year	13.79
1 to 5 years	12.07
More than 5 years	74.14
# of interviewers with at least one valid interview:	58

SOURCE: Encuesta de Competencias Financieras, Banco de España.

fewer than 10, 18 completed between 10 and 49, 11 completed between 50 and 149, 170 completed between 150 and 249, and 11 interviewers completed more than 250. The median number of interviews completed per interviewer was 137 (the mean was 133.9). Fifteen interviewers completed 51.3% of the cases in the final sample.

Table 6 summarises the main characteristics of those 58 interviewers. Specifically, 74.1% of them were females, 60.3% were aged between 36 and 55, 43.1% had tertiary education, and 74.1% had been working as interviewers for more than five years.

4.6 Control and validation

The questionnaire was programmed to detect basic inconsistencies between questions. As already mentioned, those inconsistencies are likely because some individuals are unsure about their own financial situation. The program allowed re-routing in case errors were detected. For example, some individuals had financed high expenses using a personal loan despite having reported previously that no loan was contracted during the last two years. The program automatically re-asked the questions that were missing —in this case, the source of information used to acquire the loan.

Aside from those checks, there was an extensive validation of interviews during fieldwork, with the aim of detecting errors and providing feedback to interviewers as soon as possible. To that end, the personnel from BdE had provided a one-day training course to five

editors in the fieldwork company that kept validating interviews during the nine months that fieldwork lasted. The validation was done via a Web-based platform that permitted access to each (properly anonymized) interview. The fieldwork company and BdE could both access each interview, but not at the same time. The platform included fields that allowed three rounds of interactions about each case.

The protocol was the following. Once finished, each interview was reviewed by the fieldwork company, which could recommend changes in the data through the platform, re-contacting the interviewed household or, in extreme cases, completely redoing (parts of) the interview. In all those cases, the BdE team reviewed the proposals of the fieldwork company and decided on a case-by-case basis. On the other hand, the BdE team also randomly reviewed interviews marked as correct by the fieldwork company to make sure that all interviewers (including those not initially flagged by the fieldwork company) were receiving feedback about their performance from the Banco de España team.

In cases where some answers were contradictory with previous ones, and after the approval of BdE, the fieldwork company re-contacted the interviewee by phone. The most common reasons for re-contacting an individual were doubts about his or her degree of financial inclusion. For example, an individual could report not having a bank account but receiving public pension income. As most of these payments are made through bank accounts, there was a reasonable doubt about whether the individual held the financial product. Another common case for re-contact was that of individuals reporting a collateralized loan but not real estate property whatsoever. Finally, inconsistencies about household composition —because the one reported in the interview differed from the one in the phone supervision— or about the labour market status of the individual always led to a phone re-contact.

Finally, in a handful of cases, the BdE decided that the interview had to be repeated because of deficiencies in measuring financial competences or strong doubts if it had really taken place.[10]

As a result of this validation process, the fieldwork company provided immediate feedback to each interviewer, either positive or providing suggestions for improvement. That feedback was especially important during the first weeks of fieldwork to avoid the accumulation of errors.

The main validation tools were the duration of questions, geo-location of interviews and, especially, audios. Durations served as a basic tool for detecting if some interviewers shortened or read too quickly important questions. On the other hand, audios turned out to play an important role. Firstly, they helped in detecting deviations from the protocol, like imprecise wording or non-neutral attitude of the interviewer —especially relevant in the

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10 In total, all interviews were reviewed by the fieldwork company and about 48% were reviewed additionally by the BdE team.

Sections of financial literacy. Secondly, knowing that the interview was recorded helped to discipline the interviewer.

4.7 The final sample

Once interviews had been screened for quality, criteria were established to discard interviews because of insufficient information or doubts about its implementation. The total number of valid interviews completed was 7,764 after eliminating 71 interviews. In nearly one-third of the cases, interviews were discarded due to uncertainties about the protocols followed. This includes technical issues, suspicious timings, and inconsistencies or contradictions discovered during the review process. The majority of discarded interviews (35.2%) were eliminated because of refusals, either after completing the interview or during the interview, with participants choosing to stop collaborating and dropping out in the early stages. Other reasons for invalidating complete interviews included respondents who did not currently reside in Spain (14.1%), language barriers between the interviewer and interviewee (2.8%), and, finally, in 12.7% of the deleted cases, a strong influence from a third person, invalidating the responses given.

