

**THE SPANISH SURVEY OF
HOUSEHOLD FINANCES (EFF):
DESCRIPTION AND METHODS
OF THE 2008 WAVE**

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DG ECONOMICS, RESEARCH, AND STATISTICS

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Abstract

This paper describes the methods of the third wave of the Spanish Survey of Household Finances (EFF2008), paying special attention to the innovations relative to the previous waves. The EFF2008 was designed to give continuity to the information on household finances collected through the EFF2002 and the EFF2005. A desirable characteristic present in all three waves is the oversampling of wealthy households. This is achieved on the basis of the wealth tax through a blind system of collaboration between the National Statistics Institute and the Tax Office which preserves stringent tax confidentiality. An additional important characteristic of the EFF is that the second and third waves have a full panel component. Further, a refreshment sample by wealth stratum has been incorporated in those two waves to preserve cross-sectional representativity and overall sample size. The EFF is the only statistical source in Spain that allows the linking of incomes, assets, debts, and consumption at the household level. The usefulness of the information contained in a survey such as the EFF has led to the decision from the European system of central banks to conduct a household wealth survey in all euro area countries following a methodology similar to the EFF. Therefore, the EFF2008 will allow harmonized comparisons with the new European wealth surveys.

Keywords: wealth survey, oversampling of the rich, panel, refreshment sample, imputation.

JEL classification: C81, D31.

Resumen

Este documento describe los métodos de la tercera ola de la Encuesta Financiera de las Familias (EFF2008), prestando atención especial a los cambios introducidos respecto a las olas anteriores. La EFF2008 fue diseñada para dar continuidad a la información sobre finanzas de los hogares recogida a través de la EFF2002 y la EFF2005. Una característica deseable presente en las tres olas es el sobre muestreo de los hogares más ricos. Este sobre muestreo se consigue a partir del Impuesto del Patrimonio a través de un mecanismo de colaboración ciego entre el Instituto Nacional de Estadística y la Agencia Tributaria que respeta estrictos requisitos de confidencialidad. Una característica adicional importante de la EFF es que la segunda y la tercera ola tienen un componente de panel completo. Además, se ha incorporado una muestra de refresco por estratos de riqueza en esas dos olas para mantener la representatividad de corte transversal y el tamaño muestral total. La EFF es la única fuente estadística en España que permite relacionar las rentas, los activos, las deudas y el gasto de cada unidad familiar. La utilidad de la información recogida en una encuesta como la EFF ha llevado a la decisión por parte del sistema europeo de bancos centrales a realizar una encuesta de riqueza a los hogares en todos los países del área del euro siguiendo una metodología similar a la EFF. Por lo tanto, la EFF2008 permitirá comparaciones armonizadas con las nuevas encuestas de riqueza europeas.

Palabras claves: encuesta de riqueza, sobre muestreo de los hogares más ricos, panel, muestra de refresco, imputación.

Códigos JEL: C81, D31.

1 Introduction

The Spanish Survey of Household Finances (EFF) is a survey conducted by the Banco de España that collects information about income, assets, debts, and consumption at the household level. The third wave of the EFF, referring to end of the first quarter of 2009, was conducted to bring up to date the information on household finances first collected in 2002 and then in 2005. It contains the same type of information approximately three years later and hence allows the changes that have occurred since then to be assessed. It also provides an updated representative picture of the structure of household assets and debts at the household level¹. Moreover, since part of the EFF sample is a panel, the combined samples provide information on the distribution of individual changes between periods.

A desirable characteristic of the EFF present in all waves to date is the oversampling of wealthy households. The distribution of wealth is heavily skewed and moreover some types of assets are held by only a small fraction of the population. Therefore, unless one is prepared to collect very large samples, oversampling is important to achieve not only representativeness of the population but also of aggregate wealth. Furthermore, it is necessary to enable the study of financial behaviour at the top of the wealth distribution.

Oversampling in the EFF is achieved thanks to the collaboration of the Tax Office and the National Statistics Institute on the basis of individual wealth tax records, while preserving stringent tax confidentiality.

An additional important characteristic of the EFF is that the second and third waves have a full panel component. Having a panel allows the study of transitions and to account for heterogeneity among households. This was judged important both for descriptive and research purposes. On the other hand, a complete fresh cross-section would be better for capturing the structure of the population at the time of the survey. The compromise adopted was to try to re-interview all the previous wave respondents and, additionally, to incorporate a refreshment sample to preserve cross-sectional representativity and overall sample size.

The usefulness of the information contained in a survey such as the EFF has led to the decision from the European system of central banks to conduct a household wealth survey in all euro area countries following a methodology similar to the EFF. Therefore, the EFF2008 will allow comparisons with the new harmonised European wealth surveys, known as “Household Finance and Consumption Survey” (HFCS).

This paper describes the main features of the methods of the EFF2008. Section 2 briefly outlines the questionnaire. Section 3 describes the sample design. Section 4 presents the fieldwork and an analysis of unit non-response. Section 5 describes the final sample, in particular the panel component and the amount of oversampling. Section 6 discusses the calculation of cross-sectional and longitudinal weights. Lastly, Section 7 presents an analysis of item non-response and concludes with some brief comments on imputation issues.

