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## THE LUXEMBOURG HOUSEHOLD FINANCE AND CONSUMPTION SURVEY (LU-HFCS): INTRODUCTION AND RESULTS

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# The Luxembourg Household Finance and Consumption Survey (LU-HFCS): Introduction and Results[*]

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Abstract:

This paper introduces the Luxembourg Household Finance and Consumption Survey (LU-HFCS), presents its background and aim, the field phase, the data treatment, including editing, imputation, and anonymisation, and some basic descriptive findings. The estimated average (median) total net wealth of Luxembourg households is about €733,000 (€403,000) - an extremely high value by international standards, which is likely to be driven by high incomes and correspondingly high prices of real estate in Luxembourg. Average total gross income and total net wealth generally increase with household size, with age up to retirement age and with education. On average, total gross income of Luxembourg national and foreign households do not seem to differ significantly. This cannot be said for total net wealth and net real wealth, which, on average, is more than double as high for Luxembourg households than for foreign households.

Keywords: Household, survey, editing, multiple imputation, wealth, income
JEL Codes: D31, D14, C81, C83

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## Résumé non-technique

Les banques centrales de l'Eurosystème ont mis en place l'enquête HFCS[1] afin de collecter des données micro-économiques sur le comportement financier et de consommation des ménages. De telles informations harmonisées à travers les différents pays ne sont pas disponibles par le truchement des sources statistiques existantes. Pourtant, elles présentent une utilité certaine dans plusieurs domaines de compétence des banques centrales, étant donné que les évolutions des agrégats économiques sont déterminées en partie par la distribution, parmi les ménages, de la richesse ou de la dette. Les décisions de consommation et d'épargne dépendent d'ailleurs également de facteurs propres aux ménages individuels (composition, âge, éducation, etc.). Ainsi, par le passé plusieurs banques centrales ont établi des enquêtes régulières auprès des ménages (Federal Reserve Board, Banca d'Italia, Banco de España). Le projet HFCS vise à harmoniser cette pratique et à l'étendre à l'ensemble des pays membres de la zone euro.

Dans le cadre de ce projet, la Banque centrale du Luxembourg en collaboration avec le CEPS/Instead a conduit deux enquêtes, entre le dernier trimestre 2010 et le premier trimestre 2011. Il s'agit d'une part du volet luxembourgeois de l'enquête HFCS – orienté vers les ménages résidents – et d'autre part d'une enquête complémentaire orientée vers les ménages non-résidents dont au moins un membre est employé au Luxembourg. La deuxième enquête reflète l'importance des frontaliers pour l'emploi, la consommation et la production au Luxembourg.

Ce cahier se focalise sur l'enquête auprès des ménages résidents, présentant son contexte et ses objectifs, détaillant la collecte et le traitement des données et résumant certains résultats préliminaires concernant le comportement financier.

### Le questionnaire, l'échantillonnage et la collecte des données

Le questionnaire HFCS se compose de deux parties: la première concerne le ménage dans son ensemble et la deuxième s'adresse individuellement à certains membres du ménage. Les questions s'adressant au ménage concernent les actifs réels et leur financement, les autres passifs et contraintes de crédit, les entreprises privées, les actifs financiers, les cadeaux/transferts intergénérationnels et la décision de consommation/épargne. Les questions orientées vers les individus concernent les caractéristiques individuelles (âge, sexe, situation familiale), l'emploi, les droits à la retraite et les autres revenus du travail (les autres sources de revenus sont couvertes au niveau du ménage). Dans l'ensemble, plus de 400 questions différentes sont proposées, dont la plupart proviennent de l'enquête Eurosystème HFCS.

En principe, l'échantillon de l'enquête devrait cibler l'ensemble de la population des ménages résidant au Luxembourg. Cependant, les données du recensement de la

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[1] Household finance and consumption survey.

population étaient désuètes au moment de la collecte des données. En conséquence, l'enquête s'est basée sur un échantillon aléatoire stratifié extrait du registre de l'Inspection Générale de la Sécurité Sociale (en date du 31 décembre 2009). Ce registre couvre la quasi totalité de la population résidante (à l'exception des fonctionnaires européens et les résidents de certaines institutions).

Afin de réduire la variance des estimateurs, l'échantillon est stratifié selon la nationalité, l'occupation et le revenu individuel. En accord avec les objectifs de l'enquête, la catégorie de la population présentant une richesse plus élevée a été surreprésentée dans l'échantillon. Il s'agit de prendre en compte la plus grande variabilité de la composition du portefeuille parmi ces ménages et leur contribution plus importante aux agrégats relatifs au secteur des ménages.

L'enquête auprès des ménages résidents au Luxembourg a été conduite par le biais d'entretiens personnels assistés par ordinateur (CAPI)[2]. Les modalités de l'enquête ont été communiquées aux ménages sélectionnés par différents moyens (lettre d'introduction, dépliants d'information, page internet et numéro téléphonique dédié). Un effort considérable a été consacré à la préparation du questionnaire dans les différentes langues véhiculaires au Luxembourg. La collecte des données a commencé fin septembre 2010 et s'est terminée en avril 2011. En moyenne, un entretien a duré 56 minutes (avec une médiane de 51 minutes). Partant de l'échantillon initial de 5,000 ménages résidents extrait du registre IGSS, des entretiens ont eu lieu avec 950 ménages, représentant 2,540 individus. La qualité des réponses fournies est jugée bonne au vu de différentes indications fournies par les enquêteurs (fiabilité des données sur le revenu et la richesse, nombre de documents consultés, intérêt pour l'enquête, compréhension des questions).

## Traitement des données

Il est bien connu que des enquêtes aussi complexes sur des sujets particulièrement sensibles conduisent à des incohérences logiques entre les réponses à différentes questions et à des non-réponses à certaines questions. C'est pourquoi les données doivent faire l'objet d'un traitement spécifique avant toute analyse empirique. Dans un premier temps, les données sont éditées afin d'identifier et de corriger d'éventuelles erreurs (incohérences logiques). Ces corrections se basent aussi sur les commentaires de l'enquêteur enregistrés après l'entretien, sur des incohérences institutionnelles, des incohérences logiques entre les réponses à différentes questions ou des erreurs de frappe.

Dans un deuxième temps, la non-réponse à des questions individuelles est traitée. Sans un traitement approprié, la non-réponse peut avoir des conséquences graves, générant un biais des estimateurs et limitant la taille de l'échantillon et donc l'efficience des estimateurs. La procédure de l'imputation sert à remplacer les non-

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[2] Computer-assisted personal interview.

réponses par des valeurs plausibles. La BCL a eu recours à €MIR[3], une suite de routines pour l'imputation multiple, mise à sa disposition par l'Eurosystème.

Enfin, les données éditées et imputées sont pondérées pour fournir un échantillon représentatif de la population de ménages résidents au Luxembourg (dont au moins un membre était enregistré à l'IGSS fin 2009). La procédure de pondération repose sur les étapes suivantes : ajustement pour la probabilité de sélection (en tenant compte de la surreprésentation des ménages plus favorisés), ajustement pour la non-réponse à des questions individuelles, ajustement selon des sources statistiques externes afin d'approximer au mieux la distribution des ménages et des individus dans la population cible.

## Résultats

Pour le ménage résident représentatif (moyenne pondérée des ménages interrogés) le revenu brut annuel est estimé à €83,600. La plus grande part de ce revenu brut provient des salaires (63%), tandis que 7% proviennent du revenu du travail indépendant et 18% des pensions. Sur l'ensemble des ménages résidents, seulement 71% comptent des salariés et 10% des travailleurs indépendants. Le revenu salarial moyen (par ménage dont au moins un membre est salarié) est de €73,700. Parmi les ménages dont au moins un membre est travailleur indépendant, le revenu moyen émanant de ce travail est de €58,900. Ce contraste s'explique en partie par le fait que bon nombre de ménages combinent un revenu salarial avec un travail indépendant qui génère un revenu plus limité. Ainsi, en se limitant aux ménages dont la personne de référence se déclare travailleur indépendant, cette source de revenu représente €150,000 pour le ménage représentatif.

Environ 35% des ménages résidents reçoivent au moins une pension pour une valeur moyenne de €42,800 par an. Les transferts sociaux concernent 41% des ménages et leur valeur moyenne est estimée à €8,600 par an. Les revenus des investissements immobiliers sont perçus par seulement 13% des ménages, avec une valeur moyenne de €24,400 par an. Les investissements financiers concernent pratiquement 50% des ménages et génèrent un revenu annuel moyen de €2,100.

Pour le ménage représentatif, la richesse nette (après déduction des dettes immobilières et autres) est de €733,000 (médiane €403,000). Cette valeur est très élevée en comparaison internationale. Aux Etats-Unis, la richesse nette du ménage moyen se situe à €425,000 (Bricker et al., 2011), en France à €229,300 (Chaput et al., 2011) et en Allemagne à €140,000 (Frick et al., 2010).

La richesse brute se compose à 11% d'actifs financiers et à 89% d'actifs réels (biens immobiliers, véhicules, etc.). Le ménage représentatif détient €723,000 d'actifs réels et €88,400 d'actifs financiers, pour une richesse brute totale de l'ordre de € 811 000. La résidence principale correspond à 59% des actifs réels du ménage représentatif

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[3] ECB Multiple Imputation Routines.

(€ 430,000). D'autres biens immobiliers représentent 30% des actifs réels (€ 217,000), tandis que les véhicules et autres objets de valeur ne constituent qu'une fraction de ces actifs. Du coté du passif, les dettes hypothécaires s'élèvent à € 74,000 en moyenne. La dette totale est estimée à € 78,400 pour le ménage représentatif.

On estime que 67% des ménages luxembourgeois sont propriétaires de leur résidence principale (au moins en partie). Sa valeur moyenne est estimée à €640,000 (médiane €500,000). Pratiquement 30% des ménages sont propriétaires d'autres biens immobiliers, d'une valeur moyenne de €770,000 (médiane €300,000). Seuls 6% des ménages possèdent des parts d'entreprise, avec une valeur moyenne de € 760,000 (médiane €190,000). Par contre, 87% des ménages sont propriétaires d'au moins un véhicule, d'une valeur moyenne de €24,000. D'autres objets de valeur sont détenus par 24% des ménages, la valeur moyenne correspondante s'établissant à €39,000.

Le ménage représentatif détient par ailleurs 32% de ses actifs financiers sur un compte d'épargne, 21% dans un organisme de placement collectif, 19% dans le cadre d'un plan de pension privé et 11% sur un compte courant. En moyenne, les ménages luxembourgeois possèdent près de €29,000 sur leur compte d'épargne, €18,000 en parts d'OPC, €17,000 en plan de pension et €10,000 en compte courant. D'autres catégories d'actifs financiers sont moins importantes.

Presque chaque ménage possède un compte courant, mais seuls 75% ont un compte d'épargne et 19% des parts d'OPC. Si on se limite aux ménages qui ont un compte d'épargne, leur montant moyen est de presque €40,000 (médiane €15,000). En se limitant aux ménages qui ont des parts d'OPC, l'investissement moyen est de €95,000 (médiane €27,000). Pour les 4% des ménages qui ont acheté des obligations, leur valeur moyenne est de €120,000 (médiane € 45,000) et pour les 10% qui ont acheté des actions, leur valeur moyenne est de €60,000 (médiane €10,000). Un tiers des ménages souscrit à un plan de pension privé, avec une valeur moyenne de €50,000 (médiane €28,000).

Les caractéristiques spécifiques des différents ménages peuvent expliquer le niveau et la composition de leur richesse nette. En passant des ménages composés d'une seule personne aux ménages composés de deux personnes, on observe une forte augmentation de la richesse totale et de la richesse réelle. Cependant, le passage des ménages à deux personnes aux ménages à trois ou à quatre personnes n'exerce pratiquement aucun effet. Le niveau de richesse augmente à nouveau si les ménages sont composés de plus de quatre personnes.

Le revenu brut, la richesse nette et la richesse réelle augmentent nettement avec l'âge (jusqu'à la retraite) et avec le niveau d'éducation. Par contre, ces variables ont moins d'impact sur la richesse financière. Par exemple, pour les ménages dont la personne de référence ne dispose pas d'un niveau d'éducation primaire, le niveau de richesse nette est de l'ordre de €400,000. Celle-ci augmente jusqu'à €1,075,000 pour les ménages dont la personne de référence présente le niveau d'éducation le plus élevé.

Les ménages dont la personne de référence a la nationalité luxembourgeoise ont un niveau moyen de richesse nette (€939,357) et de richesse réelle (€841,982) constituant pratiquement le double des ménages dont la personne de référence est de nationalité étrangère (respectivement €394,570 et €333,111 en moyenne). Ces différences sont statistiquement significatives. Par contre, en termes de revenu brut, la différence n'est pas significative (€86,499 en moyenne pour le ménage luxembourgeois et €78,963 pour le ménage étranger). Ceci pourrait s'expliquer par les héritages, qui sont vraisemblablement plus élevés pour les ménages luxembourgeois.

Le lien entre le niveau de revenu et le niveau de richesse est bien visible. La richesse nette augmente de façon régulière en passant du premier au deuxième quartile de la distribution des revenus et ensuite du deuxième au troisième quartile. Par contre, une augmentation beaucoup plus importante de la richesse nette se manifeste en passant du troisième au quatrième quartile de la distribution des revenus.


## Conclusions

Ce cahier fournit un premier aperçu de l'enquête sur le comportement financier et de consommation des ménages au Luxembourg. Par rapport au revenu et la richesse, les résultats sont cohérents avec les données agrégées quant à la position du Luxembourg en comparaison internationale (OECD, 2011). La valeur ajoutée de cette enquête provient des informations micro-économiques qui permettent de mettre en relation le revenu et la richesse par rapport à des données propres à chaque ménage. De plus, elle permet d'analyser la distribution du revenu et de la richesse à travers la population des ménages. Enfin, la nature harmonisée de l'enquête permettra une comparaison avec la distribution des revenus et de la richesse dans d'autres pays de la zone euro.

# 1 Introduction

Between the forth quarter of 2010 and the first quarter of 2011, the Banque centrale du Luxembourg together with CEPS/INSTEAD conducted two household finance and consumption surveys (HFCS). The first survey was targeted at households residing in Luxembourg (LU-HFCS) whereas the second survey was targeted at households residing abroad where at least one member works in Luxembourg, i.e. so called cross-border working households (XB-HFCS). The objective with these two surveys is to obtain representative information on households' wealth and income structure. The resident survey was conducted in close correspondence with similar surveys across Eurosystem member states, initiated by the Eurosystem Household Finance and Consumption Network (HFCN). The cross-border survey was conducted as a complement to the resident survey to take into consideration the importance of cross-border commuters for Luxembourg employment, consumption and output.

This paper introduces the resident HFC survey, presents its background and aim, the field phase, the data treatment and some findings. Section 2 outlines the objectives of the HFCS; section 3 displays the questionnaire and sample design; section 4 discusses the data treatment, including editing, imputation etc...; section 5 shows sample and population characteristics; section 6 presents first results on the income and wealth of Luxembourg resident households; section 7 compares the survey results with results for aggregate sources; finally, section 8 concludes.

# 2 Objectives

The LU-HFCS is part of a wider Eurosystem HFCS, in which all 17 Eurosystem national central banks (NCBs) together with the European Central Bank (ECB) and some National Statistics Institutes (NSIs) take part. The Eurosystem HFCS was initiated to provide the Eurosystem with micro-level data on euro area households' finances and permit studying in detail their financial and economic behaviour.[4] Such ex ante harmonized micro data on these topics are not available from other data sources or statistics. As described in detail by the HFCN (2008) the analysis of household behaviour is relevant as most important financial and economic decisions are taken at the household level (as compared to the level of a single individual). As dynamics of economic aggregates are determined not only by macroeconomic variables, but also by household-specific factors (household consumption, savings and investments), detailed information of the latter can provide valuable input into a number of policy areas of the Eurosystem, in particular as these factors appear to be driven to a large extent by expectations, uncertainty with respect to future individual income as well as demographic and social characteristics, which remain hidden in aggregate statistics.

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[4]  For more information please consult the documentation on the HFCN available at the ECB website: http://www.ecb.int/home/html/researcher_hfcn.en.html.

Household finance and consumption surveys, or other wealth surveys, have been conducted by several central banks in the past (e.g. the Federal Reserve Board, the Banca d'Italia, the Banco de España). Their research results feed extensively into policy and into their communication with the public. Research results based on these surveys are recurringly consulted for monetary policy analyses and financial stability purposes. For example, the implications of the recent steep increases in household indebtedness in many euro area countries cannot be adequately judged by referral to aggregate data. Information on the households' debt levels and its categories as well as their distribution across various characteristics, such as income, education, and/or age classes obtained from surveys provide crucial information for the assessment of whether or not households are over indebted and whether there exists eventual financial risks associated therewith.

To date the available data did not allow painting a coherent picture on households' finance and consumption behaviour across the euro area. Data was only available for few countries, and methodologies, concepts and questions asked were not ex ante harmonised making adequate inference and aggregation of results a cumbersome and error prone task. Other EU household surveys, such as the European Survey on Income and Living Conditions (EU-SILC) or the Survey of Health, Ageing and Retirement in Europe (SHARE) do exist; however, they have a different focus or target population. The euro area wide HFCS provides Eurosystem policy-makers and researchers with an unprecedented wealth of information on households' financial behaviour and decisions. The Eurosystem HFCS is conducted in a decentralised manner by Eurosystem national central banks and follows an output-oriented approach, which requests participating NCBs to report a set of core output variables. The main aim of the survey is to gather micro-level, structural information on households' assets and liabilities in the euro area, as much as possible in line with aggregates derived from non-financial and financial accounts according to the definitions of ESA95. In addition, the survey collects key information on households' demographic structure, income and consumption expenditures.

## 3   The questionnaire and sample selection

As shown in Figure 1 and described in detail in the final report of the household finance and consumption network (HFCN 2008) the LU-HFCS questionnaire comprises two main parts: i) questions aimed at the household as such (depicted in grey) and ii) questions aimed at individual household members (depicted in blue). The household level questions include a set of questions on real assets and their financing, other liabilities/credit constraints, private businesses, financial assets, intergenerational transfers/gifts and consumption/savings. The individual level questions concern demographics, employment, future pension entitlements and labour-related income (other income sources being covered at the household level). Together, the questionnaire contains over 400 different questions, the predominant majority of which are common to the Eurosystem HFCS. Other questions are asked in some countries only and few are purely national. For example, due to the relevance of the neighbouring regions for Luxembourg employment and

consumption, in the LU-HFCS, households were asked to provide information on their consumption behaviour in Luxembourg as well as the neighbouring countries.

*Figure 1: Structure of LU-HFCS*
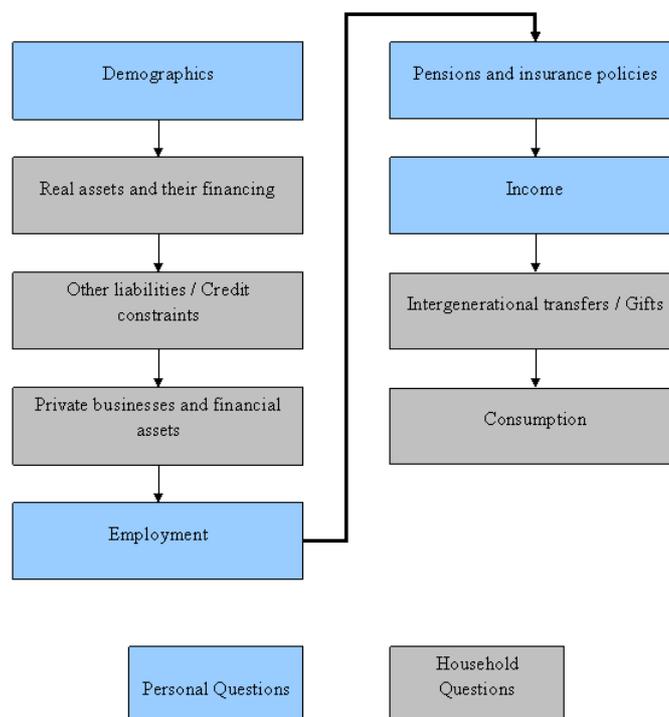


*Source: HFCN (2008)*

Prior to the fieldwork, various different versions of the Eurosystem questionnaire had been pre-tested in several countries; the LU-HFCS was pre-tested among a small number of Luxembourg households in July 2010.

In principle, the ideal target population of the LU-HFCS would include all private households resident in Luxembourg at 31st December 2010. In absence of a recent census (at the time of data collection), the Social Security register of Luxembourg (Inspection Générale de la Sécurité Sociale, IGSS) as at 31st December 2009 is used as sampling frame to extract the sample. The IGSS covers approximately all individuals in the Luxembourg resident population with few exceptions.[5] Table 1 provides an overview of the main characteristics of the sample design for the survey.

To reduce the variance in the estimated wealth components, a stratified sampling procedure, that includes the oversampling of the wealthiest strata in the population, is adopted. Essentially, this means that the sample includes a higher share of households belonging to wealthier strata than actually present in the population.

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[5] The sampling frame does not cover international civil servants and in general individuals not registered in the social security register unless they are part of a household where another member is included in the social security register. In an attempt to integrate international civil servants into the sampling frame a request to the health insurance office of the international civil servants was made but was unsuccessful. CEPS (2011) estimates that 3-5% of the population is not covered.

