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THE LUXEMBOURG HOUSEHOLD FINANCE AND CONSUMPTION SURVEY: RESULTS FROM THE 2ND WAVE

ANASTASIA GIRSHINA   THOMAS Y. MATHÄ   MICHAEL ZIEGELMEYER

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The Luxembourg Household Finance and Consumption Survey:
Results from the 2nd wave[*]

Anastasia Girshina[1]   Thomas Y. Mathä[2]   Michael Ziegelmeyer[3]

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Abstract:

This report presents the main results and the underlying methodology of the 2nd wave of the Luxembourg Household Finance and Consumption Survey (LU-HFCS) and compares them to those obtained in the 1st wave in 2010. This survey is conducted among private households resident in Luxembourg and is part of the Eurosystem Household Finance and Consumption Survey, which provides detailed individual and household data on assets, liabilities, income and consumption. This individual-level information on households provides a view on the distribution of assets and liabilities that complements the aggregate data on the household sector in the financial accounts.

Keywords: Household, survey, editing, multiple imputation, wealth, income

JEL-Codes: D31, D14, C81, C83

Résumé non-technique

Ce cahier présente les principaux résultats de la 2ème vague de l'enquête sur le comportement financier et de consommation des ménages au Luxembourg (LU-HFCS) menée en 2014 par la Banque centrale du Luxembourg (BCL), en collaboration avec le Luxembourg Institute of Socio-Economic Research (LISER). L'objectif a été d'obtenir des informations détaillées sur les bilans des ménages, leurs actifs et leurs passifs, ainsi que sur leurs revenus et leur consommation. Ces informations permettent d'analyser la répartition du patrimoine et de ses diverses composantes à travers la population des ménages. Au Luxembourg, l'enquête LU-HFCS est la seule source de données détaillées sur les bilans des ménages individuels.

La deuxième vague est basée sur un échantillon représentatif comportant plus de 1 600 ménages résidant au Luxembourg. S'agissant d'une enquête transversale, l'échantillon sélectionné pour chaque vague a été représentatif de l'année en question. Ainsi, il convient de garder à l'esprit, en comparant les résultats entre les deux vagues, que les ménages retenus peuvent différer d'un échantillon à l'autre.

Actifs des ménages

Les actifs des ménages se divisaient en actifs réels et actifs financiers. Les **actifs réels**, tels que les biens immobiliers, véhicules ou objets de valeur, en représentaient la part la plus importante. Au Luxembourg, ils représentaient 84,7 % de tous les actifs bruts détenus par les ménages en 2014. La plupart des ménages était propriétaire de véhicules (88,0 %) ou de leur résidence principale (67,6 %), et une proportion importante était propriétaire d'autres biens immobiliers (26,3 %) ou d'objets de valeur (25,7 %). Ces statistiques sont proches de celles de 2010. En 2014, la valeur moyenne[4] des actifs réels bruts détenus par les ménages atteignait € 733 300. La résidence principale et les autres biens immobiliers constituaient les deux catégories les plus importantes (respectivement 59,7 % et 31,8 % du total des actifs réels). Les autres catégories ne représentaient qu'une petite part des actifs réels, soit 4,7 % pour les entreprises individuelles, 2,8 % pour les véhicules et 1,0 % pour les objets de valeur.

En 2014, seulement 15,3 % de tous les actifs bruts détenus par les ménages étaient des **actifs financiers**. Ceux-ci se composaient de dépôts (46,3 %), de pensions et assurances-vie privées (17,6 %), de fonds communs de placement (15,8 %), d'actions (5,4 %), d'obligations (2,0 %) et d'autres actifs financiers (10,7 %). Les actifs financiers les plus détenus étaient le compte à vue et le compte d'épargne, présents au sein de 96,7 % des ménages.

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[4] Les estimations des valeurs moyennes ou médianes sont arrondies à la centaine d'euros dans le texte.

En 2014, la valeur moyenne des actifs financiers atteignait € 132 400, à comparer avec une valeur moyenne des actifs financiers de € 88 400 en 2010. Cette hausse reflète principalement une augmentation des dépôts (comptes à vue et comptes d'épargne), dont l'encours se chiffrait à € 60 000 en moyenne en 2014. Moins de ménages détenaient des fonds communs de placement (19,0 % des ménages en 2010 et 14,6 % en 2014), des obligations (passage de 4,4 % à 2,6 % des ménages) ou des actions (de 10 % à 9 %). Cependant, les ménages qui détenaient des fonds communs de placement ou des actions ont vu leurs valeurs moyennes augmenter fortement grâce à la hausse du marché boursier. En général, les données suggèrent une réallocation de portefeuille entre 2010 et 2014 vers des actifs financiers plus sûrs et liquides aux dépens des actifs plus risqués. Pensions et assurances-vie privées constituaient la deuxième catégorie d'actifs financiers la plus répandue, détenue par 32 % des ménages et la deuxième en termes de valeur. Leur montant moyen était de € 23 400 en 2014, en progression de 39 % par rapport à 2010. La troisième catégorie en termes de valeur est constituée par les fonds communs de placement (€ 20 900) qui sont détenus par 15% des ménages.

L'endettement des ménages

En 2014, 54,6 % des ménages détenaient au moins un type de dette. Il s'agissait de crédits hypothécaires, détenue par 35,2 % des ménages ou d'autres types de dette, pour 33,9 % des ménages. Pour les ménages endettés, la valeur moyenne de la dette hypothécaire (€ 251 900) dépassait largement la valeur moyenne de la dette non-hypothécaire (€ 25 600). La part des ménages endettés a diminué, passant de 58,3 % en 2010 à 54,6 % en 2014, tandis que la valeur de la dette moyenne a augmenté de 19 % sur la même période, passant de € 81 800 à € 97 300. Le montant des dettes dues par les ménages endettés a donc augmenté de 27 % par rapport à 2010. La part des ménages ayant contracté des prêts à la consommation était nettement plus faible (-5 points de pourcentage) en 2014.

Le patrimoine net des ménages

Il résulte des changements des actifs réels et financiers, ainsi que des dettes, entre 2010 et 2014, que le patrimoine total moyen des ménages a augmenté de 8 % en termes nominaux pour atteindre € 768 400. En termes réels, c.-à-d. après correction de la variation des prix à la consommation, cela correspond à une légère diminution de 1 %. La valeur médiane du patrimoine net a augmenté de 10 % pour atteindre € 437 500 en termes nominaux et de 1 % en termes réels.

Table of Contents

1.   Introduction

In 2010, the Banque centrale du Luxembourg (BCL), together with the Luxembourg Institute of Socio-Economic Research (LISER), launched a new survey among private households in Luxembourg, with the intention to repeat it at regular intervals - the *Luxembourg Household Finance and Consumption Survey* (LU-HFCS). The LU-HFCS is part of the Eurosystem Household Finance and Consumption Survey (HFCS) (HFCN, 2013, 2016). The objective is to collect detailed information about individual households' balance sheets - their assets and liabilities - but also on their income and consumption. LU-HFCS is the only dataset with such a wealth of detailed information on Luxembourg households' balance sheets.

The information provided by the HFCS survey was widely discussed in the European media in the past. Results for Luxembourg were published in several BCL publications, starting from providing key results for each of the waves (BCL 2012a, 2016b) to then focusing on more specific topics such as homeownership (BCL, 2012c), portfolio adjustments during the crisis (BCL, 2013a), household indebtedness (BCL, 2013b,d), financial wealth (BCL, 2013c, 2016c) and financial literacy (BCL, 2016a). Other specific studies analysed the determinants of Luxembourg households' net wealth in comparison to cross-border commuter households (Mathä, Porpiglia and Ziegelmeyer, 2014a), households' net wealth across euro area countries (Mathä, Porpiglia and Ziegelmeyer, 2014b) and real estate property other than the household main residence in Luxembourg and in surrounding countries (Ziegelmeyer, 2015).

This data makes it possible to analyse the distribution of wealth and its various components, while the information on household debt by population group can be used for analyses related to monetary policy and financial stability. In addition, the information on individual households collected by the survey complements the aggregate figures on the household sector provided by the financial accounts.

The LU-HFCS is complemented by the *Luxembourg Cross-border Household Finance and Consumption Survey* (XB-HFCS) (see BCL 2012b; Mathä, Porpiglia and Ziegelmeyer, 2012b), a companion survey designed to collect corresponding information for households residing across the border within the "Grande Région"[5] and in which at least one household member is a cross-border commuter working in Luxembourg.

This report presents the main descriptive findings of the 2nd wave of the LU-HFCS conducted in 2014 among private households resident in Luxembourg. It provides comparisons with results from the first survey conducted in 2010. Emphasis is placed on distributional aspects and the

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[5] The "Grande Région" comprises the country of Luxembourg, the Belgian region "Wallonie", the French region "Lorraine" and the German regions "Rheinland-Pfalz" and "Saarland".

composition of assets and liabilities, net wealth and gross income. It serves as background reference document for further economic analysis and research.

The report is divided into two larger separate sections. Section 2 describes the methodology, fieldwork and data treatment. It starts with the methodological aspects of the survey, continues with the sampling, fieldwork and paradata before moving to the data treatment: editing, imputation, weighting and anonymisation of the data collected. Section 3 describes the main findings. The asset and liability sides and their changes relative to 2010 are presented in Sections 3.1 and 3.2. Section 3.3 assesses net wealth and how it has changed since 2010. Section 3.4 reports different measures of households' debt burden. Section 3.5 analyses household income. Section 3.6 compares the HFCS results to other external data sources. Section 4 provides concluding remarks.

1.1 Interpreting changes between wave 1 and 2

The LU-HFCS is a cross-sectional survey. Each wave aims to be representative of the household population in the reference year for which data are collected. The waves do not follow the same households over time. Consequently, when comparing assets or liabilities for a particular sub-group over time, one should be aware that the households in a specific sub-group in one wave may not be part of this sub-group in another wave, as the composition might have changed.

Note that the household characteristics may refer to the household head (indicated by * in Tables and Figures), which is identified as the (self-declared) financially knowledgeable person (FKP) in the household. As the underlying data are multiply imputed, the figures provided in the report, such as shares, means and medians, are always calculated across the 5 implicates (Section 2.6.3) by using 1,000 replicate weights (Section 2.6.4). This is done to account properly for the sampling and the features of the sampling design. The median, its standard error and confidence interval is calculated using the STATA command MEDIANIZE, version 0.4.[6] The estimates provide standard errors and confidence bands, which indicate the precision of the estimates. For example, if a particular value is reported to be larger by 10% in 2014 compared to 2010, the standard errors help to infer the confidence with which we can say the change to be true. The confidence band provides the lower and upper bounds of the estimate and thus the interval within which we expect the true value to lie with a 95% probability. The confidence we can attach to a reported value depends among other factors on the sampling variability of the outcome and the sample size.

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[6] We would like to thank Sébastien Perez-Duarte from the ECB for sharing his programme with us.

1.2 Inflation adjustment

Values for 2010 are adjusted for consumer price inflation between the 2010 and 2014 waves. In line with the ECB first results report for the 2nd wave, we use the country-specific *All-index HICP indicator* (source Eurostat: prc_hicp_aind). We calculate consumer price inflation comparing the HICP index of the two reference years: 2010 and 2014. This means that we adjust all monetary values of the 1st wave, i.e. assets, liabilities and income by the factor 1.093. The tables and figures throughout the report provide the nominal values for 2014, the inflation-adjusted values for 2010 "in 2014 EUR" and the reported nominal values for 2010. We are aware that this inflation adjustment is only one among several alternatives. However, this adjustment ensures the comparability with ECB figures and an easy verification. Normally, analyses in BCL Bulletins are based on the national index of consumer prices (NICP), which is less affected by swings in energy prices. From end-2010 to end-2014, the HICP increased by 9.3% and the NICP by 8.6%, a difference which is not substantial, but not negligible either.

2. Methodology and data treatment

This section describes the methodological aspects of the LU-HFCS. It roughly follows the chronological order of the numerous steps and covers among others the sampling procedure, the questionnaire, fieldwork, response behaviour, paradata before turning to a detailed description of the data editing, imputation and anonymisation procedures.[7]

2.1 Sampling

The target population comprises all private households and their current members residing in Luxembourg as at 31 December 2013. As there is no perfect sampling frame for this target population in Luxembourg, we apply an indirect sampling frame (Lavallée, 2007), covering fiscal households included in the Luxembourg social security register (Inspection Générale de la Sécurité Sociale, IGSS). The IGSS register includes 267,845 fiscal households and their 495,928 current household members (as at 31 December 2012). Households with no members affiliated with the social security system of Luxembourg are not covered in the indirect sampling frame. This primarily excludes households of international civil servants. The indirect sampling unit is a "fiscal household", which comprises people with a marital and/or a parental link. A private household may comprise several fiscal households, as private households are not exclusively formed of members with marital or parental ties; therefore, the link between the indirect sampling unit (i.e. the fiscal household) to the target unit (i.e. the private household) can be

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[7] This section relies heavily on the final report of LISER, which conducted the fieldwork (Bienvenue et al., 2016).

either one-to-one or many-to-one, and thus needs to be appropriately taken into account in the weighting procedure.

Table 1 : Sampling design – overview

	Wave 2010	Wave 2014
Sample frame	Luxembourg Social Security Register	
Sampling unit	Resident fiscal households (indirect sampling frame)	
Target population	Private households and their members residing in Luxembourg as at …	
	… 31 December 2010	… 31 December 2013
Gross sample	5,000 fiscal households, 2.01% of target population	7,300 fiscal households, 2.73% of target population
Oversampling of wealthy	Yes: 20%	Yes: 20%
Sample size	950 households (planned 1,000)	1,601 households (planned 1,500)
Representative of	186,440 households 462,618 individuals	210,965 households 508,248 individuals
Number of strata	20 (nationality, employment status, income)	
Coverage, excluded are	• collective households • households mainly comprising international civil servants	• collective households (around 9,073 individuals) • households mainly comprising international civil servants (estimated to be 32,359)

The gross sample consists of 7,300 fiscal households from the social security register, covering 2.73% of the target population. It contains 20 strata along three dimensions, namely nationality, occupational status and the individual labour income declared to the social security register. [8] The majority of the gross sample (80%) is drawn using a stratified random sampling procedure. The remaining 20% are randomly drawn from fiscal households in high labour income strata, in an attempt to oversample the wealthy households, as recommended by the HFCN guidelines. One aim of oversampling is to increase the number of observations for infrequent asset categories as they are mainly owned by the wealthy, and, as a result, to improve the statistical precision of these asset categories. Due to the oversampling, 28% of households in the gross sample are located in the high labour income strata.

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[8] The highest individual income is used for the determination of the stratum if the fiscal household has more than one individual labour income source.

Table 2: Sampling design by stratum: distribution of the population

Nationality	Auxiliary variables Employment status	Individual income	Strata number	Population absolute	in %
Luxemburgish	Self-employed	7 650 EUR or less	1	5 100	1.9
		More than 7 650 EUR	2	2 124	0.8
	Private employee	7 650 EUR or less	3	60 656	22.6
		More than 7 650 EUR	4	6 435	2.4
	Public employee	7 650 EUR or less	5	16 206	6.1
		More than 7 650 EUR	6	7 750	2.9
	Other	7 650 EUR or less	7	4 749	1.8
		More than 7 650 EUR	8	18	0.0
	Retired	7 650 EUR or less	9	55 232	20.6
		More than 7 650 EUR	10	1 473	0.5
Foreigners	Self-employed	7 650 EUR or less	11	4 201	1.6
		More than 7 650 EUR	12	824	0.3
	Private employee	7 650 EUR or less	13	72 028	26.9
		More than 7 650 EUR	14	7 876	2.9
	Public employee	7 650 EUR or less	15	318	0.1
		More than 7 650 EUR	16	101	0.0
	Other	7 650 EUR or less	17	6 825	2.5
		More than 7 650 EUR	18	75	0.0
	Retired	7 650 EUR or less	19	15 809	5.9
		More than 7 650 EUR	20	45	0.0
Total				**267 845**	**100.0**

Note: Sampling unit corresponds to a "fiscal household".
Source: Inspection Générale de la Sécurité Sociale (IGSS), December 2012.

2.2 Sample characteristics

This section presents a breakdown of basic descriptive statistics at the household level (i.e. in weighted terms) across various socio-demographic characteristics. For each statistic, we also provide the corresponding figure of the first LU-HFCS wave in 2010. The p-value indicates whether the difference between the two waves is statistically significant. As a preamble, the LU-HFCS reflects well the population and composition by age and gender when compared to official population statistics (ECB, 2016).

In 2014, the average household in Luxembourg consisted of 2.41 individuals and 0.63 dependent children (defined as persons aged 0-15 or aged 16-24 not at work and living with a parent). 59.5% of households are headed by a male person (Table 3) with a mode age bracket of 34-44 years (21.2%). This is slightly lower than the figures in 2010 when the average household was characterised by 2.48 individuals, 0.67 dependent children, 56.5% male heads and the mode age bracket of 34-44 years (22.7%). These differences between waves are statistically significant. Differences in age category between waves are however not significant except for the lower share of male headed households and households in the age bracket 55-64 years, which reflects the ageing of the society in general.

Table 3: Household socio-demographic characteristics

Variable		Wave	Proportions	Std. Err.	[95% Conf. Interval]		P-value	
Male*		2010	59.5%	1.4%	56.8%	62.3%	0.095	*
		2014	56.5%	1.1%	54.3%	58.7%		
Age class*	16-34	2010	18.6%	0.9%	16.9%	20.4%	0.635	
		2014	19.2%	0.7%	17.8%	20.6%		
	35-44	2010	22.7%	1.0%	20.9%	24.6%	0.223	
		2014	21.2%	0.8%	19.7%	22.7%		
	45-54	2010	22.3%	1.0%	20.4%	24.3%	0.322	
		2014	21.1%	0.7%	19.6%	22.6%		
	55-64	2010	15.6%	0.8%	14.0%	17.2%	0.085	*
		2014	17.4%	0.6%	16.2%	18.5%		
	65+	2010	20.7%	0.8%	19.0%	22.4%	0.650	
		2014	21.2%	0.6%	20.1%	22.3%		
Marital status*	Single	2010	24.7%	1.4%	21.9%	27.5%	0.184	
		2014	27.2%	1.2%	24.9%	29.5%		
	Couple	2010	52.8%	1.2%	50.3%	55.2%	0.047	**
		2014	49.6%	1.0%	47.6%	51.7%		
	Divorced	2010	13.4%	1.3%	10.9%	15.9%	0.889	
		2014	13.7%	1.0%	11.7%	15.6%		
	Widowed	2010	9.1%	1.0%	7.1%	11.1%	0.769	
		2014	9.5%	0.8%	7.9%	11.1%		
Country of birth*	Luxembourg	2010	57.1%	1.3%	54.5%	59.7%	0.993	
		2014	57.1%	1.1%	55.0%	59.2%		
	Portugal	2010	13.7%	0.9%	12.0%	15.4%	0.097	*
		2014	11.9%	0.6%	10.7%	13.2%		
	France	2010	7.0%	0.9%	5.2%	8.8%	0.436	
		2014	7.9%	0.7%	6.4%	9.3%		
	Belgium	2010	3.4%	0.6%	2.3%	4.5%	0.856	
		2014	3.6%	0.5%	2.5%	4.6%		
	Italy	2010	3.1%	0.6%	1.9%	4.4%	0.975	
		2014	3.2%	0.5%	2.2%	4.2%		
	Germany	2010	2.7%	0.6%	1.7%	3.8%	0.539	
		2014	3.2%	0.5%	2.2%	4.2%		
	Other countries	2010	12.9%	1.0%	11.0%	14.9%	0.840	
		2014	13.2%	0.8%	11.6%	14.9%		
Education level*	Low (ISCED=0,1,2)	2010	35.7%	1.7%	32.3%	39.0%	0.006	***
		2014	29.8%	1.2%	27.3%	32.2%		
	Middle (ISCED=3,4)	2010	38.2%	1.8%	34.6%	41.7%	0.650	
		2014	39.2%	1.5%	36.4%	42.1%		
	High (ISCED=5,6)	2010	26.2%	1.4%	23.4%	29.0%	0.012	**
		2014	31.0%	1.2%	28.6%	33.4%		
Employment status*	Employed	2010	56.1%	1.2%	53.8%	58.5%	0.743	
		2014	56.1%	1.1%	54.0%	58.3%		
	Self-Employed	2010	5.9%	0.6%	4.6%	7.1%	0.080	*
		2014	4.4%	0.4%	3.5%	5.2%		
	Unemployed	2010	2.5%	0.5%	1.5%	3.6%	0.305	
		2014	3.3%	0.5%	2.3%	4.4%		
	Retired	2010	24.3%	1.1%	22.2%	26.5%	0.144	
		2014	26.3%	0.8%	24.7%	28.0%		
	Other	2010	11.1%	1.2%	8.9%	13.4%	0.372	
		2014	9.8%	0.9%	8.0%	11.6%		

Variable	Wave	Mean	Std. Err.	[95% Conf. Interval]		P-value	
Age*	2010	49.9	0.3	49.2	50.5	0.214	
	2014	50.4	0.2	49.9	50.9		
Household size	2010	2.48	0.01	2.47	2.49	0.000	***
	2014	2.41	0.00	2.40	2.42		
Number of dependent children	2010	0.67	0.01	0.64	0.69	0.012	**
	2014	0.63	0.01	0.62	0.65		

* Variables referring to the reference person of household (FKP).
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 and 2014 is significant: *** p<0.01, **p<0.05, * p<0.1.

In 2014, the share of household heads born in Luxembourg was 57.1%, unchanged from 2010. Looking at the immigrant groups, Portuguese-born households represented a significantly lower share of Luxembourg resident households in 2014 than in 2010 (11.9% in 2014 versus 13.7% in 2010). The second highest immigrant household population in Luxembourg were French (7.9%), followed by Belgian (3.6%), Italian (3.2%) and German (3.2%) households. These main groups represented 29.8% of all Luxembourg resident households. Other countries of birth represented 13.2% of all Luxembourg resident households.