1. The fourth wave is foreseen to take place at the end of 2011.

2 The questionnaire

2.1 Contents

The questionnaire is fundamentally the same as in the previous waves with some minor changes detailed below. We list here its main sections for completeness:

1. Demographics²
2. Real assets and their associated debts
3. Other debts
4. Financial assets
5. Pension plans and insurances
6. Labour market situation and labour income (for all household members)
7. Non-labour income in the previous calendar year (2007)
8. Means of payment
9. Consumption and savings

This questionnaire was presented as a 'Computer Assisted Personal Interview' (CAPI) in all waves. Compared to paper questionnaires the use of CAPI facilitates the task of the interviewers in what is a complex questionnaire, allows some basic checks for errors at the interview stage, and enables automatic conversion from pesetas to euros and vice versa.

The median time taken to complete the EFF2008 questionnaire was around 50 minutes and 90% of the interviews took less than one and a half hour. For 1% of the interviews the duration was above 229 minutes³.

Table 1 reports some figures concerning the number of questions put to households. The number of questions asked is similar with that for previous EFF's, with 14 (13) additional questions at the mean (median) due to a more explicit determination of the listing of household members.

2.2 Changes with respect to the 2005 wave

In order to allow full comparability with the new European wealth surveys (i.e. with the HFCS) some small changes with respect to the 2005 version of the questionnaire have been introduced. First, a more explicit grid of questions determining the members of the sample households has been introduced. These questions contain unified criteria across countries intended to obtain a comparable definition of household. However, they often turned out to be burdensome for the respondents. Second, equity in privately held businesses is now determined independently from self-employment status. It is possible that this approach uncovers more private businesses than those detected in previous waves. Third, at the end of the asset sections we have introduced questions about ownership of managed accounts regarding assets not included in the specific asset categories. Lastly, we have added some additional questions on inheritances received.

2. The demographic questions were worded so as to be comparable with similar questions in other household surveys carried out by the National Statistics Institute, the EU-SILC in particular.

3. For such cases we tried to confirm the length with the interviewer since some originally very lengthy interview times were due to the interviewer forgetting to close the CAPI at the end of the interview and realizing this only later on.

Completing the process initiated in the 2005 wave, all euro questions can be answered in intervals (self-reported ranges or choosing a predefined range from a list) when the respondent is unable or unwilling to provide a point estimate⁴.

Additionally, in the EFF2008, interviewers may introduce comments that may help improve the quality of the data at any stage of the interview. This has proved very useful during editing by the Banco de España to correct mistakes or understand particular situations.

4. A self-reported range is defined by a lower and/or upper bound provided by the household. The possibility of having successive open range questions was not considered since we felt it could alienate respondents.

3 Sample design

A fundamental characteristic of the EFF sample is that there is oversampling of the wealthy. This was judged important when designing the EFF since typically a small fraction of the population holds a large share of household wealth and, furthermore, many financial assets are held by only a small fraction of the population. Therefore, a standard random sample would not contain enough observations for many key analyses of wealth microdata. Thanks to the collaboration of the National Statistics Institute and the Tax Office, we were able to achieve a significant oversampling of the wealthy in the EFF.

In this third wave of the EFF we had, like in the second wave, two objectives. Firstly, we aimed to achieve a sample with the same overall characteristics as in the EFF2002, namely a sample representative of the current population with oversampling of wealthy households following the same criteria as in the first wave. Secondly, we wanted a part of this sample to be a panel by re-interviewing the 5,962 households that took part in the second wave. The panel component provides statistical information on transitions between states and individual changes in magnitudes. Moreover, it facilitates the study of causal effects.

To achieve this goal a refreshment sample by wealth stratum was designed to supplement the panel component up to a total sample size of 7,000 households and to ensure that, when used jointly with the panel, the overall sample would fulfil representativity and oversampling requirements. As a preliminary step for the design of the refreshment component, the wealth (and income) tax information of the panel sample was updated.

3.1 Basis for oversampling of the wealthy

In Spain there is a wealth tax ('Impuesto sobre el Patrimonio') and the EFF oversampling is based on individual wealth tax file information. The people liable to wealth tax in Spain in 2006 (which was the tax year used in selecting the 2008 sample) were those with taxable wealth over €108,000. In 2006 around one million individuals (corresponding to approximately 728,000 households) filed a wealth tax return.

The choice of wealth strata was based on the percentile distribution of households filing a wealth tax return. We define eight strata which were oversampled progressively at higher rates. The intervals used for the EFF2002 and the EFF2005 were the same but we updated them for the EFF2008 (see Table 2 for the definition of the new intervals). Strata 2 and 3 capture slightly less than half of the distribution of taxable wealth. Strata 4, 5 and 6 capture the third and fourth quartiles except for the last two percentiles, which are represented by the last two strata.

In Navarre and the Basque Country there was no oversampling of the wealthy because the national Tax Office does not hold the personal tax file information for these regions.

3.2 Sampling design

The population frame for the sample was the Population Register corresponding to January 2008⁵, in which the units are households as defined by their postal address. With this

5. This is usually obtained the following March/April.

information sent by the National Statistics Institute to the Tax Office, the latter constructed for each address three variables based on information drawn from both wealth and income tax returns. These data were the starting point for the sampling.

