CAHIER D'ÉTUDES
WORKING PAPER

N° 154

THE CROSS-BORDER HOUSEHOLD FINANCE AND CONSUMPTION SURVEY: RESULTS FROM THE THIRD WAVE

YIWEN CHEN THOMAS Y. MATHÄ
GIUSEPPE PULINA MICHAEL ZIEGELMEYER

FEBRUARY 2021

BANQUE CENTRALE DU LUXEMBOURG
EUROSYSTÈME

The Cross-border Household Finance and Consumption Survey:
Results from the third wave*

Yiwen Chen†
yiwen.chen@bcl.lu

Thomas Y. Mathä†
thomas.mathae@bcl.lu

Giuseppe Pulina†
giuseppe.pulina@bcl.lu

Michael Ziegelmeyer†,♠
michael.ziegelmeyer@bcl.lu

February 2021

Abstract:
This report presents the methodology and main descriptive results from the third wave of the Cross-border Household Finance and Consumption Survey (XB-HFCS) conducted in 2018. This is a household survey of employees in Luxembourg who live abroad and regularly commute across the border. We analyse the composition and level of household assets and liabilities, net wealth and income, and compare them to those of similar households (including at least one employee) whether resident in Luxembourg or in one of the bordering countries. Compared to households employed in their country of residence, cross-border commuters reported higher median gross income, homeownership rates and wealth. Around 10% of cross-border commuters lived in Luxembourg before they moved to Belgium, France or Germany (usually their country of birth).

Keywords: Cross-border commuters, households, survey, assets, liabilities, wealth, income.
JEL-Codes: G51, D31, D14, C81, C83, J61

---

* This report uses data from the Luxembourg Household Finance and Consumption Survey. This report should not be reported as representing the views of the BCL or the Eurosystem. The views expressed are those of the authors and may not be shared by other research staff or policymakers in the BCL, the Eurosystem or the Eurosystem Household Finance and Consumption Network.
We thank research intern Mattias Muckenhuber for his work during the editing and imputation phase, Emilie Décembry for her editorial assistance and Paolo Guarda for detailed comments.

† Banque centrale du Luxembourg.
♠ Munich Center for the Economics of Aging.

Résumé non-technique

En 2018, près de 44 % de l'emploi salarié au Luxembourg se composait de travailleurs frontaliers. Ces travailleurs frontaliers apportent une contribution importante à l'économie luxembourgeoise, en termes de production, de consommation et d'impôts, mais ils ne sont que partiellement couverts par les statistiques officielles. Pour cette raison la BCL conduit régulièrement l'enquête XB-HFCS sur le comportement financier et de consommation des frontaliers travaillant au Luxembourg. Cette enquête collecte des informations détaillées au niveau des ménages et des individus concernant leurs actifs, passifs et revenus, ainsi que leurs attitudes, attentes et projets futurs. L'enquête a été conçue expressément pour permettre des comparaisons avec l'enquête LU-HFCS sur le comportement financier et de consommation des ménages résidant au Luxembourg.

Entre 2014 et 2018, les **principales caractéristiques** des travailleurs frontaliers étaient relativement inchangées. En général, les frontaliers vivaient dans leur pays de naissance. La plupart vivait avec un partenaire. Leur niveau de formation était souvent élevé et ils étaient principalement employés avec un contrat à durée indéterminée. Par rapport aux employés résidant au Luxembourg, les frontaliers étaient légèrement plus jeunes en moyenne. Ils étaient aussi moins nombreux à travailler dans le secteur public au Luxembourg. En 2018 (comme en 2014), les principaux secteurs d'emploi étaient i) les activités financières et d'assurance, ii) le commerce, transports, restauration et hébergement, iii) l'industrie (y compris énergie) et iv) la construction. En 2018, la voiture personnelle restait le principal moyen de transport pour se rendre au travail. Le temps moyen de déplacement (aller simple) était de 53 minutes en 2018, soit une augmentation de 7 minutes par rapport à 2014.

Environ 10 % des **ménages frontaliers ont déjà vécu au Luxembourg** et généralement ils l'ont quitté pour rentrer dans leur pays de naissance, tout en conservant leur emploi à Luxembourg. Parmi les frontaliers qui sont nés au Luxembourg, la plupart a choisi l'Allemagne comme nouveau pays de résidence.