The educational attainment in the sample increased between 2014 and 2010. In 2014, 29.8% of Luxembourg households are characterised by low education (ISCED=0,1,2), 39.2% by medium education (ISCED=3,4) and 31.0% by higher education (ISCED=5,6). Here, it is particularly noteworthy that the share of households with medium educational attainment remained unchanged, whereas the share with low education was almost 6 percentage points lower and the share of households with high education was almost 5 percentage points higher than in 2010. This shift reflects the general tendency of the population to be better educated. Both the share of natives and immigrants with low education decreased significantly between 2010 and 2014 (Table 4).

Concerning the employment status, the majority of Luxembourg households were employed (56.1%), 4.4% were self-employed, 3.3% were unemployed and 26.3% were retired. The only significant difference to 2010 is the lower probability of being self-employed.

Table 4: Education by country of origin

Born in Luxembourg		Wave	Proportion	Std. Err.	[95% Conf. Interval]		P-value	
Education level*	Low (ISCED=0,1,2)	2010	32.0%	2.4%	27.4%	36.6%	0.085	*
		2014	26.9%	1.8%	23.4%	30.3%		
	Middle (ISCED=3,4)	2010	45.9%	2.5%	41.0%	50.9%	0.683	
		2014	47.3%	2.0%	43.3%	51.3%		
	High (ISCED=5,6)	2010	22.0%	1.9%	18.3%	25.7%	0.129	
		2014	25.8%	1.6%	22.7%	28.9%		
Born in another country								
Education level*	Low (ISCED=0,1,2)	2010	40.5%	2.7%	35.3%	45.7%	0.035	**
		2014	33.6%	1.9%	30.0%	37.3%		
	Middle (ISCED=3,4)	2010	27.8%	2.6%	22.7%	32.9%	0.821	
		2014	28.5%	2.1%	24.4%	32.7%		
	High (ISCED=5,6)	2010	31.7%	2.3%	27.2%	36.2%	0.042	**
		2014	37.8%	2.0%	33.9%	41.7%		

Variables referring to the reference person of household (FKP).
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

2.3   Questionnaire

The LU-HFCS is a face-to-face survey and follows the core questionnaire of the Eurosystem HFCS. The questionnaire covers both household and person specific questions. Person specific questions should be answered by individual household members and household specific questions by the person who is best informed about the household's finances (referred to as the "financially knowledgeable person" or "FKP"). The questionnaire is divided into 9 main sections:

1.   General characteristics of the household (personal questions)
2.   Real assets and their financing (household questions)
3.   Other liabilities / credit constraints (household questions)
4.   Private businesses and financial assets (household questions)
5.   Employment (personal questions)
6.   Pensions and insurance policies (personal questions)
7.   Income (personal questions)
8.   Intergenerational transfers/ gifts (household questions)
9.   Consumption (household questions)

In addition to the core questions, which are common to all participating countries (some are adapted to the national context of Luxembourg), 10 non-core questions (optional) and 43 national specific questions were added. These additional questions touch the following topics: immigration and languages spoken (demographics); commuting distance to workplace, multiculturalism in the workplace, reason to choose to be employed in the public or private sector; household net income; initial financing of household main residence (HMR), quality of HMR, expectations of housing price dynamics, maintenance and investment expenditure (real assets and their financing); financial literacy questions; geographical breakdown of total consumption. In total, the information collected during the interview is represented by 486 different variables. The English version was additionally translated into French and German, two of the official languages in Luxembourg.

The interviewer complemented the collected information with two sets of additional information. First, the sampling register documents the contact attempts with the household (i.e. when, how, number of attempts) and the final outcomes. Moreover, the interviewer recorded information on housing and neighbourhood conditions for the entire gross sample. Second, after each interview the interviewer completed the paradata section. This section covers several dimensions of the interviewer's perception of the interview, such as behaviour of the respondent, reliability of the answers, use of documents to provide information, etc.

2.4 Fieldwork

The target net sample size increased from 1,000 interviews (realised 950) in wave 1 to 1,500 (realised 1,601) interviews in wave 2 (Table 5). Several changes were implemented to achieve the higher net sample size: i) more interviewers, some of them contractual interviewers; ii) incentives for interviewees (numismatic product with a retail value of €30) and for interviewers (additional bonus if they completed at least 3 interviews per week[9]), and iii) a leaflet summarising the acquired knowledge from the first wave to help convince households to participate. After the development and internal validation of the CAPI program, a pre-test was conducted by 9 interviewers with 22 existing households to scrutinise the comprehension of the questions, the translation equivalence, the grammar and spelling, as well as the consistency of filters and pop-down menus. The pre-test revealed no substantial issues.

The start of the field phase was announced in a joint press release by BCL and LISER on 27 March 2014. Interested readers were referred to a dedicated web page on the BCL website for general information on the HFCS wave 2 and for results and publications related to the previous wave. A few days prior to being contacted by the interviewer, households received an introductory letter (both in French and German) signed by the Governor of the BCL and the President of LISER informing them about the survey and being included in the sample. The letter provided the motivation of HFCS, described the sampling procedure, stressed the voluntary participation and assured the confidentiality of the collected information. It mentioned that each household would receive a token of appreciation in form of a numismatic product (retail value €30) and that the household would be contacted by an interviewer soon. Finally, contact details by mail, phone or post of LISER and the BCL were provided in case of questions.

Table 5: Implementation – overview

	Wave 2010	**Wave 2014**
Survey company	LISER (CEPS/INSTEAD)	
Interview mode	CAPI	
Pre-test	June 2010	March 2014
Information material for the household	Introduction letter Leaflet Website	
Field phase	09/2010 – 04/2011	04/2014 – 12/2014

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[9]   The bonus payment became effective on the 1st October 2014.

2.4.1 Interviewers

Ninety-three interviewers were trained by LISER of which 46 interviewers were experienced and 47 inexperienced. Six interviewers were under a regular employment contract and 87 conducted the interviews as freelancers. The number of interviewers was almost double the number of the interviewers (41) in wave 1. Some of the interviewers had already participated in wave 1. However, 32 interviewers did not complete a single interview. Mainly inexperienced interviewers aborted as they had difficulties to contact and convince households to participate. Estimation results from a zero inflated regression model indicate that male, experienced interviewers and interviewers under regular contract in particular managed to complete more interviews. In case of interviewers under regular employment contract the results are particularly striking; on average they manage to complete more than 5 times as many interviews as interviewers with a freelance contract.

Figure 1: Number of interviews by interviewer
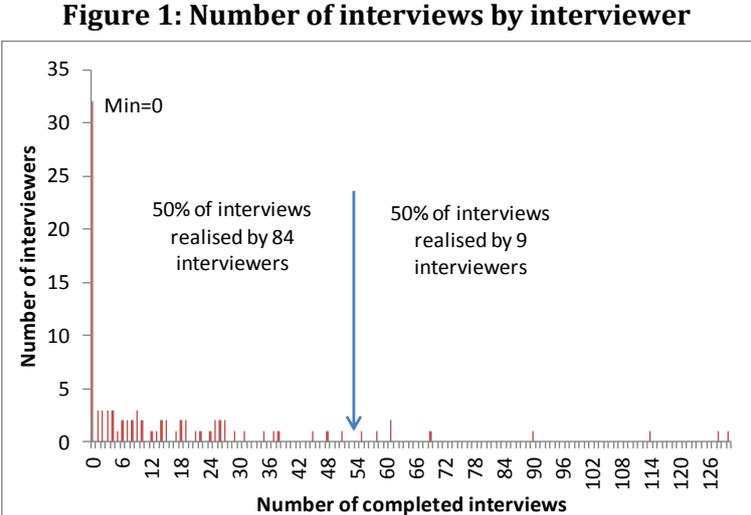
Source: Own calculations based on the 2nd wave of the LU-HFCS, non-imputed and unweighted.

Interviewers received the address list of households to contact from their fieldwork supervisors. The contact requirements included at least six contact attempts of the household, of which the first and at least contact attempt needed to be face-to-face. Interviewers had to contact the households at different days of the week (at least once during the weekend) and at different times of the day (at least once in the evening). Finally, the interviewer should at least try to contact the same household twice a week. Interviewers were equipped with a compilation of research papers and results from the first wave to demonstrate how the individual household data are used.

2.4.2   Fieldwork quality control

Interviewers and their supervisors remained in regular contact throughout the duration of the fieldwork and were requested, depending on experience and the stage of the fieldwork, to contact their respective supervisor every two weeks. In addition, supervisors (5) had regular meetings with the survey team leader (every two weeks) to review the evolution of the progress in the field, discuss and solve eventual problems (20 meetings in total). Important problems were annotated and stored in a shared document. For example, in the beginning of the fieldwork, two minor issues concerning the questionnaire were quickly resolved.

During the fieldwork, quality back-checks were carried out: as set out in the contract between BCL and LISER, a total of 15% of households having participated in the survey were re-contacted. A protocol of control included: check of the visit, questions about the content, check of the appropriateness of the interviewer's behaviour and about the hand-over of the numismatic product. Problems of quality were not recorded at this stage of the survey.

2.4.3   Interview language and duration

In the net sample, about 50% of the completed interviews were conducted in Luxembourgish, 38% in French, 10% in German and 2% in English. Only one interview was conducted in Portuguese and one other in another language. The average duration of the interviews was 60 minutes. The median duration was 56 minutes and the inter-quartile range was 26 minutes. The interview duration generally increased with gross income, net wealth and household size.

Figure 2: Language of interview
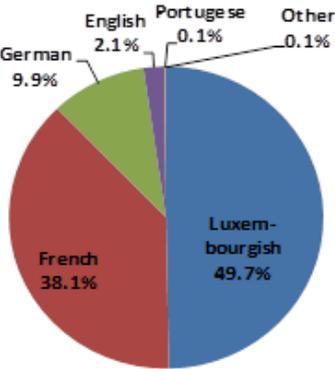
Source: Own calculations based on the 2ⁿᵈ wave of the LU-HFCS, non-imputed and unweighted.

Figure 3: Duration of interview, by socio-economic characteristics
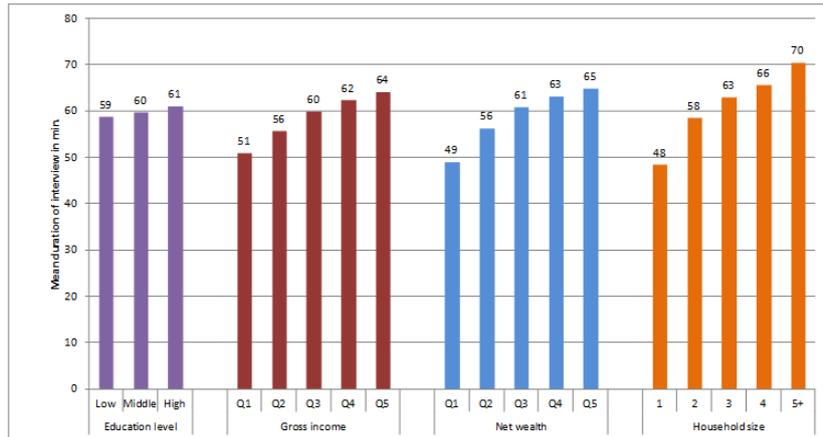
Source: Own calculations based on the 2nd wave of the LU-HFCS, non-imputed and unweighted.

In total, 1,601 household interviews were successfully concluded, all of them via computer assisted personal interviews (CAPI). This corresponds to a response rate of 23.4%, which is a 3.4 percentage point increase compared to wave 1.

Figure 4: Completed interviews per month, wave 1 and 2
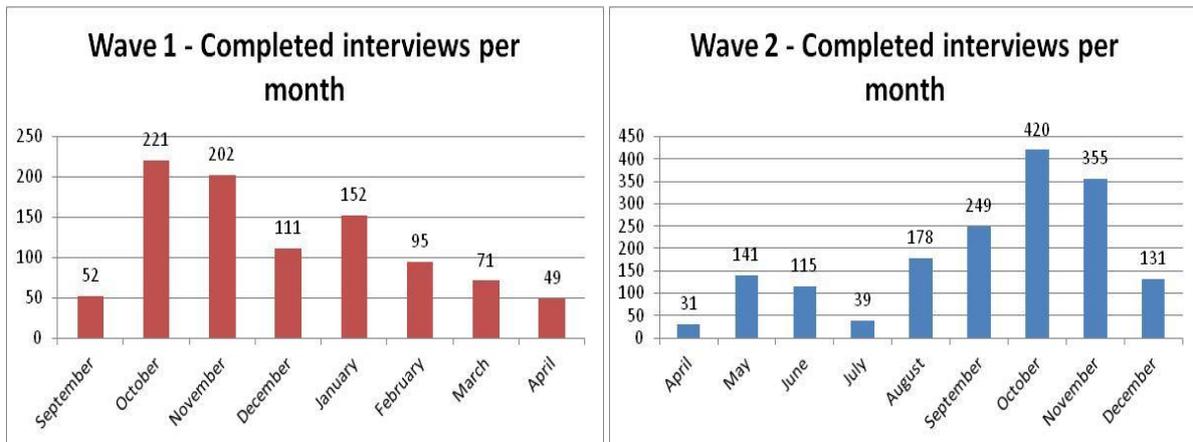
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, non-imputed and unweighted.

The final data sample is representative of 210,965 households and 508,248 individuals residing in Luxembourg as at 31 December 2013. The reference period for assets and liabilities is always the day of the interview (between April and December 2014). The reference period for yearly gross and net income is 2013 (calendar year).

2.5   Interviewer information/ Paradata

After the conclusion of each interview, interviewers additionally provide useful information for the assessment of the overall quality of the survey – the so-called 'Paradata'. It covers all types of information concerning the data collection process, such as interviewer call records, the duration of the interviews, keystroke data, as well as interviewer characteristics (Nicolaas, 2017).

Based on the subjective impression of the interviewers, it appears that, in 2014, 80% of interviewees did not show any signs of suspicion prior to the interview, whereas 17% showed some signs of concern (Figure 9). Compared to the first wave this marks an improvement. This improvement may relate to interviewees having read or heard about the survey and its results in the local and international media or having consulted the BCL website. In addition, interviewers managed to "convert" some interviewees who showed signs of suspicion prior to the interview. The share of unsuspicious interviewees was 10 percentage points higher after the interview than before the interview. This compares to only a 2 percentage points improvement after the interview for the first wave. It is not clear what brought about this improvement and whether it is related to the interviewers themselves or the token of appreciation handed out to the interviewees after the interview.

Figure 5: Suspicion prior/after the interview
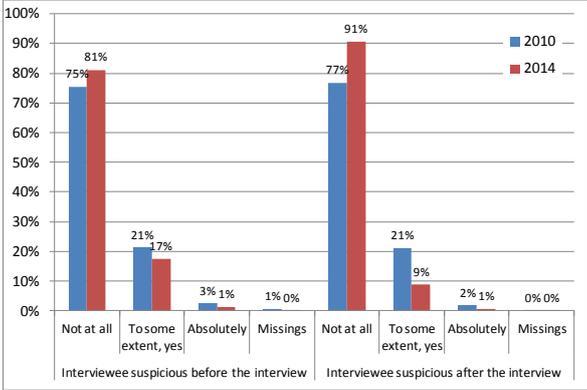
Figure 6: Interest in the interview
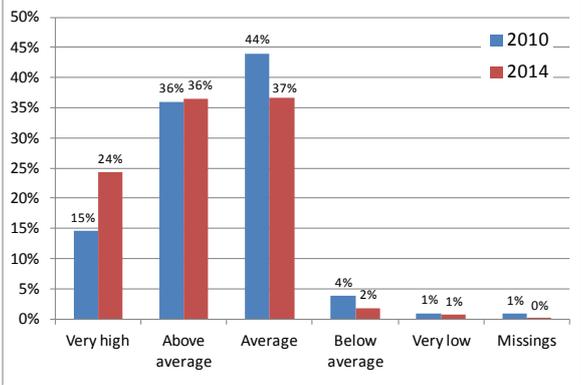
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, non-imputed and unweighted.

Overall, the interest among participants was higher than in 2010 (Figure 6). Twenty-four percent showed very high interest, an increase by 9 percentage points compared to 2010. Both in 2014 and 2010, 36% showed above average interest. A high interest in the interview is expected to raise the quality of the answers and to reduce the number of unanswered questions, as it increases respondents' willingness to answer questions that otherwise may be left unanswered due to personal concerns or the response burden (item non-response). However, if households with a high interest in the topic of the survey are more likely to be present in the final sample, this may result in a sample selection bias; the weighting procedure described below aims to correct for this possibility by taking into account known characteristics of observed and unobserved households.

For the quality of the underlying data it is indispensable for interviewees to understand correctly the questions they are asked. In addition, interviewees must be able to express themselves verbally or in a numerical manner providing amounts in euro (Figure 7). Both in wave 1 and 2, only a negligible fraction of 0-2% of interviewed households were rated to have a poor understanding of the questions or rated to have difficulties in expressing themselves. Between 50-60% of households are rated "excellent" by interviewers with respect to these three categories in wave 2, a remarkable increase from wave 1 in 2010 (40-44%). In addition, the reliability of the information provided is judged to have increased substantially. Interviewers were also requested to rate the overall reliability of the income and wealth information provided in the survey (Figure 7). The share of interviewees judged to provide accurate income and wealth information increased from 48% to 72% between waves. Only 2% (5%) of interviewed households were rated to provide inaccurate information in 2014 (2010).

Figure 7: Quality of answers
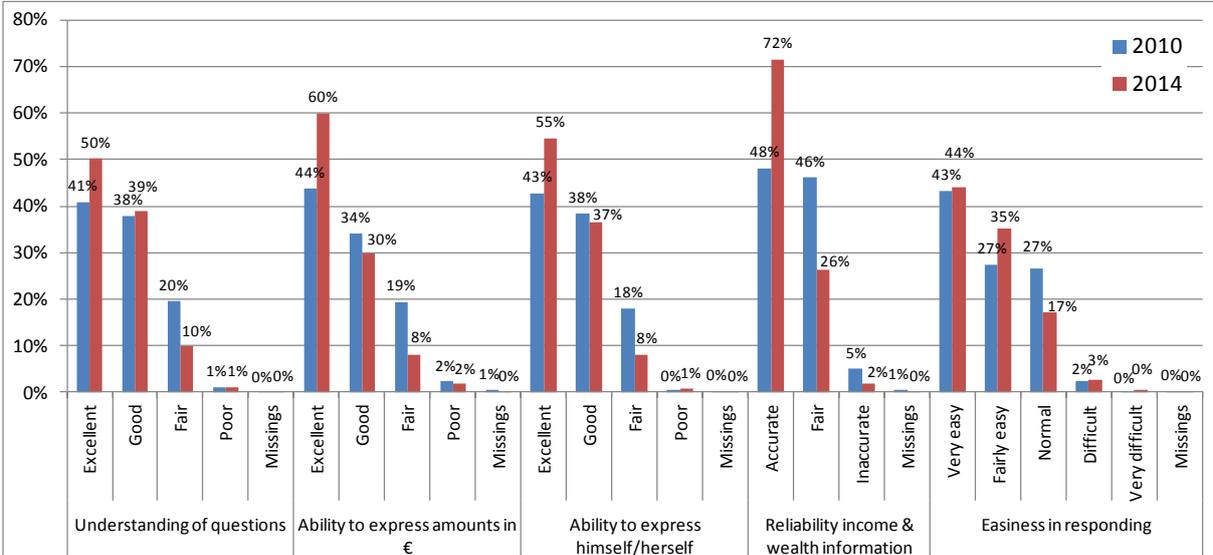
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, non-imputed and unweighted.

Recalling exact numbers on income or certain wealth categories may be very difficult for respondents, thus they are encouraged to consult any documentation that may help them to answer correctly. Thirty-seven percent of responding households consulted at least one document during the interview in 2014. This is 6 percentage points lower than in 2010 (Figure 8). The documents most frequently consulted are income statements, account statements, loan and income tax statements. In 2014, there was a substantial increase in consultation of tax bills and handwritten notes. In summary, the information provided by interviewers on data quality suggests that the LU-HFCS can be regarded as a reliable source for empirical analysis.

Figure 8: Documents consulted by interviewees
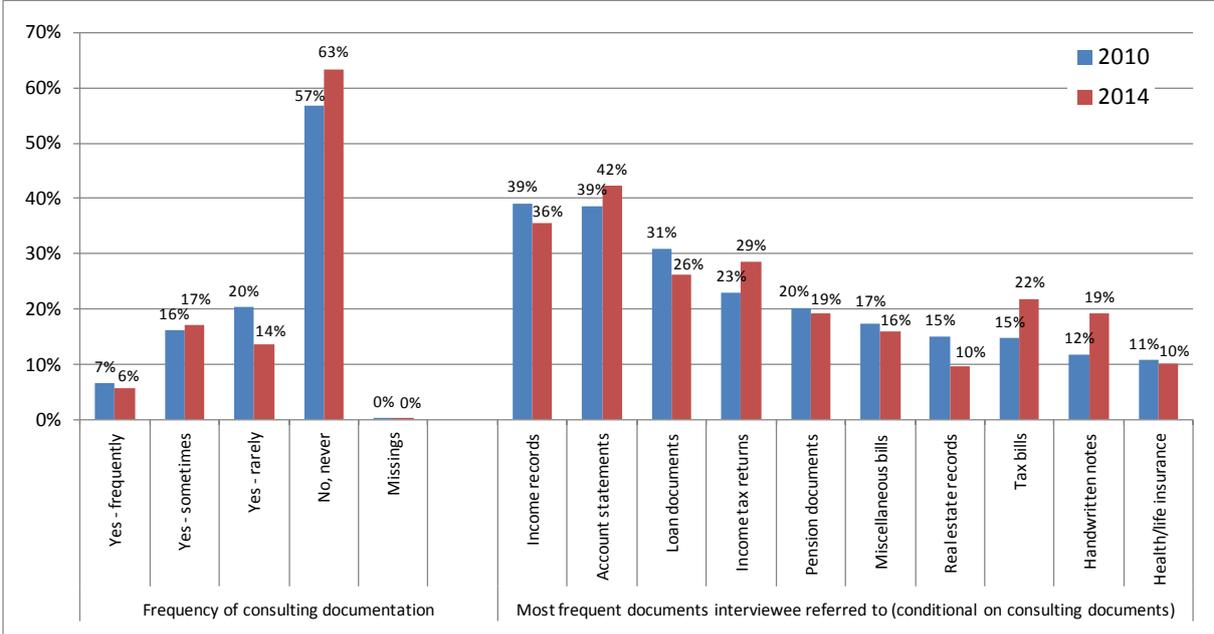
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, non-imputed and unweighted.