The first variable, the wealth stratum indicator, is based on the total declared taxable wealth of the household, which was obtained by adding up the returns of all its members when applicable. The second, for those filing income tax but not wealth tax returns, is a variable indicating the quartile in the national taxable income distribution to which the household belongs. Finally, information on the per capita income of the household was also added. The income variables were helpful in the selection of sample replacements (as we shall see below), and to ensure that households from all income levels were selected in the sample. The latter was obtained by using systematic sampling with random start in a properly ordered data frame. Furthermore, the income quartile indicator was used to correct for non-response in large cities. The tax information available at the time was related to 2006. This entailed some limited mismatch between the two sources.

The sampling design differed depending on municipality size. For all provincial capitals (there are 52 of them) and municipalities over 100,000 inhabitants, fresh oversampling was designed to supplement the panel sample by wealth stratum taking into account the updated wealth strata of panel households. Within each of the eight wealth strata the new sampling was random, closely following the sampling procedure used in the first and second waves for municipalities of that size.

For municipalities with 100,000 or fewer inhabitants there was no fresh oversampling. The sampling was a two stage cluster design in which the primary sampling units (PSUs or 'secciones censales') were the same as those used in the first and second waves⁶. Within each PSU, households were randomly selected to supplement the panel households belonging to it, up to an overall number of seven households per PSU. In the first wave oversampling in these type of municipalities was achieved only for PSUs with ten or more wealth tax filers. For these PSUs four wealth tax filers and four non-wealth tax filers had been drawn.

Sampling for Navarre and the Basque Country was similar to that for the group of smaller municipalities but with a finer stratification by municipality size for small municipalities. Specifically, the panel sample was supplemented up to a total of seven households within each of the PSUs used in the previous two waves.

3.3 Confidentiality guarantees

The Tax Office is subject to very stringent confidentiality requirements and cannot release any personal tax information (not even in the form of ranges). To overcome the problem and enable wealth tax oversampling while preserving confidentiality, the National Tax Office volunteered to actually do the random sample selection itself as instructed by the Banco de España and the National Statistics Institute.

3.4 Replacements

To try and preserve as much as possible the oversampling scheme devised for large municipalities and all provincial capitals, tightly controlled replacements were chosen⁷. The

6. In the first wave the PSUs were selected with a probability proportional to their population.

7. In the first wave controlled replacements were also chosen in small municipalities in the case of PSUs with 10 or more wealth tax filers.

use of controlled replacements is similar to post-stratification and weight adjustments within cells when data collection is completed. An important reason in our case for having controlled replacements was the fact that we do not have any indication of the wealth stratum to which the sample households belong, thus ruling out the possibility of a 'directed' effort during the field work should it be found that the response rate of certain strata was particularly low.

In particular, in large cities and provincial capitals up to four replacements were provided for each original household in the sample that would serve as replacements of that household only. These replacements were the two households immediately before and the two immediately after the household in a list ranked by income quartile (for non-filers of wealth tax), wealth stratum, and per capita household income. Replacements had to belong to the same income quartile (for non-filers of wealth tax returns) or the same wealth stratum as the sample household. This was done within municipalities to keep replacements geographically not too distant from the original sample household. In the case of smaller municipalities, Navarre, and the Basque country, a more standard scheme of a pool of eight replacement households as potential substitutes for eight sample households (within the same PSU) was adopted.

4 Fieldwork

The fieldwork lasted just over 8 months, from approximately end November 2008 to July 2009^{8,9}. During that time 11,782 households were contacted¹⁰. Given the distribution of interviews over the fieldwork period, the reference period for the EFF2008 is end of March 2009, when half of the complete valid interviews had been collected.

The programming of the CAPI questionnaire and the fieldwork were contracted out to NORC (Chicago University). This allowed the EFF2008 to benefit from NORC experience in conducting the Survey of Consumer Finances (SCF) in the US on behalf of the Board of Governors of the Federal Reserve System since 1993. In turn, NORC hired a local fieldwork agency (Metroscopia) to have access to local interviewers. The local company worked under NORC close supervision.

The fieldwork for wealth and income surveys is particularly demanding because of high unit non-response due to the nature and difficulty of the questions asked.

4.1 Efforts to reduce non-response

A pack with introductory letters from the Governor of the Banco de España and from the fieldwork agency, and a brochure was sent by the fieldwork company to the sample households. A website and telephone numbers were also provided for households to confirm the legitimacy of the survey and answer questions they might have. The Banco de España local branches were notified of the survey since people often turned to them for confirmation.

When visiting households, interviewers took with them some additional documentation to illustrate the way the data collected were used. In particular they would provide the household with a copy of the Banco de España Economic Bulletin article describing the results of the EFF2005 as well as a selection of articles that appeared in a variety of newspapers following the publication of the EFF2005 results. Finally, a token gift was offered to participating families and another to panel households even if they did not agree to collaborate in the third wave.

4.2 Training the interviewers

To minimise non-response and ensure good quality data, a proper training of interviewers is of paramount importance. For the EFF2008 there was one centralized training during the third week of November, just prior to the start of data collection. This took place in a hotel around 100 km outside Madrid to try and ensure full-time commitment to this task. First, from Monday to Wednesday, the 14 field managers were given a two and a half days briefing. Following this, from Thursday to Sunday, 80 interviewers had a three and a half days long training. During these sessions the questionnaire was analysed in detail by going through hypothetical cases and getting familiar with this particular CAPI application. Various representatives of the Banco de España participated in these sessions to explain the importance and difficulty of the project and to clarify any matters arising during the explanation of the questionnaire. Arguments to reduce non-cooperation were also discussed as well as appropriate ways of approaching households. Prior to the training all interviewers

8. Some delay with the programming of the CAPI questionnaire prevented a preferable early October start.

9. For the number of interviews completed by month of fieldwork see Table 3.

10. See Table 4 for more details.

were sent material to familiarize themselves with the study. At the end of the training, all interviewers had to conduct a mock interview with a predefined script and an exercise in gaining cooperation from households.