La part de propriétaires était plus élevée parmi les frontaliers résidant en Belgique (81 %) que parmi ceux en France (77 %) ou en Allemagne (72 %). En moyenne, les frontaliers étaient plus susceptibles d'être **propriétaires** que leurs homologues dans leur pays de résidence ou que les employés résidant au Luxembourg.

Le **patrimoine net médian** des frontaliers résidant en Belgique (275 600 euros) était légèrement supérieur à celui des frontaliers résidant en France (212 800 euros) ou en Allemagne (236 400 euros). Entre 2014 et 2018, les frontaliers résidant en Allemagne ont connu la plus forte croissance de leur patrimoine net médian (62 %), suite à une augmentation importante du taux de propriété et de la valeur de la résidence principale du ménage (18 %).

La **composition du patrimoine des ménages** frontaliers n'a pas changé substantiellement entre 2014 et 2018. Les actifs réels (comprenant les biens immobiliers) sont restés la composante la plus importante pour tous les groupes de ménages. Les dépôts bancaires étaient l'actif financier le plus courant. Les actifs à risque (actions et fonds communs de placement) étaient plus communs parmi les frontaliers résidant en Allemagne. En comparaison, les ménages qui faisaient la navette depuis la France préféreraient des actifs financiers moins risqués.

Indépendamment du pays de résidence, les ménages des personnes employées au Luxembourg étaient **plus souvent endettés** en 2018 par rapport à la moyenne de la zone euro (42 %). Parmi les frontaliers, la part des ménages endettés variait entre 57 % pour ceux résidant en France et 70 % pour ceux résidant en Belgique.

Le **revenu brut** médian des frontaliers résidant en France était inférieur à celui des frontaliers résidant en Belgique ou en Allemagne, ainsi que du revenu des ménages des employés résidant au Luxembourg. Entre 2014 et 2018, le revenu brut a progressé le plus parmi les frontaliers résidant en Belgique (16 %). Le revenu brut a également augmenté pour les frontaliers résidant en France (14 %) et en Allemagne (12 %).

Non-technical summary

In 2018, almost 44% of employment in Luxembourg consisted of cross-border commuters. These cross-border commuters contribute substantially to the Luxembourg economy, in terms output, consumption and tax revenue, but they are not well covered by official statistics. For this reason, the BCL regularly conducts the XB-HFCS survey on household finance and consumption of cross-border commuters working in Luxembourg, collecting detailed information on their assets, liabilities, income, as well as their attitudes, expectations and future plans. This survey is explicitly designed to allow comparisons with the Luxembourg Household Finance and Consumption Survey (LU-HFCS), which collects similar information among households resident in Luxembourg.

The **main structural characteristics** of the households of cross-border commuters changed little between 2014 and 2018. Cross-border commuters lived predominantly in their country of birth. Most lived with a partner. In general, they attained a high level of education and were employed with a permanent contract. Compared to comparable households resident in Luxembourg, cross-border commuters tended to be slightly younger. They were also less likely to work in the Luxembourg public sector. In 2018, and similar to 2014, cross-border workers tended to be employed in sectors such as i) financial and insurance activities, ii) trade, transport and accommodation, iii) industry including energy and iv) construction. In 2018, the private car was still the main means of transport for the commute to work in Luxembourg. Average commuting time (one way) was 53 minutes in 2018, a 7 minute increase compared to 2014.

Around 10% of cross-border commuters previously lived in Luxembourg, and they generally returned to their country of birth while continuing to work in Luxembourg. Among cross-border commuters born in Luxembourg, most had chosen Germany as their new country of residence.

The **homeownership rate** was higher for cross-border commuters from Belgium (81%) than for those from France (77%) or those from Germany (72%). Moreover, cross-border commuters are on average more likely to be homeowners than the average employee in their country of residence or than the average employees residing in Luxembourg.

Median net wealth among households commuting from Belgium (€275,600) was slightly higher than among households commuting from France (€212,800) or from Germany

(€236,400). Between 2014 and 2018, households commuting from Germany saw the highest growth in their median net wealth (62%) following a substantial increase in homeownership and the value of the household main residence (18%).