2.6   Data treatment

The data treatment consists of four parts: analysis of unit non-response, editing, imputation and weighting.

2.6.1   Analysis of unit non-response

Unit non-response is a key concern for data quality; this being particularly the case if the responding and non-responding part of the population differ in characteristics of interest (Osier, 2016). Response rates indeed vary considerably across strata (Table 6) and strata variables. The lowest response rate of about 20% is recorded for the employment status category "Others"; the highest is recorded for the category "Public employees" (Figure 9). In our dataset, there is a tendency for households with higher incomes to have lower unit non-response rates than households with lower incomes. These patterns were already observed in 2010. In general,

foreigners seem to be more likely to participate than native households; this varies across income and employment status however.

Table 6: Response behaviour for each stratum in %

Nationality	Auxiliary variables Employment status	Strata number	Individual income	Wave 2010	Individual income	Wave 2014
Luxemburgish	Self-employed	1	≤7 000 EUR	14.4	≤7 650 EUR	21.5
		2	>7 000 EUR	15.3	>7 650 EUR	21.4
	Private employee	3	≤7 000 EUR	18.8	≤7 650 EUR	20.1
		4	>7 000 EUR	24.7	>7 650 EUR	32.3
	Public employee	5	≤7 000 EUR	18.6	≤7 650 EUR	24.3
		6	>7 000 EUR	24.7	>7 650 EUR	26.1
	Other	7	≤7 000 EUR	17.1	≤7 650 EUR	20.3
		8	>7 000 EUR	16.7	>7 650 EUR	13.3
	Retired	9	≤7 000 EUR	17.7	≤7 650 EUR	22.0
		10	>7 000 EUR	36.0	>7 650 EUR	29.0
Foreigners	Self-employed	11	≤7 000 EUR	19.6	≤7 650 EUR	19.8
		12	>7 000 EUR	15.5	>7 650 EUR	19.5
	Private employee	13	≤7 000 EUR	20.1	≤7 650 EUR	23.5
		14	>7 000 EUR	27.2	>7 650 EUR	25.5
	Public employee	15	≤7 000 EUR	18.9	≤7 650 EUR	26.9
		16	>7 000 EUR	36.0	>7 650 EUR	42.5
	Other	17	≤7 000 EUR	16.8	≤7 650 EUR	22.0
		18	>7 000 EUR	13.2	>7 650 EUR	13.4
	Retired	19	≤7 000 EUR	18.8	≤7 650 EUR	22.4
		20	>7 000 EUR	39.9	>7 650 EUR	40.5

Source: Own calculations based on the 1st and 2nd wave of the LU-HFC, non-imputed and unweighted.

Figure 9: Response rate by nationality, individual income and occupational status
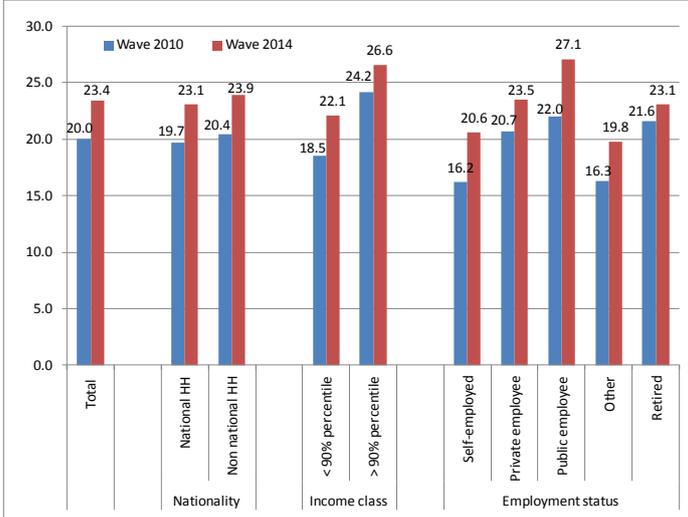
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, non-imputed and unweighted.

A more formal unit non-response model analysis, where we regress the response behaviour on a set of covariates known from the stratum information supplemented by the information recorded by the interviewers on the location and surroundings of the household's residence, suggests that survey participation varies according to stratum information and other paradata characteristics. Participation is more likely if the household is a foreigner, within the high labour income decile and less likely if it is self-employed. Paradata coefficient estimates suggest that

response behaviour is higher if the interviewee lives in an individual house, semi-detached house, flat or apartment, and less likely if the household lives in townhouses, areas between city centre and suburbs, or town outskirts (all relative to the base category). The general outward appearance does not have any effect.

These estimates, however, exclude the effect of effort by the interviewer. Participation is likely to vary depending on the day of the week and the time of the day the interviewer attempted to make contact as well as on how many contact attempts were made with the respondent.

Table 7: Unit non-response estimates

VARIABLES	(1) AME	(Std.err)
Stratum information: base foreigner, high income, retired		
Luxembourg national	-0.034 ***	(0.011)
Low income	-0.028 **	(0.012)
Self-employed	-0.042 **	(0.020)
Private sector employment	0.007	(0.014)
Public sector employment	0.026	(0.018)
Other employment	-0.012	(0.024)
Interviewer data:		
Type of dwelling: base other type of dwellling		
Individual house	0.191 ***	(0.054)
Semi-detached house	0.158 ***	(0.054)
Flat/apartment	0.131 **	(0.054)
Dwelling rating: base low-income		
Luxury	0.046	(0.070)
Upscale	0.089	(0.067)
Modest	0.052	(0.066)
Mid-range	0.010	(0.065)
Dwelling location: base isolated area, countryside		
Downtown	-0.035 **	(0.017)
Area between city centre and suburbs	-0.040 **	(0.016)
Town outskirts	-0.031 *	(0.018)
Dwelling - outward appearance: base dilapidated		
Generally clean and sound	0.050	(0.090)
Some peeling paint or cracks in walls	0.029	(0.090)
Needs substantial painting, refilling or repair	-0.011	(0.088)
Observations	6,893	
Pseudo-R2	0.0164	

AME: Average marginal effects. Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1.
Source: Own calculations based on the 2nd wave of the LU-HFCS, non-imputed and unweighted.

2.6.2 Editing

Several automatic checks were implemented in the CAPI program, mainly for questions regarding continuous variables. "*Informative bounds*" informed the interviewer that the answer provided seemed to be rather unlikely compared to the answers of other individuals in the population. Before the questionnaire continued with the next question, a pop-up screen

appeared to either confirm or correct the response. If a household answered 75 hours per week as a response to the question on the average working time per week, for example, the household was asked the following question: "Are you sure that you work more than 60 hours on average a week?" "Informative bounds" try to rule out typos but do not enforce a specific answer. "*Consistency checks*" have the same aim. They inform the interviewer that the answer provided seemed to be rather unlikely when compared to a previous response/s provided. For example, if the number of years a respondent worked for all or most of the year since the age of 16 is larger than her age minus 16, a pop-up screen showed the following massage *"Total length of employment high for respondent's age"* and asked to confirm or to correct the value. On the contrary, *"critical checks"* enforce the provision of answers in a given range. The number of years lived in the country of residence, for example, is not allowed to be larger than the age of the respondent. Several questions contained several kinds of automatic checks that had to be passed.

Although these automatic checks were carefully implemented, they did not entirely prevent some responses being inconsistent or unreliable. Thus, almost all continuous variables were additionally scrutinised by applying above or stricter rules and by cross-checking them to other answers of the respondent. Based on this verification, some of the continuous variables had to be manually edited.

In the 2nd wave, the point values of 1,038 observations (0.2% relative to all applicable cases) were set to missing (Table 8). A decrease of around 200 observations compared to wave 1. As the quality of the public pension section in the 1st wave was weak, the complete public pension section was set to missing and replies were estimated based on answers given in the employment section and the institutional rules in place in Luxembourg. In wave 2, the section on public pension was not asked and was directly calculated instead. Excluding edits from the public pension section in the 1st wave, 919 observations (0.4%) were modified. This increased to 1,816 observations (0.4%) in wave 2. In addition, respondents could provide their answers in ranges. Those ranges were also checked and if needed, set to missing or a modified value. Finally, bound values of the summary variable were used to update bound values for each category.

2.6.3   Imputation

Missing and editing rates across variables remained relatively stable in the second wave when compared to the first wave (Table 8). Missing rates for socio-demographic variables are close to zero percent. An exception in the second wave is the higher missing rate for the highest level of

education, which was almost 2%. The higher missing rate is partly driven by deleting collected values (0.5%) as the provided age was too low for the response on the highest level of education.

Table 8: Missing and editing rates for some selected variables

Variable name and description		Wave	Unappli-cable in % of total	Appli-cable (A) in % of total	Undeter-mined (U) in % of total	Min. # to be imp. (I) in % of (A)	Max. # to be imp. (II) in % of (A) + (U)	Bracket values in % of (I)	Bracket values in % of (II)	Edited in % of (A)
RA0200	gender	2010	0.0	100.0	0.0	0.0	0.0			0.0
		2014	0.0	100.0	0.0	0.0	0.0			0.0
RA0300	age	2010	0.0	100.0	0.0	0.2	0.2			0.2
		2014	0.0	100.0	0.0	0.0	0.0			0.5
RA0400	country of birth	2010	0.0	100.0	0.0	0.0	0.0			0.1
		2014	0.0	100.0	0.0	0.3	0.3			0.0
PA0100	marital status	2010	0.0	100.0	0.0	0.0	0.0			0.1
		2014	0.0	100.0	0.0	0.1	0.1			0.0
PA0200	highest level of education	2010	0.0	100.0	0.0	0.5	0.5			0.0
		2014	0.0	100.0	0.0	1.9	1.9			0.5
PG0100	received employee income	2010	0.0	100.0	0.0	0.1	0.1			0.6
		2014	0.0	100.0	0.0	0.1	0.1			1.6
PG0110	gross cash employee income	2010	47.0	52.8	0.2	28.3	28.7	71.1	70.1	1.3
		2014	42.0	57.9	0.1	23.3	23.4	43.6	43.2	3.3
PG0200	received self-employment income	2010	0.0	100.0	0.0	0.2	0.2			0.2
		2014	0.0	100.0	0.0	0.1	0.1			1.1
PG0210	gross self-employment income	2010	91.5	8.3	0.2	35.5	38.5	66.7	61.5	0.0
		2014	91.9	8.0	0.1	29.4	30.7	31.3	29.5	14.5
HB0300	household main residence (HMR)	2010	0.0	100.0	0.0	0.0	0.0			0.1
	- tenure status	2014	0.0	100.0	0.0	0.0	0.0			0.0
HB0900	current price of HMR	2010	30.0	70.0	0.0	11.7	11.7	75.6	75.6	0.0
		2014	26.6	73.4	0.0	12.5	12.5	62.6	62.6	0.5
HB1000	mortgages or loans	2010	30.0	70.0	0.0	0.2	0.2			0.3
	using HMR as collateral	2014	26.6	73.4	0.0	0.3	0.3			1.7
HB1010	number of mortgages/loans	2010	65.5	34.4	0.1	0.3	0.6			0.9
	using HMR as collateral	2014	64.5	35.3	0.2	0.2	0.9			3.7
HB1701	HMR mortgage 1: amount still owed	2010	65.5	33.7	0.8	11.3	13.8	58.3	47.7	3.1
		2014	64.5	35.2	0.3	13.5	14.2	43.4	40.7	5.1
HB1702	HMR mortgage 2: amount still owed	2010	94.8	4.4	0.7	11.9	28.6	20.0	8.3	11.9
		2014	94.0	5.7	0.3	22.0	26.0	30.0	24.0	5.5
HB4300	ownership of cars	2010	0.0	100.0	0.0	0.0	0.0			0.1
		2014	0.0	100.0	0.0	0.0	0.0			0.0
HB4400	total value of the cars	2010	10.9	89.1	0.0	6.0	6.0	70.6	70.6	0.0
		2014	7.7	92.3	0.0	5.8	5.8	70.6	70.6	0.0
HD1100	household owns sight accounts	2010	0.0	100.0	0.0	0.0	0.0			0.0
		2014	0.0	100.0	0.0	0.0	0.0			0.0
HD1110	value of sight accounts	2010	3.2	96.8	0.0	36.1	36.1	64.5	64.5	0.0
		2014	2.6	96.7	0.7	32.6	33.1	37.5	36.6	0.1
HD1200	household owns saving accounts	2010	0.0	100.0	0.0	0.3	0.3			0.0
		2014	0.0	100.0	0.0	0.3	0.3			0.0
HD1210	value of saving accounts	2010	25.6	74.1	0.3	41.2	41.6	60.3	59.7	0.7
		2014	24.8	74.9	0.3	36.9	37.2	37.7	37.3	0.0
HD1500	household owns publicy traded shares	2010	0.0	100.0	0.0	0.3	0.3			0.0
		2014	0.0	100.0	0.0	0.5	0.5			0.0
HD1510	value of publicy traded shares	2010	86.5	13.2	0.3	25.6	28.0	37.5	34.3	0.8
		2014	87.3	12.2	0.5	27.7	30.5	33.3	29.0	0.0

Source: Own calculations based on the 2nd wave of the LU-HFCS, non-imputed and unweighted. Values from the 1st wave of the LU-HFCS are taken from Mathä, Porpiglia and Ziegelmeyer (2012).
Note: 'Applicable' = number of respondents who should reply to the question; 'Inapplicable' = number of respondents who should skip the question due to routing; 'Undetermined' = number of undetermined responses due to a missing value in a mother variable or a CAPI failure; 'Minimum number of values to be imputed' = number of "don't knows", "no answer", "collect from brackets", "collected value deleted"; 'Maximum number of values to be imputed' = adds to the minimum number of values to be imputed "not collect due to missing answer to a previous question" and "not collected due to a CAPI or interviewer failure"; 'Edited' = number of "modified values" and "collected value deleted".

Across all variables, the 2nd wave counted 59% inapplicable cases, 40% of applicable cases and 1% of undetermined cases. The share of the minimum number of missings relative to all applicable cases increased from 2.7% to 4.4%. The reason for this increase is explained by the decrease of the share of applicable cases and an increase in the number of missings. The increase in missings of the total questionnaire is driven to a large extent by higher missing rates for country specific variables, which were not present in the first wave. As discussed before, collected values in brackets as a share of missing values substantially decreased in the 2nd wave.

Table 9: Missing and editing rates for some selected variables

	Wave 2010		Wave 2014	
Description	In %	Values	In %	Values
Applicable in % of total:	45.0	231,273	40.1	420,127
Inapplicable in % of total:	54.6	280,726	59.0	619,345
Undetermined in % of total:	0.5	2,338	0.9	9,426
Min missings in % of applicable:	2.7	6,346	4.4	18,493
Max missings in % of applicable:	3.8	8,684	6.6	27,919
Bracket values in % of min missing values:	23.5	1,493	10.9	2,007
Bracket values in % of max missing values:	17.2	1,493	7.2	2,007
Editing: corrected values in % of applicable:	6.6	15,178	0.4	1,816
Editing: corrected values in % of applicable (without public pension section*):	0.4	919	0.4	1,816
Editing: set to missing in % of applicable:	0.5	1,235	0.2	1,038
Editing: total in % of applicable:	7.1	16,413	0.7	2,854

Source: Own calculations based on the 2nd wave of the LU-HFCS, non-imputed and unweighted. Values from the 1st wave of the LU-HFCS are taken from Mathä, Porpiglia and Ziegelmeyer (2012).
* The public pension section was not asked in the 2nd wave. The variables were calculated based on provided answers from the employment section.
Note: See Table 8 .

Missing values are imputed with the ECB Multiple Imputation Routine (EMIR 2.2) assuming that missing values are missing at random, which means that the missing mechanism depends on variables collected in the survey. Biancotti et al. (2014) describe in detail the imputation algorithm and all necessary steps for preparation. Mathä, Porpiglia and Ziegelmeyer (2012) apply EMIR for the 1st wave of the LU-HFCS and describe the various steps involved and the techniques used, which also apply for the 2nd wave. Below, we describe which principles guide the implementation of the imputation procedure. We point out specific aspects of the LU-HFCS.

- We first impute the dataset with very naïve imputation models. Continuous variables are imputed by filling the missing values with the weighted means. Missing values of dummy and categorical variables are imputed via an unconditional hotdeck. This provides a good starting point for the proper imputation and allows including all covariates right from the beginning.

- Second, due to the complexity of the survey, variables are not ordered from variables with the lowest number of missing values to the variables with the highest number of missing values. Instead, we start with person specific demographic information (low missing rates) and continue with person specific variables on employment. All other sections are imputed in the order of the questionnaire. The sequence of the variables remains the same over all iterations. The effect that we do not order the variables from low to high missing rates should be minor as we pre-impute the dataset with initial values.
- Third, we use a broad conditioning approach to preserve the correlation structure of our dataset wherever possible. According to ECB guidelines, we include the following covariates:
  i)   good predictors of the variable of interest,
  ii) essential explanatory variables of non-response,
  iii) important determinants guided by economic theory of the variable to be imputed, and
  iv) variables with a good explanatory power for covariates part of other imputation models.

  We use a backward elimination technique (using routines from SAS 5.1 software package) to select most of our covariates. We drop the covariate with the lowest p-value and re-estimate the model. This process is repeated until a balance between model efficiency and bias is reached. Normally, we included all significant variables with a p-value of at least 10% from our very broad set of covariates. However, technical problems for some variables, such as a low number of observations or very deterministic models (overfitting), forced us to reduce the number of significant covariates for some variables.

  The imputation algorithm imputes jointly household and personal variables. Additionally, we include information of the sampling design by directly including sampling design variables. This set of information is further enlarged by including geographic information, information from the sample register file and interviewer information from the paradata section.
- Fourth, imputed data is not edited. All editing is done before the imputation. During the imputation phase, bounds are used to ensure the consistency of the estimates. Depending on the variable, three different kinds of bound values need to be respected: the imputed value must be between the 1st and the 99th percentile of observed values (general bounds), the bounds provided by the respondent themselves need to be respected, and logical constraints imposed by other variables need to be taken into account (dynamic bounds).
- Fifth, the convergence of the imputation procedure is assessed using the Gelman-Rubin indicator (Gelman and Rubin, 1992; Brooks and Gelman, 1998; Gelman et al., 2004).

The statistics presented in the following sections use the five multiply imputed datasets to calculate point and variance estimates according to Rubin's rules (Rubin, 1996, pp. 467-477). Point estimates reported in tables refer to the average of individual point estimates across the 5 implicates and the variance estimation accounts for both between- and within-imputation variance.

2.6.4   Weighting

The calculation of final survey weights follows a 6-step approach in line with ECB recommendations. The aim is to achieve a sample representativeness of the target population, which comprises all households residing in Luxembourg as at 31 December 2013 excluding collective households and households with international civil servants. The starting point is the construction of *design weights*, which are calculated as the inverse of the selection probability of our sampling unit, in our case fiscal households. Second and third, design weights are *adjusted for non-contact* and *over-coverage*. Two imperfections of the sampling frame make the over-coverage adjustment necessary: i) the IGSS database, on which the sampling frame is based, does not distinguish between private households and collective households (around 9,073 individuals); ii) some individuals (and fiscal households) died or moved outside the country between the selection date (31 December 2012) and the interview date (August to December 2014) (around 16,313 individuals). This over-coverage error is corrected by excluding non-eligible households and individuals from the gross sample and the indirect sampling frame. Fourth, weights are *adjusted for unit non-response* to control for systematic differences between responding and non-responding households in our gross sample. Fifth, as several fiscal households from the sampling frame may correspond to the same household dwelling (multiple selection probabilities), a *coverage adjustment* is needed. Sixth, the weights are adjusted to an external data source using auxiliary information from the IGSS database. Finally, replicate weights are calculated by repeating steps 1 to 6 previously described using the Rao-Wu rescaling bootstrap method for a stratified simple random sample. In total 1,000 replicate weights are provided to calculate properly the variance of our point estimates. On average, each household in our net sample of 1,601 stands for 131.8 households of our target population. The final sampling weights range from one household representing just 1.4 to one household representing 473.9 households in the target population (with a standard deviation of 92.7).

2.6.5   Anonymisation

As the LU-HFCS is made publicly available for scientific and research purposes, the final LU-HFCS dataset was anonymised. The user database (UDB) contains no individual identifier. Households just have a random household identifier. Several measures were taken to ensure that identification of households and their members is not possible. The measures follow closely the anonymisation procedure of the 1st wave, which were based on the guidelines of the ECB (HFCN, 2012) and EU-SILC (Eurostat, 2005, 2007, 2009). As we sample 2.73% of the target population, well above the sampling rates in other HFCS countries, some additional measures are implemented in Luxembourg. Anonymisation covers the following measures: removal of specific variables (e.g. paradata, regional information or some Luxembourg specific questions), random rounding of continuous variables, top-coding, non-disclosure of lower levels of disaggregation, regrouping in broader categories, imputation of rare cases and combinations. The aim is to anonymise the UDB using current best practices so that the risk of identification of households is minimised. Illegal identification should be only possible with efforts above any economic payoff one might receive (European Commission, 2002).