This is to take account for the higher variability in the portfolio composition of wealthier households. Due to the absence of external statistics on household wealth, the oversampling of wealthy households has been achieved through the oversampling of high income households, assuming a strong link between income and wealth. This is done to take into account the expected higher variability of portfolio composition and higher amounts invested in different assets categories by wealthier households. In this context, households headed by a self-employed individual were also oversampled. To make the sample statistics representative of the underlying population which it represents, the wealthier strata are subsequently down weighted.

*Table 1: Sampling characteristics of the LU-HFCS*

| | |
|---|---|
| Sampling frame | IGSS (Inspection Générale de la Sécurité Sociale – Social security register) at 31 December 2009 |
| Reference population | Private household resident in Luxembourg as at 31 December 2010 [α] |
| Sampling unit | Resident fiscal households |
| Oversampling of wealthy units | 20% |
| Sample size | 950 households |
| Number of strata | 20 |
| Stratification variables | Nationality, employment status, income |

*Notes: [α] Excluding institutionalised households, international civil servants and individuals not registered in the social security register in general unless they are part of a household where another member is included in the social security register. The difference in the reference year of the sampling frame (2009) and of the reference population (2010) is addressed via statistical assumptions in the under-coverage adjustment step of the weighting procedure.*

The sampling frame is divided into 20 different strata along the dimensions of three variables (nationality, occupational status and individual income subject to social contributions) describing the characteristics of the head of household. If a household has more than one member, the individual income of the person with the highest wage is used for the determination of the stratum. The final sample size comprises 950 households and 2,540 individuals. To reach this final sample size, an initial sample of 5,000 Luxembourg resident households extracted from the IGSS database was used. As detailed in Section 4.3 the sample is representative of 186,440 private households and 462,618 individuals living in Luxembourg at 31 December 2010 with the exclusion of institutionalized households, international civil servants and in general individuals not entitled to be registered in the social security register unless they are part of a household where another member is included in the social security register. The difference in the reference year of the sampling frame (2009) and of the reference population (2010) is addressed via statistical assumptions in the under-coverage adjustment step of the weighting procedure (see Section 4.3).

## 3.1 The fieldwork

The survey of Luxembourg resident households was conducted through computer-assisted personal interviews (CAPI). Table 2 presents an overview on the main characteristics of the fieldwork phase. Households selected for participation in the

survey received an information package shortly before the interviewer planned to establish a first contact with the household. The information package contained a letter signed by the Governor of the BCL and the President of CEPS/INSTEAD introducing the survey and describing its different features. Attached to the letter they also received a leaflet further detailing the main features and the aim of the survey (incl. a brief presentation of the BCL, the objectives of the survey, the confidentiality of the answers, the interview procedure, etc…). In order to provide the best possible support households were invited to contact two dedicated telephone numbers, one at the BCL and one at CEPS/INSTEAD, for any needed clarification on the aim, characteristics or legitimacy of the project. A web page on the BCL website contained further information about the survey and made reference to the Household Finance and Consumption Network initiative.

*Table 2: Overview over fieldwork*

| | |
|---|---|
| Interview mode | Computer assisted personal interview |
| Survey company | CEPS/INSTEAD |
| Pre-test | July 2010 |
| Information material for the household | Introduction letter, leaflet, dedicated web page and phone number |
| Planned fieldwork | End September 2010 to December 2010 |
| Actual end of fieldwork | April 2011 |

In order to account for multicultural and multinational aspects of Luxembourg society and to reduce the burden of participating households, great effort was put into translating the LU-HFCS questionnaire into different languages; 60% of the interviews were conducted in French, 38% in German and 2% in English. Although the questionnaire was also available Portuguese, no household chose this language for the interview.

Table 3 shows the number of replies for each month during the field phase of the LU-HFCS. Difficulties encountered during the fieldwork resulted in a low participation rate requiring the extension of the data collection to the end of April 2011.

*Table 3: Interview participation by month*

| | Sep. 2010 | Oct. 2010 | Nov. 2010 | Dec. 2010 | Jan. 2011 | Feb. 2011 | Mar. 2011 | Apr. 2011 | Total |
|---|---|---|---|---|---|---|---|---|---|
| Number of respondents | 52 | 221 | 202 | 111 | 152 | 92 | 71 | 49 | 950 |
| Percentage of respondents | 5.5 | 23.3 | 21.3 | 11.7 | 16.0 | 9.7 | 7.5 | 5.2 | 100 |

*Source: CEPS (2011). Technical Report of the HFCS.*

Table 4 reports the duration of the interviews (in minutes). Each interview lasted on average 56 minutes with a median length of 51 minutes; the dispersion of the interview length is sizable and varied with the number of household members, the number of questions a household had to respond to, which depended on the complexity of the structure of its total income as well asset and liability portfolio. The

duration of the interviews shows that households provided serious effort in appropriately responding to the questionnaire, which is indicative of good data quality. This sentiment is also supported by the answers of interviewers provided in the section on paradata below.

*Table 4: Interview duration*

| Minutes | <20 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-99 | 100-109 | 110-119 | >120 | Total |
|---------|-----|-------|-------|-------|-------|-------|-------|-------|-------|---------|---------|------|-------|
| Number | 9 | 64 | 169 | 202 | 185 | 122 | 96 | 51 | 23 | 10 | 9 | 10 | 950 |
| In % | 0.9 | 6.7 | 17.8 | 21.3 | 19.5 | 12.8 | 10.1 | 5.4 | 2.4 | 1.1 | 0.9 | 1.1 | 100 |

*Source: CEPS (2011). Technical Report of the HFCS.*

## 3.2 Unit non-response

As already mentioned the unit response rate of the survey has been relatively low. Table 5 shows a description of the response process.

*Table 5: Response rates of the LU-HFCS*

| Response rate by category | | in % |
|---------------------------|---------------------------|------|
| By nationality | national households | 19.7 |
| | non-national households | 20.3 |
| by income class | < 7,000 EUR | 18.4 |
| | > 7,000 EUR | 24.2 |
| Total | | 20.0 |

*Source: Own calculations based on the gross sample of the LU- HFCS.*

The total response rate, calculated as the ratio between the number of "*accepted interviews*" and the total number of interview requests sent out minus those "*out of scope*", is reported in Table 5. In the LU-HFCS, it is not possible to identify a sizable difference in the response rate between different nationalities. Table 5 suggests a positive correlation between the level of personal income and the response rate, which is contrary to expectations and to common findings. Table 6 presents a simple probit regression of unit-non response and its determinants.

The first and third column present marginal effects derived from a probit regression of various household characteristics on the probability of accepting to participate in the survey.[6] All the covariates are constructed as dummy variables. The dummy "*Luxembourg nationality*" takes the value 1 if the reference person of the household is of Luxembourg nationality and 0 otherwise. The dummy "*High income*" takes the value 1 if the personal gross income of the household reference person is higher than €7,000 per month. The base category for the reference person's employment status is being a pensioner. For simplicity reasons we will refer to the reference person's characteristics as household characteristics. The sample used for this estimation

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[6] Marginal effects are calculated as derivatives of the response with respect to the single covariate, holding all the other covariates fixed at their mean level. Calculating average marginal effects instead of marginal effects at the mean does neither affect the size nor the sign nor the significance level of the coefficients.

consists of all contacted households whether or not they accepted participating in the LU-HFCS.[7]

*Table 6: Unit response model*

| | (1) | | (2) | |
|---|---|---|---|---|
| | marg. eff. | std. err. | marg. eff. | std. err. |
| High income | 0.071*** | 0.014 | 0.182*** | 0.037 |
| *\* Luxembourg nationality* | | | *-0.018* | *0.029* |
| *\* Self-employed* | | | *-0.192\*\*\** | *0.044* |
| *\* Private employee* | | | *-0.111\*\*\** | *0.038* |
| *\* Public employee* | | | *-0.086\** | *0.043* |
| *\* Other employment* | | | *-0.194\*\*\** | *0.067* |
| Luxembourg nationality | -0.024 | 0.013 | -0.022 | 0.015 |
| Self-employed | -0.083*** | 0.021 | -0.013 | 0.027 |
| Private employee | -0.01 | 0.016 | 0.015 | 0.018 |
| Public employee | -0.011 | 0.02 | 0.007 | 0.025 |
| Other employment | -0.038 | 0.026 | 0.002 | 0.029 |
| Observations | 4530 | | 4530 | |
| Pseudo R-squared | 0.008 | | 0.013 | |

Notes: Marginal effects; base category: Foreign nationality, low income, retired.
\* p<0.05, \*\* p<0.01, \*\*\* p<0.001
*Source: Own calculations based on the gross sample of the LU- HFCS.*

As can be seen in specification (1), having a higher personal income increases the probability of survey participation whereas being self-employed decreases it relative to the base category. The remaining covariates are not statistically significant. Specification (2) of Table 6 presents the estimation of the marginal effects with the high personal income dummy being interacted with the employment status dummies and the nationality dummy. High income remains positively significant, although the effect is now allowed to vary across the employment status of the household and nationality. The negative and significant interaction coefficients indicate that for those employment statuses (relative to the base category) the positive effect of high income on survey participation is diminished and possibly even reversed in case of the self–employed. Thus, the positive effect of income on the probability of participating in the LU-HFCS is mainly driven by high income pensioners' increased participation rate. The very low Pseudo-$R^2$ in both regressions is suggestive of a limited sample selection problem, at least in an analysis based on observed characteristics at the stratification level.

## 3.3 Interviewer information (paradata)

The information interviewers provide after the conduct of an interview can be very useful to assess the overall quality of a survey. Figure 2 shows the distribution of

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[7] Households that are out of scope of the survey (so called non-contacts, i.e. households for which no contact could be established) are the sum of all households in the categories coded as: *"No Away / at hospital during survey period"*, *"Inaccessible"*, *"Unable to locate the address"*, *"Non-residential address"*, *"Vacant/empty"*. They are excluded from this analysis. Their inclusion in the estimation does, however, not affect the presented results.

how interviewers rated the interest of participants in the interview. Only 5% of respondents showed below average interest. 15% showed very high and 36% above average interest. A high interest in the interview is expected to raise the quality of the answers and to reduce the number of questions, which would otherwise be left unanswered due to personal concerns or the response burden (item non-response). Having said this, Figure 2 may also be suggestive of the existence of a sample selection bias; households with a high interest in the topic of the survey are more likely to be included in the final sample. The weighting procedure described below aims to correct for this possibility by taking into account known characteristics of observed and unobserved households.

| *Figure 2: Interest in the interview* | *Figure 3: Quality of answers* |
|---|---|
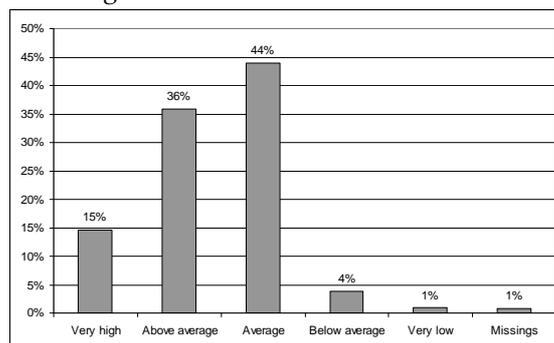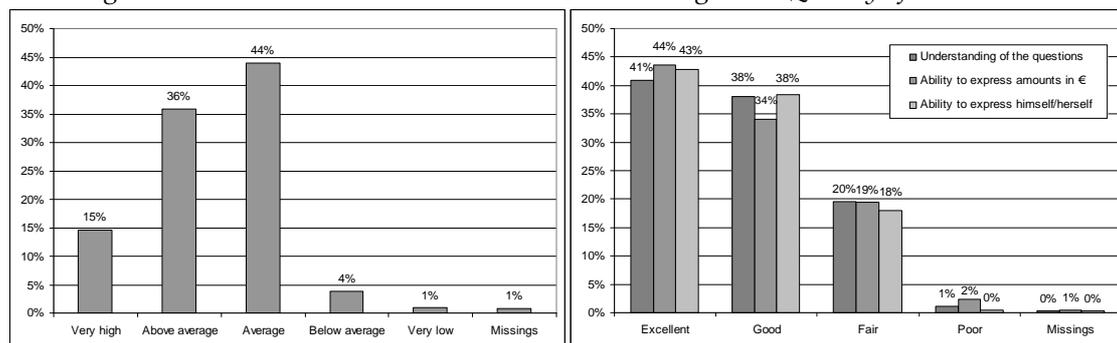


*Source: Own calculations based on LU-HFCS, non-imputed and unweighted.*

For the data quality, it is as very important that respondents correctly understand the questions they are confronted with. Moreover, respondents must be able to express themselves verbally or in a mathematical manner providing euro amounts. As Figure 3 shows, only a negligible fraction of 0-2% of respondent households were rated to have a poor understanding of the questions or rated to have difficulties to express themselves. More than 40% of respondents are rated *"excellent"* by interviewers with respect to these three categories.

It can be relatively difficult to recall exact numbers on income or certain wealth categories. Not surprising, 43% of responding households consulted at least one document during the interview (Figure 4). Conditional on consulting at least one document, on average households consulted 3.2 documents. These figures are encouraging for the data quality since a large fraction of households made the effort to provide exact numbers in case they were not able to recall them by heart.

Finally, interviewers were requested to rate the overall reliability of the income and wealth information provided in the survey (Figure 5). Only 5% of respondent households are rated to provide inaccurate information; 46% are rated to provide fairly reliable information and 48% are rated to provide accurate information. In summary, the information provided by interviewers on data quality suggests that the LU-HFCS can be regarded as reliable source for empirical analysis.

Figure 4: Number of documents interviewee referred to
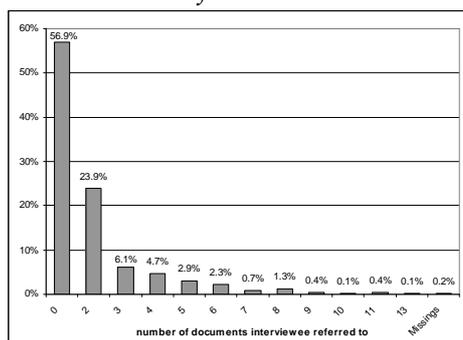


Figure 5: Reliability of income and wealth information
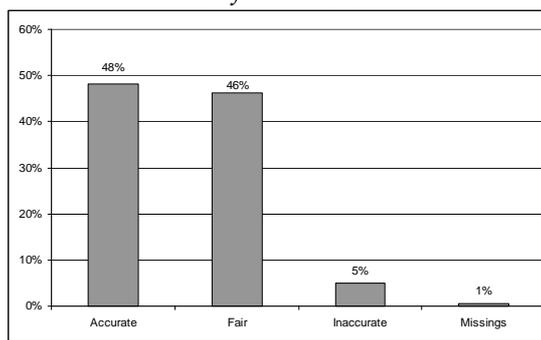


*Source: Own calculations based on LU-HFCS, non-imputed and unweighted.*

# 4 Data treatment

## 4.1 Editing

Logical inconsistencies between questions and item non-response are well known phenomena in complex surveys on sensitive topics, such as income, wealth and consumption, as is the case for the LU-HFCS. In a first step of the data preparation, the data are edited, where editing is *"the activity aimed at detecting and correcting errors (logical inconsistencies) in data"* (UNECE, 2000). These corrections include changes based on interviewer comments after the interview, institutional inconsistencies, logical inconsistency between questions, or mistyped or erroneous answers (e.g. the digit was wrongly placed or monthly instead of yearly income was provided). Appendix A provides details on which variable and how many entries had to be edited.

## 4.2 Imputation

Even if households are willing to participate in a survey, not all questions are always answered. It is well known that especially in complex surveys, such as surveys on income and wealth, missing values or so called item non-response can represent a serious problem. Item non-response strongly depends on the survey topic, the survey mode, the phrasing and ordering of questions. In case of a CAPI interview, this being the case for the LU-HFCS, the relationship with the interviewer may have an effect. Despite the HFCN being very careful to phrase questions as clearly as possible, missing values occur since interviewees may not know the answer themselves, are somehow reluctant to give answers on sensitive topics, or may simply not understand the question. Appendix A provides an overview on the number of missing values for each variable. Due to the fact that it might be difficult to recall exact values of certain income components or asset groups, all numeric variables are asked in a three level procedure. First, the interviewer asks for the exact value; second, if the exact value is not provided, the interviewer asks for a lower and upper bound for the specific value; third, if the respondent fails also to provide a own range, the interviewer offers certain pre-defined ranges the respondent can choose from. Appendix A indicates for how many households information in ranges is provided if the exact amount is missing.

The number of missing values and values to be edited varies strongly with the question. Table 7 shows a selection of variables out of Appendix A. It displays the percentage of 'applicable' cases, which reflects the number of individuals or households who should have had to reply to these questions. The column 'unapplicable' shows the fraction of households who skipped the question due to routing. The 'undetermined' cases reflect that it is uncertain whether or not a question should have been answered due to a missing value in a mother variable. The next two columns report the 'minimum' and 'maximum' fraction of values to be imputed relative to the sample size of applicable cases. The difference between the two is caused by possible missing values in the mother variable. The minimum fraction of imputed values relative to applicable cases is assuming that all undetermined cases are unapplicable; the maximum number assumes that all undetermined cases are applicable. The next two columns show the number of missing values for which bracketed information is available relative to the minimum and maximum number of values to be imputed. The last column shows the fraction of edited values relative to all applicable values (including both replaced and imputed values).

*Table 7: Missing and editing rates for some selected variables*

| Variable name and description | | Unappli-cable | Appli-cable | Undeter-mined | Min. # to be imp. (I) | Max. # to be imp. (II) | Bracket values in % of (I) | Bracket values in % of (II) | Edited |
|---|---|---|---|---|---|---|---|---|---|
| RA0200 | gender | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| RA0300 | age | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.2% |
| RA0400 | country of birth | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.1% |
| PA0100 | marital status | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% |
| PA0200 | highest level of education | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% |
| PG0100 | received employee income | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.6% |
| PG0110 | gross cash employee income | 47.0% | 52.8% | 0.2% | 28.3% | 28.7% | 71.1% | 70.1% | 1.3% |
| PG0200 | received self-employment income | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.2% |
| PG0210 | gross self-employment income | 91.5% | 8.3% | 0.2% | 35.5% | 38.5% | 66.7% | 61.5% | 0.0% |
| HB0300 | household main residence (HMR) - tenure status | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.1% |
| HB0900 | current price of HMR | 30.0% | 70.0% | 0.0% | 11.7% | 11.7% | 75.6% | 75.6% | 0.0% |
| HB1000 | mortgages or loans using HMR as collateral | 30.0% | 70.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.3% |
| HB1010 | number of mortgages/loans using HMR as collateral | 65.5% | 34.4% | 0.1% | 0.3% | 0.6% | 0.0% | 0.0% | 0.9% |
| HB1701 | HMR mortgage 1: amount still owed | 65.5% | 33.7% | 0.8% | 11.3% | 13.8% | 58.3% | 47.7% | 3.1% |
| HB1702 | HMR mortgage 2: amount still owed | 94.8% | 4.4% | 0.7% | 11.9% | 28.6% | 20.0% | 8.3% | 11.9% |
| HB4300 | ownership of cars | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.1% |
| HB4400 | total value of the cars | 10.9% | 89.1% | 0.0% | 6.0% | 6.0% | 70.6% | 70.6% | 0.0% |
| HD1100 | household owns sight accounts | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HD1110 | value of sight accounts | 3.2% | 96.8% | 0.0% | 36.1% | 36.1% | 64.5% | 64.5% | 0.0% |
| HD1200 | household owns saving accounts | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HD1210 | value of saving accounts | 25.6% | 74.1% | 0.3% | 41.2% | 41.6% | 60.3% | 59.7% | 0.7% |
| HD1500 | household owns publicy traded shares | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HD1510 | value of publicy traded shares | 86.5% | 13.2% | 0.3% | 25.6% | 28.0% | 37.5% | 34.3% | 0.8% |

*Source: Own calculations based on LU-HFCS, non-imputed and unweighted.*

Socio-demographic information have very low missing rates of normally below 1% as can be seen for example for the variables: gender, country of birth, marital status, and highest level of education. Ownership variables have low missing rates as well: the tenure status of the household main residence, ownership of cars, whether or not households own sight accounts, saving accounts or shares have missing rates of below 1% as well. The number of missing values increases strongly if one asks for the exact amount. The missing rate relative to applicable cases is almost 30% for gross cash employee income and between 36-39% for received self-employment income. More than 70% (62-67%) provided bracketed information if the exact value could not be provided for employee income (self-employment income), which proves to be

very useful for the precision of the imputation procedure. Missing values for amounts range from 6% for the total value of cars to 41% for the value of saving accounts (Table 7).

Item non-response has serious consequences if not properly treated. First and foremost, the missing generating process is most likely not missing completely at random, which means that whether or not a value of a variable is missing depends on observed or possibly unobserved characteristics of the respondent. This might lead to biased estimates. For instance, assuming that wealthy households are more reluctant to provide information about their asset holdings using the observed information on wealth only would result in downward biased aggregate wealth estimates. Second, the sample size and therewith the efficiency of the estimates is reduced depending on the number of variables included in the analysis and their missing rates and structure.