Three months into the fieldwork additional interviewers were recruited to replace those that had dropped-out. In order to train them, three additional trainings took place in Barcelona, Madrid, and Seville. The contents and length of these briefings was similar to the main one conducted before the start of the fieldwork.

4.3 Interviewer incentives and production

In the 2008 wave interviewers were paid according to the number of interviews they completed, with some nonlinearities to encourage production¹¹. Payment per completed case as opposed to fix weekly/monthly pay is the scheme used by most fieldwork companies in Spain¹².

The median number of interviews completed per interviewer was 55 (the mean was 71) with six interviewers completing over 200 cases. The most productive interviewers completed 50% of the cases in the final sample.

4.4 Tracing panel households

All addresses of households that participated in the EFF2005 were visited. A household was considered a panel household if at least one of its 2008 members was a member of a participating 2005 household. Sometimes the panel status of the people currently living at the panel addresses was not straightforward from current household members' recollection because members involved in answering in the 2005 wave had left or died. During the visit, and in order to establish the panel nature of current members (and match them to the 2005 members), some automatic comparisons of demographic information about household members between the two waves was performed. This included first name, gender and month and year of birth. A thorough inspection of the panel status of households, their members, and their matching between waves was later carried out by the Banco de España, as reported below.

A fraction of households interviewed for the EFF2005 were not found at their 2005 address. Some of them had moved but for others there seemed to be a mismatch between addresses in the two waves. Efforts were made to trace and re-interview households that participated in the EFF2005 but had moved since. Overall, 62 of them were interviewed at a new address.

4.5 Never at home and Refusals

As seen in Table 5, aggregate co-operation rates [defined as completed/(completed+refused)]¹³ for the whole sample mask significant differences between the panel and the non-panel components¹⁴. Overall, the co-operation rate of the panel component is 76.6% compared to 44.8% for non-panel. These differences are large in all strata. The smallest differences occur for Navarre and the Basque Country (approximately 20.4 percentage points difference) and the differences are larger for the highest wealth stratum (45.2 percentage points difference).

11. There was also a small retribution for each visit that did not end up with an interview.

12. In 2002 interviewers were also paid per completed interviews. In 2005 payment was established according to a (nonlinear) per completed interviews scheme but with a minimum pay per month of work.

13. Refusals include straight refusals (3,794), deceased household head (20), language problem (21), and ill/disabled (123).

14. The figures in Table 5 were provided by the Tax Office due to confidentiality restrictions.

Furthermore, while there is a clear non-random component in these rates for the non-panel sample (they decrease as we move up the wealth strata from 50.5% to 27%), this is not the case for the panel sample.

There is an improvement in the co-operation rates of the non-panel component (44.8% overall) compared to those obtained in the EFF2005 (38.6% overall). Moreover, this is true for practically all strata. These higher co-operation rates in 2008 may be due to closer monitoring of the interviewers and constant feedback on their work both from NORC/Metroscopia management and from the Banco de España.

The number of households for which the interviewer was unable to find anybody at home after five attempted visits (having confirmed that the address corresponds to the household) is not large (5.4% of total attempted contacts) and, higher for the non-panel part as compared to the panel. By strata, never at home rates are significantly higher for the top stratum and similar in both the panel and non-panel parts. Finally, comparison of the EFF2008 and EFF2005 shows that a substantially smaller number of addresses were visited without finding anybody at their main residence in 2008 (637 in 2008 compared to 1602 in 2005).

As a descriptive device, Table 6 presents logit parameter estimates of the accepted vs. refused¹⁵ decision to participate in the EFF2008, along with some information at our disposal about non-participating households. We separate the panel and the non-panel samples given the very large differences in unconditional co-operation rates just described above. The most noteworthy feature that emerges is that both for panel and non-panel households the probability of co-operating diminishes with municipality size although this differences are less significant in the case of panel households. As for other variables, the building condition and type of area variables recorded by the interviewer do not provide very telling results. Regarding differences across regions, households in Catalonia and Cantabria are significantly less inclined to co-operate as compared to the rest, both in panel and in non-panel households. In contrast, households in Murcia are the ones with the higher probability of cooperation.

4.6 Control and validation

The data from the completed interviews were revised in detail by the team at the Banco de España to uncover potential inconsistencies and implausible values. This process was undertaken from the beginning of the fieldwork to identify possible misunderstandings and bad practices from particular interviewers and trying to correct them through constant feed-back on their work. During the process of revising the data, the EFF team looked at all completed questionnaires. When additional information or clarification was considered important, the fieldwork company recontacted the household. The trade-off between getting additional information and bothering households was taken into account by the EFF team for each individual case. Additional information was obtained for about 800 households. The most common errors found in the recorded answers were: (i) euro vs. pesetas, (ii) incorrect interpretation of particular questions by some interviewers, and (iii) monthly vs. annual quantities.