3.   Main findings

This section presents the main findings of the 2nd wave of the LU-HFCS. First, we describe the asset and liability sides, then we analyse income. A comparison with external data sources concludes this section. We report the composition of assets and liabilities distinguishing between i) the extensive margin and ii) the intensive margin. The extensive margin reflects the participation rate, that is, whether or not a household holds a particular type of asset or liability. The intensive margin, also referred to as conditional value, is the value of a particular type of asset or liability for those households holding this particular asset or liability type. In contrast, unconditional values refer to statistics for the whole (sub-)population in question. Furthermore, we report the share of various asset and liability types relative to the total value of assets and liabilities. The composition of assets and liabilities reflects both participation decisions as well as their conditional values. Our discussion will focus on the most relevant findings and changes compared to 2010.[10] Information on the composition of assets and liabilities is necessary to understand the impact of economic shocks and the transmission of monetary policy measures. This is because differences in the structure of household balance sheet across household demographic and socio-economic characteristics lead to differences in household resilience to adverse economic conditions as well as in sensitivity to policy measures. For example, Ehrmann

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[10] Note that minor difference may exist between figures provided for the 1st wave in this report and the corresponding numbers in Mathä, Porpiglia and Ziegelmeyer (2012a). This reflects slight data changes, such as the use of the anonymised ECB dataset of the 1st wave.

and Ziegelmeyer (2017) investigate the effect of monetary policy on household debt across countries and household groups.

3.1 Household assets

Household assets are typically divided into real assets and financial assets. Real assets comprise the household main residence (HMR), other real estate property (OREP), vehicles, valuables, etc. Real assets are generally the most important household asset as measured by their share in the overall household portfolio (e.g. Arrondel et al., 2016). In Luxembourg, for instance, real assets represent 84.7% of all gross assets held by households. Financial assets include deposit and savings accounts, mutual funds, publicly quoted shares, pension and insurance accounts, etc. We first discuss real and financial assets separately, starting with real assets.

3.1.1 Real assets

Vehicles represent the real asset category most commonly held by Luxembourg households in 2014 (88.0%). It is followed by the HMR (67.6%), OREP (26.3%) and valuables (25.7%). The participation rates, i.e. the share of households holding the respective asset types, reported in 2014 are similar to those reported in 2010. Differences between waves are not statistically significant (Table 10) except for the participation rate in the category self-employment business, which was significantly lower in 2014 than in 2010 (from 5.2% to 3.9%).

In 2014, mean gross real assets of households in Luxembourg are estimated to be around €733,300. The corresponding value for 2010 was around €703,500, and thus in nominal terms slightly lower than in 2014. Adjusting the value for past HICP inflation between 2010 and 2014, gross real assets amounted to €768,900 in 2010 in real terms, that is, the amount was slightly higher than the amount reported in 2014. However, whether or not the 2010 value is adjusted for past inflation, the differences to the 2014 value remain too small to be considered statistically significant. With €438,000 and €233,000, or with a share of 59.7% and 31.8%, the HMR and OREP represent the two most important real asset categories (Table 11). The share of the HMR in total real assets is slightly larger than in 2010, whereas the share of OREP is slightly lower. The remaining real asset categories, such as self-employment business, vehicles and valuables make up only a small fraction of average household real wealth, representing 4.7%, 2.8% and 1.0% of total real assets, respectively. Median total real assets, instead, amounted to €477,100 in 2014. In 2010, the corresponding amount was €445,700 in nominal terms and €487,100 in real terms. Similar to the mean, the differences in the medians are not statistically significant, thus we cannot reject that the median value of gross real assets is the same in 2010 and in 2014.

Table 10: Participation in real assets categories (% of households)

Wealth category	Wave	Participation in %	Std. err.	[95% conf. interval]		P-value
Household main residence	*2010*	67.1	1.5	64.1	70.1	0.806
	2014	67.6	1.3	65.0	70.2	
Other real estate property	*2010*	28.2	1.6	25.0	31.3	0.367
	2014	26.3	1.2	24.0	28.7	
Vehicles	*2010*	86.7	1.3	84.2	89.3	0.444
	2014	88.0	1.0	85.9	90.0	
Valuables	*2010*	23.8	1.6	20.7	27.0	0.360
	2014	25.7	1.3	23.2	28.2	
Self-employment businesses	*2010*	5.2	0.6	4.1	6.3	0.079 *
	2014	3.9	0.5	3.0	4.8	
Total real wealth	*2010*	93.6	0.9	91.8	95.5	0.865
	2014	93.9	0.8	92.2	95.5	

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 and 2014 is significant: *** p<0.01, **p<0.05, * p<0.1.

Considering only those households holding real assets, which make up 93.3% of all households, the mean value of gross real assets amounted to €781,400 in 2014 (Table 12). The corresponding median value was €507,400. Differences between mean gross real assets in 2014 and 2010 are not significant, be it in nominal or real terms. In contrast, differences are significant for the conditional median (in nominal terms only). Looking at individual real asset categories, conditional on owning such assets, the mean value of valuables and vehicles was significantly smaller in 2014 than in 2010 real terms but not in nominal terms. These differences are however too small in size to feed through for differences in the total real assets to become statistically significant.

Table 11: Composition of mean and median household real assets

Wealth category	Wave	Mean	Std. err.	[95% conf. interval]		P-value	Median	Std. err.	[95% conf. interval]		P-value	in % of total
Household main residence	*2010*	410,615	31,007	349,840	471,390	0.407	357,307	18,688	320,631	393,982	0.055 *	58.4
	2010 in 2014 EUR	448,802	33,891	382,375	515,229	0.763	390,536	20,426	350,450	430,622	0.690	
	2014	438,017	10,981	416,493	459,540		400,000	12,642	375,221	424,779		59.7
Other real estate property	*2010*	239,261	42,340	156,274	322,247	0.918	0 (omitted)					34.0
	2010 in 2014 EUR	261,512	46,278	170,808	352,216	0.646	0 (omitted)					
	2014	233,209	37,484	159,729	306,689		0 (omitted)					31.8
Vehicles	*2010*	20,878	1,177	18,572	23,185	0.670	14,000	979	12,081	15,919	0.435	3.0
	2010 in 2014 EUR	22,820	1,286	20,299	25,341	0.085 *	15,302	1,070	13,204	17,400	0.089 *	
	2014	20,295	644	19,033	21,558		13,000	791	11,450	14,550		2.8
Valuables	*2010*	9,193	1,276	6,693	11,694	0.268	0 (omitted)					1.3
	2010 in 2014 EUR	10,048	1,394	7,315	12,781	0.122	0 (omitted)					
	2014	7,390	1,059	5,314	9,466		0 (omitted)					1.0
Self-employment businesses	*2010*	23,506	6,456	10,837	36,175	0.408	0 (omitted)					3.3
	2010 in 2014 EUR	25,692	7,056	11,845	39,540	0.517	0 (omitted)					
	2014	34,410	11,658	11,555	57,265		0 (omitted)					4.7
Total real wealth	*2010*	703,453	56,701	592,320	814,586	0.685	445,707	18,001	410,177	481,238	0.176	100.0
	2010 in 2014 EUR	768,874	61,974	647,405	890,342	0.647	487,158	19,675	448,323	525,993	0.683	
	2014	733,321	45,716	643,710	822,932		477,136	15,450	446,766	507,507		100.0

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

Looking at the median of households holding real assets, their total real assets were higher in 2014 than in 2010 (Table 12). This mainly reflects the significantly higher conditional median value of the HMR in 2014 compared to 2010. The median value of the HMR of homeowners increased from €500,000 in 2010 to €555,600 (+11.1%) in 2014 in nominal terms. In inflation-adjusted terms, the increase was however a modest €9,100, too low to be considered a statistically significant change. The median value of OREP (among households who own such assets) increased from €300,000 to €350,000 (+16.7%). Both the increases of HMR and OREP are roughly in line with the evolution of STATEC's hedonic index of residential property prices, which rose by 19.9% from 2010Q4 to 2014Q4.[11] The figures suggest that the increase in value for more expensive HMRs and OREPs may have been lower since their mean conditional values only increased by 6% and 4%, respectively.

In addition, the median value of vehicles for households with vehicles was significantly smaller in 2014 if the 2010 value is adjusted for past inflation, which may reflect some saturation in vehicle purchases after the introduction of the government-subsidised car-e scheme in 2007.

Table 12: Mean and median assets by real asset category conditional on participation

Wealth category	Wave	Mean	Std. err.	[95% conf. interval]		P-value	Median	Std. err.	[95% conf. interval]		P-value
Household main residence	2010	611,873	45,074	523,527	700,219	0.436	500,000	8,374	483,588	516,413	0.021 **
	2010 in 2014 EUR	668,778	49,266	572,215	765,340	0.678	546,500	9,153	528,561	564,439	0.708
	2014	647,874	11,971	624,410	671,339		555,601	22,901	510,689	600,513	
Other real estate property	2010	849,590	145,720	563,981	1,135,200	0.862	300,000	28,191	244,746	355,254	0.228
	2010 in 2014 EUR	928,602	159,272	616,431	1,240,773	0.840	327,900	30,813	267,507	388,293	0.610
	2014	885,241	135,994	618,632	1,151,849		350,000	30,047	291,109	408,891	
Vehicles	2010	24,078	1,355	21,422	26,734	0.522	16,071	902	14,302	17,839	0.328
	2010 in 2014 EUR	26,317	1,481	23,414	29,220	0.054 *	17,565	986	15,632	19,498	0.028 **
	2014	23,071	735	21,630	24,513		15,000	583	13,857	16,143	
Valuables	2010	38,601	5,015	28,772	48,429	0.116	12,251	2,670	6,887	17,616	0.417
	2010 in 2014 EUR	42,190	5,481	31,448	52,933	0.043 **	13,391	2,919	7,528	19,254	0.263
	2014	28,749	3,855	21,193	36,305		10,000	647	8,733	11,267	
Self-employment businesses	2010	451,063	122,513	210,617	691,509	0.162	97,600	28,900	40,954	154,246	0.288
	2010 in 2014 EUR	493,012	133,907	230,204	755,820	0.213	106,677	31,587	44,762	168,591	0.374
	2014	882,864	288,274	317,717	1,448,011		161,288	51,725	59,766	262,809	
Total real wealth	2010	751,157	60,645	632,294	870,021	0.700	470,488	15,601	439,911	501,066	0.07 *
	2010 in 2014 EUR	821,015	66,285	691,097	950,933	0.632	514,244	17,051	480,823	547,665	0.75
	2014	781,341	48,269	686,727	875,955		507,399	12,695	482,505	532,294	

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

The mean values of the various real assets categories increases along the gross income distribution, as would be expected. In particular, the HMR value increases steadily, whereas OREP shows a substantial increase in the last gross income quintile only. To some extent, this is also the case for self-employment businesses as their contribution to total real assets increases substantially only for the last gross income quintile. The increase in the mean value of vehicles and valuables is comparatively less steep (Figure 10). In terms of contribution to total real assets

11 STATEC – Indicateurs rapides, Series C – Acquisition prices for dwellings.
http://www.statistiques.public.lu/fr/publications/series/indicateur-rapides/index.html.

the HMR tends to decline whereas OREP tends to increase, as we move along the gross income distribution.

Figure 10: Composition and of total real assets across gross household income quintiles
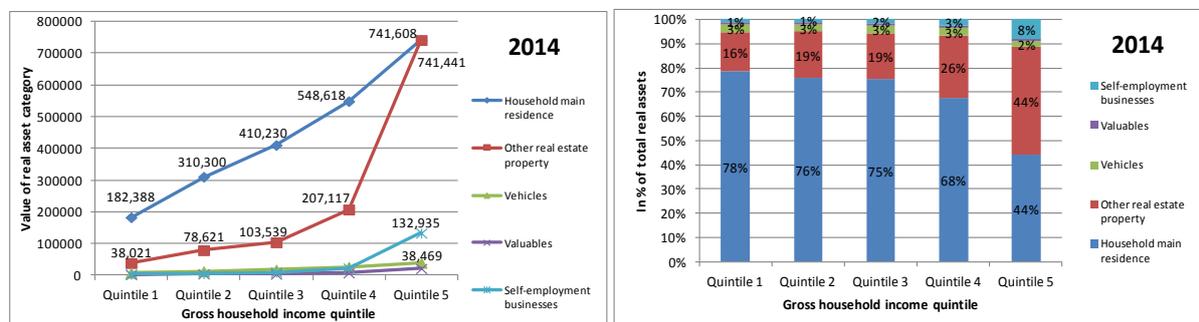
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted.

3.1.2   Financial assets

Financial assets represented 15.3% of households' total gross assets in 2014. Financial assets consisted of deposits (46.3%), voluntary private pensions / life insurances (17.6%), mutual funds (15.8%), shares (5.4%), bonds (2.0%) and other financial assets (10.7%) (Table 13).

Table 13: Composition of mean household financial assets

Wealth category	Wave	Mean	Std. err.	[95% conf. interval]		P-value		Median	Std. err.	[95% conf. interval]		P-value	in % of total
Deposits	2010	38 655	2 766	33 219	44 091	0.000	***	13 641	1 426	10 711	16 571	0.567	
(sight and saving	2010 in 2014 EUR	42 250	3 024	36 309	48 192	0.000	***	14 910	1 559	11 707	18 112	0.823	43.7
accounts)	2014	61 336	3 669	54 138	68 534			14 537	1 079	12 368	16 706		46.3
Mutual funds	2010	18 143	3 358	11 524	24 762	0.542		0 (omitted)					
	2010 in 2014 EUR	19 830	3 670	12 596	27 065	0.820		0 (omitted)					20.5
	2014	20 916	3 265	14 517	27 316			0 (omitted)					15.8
Bonds	2010	5 431	2 569	396	10 465	0.296		0 (omitted)					
	2010 in 2014 EUR	5 936	2 807	433	11 438	0.256		0 (omitted)					6.1
	2014	2 643	745	1 183	4 103			0 (omitted)					2.0
Non-self-employed	2010	446	237	-20	912	0.086	*	0 (omitted)					
private business	2010 in 2014 EUR	487	259	-22	996	0.087	*	0 (omitted)					0.5
asset (BW)	2014	12 438	6 992	-1 268	26 144			0 (omitted)					9.4
Shares	2010	6 365	2 045	2 358	10 373	0.741		0 (omitted)					
(publicly traded)	2010 in 2014 EUR	6 957	2 235	2 577	11 338	0.928		0 (omitted)					7.2
	2014	7 202	1 463	4 333	10 071			0 (omitted)					5.4
Managed accounts	2010	88	51	-11	187	0.102		0 (omitted)					
(MA)	2010 in 2014 EUR	96	55	-12	205	0.117		0 (omitted)					0.1
	2014	337	144	54	619			0 (omitted)					0.3
Money owed	2010	1 945	781	415	3 475	0.417		0 (omitted)					
to household	2010 in 2014 EUR	2 126	853	454	3 798	0.553		0 (omitted)					2.2
	2014	2 743	669	1 432	4 053			0 (omitted)					2.1
Other assets	2010	506	204	90	921	0.088	*	0 (omitted)					
(OA)	2010 in 2014 EUR	553	223	98	1 007	0.110		0 (omitted)					0.6
	2014	1 427	500	447	2 407			0 (omitted)					1.1
Voluntary pensions /	2010	16 845	2 341	12 256	21 434	0.348		0 (omitted)					
life insurances	2010 in 2014 EUR	18 412	2 559	13 396	23 427	0.481		0 (omitted)					19.1
	2014	23 357	6 615	10 391	36 323			0 (omitted)					17.6
Other types of	2010	1 039	318	410	1 668	0.061	*	0 (omitted)					
financial assets	2010 in 2014 EUR	1 136	348	448	1 824	0.063	*	0 (omitted)					1.2
(=BW+MA+OA)	2014	14 202	7 043	396	28 008			0 (omitted)					10.7
Total financial assets	2010	88 424	7 745	73 240	103 607	0.014	**	26 653	3 170	20 182	33 125	0.392	
(FA)	2010 in 2014 EUR	96 647	8 465	80 051	113 243	0.048	**	29 132	3 465	22 059	36 205	0.816	100.0
	2014	132 399	16 507	100 045	164 753			30 133	2 302	25 617	34 650		100.0

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

The most widespread financial asset category held by Luxembourg households is the sight and saving account; with a participation rate of 96.7%, almost every household had such an account in 2014 (Table 14).

Between 2010 and 2014, mean financial assets increased from about €88,400 to €132,400 (Table 13). This mainly reflects strong growth in the value of deposits (sight and saving accounts) by more than €20,000 to above €60,000. In contrast, fewer households held mutual funds (from 19.0% to 14.6%) and bonds (from 4.4% to 2.6%) in 2014 compared to 2010 (Table 14). Among those households that held mutual funds or publicly traded shares, however, the average value increased strongly, in line with stock market developments between end-2010 and end-2014 (the Dow Jones Eurostoxx broad index rose by 16% between December 2010 and December 2014). This suggests that households shifted their portfolio away from riskier assets into safer and more liquid financial assets. These changes are, however, mainly driven by decisions taken by wealthier households, as the median values of deposits and total financial assets increased much less strongly. The median value of financial assets increased from around €26,700 to €30,100 only (about 13%) (Table 13) and the median value of deposits (among the 96.7% of households who own them) increased from around €14,300 to €15,400 (about 8%) (Table 15).

Table 14: Participation in financial asset categories (% of households)

Wealth category	Wave	Participation in %	Std. err.	[95% conf. interval]		P-value
Deposits (sight	2010	98.0	0.5	96.9	99.0	0.104
and saving accounts)	2014	96.7	0.6	95.6	97.8	
Mutual funds	2010	19.0	1.3	16.4	21.6	0.006 ***
	2014	14.6	1.0	12.7	16.5	
Bonds	2010	4.4	0.7	3.0	5.9	0.053 *
	2014	2.6	0.5	1.7	3.6	
Non-SE private	2010	0.7	0.2	0.3	1.1	0.003 ***
business wealth (BW)	2014	2.1	0.4	1.3	2.9	
Shares	2010	10.0	1.0	7.9	12.0	0.433
(publicly traded)	2014	9.0	0.8	7.4	10.5	
Managed accounts	2010	0.3	0.2	-0.1	0.7	0.502
(MA)	2014	0.5	0.2	0.1	0.9	
Money owed	2010	7.1	0.9	5.3	9.0	0.839
to household	2014	7.4	0.8	5.9	8.9	
Other assets	2010	1.4	0.4	0.7	2.1	0.267
(OA)	2014	2.0	0.4	1.2	2.9	
Voluntary pensions /	2010	34.3	1.6	31.1	37.5	0.255
life insurances	2014	32.0	1.3	29.5	34.5	
Other types of financial	2010	2.2	0.4	1.3	3.1	0.003 ***
assets (=BW+MA+OA)	2014	4.4	0.6	3.2	5.6	
Total financial assets	2010	98.4	0.5	97.4	99.3	0.074 *
	2014	97.1	0.5	96.0	98.1	

*Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.*

The second most important financial asset type in terms of participation and third most important in terms of value is voluntary pensions and life insurances, which are partly state subsidised, as they are to some extent tax-deductible. In 2014, the participation rate was 32.0%. Their unconditional mean value increased between 2010 and 2014, although not statistically significantly so, from €16,800 to €23,400. Other types of financial assets (that is non-self-employed business assets, managed accounts and other assets) increased substantially between 2010 and 2014 (from €1,000 to €14,200). This increase owes much to the significantly higher conditional value reported for non-self-employment business assets (€65,300 in 2010 to €594,300 in 2014) and the significantly higher reported participation rate (from 0.7% in 2010 to 2.1% in 2014). To some extent, the increased value for this particular asset type reflects the effect of the increased sample size in wave 2 and thus the increased sampling of very wealthy households, as can for example also be seen from the much higher conditional median of managed accounts in 2014 compared to 2010.

Table 15: Mean and median financial assets conditional on participation

Wealth category	Wave	Mean	Std. err.	[95% conf. interval]		P-value	Median	Std. err.	[95% conf. interval]		P-value
Deposits	2010	39 455	2 828	33 897	45 012	0.000 ***	14 278	1 385	11 440	17 115	0.479
(sight and saving	2010 in 2014 EUR	43 124	3 091	37 050	49 199	0.000 ***	15 606	1 514	12 504	18 707	0.925
accounts)	2014	63 444	3 802	55 984	70 904		15 441	1 047	13 351	17 532	
Mutual funds	2010	95 301	16 069	63 650	126 953	0.066 *	26 870	6 399	14 226	39 513	0.284
	2010 in 2014 EUR	104 164	17 564	69 569	138 760	0.148	29 369	6 995	15 549	43 188	0.365
	2014	142 985	20 873	102 075	183 896		44 467	14 581	15 216	73 719	
Bonds	2010	122 984	52 208	20 650	225 317	0.678	45 773	13 082	20 009	71 536	0.786
	2010 in 2014 EUR	134 421	57 064	22 570	246 272	0.564	50 029	14 299	21 870	78 189	0.879
	2014	100 142	19 912	61 088	139 195		55 663	35 015	-13 038	124 363	
Non-self-employed	2010	64 320	37 305	-9 095	137 735	0.099 *	6 636	39 294	-70 378	83 650	0.526
private business	2010 in 2014 EUR	70 302	40 774	-9 941	150 545	0.104	7 253	42 948	-76 923	91 430	0.545
assets (BW)	2014	594 294	319 923	-32 808	1 221 396		49 000	53 967	-56 834	154 834	
Shares	2010	63 874	18 502	27 611	100 137	0.494	10 800	3 934	3 069	18 531	0.427
(publicly traded)	2010 in 2014 EUR	69 814	20 222	30 178	109 450	0.679	11 804	4 300	3 354	20 255	0.557
	2014	80 367	15 081	50 803	109 930		15 254	3 873	7 661	22 848	
Managed accounts	2010	30 032	44 337	-56 867	116 931	0.712	3 000	49 164	-93 360	99 360	0.108
(MA)	2010 in 2014 EUR	32 825	48 460	-62 155	127 805	0.735	3 279	53 736	-102 042	108 600	0.142
	2014	70 185	98 269	-122 419	262 790		50 000	95 555	-137 285	237 285	
Money owed	2010	27 287	11 096	5 539	49 034	0.456	3 572	1 442	738	6 406	0.089 *
to household	2010 in 2014 EUR	29 824	12 128	6 054	53 594	0.602	3 904	1 576	807	7 002	0.127
	2014	37 165	8 413	20 677	53 654		8 000	2 160	3 766	12 234	
Other assets	2010	35 641	13 341	7 592	63 690	0.201	24 214	11 466	769	47 659	0.675
(OA)	2010 in 2014 EUR	38 955	14 582	8 298	69 613	0.260	26 466	12 532	840	52 092	0.591
	2014	69 736	23 364	23 940	115 532		18 000	8 500	1 262	34 738	
Voluntary pensions /	2010	49 124	6 429	36 523	61 724	0.264	27 831	3 278	21 157	34 504	0.453
life insurances	2010 in 2014 EUR	53 692	7 027	39 920	67 465	0.370	30 419	3 583	23 125	37 713	0.212
	2014	73 054	20 634	32 607	113 501		24 480	2 888	18 391	30 569	
Other types of	2010	47 578	14 786	18 297	76 859	0.078 *	16 460	11 790	-7 922	40 842	0.390
financial assets	2010 in 2014 EUR	52 003	16 161	19 999	84 007	0.083 *	17 991	12 887	-8 658	44 640	0.466
(=BW+MA+OA)	2014	319 925	154 061	17 939	621 911		30 258	11 391	7 799	52 717	
Total financial assets	2010	89 881	7 888	74 417	105 346	0.011 **	27 910	3 341	21 106	34 714	0.354
(FA)	2010 in 2014 EUR	98 240	8 622	81 338	115 143	0.040 **	30 506	3 652	23 069	37 942	0.740
	2014	136 414	16 976	103 141	169 686		32 073	2 903	26 367	37 779	

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

3.2 Household debt

In 2014, 45.4% of Luxembourg households had no debt at all while 54.6% of Luxembourg households held some type of debt. The largest debt category in terms of outstanding amounts is mortgage debt, which was held by a share of 35.2% of households in 2014. The corresponding share for non-mortgage debt is 33.9% (Table 17). 20.7% held only mortgage debt, while 19.4% held only non-mortgage debt and 14.5% held both types of debt. Unsurprisingly, mortgage debt by far exceeded non-mortgage debt (Table 16). The conditional median value of mortgage debt in 2014 was €200,000, while the median value of non-mortgage debt was €10,100 (Table 18).