*Table 8: Total number of edited and imputed values*

| Description | In % | Values |
|---|---|---|
| Applicable in % of total: | 45.0% | 231273 |
| Unapplicable in % of total: | 54.6% | 280726 |
| Undetermined in % of total: | 0.5% | 2338 |
| Min missings in % of applicable: | 2.7% | 6346 |
| Max missings in % of applicable: | 3.8% | 8684 |
| Bracket values in % of min missing values: | 23.5% | 1493 |
| Bracket values in % of max missing values: | 17.2% | 1493 |
| Editing: corrected values in % of applicable: | 6.6% | 15178 |
| Editing: corrected values in % of applicable (without pensions): | 0.4% | 919 |
| Editing: set to missing in % of applicable: | 0.5% | 1235 |
| Editing: total in % of applicable: | 7.1% | 16413 |

*Source: Own calculations based on LU-HFCS, non-imputed and unweighted.*

Table 8 summarizes the share and total number of edited and imputed values in the LU-HFCS. It gives a general impression how many values had to be edited and imputed and neglects the strong variation in missing and editing rates across variables. In total, respondents should have answered 45% of questions. 54.6% were unapplicable and should not have been answered and 0.5% were undetermined. The average minimum missing rate as a share of applicable cases is 2.7%. Adding the undetermined values, the average maximum missing rate increases to 3.8%. These missing rates seem to be rather low and might question the very time and resource intensive imputation process applied that follows. However, as pointed out in Table 7 key variables of income and wealth have normally much higher missing rates. The problem will amplify if an aggregate variable is constructed or a multivariate analysis is conducted. For example total net wealth is constructed out of a wide range of variables. If all observations are dropped if one component is missing, 63% of all observations will have to be deleted. On average, bracketed information is available for 24% of the minimum number of missing values. This number is

relatively large given the fact that bracketed information is only asked in case of questions with numerical responses.

Finally, the percentage share of corrected values relative to applicable cases is 6.6%. This relatively high number is mainly due to the editing process of one section concerning public pensions. The public pension section necessitated editing all values due to many inconsistencies between personal characteristics (e.g. employment status) and the institutional framework in Luxembourg. Disregarding the public pension section, the average percentage share of corrected values reduces to 0.4% only. An additional 0.5% had to be deleted and imputed at a later stage since the value could not be replaced with certainty by another one.

One way to deal with item non-response is *imputation*, where *"imputation is a generic term for filling in missing data with plausible values"* (Schafer, 1997, p. 1). Although there are alternative ways to handle missing values like complete case analysis, weighting, or model-based procedures,[8] there is strong support for multiple imputation. Here, multiple is to mean that missing values are not just replaced by one value but by M different values (normally M=5) to account for the uncertainty in the imputation procedure. First, the advantage is that the imputed dataset can be analyzed with complete-data methods (Rubin, 1996, p. 474). Second, researchers can analyze the same imputed dataset and are spared from the time consuming imputation process. Third, the data provider has normally additional information which is useful for imputation but cannot be released to the researchers and final user (for example due to data confidentiality reasons). In case of the LU-HFCS, the sample design information and information provided by interviewers were for instance used in the imputation models. And finally, as the uncertainty with regard to the imputation algorithm is taken into account and the correlation structure of the dataset can be preserved, multiple imputations have shown to exhibit good properties.[9]

The key assumption for imputation is that the missing mechanism is MAR (missing at random), which means that missingness only depends on components which can be observed and are included in the dataset and not on components which are unobserved (Cameron and Trivedi, 2005, pp. 925-927). The MAR assumption cannot be tested. On that account it is so important to include as many variables and their interactions as possible in the imputation models.

There are a wide range of different imputation programs available. The LU-HFCS makes use of the ECB Multiple Imputation Routines (€MIR), which provides a range of SAS programs designed to perform multiple imputation for the Eurosystem HFCS

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[8] See Rassler and Riphahn (2006) for an overview of methods to treat item non-response and an application of multiple imputation in this context.

[9] See for example Schafer et al. (1996), Graham et al. (1996), Graham and Schafer (1999), and Rassler and Riphahn (2006).

(Biancotti, 2010).[10] Figure 6 provides an overview of €MIR. After the dataset is edited as described above, the dataset is separated into different sub-datasets respectively containing the i) household level information (H), ii) basic demographic personal information (R), iii) all other person level information (P), and iv) the sample register file (S). Based on a logical flow file, which contains the filter rules for each variable, the flag files for H, R, and P are generated. Since the S file will be neither imputed nor transmitted to the final user, a flag file is not necessary. Using H, R, P datasets and their flags, €MIR executes the following steps:

0.) *Logflow* is a SAS package that performs a series of consistency checks between variable values and status flags and produces tables where inconsistencies of various types are indicated.

1.) The output of the *diagnostics* package consists of tables indicating how many missing values of different types exist for every variable in the H, R, and P datasets.

2.) *Data overview* displays basic descriptive statistics on all variables, and estimates an item non-response model for each variable. The results of the item non-response models help to identify important predictors of item non-response, which are included in the imputation model at a later stage.

3.) The *preparation* module is just a technical step that assembles all relevant files for the imputation process. In case of the LU-HFCS, it combines the H, R, P and S datasets and their flags in one dataset in wide format. Since most of the variables in the HFCS are household variables, the wide format allows taking detailed personal information in imputing household-level variables into account. In addition, the complete dataset is replicated five times as a basis for generating five multiply imputed datasets.

4.) The most extensive element is the *imputation* step, which is explained in detail below.

*Figure 6: Overview of the ECB Multiple Imputation Routines (€MIR)*
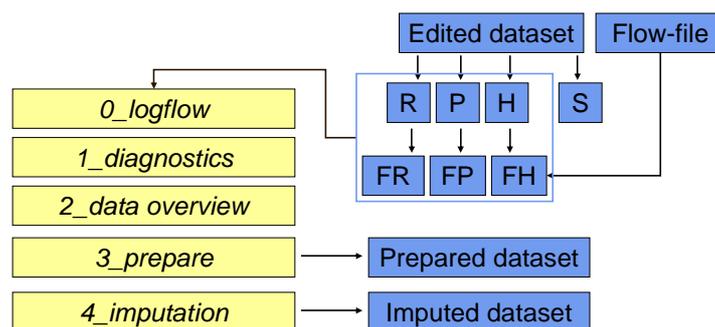


*Source: Own figure based on Biancotti (2010).*

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[10]  €MIR is a further developed multiple imputation routine based on the Federal Reserve Imputation Technique Zeta (FRITZ) used for the Survey of Consumer Finances (SCF). €MIR has the advantages that it increases the comparability between the imputation algorithms of HFCS countries. Being based on FRITZ, it is known to be a highly flexible imputation tool able to handle complex surveys on household finances.

Figure 7 shows in more detail the procedures within the imputation module. After the production of five replicates of the prepared dataset suitable covariates for the imputation models are generated by variable transformation (e.g. creation of dummy and interaction variables, logarithmic transformations). Three different models depending on the type of variable to be imputed are used.

1.) *Hot deck* imputation is applied for the imputation of categorical variables. Respondents and non-respondents for a specific question are classified into adjustment cells with similar observed values. A respondent is randomly drawn out of this cell and the missing value of a non-respondent is replaced. Since only a limited number of variables for cell formation can be used, the selected variables should be highly correlated with the variable to be imputed.

2.) *Regression models* (OLS) are used for continuous variables. The following linear relationship is estimated for the observed values of dependent variable ( $y_{obs}$ ):

$$(1) \qquad y_{obs} = X\beta + u \quad \text{with} \quad u|X \sim N(0, \sigma^2 I)$$

where y is the dependent variable, X a vector of independent variables, u is a normally distributed error term, and β is the vector of coefficients. Provided that the missing at random assumption holds, the OLS estimate of β ( $\hat{\beta} = (X'X)^{-1}(X'y)$ ) is unbiased. The used covariate vector X must be complete, which means either observed or imputed. The missing values are imputed by their best linear predicted value plus a normally distributed random variable.

$$(2) \qquad \hat{y}_{mis} = X\hat{\beta} + \hat{u}, \ \hat{u}|X \sim N(0, \hat{\sigma}^2 I)$$

where $\hat{u}$ is drawn from a normal distribution with mean zero and variance equal to the mean squared error of equation 1, which is $\hat{\sigma}^2 = \frac{1}{n-k}\left(y'y - y'X(X'X)^{-1}X'y\right).$

The better the covariates can explain the observed values of dependent variable, the smaller will be the variance of the added random error. In other words, the better the relationship between dependent and independent variables can be modelled, the less uncertain is the imputed value, which is reflected in a smaller variance between the five implicates. The imputation procedure is not proper in the sense of Rubin (1987, pp. 118-119) since it does not properly model the uncertainty with respect to choosing the accurate imputation model. However, adding randomization with respect to coefficients as well adds additional complexity that can almost not be handled in such a complex survey as the LU-HFCS.[11] Moreover, the imputation models take provided ranges into account. Provided ranges assure that the imputed value is within this range, which makes the imputation procedure more precise than without any lower and upper thresholds.

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[11] As monetary values are usually highly skewed to the right, the dependent variable is often transformed by taking the normal logarithm of this variable. The log transformation reduces, if not eliminates, this skewness. Problematic is the so-called retransformation to the original scale after the missing value is predicted. Ziegelmeyer (2012) discusses the retransformation problem and possible solutions.

3.) The imputation model used for binary variables - *linear probability model* - is similar to the one outlined in equation (1) and (2). The main difference is that the dependent variable is often an indicator variable of owning a certain assets category or receiving income from a certain source instead of a continuous variable.

In total, 424 variables are imputed with the routing of the questionnaire as additional constraint. To preserve the covariance structure of the questionnaire the maximum number of covariates is included. This normally includes survey design information, variables from the sample register file, predictors of item non-response (see data overview program of €MIR), demographic information of the household head, variables on household composition, various pieces of information on income and wealth and possible interactions for selected variables. In some cases the limited number of observations necessitated the reduction of the number of covariates removing first those with least explanatory power and those likely to cause multicollinearity between the variables.

In a first round, the imputation procedure imputes for each implicate M ∈ {1, 2, …5} all missing values using the models outlined above to obtain a first complete database without missing values. Generally, the imputation starts with variables having low missing rates and progresses to variables with higher missing rates. The remaining missings are due to the routing of the questions. For each implicate, the imputation procedure is repeated using the imputed values of the first complete dataset as initial value for the next imputation. This process is called *"Markov Chain Monte Carlo Multiple Imputation Procedure"* and it is repeated until certain convergence criteria are fulfilled (Kennickell, 1991, pp. 10-12). For the LU-HFCS, the Gelman and Rubin indicator (Gelman and Rubin, 1992) is used. The indicator is calculated for the mean and median of all continuous variables. The process is stopped after five iterations. This is as the Gelman and Rubin indicator is below the suggested value of 1.1, which indicates that the convergence of the variables of interest is achieved (Gelman, Carlin, Stern, and Rubin, 2004).

*Figure 7: Overview of the ECB Multiple Imputation Routines (€MIR)*



$$GR = \sqrt{\frac{IM-1}{IM} + \frac{BV}{WV}} < 1.1$$
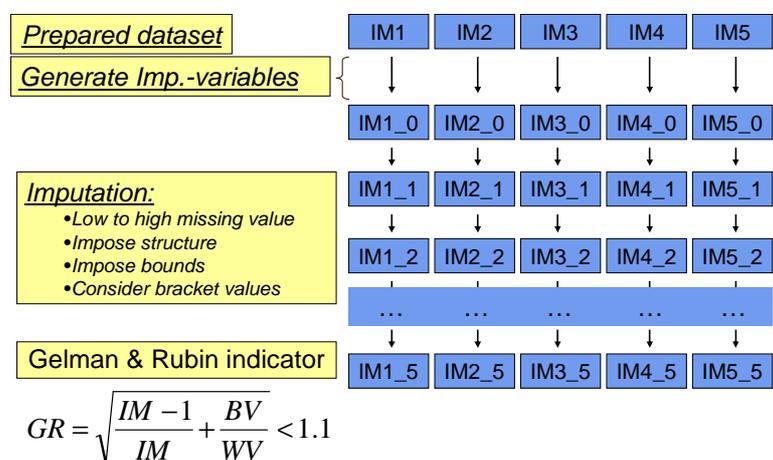
*Source: Own figure based on Biancotti (2010).*

A difficult task is to *evaluate* an imputation procedure, which is due to missing values not being observed. In the best case, the expected value of the quantity of interest Q should be equal to the associated complete-data estimate. Usual quantities of interest are the mean and the 25th, 50th, and 75th percentile of the distribution, correlations or regression coefficients. In addition, proper imputation requires the correct estimation of the variance of the quantities Q of interest (Rubin, 1996, pp. 474-475). As true values for missings are unknown, time-consuming and computationally demanding simulation studies are commonly used to evaluate imputation procedures.[12] In large surveys like the LU-HFCS only a few variables could be investigated this way. Instead, the approach followed by the BCL as well as the ECB is to analyze whether imputation leads to the preservation of distributions and correlations between variables by investigating the mean, median, Q1, Q3, P10, P90, standard errors and extreme observations of all the imputed variables.

All descriptive statistics presented in sections 5 and 6 are based on five complete datasets, which only differ in their imputed values. The statistics shown are based on Rubin's rules (Rubin, 1996, pp. 467-477), which calculate the average over the estimated quantities generated by the five different datasets, and adjust standard errors taking both the within-imputation and between-imputation variance into account.

## 4.3 Weighting

The sampling procedure follows closely the ECB guidelines for the construction of survey weights for the HFCS (HFCN, 2011a). It contains the following steps: i) construction of design weights based on selection probability, ii) non-contact adjustment, iii) over-coverage adjustment, iv) non-response and v) under coverage adjustment. Due to lack of available data it was not possible to calibrate the analytic weights to external data sources.

The reference population of the LU-HFCS comprises all private households living in Luxembourg at 31 December 2010 with the exclusion of institutionalized households, international civil servants and in general individuals not entitled to be registered in the social security register unless they are part of a household where another member is included in the social security register. The sampling frame consists of 248,601 fiscal households[13] and 466,378 individuals registered in the IGSS database at the end of December 2009 (IGSS data referring to December 2010 were not available at the time of the selection of the sample design). The sample design discussed in Section 3 resulted in selecting 5,000 fiscal households. The difference in the definition of the sample unit (fiscal households) and the target unit (private households as

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[12]  See Ziegelmeyer (2012) for an example using the SAVE survey.

[13]  A fiscal household is composed by one or two individuals directly insured via the Luxembourg social security system and all indirectly insured individuals such as depended spouse or children as indentified in the social security register.

defined in the HFCS Manual of Procedures[14]) is addressed in the set up of the weighting procedure. This also holds, as already mentioned, for the difference in the reference year of the sampling frame (2009) and the reference population (2010).

i) The design weights are calculated as the inverse of the selection probability. The household weight is constructed taking into account the different selection probabilities of each stratum. Having been oversampled the weights of high income and self-employed households are adjusted downward.

ii) The non-contact adjustment is necessary to take into account that a number of households included in the initial sample could not successfully be contacted by interviewers. A non-contact with a sampled household can arise for a number of reasons such as: inaccessibility of the address, non possibility to locate the selected address, dwelling demolished or under construction, dwelling empty etc. The non-contact adjustment is calculated using the Calmar procedure developed by French National Statistics Institute (INSEE) (e.g. Deville et al., 1993). Auxiliary information necessary for this procedure (at population and sample level) was derived from the IGSS database.

iii) The over-coverage adjustment addresses that a number of non-eligible households (as non-resident households, or individuals living in collective households, households who moved abroad etc…) may have been accidentally selected in the sampling procedure, given that it was not possible to a priori indentify those households by using the information contained in the sampling frame. This step of the weighting procedure aims to exclude non-eligible households either from the selected sample or from the sampling frame. Having established the number of eligible fiscal households present in the sampling frame and in the sample, the number of eligible private households is established linking the two by means of statistical assumptions starting from the calculated number of eligible individuals.

iv) The non-response adjustment addresses issues related to the fact that sampled households, although having been contacted and eligible, refused to participate in the survey (see Section 3.2). Similar to the non-contact adjustment the weighting procedure uses the Calmar procedure to maintain the representativeness at the population level of the extracted sample. Again, the incorporation of auxiliary information from the IGSS database is necessary for this procedure (at population and sample level).

v) The last step of the weighting procedure is the under-coverage adjustment. This issue mainly arises because the sampling frame is based on a sample drawn from the IGSS database in December 2009, while the target population consists of all

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[14] In the HFCS Manual of procedures (HFCN, 2010 - Annex 1) a household is defined as "*a person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living*".

private households resident in Luxembourg at the end of December 2010. Thus, before implementing this adjustment, a small fraction of Luxembourg resident private households, such as new immigrants, or newly born individuals, is not yet covered by the survey. The under-coverage adjustment overcomes this problem via statistical assumptions, making the LU-HFCS representative of all private households living in Luxembourg at 31 December 2010 with the exclusion of institutionalized households, international civil servants and in general individuals not entitled to be registered in the social security register unless they are part of a household where another member is included in the social security register. Table 9 presents an overview of the weighted and unweighted number of observations at household and individual level.

*Table 9: Number of observations in the sample*

| Sample | Unweighted number of observations | Weighted number of observations |
|---|---|---|
| Households | 950 | 186,440 |
| Individuals | 2,540 | 462,618 |

*Source: Bienvenue (2012)*

Following the ECB guidelines concerning the bootstrap method for variance estimation in the HFCS (HFCN, 2011b), in addition to the analytic weights described in this paragraph, 2,000 sets of replicate bootstrap weights are calculated using the Rao and Wu (1988) method; these sets of weights are necessary in order to allow the final user to properly calculate the variance of the estimates without disseminating sample design information.

The slight variability in the weighted number of individuals in different sets of replicate weights reflects the random component of the statistical assumptions used in the under-coverage adjustment of the analytic weights.

## 4.4 Anonymisation

It is the aim to make the database publicly available for scientific and research purposes. To this end, a user database (UDB) is created where individual data records are anonymised as to ensure to the extent possible that individuals and households having participated in the LU-HFCS cannot be identified. In this context, *"Anonymised microdata" shall mean individual statistical records which have been modified in order to minimise, in accordance with current best practice, the risk of identification of the statistical units to which they relate* (European Commission, 2002).

The anonymisation of the database is a delicate undertaking; on the one hand, it needs to ensure that the disclosure control of the data is appropriate. On the other hand, if the data is altered and tweaked too much the accuracy and meaningfulness of the data may undermine the purpose of collection in the first place.

Essentially, the following measures are taken to anonymise the LU-HFCS database:
- Removal of direct identifiers
- Removal of some variables (e.g. sample register file)

- Rounding / addition of random noise to continuous variables (e.g. income)
- Top-coding of certain variables (e.g. age, size of residence)
- Regrouping (e.g. education, type of vehicle, number of employees in owned business)
- Non-disclosure of lower levels of disaggregation (e.g. NACE-codes)
- Imputation of selected cases

In general, the measures taken are in line with the guidelines of the ECB (HFCN, 2012) and EU-SILC (Eurostat, 2005, 2007, 2009); additional measures to take into account the special situation in Luxembourg are taken as well.


# 5   Sample and population characteristics

This section presents household basic descriptive statistics at sample (i.e. unweighted) and population level (i.e. weighted), with a particular focus on the mean, standard error of the mean estimator, including the confidence interval of the mean. Although our main interest is on population representative figures, Table 10 reports even unweighted values in order to show the effect of the sampling and weighting procedure described in the previous sections and to provide some information on the sample characteristics.

The average household in Luxembourg consists of 2.48 individuals, has 0.58 children with an age of below 18 years and in 60% of cases is headed by a male. The modal age group for household heads is 40 to 49 years and the process of population aging becomes evident when analyzing the distribution of this variable with its sizable right tail. Luxembourg is the European country with the highest share of immigrants and this feature is well reflected in the LU-HFCS. At the population level, 62% and 38% of households are headed by a person with Luxembourg and foreign citizenship, respectively.

Comparing the results at sample and population level for this set of variables we observe that the effect of the sampling strategy and weighting procedure on the mean of these variables is relatively small. This is not the case for variables, such as wealth and income or for variables closely related to those, as the education level and employment status. The mean total household income and the total household net wealth are in fact much higher at the sample level than in the population. A comprehensive analysis of income and wealth aggregates will be presented in the next section. These characteristics reflect the effect of the oversampling of the wealthiest households.

With a population share of 38%, the modal household head has completed the education category ISCED 03-04, which refers to upper secondary education and post-secondary non-tertiary education. It is interesting to underline that, at the population level, 26% of household heads successfully completed the ISCED 05-06 level of education (first stage of tertiary and second stage of tertiary education). This value is much higher at the sample level (37%), again, reflecting the effect of the

oversampling of wealthy households and the positive relationship between income and the level of education of the household head. The effect of overweighting the wealthy households also depicted in the statistics on the employment status. Households headed by self-employed individuals account just for 6% of the Luxembourg resident population but they represent 12% of the LU-HFCS sample.

It is worth noting that the standard errors of the mean estimator are reasonably low for all variables reported here in this section, which is suggestive of good data accuracy despite the relatively low number of observations in the sample.