Furthermore, in 2,065 cases, the individual reported not to be the most knowledgeable person about the household financial matters. In more than 92% of those cases, two persons were interviewed (the sample person and one informed person).

5 Correcting for unit non-response and weights

Cross-sectional weights computed by the National Statistics Institute are provided as part of the data. In this section, we describe the construction of these weights.

The basic weight for each individual is the inverse of the probability of being included in the sample (as given by the sampling design), subsequently adjusted for non-response within the cells defined by the various sampling frame variables. This is done by multiplying the initial weight by the inverse of the response probability within the stratum. With the objective of improving the estimator obtained in the previous steps, another adjustment is done. The population used at the time of sample selection is updated to the population at the time of the survey (specifically at the approximate midpoint of the survey period, on January 1, 2022).

The resulting weights were adjusted using the Calmar procedure to conform to the most recent structure of the population according to gender, age and education at the Autonomous Community level, based on the 2021 Census (and the Padrón Continuo, a continuously updated municipal population register).

6 Item non-response and imputation

6.1 Item non-response

Item non-response occurs when an individual agrees to participate in the survey but fails to respond to one or more questions. Together with unit non-response, item non-response is an inherent characteristic of surveys. Moreover, they are closely related. Indeed, item non-response will partly depend on the stringency of the conditions that have to be met for an interview to be declared valid (in terms of the number of valid answers), which in turn affects unit non-response rates. As already mentioned in Section 4, in the case of ECF, the contract conditions with the field agency did not set a fixed rule with a minimum number of valid answers below which an interview would be considered invalid, as this was established once the revisions had been conducted.

Regarding the main patterns of item non-response in the ECF 2021, in many instances, "Do not know" (DK) is a very informative response for questions on knowledge or holding of financial products. A more appropriate definition of non-response would focus on "Does not answer" (NA) type of responses, whose prevalence is testimonial in questions about having heard of, holding or having recently acquired a particular financial product. Similarly, the vast majority of individuals answered questions about demographics, competences (either financial or general), attitudes or expectations.

In contrast, individuals had more difficulty in answering questions on monetary amounts. In anticipation of such concerns, interviewers were instructed to collect information on ranges when the respondent was not able or not willing to provide point monetary values. Furthermore, as some of those questions were recorded, ranges were also introduced during revision. In this case, Table 7 shows the percentage of "Do not know"/ "No answer" (DK/NA) in questions involving monetary quantities. About 5.4% of individuals did not provide information about their yearly household income. Item non-response is 5.2% in the case of food expenditure and about 2% when considering expenses in education. In the Section on housing, the fraction of indebted owners not answering questions about the mortgage instalments or loan-to-value at purchase is about 8% and 10%, respectively, a percentage that is lower in the question to renters about the monthly rent, around 3.5%.

6.2 Imputation methods

Imputation is a procedure to provide users with a complete dataset by generating a distribution of m possible values for each missing answer, where each of the values is drawn from the distribution of non-missing information of similar individuals (plus a perturbation term that reflects the uncertainty in the estimation).

As already mentioned, the ECF is a survey that elicits information on what individuals know about their own financial situation as well as about their financial competences. Hence, DK/NA responses do not reflect an incomplete dataset, as they are just as informative as complete information on whether the individual holds a particular asset, say. To reiterate,

the ECF is not a survey designed to capture the financial situation of individuals in detail, so providing a distribution of possible values for each DK/NA answer is not strictly needed.

However, many users may be interested in conducting analyses of the distribution of financial competences by household income or to relate quantitative measures of economic fragility to attitudes towards finance, without having to adjust for the fact that not all respondents reported their income or answered all expenditure questions.[11]

For those reasons, a small set of quantitative questions that the respondent was not able or willing to answer was imputed. In particular, the variables that were imputed were those shown in Table 7, and include the monthly rent (for individuals who answered that their household rents the dwelling), the monthly mortgage instalment and the loan-to-value ratio at purchase (for homeowners with an outstanding mortgage loan and those who purchased their home using a loan, respectively), as well as household expenses in food and education. Similarly, household income, asked in six brackets, was imputed as well. We note that imputation was done exclusively for cases when it was certain that the individual should have answered the question. That is, m imputations are made for the rental amount paid by renters, but no attempt was done to impute the rental amount if home ownership is not renting (those values are left as "not applicable", following the convention of the survey).