The EFF team at the Banco de España also examined the completed interviews for overall individual consistency. As a result of this process it was decided to discard: (i)

¹⁵. We report estimates for the acceptance vs. straight refusal decision. The results do not change if we include among refusals non-response because of language problems, deceased, and ill/disabled.

completed interviews where no income information was provided (neither labour income nor asset income nor assistance income of any kind), except in the case of panel households with a high percentage of answered euro questions, and (ii) interviews where less than 30% of the questions in euro were answered, unless that percentage increased substantially when answers provided in range form were taken into account. These conditions emerged as natural cut-off points after having reviewed the informational content of the completed interviews and are in line with those adopted for previous waves. The final number of discarded interviews is shown in Table 4.

Special care was also taken to ensure the actual panel status of households. During the editing process all panel households were analysed to check the matching of panel members across the 2005 and 2008 waves that had been done automatically during the interview (as explained above).

5 The final sample

5.1 Panel and refreshment in the final sample

The total number of valid completed interviews is 6,197¹⁶. There are 3,967 households in the EFF2008 sample (64%) that had also participated in the EFF2005, i.e. 66.5% of the EFF2005 sample¹⁷. Among the 3,967 panel households 1,925 participate since 2002 and 2,042 since 2005. Table 7 shows the changes in composition of the panel households between the two waves. In particular, 69.2% of them (i.e. 2,746) have neither gained nor lost members, 7% (277) have one additional member, and 18.9% (749) have lost one member. The number of individual household members interviewed in the two waves is 9,959.

There are two different components in the non-panel part of the sample, namely 1,317 households (i.e. 21.3% of the sample) that are refreshment households and 913 households (14.7% of the sample) that replace non-cooperating EFF2005 households in large municipalities where replacements are tightly tied to the characteristics of the households they replace.

5.2 Degree of oversampling in the final sample

Around 28% of the sample¹⁸ are wealth tax filers while in the population the proportion of household that filed a wealth tax return is around 4.7%.

Regarding actual net worth in the EFF data, Table 8 presents oversampling rates in various parts of the distribution for the three waves¹⁹. The oversampling rate is defined as the ratio of the number of observations actually in the sample for a specific percentile range of the distribution to the number of observations one would expect if the sample was randomly drawn from the population. As can be seen, a progressive oversampling of the wealthy is achieved. In particular, in the EFF2008, for the wealthier 1% the number of observations is over nine times what would be expected with random sampling.

16. 25 households completed the interview through a proxy person. In only two of those cases the proxy was not a relative (in one case it was a carer and in the other a lawyer).

17. 5,962 households participated in the EFF2005.

18. These figures were kindly provided by the Tax Office due to confidentiality restrictions.

19. EFF2008 net worth data correspond to the preliminary imputations dated autumn 2010.

6 Correcting for unit non-response and weights

In the EFF2008 both cross-sectional and longitudinal weights are provided. In line with the confidentiality restrictions mentioned above, design and non-response weights were calculated by the Tax Office following detailed instructions from the National Statistics Institute. In this section we describe the construction of the weights. For details on further potential corrections for non-response and the relationship with econometric selectivity corrections, see Bover (2004).

6.1 Longitudinal weights

The initial weights for the panel households were their 2005 design weights corrected for 2005 non-response. These were further corrected for the non-response in 2008 of the 2005 sample, using as reference the 2005 population. Non-response corrections in both EFF waves are made in the cells defined by the various sampling frame variables. In particular these include municipality size, wealth stratum, and income quartile for non-filers of wealth tax returns.

In a second step, the aforementioned weights were adjusted to conform to the 2008 population, by wealth stratum and income quartile. Finally, these were further adjusted (by a linear distance function using the Calmar procedure) to conform to the 2008 structure of the population according to gender, age by municipality size, and household size by municipality size^{20, 21, 22}.

6.2 Cross-sectional weights

To obtain cross-sectional weights, the panel and non-panel components of the sample are considered as two independent samples.

The basic weights for non-panel households are 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. For panel households, the basic weights are the longitudinal weights prior to their Calmar adjustment, as described earlier.

Finally, the two sample components are combined and their weights corrected according to the relative size of the sub-samples, this being the minimum variance estimator for two independent samples representing the same population. The resulting weights were adjusted using the Calmar procedure to conform to the 2008 Census structure of the population according to gender, age by municipality size, and household size by municipality size.

20. Details of the Calmar procedure, developed by the French INSEE, can be found in Sautory (1993). One useful feature of this procedure is that it allows for different levels of adjustment simultaneously, in particular, households and individuals.

21. The population data used for this calibration are the population projections done by the National Statistics Institute based on the most recent census and other population information.

22. Another set of longitudinal weights that are adjusted to conform to the 2005 population are also provided.

7 Item non-response and imputation

7.1 Item non-response

Item non-response occurs when a household agrees to participate in the survey but fails to respond to one or more questions. Together with high unit non-response, item non-response is an inherent characteristic of wealth surveys. Moreover they are closely related. Indeed item non-response will partly depend on the stringency of the conditions (in terms of the number of key questions that have to be completed) that have to be met for an interview to be declared valid, which in turn affects unit non-response rates. This is an issue that often arises in the early stages since it may affect the terms of the contract with the field agency. In particular, there is a trade-off because stringent conditions would give the right incentive to interviewers but would produce self-selection into the sample in addition to that created by overall refusals to participate. Moreover, interviewers faced with overly stringent conditions are more likely to cheat or to induce answers from the household. The fieldwork contract conditions in the EFF2008 were the same as in previous waves.