*Table 10: Household demographic characteristics*

| Variable | | Sample Level (obs=950) | | | | Population Level (obs=186,440) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Err. | [95% Conf. Interval] | | Mean | Std. Err. | [95% Conf. Interval] | |
| Household Size | | 2.67 | 0.04 | 2.59 | 2.76 | 2.48 | 0.00 | 2.47 | 2.49 |
| Number of children < 18 | | 0.58 | 0.03 | 0.52 | 0.64 | 0.52 | 0.01 | 0.50 | 0.54 |
| Total income | | 106,882 | 3,718 | 99,585 | 114,179 | 83,641 | 2,358 | 79,020 | 88,262 |
| Total wealth | | 984,613 | 78,039 | 831,462 | 1,137,765 | 732,728 | 61,180 | 612,817 | 852,639 |
| Male* | | 0.62 | 0.02 | 0.58 | 0.65 | 0.60 | 0.01 | 0.57 | 0.62 |
| Age* | Under 29 | 0.07 | 0.01 | 0.06 | 0.09 | 0.09 | 0.01 | 0.07 | 0.11 |
| | From 30 to 39 | 0.18 | 0.01 | 0.15 | 0.20 | 0.18 | 0.01 | 0.16 | 0.21 |
| | From 40 to 49 | 0.27 | 0.01 | 0.25 | 0.30 | 0.27 | 0.01 | 0.25 | 0.30 |
| | From 50 to 59 | 0.19 | 0.01 | 0.17 | 0.22 | 0.18 | 0.01 | 0.16 | 0.20 |
| | From 60 to 69 | 0.17 | 0.01 | 0.14 | 0.19 | 0.13 | 0.01 | 0.11 | 0.14 |
| | Over 70 | 0.11 | 0.01 | 0.09 | 0.13 | 0.15 | 0.01 | 0.13 | 0.17 |
| Natio-nality* | Luxembourg | 0.59 | 0.02 | 0.55 | 0.62 | 0.62 | 0.01 | 0.60 | 0.64 |
| | Other | 0.41 | 0.02 | 0.38 | 0.45 | 0.38 | 0.01 | 0.36 | 0.40 |
| Educa-tion level* | ISCED 01** | 0.17 | 0.01 | 0.15 | 0.20 | 0.24 | 0.02 | 0.21 | 0.27 |
| | ISCED 02** | 0.10 | 0.01 | 0.08 | 0.11 | 0.11 | 0.01 | 0.09 | 0.14 |
| | ISCED 03-04** | 0.36 | 0.02 | 0.33 | 0.39 | 0.38 | 0.02 | 0.35 | 0.42 |
| | ISCED 05-06** | 0.37 | 0.02 | 0.34 | 0.40 | 0.26 | 0.01 | 0.23 | 0.29 |
| Empl. status* | Employed | 0.53 | 0.02 | 0.50 | 0.56 | 0.56 | 0.01 | 0.54 | 0.58 |
| | Self-employed | 0.12 | 0.01 | 0.10 | 0.14 | 0.06 | 0.01 | 0.05 | 0.07 |
| | Retired | 0.24 | 0.01 | 0.22 | 0.27 | 0.24 | 0.01 | 0.22 | 0.26 |
| | Other | 0.11 | 0.01 | 0.09 | 0.13 | 0.14 | 0.01 | 0.11 | 0.16 |

*Source: Own calculations based on the LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights.[15]*

*Notes: * Variables referring to the head of household. ** ISCED 01=primary education or first stage of basic education; ISCED 02 = lower secondary or second stage of basic education; ISCED 03-04= upper secondary education and post-secondary non-tertiary education; ISCED 05-06= first stage of tertiary and second stage of tertiary education.*

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[15] In situations involving multiple imputation, we use the replicated variance estimation for subpopulations. When one is using the sample design information (strata, clusters, and weights), the possibility arises that the subpopulation is not present for entire strata. In such cases, Stata will drop such strata, which could render the number of observations inconsistent across imputations. This is not the case when using replicated variance estimation.

# 6 Findings

This section presents preliminary estimates on Luxembourg households' income and wealth using the LU-HFCS data collected in 2010-2011. All values are in nominal euro terms. All income related data refer to 2009, whereas wealth data refer to the actual values at the time of the interview. All descriptive statistics are weighted such that provided information can be regarded representative of the underlying population.

Table 11 presents the mean household gross income, by income category. The estimated average household gross income of Luxembourg households in 2009 was about €83,600. With 63%, the majority of the average gross household income derives from labour income as employee, while 7% and 18% derive from self-employment income and pensions (Figure 8). Other income sources are barely important at the aggregate level.

*Table 11: Composition of mean household gross income*

| | Income category | Mean | Std. err. | [95% conf. interval] | | In % of total income |
|---|---|---|---|---|---|---|
| | employee income | 52316 | 1865 | 48656 | 55976 | 63% |
| + | self-employment income | 6073 | 719 | 4661 | 7485 | 7% |
| + | pension income | 15340 | 791 | 13774 | 16905 | 18% |
| + | social transfers | 3601 | 241 | 3127 | 4075 | 4% |
| + | income from regular private transfers | 394 | 80 | 237 | 550 | 0% |
| + | income from real estate property | 3230 | 887 | 1490 | 4970 | 4% |
| + | income from financial investments | 939 | 181 | 583 | 1295 | 1% |
| + | income from private business | 307 | 146 | 20 | 594 | 0% |
| + | income from other income sources | 1442 | 761 | -53 | 2938 | 2% |
| = | total household income | 83641 | 2559 | 78618 | 88664 | 100% |

*Source: Own calculations based on the LU-HFCS; data are multiply imputed and weighted;*
*variance estimation based on survey design information.*

*Figure 8: Composition of mean household gross income*
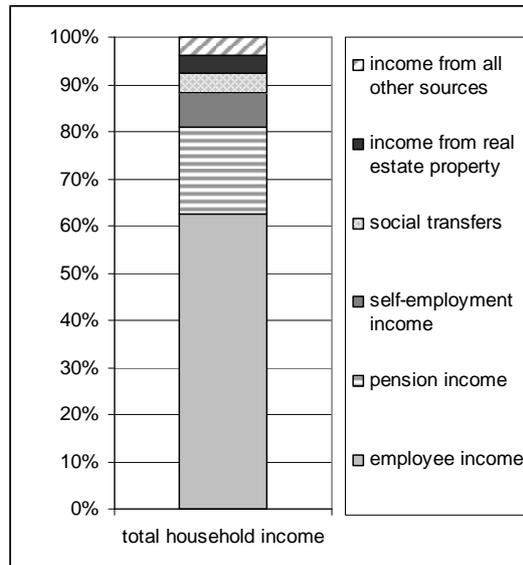


*Source: Own calculations based on the LU-HFCS; data are multiply imputed and weighted.*

Average self-employment income seems to be rather low, which is due to not all households receiving income from all sources. Employee income and self-employment income are received by 71% and 10% of the resident households, respectively (Table 12). The conditional employee and self-employment income is estimated to be €73,700 and €58,900, respectively. Note however, that the self-employment income includes low incomes of self-employed, for which the self-employment income is not considered the main income source. This partly explains why the income may be lower than the employee income.

Figure 12 additionally presents the income of household reference persons stating that their main employment status is being self-employed. For those the average income is estimated to be €150,000 and thus much higher, thereby indicating that the discrepancy can indeed partly explained by the fact that income from self-employment is not the main income source for a part of the sample.

*Table 12: Conditional mean and median household gross income*

| Income category | Mean | Std. err. | [95% conf. interval] | | Subgroup size | Share of total population | Median |
|---|---|---|---|---|---|---|---|
| employee income | 73668 | 2433 | 68898 | 78438 | 132401 | 71.0% | 58797 |
| self-employment income | 58857 | 6996 | 45141 | 72573 | 19238 | 10.3% | 30200 |
| pension income | 43799 | 1915 | 39977 | 47622 | 65426 | 35.1% | 38766 |
| social transfers | 8635 | 424 | 7804 | 9467 | 77725 | 41.7% | 6983 |
| income from regular private transfers | 6724 | 1179 | 4412 | 9036 | 10919 | 5.9% | 5086 |
| income from real estate property | 24359 | 6240 | 12129 | 36590 | 24838 | 13.3% | 10272 |
| income from financial investments | 2095 | 425 | 1262 | 2928 | 83912 | 45.0% | 497 |
| income from private business | 32267 | 15171 | 2530 | 62005 | 1774 | 1.0% | 11667 |
| income from other income sources | 64355 | 30925 | 3667 | 125043 | 4178 | 2.2% | 20000 |
| total household income | 83641 | 2358 | 79020 | 88262 | 186440 | 100.0% | 64653 |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights.*

The conditional average household pension income, received by 35% of Luxembourg households, is estimated to be €43,800. 41% of Luxembourg households receive an estimated average of about €8,600 in social transfers. The share of Luxembourg households receiving income from real estate investments is lower at 13% with an average income of about €24,400. In contrast, the estimated income from financial investments, conditional on holding such assets, is rather low at about €2,100. Despite this low value, almost 50% of Luxembourg households receive an financial investment income.

Turning to wealth, the estimated average (median) total net wealth of Luxembourg households is about €733,000 (€403,000) (Table 13). This is an extremely high value by international standards. For example in the U.S., average (median) household total net wealth is estimated to be about €425,000 / $595,000 (€90,000 / $125,000) in

2009 (Bricker et al., 2011). In France, mean household net wealth is estimated at €229,300 in 2010 (Chaput et al., 2011); in Germany it is estimated to be around €140,000 in 2002 (Frick et al., 2010).

*Table 13: Composition of total net wealth*

|   | Wealth category | Mean | Std. err. | [95% conf. interval] | | Share of total gross wealth | Median |
|---|---|---|---|---|---|---|---|
|   | total real wealth | 722711 | 53976 | 616779 | 828643 | 89% | 359000 |
| + | total financial assets | 88424 | 7572 | 73560 | 103288 | 11% | 26653 |
| = | total gross wealth | 811135 | 56231 | 700780 | 921490 | 100% | 493937 |
| - | total debt | 78407 | 5104 | 68389 | 88424 | 10% | 5001 |
| = | total net wealth | 732728 | 55646 | 623521 | 841936 | 90% | 403103 |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on survey design information.*

With a share of 89%, the predominant part of average total gross household wealth consists of real wealth. On average, Luxembourg households are estimated to hold about €723,000 in total real wealth and about €88,400 in total financial wealth, resulting in total gross wealth of about €811,000. The average total debt of Luxembourg households is about €78,400.

The main part (59%) of real household wealth consists of the value of the household main residence (Figure 9), which accounts for about €430,000 of the estimated €723,000 total real wealth (Table 14). 30% of households' real wealth derive from other real estate holdings, which are estimated to have an approximate average value of €217,000. Vehicles and other valuables make up only a small fraction of average household real wealth. On the liability side, average total mortgage debt is estimated at €74,000.

*Figure 9: Composition of mean household real wealth*
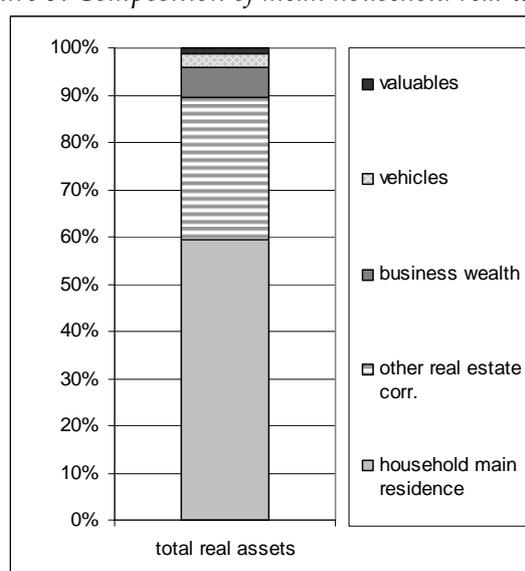


*Source: Own calculations based on the LU-HFCS; data are multiply imputed and weighted.*

*Table 14: Composition of mean household real wealth*

| | Wealth category | Mean | Std. err. | [95% conf. interval] | | Share of total real wealth |
|---|---|---|---|---|---|---|
| | household main residence | 429873 | 30456 | 370101 | 489646 | 59% |
| + | other real estate corr. | 217086 | 38140 | 142234 | 291937 | 30% |
| + | business wealth | 45681 | 11539 | 23033 | 68328 | 6% |
| + | vehicles | 20878 | 1363 | 18203 | 23554 | 3% |
| + | valuables | 9193 | 1250 | 6740 | 11646 | 1% |
| = | total real wealth | 722711 | 53976 | 616779 | 828643 | 100% |
| - | total mortgage debt | 73736 | 5053 | 63819 | 83652 | 10% |
| = | net real wealth | 648975 | 53374 | 544225 | 753726 | 90% |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted;*
*variance estimation based on survey design information.*

Looking at the respective conditional wealth components drives figures up, as is expected (Table 15). First, an estimated 67% of Luxembourg households own their residence (in full or in part). The average and median value of the household main residence is estimated to be €640,000 and €500,000, respectively. Almost an estimated 30% of households own other real estate properties, which are valued at an estimated €770,000 on average. The median is lower at almost €300,000, indicating a significant amount of right skewness in the data. This is also the case with regard to business wealth. Business wealth is held by an estimated 6% of households, which an average value of almost €760,000, whereas the median is estimated at a much lower €190,000. With 87% the most commonly held real asset category, households' vehicles are estimated to be worth about €24,000 on average. A further 24% of Luxembourg households own valuables with an estimated average value of almost €39,000.

*Table 15: Conditional mean and median household real wealth*

| | Wealth category | Mean | Std. err. | [95% conf. interval] | | Subgroup size | Share of total population | Median |
|---|---|---|---|---|---|---|---|---|
| | household main residence | 640571 | 50778 | 541045 | 740097 | 125116 | 67% | 500000 |
| + | other real estate corr. | 770852 | 142921 | 490728 | 1050975 | 52545 | 28% | 299000 |
| + | business wealth | 756600 | 206234 | 352364 | 1160835 | 11257 | 6% | 189685 |
| + | Vehicles | 24078 | 1379 | 21376 | 26780 | 161663 | 87% | 16071 |
| + | Valuables | 38601 | 4954 | 28890 | 48311 | 44402 | 24% | 12251 |
| = | total real wealth | 722711 | 59756 | 605591 | 839831 | 186440 | 100% | 445707 |
| - | total mortgage debt | 190232 | 10528 | 169594 | 210871 | 72266 | 39% | 127326 |
| = | net real wealth | 648975 | 59191 | 532962 | 764988 | 186440 | 100% | 357633 |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights.*

With regard to financial assets, the following figures emerge (Table 16 or Figure 10). With 32%, 21%, 19% and 11% of Luxembourg households' financial wealth is held in form of savings accounts, mutual funds, private pension wealth and sight accounts. On average, Luxembourg households hold almost €29,000 in their savings accounts. Mutual funds amount on average to almost €18,000, private pension wealth to almost €17,000, and sight accounts to around €10,000. Other financial asset components are less relevant.

*Table 16: Composition of mean household financial assets*

| | Financial asset category | Mean | Std. err. | [95% conf. interval] | | Share of total fin. assets |
|---|---|---|---|---|---|---|
| | sight accounts | 9973 | 835 | 8324 | 11623 | 11% |
| + | savings accounts | 28682 | 2182 | 24391 | 32973 | 32% |
| + | mutual funds | 18143 | 3595 | 11055 | 25230 | 21% |
| + | Bonds | 5431 | 2528 | 470 | 10391 | 6% |
| + | Shares | 6365 | 1998 | 2444 | 10286 | 7% |
| + | managed accounts | 88 | 72 | -54 | 230 | 0% |
| + | amount owned to household | 1945 | 842 | 293 | 3598 | 2% |
| + | any other financial assets | 506 | 220 | 60 | 951 | 1% |
| + | value of non-self-empl. not publicly traded businesses | 446 | 239 | -26 | 917 | 1% |
| + | private pension wealth | 16845 | 2271 | 12389 | 21301 | 19% |
| = | total financial assets | 88424 | 7572 | 73560 | 103288 | 100% |
| - | non mortgage debt | 4671 | 403 | 3880 | 5462 | 5% |
| = | net financial assets | 83753 | 7578 | 68876 | 98630 | 95% |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on survey design information. Occupational pension wealth is not included in total financial assets due to the fact that more than 50% of those having an occupational pension plan do not have an account on which the exact amount of their savings is stored, e.g. employees who have a defined benefit occupational pension plan have most likely not an account information.*

*Figure 10: Composition of mean household financial assets*
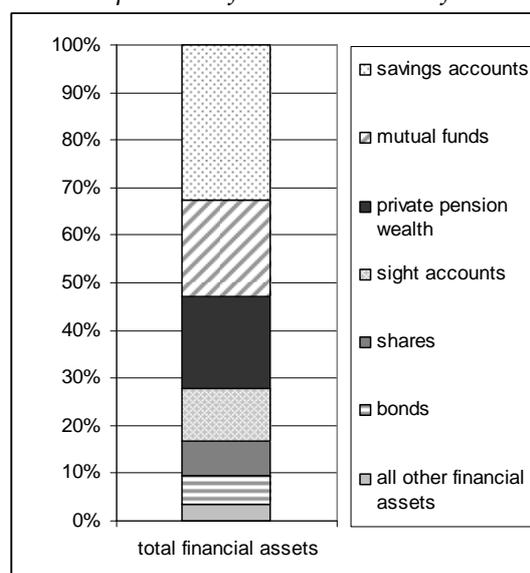


*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted.*

Looking at the conditional figures reveals interesting differences (Table 17). Almost every household holds a sight account; still almost three quarters of households have a savings account, while 19% hold mutual funds. The average amount on sight accounts is €10,000 and as expected represents the lowest average value of all components. Luxembourg households with a savings account hold on average almost €40,000 in their savings account. The estimated median is however much lower at almost €15,000. The mean wealth invested in mutual funds is €95,000 and the median €27,000.

*Table 17: Conditional mean and median household financial assets*

| Financial asset category | Mean | Std. err. | [95% conf. interval] | | Subgroup size | Share of total population | Median |
|---|---|---|---|---|---|---|---|
| sight accounts | 10358 | 905 | 8574 | 12141 | 179521 | 96% | 3209 |
| savings accounts | 39695 | 3179 | 33452 | 45937 | 134776 | 72% | 14742 |
| mutual funds | 95301 | 15844 | 64084 | 126518 | 35247 | 19% | 26870 |
| bonds | 122984 | 50657 | 23690 | 222277 | 8189 | 4% | 45773 |
| shares | 63874 | 18055 | 28485 | 99262 | 18503 | 10% | 10800 |
| managed accounts | 30032 | 45434 | -59016 | 119080 | 546 | 0% | 3000 |
| amount owned to household | 27287 | 10836 | 6049 | 48524 | 13291 | 7% | 3572 |
| any other financial assets | 35641 | 13295 | 7661 | 63621 | 2592 | 1% | 24214 |
| value of non-self-empl. not publicly traded businesses | 64320 | 35722 | -6034 | 134674 | 1265 | 1% | 6636 |
| private pension wealth | 49124 | 6652 | 36086 | 62161 | 63903 | 34% | 27831 |
| total financial assets | 88424 | 7465 | 73788 | 103060 | 186440 | 100% | 26653 |
| non mortgage debt | 12641 | 962 | 10756 | 14526 | 68797 | 37% | 8092 |
| net financial assets | 83753 | 7474 | 69100 | 98405 | 186440 | 100% | 23394 |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights.*

Household participation of holding bonds and shares is estimated at 4% and 10% respectively. The conditional mean (median) are estimated to be more than €120,000 (€45,000) and more than €60,000 (€10,000) for bonds and shares, respectively. The conditional mean of private pension wealth (median) (held by about one third of households) is estimated to be almost €50,000 (€28,000).

The distribution of total net and net real wealth reveal skewness, as would be expected (Figure 11, see as well Table 21 in Appendix B for exact figures). For example, total net wealth and net real wealth almost double (1.8) between the 50th and the 75th percentiles. Between the 25th and the 50th percentile, they increase by a factor 6.4 and 11.6, respectively. Gross income in contrast increases by a steady factor of 1.5-1.7 between the 10th and the 25th percentile, the interquartile ranges between the 25th, 50th and the 75th percentile and the 75th and 90th percentile.

*Figure 11: Distribution of income and wealth*
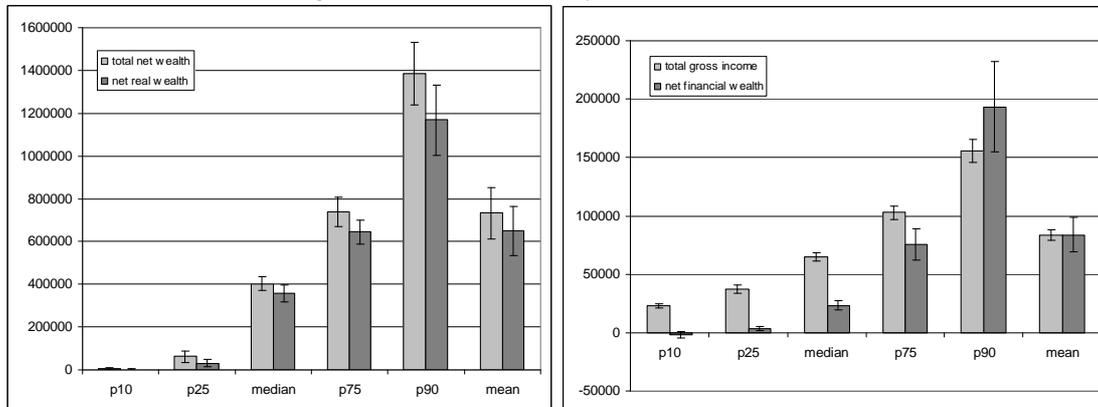


*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights; the 95% confidence intervals are included in the figure.*

Next, we report some aggregate statistics for total gross income and net wealth over various household characteristics. Average total gross income generally increases with household size, with age up to retirement age and with education (Figure 12, see also Table 22 in Appendix B for exact figures). Furthermore, after reaching retirement age average total gross income is much lower which is due to receiving a pension income. At aggregate level, foreign households do not seem to receive a significantly different average total gross income than Luxembourg households, where nationality is based on the reference person for the household. Lastly, self-employed households, where self-employment is considered the primary income source, earn on average 75% more than employees.