Table 16: Composition of mean household debt

Debt category	Wave	Mean	Std. err.	[95% conf. interval]		P-value	in % of total
Total debt	2010	81,785	5,053	71,881	91,688	0.024 **	100.0
	2010 in 2014 EUR	89,391	5,523	78,566	100,216	0.271	
	2014	97,316	4,942	87,630	107,002		100.0
Mortgage debt	2010	73,736	4,915	64,102	83,370	0.027 **	90.2
	2010 in 2014 EUR	80,593	5,372	70,063	91,123	0.253	
	2014	88,638	4,907	79,020	98,256		91.1
HMR mortgage debt	2010	55,301	3,540	48,363	62,239	0.027 **	67.6
	2010 in 2014 EUR	60,444	3,869	52,860	68,028	0.243	
	2014	66,742	3,961	58,979	74,505		68.6
OREP mortgage debt	2010	18,435	3,508	11,558	25,312	0.416	22.5
	2010 in 2014 EUR	20,149	3,835	12,633	27,666	0.699	
	2014	21,896	2,599	16,803	26,989		22.5
Non-mortgage debt	2010	8,049	937	6,213	9,885	0.624	9.8
	2010 in 2014 EUR	8,797	1,024	6,791	10,804	0.929	
	2014	8,678	953	6,809	10,546		8.9
Overdraft debt	2010	505	165	181	829	0.142	0.6
	2010 in 2014 EUR	552	181	198	906	0.109	
	2014	254	48	161	348		0.3
Credit card debt	2010	93	21	53	134	0.151	0.1
	2010 in 2014 EUR	102	23	57	147	0.094 *	
	2014	58	12	35	82		0.1
Private loans	2010	not asked					0.0
	2010 in 2014 EUR	not asked					
	2014	1,642	614	439	2,844		1.7
Consumer loans	2010	7,451	918	5,652	9,249	0.515	9.1
	2010 in 2014 EUR	8,144	1,003	6,178	10,109	0.230	
	2014	6,724	739	5,275	8,172		6.9

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

In total, mean household liabilities (across all households) increased significantly between 2010 and 2014 (from €81,800 to €97,300) (Table 16). This change in household liabilities was mainly due to changes in mortgage debt (consisting of mortgages related to both HMR and OREP). The share of mortgage debt in total liabilities was 91.1% in 2014 compared to 90.2% in 2010 while the share of HMR mortgage debt was 68.6% compared to 67.6% four years earlier. In contrast, the share OREP debt remained unchanged at 22.5%.

Outstanding amounts of total mortgages and HMR mortgages of the average Luxembourg household were about 20% higher in 2014 compared to 2010. The difference between 2010 and 2014 is significant in nominal terms, but not if in real terms, that is if 2014 values are compared to inflation adjusted figures for 2010. The outstanding stock of loans for house purchases in Luxembourg increased by about 31% between 2011 and 2014 (BCL, BSI statistics).[12] The difference between official aggregate statistics and the LU-HFCS based statistics reflects in part population growth of about 7.5% over this period. In addition, the average size of new mortgage take outs may be higher given that house prices increased by 14.2% over this period.[13] The net effect of these compositional changes is however not clear, since older mortgages will be unaffected by rising house prices and will actually fall in value as households pay off their outstanding debt.

Table 17: Participation in debt categories (% of households)

Debt category	Wave	Participation in %	Std. err.	[95% conf. interval]		P-value
Total debt	2010	58.3	1.6	55.1	61.6	0.083 *
	2014	54.6	1.4	51.8	57.3	
Mortgage debt	2010	38.8	1.6	35.7	41.8	0.085 *
	2014	35.2	1.3	32.7	37.7	
HMR mortgage debt	2010	32.8	1.5	29.8	35.8	0.059 *
	2014	29.1	1.2	26.7	31.5	
OREP mortgage debt	2010	8.4	0.9	6.5	10.2	0.416
	2014	9.4	0.8	7.8	10.9	
Non-mortgage debt	2010	36.9	1.8	33.4	40.5	0.180
	2014	33.9	1.3	31.2	36.5	
Overdraft debt	2010	7.4	0.9	5.6	9.2	0.275
	2014	8.8	0.9	7.1	10.5	
Credit card debt	2010	6.3	0.9	4.5	8.0	0.511
	2014	5.5	0.7	4.2	6.9	
Private loans	2010	not asked				
	2014	3.5	0.6	2.4	4.6	
Consumer loans	2010	30.8	1.7	27.5	34.2	0.021 **
	2014	25.9	1.3	23.4	28.4	

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

Disentangling the changes in debt into changes in the extensive margin, that is the share of indebted households, and the intensive margin, that is the amount of debt conditional on holding debt, reveals interesting developments. The share of indebted households was 54.6% in 2014, down by almost 4 percentage points from 58.3% in 2010. At the same time, total debt across all households was on average 19% higher in 2014 compared to 2010 (from €81,800 to €97,300). By construction, the increase in households' average debt, conditional on holding debt, (+27%)

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is larger than the unconditional increase. Similarly, the conditional median was significantly larger in 2014 than in 2010 (+22%). The decrease in the share of indebted households, despite the currently very favourable interest rate environment, is also observed for other euro area countries, such as Germany (Deutsche Bundesbank, 2016) or Austria (Fessler et al., 2016). In the case of Luxembourg, this may suggest that the level of raising the required external funds to acquire the HMR or OREP has become so high that some households failed to raise the required funds to enter the real estate market.

Table 18: Mean and median debt across debt categories conditional on participation

Debt category	Wave	Mean	Std. err.	[95% conf. interval]		P-value	Median	Std. err.	[95% conf. interval]		P-value
Total debt	2010	140,182	8,352	123,811	156,553	0.001 ***	73,440	8,801	56,172	90,708	0.214
	2010 in 2014 EUR	153,219	9,129	135,325	171,113	0.039 **	80,270	9,619	61,396	99,143	0.488
	2014	178,379	8,487	161,745	195,013		89,800	9,410	71,356	108,244	
Mortgage debt	2010	190,232	10,833	168,997	211,468	0.000 ***	127,326	10,943	105,873	148,778	0.000 ***
	2010 in 2014 EUR	207,924	11,841	184,714	231,134	0.006 ***	139,167	11,961	115,719	162,615	0.003 ***
	2014	251,861	11,316	229,682	274,040		200,000	16,567	167,529	232,471	
HMR mortgage debt	2010	168,678	8,084	152,830	184,525	0.000 ***	121,519	9,825	102,261	140,776	0.001 ***
	2010 in 2014 EUR	184,365	8,836	167,043	201,686	0.001 ***	132,820	10,738	111,772	153,868	0.006 ***
	2014	229,553	10,208	209,546	249,559		190,000	17,432	155,834	224,166	
OREP mortgage debt	2010	220,203	36,907	147,861	292,546	0.742	116,395	19,502	78,137	154,654	0.215
	2010 in 2014 EUR	240,682	40,339	161,612	319,753	0.880	127,220	21,316	85,404	169,036	0.422
	2014	233,950	21,735	191,348	276,551		150,000	19,261	112,248	187,752	
Non-mortgage debt	2010	21,784	2,423	17,035	26,532	0.270	10,019	1,003	8,053	11,985	0.925
	2010 in 2014 EUR	23,810	2,648	18,619	29,000	0.618	10,951	1,096	8,801	13,100	0.57
	2014	25,620	2,694	20,340	30,900		10,146	922	8,336	11,955	
Overdraft debt	2010	6,800	2,162	2,563	11,037	0.076 *	1,560	446	683	2,437	0.222
	2010 in 2014 EUR	7,432	2,363	2,801	12,063	0.058 *	1,705	487	746	2,664	0.158
	2014	2,892	490	1,931	3,853		1,000	95	814	1,186	
Credit card debt	2010	1,490	264	973	2,006	0.183	1,000	160	687	1,313	0.150
	2010 in 2014 EUR	1,629	288	1,064	2,193	0.099 *	1,093	175	751	1,435	0.082 *
	2014	1,057	179	705	1,409		640	188	258	1,022	
Private loans	2010	not asked					not asked				
	2010 in 2014 EUR	not asked					not asked				
	2014	47,001	16,889	13,900	80,103		8,902	2,501	4,000	13,805	
Consumer loans	2010	24,158	2,824	18,623	29,693	0.619	12,441	1,120	10,245	14,638	0.419
	2010 in 2014 EUR	26,405	3,087	20,355	32,454	0.913	13,598	1,225	11,197	15,999	0.908
	2014	25,983	2,639	20,810	31,156		13,800	1,349	11,141	16,459	

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, **p<0.05, * p<0.1.

Next, we turn to non-mortgage debt. The share of non-mortgage debt in total debt was 8.9% in 2014, which represents a slight reduction compared to 2010, when it represented 9.8% of total liabilities. The average amount of non-mortgage debt was €8,700, an increase of 8% from the €8,000 in 2010. The participation rate in total non-mortgage debt was 33.9% in 2014 compared to 36.9% in 2010, a decrease of 3 percentage points. Thus, the non-mortgage debt developments mirrored those of the mortgage debt; participation was lower in 2014, while conditional indebtedness tended to be higher. In contrast to mortgage debt changes, changes in total non-mortgage debt were not statistically significant.

Looking at the individual components of non-mortgage debt suggests that neither the share of households with overdraft debt nor the share of households with credit card debt have

significantly changed. The share of households with overdraft debt was 8.8% in 2014 compared to 7.4% in 2010. The corresponding shares with credit card debt were 5.5% and 6.3%. In contrast, the share of households with consumer loans was significantly lower (-4.9 percentage points) in 2014 compared to 2010. The amount of overdraft debt among households having such debts was €2,900 in 2014 compared to €6,800 in 2010, a substantial reduction by almost 60%. Similarly, the amount of credit card debt among households with such debts was almost 30% lower in 2014 compared to 2010. In contrast, the conditional mean of consumer loans was somewhat larger in 2014 compared to 2010, but not significantly so.

3.3   Household net wealth

Total net wealth of the average household in Luxembourg was €768,400 in 2014, which was around 8% higher in nominal terms than in 2010 (€710,100) (Table 19). Expressing the 2010 value in 2014 prices, total net wealth in 2010 was €776,100, which suggests a very slight reduction of average total net wealth in real terms between 2010 and 2014 by around 1%. Similarly, median net wealth was €437,500 in 2014 compared to €397,800 in 2010, an increase by around 10%. Expressed in 2014 prices, median total net wealth in 2010 was €434,800, which suggests a slightly higher median total net wealth by around 1% in 2014 compared to 2010. The changes in the average and median total net wealth between 2010 and 2014 are, however, not statistically significant at standard levels of confidence (≤10%), be the 2010 values expressed in 2010 or in 2014 prices. In 2014, average total gross wealth mainly comprises total real wealth (€733,300) and to a lesser extent financial wealth (€132,400), as was the case in 2010.

Table 19: Composition of total net wealth

Wealth category	Wave	Mean	Std. err.	[95% conf. interval]		P-value	Median	Std. err.	[95% conf. interval]		P-value
Total real wealth	2010	703,453	56,701	592,320	814,586	0.685	445,707	18,001	410,177	481,238	0.176
(RW)	2010 in 2014 EUR	768,874	61,974	647,405	890,342	0.647	487,158	19,675	448,323	525,993	0.683
	2014	733,321	45,716	643,710	822,932		477,136	15,450	446,766	507,507	
Total financial assets	2010	88,424	7,745	73,240	103,607	0.014 **	26,653	3,170	20,182	33,125	0.392
(FA)	2010 in 2014 EUR	96,647	8,465	80,051	113,243	0.048 **	29,132	3,465	22,059	36,205	0.816
	2014	132,399	16,507	100,045	164,753		30,133	2,302	25,617	34,650	
Total gross wealth	2010	791,876	59,093	676,056	907,697	0.360	494,407	19,941	454,863	533,951	0.082 *
(GW=RW+FA)	2010 in 2014 EUR	865,521	64,588	738,929	992,112	0.998	540,387	21,795	497,165	583,608	0.950
	2014	865,720	54,201	759,478	971,961		538,714	16,994	505,338	572,091	
Total debt	2010	81,785	5,053	71,881	91,688	0.024 **	7,006	1,760	3,556	10,456	0.076 *
(D)	2010 in 2014 EUR	89,391	5,523	78,566	100,216	0.271	7,658	1,924	3,886	11,429	0.051 *
	2014	97,316	4,942	87,630	107,002		3,089	1,323	495	5,683	
Total net wealth	2010	710,092	58,197	596,027	824,156	0.465	397,841	17,099	364,325	431,357	0.113
(NW=GW-D)	2010 in 2014 EUR	776,130	63,610	651,458	900,803	0.927	434,840	18,690	398,207	471,473	0.919
	2014	768,404	53,392	663,747	873,061		437,510	17,529	403,068	471,953	

*Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1. Total financial assets exclude public and occupational pension plans.*

Whilst changes in net wealth may not be statistically significant, this is not necessarily true for changes in individual components. The higher mean total net wealth in 2014 compared to 2010 were mainly due to higher mean financial assets, while changes in mean real assets were only slightly higher in absolute terms than changes in mean debt or mean mortgage debt. Mean financial assets increased from about €88,400 to €132,400, an increase of almost 50% (Table 19). This mainly reflects strong growth in the mean value of deposits (sight and saving accounts) by more than €20,000 to above €60,000. On the asset side, the mean value of the HMR also increased by €27,400, that is 6.7%. On the liability side, the mean value of HMR mortgages increased more strongly in relative terms, but less in absolute terms (€11,400 or 21%). The net result is a statistically insignificant average increase, of the net value of the HMR by €16,000. Mean total debt increased from €81,800 to €97,300 (18.9%), mainly reflecting the aforementioned increase in the largest debt item, i.e. HMR mortgage debt (from €55,300 to €66,700 or 21%).

The change in median net wealth mainly reflects increases in total real assets (including real estate, business wealth, vehicles and valuables). Its median value rose from around €445,700 to €477,100 (+7.1%) whilst median total debt decreased (Table 19). Within total real assets, the main drivers are the value of the HMR and OREP.

Mean and median net wealth varies substantially across population groups (Figure 11 and Figure 12 for precise numbers see Appendix, Table 26 and Table 27). The figures show median and mean net wealth for different population groups for 2014 and 2010 (both in 2010 and 2014 prices). Furthermore, the uncertainty of the estimates is depicted by the error bars showing the 95% confidence interval. This provides a visualisation of uncertainty surrounding the point estimates and allows the reader to assess whether or not differences between characteristics are statically significant.

Median and mean net wealth generally increases with age. The increase is particularly large between the two age groups of 16-34 and 35-44 years. Households with a male financially knowledgeable person (FKP) tend to be richer than households with a female FKP. Both median and mean net wealth is lowest for 1-person households. There is no clear-cut tendency indicating larger median or mean net wealth for larger household sizes. Figure 11 suggests a strong association between educational attainment and median and mean net wealth. As expected, median and mean net wealth increases with gross household income. The uncertainty of the median for gross income quintile 2 is rather large compared to quintiles 3-5 whereas the statistical uncertainty of the mean net wealth estimates is relatively low for gross income quintiles 1-4 but substantial for quintile 5.

Figure 11: Household median net wealth across demographic and socio-economic characteristics
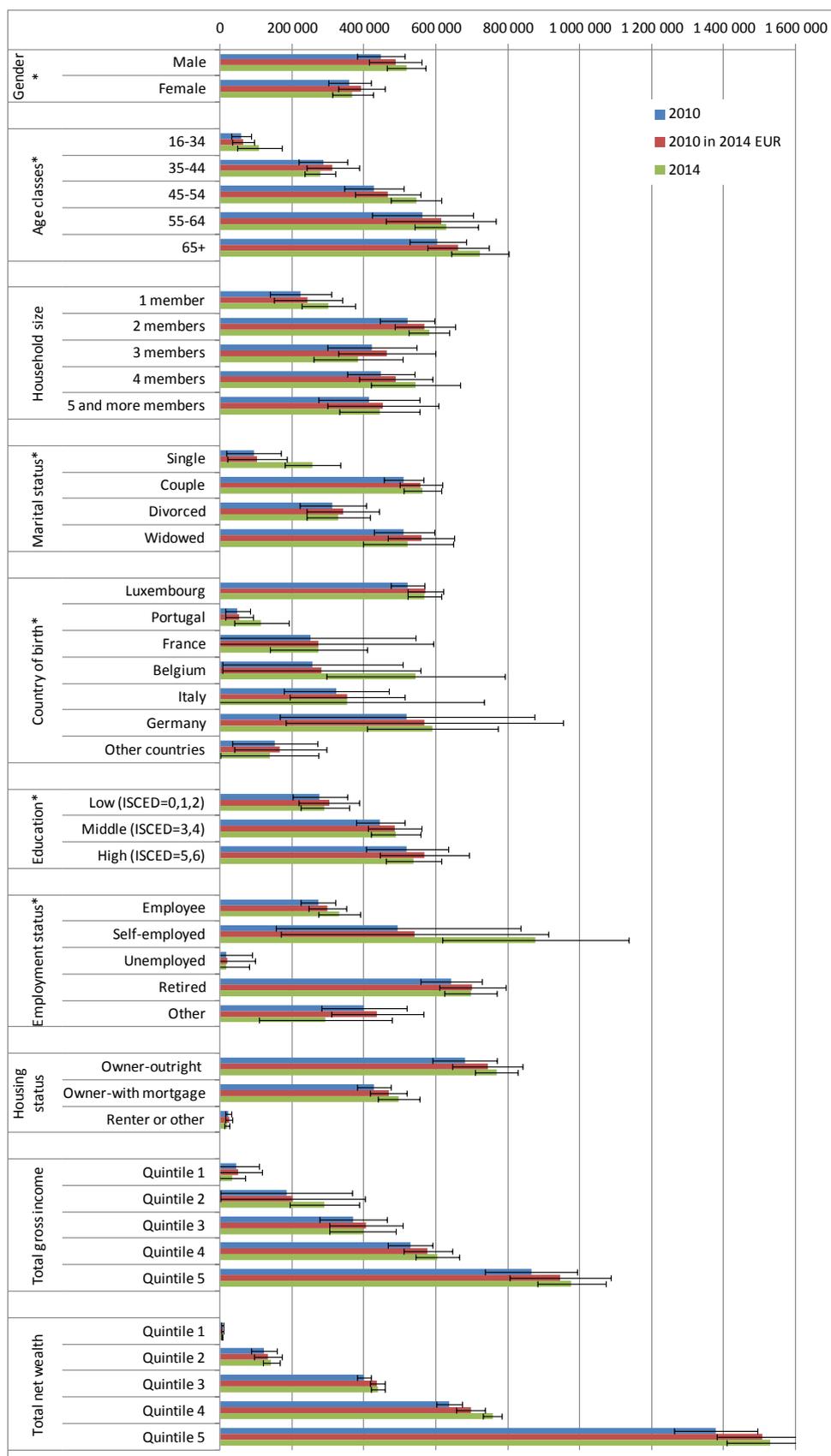
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights.