The number of questions answered (reported in Table 1) increases somewhat as compared to 2005. In particular, the percentage of euro questions answered (excluding ranges) increases from 91.7% to 95.4% at the median, and the dispersion diminishes (from 15.1 to 13.8). The figures in Table 1 are similar for the panel and non-panel components of the sample.

Answers to the questions on whether the household holds a particular asset are usually readily provided. In contrast, households may have more difficulty providing information about the value of the asset held or about the amount of a particular income source. In the EFF2005 we introduced the possibility that for most questions in euro the household could give answers in the form of a range when not able or not willing to provide point values. Namely, when the household answered DK (don't know) to the point value question, he/she was prompted to provide an answer as a self-reported range (as defined by an upper and a lower bound) or, if failing to do so, to choose from a set of predefined ranges. In the EFF2008 this range facility is available for answers to all euro questions.

In Table 1 we document the number of questions answered by the household, distinguishing for the euro questions between answers in point values, self-reported ranges, and predefined ranges from a list. Almost a quarter of the sample (23.4%; 1,458 households) gave at least one of their euro answers choosing a predefined range from the list and 10.8% (670 households) provided self-reported ranges. In any case, range answer was not used extensively, as we can see from the statistics provided. For example, the number of questions answered by a single household in the form of a predefined range was 2 at the median, 3.6 at the mean, and 56 at the maximum. As a percentage of the euro answers provided by a household, these figures would be 9.1%, 15.1% and 93.3%, respectively²³.

As observed in the EFF2005, information provided in the form of ranges (and more particularly as predefined ranges) appears to reduce significantly the proportion of DK/NA answers, mainly the DK ones, without reducing the number of point value responses. This can be seen by comparing the non-response rates to some key questions in Table 8 with a

23. Percentages not shown in the table.

similar table for the EFF2002 and the EFF2005 [see Bover (2004 and 2008)]. In particular, comparing to the 2005 wave, it is striking how the percentages of DK/NA for three significant questions for which the range option was not introduced in 2005 have been reduced. Namely, these are: (i) income from real assets (from 7.5% of DK/NA to 4.5%), (ii) income from dividends, coupons, etc. (from 36.6% to 11.9%), and (iii) bank accounts interest income (from 42.6% to 14.8%).

7.2 Imputation methods

In the EFF2008 imputation of DK/NA answers was performed using the same methods as in the EFF2002 and the EFF2005 (for a general rationale and description see Bover (2004), for a detailed explanation of the procedures and the models involved see Barceló (2006), and for a comparison of the performance of different imputation methods see Barceló (2008)²⁴).

However, although the same framework and methods were used, the models for all the variables were revised and often modified as a result of the new data. Moreover, given the possibility of range answers, imputation was performed subject to the imputed values belonging to the range provided by the household, when applicable.

The panel aspect in this second wave of the EFF would in principle allow a new imputation of the 2005 (and 2002) EFF data using the information obtained in 2008, and vice versa. This has not yet been done and the imputations provided so far are static ones. However, forward and backward imputation is an avenue we are exploring. To get an idea of the amount of information that could be gained from a dynamic imputation in Table 9 we calculate, for some key questions, the conditional probabilities of not giving a point value answer to a euro question in the EFF2008 having provided one in the EFF2005 (and vice versa). These indicate that in general more information might be gained from backward imputation than from forward imputation.

24. In the three waves nearest neighbours procedures described in Bover (2004) were implemented only for the first iteration of the imputation process. When preparing the final EFF2002 data this was judged superior to using them in the final imputation as well.

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Table 1. Number of questions asked and answered per sample household, unweighted

	Average	Median	Standard deviation	Minimum	Maximum
No. of questions asked ¹	225	221	59.0	108	540
No. of € questions asked					
- excl. ranges	25	24	9.9	6	75
- incl. ranges	29	27	13.2	6	188
No. of questions answered ¹	221	217	58.5	104	536
No. of € questions answered					
- point value	23	22	9.8	0	71
- self-reported range ²	2.0	1	1.7	1	14
- predefined range ³	3.6	2	4.7	1	56
% of questions answered ¹	98.1	98.9	2.3	75.4	100
% of € questions answered					
- excl. ranges	90.1	95.4	13.8	0	100
- incl. ranges	93.7	100	10.2	28.6	100

1. Excluding ranges.

2. For those 1458 households who provide some answers in self-reported range format.

3. For those 670 households who provide some answers choosing a range from the list provided.

Table 2. Definition of wealth strata

Stratum 1	Do not file wealth tax returns
Stratum 2	≤ 200,000 €
Stratum 3	200,000 – 500,000 €
Stratum 4	500,000 – 900,000 €
Stratum 5	900,000 – 2,000,000 €
Stratum 6	2,000,000 – 6,000,000 €
Stratum 7	6,000,000 – 25,000,000 €
Stratum 8	> 25,000,000 €

Table 3. Number of completed interviews by month of fieldwork period

Month	Nº of interviews	Percent
November (from 20th)	248	4.00
December	890	14.36
January	920	14.85
February	911	14.70
March	1,099	17.73
April	935	15.09
May	751	12.12
June	427	6.89
July	15	0.24
August	1	0.02
Total	6,197	100