*Figure 12: Total gross income over reference persons' characteristics[16]*
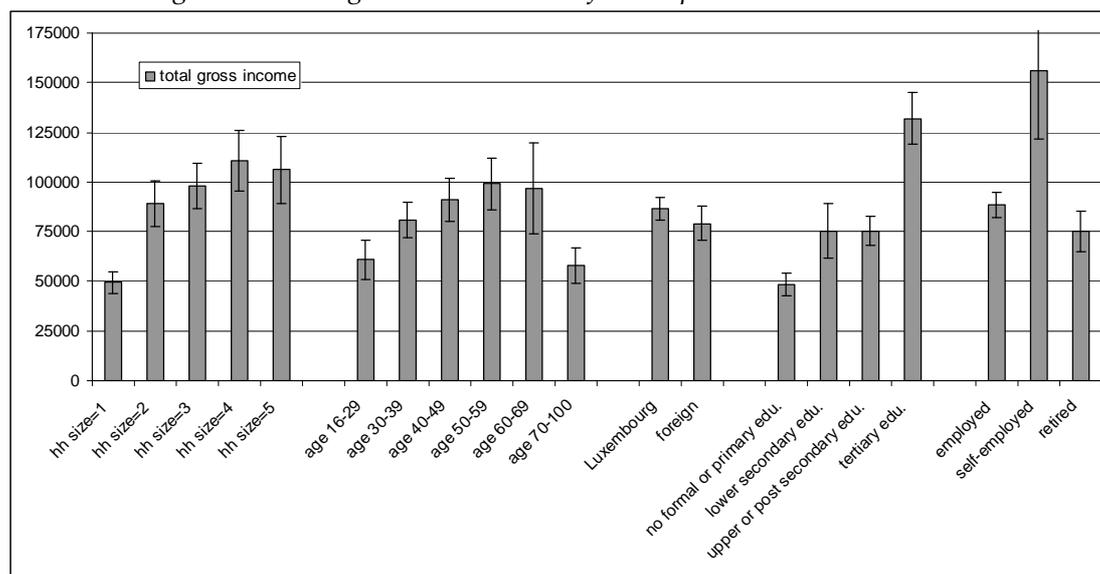


*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights; the 95% confidence intervals are included in the figure.*

With regard to net wealth and its components across various household characteristics, the figures reveal the following (Figure 13, see also Table 22 in Appendix B for exact figures). Average total net wealth and average net real wealth show a strong increase from a one person to a two person household. No significant difference is observed between a two person household and household having three or four household members. The point estimate increases again for households with a household size of more than four members.

Similarly to gross income, average total net wealth and average net real wealth tend to rise with age (up to retirement) and the education. This is also the case for average net financial wealth, but to a much lower extent. For instance, total net wealth is around €400,000 for households having no formal or primary education. This increases to €1,075,000 for households in the highest education group.

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[16]  HFCS reference person is the most knowledgeable person on financial matters of the household (or a proxy if the person is not living in the household).

Total net wealth and net real wealth of Luxembourg nationals and foreign households differ, with Luxembourg household holding about more than double as much total net wealth and real net wealth on average. The difference between Luxembourg nationals and foreign households is highly significant and this is despite the fact that no significant difference with respect to gross income is observed. The effect might be mainly driven by bequests, which are expected to be much higher for households of Luxembourg nationality.

*Figure 13: Mean net wealth over different household characteristics*
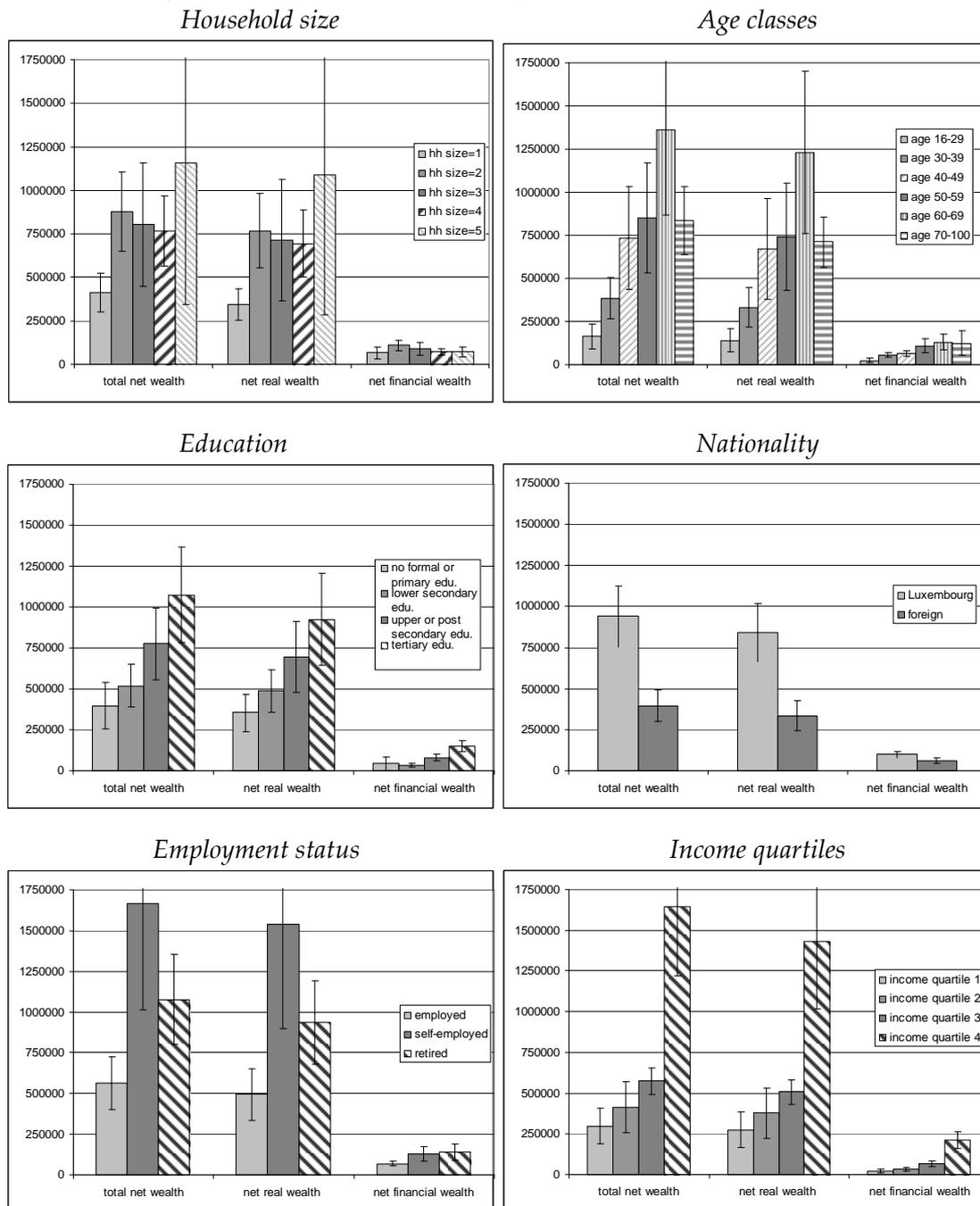


*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights; the 95% confidence intervals are included in the figure.*

There are significant differences in average total net, net real, and net financial wealth between employed households and self-employed households or retired households, where the larger wealth of the self-employed is driven by business wealth and the higher wealth of retirees by a longer accumulation phase over their working life. The income effect on wealth stands out very clearly in these pictures. Whereas there seems to be an almost equidistant increase in average total net wealth and average net real wealth between the first, second and third income quartile, there is a huge jump for the fourth income quartile, in particular with regard to net real wealth and less so for net financial wealth.

# 7 Comparison with aggregate statistics

Despite micro data offering great benefits compared to aggregate statistics, such as national or financial accounts, it is well known that total wealth, especially financial wealth, is normally underreported. Often the aggregate statistics are viewed as a benchmark to evaluate the bias in survey statistics. Errors in measurement and errors in estimation based on micro data might cause such a bias. However, linking survey data to aggregate statistics is only partly possible due to different viewpoints of the statistics. Kavonius and Törmälehto (2010) examine the linkage between the HFCS and the integrated Euro Area Accounts (EAA). Based on their consideration and taking the Luxembourg specific situation into account, Table 18 compares total debt, total financial wealth and their components between the LU-HFCS and financial accounts. Statec and BCL published financial accounts data for Luxembourg according to the European system of accounts (ESA95) for the first time in April 2011 (Karpen, 2011). The comparison category by category is sometimes possible only to a limited extend due to the different coverage of certain variables in the LU-HFCS compared to financial accounts.

*Table 18: Comparison between the LU-HFCS and financial accounts*

| variable HFCS | category financial accounts | | HFCS in Euro | financial accounts only pr. hhs in Euro | HFCS in % of fin. acc. | asset category as fraction of total debt/financial assets HFCS | financial accounts |
|---|---|---|---|---|---|---|---|
| *Total debt* | AF.4 | Loans | *78407* | *101770* | *77%* | *100%* | *100%* |
| Total mortgage debt | AF.42 | Long-term loans (> 1 year) | 73736 | 97867 | 75% | 94% | 96% |
| Non mortgage debt | AF.41 | Short-term loans (< 1 year) | 4671 | 3903 | 120% | 6% | 4% |
| | | | | | | | |
| *Total financial assets* | | | *93201* | *266114* | *35%* | *100%* | *100%* |
| -- n.a. -- | AF.21 | Currency | -- n.a. -- | 9942 | -- n.a. -- | -- n.a. -- | 4% |
| Sight accounts & savings accounts & amount owned to household | AF.22+AF.29 AF.4 | Deposits Loans | 40600 | 119587 | 34% | 44% | 45% |
| Mutual funds | AF.52 | Mutual fund shares | 18143 | 26472 | 69% | 19% | 10% |
| Bonds | AF.3 | Securities other than shares | 5431 | 37430 | 15% | 6% | 14% |
| Shares & managed accounts | AF.511 | Quoted shares | 6453 | 11378 | 57% | 7% | 4% |
| Value of non-self-employment not publicly traded businesses | AF.512+513 | Unquoted equity | 446 | 22739 | 2% | 0% | 9% |
| Private/occupational pension wealth | AF.6 | Insurance technical reserves | 21622 | 38567 | 56% | 23% | 14% |
| Any other financial assets | AF.7 | Other accounts receivable | 506 | 0 | 1% | 0% |

*Source: Own calculations based on LU-HFCS and financial accounts data from Statec and BCL. The financial accounts data are from the end of 2010, which is the middle of the field phase of the LU-HFCS. Due to the fact that private households and non-profit institutions serving households (NPISHs) are combined in the financial accounts, BCL estimates are used to obtain the financial accounts for private households alone (pr. hhs). The financial accounts asset categories are divided by 204,900 households (number of resident households in Luxembourg in 2010; Eurostat) to obtain wealth per household.*

Total debt is relatively well measured in the LU-HFCS. The average household in the HFCS has a total debt of around €78,000 representing 77% of debt reported in the financial accounts. Comparing the differences between the LU-HFCS and the financial accounts with differences for other countries, the LU-HFCS debt estimates seem to be closer to the financial accounts compared to most other countries (Table 19). The financial accounts report a value for total financial assets of approximately €266,000 per household and the LU-HFCS estimates a €93,000. The covered fraction of 35% seems low and indicates a strong underreporting of financial wealth. Another reason might be the coverage of the LU-HFCS survey, which excludes international civil servants and institutionalized individuals. The discrepancy will decrease if financial wealth holdings of the excluded group are higher. Compared to survey data in other countries (Table 19), a 35% coverage in Luxembourg is among the higher ones. The coverage of single financial asset categories varies strongly. Sight and saving accounts as well as amounts owned to other household cover 34% of the financial account categories *"deposits"* plus *"loans"*. Mutual funds and shares (+ managed accounts) are covered relatively well with 69% and 57% respectively. Badly covered are the value of non-self-employment not publicly traded businesses with 2% and bonds with 15%. Private and occupational pension wealth, which includes as well life-insurances, has coverage of 56%. Part of the under-coverage can be explained by the fact that the values of occupational pensions with defined benefit contracts are not included in the survey. As the distribution of the underreporting is relatively unequal over categories, the composition of total financial wealth differs between the financial accounts and the LU-HFCS (see the last two columns in Table 18). The largest part of financial wealth, namely the sight and saving accounts, is relatively well reflected. With 44% in the LU-HFCS and 45% in the financial accounts, the fraction of deposits is relatively large by international standards (BCL, 2011, p. 43).

*Table 19: International comparison of wealth in survey data and aggregate statistics*

| Country | Canada | Italy | UK | USA | | Germany | Luxembourg |
|---|---|---|---|---|---|---|---|
| Survey | SFS | SHIW | BHPS | PSID | SCF | SOEP | HFCS |
| Year | 1999 | 2002 | 2000 | 2001 | 2001 | 2002 (A-G) | 2010/11 |
| Non-financial assets | 87% | 65% | 91% | 95% | 117% | 98% | -* |
| Financial assets | 16% | 18% | 13% | 25% | 38% | 34% | 35% |
| Debt | 69% | 37% | 66% | 67% | 86% | 93% | 74% |
| Net wealth | 38% | 48% | 44% | 46% | 61% | 69% | -* |

*Source: Table based on Frick et al. (2007, figure 8 and the references therein) and own calculations based on LU-HFCS. Wealth figures provided are per capita in contrast to Table 18 which reports average wealth on a household level. The small differences observed for the fraction of wealth covered in Luxembourg is based on a small difference in average household size between Eurostat (2.45) and the LU-HFCS (2.48). Figures for other countries are from the Luxembourg Wealth Study (α-version for Germany and β-version for other countries). * Due to the lack of appropriate aggregate national accounts data a comparison of non-financial assets to aggregate statistics is not possible.*

Whereas financial account data can be considered as rather precise since it is based on different banking statistics (among others security by security reporting), the balance sheet of the Banque centrale du Luxembourg, statistics of the Bank for International Settlements, insurance statistics and so on, the produced assets of the resident Luxembourg population is calculated by the perpetual-inventory-method

(Schmalwasser and Schidlowski, 2006). Statec uses the perpetual-inventory-method to transform yearly flows of gross fixed capital formation into produced assets using assumptions on average operating time and the functional form of depreciations (Maria and Ciccone, 2006).[17]

In principle it is very difficult to compare the estimate of total real wealth to the corresponding macro figure. Produced assets amount to €45.584 billion at the end of 2010.[18] Dividing this value by the number of 204,900 households in 2010 (Eurostat), results in €222,469 for each household (thereafter macro figure). This value is well below the estimated mean total real wealth of households estimated by the LU-HFCS (Table 14), which was around €720,000 (thereafter micro figure). Subtracting vehicles and valuables from this micro figure since durable consumption goods are not included into the macro figure reduces total real wealth to €690,000, still leaving a big part of the difference unexplained. Business wealth is included in both the macro and micro figure. The main reason for the discrepancy between the two figures is that the value of dwellings is included in both figures but the value of land is only included in the micro figure. However, the square meter prices for land in Luxembourg are expensive. Unfortunately, a reliable data source is not available. In the LU-HFCS, housing wealth cannot be separated into value of the dwelling and the land since the survey question refers to the current value of both the dwelling and the land combined. Moreover, renovations and improvements can prolong the average time of use, which is an important increment to calculate the macro figure. Due to a lack of data, these data have to be estimated by Statec. An underestimation of the effect of renovations and improvements cannot be ruled out, which biases the value of produced assets downwards.

The *"Observatoire de l'Habitat"* publishes asking and transaction prices for houses and apartments in Luxemburg. The current value of the household main residence as provided by weighted average of the LU-HFCS is around €640,000 with an average size of 158m$^2$ (Table 20). If the household main residence (HMR) is a house, semidetached house or townhouses, the average price is almost €715,000. The average size is 178m$^2$. The average value of an apartment is €400,000 and the size is nearly 100m$^2$. Comparing the mean price/m$^2$ they are almost equal (with €4,023/m$^2$ for houses and €4,174/m$^2$ for apartments). Table 20 compares these values to the asking prices of the values reported in the *"Observatoire de l'Habitat"* (2011). The mean price of a house is reported to be around €569,000 in 2010, which is substantially lower than the estimate based on the LU-HFCS. The reported house size is more or less equal, which leads into the price of €3,220/m$^2$ for houses. The difference in the prices/m$^2$ as reported in the LU-HFCS and the numbers presented

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[17]  Statec assumes an average operating time for houses of 55 years.

[18]  The preferred macro figure would have been the stock of fixed assets, which includes produced assets and non-produced assets (land, subsoil assets, non-cultivated biological resources and water resources, as well as intangible non-produced assets). For Luxembourg only produced assets are available, which include tangible fixed assets such as dwellings, other buildings and structures, machinery and equipment, and cultivated assets. In addition it contains produced intangible fixed assets such as mineral exploration, computer software, entertainment, literary or artistic originals.

by the *"Observatoire de l'Habitat"* could reflect a persistent overestimation of house prices by LU-HFCS respondents. Since land is very expensive in Luxembourg, another reason accounting for the part of the discrepancy could be that newly constructed houses are constructed on relatively smaller properties than previously. Thus, household owners of our sample report higher values for their HMR due their larger average property sizes.

*Table 20: Comparison of real estate prices*

| Wealth category | LU-HFCS | | | | | | | Observatoire de l' Habitat | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. err. | Subgroup size | Population share | % of HMR owners | Sqm | Price / sqm | Mean | Sqm | Price / sqm |
| Main residence | 640571 | 50778 | 125116 | 67% | | 158 | 4050 | | | |
| House | 714087 | 67091 | 93644 | 50% | 75% | 178 | 4023 | 569200 | 175 | 3220 |
| Apartment | 400232 | 27408 | 29822 | 16% | 24% | 96 | 4174 | 350600 | 88 | 3990 |

*Source: Own calculations based on LU-HFCS and the Observatoire de l' Habitat (2011). Households owning an agricultural household main residence or another kind of household main residence are excluded from the LU-HFCS estimates (1% of population). Data of the Observatoire de l' Habitat display the average asking prices for houses and apartments.*

This view can be supported with the observation that price/m² of apartments in the LU-HFCS and the mean value provided by *"Observatoire de l'Habitat"* are with €4,174/m² and €3,990/m² respectively much closer to each other. Actual transaction prices are available for apartments only (Observatoire de l'Habitat, 2011) and range between €3,715/m² for existing apartments and €4,558/m² for future apartments to be built in 2010.

Gross disposable income (B6G) in Luxembourg first published at the end of 2009 is estimated to be €14.911 billion for 2009 (Eurostat).[19] In order to obtain an aggregate figure which is roughly comparable to household gross income of the LU-HFCS in 2009, the following components are added to B6G: Property income paid (D4), current taxes on income, wealth, etc. (D5), social contributions (D61) (only employee, self-employed and unemployment contributions), net non-life insurance premiums paid (D71) minus non-life insurance claims received (D72), and miscellaneous current transfers paid (D75). This increases the aggregate figure to €19.635 billion (see Appendix C). On average this amounts to €97,205 per household. Based on LU-HFCS data, total household income is estimated to be €83,641 in 2009, which is about €13,500 or 14% less. The difference can be attributed to underreporting in the LU-HFCS (e.g. excluding payments for overtime or holiday pay-outs) and income of non-profit institutions serving households in the national accounts.

In summary, households seem to have a fair notion of their income and debt level. Total financial assets are strongly underreported. The results are in line with the wealth coverage in surveys of other countries. Real estate holdings seem to be over-reported in case of houses as the disparate characteristics of the dwelling and the

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[19] The figure combines both private households sector (S.14) and non-profit institutions serving households (S. 15). This leads to an upward bias of private households' gross income with respect to the aggregate figure.

land are only inadequately taken into account. Estimates of apartment values seem to be close to the one reported in external sources.

## 8   Final remarks

This paper introduced the Luxembourg Household Finance and Consumption Survey (LU-HFCS), presented some background information, its general objectives, the data collection, data treatment and some first descriptive statistics with respect to Luxembourg households' income and wealth position and their distribution across different household characteristics. With respect to wealth and income the data confirms the results of aggregate statistics, which indicate the high income level in Luxembourg and the impressive net wealth accumulated by resident households (e.g. OECD, 2011). The main results are as follows:

1)   The estimated average (median) total net wealth of Luxembourg households is about €733,000 (€403,000) and is highly skewed to the right. This is likely to be driven by high incomes and correspondingly high prices of real estate in Luxembourg. Average total net wealth and average net real wealth generally tend to increase with household size, age and education.

2)   On average, Luxembourg households are estimated to hold about €723,000 in total real wealth and about €88,400 in total financial wealth. The average total debt of Luxembourg households is about €78,400. With a share of 89%, the predominant part of average total gross household wealth consists of real wealth, of which the main part with 59% consists of the value of the household main residence. This is also reflected in the relatively high share of 67% of households owning (in full or in part their) their main residence.