Figure 12: Household mean net wealth across demographic and socio-economic characteristics
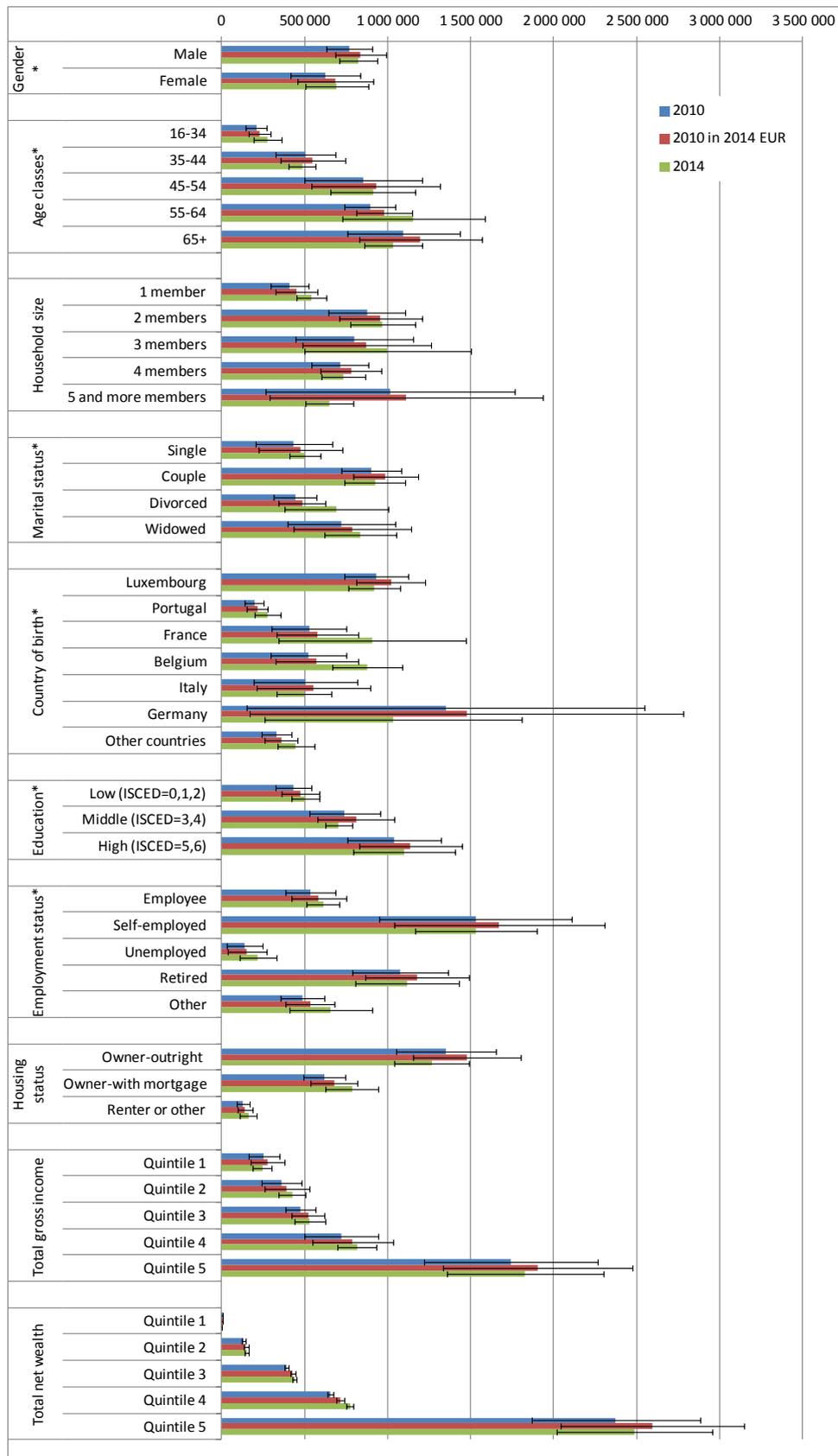
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights.

The uncertainty of the median and mean net wealth for net wealth quintiles 1-4 is very low whereas it is more substantial for quintile 5, reflecting the generally higher heterogeneity within the 5th quintile. In addition, median and mean net wealth is correlated with housing tenure choice. Median and mean net wealth are highest for households owning their HMR outright, followed by homeowners with mortgage. They are lowest for households renting their HMR. This result extends to other countries (e.g. HFCN, 2013).

Median and mean net wealth also vary according the country of origin. Median net wealth appears highest for Luxembourg- and German-born households, followed by Italian-, French- and Portuguese-born households. The ordering is slightly different with regard to mean net wealth. Mean net wealth appears highest for German-born households, followed by Luxembourg-, French- and Belgian-born households. Italian- and Portuguese-born households have the lowest mean net wealth. Importantly, some of these estimates are highly uncertain (for example the confidence band for German born households is extremely large, i.e. precision of the estimate is very low). The estimates suggest though that significant differences are present for Portuguese-born and other-country-born households; they have lower median and mean net wealth compared to Luxembourg- and Belgian-born households.

3.4   Household debt burden

The LU-HFCS can be used to calculate various measures of the debt burden of Luxembourg resident households (see e.g. HFCN, 2013, section 3.3 for detailed explanations) (Table 20). The median debt-to-asset ratio, which relates the outstanding balance of overall debt to household assets (including housing), was 22.2% in 2014, which represents an increase of 4.4 percentage points compared to 2010. This number masks considerable variation across household groups. For example, it makes a difference whether the HMR is owned or not. For renting households, the median debt-to-asset ratio remained rather stable between 2010 and 2014; it was 41.5% in 2014 compared to 39.9% in 2010. For homeowners with a mortgage, the median debt-to-asset ratio was much lower at 28.2%. Compared to 2010 it increased however from 22.6%. The corresponding figures for outright homeowners were 1.8% in 2014 and 2.9% in 2010. The debt-to-asset ratio generally falls with household income. With a ratio of 34.6% in 2014 (37.6% in 2010) it peaked in the second income quintile. The debt-to-asset ratio varied substantially with age. In 2014, it was 50.3% for the youngest households (16-34 years) and only 4.0% for older households (>65 years). Low ratios for older households were also reflected in the breakdown by work status, where pensioners report the lowest debt-to-asset ratio (5.3%), consistent with the reduction of debt during working life and a slow reduction of assets during retirement.

Comparing the debt-to-asset ratio with the debt-to-income ratio, results are similar but not identical as the correlation between gross income and gross assets is not perfect. The median debt-to-income ratio, which relates the outstanding balance of overall debt to annual household gross income, provides an indication as to whether debt can be repaid using income streams rather than liquidating the stock of assets. The median debt-to-income ratio was 114.1% in 2014 compared to 86.9% in 2010, which reflects a substantial increase. Not surprisingly, the median debt-to-income ratio was particularly high for homeowners with a mortgage. It was 239.1% in 2014 compared to 171.1% in 2010. The ratio was highest for the second quintile of the net wealth distribution, where it reached 280.3% in 2014 compared to 262.8% in 2010. It generally tends to decline from net wealth quintile 3 onwards. As with many other indicators, the debt-to-income ratio steadily declines with age.

Table 20: Median debt burden indicators in %

Debt burden indicator	Year	Median	Std. err.	[95% conf. interval]		p-value	
Debt-to-asset ratio	2010	18.2	2.1	14.0	22.4	0.161	
	2014	22.2	2.1	18.1	26.3		
Debt-to-income ratio	2010	86.9	11.2	64.8	108.9	0.089	*
	2014	114.1	10.6	93.3	134.9		
Debt service-to-income ratio	2010	15.7	0.9	14.0	17.5	0.367	
	2014	14.8	0.6	13.6	16.0		
Mortgage debt service-to-income ratio	2010	16.3	0.7	15.0	17.6	0.173	
	2014	17.6	0.7	16.2	18.9		
Loan-to-value ratio of main residence	2010	27.5	2.6	22.4	32.6	0.056	*
	2014	34.6	2.8	29.2	40.0		
Net liquid assets to income	2010	12.2	2.2	7.9	16.5	0.790	
	2014	11.5	1.7	8.2	14.7		

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

The debt service-to-income ratio, calculated as total monthly debt payments divided by monthly gross income, indicates the drain on current income from (regular) debt repayments. It compares two flows and depends on prevailing interest rate levels, among other factors. In 2014, the median debt service-to-income ratio among indebted households was 14.8% compared to 15.7% in 2010. Variations in the debt service-to-income ratio do not always mirror those observed for the debt-to-assets ratio. In particular, the data show that renters have the largest debt-to-asset ratio, but a small debt service-to-income ratio (renters have no housing assets and usually a much smaller amount of (non-mortgage) debt to be serviced). The debt-to-asset ratio generally declines with age, while for the debt service-to-income ratio this tendency is much less pronounced and the decrease becomes relevant just after the second age group. The

debt service-to-income ratio was especially elevated for the second and third net wealth quintile. In these two categories even the debt to asset ratio were elevated (>25).

The mortgage debt service-to-income ratio does not take into account households without mortgage debt (64.8% of Luxembourg households in 2014). Since the predominant part of overall debt was mortgage debt, the mortgage debt service-to-income ratio was typically not very different from the overall debt service-to-income ratio. The median values were close (14.8% in 2010 versus 17.6% in 2014). In 2014, the mortgage debt service-to-income ratio was lowest for outright homeowners (8.6%), followed by renters (13.2%) and highest for homeowners with mortgage (18.3%).

The median loan-to-value ratio (LTV) for the mortgage related to the household main residence was 34.6% in 2014 compared to 27.5% in 2010, which represents a substantial increase. The LTV ratio was highest for households at the bottom of the net wealth distribution (129.3% in 2014 compared to 92.6% in 2010) and for young households (59.1% in 2014 compared to 69.1% in 2010). Considerably smaller values were reported for those in the top of the net wealth distribution (12.9%), households with age above 65 years (around 17.4%) and pensioners (9.0%).

The ratio of net liquid assets to gross annual income provides information on the resources readily available to households if they face income shocks. In 2014, the median household held 11.5% of its annual income in the form of liquid assets. The indicator was higher for homeowners than for renters, suggesting that overall they tend to be better off than renters in terms of both liquid and illiquid assets. The net liquid asset-to-income ratio in 2014 was substantially lower for homeowners without mortgage than in 2010 (from 26.1% to 19.2%). The ratio tends to increase not only with income and wealth, but also with age and education, although the increase is not always linear.

In summary, household debt burden indicators seem to suggest that Luxembourg households were more indebted relative to their financial resources in 2014 compared to 2010. The increase in the debt was larger than the increase in the collateral. In contrast, the low interest rate environment effectively reduces the debt servicing burden of Luxembourg households. This lower total debt servicing burden of in 2014 compared to 2010 mainly emanates from lower services of non-mortgage debt since the median debt service on mortgages was higher in 2014 compared to 2010.

3.5 Household income

Households receive their income from various sources. The composition of gross income remained roughly stable between 2010 and 2014 (Figure 13). The most prevalent income source in 2014 was employee income: 71.6% of households received employee income, which was very similar to the results reported for 2010 (Table 21). In contrast, the share of households with self-employment income was significantly lower in 2014 compared to 2010 (from 10.3% to 8.4%). The share of households receiving social transfers in 2014 was 36.1%, a significant reduction compared to 41.7% in 2010. This decline is however not related to the share of households receiving unemployment benefit but rather a smaller share of households receiving other social transfers. Around 34% of households received a public pension in 2014, which is by and large unchanged from 2010.

Table 21: Participation in income sources (% of households)

Income category	Wave	Participation in %	Std. err.	[95% conf. interval]		P-value
Employee income	2010	71.4	1.0	69.3	73.4	0.848
	2014	71.6	0.8	70.0	73.3	
Self-employment income	2010	10.3	0.9	8.6	12.0	0.076 *
	2014	8.4	0.6	7.2	9.6	
Pension income	2010	35.0	0.9	33.3	36.7	0.663
	2014	34.5	0.8	32.9	36.1	
Public pension income	2010	34.6	0.9	33.0	36.3	0.568
	2014	34.0	0.8	32.4	35.6	
Occupational and private pension income	2010	2.9	0.7	1.5	4.2	0.758
	2014	2.6	0.5	1.7	3.5	
Social transfers	2010	41.7	1.3	39.2	44.2	0.001 ***
	2014	36.1	1.1	34.0	38.2	
Unemployment benefits	2010	4.3	0.8	2.7	5.9	0.565
	2014	4.9	0.7	3.6	6.2	
Other social transfers	2010	39.2	1.2	36.9	41.5	0.000 ***
	2014	33.7	1.0	31.8	35.7	
Income from real estate property	2010	13.3	1.2	10.9	15.6	0.615
	2014	12.5	0.9	10.8	14.2	
Income from financial investment	2010	45.2	1.9	41.6	48.9	0.031 **
	2014	40.2	1.4	37.5	42.9	
Income from financial assets	2010	44.8	1.9	41.1	48.5	0.043 **
	2014	40.1	1.4	37.4	42.8	
Income from private business other than self-employment	2010	1.0	0.3	0.4	1.5	0.073 *
	2014	0.4	0.2	0.0	0.7	
Income from regular private transfers	2010	5.9	0.9	4.2	7.6	0.858
	2014	5.7	0.6	4.5	6.8	
Income from other income sources	2010	2.2	0.5	1.2	3.3	0.354
	2014	1.6	0.4	0.9	2.3	

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

At the same time, the conditional mean income from employment was €78,400 in 2014 compared €73,400 in 2010 (Table 23). The corresponding medians were €61,400 and €58,700 in 2014 and 2010. The conditional mean pension income was €47,300 in 2014 compared to €43,800 in 2010, with the corresponding medians amounting to €41,600 in 2014 and €38,800

in 2010. The share of households receiving income from self-employment in 2014 was 8.4% and thus 2 percentage points lower compared to 2010. Within this group, the conditional mean of income from self-employment was €72,500 in 2014, representing an increase 23.1% compared to 2010. The conditional median reached €35,600 in 2014, which represents an increase of 18.6% compared to 2010.

Figure 13: Composition of mean household gross income
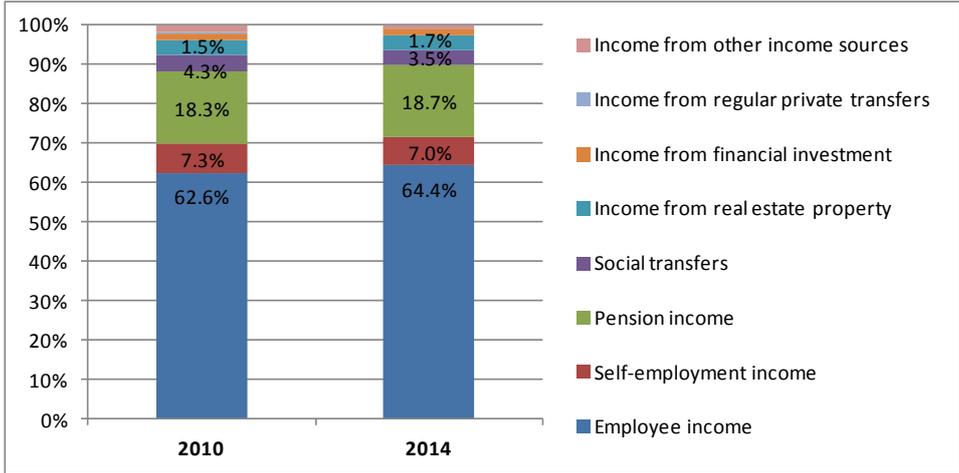
Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted.

Table 23 depicts how the conditional means of several wealth components changed between wave 1 and wave 2 of the survey. In most cases, changes are not statistically significant and should therefore be ascribed to sampling uncertainty. The differences shown for self-employment income and rental income from OREP are negligible. In contrast, the mean of regular social transfers was significantly lower in 2014 than in 2010 in inflation-adjusted terms. Regular social transfers combine unemployment benefits received as well as other social transfers.[14] This result was mainly driven by the latter component for which both the extensive and the inflation adjusted intensive margin declined from 2010 to 2014. This decrease was consistent with the decrease in the number of dependent children (Table 3). Other possible reasons may include the bonus for new cars from 2009 (started partly already 1 June 2007) until 2012 (Car-e plus) with low CO_2 emission and electric cars. In 2013/14, the bonus was paid out for purchases of electric cars only, and the number of electric cars purchased is rather modest (registration numbers for electric cars rather low: 2012: 150; 2014: 312).

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[14] Other social transfers include (i) Family/children related allowances; (ii) Housing allowances; (iii) Education allowances linked to grants, scholarships and other education help received by students; (iv) Minimum subsistence or minimum income schemes, periodic payments to people with insufficient resources; (v) Other types of social benefits. Other social transfers exclude: Unemployment benefits and income from state financed pension schemes.

Table 22: Composition of mean household gross income

Income category	Wave	Mean	Std. err.	[95% conf. interval]		P-value		In % of total
Employee income	2010	52,357	1,689	49,045	55,669	0.095	*	62.6
	2010 in 2014 EUR	57,226	1,847	53,606	60,846	0.647		
	2014	56,137	1,467	53,262	59,011			64.4
Self-employment income	2010	6,074	780	4,546	7,603	0.987		7.3
	2010 in 2014 EUR	6,639	852	4,968	8,310	0.630		
	2014	6,092	740	4,625	7,559			7.0
Pension income	2010	15,343	648	14,052	16,634	0.263		18.3
	2010 in 2014 EUR	16,770	708	15,359	18,181	0.635		
	2014	16,330	571	15,211	17,448			18.7
Public pension income	2010	14,684	603	13,485	15,883	0.160		17.6
	2010 in 2014 EUR	16,049	659	14,739	17,360	0.793		
	2014	15,825	515	14,815	16,835			18.1
Occupational and	2010	660	230	207	1,112	0.630		0.8
private pension income	2010 in 2014 EUR	721	252	227	1,215	0.522		
	2014	504	221	71	938			0.6
Social transfers	2010	3,598	202	3,203	3,993	0.033	**	4.3
	2010 in 2014 EUR	3,932	220	3,500	4,365	0.001	***	
	2014	3,040	165	2,717	3,364			3.5
Unemployment benefits	2010	593	153	292	894	0.629		0.7
	2010 in 2014 EUR	648	168	319	977	0.857		
	2014	684	111	466	902			0.8
Other social transfers	2010	3,005	138	2,735	3,275	0.000	***	3.6
	2010 in 2014 EUR	3,284	151	2,989	3,580	0.000	***	
	2014	2,356	112	2,137	2,575			2.7
Income from real estate property	2010	3,229	889	1,487	4,972	0.975		3.9
	2010 in 2014 EUR	3,530	972	1,625	5,434	0.765		
	2014	3,197	490	2,238	4,157			3.7
Income from financial investment	2010	1,221	234	762	1,681	0.484		1.5
	2010 in 2014 EUR	1,335	256	833	1,837	0.739		
	2014	1,448	233	992	1,905			1.7
Income from financial assets	2010	914	191	540	1,289	0.110		1.1
	2010 in 2014 EUR	1,000	209	590	1,409	0.208		
	2014	1,381	231	929	1,834			1.6
Income from private business	2010	307	142	29	585	0.113		0.4
other than self-employment	2010 in 2014 EUR	336	155	32	639	0.101		
	2014	67	44	-18	153			0.1
Income from regular private transfers	2010	394	86	225	562	0.317		0.5
	2010 in 2014 EUR	430	94	246	614	0.199		
	2014	298	38	223	373			0.3
Income from other income sources	2010	1,440	713	41	2,840	0.316		1.7
	2010 in 2014 EUR	1,574	780	45	3,104	0.276		
	2014	657	323	24	1,290			0.8
Total gross household income	2010	83,657	2,316	79,118	88,197	0.247		100.0
	2010 in 2014 EUR	91,438	2,532	86,475	96,400	0.189		
	2014	87,199	2,046	83,186	91,212			100.0

*Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.*

Table 23: Mean and median income across income categories conditional on participation

Income category	Wave	Mean	Std. err.	[95% conf. interval]		P-value	Median	Std. err.	[95% conf. interval]		P-value
Employee income	2010	73,374	2,438	68,595	78,153	0.108	58,700	2,441	53,915	63,485	0.356
	2010 in 2014 EUR	80,198	2,665	74,975	85,421	0.583	64,159	2,668	58,929	69,389	0.375
	2014	78,389	1,949	74,569	82,210		61,400	1,756	57,944	64,856	
Self-employment income	2010	58,869	7,031	45,083	72,655	0.203	30,000	5,391	19,384	40,616	0.586
	2010 in 2014 EUR	64,343	7,685	49,275	79,411	0.465	32,790	5,892	21,187	44,393	0.791
	2014	72,464	7,742	57,017	87,911		35,600	8,156	19,552	51,648	
Pension income	2010	43,810	1,888	40,039	47,581	0.145	38,840	2,612	33,618	44,062	0.345
	2010 in 2014 EUR	47,884	2,064	43,762	52,006	0.822	42,452	2,855	36,745	48,159	0.785
	2014	47,314	1,503	44,368	50,260		41,600	1,707	38,238	44,962	
Public pension income	2010	42,387	1,802	38,800	45,975	0.063 *	37,840	2,778	32,057	43,623	0.314
	2010 in 2014 EUR	46,329	1,970	42,408	50,250	0.919	41,359	3,037	35,038	47,680	0.964
	2014	46,572	1,359	43,908	49,235		41,200	1,648	37,962	44,438	
Occupational and private pension income	2010	23,064	5,199	12,793	33,334	0.689	23,000	10,090	2,833	43,167	0.114
	2010 in 2014 EUR	25,208	5,682	13,983	36,434	0.54	25,139	11,028	3,096	47,182	0.101
	2014	19,351	7,508	4,633	34,069		5,960	3,229	-369	12,289	
Social transfers	2010	8,629	426	7,793	9,465	0.729	6,980	376	6,244	7,716	0.043 **
	2010 in 2014 EUR	9,431	466	8,518	10,345	0.100	7,629	410	6,825	8,434	0.002 ***
	2014	8,427	402	7,640	9,214		6,000	296	5,420	6,580	
Unemployment benefits	2010	13,875	2,461	9,052	18,698	0.967	8,800	3,192	2,543	15,057	0.197
	2010 in 2014 EUR	15,166	2,690	9,894	20,437	0.698	9,618	3,489	2,780	16,457	0.304
	2014	13,991	1,461	11,129	16,854		14,000	2,560	8,982	19,018	
Other social transfers	2010	7,669	316	7,050	8,288	0.112	6,400	431	5,553	7,247	0.147
	2010 in 2014 EUR	8,382	345	7,705	9,059	0.002 ***	6,995	471	6,069	7,921	0.018
	2014	6,986	293	6,412	7,560		5,580	342	4,910	6,250	
Income from real estate property	2010	24,356	6,290	12,028	36,684	0.871	10,200	1,250	7,732	12,668	0.252
	2010 in 2014 EUR	26,621	6,875	13,147	40,095	0.888	11,149	1,367	8,451	13,847	0.532
	2014	25,528	3,418	18,828	32,228		12,400	1,339	9,744	15,056	
Income from financial investment	2010	2,701	513	1,695	3,707	0.237	500	42	417	583	0.081 *
	2010 in 2014 EUR	2,952	561	1,853	4,052	0.413	547	46	456	637	0.018 **
	2014	3,601	571	2,482	4,720		390	45	299	481	
Income from financial assets	2010	2,041	421	1,216	2,866	0.044 **	496	43	411	581	0.101
	2010 in 2014 EUR	2,231	460	1,329	3,133	0.092 *	542	47	450	635	0.025 **
	2014	3,444	568	2,329	4,558		390	45	299	481	
Income from private business other than self-employment	2010	32,257	14,587	3,663	60,850	0.421	11,600	6,106	-474	23,674	0.447
	2010 in 2014 EUR	35,257	15,943	4,004	66,509	0.359	12,679	6,674	-518	25,876	0.503
	2014	19,075	6,366	6,534	31,616		22,000	11,241	-275	44,275	
Income from regular private transfers	2010	6,721	1,200	4,368	9,074	0.262	5,060	790	3,512	6,608	0.194
	2010 in 2014 EUR	7,346	1,312	4,775	9,917	0.138	5,531	863	3,838	7,223	0.099 *
	2014	5,265	469	4,345	6,185		3,660	719	2,250	5,070	
Income from other income sources	2010	64,283	31,353	2,758	125,809	0.519	20,000	4,786	10,619	29,381	0.015 **
	2010 in 2014 EUR	70,262	34,269	3,015	137,509	0.450	21,860	5,231	11,607	32,114	0.010 **
	2014	40,337	19,352	2,407	78,266		5,440	3,550	-1,517	12,397	
Total gross household income	2010	83,657	2,316	79,118	88,197	0.247	64,840	1,821	61,269	68,411	0.923
	2010 in 2014 EUR	91,438	2,532	86,475	96,400	0.189	70,870	1,990	66,966	74,774	0.017 **
	2014	87,199	2,046	83,186	91,212		64,600	1,650	61,352	67,848	

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights. P-values indicate whether difference between 2010 (in 2014 EUR) and 2014 is significant: *** p<0.01, ** p<0.05, * p<0.1.