The **composition of household wealth** did not change substantially between 2014 and 2018. Real assets (which comprise real estate) remained the most important component for all groups of households. Deposits were the most common financial asset for all household groups. Cross-border commuter households from Germany were the most likely to hold risky assets (stocks and mutual funds). In comparison, cross-border commuter households from France were more conservative in their financial investments.

Irrespective of their country of residence, households working in Luxembourg in 2018 were **more often indebted** compared to the average household in the euro area (42%). Among cross-border commuters, the share of indebted households ranged from 57% for those living in France to 70% for those living in Belgium.

Gross income was lower for cross-border commuters from France than for those from Belgium, Germany or for employees resident in Luxembourg. Between 2014 and 2018, households commuting from Belgium saw their median gross income increase most (16%). Median gross income also increased significantly for cross-border commuters residing in France (14%) or in Germany (12%).

Nicht-technische Zusammenfassung

Im Jahr 2018 bestanden fast 44% der Beschäftigungsverhältnisse in Luxemburg mit Grenzgängern. Diese Grenzgänger tragen in erheblichem Maße zur luxemburgischen Wirtschaft in Bezug auf die Produktion, den Konsum und das Steueraufkommen bei, werden aber von der offiziellen Statistik nicht gut erfasst. Aus diesem Grund führt die BCL regelmäßig die XB-HFCS-Umfrage über die Finanzen und den Konsum der in Luxemburg arbeitenden Grenzgänger-Haushalte durch und erhebt detaillierte Informationen über deren Vermögen, Verbindlichkeiten, Einkommen sowie deren Einstellungen, Erwartungen und Zukunftsplänen. Diese Umfrage ist explizit so konzipiert, dass sie Vergleiche mit dem Luxembourg Household Finance and Consumption Survey (LU-HFCS) ermöglicht, die ähnliche Informationen unter den in Luxemburg wohnenden Haushalten erhebt.

Die **wichtigsten strukturellen Merkmale** der Grenzgänger-Haushalte haben sich zwischen 2014 und 2018 kaum verändert. Grenzpendler lebten überwiegend in ihrem Geburtsland. Die meisten lebten mit einem Partner zusammen. Im Allgemeinen verfügten sie über ein hohes Bildungsniveau und hatten einen unbefristeten Arbeitsvertrag. Im Vergleich zu vergleichbaren Haushalten mit Wohnsitz in Luxemburg waren die Grenzgänger tendenziell etwas jünger. Sie waren auch seltener im öffentlichen Sektor Luxemburgs tätig. Im Jahr 2018 und ähnlich wie 2014 waren Grenzgänger tendenziell in Sektoren wie i) Finanz- und Versicherungswesen, ii) Handel, Verkehr und Beherbergung, iii) Industrie einschließlich Energie und iv) Bauwesen beschäftigt. Im Jahr 2018 war der private Pkw immer noch das Hauptverkehrsmittel für den Arbeitsweg nach Luxemburg. Die durchschnittliche Pendelzeit (einfache Strecke) betrug 2018 53 Minuten, ein Anstieg von 7 Minuten im Vergleich zu 2014.

Etwa 10% der Grenzpendler lebten in Luxemburg, bevor sie über die Grenze und in der Regel in ihr Geburtsland (zurück)zogen, während sie weiterhin in Luxemburg beschäftigt blieben. Grenzgänger, die in Luxemburg geboren wurden, wählten hautsächlich Deutschland als neues Wohnsitzland.

Die **Wohneigentumsquote** war bei den Grenzgängern aus Belgien (81%) höher als bei denen aus Frankreich (77%) oder Deutschland (72%). Darüber hinaus sind Grenzpendler im Durchschnitt eher Haus- und Wohnungseigentümer im Vergleich zu Arbeitnehmern in

Belgien, Deutschland oder Frankreich, oder im Vergleich zu Arbeitnehmern mit Wohnsitz in Luxemburg.

Das **Nettovermögen** der von Belgien pendelnden Haushalte (€275.600) war im **Median** etwas höher als das der von Frankreich (€212.800) oder Deutschland (€236.400) pendelnden Haushalte. Zwischen 2014 und 2018 verzeichneten Haushalte, die von Deutschland pendeln, im Median den höchsten Zuwachs ihres Nettovermögens (62%), nachdem die Wohneigentumsquote und der Wert des Hauptwohnsitzes (18%) der Haushalte deutlich gestiegen waren.