6.2.1 Choice of imputation method

The imputation methods used in the ECF rely on the missing at random (MAR) assumption, as defined in Rubin (1976) and in Little and Rubin (1987). This requires that the missing values behave like a random sample of all values but within groups defined by observed data. The goodness of this assumption will depend on the availability of observed variables which could plausibly explain missingness and conditional upon which the analysis can be conducted.

The idea behind multiple imputation is that for each missing value, several imputed values (say m) are provided instead of just one. Such a multiply imputed data set gives rise to m complete data sets. The way to use the multiply imputed data set is to first analyse the m imputed datasets separately using complete data tools, and to combine the results in a second step.[12]

All the ECF imputations are based on random regression type models, performed using STATA Multiple Imputation programs. In a given iteration, the variables are imputed sequentially, and an imputed variable is taken as 'observed' for subsequent imputations in the sequence and in the next iterations (but subject to updating). There are three types of imputations in ECF: continuous (for example, expenditure in food), binary (whether

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11 The advantage of data producers providing imputed values, rather than leaving the task to users, is that the former have access to restricted-use variables with explanatory power in explaining household income or expenses, such as detailed geographical location.

12 For further information, see XXX (añadir vínculo a la user guide)

Table 7

Reporting rates (%) of various items, unweighted sample

	Have item		Value for those having the item				
	Yes	Un-known	Exact Point value	Own Interval (a)	DK	NA	NP/NF (b)
Monthly payment, loan on main residence	31.17	0.73	90.50	1.49	5.66	2.31	0.04
Loan to value for own house purchase	28.87	0.30	88.27	1.25	9.14	0.80	0.54
Rent main residence	18.30	0.24	95.21	1.20	1.27	2.18	0.14
Household income	100.00	0.00	93.79	0.66	2.56	2.81	0.18
Food expenditure	100.00	0.00	90.48	4.15	4.92	0.31	0.14
Education expenditure (c)	100.00	0.00	95.25	2.64	1.80	0.15	0.15

SOURCE: Encuesta de Competencias Financieras, Banco de España.

a Own interval: it refers to cases where the individual does not disclose the exact value but provides lower or upper bounds.
b NP/NF: not plausible/not formulated.
c Exact point value for education expenditure includes answers of zero expenditure.

an individual had spent anything on education during the last 12 months) or multinomial (income, provided in six brackets, or parts of the distribution of the loan-to-value, that exhibits bunching at particular thresholds).

For continuous variables, the imputations are randomizations from regression predictions. As shown in Table 7, respondent-provided brackets were available for all questions, and, in some cases, the interviewer or reviewer collected both the single point and an interval as an answer. In those cases, the estimated likelihood function included terms modelling the interval where the bracketed response lies as a function of the covariates included[13].

An important feature of the STATA Multivariate Imputation by Chained Equations (MICE) program is that it allows specifying all the variables that one would like to use as regressors. To fix ideas, assume income has predictive power in explaining the loan-to-value. However, as shown in Table 7, 5.6% of respondents do not provide a bracket for the household income. The first iteration predicting the loan-to-value (say) uses the coefficients from a regression-based only on cases where the dependent variable is complete, excluding from the set of regressors any imputed variable (like income). However, in subsequent iterations the model uses again cases where the dependent variable is complete, but now including the imputed values of the relevant missing regressors (income, in the example above). STATA does not use any convergence measure to determine when convergence is achieved. Hence, a set of 10 iterations was used, and five different values were produced. To highlight the fact that non-response may be an interesting outcome in the ECF all imputations are provided as a separate file, along with indicators of whether each value is imputed or if it comes from a complete observation.

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13 Whenever we have a point-in-value, and when performing the imputation, we replace the given upper and lower bounds by that exact number.

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