Household gross income varies substantially across population groups (Figure 14; for precise numbers see Appendix, Table 28). The figure depicts mean gross income for different population groups for 2014 and 2010 (both in 2010 and 2014 prices). Mean gross income steadily increases with age up to age category 55-64 years. Thereafter, it declines reflecting lower retirement income and pensions. Households with a male financially knowledgeable person (FKP) tend have a higher gross household income than households with a female FKP. Gross income is lowest for 1-person households. There is no clear-cut tendency indicating larger mean gross income for larger household sizes. Figure 14 suggests a very strong association between educational attainment and mean gross income, in particular for households with high educational attainment.

Figure 14: Mean household gross income across household demographic and socio-economic characteristics
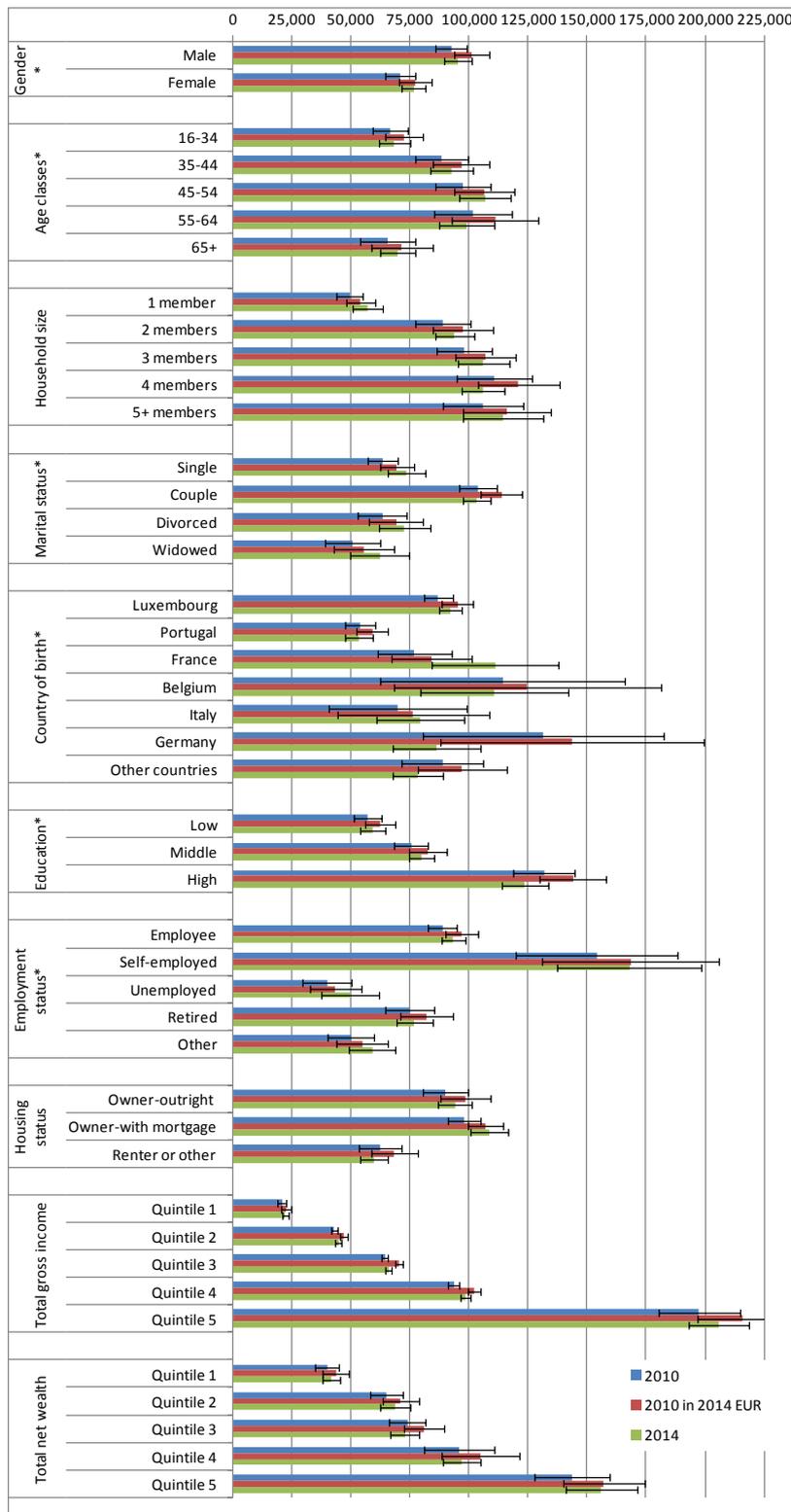
Source: Own calculations based on the 1ˢᵗ and 2ⁿᵈ wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights.

As expected, mean gross income increases with net wealth. The uncertainty of the mean gross income estimates for the net wealth quintiles is low for quintiles 1-3 and somewhat higher for quintiles 4 and 5. Similarly, the uncertainty of mean gross income in income quintiles 1-4 is very low, whereas it is somewhat larger in quintile 5, reflecting the higher heterogeneity among high incomes. The heterogeneity in the 5th gross income and net wealth quintile is however much lower than in the corresponding 5th net wealth quintile (Figure 11). In addition, gross income is correlated with housing tenure choice. In contrast to net wealth, gross income is very similar for households owning their HMR outright and homeowners with mortgage. It is lowest for households renting their HMR. Concerning differences among Luxembourg natives and foreign-born households, mean gross income was lowest for Portuguese-born households. The confidence band of Luxembourg-born households is comparatively narrow, possibly reflecting the elevation and homogeneity of salaries in Luxembourg public services. For foreign-born households from other countries, income heterogeneity is comparatively higher.

3.6   Comparison with other sources

This section compares the results of the 2014 LU-HFCS to information from other external sources, including the Financial Accounts of Luxembourg. While micro data generally offer great insights, in particular with regard to distributional characteristics of assets and liabilities, it is well known that total assets and in particular financial assets are commonly underreported by households – this is if the aggregate statistics is regarded as the benchmark, which is usually the case. To infer to the quality of the survey from the degree of under- or over-reporting would be wrong however, as the underlying concepts and definitions in the financial accounts and household finance surveys differ. A like-for-like comparison is only possible for a subset of items included in the financial accounts; for others a comparison may be hampered by the limited congruence. Table 3 compares total debt and total financial wealth, as well as their respective corresponding components between the LU-HFCS and the Luxembourg financial accounts in nominal terms. To ease the comparison, all figures are denominated in per capita terms.

Total debt is relatively well measured in the LU-HFCS. The average Luxembourg individual held total debt of around €40,400 according to the LU-HFCS 2014; this was an increase of around €7,400 or 22% compared to 2010. This represented 82.2% of debt reported in the financial accounts in 2014, an increase of 4.1 percentage points compared to 2010. In terms of mortgage debt, the coverage in 2014 was somewhat lower at 78.7%, yet still an improvement from 75.5% in 2010. In contrast, the reported amount of non-mortgage debt was higher in the LU-HFCS than in the financial accounts. The difference increased from 2010 to 2014 from 114.6% to 151.7%. This is also related to the fact that the 2014 wave included private loans from household to

household, which was not covered in the 2010 wave and is not part of the financial accounts. Private loans represented 19% of non-mortgage debt in 2014.

Turning to the asset side, the financial accounts 2014 reported a value for total financial assets of approximately €112,000 per capita, while the LU-HFCS estimate was €57,200. The coverage improved from 36.5% in 2010 to 51.1% in 2014. While the LU-HFCS survey excludes international civil servants and institutionalised individuals, which may partially explain the general level of under-reporting, the substantial increase in the coverage between 2010 and 2014 is likely to be linked to the increased sample size and the higher coverage of high wealth households in 2014.

The coverage of single financial asset categories varies strongly. Combined "Sight and saving accounts" and "Amounts owed to household" cover 51.8% of the financial account categories "Deposits" plus "Loans". Mutual funds and shares are covered relatively well with 62.8% and 44.6% respectively. Both items saw a reduction in coverage from 2010 to 2014 however. With a coverage ratio of 64.0%, the category "Non-self-employment not publicly traded businesses" is well covered in 2014, a big improvement to the 2% for 2010, which is mainly related to the better coverage in 2014 compared to 2010. Private and occupational pension wealth, which includes as well life-insurances, recorded a coverage ratio of 56.7% in 2010; in 2014, it improved to 60.5%. For this particular item, part of the under-coverage can be explained by the definition of wealth in the LU-HFCS; in contrast to the financial accounts, values of occupational pensions with defined benefit contracts are not included in the survey questionnaire.

As the distribution of the underreporting is relatively unequal across categories, the contribution of various asset components to total financial wealth differs between the financial accounts and the LU-HFCS (see the last two columns in Table 14). At 44.5% and 45.8%, the respective contribution of the sight and saving accounts, the most important component of financial wealth, is similar in both the financial accounts and the LU-HFCS. Both shares are also very stable when compared to 2010 (41.3% and 43.8%). By international standards, the share is relatively high (Mathä, Porpiglia and Ziegelmeyer, 2012a, p. 37).

Table 24: Comparison between the LU-HFCS and financial accounts

Variable HFCS	Category financial accounts (FA) 2010 ESA95 (*2014 ESA2010*)		HFCS 2010 Euro per capita	HFCS 2014 Euro per capita	FA (S.14 only) 2010 Q4	FA (S.14 only) 2014 Q4	Increase in % from 2010 to 2014 HFCS	FA	HFCS in % of FA 2010	2014	Category as fraction of total debt/financial assets in % HFCS 2010	HFCS 2014	FA (S.14 only) 2010 Q4	FA (S.14 only) 2014 Q4
Total financial assets			37561	57080	103154	111918	52.0	8.5	36.4	51.0	100.0	100.0	100.0	100.0
-- n.a. --	AF.21	Currency	-- n.a. --	-- n.a. --	3175	3677	-- n.a. --	15.8	-- n.a. --	-- n.a. --	-- n.a. --	-- n.a. --	3.1	3.3
Sight accounts & savings accounts	AF.22+AF.29	Deposits	15578	25459	45185	51247	63.4	13.4	34.5	49.7	41.5	44.6	43.8	45.8
Amount owned to household	AF.4	Loans	784	1138	90	131	45.2	46.4	873.2	866.1	2.1	2.0	0.1	0.1
Mutual funds	AF.52	Mutual fund shares	7312	8682	10584	13831	18.7	30.7	69.1	62.8	19.5	15.2	10.3	12.4
Bonds	AF.3	Securities other than shares	2189	1097	14965	8544	-49.9	-42.9	14.6	12.8	5.8	1.9	14.5	7.6
Shares	AF.511	Quoted shares	2565	2989	4582	6696	16.5	46.1	56.0	44.6	6.8	5.2	4.4	6.0
Investment in non-selfemployment not publicly traded shares	AF.512+513 (*AF.519*)	Unquoted equity	180	5163	9206	8071	2774.0	-12.3	2.0	64.0	0.5	9.0	8.9	7.2
Private/occupational pension wealth	AF.6	Insurance technical reserves	8714	11818	15367	19721	35.6	28.3	56.7	59.9	23.2	20.7	14.9	17.6
Any other financial assets & managed accounts	AF.7 (*AF.8*)	Other accounts & financial derivatives	239	732	0	0	206.1	-- n.a. --	-- n.a. --	-- n.a. --	0.6	1.3	0.0	0.0
Total debt	AF.4	Loans	32960	40394	42194	49130	22.6	16.4	78.1	82.2	100.0	100.0	100.0	100.0
Total mortgage debt	AF.42	Long-term loans (> 1 year)	29716	36792	39364	46755	23.8	18.8	75.5	78.7	90.2	91.1	93.3	95.2
Non-mortgage debt	AF.41	Short-term loans (< 1 year)	3244	3602	2830	2375	11.0	-16.1	114.6	151.7	9.8	8.9	6.7	4.8

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted. Financial accounts (FA) from BCL (Table 5.08). Table 5.08 combines statistics for private households (S.14) and non-profit institutions serving households (NPISHs, S.15). Internal BCL estimates are used to obtain the statistics for private households only. The HFCS totals for each category are divided by the covered population in each survey year: 462,618 individuals for 2010 and 508,248 individuals for 2014. The financial accounts categories are divided by the total population in Luxembourg: 512,400 individuals for the end of 2010 and 563,000 individuals for the end of 2014 (STATEC).

According to the LU-HFCS, the current value of the HMR (as provided by the weighted average) was around €647,900 with an average size of 159m^2 (Table 25). The average value and size of the HMR increased to around €707,100 and 179m^2 if the HMR considered is a house, semi-detached house or a townhouse. Average apartment values and sizes were smaller at respectively €460,500 and 96m^2. These values were slightly above the estimated values for the LU-HFCS in 2010. The increase was 5.9% for the HMR, 4.1% for houses and 15.0% for apartments. Adjusted for inflation the average house values in 2014 were 4.8% lower than 2010, whereas apartments increased by 5.2% in value on average.

The "Observatoire de l'Habitat" publishes asking and transaction prices for houses and apartments in Luxembourg. A comparison between the estimates from the LU-HFCS 2014 and the Observatoire suggests that they were rather close to each other (Table 25). According to the Observatoire, the mean asking price of a house was reported to be around €699,900 in 2014, which was close to the €707,100 according to the LU-HFCS 2014. The reported average house size was comparable at respectively 184m^2 and 179m^2, resulting in a similar price/m^2. According to the Observatoire, the average price was €3,801 per m^2. According to the LU-HFCS, the price was €3,951 per m^2 based on an aggregate division of the respective means and €4,088 per m^2 based on a weighted mean across individual households. It is noteworthy that the 2014 estimates were closer to each other than the 2010 estimates; the LU-HFCS and the Observatoire estimates differed by €641 in 2010. The estimate of l'Administration de l'Enregistrement et des Domaines (AED) reports lower mean house prices. While their estimate is based on transaction prices, a square metre price is not available, and on this account a comparison with the LU-HFCS and the Observatoire estimates is not possible. The slightly higher square metre price reported in the LU-HFCS could reflect homeowners' "overvaluation" of their house. However, asking a household during an interview to report beliefs about the value of the house may come close to asking for an asking price. In fact, empirical studies have shown that households have a good sense of what their home is worth but also that they tend to slightly overestimated the value, usually in the order of around 10% (e.g. Ihlanfeldt and Martinez-Vazquez, 1986; Goodman and Ittner, 1992; Benítez-Silva et al., 2009). Since land is very expensive in Luxembourg, another reason accounting for part of the discrepancy could be that new houses are constructed on comparatively smaller plots than before. In turn, household owners in the LU-HFCS sample would be expected to report higher values for their HMR, reflecting comparatively large average plot sizes. A support for this line of argument would be if the square metre prices of apartments are closer than those of houses. Indeed, this seems to be borne out by the data. The average price/m^2 of apartments was €4,921 according to the LU-HFCS 2014, €5,033 according the Observatoire and €4,696 according in the AED. The average size of apartments was reported to

be 96m² in the LU-HFCS, whilst the average size in the Observatoire and AED was somewhat smaller at respectively 88 m² and 81m². Estimates of apartment values seem to be close to those from external sources. It is important to note in this regard that the confidence interval surrounding the LU-HFCS point estimates of apartments always includes the value reported by the Observatoire and AED. For HMR houses, the reported square metre price by the Observatoire is just outside the lower band of the 95% confidence interval for both 2010 and 2014. This may reflect that houses are more differentiated than apartments, i.e. they are less comparable. The larger discrepancy between the LU-HFCS estimates and estimates from other sources may also reflect that differences in land valuation are inadequately taken into account.

Table 25: Comparison of HMR square metre prices with other sources

Year Owners of	Share of population	HFCS* Self-assessed current value				HFCS* Sqm size of HMR			
		Mean	Std. err.	[95% conf. interval]		Mean	Std. err.	[95% conf. interval]	
2010									
HMR	67.1	611,873	45,074	523,527	700,219	157	3	151	163
HMR house	50.9	679,370	58,674	564,370	794,370	177	4	170	183
HMR apartment	16.3	400,571	27,528	346,068	455,073	96	3	90	102
2014									
HMR	67.6	647,874	11,971	624,410	671,339	159	3	154	164
HMR house	51.4	707,135	14,645	678,431	735,838	179	3	173	185
HMR apartment	16.3	460,539	19,292	422,716	498,361	96	3	90	102

Year Owners of	HFCS* Price per sqm				Price per sqm Aggregate	l'Obs**			AED***			Indiv. mean price per sqm
	Mean	Std. err.	[95% conf. interval]			Mean value	Mean sqm	Mean price per sqm	Mean value	Mean sqm	Price per sqm Aggregate	
2010												
HMR	4,022	211	3,609	4,436	3,895	not available					not available	
HMR house	3,951	269	3,423	4,478	3,847	585,778	177	3,310	433,309		not available	
HMR apartment	4,246	234	3,787	4,705	4,174	354,823	88	4,026	322,336	82	3,931	3,973
2014												
HMR	4,288	69	4,153	4,424	4,072	not available					not available	
HMR house	4,088	72	3,948	4,229	3,951	699,886	184	3,801	522,644		not available	
HMR apartment	4,921	168	4,592	5,250	4,781	455,870	91	5,033	377,369	81	4,659	4,696

*Household Finance and Consumption Survey: Self-reported prices, **l'Observatoire de l' Habitat: Asking prices,
***l'Administration de l'Enregistrement et des Domaines: transaction prices.

4. Concluding remarks

This report presents the methodology and main descriptive statistics of the 2nd wave of the Luxembourg Household Finance and Consumption Survey (LU-HFCS) conducted in 2014. Results are compared with those from the first wave collected in 2010. The LU-HFCS is a regular survey designed to match similar surveys conducted by other national central banks within the European System of Central Banks (ESCB). It collects detailed information among private households in Luxembourg on their assets, liabilities, income, etc. This data makes it possible to study the distribution of wealth and its various components across the population of households. It is the only dataset available with such detailed balance sheet information on Luxembourg households. The individual household-level information complements the

aggregate figures for the household sector provided by financial accounts. The LU-HFCS data are of good quality. As is usually the case in wealth surveys, households underreport financial wealth compared to estimates in the financial accounts. Nonetheless, the coverage of liabilities is good compared to estimates in the financial accounts. However, the LU-HFCS provides a more detailed data source that complements aggregate data reported in the financial accounts.

Compared to the findings from the first LU-HFCS wave in 2010, the structure and composition of households' balance sheet remained generally stable. Real assets make up the predominant part of gross wealth (84.7% in 2014 and 88.8% in 2010), of which the household main residence represents the lion's share (59.7% in 2014 and 58.4% in 2010). Among real assets, 31.8% of households own other real estate property (OREP) and 4.7% own self-employment business.

The HMR is the most prevalent real asset second to vehicles: 67.6% of Luxembourg resident households own their main residence, among which 57% outright and 43% with a mortgage. For homeowners with no mortgage, the median value of their main residence is €555,600. OREP is owned by 26.3% of households; a self-employment business by 3.9% and vehicles by 88.0%. Among those households that own OREP, its median value is €350,000. For self-employment business, the median value is €161,300 and for vehicles it is €15,000.

Compared to 2010, the mean value of financial assets increased substantially, mainly reflecting strong growth in deposits, while fewer households held mutual funds and bonds. This suggests a shift from riskier assets to safer and more liquid financial assets. In 2014, mean financial assets consist of deposits (46.3%), voluntary private pensions / life insurances (17.6%), mutual funds (15.8%), shares (5.4%), bonds (2.0%) and other financial assets (10.7%).