Table 4. Number of attempted contacts, by type of response

	TOTAL	PANEL	NON-PANEL
Completed	6,197	3,967	2,230
Refused	3,958	1,214	2,744
Never at home	637	163	474
Out of scope (wrong address, not a housing unit, empty dwelling, deceased, others out of scope)	847	348	499
Discarded after supervision	143	56	87
Total	11,782	5,748	6,034

Table 5. Some measures of non-participation (%), by wealth stratum

	TOTAL		PANEL		NON-PANEL	
	Never at home ¹	Co-operation rate ²	Never at home	Co-operation rate	Never at home	Co-operation rate
Total	5.4	61.0	2.8	76.6	7.9	44.8
Stratum 1	3.1	67.8	2.0	78.5	4.8	50.5
Stratum 2	7.0	49.6	3.6	76.4	8.1	40.6
Stratum 3	6.7	55.3	3.5	72.7	8.4	44.8
Stratum 4	7.5	49.7	4.1	72.6	9.2	37.1
Stratum 5	6.2	48.8	3.7	68.5	7.4	38.7
Stratum 6	7.1	43.6	3.6	60.6	8.5	36.6
Stratum 7	8.9	45.0	4.1	68.2	10.5	36.5
Stratum 8	16.6	31.6	16.0	72.2	16.7	27.0
Navarre and Basque Country	14.8	70.8	8.4	79.0	22.7	58.6

1. Defined as (Never at home/Total attempted contacts).

2. Defined as (Completed/Completed+Refused).

Table 6. Logit parameter estimates of the completed vs. refused decision^{1, 2}:**Panel vs. non-panel sample**

	Odds ratio	t-ratio	Odds ratio	t-ratio
	Non-panel sample		Panel sample	
Building condition				
Good	1.125	0.96	1.030	0.20
In need of some maintenance	1.194	1.14	1.174	0.89
Very poor	1.957	1.69	1.280	0.65
Type of area				
High standing	0.812	1.20	0.736	1.32
Medium	0.653	2.28	0.695	1.48
Medium-low	1.199	0.90	1.014	0.05
Low	1.440	1.22	1.532	1.20
Size of municipality				
2,000<inhab=<10,000	0.783	1.17	1.120	0.54
10,000<inhab=<50,000	0.725	1.66	1.163	0.76
50,000<inhab=<100,000	0.606	2.50	0.809	1.02
100,000<inhab=<500,000	0.512	3.60	0.731	1.61
500,000<inhab=<1,000,000	0.504	3.20	0.813	0.91
inhab>1,000,000	0.454	3.88	0.754	1.31
Region				
Aragon	0.444	4.15	1.038	0.17
Asturias	2.067	2.89	1.575	1.88
Balearic Islands	0.586	2.55	0.812	0.84
Canary Islands	0.549	3.31	1.384	1.53
Cantabria	0.416	3.79	0.606	2.01
Castille-La Mancha	0.650	2.09	1.341	1.30
Castille-Leon	0.567	3.46	1.148	0.75
Catalonia	0.350	8.42	0.558	4.39
Valencia	0.682	2.91	1.036	0.25
Extremadura	0.916	0.30	0.925	0.30
Galicia	0.620	2.61	1.518	1.99
Madrid	1.025	0.16	0.922	0.53
Murcia	2.035	2.51	1.911	2.31
Navarre	1.035	0.09	0.796	0.66
Basque Country	0.899	0.57	0.971	0.15
La Rioja	0.927	0.22	1.787	1.28
Number of observations	4,868 of which 2,230 yes (45.8%)		5,097 of which 3,967 yes (77.8%)	
Pseudo-R ²	0.06		0.03	

1. The omitted categories are: luxury building, very high standing neighbourhood, municipalities with 2,000 inhabitants or less, Andalusia.
2. Twenty six observations were not included because no information was recorded on the building condition and type of area.

Table 7. Change in the composition of panel households

	No. of members that dropped out between the 2005 and the 2008 wave				Total
	0	1	2	3 or more	
No. of new members in 2008 compared to 2005					
0	2,746	694	144	27	3,611
1	227	41	7	2	277
2	45	9	4	1	59
3 or more	11	5	3	1	20
Total	3,029	749	158	31	3,967

Table 8. Degree of oversampling in the final sample

Net worth decile group	EFF 2002		EFF 2005		EFF 2008	
	Number of observations	Oversampling rate ¹	Number of observations	Oversampling rate	Number of observations	Oversampling rate
Bottom 50%	1,878	0.73	2,234	0.75	2,095	0.68
50% to 90%	1,944	0.94	2,036	0.85	2,304	0.93
90% to 95%	429	1.67	481	1.61	499	1.61
95% to 99%	524	2.55	675	2.83	712	2.87
Top 1%	368	7.16	536	8.99	587	9.47

1. The oversampling rate is defined as the ratio of the number of observations actually in the sample for a specific percentile range of the distribution to the number of observations one would expect if the sample was randomly drawn from the population.