Die **Zusammensetzung des Haushaltsvermögens** hat sich zwischen 2014 und 2018 nicht wesentlich verändert. Das Sachvermögen (das Immobilien umfasst) blieb für alle Haushaltsgruppen die wichtigste Komponente. (Spar-)Einlagen waren für alle Haushaltsgruppen das häufigste Finanzvermögen. Grenzgänger-Haushalte aus Deutschland hielten am ehesten risikoreiche Vermögenswerte (Aktien und Investmentfonds). Im Vergleich dazu waren Grenzgänger-Haushalte aus Frankreich konservativer bei ihren Finanzanlagen.

Unabhängig von ihrem Wohnsitzland waren die Haushalte, die 2018 in Luxemburg arbeiteten, im Vergleich zum Durchschnittshaushalt im Euroraum (42%) **öfters verschuldet**. Bei den Grenzgängern reichte der Anteil der verschuldeten Haushalte von 57% in Frankreich bis zu 70% in Belgien.

Das **Bruttoeinkommen** war bei Grenzpendlern aus Frankreich niedriger als bei denen aus Belgien, Deutschland oder Arbeitnehmern mit Wohnsitz in Luxemburg. Zwischen 2014 und 2018 stieg das Bruttoeinkommen der Haushalte, die von Belgien pendeln, im Median am stärksten an (16%). Auch für Grenzgänger mit Wohnsitz in Frankreich (14%) oder in Deutschland (12%) stieg das Bruttoeinkommen im Median deutlich an.

Table of Contents

List of Figures

List of Tables

Appendix

1. Introduction

This report presents the main results of the 2018 wave of the Cross-border Household Finance and Consumption Survey (XB-HFCS). Since 2010, this survey regularly collects detailed information about the economic and financial situation of households with (at least) one member working in Luxembourg but residing abroad in the Greater Region (cross-border commuter(s) households). Apart from this survey, information regarding this group is fairly limited, as cross-border commuters are usually not identified in official statistics. The XB-HFCS is conducted by the Banque centrale du Luxembourg (BCL) in cooperation with the Luxembourg Institute of Socio-Economic Research (LISER). It is specifically designed to complement the Luxembourg Household Finance and Consumption Survey (LU-HFCS), which collects data on households resident in Luxembourg, as part of the Eurosystem Household Finance and Consumption Survey (HFCS), a European project coordinated by the European Central Bank (ECB).

In 2018, over 196,000 cross-border commuters worked in Luxembourg, a 14% increase compared to 2014, when the previous wave of the XB-HFCS was conducted. They accounted for approximately 44% of Luxembourg employment (STATEC, 2019) and played an important role in Luxembourg's economy, contributing to total output, consumption and tax revenue. In 2018, cross-border commuters in Luxembourg earned more than €10 billion in gross income (excluding employers' social contributions) and paid around €1.1 billion in income tax (STATEC, 2019). In addition, they spent a substantial share of their income on products and services in Luxembourg. Evidence from the 2010 XB-HFCS showed that consumption in Luxembourg by cross-border commuters represented 17% of the income they earned in Luxembourg (Mathä, Porpiglia and Ziegelmeyer, 2012, 2017).

This report discusses key results of the 2018 wave of the XB-HFCS, mainly focusing on households' financial balance sheets and economic and financial behaviour. It also compares results on cross-border commuters to those for residents collected through the LU-HFCS conducted in the same year. To increase the comparability of results, this report only considers households in Luxembourg where at least one member is employed or self-employed. This is because all cross-border commuters are either employed or self-employed. This report also compares the 2018 results to the 2014 XB-HFCS wave and discusses changes in the financial situation and behaviour of cross-border commuters.

The main structural characteristics of cross-border commuters have barely changed since 2014. In 2018, most cross-border commuters lived in their country of birth. Most lived with a partner. In general, they were highly educated and employed with a permanent contract. Cross-border commuters were slightly younger than employed residents. Compared to employed residents, cross-border workers were less likely to work in the "Public sector" (O, P and Q) and more likely to be employed in sectors such as "Financial and insurance activities" (K) or "industry including energy" (B, C, D, E). For cross-border commuters, the private car remained the main means of transport to work. Average one-way commuting time was 53 minutes in 2018, an increase of 7 minutes compared to 2014.