3)   Almost every Luxembourg resident household holds a sight account and almost three quarters of households have a savings account, while 19% hold mutual funds. 32%, 21%, 19% and 11% of Luxembourg households' financial wealth is held in form of savings accounts, mutual funds, private pension wealth and sight accounts. Household participation of holding bonds and shares is estimated at a rather low 4% and 10% respectively.

4)   Total gross household income is on average almost €84,000. Similarly to total net wealth and total real wealth it generally increases with household size, with age up to retirement age and with education. After reaching retirement age average total gross income is lower which is due to receiving a pension income.

5)   Average total gross income of Luxembourg national and foreign households do not seem to differ significantly. This cannot be said for total net wealth and net real wealth, which, on average, is more than double as high for Luxembourg households than for foreign households.

6)   A comparison with aggregate statistics from the Luxembourg national and financial accounts reveals that households seem to have a fair notion of their income, debt and real estate level. However, total financial assets are strongly underreported, as is the case in surveys of other countries.

The value added of the LU-HFCS is that it allows a detailed breakdown of wealth and income across different household characteristics. Additionally, distributional aspects can be investigated. While having only scratched the surface, it is clear that these kinds of data offer a tremendous wealth of information allowing more detailed analysis of distributional aspects on households' income and wealth that is in the interest of central banks and the public in general. Here, the comparison of the Luxembourg households' income and wealth positions and their distributions with other euro area countries will provide fruitful insights.

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# Appendix A: Number of edited and imputed values

| variable name | description | unappli-cable | appli-cable | undeter-mined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| HB0100 | size of household main residence | 0.0% | 100.0% | 0.0% | 1.3% | 1.3% | 0.0% | 0.0% | 0.1% |
| HB0200 | how long have you been living in the household main residence | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HB0300 | main residence - tenure status | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.1% |
| HB0400 | is rent paid for partially owned household main residence | 99.3% | 0.7% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HB0410 | amount of rent paid for partially owned household main residence | 100.0% | 0.0% | 0.0% | | | | | |
| HB0500 | % of ownership of household main residence | 99.3% | 0.7% | 0.0% | 14.3% | 14.3% | 0.0% | 0.0% | 0.0% |
| HB0600 | way of acquiring property | 30.0% | 70.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HB0700 | year of property acquisition | 30.0% | 70.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% |
| HB0800 | property value at the time of its acquisition | 30.0% | 70.0% | 0.0% | 5.9% | 5.9% | 56.4% | 56.4% | 0.2% |
| HB0900 | current price of household main residence | 30.0% | 70.0% | 0.0% | 11.7% | 11.7% | 75.6% | 75.6% | 0.0% |
| HB1000 | mortgages or loans using HMR as collateral | 30.0% | 70.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.3% |
| HB1010 | number of mortgages or loans using HMR as collateral | 65.5% | 34.4% | 0.1% | 0.3% | 0.6% | 0.0% | 0.0% | 0.9% |
| HB1101 | HMR mortgage $x: loan refinancing | 65.5% | 34.4% | 0.1% | 0.0% | 0.3% | | 0.0% | 0.3% |
| HB1102 | HMR mortgage $x: loan refinancing | 94.8% | 4.9% | 0.2% | 0.0% | 4.3% | | 0.0% | 0.0% |
| HB1151 | HMR mortgage $x: country of bank or credit institute | 65.5% | 34.4% | 0.1% | 0.3% | 0.6% | 0.0% | 0.0% | 0.3% |
| HB1152 | HMR mortgage $x: country of bank or credit institute | 94.8% | 4.9% | 0.2% | 0.0% | 4.3% | | 0.0% | 0.0% |
| HB1201A | HMR mortgage $x: purpose of the loan | 65.5% | 34.4% | 0.1% | 0.0% | 0.3% | | 0.0% | 0.3% |
| HB1201B | HMR mortgage $x: purpose of the loan | 95.7% | 4.2% | 0.1% | 0.0% | 2.5% | | 0.0% | 0.0% |
| HB1201C | HMR mortgage $x: purpose of the loan | 99.1% | 0.8% | 0.1% | 0.0% | 12.5% | | 0.0% | 0.0% |
| HB1201D | HMR mortgage $x: purpose of the loan | 99.5% | 0.4% | 0.1% | 0.0% | 25.0% | | 0.0% | 0.0% |
| HB1201E | HMR mortgage $x: purpose of the loan | 99.7% | 0.2% | 0.1% | 0.0% | 50.0% | | 0.0% | 0.0% |
| HB1201F | HMR mortgage $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB1201G | HMR mortgage $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB1201H | HMR mortgage $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB1201I | HMR mortgage $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB1202A | HMR mortgage $x: purpose of the loan | 94.8% | 4.9% | 0.2% | 2.1% | 6.4% | 0.0% | 0.0% | 0.0% |
| HB1202B | HMR mortgage $x: purpose of the loan | 99.6% | 0.2% | 0.2% | 0.0% | 100.0% | | 0.0% | 0.0% |
| HB1202C | HMR mortgage $x: purpose of the loan | 99.7% | 0.1% | 0.2% | 0.0% | 200.0% | | 0.0% | 0.0% |
| HB1202D | HMR mortgage $x: purpose of the loan | 99.8% | 0.0% | 0.2% | | | | 0.0% | |
| HB1202E | HMR mortgage $x: purpose of the loan | 99.8% | 0.0% | 0.2% | | | | 0.0% | |
| HB1202F | HMR mortgage $x: purpose of the loan | 99.8% | 0.0% | 0.2% | | | | 0.0% | |
| HB1202G | HMR mortgage $x: purpose of the loan | 99.8% | 0.0% | 0.2% | | | | 0.0% | |
| HB1202H | HMR mortgage $x: purpose of the loan | 99.8% | 0.0% | 0.2% | | | | 0.0% | |
| HB1202I | HMR mortgage $x: purpose of the loan | 99.8% | 0.0% | 0.2% | | | | 0.0% | |
| HB1301 | HMR mortgage $x: year when loan taken or refinanced | 65.5% | 34.4% | 0.1% | 0.6% | 0.9% | 0.0% | 0.0% | 0.3% |
| HB1302 | HMR mortgage $x: year when loan taken or refinanced | 94.8% | 4.9% | 0.2% | 2.1% | 6.4% | 0.0% | 0.0% | 0.0% |
| HB1401 | HMR mortgage $x: initial amount borrowed | 65.5% | 34.1% | 0.4% | 6.8% | 8.0% | 54.5% | 46.2% | 1.5% |
| HB1402 | HMR mortgage $x: initial amount borrowed | 94.8% | 4.9% | 0.2% | 2.1% | 6.4% | 0.0% | 0.0% | 2.1% |
| HB1501 | HMR mortgage $x: additional borrowing on the HMR mortgage | 65.5% | 34.4% | 0.1% | 0.3% | 0.6% | 0.0% | 0.0% | 0.3% |
| HB1502 | HMR mortgage $x: additional borrowing on the HMR mortgage | 94.8% | 4.9% | 0.2% | 0.0% | 4.3% | | 0.0% | 0.0% |
| HB1601 | HMR mortgage $x: length of the loan at the time of borrowing/refinancing | 65.5% | 34.0% | 0.5% | 0.0% | 1.5% | | 0.0% | 1.2% |
| HB1602 | HMR mortgage $x: length of the loan at the time of borrowing/refinancing | 94.8% | 4.9% | 0.2% | 2.1% | 6.4% | 0.0% | 0.0% | 0.0% |
| HB1701 | HMR mortgage $x: amount still owed | 65.5% | 33.7% | 0.8% | 11.3% | 13.8% | 58.3% | 47.7% | 3.1% |
| HB1702 | HMR mortgage $x: amount still owed | 94.8% | 4.4% | 0.7% | 11.9% | 28.6% | 20.0% | 8.3% | 11.9% |
| HB1801 | HMR mortgage $x: adjustable interest rate | 65.5% | 34.4% | 0.1% | 0.3% | 0.6% | 0.0% | 0.0% | 0.3% |
| HB1802 | HMR mortgage $x: adjustable interest rate | 94.8% | 4.9% | 0.2% | 4.3% | 8.5% | 0.0% | 0.0% | 0.0% |
| HB1901 | HMR mortgage $x: current interest loan of the HMR mortgage | 65.5% | 34.4% | 0.1% | 12.2% | 12.5% | 0.0% | 0.0% | 0.3% |
| HB1902 | HMR mortgage $x: current interest loan of the HMR mortgage | 94.8% | 4.9% | 0.2% | 14.9% | 19.1% | 0.0% | 0.0% | 0.0% |
| HB2001 | HMR mortgage $x: monthly amount of payment made on loan | 65.5% | 34.2% | 0.3% | 4.9% | 5.8% | 50.0% | 42.1% | 0.9% |
| HB2002 | HMR mortgage $x: monthly amount of payment made on loan | 94.8% | 4.7% | 0.4% | 4.4% | 13.3% | 0.0% | 0.0% | 4.4% |
| HB2100 | money still owed on additional HMR loans | 98.5% | 1.3% | 0.2% | 8.3% | 25.0% | 0.0% | 0.0% | 0.0% |
| HB2200 | monthly amount of payment made on additional HMR loans | 98.5% | 1.2% | 0.3% | 9.1% | 36.4% | 0.0% | 0.0% | 9.1% |
| HB2300 | monthly amount paid as rent | 73.1% | 26.9% | 0.0% | 0.8% | 0.8% | | | 1.2% |
| HB2400 | household owns other properties than HMR | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HB2410 | number of properties other than household main residence | 65.8% | 34.1% | 0.1% | 0.0% | 0.3% | | 0.0% | 0.9% |
| HB2501 | other property $x: property type | 65.8% | 34.1% | 0.1% | 0.0% | 0.3% | | 0.0% | 0.3% |
| HB2502 | other property $x: property type | 85.8% | 14.1% | 0.1% | 0.7% | 1.5% | 0.0% | 0.0% | 0.0% |
| HB2511 | other property $x: In which country is real estate located? | 65.8% | 34.1% | 0.1% | 0.0% | 0.3% | | 0.0% | 0.3% |
| HB2512 | other property $x: In which country is real estate located? | 85.8% | 14.0% | 0.2% | 0.0% | 1.5% | | 0.0% | 1.5% |
| HB2601 | other property $x: for household own use | 75.6% | 24.3% | 0.1% | 0.0% | 0.4% | | 0.0% | 0.4% |
| HB2602 | other property $x: for household own use | 91.9% | 7.9% | 0.2% | 1.3% | 4.0% | 0.0% | 0.0% | 0.0% |
| HB2611 | other property $x: for business use | 76.0% | 23.9% | 0.1% | 0.0% | 0.4% | | 0.0% | 0.9% |
| HB2612 | other property $x: for business use | 88.4% | 11.4% | 0.2% | 0.0% | 1.9% | | 0.0% | 0.0% |
| HB2621 | other property $x: leased or rented | 78.7% | 21.2% | 0.1% | 0.0% | 0.5% | | 0.0% | 0.5% |
| HB2622 | other property $x: leased or rented | 89.7% | 10.1% | 0.2% | 0.0% | 2.1% | | 0.0% | 0.0% |
| HB2631 | other property $x: for other use | 91.8% | 8.1% | 0.1% | 0.0% | 1.3% | | 0.0% | 1.3% |

| variable name | description | unapplicable | applicable | undetermined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| HB2632 | other property $x: for other use | 96.0% | 3.7% | 0.3% | 0.0% | 8.6% | | 0.0% | 0.0% |
| HB2701 | other property $x: % of the property belonging to household | 65.8% | 34.1% | 0.1% | 1.2% | 1.5% | 0.0% | 0.0% | 0.0% |
| HB2702 | other property $x: % of the property belonging to household | 85.8% | 14.0% | 0.2% | 1.5% | 3.0% | 0.0% | 0.0% | 0.8% |
| HB2801 | other property $x: current value | 65.8% | 34.1% | 0.1% | 12.7% | 13.0% | 34.1% | 33.3% | 0.3% |
| HB2802 | other property $x: current value | 85.8% | 14.1% | 0.1% | 16.4% | 17.2% | 54.5% | 52.2% | 0.0% |
| HB2900 | additional properties current value | 93.6% | 6.2% | 0.2% | 20.3% | 23.7% | 25.0% | 21.4% | 3.4% |
| HB3000 | mortgages or loans using other properties as collateral | 65.8% | 34.1% | 0.1% | 0.0% | 0.3% | | 0.0% | 0.9% |
| HB3010 | number of mortgages or loans using other properties as collateral | 88.2% | 11.7% | 0.1% | 0.0% | 0.9% | | 0.0% | 1.8% |
| HB3021 | Location of the first mortgage | 88.2% | 11.6% | 0.2% | 0.0% | 1.8% | | 0.0% | 0.9% |
| HB3022 | Location of the second mortgage | 97.2% | 2.7% | 0.1% | 7.7% | 11.5% | 0.0% | 0.0% | 0.0% |
| HB3101 | other property mortgages $x: loan refinancing | 88.2% | 11.6% | 0.2% | 0.0% | 1.8% | | 0.0% | 0.9% |
| HB3102 | other property mortgages $x: loan refinancing | 97.2% | 2.7% | 0.1% | 7.7% | 11.5% | 0.0% | 0.0% | 0.0% |
| HB3201A | other property mortgage $x: main purpose of the loan | 88.2% | 11.7% | 0.1% | 1.8% | 2.7% | 0.0% | 0.0% | 0.9% |
| HB3201B | other property mortgage $x: main purpose of the loan | 99.2% | 0.7% | 0.1% | 0.0% | 14.3% | | 0.0% | 0.0% |
| HB3201C | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3201D | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3201E | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3201F | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3201G | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3201H | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3201I | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3202A | other property mortgage $x: main purpose of the loan | 97.2% | 2.7% | 0.1% | 3.8% | 7.7% | 0.0% | 0.0% | 0.0% |
| HB3202B | other property mortgage $x: main purpose of the loan | 99.7% | 0.2% | 0.1% | 0.0% | 50.0% | | 0.0% | 0.0% |
| HB3202C | other property mortgage $x: main purpose of the loan | 99.8% | 0.1% | 0.1% | 0.0% | 100.0% | | 0.0% | 0.0% |
| HB3202D | other property mortgage $x: main purpose of the loan | 99.8% | 0.1% | 0.1% | 0.0% | 100.0% | | 0.0% | 0.0% |
| HB3202E | other property mortgage $x: main purpose of the loan | 99.8% | 0.1% | 0.1% | 0.0% | 100.0% | | 0.0% | 0.0% |
| HB3202F | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3202G | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3202H | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3202I | other property mortgage $x: main purpose of the loan | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HB3301 | other property mortgage $x: year when loan taken or refinanced | 88.2% | 11.7% | 0.1% | 2.7% | 3.6% | 0.0% | 0.0% | 0.9% |
| HB3302 | other property mortgage $x: year when loan taken or refinanced | 97.2% | 2.7% | 0.1% | 11.5% | 15.4% | 0.0% | 0.0% | 0.0% |
| HB3401 | other property mortgage $x: initial amount borrowed | 88.2% | 11.6% | 0.2% | 11.8% | 13.6% | 38.5% | 33.3% | 1.8% |
| HB3402 | other property mortgage $x: initial amount borrowed | 97.2% | 2.7% | 0.1% | 15.4% | 19.2% | 0.0% | 0.0% | 0.0% |
| HB3501 | other property mortgage $x: additional borrowing | 88.2% | 11.7% | 0.1% | 1.8% | 2.7% | 0.0% | 0.0% | 0.9% |
| HB3502 | other property mortgage $x: additional borrowing | 97.2% | 2.7% | 0.1% | 7.7% | 11.5% | 0.0% | 0.0% | 0.0% |
| HB3601 | other property mortgage $x: length of the loan at the time of borrowing/refinancing | 88.2% | 11.7% | 0.1% | 3.6% | 4.5% | 0.0% | 0.0% | 0.9% |
| HB3602 | other property mortgage $x: length of the loan at the time of borrowing/refinancing | 97.2% | 2.7% | 0.1% | 11.5% | 15.4% | 0.0% | 0.0% | 0.0% |
| HB3701 | other property mortgage $x: amount still owed | 88.2% | 11.3% | 0.5% | 15.0% | 19.6% | 37.5% | 28.6% | 3.7% |
| HB3702 | other property mortgage $x: amount still owed | 97.2% | 2.7% | 0.1% | 19.2% | 23.1% | 0.0% | 0.0% | 0.0% |
| HB3801 | other property mortgage $x: adjustable interest rate | 88.2% | 11.7% | 0.1% | 5.4% | 6.3% | 0.0% | 0.0% | 0.9% |
| HB3802 | other property mortgage $x: adjustable interest rate | 97.2% | 2.7% | 0.1% | 11.5% | 15.4% | 0.0% | 0.0% | 0.0% |
| HB3901 | other property mortgage $x: current interest loan of the mortgage | 88.2% | 11.7% | 0.1% | 18.0% | 18.9% | 0.0% | 0.0% | 0.9% |
| HB3902 | other property mortgage $x: current interest loan of the mortgage | 97.2% | 2.7% | 0.1% | 23.1% | 26.9% | 0.0% | 0.0% | 0.0% |
| HB4001 | other property mortgage $x: monthly payment on loan | 88.2% | 11.6% | 0.2% | 9.1% | 10.9% | 70.0% | 58.3% | 0.9% |
| HB4002 | other property mortgage $x: monthly payment on loan | 97.2% | 2.7% | 0.1% | 19.2% | 23.1% | 40.0% | 33.3% | 0.0% |
| HB4100 | money still owed on additional other property loans | 99.2% | 0.5% | 0.3% | 40.0% | 100.0% | 0.0% | 0.0% | 40.0% |
| HB4200 | monthly payment on additional other property loans | 99.2% | 0.7% | 0.1% | 14.3% | 28.6% | 0.0% | 0.0% | 0.0% |