Table 9. Reporting rates (%) of various items, unweighted sample

	Have item		Value for those having the item					
	Yes	Unknown	Point value	Own interval	Fixed interval	DK	NA	NP/NF ¹
Own main residence	87.0	0.0	90.9	3.4	1.5	3.9	0.0	0.3
Amount owed, 1st loan, main residence	18.0	0.0	91.6	3.4	1.1	3.1	0.1	0.6
Monthly payment, 1st loan, main residence	18.0	0.0	98.3	0.6	0.2	0.6	0.0	0.3
Rent main residence	8.5	0.0	97.2	0.8	0.4	1.1	0.0	0.6
Other real estate, 1st property	49.9	0.1	89.0	2.5	1.5	6.3	0.0	0.7
Amount owed, 1st loan, 1st other real estate	6.3	0.0	95.4	1.8	0.3	2.1	0.0	0.6
Accounts usable for payments	96.5	0.0	85.6	3.2	2.1	8.0	0.5	0.7
Accounts not usable for payments	30.1	0.2	86.2	3.1	2.0	7.6	0.7	0.4
Listed shares	22.4	0.2	84.6	2.5	3.0	9.0	0.3	0.7
Unlisted shares	4.3	0.2	74.5	4.1	4.5	12.4	0.0	4.5
Mutual funds, 1st fund	11.5	0.2	91.2	0.6	1.5	5.7	0.0	1.2
Fixed income securities	3.2	0.3	80.4	2.0	1.5	13.6	1.0	1.5
Pension plans, 1st plan	29.1	0.2	84.4	2.6	1.7	10.9	0.0	0.5
Life insurance (1st policy) coverage	11.1	0.1	74.7	1.9	2.3	19.1	0.0	1.9
Business market value (household), 1 st business	19.4	0.2	60.4	3.9	4.7	19.4	0.2	11.3
Wage income (reference person, 2007)	36.2	0.0	94.5	2.5	1.2	1.4	0.0	0.4
Self-employment income (ref. person, 2007)	13.1	0.1	88.5	3.0	3.0	3.8	0.4	1.4
Unemployment benefits (ref. person, 2007)	2.4	0.0	96.6	1.3	0.7	0.0	0.0	1.3
Pensions (reference person, 2007)	31.3	0.0	95.7	1.6	1.2	1.0	0.0	0.6
Income from real assets (2007)	14.1	0.1	91.4	1.3	2.2	4.5	0.0	0.7
Income from dividends, coupons, etc (2007)	5.4	1.1	75.6	4.2	8.0	11.9	0.0	0.3
Bank accounts interest income (2007)	41.4	3.1	70.4	6.1	8.5	14.4	0.4	0.2
Food expenditure	100.0	0.0	97.9	0.6	0.4	1.1	0.0	0.0
Non-durable expenditure	100.0	0.0	97.3	0.5	0.6	1.6	0.0	0.4

1. NP/NF: not plausible/not formulated.

Table 10. Conditional probabilities of not giving a point value answer to a € question in the EFF 2008 having provided one in the EFF 2005 (and vice versa), unweighted panel component of the sample (%)

	Pr (Point value 2008 = 0 ¹ Point value 2005 = 1)				Pr (Point value 2005 = 0 Point value 2008 = 1)
	Intervals	NP/NF	DK/NA ²	Total	
Own main residence	4.0	0.3	2.5	6.7	10.3
Amount owed, 1st loan, main residence	2.8	0.1	2.2	5.1	6.2
Monthly payment, 1st loan, main residence	0.7	0.1	0.3	1.1	1.7
Rent main residence	0.8	0.0	0.4	1.1	0.0
Other real estate, 1st property	2.5	0.3	3.6	6.4	9.7
Amount owed, 1st loan, 1st other real estate	0.4	0.0	0.0	0.4	3.8
Accounts usable for payments	3.7	0.7	5.7	10.1	17.7
Accounts not usable for payments	1.8	0.0	2.5	4.3	6.3
Listed shares	2.4	0.5	4.0	6.9	12.0
Unlisted shares	0.5	1.6	1.1	3.2	9.9
Mutual funds, 1st fund	0.3	0.7	1.2	2.2	8.4
Fixed income securities	1.1	0.0	0.0	1.1	1.7
Pension plans, 1st plan	2.9	0.1	4.9	7.9	12.8
Life insurance (1st policy) coverage	0.9	0.5	3.7	5.0	8.6
Business market value (household), 1 st business	5.7	9.3	6.9	21.9	13.7
Wage income (reference person, 2007)	1.2	0.4	0.7	2.3	6.1
Self-employment income (ref. person, 2007)	1.8	0.7	1.3	3.7	11.2
Unemployment benefits (ref. person, 2007)	0.0	0.0	0.0	0.0	0.0
Pensions (reference person, 2007)	1.3	0.6	0.6	2.5	5.0
Income from real assets (2007)	1.6	0.4	1.6	3.7	4.7
Income from dividends, coupons, etc (2007)	2.1	0.0	1.4	3.5	10.5
Bank accounts interest income (2007)	6.0	0.1	6.3	12.4	13.6
Food expenditure	0.8	0.0	0.7	1.5	3.5
Non-durable expenditure	0.8	0.1	1.4	2.2	3.1

1. "Point value 2008 = 0" is the sum of "Interval in 2008", "NP/NF in 2008", and "DK/NA in 2008". The four columns below show the overall conditional probability and its three components.
2. For comparisons with the 2005 wave, the first column of the corresponding table in Bover (2008) should be compared with the third column headed DK/NA.

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