The most prevalent financial assets are deposits (sight and/or saving accounts), which are held by 96.7% of Luxembourg households. Voluntary private pensions / life insurances are held by 32.0% of households. All other financial asset categories are owned by less than 15% of households. Among those households that own deposits or voluntary private pensions / life insurances, their median value are respectively €15,400 and €24,500.

Compared to 2010, fewer Luxembourg households held debt, in particular mortgage debt or HMR mortgage debt in 2014. In 2014, about 45% of all Luxembourg households had no debt, while about 55% of households held (some type of) debt. Among the latter, 21% held only mortgage debt, 19% held only non-mortgage debt and 15% held both types of debt. Conditional on ownership, the median value of mortgage debt (€200,000) substantially exceeded the median value of non-mortgage debt (€10,100). Among households that owned real estate assets, both the mean and median value of mortgage debt and HMR mortgage debt increased between 2010

and 2014. Despite a favourable mortgage interest rate environment, fewer households were indebted in 2014. This contrasts with indebted households holding larger amounts of debt on average. Also, the share of households with consumer loans is significantly smaller in 2014.

Regarding the debt burden indicators, the median debt-asset ratio among households with debt is 22.2%, the median debt-income ratio is 114.1%, the median debt service-income ratio is 14.8% and the median outstanding loan-to-value ratio of the household main residence is 14.6%. Household debt burden indicators suggest that Luxembourg households were more indebted relative to their financial resources in 2014 compared to 2010. The increase in the debt was larger than the increase in the collateral. In contrast, the low interest rate environment effectively reduces the debt servicing burden of Luxembourg households. This lower total debt servicing burden of Luxembourg households in 2014 compared to 2010 mainly emanates from lower services of non-mortgage debt, since the median debt service on mortgages was higher in 2014 compared to 2010.

Net wealth of the average household increased from around €710,000 in 2010 to around €768,000 in 2014, a nominal increase of around 8%. After adjusting for inflation, this was actually a slight reduction of average total net wealth by 1%. Median net wealth increased by 10% to around €438,000, but in real terms the increase was only about 1%. These changes in household net wealth are however not statistically significant. Like many other components of household balance sheets, net wealth follows a hump-shaped profile over the life-cycle, rising until roughly the age of 60 and gradually declining thereafter. For homeowners, the dominant components of net wealth are housing assets; financial assets have only a limited impact on net wealth. For the whole sample of all Luxembourg households, the mean value of real assets was €733,300 and that of financial assets was €132,400.

The total gross income of the average household increased from €83,600 to €87,200. The median value was more or less unchanged around €65,000 in nominal terms, representing a significant reduction of about 9% in real terms. These results reflect the combined effect of compositional changes in the income sources and changes in (the mean or median value of) these different income sources. Given that average value increased and that the mean value was stable, this suggests that households with higher gross incomes were able to increase their income by more than households with lower incomes.

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6. Appendix

Table 26: Median household net wealth across household characteristics

	2010				2010 in 2014 EUR				2014			
	Median	Std. err.	[95% conf. interval]		Median	Std. err.	[95% conf. interval]		Median	Std. err.	[95% conf. interval]	
Gender*												
Male	446 615	34 118	379 743	513 487	488 151	37 291	415 059	561 242	517 868	27 461	464 044	571 691
Female	358 873	30 215	299 652	418 094	392 248	33 025	327 520	456 977	367 134	28 905	310 480	423 789
Age classes*												
16-34	59 013	14 265	31 053	86 973	64 501	15 592	33 941	95 062	108 613	31 854	46 180	171 046
35-44	286 017	33 973	219 430	352 604	312 617	37 132	239 837	385 396	277 470	21 410	235 506	319 433
45-54	426 911	42 072	344 450	509 372	466 614	45 984	376 484	556 743	545 012	36 092	474 272	615 752
55-64	561 859	71 681	421 363	702 354	614 112	78 348	460 550	767 673	628 516	45 402	539 528	717 504
65+	604 838	40 058	526 324	683 352	661 088	43 784	575 272	746 904	722 945	40 571	643 425	802 464
Household size												
1 member	223 380	44 006	137 129	309 631	244 154	48 098	149 881	338 427	300 484	37 932	226 137	374 832
2 members	520 305	39 042	443 782	596 828	568 694	42 673	485 054	652 333	581 258	28 765	524 878	637 638
3 members	422 953	63 051	299 372	546 533	462 287	68 915	327 213	597 361	383 925	63 467	259 530	508 320
4 members	446 820	47 905	352 926	540 715	488 375	52 360	385 748	591 001	542 749	63 181	418 914	666 585
5 and more members	414 029	71 929	273 048	555 010	452 534	78 618	298 441	606 626	443 019	56 690	331 906	554 132
Marital status*												
Single	93 766	38 744	17 828	169 704	102 486	42 347	19 486	185 486	256 330	39 052	179 788	332 872
Couple	509 974	27 690	455 701	564 246	557 401	30 265	498 082	616 721	562 494	26 170	511 201	613 786
Divorced	312 285	46 993	220 178	404 392	341 328	51 364	240 655	442 001	328 304	44 869	240 361	416 247
Widowed	511 453	43 317	426 552	596 355	559 018	47 346	466 221	651 816	522 547	63 735	397 627	647 467
Country of birth*												
Luxembourg	522 343	23 762	475 770	568 915	570 921	25 971	520 016	621 825	567 528	23 714	521 049	614 007
Portugal	48 111	17 856	13 114	83 108	52 586	19 516	14 334	90 837	113 401	38 633	37 680	189 121
France	251 191	148 568	-40 002	542 383	274 551	162 384	-43 722	592 825	273 182	68 498	138 926	407 437
Belgium	256 973	128 399	5 311	508 635	280 872	140 340	5 805	555 938	543 450	127 102	294 331	792 570
Italy	323 723	74 461	177 778	469 667	353 829	81 386	194 312	513 346	352 512	194 315	-28 345	733 369
Germany	519 912	180 083	166 949	872 875	568 264	196 831	182 475	954 052	589 453	92 683	407 794	771 111
Other countries	151 909	59 895	34 514	269 304	166 037	65 465	37 724	294 349	136 750	70 068	-583	274 083
Education*												
Low (ISCED=0,1,2)	277 081	39 138	200 371	353 791	302 850	42 778	219 006	386 694	290 408	34 439	222 907	357 910
Middle (ISCED=3,4)	444 514	34 447	376 999	512 029	485 854	37 650	412 060	559 648	487 751	34 734	419 673	555 829
High (ISCED=5,6)	519 161	58 195	405 098	633 223	567 443	63 607	442 772	692 113	538 705	39 467	461 350	616 061
Employment status*												
Employee	272 671	24 660	224 337	321 005	298 030	26 954	245 201	350 859	330 985	29 152	273 847	388 123
Self-employed	494 963	173 406	155 088	834 839	540 995	189 533	169 511	912 479	876 690	131 920	618 127	1 135 254
Unemployed	16 955	35 877	-53 364	87 273	18 531	39 213	-58 327	95 390	15 798	32 349	-47 606	79 202
Retired	642 127	43 211	557 434	726 820	701 845	47 229	609 275	794 414	696 430	37 780	622 381	770 479
Other	400 000	60 465	281 489	518 511	437 200	66 088	307 668	566 732	293 141	94 577	107 770	478 512
Housing status												
Owner-outright	680 157	45 403	591 168	769 147	743 412	49 625	646 147	840 677	769 138	30 111	710 121	828 156
Owner-with mortgage	427 980	23 775	381 381	474 580	467 782	25 986	416 849	518 716	497 629	29 594	439 625	555 633
Renter or other	22 060	4 140	13 946	30 175	24 112	4 525	15 243	32 981	18 277	3 604	11 212	25 341
Total gross income												
Quintile 1	45 376	31 255	-15 885	106 637	49 596	34 162	-17 362	116 554	33 158	18 571	-3 242	69 557
Quintile 2	183 983	93 912	-85	368 050	201 093	102 646	-93	402 279	290 017	49 444	193 107	386 928
Quintile 3	370 071	47 505	276 961	463 180	404 487	51 923	302 719	506 256	396 076	47 393	303 186	488 965
Quintile 4	528 593	31 889	466 089	591 096	577 752	34 855	509 436	646 068	603 048	31 054	542 183	663 913
Quintile 5	864 661	65 850	735 596	993 726	945 075	71 974	804 006	1 086 143	977 160	48 461	882 176	1 072 143
Total net wealth												
Quintile 1	5 051	1 596	1 922	8 180	5 521	1 745	2 101	8 941	4 452	1 191	2 118	6 787
Quintile 2	120 845	18 374	84 832	156 857	132 083	20 082	92 722	171 445	142 225	12 480	117 765	166 685
Quintile 3	399 768	9 906	380 352	419 185	436 947	10 827	415 725	458 169	438 389	9 880	419 025	457 753
Quintile 4	637 531	18 330	601 604	673 457	696 821	20 034	657 553	736 089	757 272	13 093	731 609	782 935
Quintile 5	1 379 037	58 744	1 263 899	1 494 175	1 507 288	64 207	1 381 442	1 633 134	1 529 314	61 205	1 409 352	1 649 276

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights.

Table 27: Mean household net wealth across household characteristics

	2010				2010 in 2014 EUR				2014			
	Mean	Std. err.	[95% conf. interval]		Mean	Std. err.	[95% conf. interval]		Mean	Std. err.	[95% conf. interval]	
Gender*												
Male	767 188	70 410	629 182	905 195	838 537	76 958	687 696	989 378	825 529	58 342	711 174	939 884
Female	626 058	106 259	417 792	834 323	684 281	116 141	456 647	911 915	694 125	95 254	507 425	880 826
Age classes*												
16-34	209 487	31 364	147 908	271 067	228 970	34 281	161 663	296 276	277 640	43 025	193 162	362 119
35-44	503 192	92 103	322 650	683 734	549 989	100 669	352 656	747 321	485 881	41 644	404 249	567 514
45-54	850 816	180 716	496 621	1 205 012	929 942	197 522	542 806	1 317 079	912 718	130 686	656 563	1 168 873
55-64	894 538	78 442	740 767	1 048 309	977 730	85 738	809 659	1 145 802	1 155 456	219 752	724 749	1 586 163
65+	1 096 440	171 871	759 572	1 433 309	1 198 409	187 855	830 212	1 566 606	1 034 512	88 873	860 310	1 208 715
Household size												
1 member	410 805	58 757	295 633	525 978	449 010	64 222	323 126	574 894	540 020	45 921	450 014	630 025
2 members	876 471	117 307	646 547	1 106 396	957 983	128 216	706 676	1 209 290	968 711	99 899	772 913	1 164 509
3 members	798 528	181 067	443 643	1 153 413	872 791	197 906	484 902	1 260 681	997 945	255 810	496 566	1 499 323
4 members	713 251	86 110	544 476	882 026	779 583	94 118	595 113	964 054	732 219	66 995	600 065	864 374
5 and more members	1 017 419	382 793	267 156	1 767 681	1 112 038	418 393	292 002	1 932 075	650 542	74 156	505 158	795 926
Marital status*												
Single	435 427	117 523	205 085	665 769	475 922	128 452	224 158	727 686	502 030	47 418	409 031	595 029
Couple	904 106	92 159	723 478	1 084 734	988 188	100 730	790 761	1 185 614	923 316	92 769	741 488	1 105 145
Divorced	444 611	65 260	315 996	573 226	485 960	71 330	345 384	626 536	689 154	159 497	376 545	1 001 762
Widowed	722 920	165 173	399 186	1 046 653	790 151	180 534	436 310	1 143 992	835 479	110 568	618 715	1 052 243
Country of birth*												
Luxembourg	933 137	97 217	742 595	1 123 679	1 019 918	106 258	811 656	1 228 181	919 752	78 858	765 189	1 074 315
Portugal	197 493	29 003	140 647	254 339	215 860	31 700	153 727	277 992	275 248	39 715	197 339	353 157
France	528 101	113 727	304 377	751 825	577 214	124 303	332 684	821 744	906 758	288 736	340 550	1 472 966
Belgium	524 440	116 025	297 029	751 850	573 213	126 815	324 653	821 772	879 517	107 639	668 543	1 090 492
Italy	505 981	158 947	194 451	817 511	553 038	173 729	212 535	893 540	496 832	84 321	331 556	662 108
Germany	1 349 623	610 713	152 645	2 546 601	1 475 138	667 509	166 841	2 783 435	1 035 630	394 779	261 878	1 809 382
Other countries	329 502	45 943	239 428	419 575	360 145	50 215	261 695	458 595	447 054	57 220	334 721	559 386
Education*												
Low (ISCED=0,1,2)	433 758	53 918	328 074	539 442	474 097	58 932	358 585	589 610	504 903	42 749	421 080	588 726
Middle (ISCED=3,4)	741 738	108 043	529 978	953 498	810 720	118 091	579 266	1 042 174	706 476	42 337	623 472	789 480
High (ISCED=5,6)	1 040 104	144 458	756 969	1 323 238	1 136 833	157 893	827 367	1 446 300	1 100 090	156 971	792 413	1 407 766
Employment status*												
Employee	535 387	76 663	385 130	685 645	585 178	83 793	420 947	749 410	611 617	50 371	512 884	710 350
Self-employed	1 530 284	294 796	952 468	2 108 100	1 672 601	322 212	1 041 048	2 304 154	1 531 767	186 312	1 165 200	1 898 335
Unemployed	140 695	54 325	34 207	247 184	153 780	59 377	37 388	270 172	219 320	56 497	108 574	330 065
Retired	1 076 930	146 287	790 211	1 363 649	1 177 085	159 892	863 701	1 490 469	1 118 621	159 436	806 132	1 431 110
Other	487 500	68 146	353 934	621 066	532 837	74 484	386 850	678 825	657 291	126 997	406 722	907 860
Housing status												
Owner-outright	1 352 836	152 311	1 054 311	1 651 361	1 478 650	166 476	1 152 362	1 804 937	1 265 716	115 665	1 039 016	1 492 417
Owner-with mortgage	619 326	65 568	490 805	747 847	676 923	71 666	536 450	817 397	785 317	80 672	627 113	943 521
Renter or other	129 863	20 943	88 539	171 187	141 940	22 891	96 773	187 107	161 619	26 672	109 342	213 895
Total gross income												
Quintile 1	254 877	46 335	162 382	347 372	278 580	50 644	177 483	379 677	246 130	29 226	188 695	303 566
Quintile 2	360 790	61 728	239 760	481 819	394 343	67 469	262 058	526 628	426 450	41 589	344 763	508 137
Quintile 3	476 506	46 505	384 824	568 189	520 821	50 830	420 612	621 030	531 483	47 149	438 611	624 355
Quintile 4	721 976	107 470	500 055	943 896	789 119	117 465	546 560	1 031 678	815 578	60 108	697 608	933 549
Quintile 5	1 740 907	266 275	1 218 309	2 263 505	1 902 811	291 039	1 331 612	2 474 011	1 829 257	240 360	1 358 135	2 300 378
Total net wealth												
Quintile 1	2 284	2 630	-2 871	7 438	2 496	2 875	-3 138	8 130	-3 400	3 829	-10 909	4 110
Quintile 2	134 304	7 062	120 426	148 182	146 794	7 718	131 625	161 963	152 078	6 193	139 922	164 234
Quintile 3	393 213	6 630	380 050	406 376	429 782	7 246	415 395	444 170	439 131	6 062	427 192	451 070
Quintile 4	654 998	10 210	634 800	675 195	715 913	11 159	693 837	737 988	773 296	10 477	751 733	794 859
Quintile 5	2 374 262	258 663	1 867 286	2 881 238	2 595 068	282 719	2 040 944	3 149 193	2 487 115	239 151	2 018 308	2 955 921

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights.

Table 28: Mean household gross income across household characteristics

	2010				2010 in 2014 EUR				2014			
	Mean	Std. err.	[95% conf. interval]		Mean	Std. err.	[95% conf. interval]		Mean	Std. err.	[95% conf. interval]	
Gender*												
Male	92 423	3 486	85 589	99 258	101 019	3 811	93 549	108 489	95 428	3 038	89 472	101 383
Female	70 756	3 272	64 338	77 174	77 336	3 576	70 322	84 351	76 500	2 511	71 578	81 422
Age classes*												
16-34	66 487	3 732	59 160	73 814	72 670	4 079	64 662	80 679	68 253	3 382	61 621	74 885
35-44	88 441	5 573	77 512	99 370	96 666	6 091	84 721	108 611	92 612	4 530	83 732	101 493
45-54	97 285	5 942	85 625	108 946	106 333	6 495	93 588	119 078	106 787	5 450	96 103	117 470
55-64	101 695	8 517	84 992	118 397	111 152	9 309	92 897	129 408	98 894	5 960	87 210	110 577
65+	65 525	6 051	53 653	77 396	71 618	6 614	58 643	84 594	69 805	3 758	62 434	77 175
Household size												
1 member	49 371	2 812	43 859	54 884	53 963	3 074	47 938	59 988	57 233	3 211	50 939	63 527
2 members	89 108	5 977	77 389	100 828	97 395	6 533	84 586	110 205	93 979	4 244	85 647	102 311
3 members	97 803	5 948	86 138	109 468	106 899	6 501	94 149	119 648	106 194	5 651	95 117	117 271
4 members	110 719	7 997	95 034	126 405	121 016	8 740	103 872	138 160	105 960	4 530	97 079	114 840
5 and more members	106 157	8 655	89 186	123 128	116 030	9 460	97 481	134 579	114 420	8 737	97 267	131 573
Marital status*												
Single	63 449	3 356	56 865	70 033	69 350	3 669	62 153	76 546	73 713	4 026	65 821	81 605
Couple	104 006	4 032	96 101	111 911	113 679	4 407	105 039	122 319	103 356	2 903	97 664	109 047
Divorced	63 315	5 335	52 828	73 802	69 203	5 831	57 741	80 666	72 719	5 608	61 729	83 710
Widowed	50 626	5 880	39 055	62 197	55 334	6 427	42 687	67 981	62 220	6 365	49 742	74 698
Country of birth*												
Luxembourg	87 074	3 090	81 018	93 130	95 172	3 377	88 553	101 791	92 067	2 479	87 208	96 925
Portugal	53 949	3 178	47 686	60 212	58 966	3 473	52 121	65 812	53 289	2 956	47 465	59 113
France	76 862	7 932	61 314	92 409	84 010	8 670	67 016	101 003	111 105	13 683	84 269	137 940
Belgium	114 187	26 418	62 344	166 029	124 806	28 875	68 142	181 470	110 837	15 984	79 503	142 171
Italy	69 795	15 018	40 346	99 244	76 286	16 414	44 098	108 474	79 324	9 574	60 556	98 092
Germany	131 373	26 005	80 333	182 413	143 591	28 424	87 804	199 377	86 105	9 496	67 484	104 727
Other countries	88 841	8 816	71 560	106 121	97 103	9 636	78 215	115 990	78 273	5 484	67 519	89 028
Education*												
Low (ISCED=0,1,2)	57 108	2 997	51 211	63 006	62 419	3 275	55 974	68 865	59 108	2 727	53 729	64 487
Middle (ISCED=3,4)	75 401	3 711	68 127	82 675	82 414	4 056	74 463	90 364	79 689	2 705	74 381	84 996
High (ISCED=5,6)	131 821	6 624	118 832	144 810	144 081	7 240	129 884	158 278	123 709	5 019	113 867	133 551
Employment status*												
Employee	88 715	3 198	82 445	94 984	96 965	3 495	90 112	103 818	93 295	2 610	88 179	98 411
Self-employed	154 092	17 513	119 757	188 427	168 422	19 142	130 895	205 950	168 073	15 545	137 556	198 591
Unemployed	39 801	5 180	29 632	49 969	43 502	5 662	32 388	54 616	49 705	6 249	37 453	61 958
Retired	75 013	5 276	64 671	85 355	81 989	5 767	70 685	93 293	76 831	3 885	69 216	84 447
Other	50 061	4 968	40 194	59 928	54 716	5 430	43 932	65 501	58 985	4 965	49 159	68 812
Housing status												
Owner-outright	90 129	4 848	80 617	99 640	98 511	5 298	88 115	108 907	94 015	3 574	87 001	101 028
Owner-with mortgage	97 992	3 398	91 332	104 652	107 105	3 714	99 826	114 384	108 571	4 040	100 653	116 488
Renter or other	62 617	4 594	53 611	71 623	68 441	5 022	58 597	78 284	59 908	3 001	54 020	65 795
Total gross income												
Quintile 1	20 681	902	18 907	22 455	22 605	985	20 666	24 543	22 242	723	20 823	23 661
Quintile 2	42 958	724	41 451	44 466	46 953	791	45 306	48 601	44 583	529	43 509	45 657
Quintile 3	64 323	634	63 067	65 579	70 305	692	68 932	71 678	65 850	672	64 436	67 264
Quintile 4	93 493	1 188	91 057	95 928	102 188	1 298	99 526	104 850	98 460	966	96 482	100 438
Quintile 5	197 506	8 798	180 260	214 753	215 874	9 616	197 024	234 725	205 697	6 532	192 879	218 515
Total net wealth												
Quintile 1	39 982	2 497	34 953	45 011	43 700	2 729	38 203	49 197	41 834	1 855	38 193	45 474
Quintile 2	65 088	3 526	58 116	72 059	71 141	3 854	63 521	78 760	68 525	3 178	62 116	74 934
Quintile 3	73 969	3 918	66 227	81 711	80 848	4 282	72 387	89 310	72 810	3 188	66 560	79 060
Quintile 4	96 005	7 620	81 054	110 956	104 934	8 328	88 592	121 275	96 935	3 995	89 062	104 807
Quintile 5	143 697	8 055	127 908	159 486	157 061	8 804	139 804	174 318	156 158	7 683	141 099	171 218

Source: Own calculations based on the 1st and 2nd wave of the LU-HFCS, data are multiply imputed and weighted; variance estimation based on 1000 replicate weights.

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BANQUE CENTRALE DU LUXEMBOURG