| variable name | description | unappli- cable | appli- cable | undeter- mined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| HB4300 | ownership of cars | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.1% |
| HB4310 | number of cars | 10.9% | 89.1% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HB4400 | total value of the cars | 10.9% | 89.1% | 0.0% | 6.0% | 6.0% | 70.6% | 70.6% | 0.0% |
| HB4500 | ownership of other vehicles | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HB4510A | number of other vehicles | 85.8% | 14.1% | 0.1% | 0.7% | 1.5% | 0.0% | 0.0% | 0.0% |
| HB4510B | number of other vehicles | 85.8% | 14.1% | 0.1% | 0.7% | 1.5% | 0.0% | 0.0% | 0.0% |
| HB4510C | number of other vehicles | 85.8% | 14.1% | 0.1% | 0.7% | 1.5% | 0.0% | 0.0% | 0.0% |
| HB4510D | number of other vehicles | 85.8% | 14.1% | 0.1% | 0.7% | 1.5% | 0.0% | 0.0% | 0.0% |
| HB4510E | number of other vehicles | 85.8% | 14.1% | 0.1% | 0.7% | 1.5% | 0.0% | 0.0% | 0.0% |
| HB4510F | number of other vehicles | 85.8% | 14.1% | 0.1% | 0.7% | 1.5% | 0.0% | 0.0% | 2.2% |
| HB4600 | total value of other vehicles | 85.8% | 14.1% | 0.1% | 4.5% | 5.2% | 66.7% | 57.1% | 0.0% |
| HB4700 | ownership of other valuables | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HB4710 | value of other valuables | 70.6% | 28.8% | 0.5% | 33.2% | 35.0% | 57.1% | 54.2% | 0.4% |
| HC0100 | household has a leasing contract | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HC0110 | monthly leasing payments | 94.2% | 5.7% | 0.1% | 7.4% | 9.3% | 25.0% | 20.0% | 0.0% |
| HC0200 | household has credit line or overdraft | 0.0% | 100.0% | 0.0% | 0.7% | 0.7% | 0.0% | 0.0% | 0.1% |
| HC0210 | household has outstanding credit line/overdraft balance | 43.7% | 55.6% | 0.7% | 0.2% | 1.5% | 0.0% | 0.0% | 0.0% |
| HC0220 | amount of outstanding credit line/overdraft balance | 90.1% | 9.1% | 0.8% | 12.8% | 22.1% | 27.3% | 15.8% | 0.0% |
| HC0300 | household has a credit card | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HC0310 | household has outstanding balance on credit cards | 14.4% | 85.5% | 0.1% | 0.2% | 0.4% | 0.0% | 0.0% | 0.0% |
| HC0320 | amount of outstanding credit cards balance | 93.6% | 6.1% | 0.3% | 10.3% | 15.5% | 50.0% | 33.3% | 0.0% |
| HC0400 | has any non-collaterised loans | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.3% |
| HC0410 | number of non-collaterised loans | 69.3% | 30.7% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 1.0% |
| HC0501A | non-collaterised loan $x: purpose of the loan | 69.3% | 30.7% | 0.0% | 0.0% | 0.0% | | | 1.7% |
| HC0501B | non-collaterised loan $x: purpose of the loan | 97.8% | 2.2% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HC0501C | non-collaterised loan $x: purpose of the loan | 99.5% | 0.5% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HC0501D | non-collaterised loan $x: purpose of the loan | 100.0% | 0.0% | 0.0% | | | | | |
| HC0501E | non-collaterised loan $x: purpose of the loan | 100.0% | 0.0% | 0.0% | | | | | |
| HC0501F | non-collaterised loan $x: purpose of the loan | 100.0% | 0.0% | 0.0% | | | | | |
| HC0501G | non-collaterised loan $x: purpose of the loan | 100.0% | 0.0% | 0.0% | | | | | |
| HC0501H | non-collaterised loan $x: purpose of the loan | 100.0% | 0.0% | 0.0% | | | | | |
| HC0501I | non-collaterised loan $x: purpose of the loan | 100.0% | 0.0% | 0.0% | | | | | |
| HC0502A | non-collaterised loan $x: purpose of the loan | 92.4% | 7.5% | 0.1% | 1.4% | 2.8% | 0.0% | 0.0% | 0.0% |
| HC0502B | non-collaterised loan $x: purpose of the loan | 99.4% | 0.5% | 0.1% | 20.0% | 40.0% | 0.0% | 0.0% | 0.0% |
| HC0502C | non-collaterised loan $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | | 0.0% |
| HC0502D | non-collaterised loan $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | | 0.0% |
| HC0502E | non-collaterised loan $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | | 0.0% |
| HC0502F | non-collaterised loan $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | | 0.0% |
| HC0502G | non-collaterised loan $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | | 0.0% |
| HC0502H | non-collaterised loan $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | | 0.0% |
| HC0502I | non-collaterised loan $x: purpose of the loan | 99.9% | 0.0% | 0.1% | | | | | 0.0% |
| HC0551 | non-collaterised loan $x: Which institution granted the credit? | 69.3% | 30.5% | 0.2% | 0.7% | 1.4% | 0.0% | 0.0% | 1.0% |
| HC0552 | non-collaterised loan $x: Which institution granted the credit? | 92.4% | 7.5% | 0.1% | 2.8% | 4.2% | 0.0% | 0.0% | 0.0% |
| HC0601 | non-collaterised loan $x: amount initially borrowed | 69.3% | 30.5% | 0.2% | 4.1% | 4.8% | 66.7% | 57.1% | 1.7% |
| HC0602 | non-collaterised loan $x: amount initially borrowed | 92.4% | 7.2% | 0.4% | 10.3% | 16.2% | 42.9% | 27.3% | 4.4% |
| HC0701 | non-collaterised loan $x: intitial length of the loan | 69.3% | 30.6% | 0.1% | 5.5% | 5.8% | 0.0% | 0.0% | 1.0% |
| HC0702 | non-collaterised loan $x: intitial length of the loan | 92.4% | 7.5% | 0.1% | 9.9% | 11.3% | 0.0% | 0.0% | 0.0% |
| HC0801 | non-collaterised loan $x: outstanding balance of loan | 69.3% | 30.3% | 0.4% | 8.7% | 10.1% | 60.0% | 51.7% | 1.7% |
| HC0802 | non-collaterised loan $x: outstanding balance of loan | 92.4% | 7.5% | 0.1% | 12.7% | 14.1% | 22.2% | 20.0% | 0.0% |
| HC0901 | non-collaterised loan $x: current interest rate of loan | 69.3% | 30.6% | 0.1% | 25.8% | 26.1% | 0.0% | 0.0% | 1.0% |
| HC0902 | non-collaterised loan $x: current interest rate of loan | 92.4% | 7.5% | 0.1% | 21.1% | 22.5% | 0.0% | 0.0% | 0.0% |
| HC1001 | non-collaterised loan $x: monthly payment on loan | 69.3% | 30.6% | 0.1% | 7.2% | 7.6% | 38.1% | 36.4% | 1.0% |
| HC1002 | non-collaterised loan $x: monthly payment on loan | 92.4% | 7.5% | 0.1% | 11.3% | 12.7% | 0.0% | 0.0% | 0.0% |
| HC1100 | total amount owed for additional non-collaterised loans | 98.3% | 1.6% | 0.1% | 6.7% | 13.3% | 0.0% | 0.0% | 0.0% |
| HC1200 | monthly payment on additional non-collateralised loans | 98.3% | 1.6% | 0.1% | 13.3% | 20.0% | 50.0% | 33.3% | 0.0% |
| HC1300 | has applied for loan/credit | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 2.3% |
| HC1310 | was refused credit | 58.6% | 39.1% | 2.3% | 0.3% | 6.2% | 0.0% | 0.0% | 5.9% |
| HC1320 | re-applying for credit | 95.5% | 2.1% | 2.4% | 0.0% | 115.0% | | 0.0% | 110.0% |
| HC1400 | not applying for credit due to perceived credit constrain | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HD0100 | investments in businesses not publicly traded | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HD0200 | investments in self-employment businesses | 90.3% | 9.6% | 0.1% | 0.0% | 1.1% | | 0.0% | 0.0% |
| HD0210 | how many self-employment businesses | 91.2% | 8.7% | 0.1% | 0.0% | 1.2% | | 0.0% | 0.0% |
| HD0301 | business $x: NACE | 91.2% | 8.7% | 0.1% | 0.0% | 1.2% | | 0.0% | 0.0% |
| HD0302 | business $x: NACE | 97.9% | 2.0% | 0.1% | 5.3% | 10.5% | 0.0% | 0.0% | 0.0% |
| HD0401 | business $x: legal form of the business | 91.2% | 8.7% | 0.1% | 0.0% | 1.2% | | 0.0% | 0.0% |
| HD0402 | business $x: legal form of the business | 97.9% | 2.0% | 0.1% | 0.0% | 5.3% | | 0.0% | 0.0% |
| HD0501 | business $x: number of employees | 91.2% | 8.7% | 0.1% | 0.0% | 1.2% | | 0.0% | 0.0% |
| HD0502 | business $x: number of employees | 97.9% | 1.7% | 0.4% | 0.0% | 25.0% | | 0.0% | 18.8% |
| HD0601A | business $x: household members working in the business | 91.2% | 8.7% | 0.1% | 2.4% | 3.6% | 0.0% | 0.0% | 20.5% |

| variable name | description | unappli-cable | appli-cable | undeter-mined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| HD0601B | business $x: household members working in the business | 98.1% | 1.8% | 0.1% | 0.0% | 5.9% | | 0.0% | 100.0% |
| HD0601C | business $x: household members working in the business | 99.6% | 0.3% | 0.1% | 0.0% | 33.3% | | 0.0% | 100.0% |
| HD0601D | business $x: household members working in the business | 99.8% | 0.1% | 0.1% | 0.0% | 100.0% | | 0.0% | 100.0% |
| HD0601E | business $x: household members working in the business | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HD0601F | business $x: household members working in the business | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HD0602A | business $x: household members working in the business | 97.9% | 2.0% | 0.1% | 21.1% | 26.3% | 0.0% | 0.0% | 21.1% |
| HD0602B | business $x: household members working in the business | 99.5% | 0.4% | 0.1% | 0.0% | 25.0% | | 0.0% | 100.0% |
| HD0602C | business $x: household members working in the business | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HD0602D | business $x: household members working in the business | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HD0602E | business $x: household members working in the business | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HD0602F | business $x: household members working in the business | 99.9% | 0.0% | 0.1% | | | | 0.0% | |
| HD0701 | business $x: % of household ownership | 91.2% | 8.6% | 0.2% | 1.2% | 3.7% | 0.0% | 0.0% | 2.4% |
| HD0702 | business $x: % of household ownership | 97.9% | 1.9% | 0.2% | 0.0% | 11.1% | | 0.0% | 5.6% |
| HD0801 | business $x: value of the business | 91.2% | 8.7% | 0.1% | 48.2% | 49.4% | 32.5% | 31.7% | 0.0% |
| HD0802 | business $x: value of the business | 97.9% | 1.9% | 0.2% | 33.3% | 44.4% | 16.7% | 12.5% | 5.6% |
| HD0900 | value of additional businesses | 98.9% | 0.9% | 0.1% | 33.3% | 44.4% | 0.0% | 0.0% | 0.0% |
| HD1000 | non-self-employment not publicly traded businesses | 90.3% | 9.6% | 0.1% | 1.1% | 2.2% | 0.0% | 0.0% | 0.0% |
| HD1010 | value of non-selfemployment not publicly traded businesses | 98.6% | 1.2% | 0.2% | 45.5% | 63.6% | 40.0% | 28.6% | 0.0% |
| HD1100 | household owns sight accounts | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HD1110 | value of sight accounts | 3.2% | 96.8% | 0.0% | 36.1% | 36.1% | 64.5% | 64.5% | 0.0% |
| HD1200 | household owns savings accounts | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HD1210 | value of saving accounts | 25.6% | 74.1% | 0.3% | 41.2% | 41.6% | 60.3% | 59.7% | 0.7% |
| HD1300 | household owns investments in mutual funds | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.5% |
| HD1310A | types of mutual funds | 75.4% | 24.0% | 0.6% | 3.5% | 6.1% | 0.0% | 0.0% | 1.3% |
| HD1310B | types of mutual funds | 75.4% | 24.0% | 0.6% | 2.6% | 5.3% | 0.0% | 0.0% | 1.3% |
| HD1310C | types of mutual funds | 75.4% | 24.0% | 0.6% | 2.2% | 4.8% | 0.0% | 0.0% | 0.4% |
| HD1310D | types of mutual funds | 75.4% | 24.0% | 0.6% | 2.2% | 4.8% | 0.0% | 0.0% | 0.4% |
| HD1310E | types of mutual funds | 75.4% | 24.0% | 0.6% | 1.3% | 3.9% | 0.0% | 0.0% | 0.4% |
| HD1310F | types of mutual funds | 75.4% | 24.0% | 0.6% | 2.2% | 4.8% | 0.0% | 0.0% | 5.7% |
| HD1310G | types of mutual funds | 75.4% | 24.0% | 0.6% | 2.2% | 4.8% | 0.0% | 0.0% | 0.0% |
| HD1320A | market value of mutual funds | 83.1% | 15.5% | 1.5% | 34.0% | 43.5% | 54.0% | 42.2% | 2.0% |
| HD1320B | market value of mutual funds | 91.4% | 7.4% | 1.3% | 38.6% | 55.7% | 29.6% | 20.5% | 1.4% |
| HD1320C | market value of mutual funds | 95.4% | 3.5% | 1.2% | 48.5% | 81.8% | 56.3% | 33.3% | 0.0% |
| HD1320D | market value of mutual funds | 98.0% | 0.8% | 1.2% | 62.5% | 200.0% | 40.0% | 12.5% | 0.0% |
| HD1320E | market value of mutual funds | 98.2% | 0.8% | 0.9% | 12.5% | 125.0% | 0.0% | 0.0% | 0.0% |
| HD1320F | market value of mutual funds | 93.8% | 4.7% | 1.5% | 24.4% | 55.6% | 63.6% | 28.0% | 28.9% |
| HD1320G | market value of mutual funds | 0.0% | 0.0% | 100.0% | | | | 0.0% | |
| HD1400 | household owns bonds | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% |
| HD1410A | kind of bonds owned | 93.2% | 6.3% | 0.5% | 3.3% | 11.7% | 0.0% | 0.0% | 0.0% |
| HD1410B | kind of bonds owned | 93.2% | 6.3% | 0.5% | 0.0% | 8.3% | | 0.0% | 0.0% |
| HD1410C | kind of bonds owned | 93.2% | 6.3% | 0.5% | 1.7% | 10.0% | 0.0% | 0.0% | 0.0% |
| HD1410D | kind of bonds owned | 93.2% | 6.3% | 0.5% | 10.0% | 18.3% | 0.0% | 0.0% | 1.7% |
| HD1420 | market value of bonds | 93.2% | 6.3% | 0.5% | 26.7% | 35.0% | 12.5% | 9.5% | 3.3% |
| HD1500 | household owns publicly traded shares | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HD1510 | value of publicly traded shares | 86.5% | 13.2% | 0.3% | 25.6% | 28.0% | 37.5% | 34.3% | 0.8% |
| HD1520 | any shares issued by foreign companies | 86.5% | 13.2% | 0.3% | 0.0% | 2.4% | | 0.0% | 0.0% |
| HD1600 | household owns managed accounts | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HD1610 | managed accounts - assets not already recorded | 96.8% | 2.7% | 0.4% | 3.8% | 19.2% | 0.0% | 0.0% | 0.0% |
| HD1620 | value of additional assets in managed accounts | 99.2% | 0.3% | 0.5% | 33.3% | 200.0% | | 16.7% | 0.0% |
| HD1700 | does anyone owe money to household | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HD1710 | amount owned to household | 92.4% | 7.5% | 0.1% | 5.6% | 7.0% | 50.0% | 40.0% | 0.0% |
| HD1800 | investment attitudes | 0.0% | 100.0% | 0.0% | 1.7% | 1.7% | 0.0% | 0.0% | 0.0% |
| HD1900 | any other financial assets | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HD1910 | specification of other assets | 97.6% | 2.1% | 0.3% | 10.0% | 25.0% | 0.0% | 0.0% | 0.0% |
| HD1920 | value of the other assets | 97.6% | 2.1% | 0.3% | 35.0% | 50.0% | 71.4% | 50.0% | 0.0% |
| HG0100 | received income from public transfers | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.3% |
| HG0110 | gross income from regular social transfers | 57.9% | 42.0% | 0.1% | 10.8% | 11.0% | 74.4% | 72.7% | 0.8% |
| HG0200 | received income from regular private transfers | 0.0% | 100.0% | 0.0% | 0.0% | | | | 0.1% |
| HG0210 | income from regular private transfers | 94.6% | 5.4% | 0.0% | 13.7% | 13.7% | 85.7% | 85.7% | 0.0% |
| HG0300 | received income from real estate proprerty | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HG0310 | gross rental income from real estate property | 82.4% | 17.5% | 0.1% | 16.3% | 16.9% | 44.4% | 42.9% | 0.0% |
| HG0400 | received income from financial investment | 0.0% | 100.0% | 0.0% | 1.8% | 1.8% | 0.0% | 0.0% | 0.0% |
| HG0410 | gross income from financial investments | 48.9% | 49.3% | 1.8% | 44.9% | 48.5% | 52.9% | 48.9% | 0.2% |
| HG0500 | received income from private business other than self-employment | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HG0510 | gross income from private business other then self-employment | 98.3% | 1.5% | 0.2% | 35.7% | 50.0% | 20.0% | 14.3% | 0.0% |
| HG0600 | received income from other income source | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HG0610 | gross income from other sources | 97.3% | 2.3% | 0.4% | 13.6% | 31.8% | 0.0% | 0.0% | 0.0% |
| HG0620 | specification of other income source received | 97.3% | 2.3% | 0.4% | 4.5% | 22.7% | 0.0% | 0.0% | 0.0% |
| HG0700 | is income 'normal' in reference period | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HG0800 | future income expectations | 0.0% | 100.0% | 0.0% | 3.9% | 3.9% | 0.0% | 0.0% | 0.0% |

| variable name | description | unappli-cable | appli-cable | undeter-mined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| HH0100 | any substantial gift or inheritance received | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.1% |
| HH0110 | no of gifts/inheritances received | 68.8% | 30.5% | 0.6% | 1.4% | 3.4% | 0.0% | 0.0% | 0.7% |
| HH0201 | gift/inheritance $x: year gift/inheritance received | 68.8% | 30.3% | 0.8% | 1.0% | 3.8% | 0.0% | 0.0% | 0.7% |
| HH0202 | gift/inheritance $x: year gift/inheritance received | 89.7% | 9.3% | 1.1% | 2.3% | 13.6% | 0.0% | 0.0% | 1.1% |
| HH0301A | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.3% | 2.8% | 0.0% | 0.0% | 0.3% |
| HH0301B | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.3% | 2.8% | 0.0% | 0.0% | 0.3% |
| HH0301C | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.3% | 2.8% | 0.0% | 0.0% | 0.3% |
| HH0301D | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.7% | 3.1% | 0.0% | 0.0% | 0.3% |
| HH0301E | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.3% | 2.8% | 0.0% | 0.0% | 0.3% |
| HH0301F | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.3% | 2.8% | 0.0% | 0.0% | 0.3% |
| HH0301G | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.3% | 2.8% | 0.0% | 0.0% | 0.3% |
| HH0301H | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 0.3% | 2.8% | 0.0% | 0.0% | 0.3% |
| HH0301I | gift/inheritance $x: what kind of assets received | 68.8% | 30.4% | 0.7% | 2.1% | 4.5% | 0.0% | 0.0% | 0.3% |
| HH0302A | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 0.0% |
| HH0302B | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 0.0% |
| HH0302C | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 0.0% |
| HH0302D | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 0.0% |
| HH0302E | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 0.0% |
| HH0302F | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 0.0% |
| HH0302G | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 1.1% | 12.5% | 0.0% | 0.0% | 0.0% |
| HH0302H | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 0.0% |
| HH0302I | gift/inheritance $x: what kind of assets received | 89.7% | 9.3% | 1.1% | 3.4% | 14.8% | 0.0% | 0.0% | 0.0% |
| HH0401 | gift/inheritance $x: value | 68.8% | 30.4% | 0.7% | 24.6% | 27.0% | 50.7% | 46.2% | 0.7% |
| HH0402 | gift/inheritance $x: value | 89.7% | 9.3% | 1.1% | 12.5% | 23.9% | 45.5% | 23.8% | 1.1% |
| HH0501 | gift/inheritance $x: type of transfer (gift/inheritance) | 68.8% | 30.5% | 0.6% | 0.0% | 2.1% |  | 0.0% | 0.3% |
| HH0502 | gift/inheritance $x: type of transfer (gift/inheritance) | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 1.1% |
| HH0601 | gift/inheritance $x: from whom received | 68.8% | 30.5% | 0.6% | 0.0% | 2.1% |  | 0.0% | 0.3% |
| HH0602 | gift/inheritance $x: from whom received | 89.7% | 9.3% | 1.1% | 0.0% | 11.4% |  | 0.0% | 1.1% |
| HH0700 | expect to receive inheritance in the future | 0.0% | 100.0% | 0.0% | 2.4% | 2.4% | 0.0% | 0.0% | 0.0% |
| HI0100 | amount spent on food at home | 0.0% | 99.9% | 0.1% | 7.1% | 7.2% | 82.1% | 80.9% | 0.8% |
| HI01011 | amount spent on food at home: Luxembourg | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.0% |
| HI01012 | amount spent on food at home: Belgium | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.0% |
| HI01013 | amount spent on food at home: Germany | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.0% |
| HI01014 | amount spent on food at home: France | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.0% |
| HI01015 | amount spent on food at home: Others | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.0% |
| HI0102 | amount spent on food at home: reason | 0.0% | 100.0% | 0.0% | 1.5% | 1.5% | 0.0% | 0.0% | 0.0% |
| HI0200 | amount spent on food outside home | 0.0% | 100.0% | 0.0% | 4.7% | 4.7% | 80.0% | 80.0% | 0.7% |
| HI02011 | amount spent on food outside home: graphical breakdown | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 6.8% |
| HI02012 | amount spent on food outside home: Luxembourg | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 6.8% |
| HI02013 | amount spent on food outside home: Belgium | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 6.8% |
| HI02014 | amount spent on food outside home: Germany | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 6.8% |
| HI02015 | amount spent on food outside home: France | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 6.8% |
| HI0202 | amount spent on food outside home: Others | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 6.8% |
| HI0300 | Makes private transfers to individuals out of household/charities (y/n)? | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| HI0301 | amount spent on non-durable consumption | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% |  |  | 100.0% |
| HI03021 | amount spent on non-durable consumption: Luxembourg | 0.0% | 100.0% | 0.0% | 1.7% | 1.7% | 0.0% | 0.0% | 0.0% |
| HI03022 | amount spent on non-durable consumption: Belgium | 0.0% | 100.0% | 0.0% | 1.7% | 1.7% | 0.0% | 0.0% | 0.0% |
| HI03023 | amount spent on non-durable consumption: Germany | 0.0% | 100.0% | 0.0% | 1.7% | 1.7% | 0.0% | 0.0% | 0.0% |
| HI03024 | amount spent on non-durable consumption: France | 0.0% | 100.0% | 0.0% | 1.7% | 1.7% | 0.0% | 0.0% | 0.0% |
| HI03025 | amount spent on non-durable consumption: Others | 0.0% | 100.0% | 0.0% | 1.7% | 1.7% | 0.0% | 0.0% | 0.0% |
| HI0303 | amount spent on non-durable consumption: reason | 0.0% | 100.0% | 0.0% | 3.1% | 3.1% | 0.0% | 0.0% | 0.0% |
| HI0310 | amount given as private transfers per month | 86.5% | 13.4% | 0.1% | 3.9% | 4.7% | 60.0% | 50.0% | 2.4% |
| HI0400A | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400B | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400C | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400D | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |

| variable name | description | unappli-cable | appli-cable | undeter-mined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| HI0400E | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400F | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400G | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400H | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400I | purpose of saving | 0.0% | 100.0% | 0.0% | 2.5% | 2.5% | 0.0% | 0.0% | 0.0% |
| HI0400J | purpose of saving | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HI0400K | purpose of saving | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HI0400L | purpose of saving | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.2% |
| HI0500 | comparison of last 12 months' expenses with average | 0.0% | 100.0% | 0.0% | 1.2% | 1.2% | 0.0% | 0.0% | 0.0% |
| HI0600 | last 12 month expenses were below/above income | 0.0% | 100.0% | 0.0% | 0.7% | 0.7% | 0.0% | 0.0% | 0.0% |
| HI0700A | source of extra income to meet expenses | 91.4% | 7.9% | 0.7% | 8.0% | 17.3% | 0.0% | 0.0% | 0.0% |
| HI0700B | source of extra income to meet expenses | 91.4% | 7.9% | 0.7% | 8.0% | 17.3% | 0.0% | 0.0% | 0.0% |
| HI0700C | source of extra income to meet expenses | 91.4% | 7.9% | 0.7% | 8.0% | 17.3% | 0.0% | 0.0% | 0.0% |
| HI0700D | source of extra income to meet expenses | 91.4% | 7.9% | 0.7% | 8.0% | 17.3% | 0.0% | 0.0% | 0.0% |
| HI0700E | source of extra income to meet expenses | 91.4% | 7.9% | 0.7% | 8.0% | 17.3% | 0.0% | 0.0% | 0.0% |
| HI0700F | source of extra income to meet expenses | 91.4% | 7.9% | 0.7% | 8.0% | 17.3% | 0.0% | 0.0% | 0.0% |
| HI0700G | source of extra income to meet expenses | 91.4% | 7.9% | 0.7% | 8.0% | 17.3% | 0.0% | 0.0% | 4.0% |
| HI0800 | ability to get financial assistance from friends or relatives | 0.0% | 100.0% | 0.0% | 3.8% | 3.8% | 0.0% | 0.0% | 0.0% |
| HNB0100 | Farms/If household main residence is a farm | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.1% |
| HNB1401 | HMR mortgages: work for institution granting the loan | 65.5% | 34.4% | 0.1% | 0.0% | 0.3% | | | 0.3% |
| HNB1402 | HMR mortgages: work for institution granting the loan | 94.8% | 4.9% | 0.2% | 0.0% | 4.3% | | | 0.0% |
| HNB3000 | Reasons for moving | 80.8% | 18.7% | 0.4% | 0.6% | 2.8% | 0.0% | 0.0% | 0.0% |
| HNC0125 | Late or missed payments on loans | 69.3% | 30.4% | 0.3% | 1.7% | 2.8% | 0.0% | 0.0% | 1.0% |
| HNC0126 | Any outstanding overdue payments | 98.3% | 1.2% | 0.5% | 0.0% | 45.5% | | | 0.0% |
| HNC0210A | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 0.0% | 3.0% | | | 0.0% |
| HNC0210B | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 0.0% | 3.0% | | | 0.0% |
| HNC0210C | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 3.0% | 6.1% | 0.0% | | 0.0% |
| HNC0210D | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 0.0% | 3.0% | | | 0.0% |
| HNC0210E | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 3.0% | 6.1% | 0.0% | | 0.0% |
| HNC0210F | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 3.0% | 6.1% | 0.0% | | 0.0% |
| HNC0210G | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 0.0% | 3.0% | | | 0.0% |
| HNC0210H | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 0.0% | 3.0% | | | 0.0% |
| HNC0210I | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 0.0% | 3.0% | | | 0.0% |
| HNC0210J | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 0.0% | 3.0% | | | 0.0% |
| HNC0210K | Reasons for not applying for credit due to perceived credit constrain | 96.4% | 3.5% | 0.1% | 9.1% | 12.1% | 0.0% | 0.0% | 3.0% |
| HND3000 | Largest asset in HH balance sheet | 0.0% | 98.4% | 1.6% | 2.2% | 3.9% | 0.0% | 0.0% | 1.6% |
| HND3001 | Second largest asset in HH balance sheet | 12.5% | 85.2% | 2.3% | 1.1% | 3.8% | 0.0% | 0.0% | 0.1% |
| HND3002 | Third largest asset in HH balance sheet | 27.6% | 69.2% | 3.3% | 3.0% | 7.8% | 0.0% | 0.0% | 0.2% |
| HND3010 | Portfolio shifts last two years? | 12.5% | 85.2% | 2.3% | 0.5% | 3.2% | 0.0% | 0.0% | 0.1% |
| HND3020 | Portfolio shifts last two years: money out | 83.7% | 13.6% | 2.7% | 0.0% | 20.2% | | | 0.8% |
| HND3030 | Portfolio shifts last two years: money in | 83.7% | 13.6% | 2.7% | 0.8% | 20.9% | 0.0% | 0.0% | 0.8% |
| HND3040 | Would not invest again? | 12.5% | 85.2% | 2.3% | 3.6% | 6.3% | 0.0% | 0.0% | 0.1% |
| HND3050 | Assets HH would not invest again | 78.7% | 15.8% | 5.5% | 0.0% | 34.7% | | | 1.3% |
| HND3100 | Net worth past two years | 0.0% | 98.4% | 1.6% | 1.4% | 3.0% | 0.0% | 0.0% | 1.6% |
| HND3200 | Net worth next two years | 0.0% | 98.4% | 1.6% | 3.6% | 5.2% | 0.0% | 0.0% | 1.7% |
| HNI0700 | More or less savings in the next year | 0.0% | 100.0% | 0.0% | 6.3% | 6.3% | 0.0% | 0.0% | 0.0% |
| HNI0800 | General price expectations | 0.0% | 100.0% | 0.0% | 1.4% | 1.4% | 0.0% | 0.0% | 0.0% |
| HP0100 | items difficult for interviewee | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HP0200 | items missed by the interviewee | 0.0% | 99.9% | 0.1% | 1.1% | 1.2% | 0.0% | 0.0% | 0.1% |
| HP0300 | interviewee additions | 0.0% | 99.8% | 0.2% | 0.1% | 0.3% | 0.0% | 0.0% | 0.2% |
| HR0100 | Language of the interview | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| HR0200 | Dwelling - interior conditions | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HR0300 | Interviewee - suspicious before the interview | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.0% |
| HR0400 | Interviewee - suspicious after the interview | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR0500 | Interviewee - understanding of the questions | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR0600 | Interviewee - reliability of income and wealth information | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.0% |
| HR0700 | Interviewee - ability to express amounts in EUR | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% |
| HR0800 | Interviewee - easiness in responding | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR0900 | Interviewee - ability to express himself/herself | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR1000 | Interviewee - interest in the interview | 0.0% | 100.0% | 0.0% | 0.8% | 0.8% | 0.0% | 0.0% | 0.0% |
| HR1100A | Other persons present during the interview | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1100B | Other persons present during the interview | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1100C | Other persons present during the interview | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1100D | Other persons present during the interview | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1100E | Other persons present during the interview | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1100F | Other persons present during the interview | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR1200 | Persons providing information | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1300 | Interviewee - frequency of consulting documentation | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400A | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400B | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400C | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |

| variable name | description | unapplicable | applicable | undetermined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| HR1400D | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400E | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400F | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR1400G | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.4% | 0.4% | 0.0% | 0.0% | 0.0% |
| HR1400H | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR1400I | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400J | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% |
| HR1400K | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400L | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR1400M | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400N | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400O | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400P | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400Q | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400R | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400S | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.3% | 0.3% | 0.0% | 0.0% | 0.0% |
| HR1400T | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400U | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400V | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1400W | Documents interviewee refered to | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| HR1500 | Interviewer's comments - missing/misreported items | 0.0% | 100.0% | 0.0% | 87.1% | 87.1% | 0.0% | 0.0% | 0.0% |
| HR1600 | Interviewer's comments - conduct of the interview | 0.0% | 100.0% | 0.0% | 87.5% | 87.5% | 0.0% | 0.0% | 0.0% |
| PA0100 | marital status | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% |
| PA0200 | highest level of education completed | 0.0% | 100.0% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.3% |
| PE0100A | labour status | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% |
| PE0100B | labour status | 94.8% | 5.2% | 0.0% | 2.9% | 2.9% | 0.0% | 0.0% | 1.0% |
| PE0100C | labour status | 99.5% | 0.5% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| PE0100D | labour status | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| PE0100E | labour status | 100.0% | 0.0% | 0.0% | | | | | |
| PE0100F | labour status | 100.0% | 0.0% | 0.0% | | | | | |
| PE0100G | labour status | 100.0% | 0.0% | 0.0% | | | | | |
| PE0100H | labour status | 100.0% | 0.0% | 0.0% | | | | | |
| PE0100I | labour status | 100.0% | 0.0% | 0.0% | | | | | |
| PE0200 | status in employment | 44.9% | 55.0% | 0.1% | 0.1% | 0.3% | 0.0% | 0.0% | 0.4% |
| PE0300 | job description / ISCO | 44.9% | 55.0% | 0.1% | 0.5% | 0.7% | 0.0% | 0.0% | 0.3% |
| PE0400 | main employment - NACE | 52.8% | 47.0% | 0.1% | 1.0% | 1.4% | 0.0% | 0.0% | 0.4% |
| PE0500 | type of contract | 52.8% | 47.0% | 0.2% | 0.2% | 0.6% | 0.0% | 0.0% | 0.4% |
| PE0600 | hours working a week - main job | 44.9% | 55.0% | 0.1% | 0.6% | 0.8% | 0.0% | 0.0% | 0.4% |
| PE0700 | time in main job | 44.9% | 54.9% | 0.1% | 1.0% | 1.3% | 0.0% | 0.0% | 0.4% |
| PE0800 | currently more than one job/employers | 44.9% | 54.9% | 0.1% | 0.1% | 0.4% | 0.0% | 0.0% | 0.3% |
| PE0810 | type of other work | 97.8% | 2.0% | 0.2% | 0.0% | 9.8% | | 0.0% | 4.9% |
| PE0900 | ever been employed | 55.0% | 44.9% | 0.0% | 0.2% | 0.3% | 0.0% | 0.0% | 0.0% |
| PE1000 | total time in employment | 13.9% | 86.0% | 0.1% | 1.1% | 1.3% | 0.0% | 0.0% | 3.9% |
| PE1100 | at what age expect to retire | 20.3% | 75.4% | 4.3% | 21.1% | 26.8% | 0.0% | 0.0% | 10.6% |
| PE9020 | respondent of the employment section | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| PF0100 | has public pension plans | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 100.0% |
| PF0110 | number of public pension schemes | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 100.0% |
| PF0200 | main public plan - % of current gross earnings contributed | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 100.0% |
| PF0300 | main public plan - years contributing to pension plan | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 100.0% |
| PF0400 | additional public plans: % of gross earnings | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 100.0% |
| PF0500 | has public/social security plan with account balance | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 100.0% |
| PF0510 | current value of all social security plans that have an account | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 100.0% |
| PF0600 | has occupational pension plan | 0.0% | 100.0% | 0.0% | 1.4% | 1.4% | 0.0% | 0.0% | 0.0% |
| PF0610 | number of occupational pension plans | 88.4% | 10.2% | 1.4% | 0.5% | 14.4% | 0.0% | 0.0% | 0.5% |
| PF0700 | occupational plan has an account balance | 88.4% | 10.3% | 1.4% | 12.0% | 25.4% | 0.0% | 0.0% | 0.0% |
| PF0710 | current value of all occupational pension plans that have an account | 94.1% | 3.3% | 2.6% | 52.9% | 130.9% | 13.9% | 5.6% | 1.5% |
| PF0800 | occupational plan has regular benefit in retirement | 88.4% | 10.3% | 1.4% | 6.7% | 20.1% | 0.0% | 0.0% | 0.0% |
| PF0900 | has voluntary pension scheme | 0.0% | 100.0% | 0.0% | 0.6% | 0.6% | 0.0% | 0.0% | 0.2% |
| PF0910A | type of voluntary pension scheme | 74.8% | 24.6% | 0.6% | 0.6% | 3.0% | 0.0% | 0.0% | 1.0% |
| PF0910B | type of voluntary pension scheme | 74.8% | 24.6% | 0.6% | 0.4% | 2.8% | 0.0% | 0.0% | 1.0% |
| PF0920 | voluntary pension schemes - value of accounts | 74.8% | 24.5% | 0.7% | 50.4% | 53.2% | 28.2% | 26.7% | 2.0% |
| PF0930 | monthly contributions to voluntary pension schemes | 74.8% | 24.6% | 0.6% | 8.6% | 11.0% | 30.2% | 23.6% | 2.2% |
| PF9020 | respondent of the pensions section | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |
| PG0100 | received employee income | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.6% |
| PG0110 | gross cash employee income | 47.0% | 52.8% | 0.2% | 28.3% | 28.7% | 71.1% | 70.1% | 1.3% |
| PG0200 | received self-employment income | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.2% |
| PG0210 | gross self employment income | 91.5% | 8.3% | 0.2% | 35.5% | 38.5% | 66.7% | 61.5% | 0.0% |
| PG0300 | received income from public pensions | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.2% |
| PG0310 | gross income from public pensions | 78.6% | 21.2% | 0.1% | 20.4% | 21.1% | 67.0% | 64.8% | 1.4% |
| PG0400 | received income from private and occupational pension plans | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.0% |
| PG0410 | gross income from occupational and private pension plans | 98.6% | 1.2% | 0.2% | 29.2% | 45.8% | 14.3% | 9.1% | 0.0% |
| PG0500 | received income from unemployment benefits | 0.0% | 100.0% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| PG0510 | gross income from unemployment benefits | 98.3% | 1.6% | 0.1% | 3.0% | 9.1% | | 33.3% | 0.0% |
| PG9020 | respondent of the personal income section | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.0% |

| variable name | description | unappli-cable | appli-cable | undeter-mined | min. # to be imp. (I) | max. # to be imp. (II) | bracket values in % of (I) | bracket values in % of (II) | edited |
|---|---|---|---|---|---|---|---|---|---|
| PNA0500A | RP's mother alive | 22.4% | 77.6% | 0.0% | 0.3% | 0.4% | 0.0% | 0.0% | 0.1% |
| PNA0500B | partner's mother alive | 22.4% | 77.6% | 0.0% | 0.3% | 0.4% | 0.0% | 0.0% | 0.1% |
| PNE0500 | RP's/partner's father alive | 52.8% | 47.0% | 0.2% | 0.6% | 1.0% | 0.0% | 0.0% | 0.5% |
| PNE0500 | Private-public organization | 52.8% | 47.0% | 0.2% | 0.6% | 1.0% | 0.0% | 0.0% | 0.5% |
| PNE0600 | Number of employees - main employer | 52.8% | 46.9% | 0.2% | 3.5% | 4.0% | 0.0% | 0.0% | 0.4% |
| PNE2200 | Total time in full-time employment | 13.9% | 86.0% | 0.1% | 1.2% | 1.4% | 0.0% | 0.0% | 0.4% |
| RA0100 | relationship to reference person | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.4% |
| RA0200 | gender | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| RA0300 | age | 0.0% | 100.0% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.2% |
| RA0400 | country of birth | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | | | 0.1% |
| RA0500 | how long have you been living in the country | 61.1% | 38.9% | 0.0% | 0.5% | 0.5% | 0.0% | 0.0% | 0.0% |
| RNA0200 | citizenship | 0.0% | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% |

*Source: Own calculations based on LU-HFCS, non-imputed and unweighted.*

*The column 'applicable' cases reflects the number of individuals or households who should have had to reply to these questions. The column 'unapplicable' shows the fraction of households who skipped the question due to routing. The 'undetermined' cases reflect that it is uncertain whether or not a question should have been answered due to a missing value in a mother variable. The next two columns report the 'minimum' and 'maximum' fraction of values to be imputed relative to the sample size of applicable cases. The difference between the two is caused by possible missing values in the mother variable. The minimum fraction of imputed values relative to applicable cases is assuming that all undetermined cases are unapplicable; the maximum number assumes that all undetermined cases are applicable. The next two columns show the number of missing values for which bracketed information is available relative to the minimum and maximum number of values to be imputed. The last column shows the fraction of edited values relative to all applicable values (including both replaced and imputed values).*

# Appendix B: Distribution of income and wealth

*Table 21: Distribution of household income and wealth*

**Total net wealth, including private pension wealth**

| Statistic | Point estimate | Std. err. | [95% conf. interval] | |
|-----------|---------------:|----------:|---------------------:|---------------------:|
| p10       | 5674           | 2177      | 1397    | 9951    |
| p25       | 62553          | 13249     | 36534   | 88572   |
| median    | 403456         | 16776     | 370575  | 436338  |
| p75       | 738134         | 35719     | 668076  | 808191  |
| p90       | 1383543        | 75036     | 1235743 | 1531344 |
| mean      | 732728         | 61180     | 612817  | 852639  |

**Net real wealth**

| Statistic | Point estimate | Std. err. | [95% conf. interval] | |
|-----------|---------------:|----------:|---------------------:|---------------------:|
| p10       | 2400           | 1050      | 340     | 4460    |
| p25       | 30821          | 8428      | 14280   | 47362   |
| median    | 357633         | 20436     | 317566  | 397701  |
| p75       | 644731         | 28302     | 589255  | 700208  |
| p90       | 1167760        | 83736     | 1003566 | 1331955 |
| mean      | 648975         | 59191     | 532962  | 764988  |

**Net financial wealth**

| Statistic | Point estimate | Std. err. | [95% conf. interval] | |
|-----------|---------------:|----------:|---------------------:|---------------------:|
| p10       | -2183          | 1326      | -4782   | 416     |
| p25       | 3397           | 889       | 1652    | 5142    |
| median    | 23394          | 2189      | 19089   | 27698   |
| p75       | 75826          | 6592      | 62487   | 89165   |
| p90       | 193330         | 19650.2   | 154679  | 231981  |
| mean      | 83753          | 7474      | 69100   | 98405   |

**Yearly gross income**

| Statistic | Point estimate | Std. err. | [95% conf. interval] | |
|-----------|---------------:|----------:|---------------------:|---------------------:|
| p10       | 22900          | 1030      | 20879   | 24921   |
| p25       | 37493          | 1756      | 33991   | 40995   |
| median    | 64653          | 1806      | 61112   | 68194   |
| p75       | 102884         | 3026      | 96939   | 108829  |
| p90       | 155626         | 5004      | 145748  | 165504  |
| mean      | 83641          | 2358      | 79020   | 88262   |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights.*

*Table 22: Mean income and wealth by households' characteristics*

| | Gross income | Total net wealth | Net real wealth | Net financial wealth | Subgroup size | In % of total population |
|---|---|---|---|---|---|---|
| *Household size* | | | | | | |
| hh size=1 | 49439 | 411239 | 345133 | 66106 | 55932 | 30% |
| hh size=2 | 88995 | 877723 | 769091 | 108632 | 52203 | 28% |
| hh size=3 | 97845 | 802976 | 712435 | 90540 | 31695 | 17% |
| hh size=4 | 110729 | 767574 | 694659 | 72914 | 29830 | 16% |
| hh size=5 | 106006 | 1158619 | 1086998 | 71620 | 16780 | 9% |
| *Age class* | | | | | | |
| age 16-29 | 60844 | 162588 | 139775 | 22813 | 16943 | 9% |
| age 30-39 | 80916 | 385151 | 331209 | 53942 | 34098 | 18% |
| age 40-49 | 91019 | 733500 | 669572 | 63928 | 50469 | 27% |
| age 50-59 | 99060 | 849746 | 740982 | 108764 | 33573 | 18% |
| age 60-69 | 96807 | 1360412 | 1231086 | 129326 | 23355 | 13% |
| age 70-100 | 57987 | 835756 | 711094 | 124662 | 28001 | 15% |
| *Nationality* | | | | | | |
| Luxembourg | 86499 | 939357 | 841982 | 97375 | 115726 | 62% |
| foreign | 78963 | 394570 | 333111 | 61460 | 70714 | 38% |
| *Education (ISCED)* | | | | | | |
| no formal or primary edu. | 48296 | 396903 | 353685 | 43218 | 45106 | 24% |
| lower secondary edu. | 75257 | 519143 | 486211 | 32932 | 21236 | 11% |
| upper or post secondary edu. | 75385 | 775099 | 695720 | 79379 | 71430 | 38% |
| tertiary edu. | 131982 | 1074628 | 924838 | 149790 | 48669 | 26% |
| *Employment status* | | | | | | |
| employed | 88619 | 560954 | 493242 | 67713 | 104623 | 56% |
| self-employed | 155904 | 1665658 | 1538658 | 127000 | 10793 | 6% |
| retired | 75128 | 1077320 | 937528 | 139791 | 45375 | 24% |
| *Income quartile* | | | | | | |
| income quartile 1 | | 297887 | 276345 | 21542 | 45998 | 25% |
| income quartile 2 | | 412802 | 378809 | 33993 | 46485 | 25% |
| income quartile 3 | | 573116 | 506792 | 66324 | 46194 | 25% |
| income quartile 4 | | 1643395 | 1431003 | 212392 | 47763 | 26% |

*Source: Own calculations based on LU-HFCS; data are multiply imputed and weighted; variance estimation based on replicate weights.*

## Appendix C: Household gross income calculation based on national accounts

*Table 23: Household gross income calculation based on national accounts*

| National account component | in Mio. euro |
|---|---:|
| B6G: Gross disposable income | 14,911 |
| + D4: Property income | 384 |
| + D5: Current taxes on income, wealth, etc. | 2,351 |
| + D6: Social contributions (only employee, self-employed and unemployed) | 1,712 |
| + D62: Social benefits other than social transfers in kind | 0 |
| + D71 - D72: remove all items related to non-life insurance operations | 48 |
| + D75: Miscellaneous current transfers | 229 |
| = Total | 19,635 |

*Source: Own calculations based on data from Eurostat and Statec. Figures are for Luxembourg in 2009. The sector includes both private households and non-profit institutions serving households. D6 is an estimate based on the assumption that 38% of the work force in 2009 are cross-border workers.*

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