In general, cross-border commuters are more likely to be homeowners than their counterparts employed in their country of residence. In 2018, 81% of cross-border commuters from Belgium were homeowners. This was the case for 77% of those from France and 72% of those from Germany. Cross-border commuter households were also more likely to own their home than employed residents born abroad ("foreign-born"), but they were less likely to be homeowners than employed residents born in Luxembourg ("native-born"). Nearly one-half of employed residents born abroad rented their home, while only 15% of those born in Luxembourg were tenants.

Regarding their economic and financial situation, employed residents born in Luxembourg reported the highest median household net wealth in 2018 (€660,200). This reflects their high homeownership rates and higher property values in Luxembourg than in neighbouring regions. Among cross-border commuters, median household net wealth was €275,600 for those from Belgium, €212,800 for those from France and €236,400 for those from Germany. Median household net wealth of cross-border commuters was significantly higher than that of households employed in their country of residence, be it Belgium, France or Germany. This is particularly true for cross-border commuters from France and Germany and reflects higher homeownership rates and higher values of the main residence compared to their national average. Median household net wealth was significantly higher in 2018 than in 2014 for all net wealth quintiles and all countries of residence. Comparing net wealth of employed residents and cross-border commuters, levels were similar for the bottom 40%. However, in the upper three quintiles noticeable differences appear.

The composition of household wealth remained largely unchanged. Real assets continued to be the most important wealth component for all households regardless of their country of

residence. In 2018, employed residents born in Luxembourg reported the highest homeownership rate and the highest median value of their main residence among all household groups considered.

In 2018, households of employed residents born abroad were the least likely to hold risky assets (mutual funds and stocks) (14.6%). However, those with such assets reported the highest median amount (€40,000). Cross-border commuter households from France were less likely to hold risky assets and reported the lowest median amount (€11,100).

Irrespective of the country of residence, employed households in Luxembourg were highly indebted in 2018 compared to the average household in the euro area (42%). Among cross-border commuter households, the share of indebted households ranged from 57% for those from France to 70% for those from Belgium. In 2018, the median debt-to-income ratio was significantly lower for cross-border commuter households than for those of employed residents. However, the debt-to-asset ratio, debt-service-to-income ratio and current loan-to-value ratio did not differ significantly between those two groups.

In 2018, resident households of native-born employees reported the highest median gross income (€100,300). For cross-border commuters, gross household income was €61,700 for those from France, €71,000 for those from Belgium and €71,900 for those from Germany. However, median household gross income for cross-border commuters was higher than the national average among employed households in their country of residence. Compared to 2014, median gross income increased most for cross-border commuter households from Belgium, although those from France and Germany also experienced a significant increase. In comparison, household income increased less for employed residents who were born abroad.

Around 10% of cross-border commuters reported that they previously lived in Luxembourg. Most of these households left Luxembourg to return to their country of birth. Among cross-border commuters who were born in Luxembourg, most had moved to Germany. For households that previously lived in Luxembourg, median gross household income and net wealth were roughly comparable to those of employed residents born abroad. However, employed residents born in Luxembourg had a higher median household income and net wealth. This difference was particularly pronounced when focussing on cross-border commuters born in Luxembourg.

This report is structured as follows: Section 2 provides a brief general overview and some stylised facts on cross-border commuter households. Section 3 describes the methodology underlying the reported statistics and the inflation adjustment. The main results are presented in Sections 4 to 7. Section 4 focuses on cross-border commuters' general characteristics and employment. Section 5 presents their assets and liabilities and Section 6 discusses their income. Section 7 explores their country of origin and residential mobility. Section 8 describes the survey preparation and fieldwork. Section 9 gives an overview of the data treatment, which consists of editing, imputation and weighting of the collected information. Section 10 concludes.

2. Previous analyses using the XB-HFC Survey

Understanding the economic behaviour of cross-border commuters requires more data than the limited information on socio-demographic and economic characteristics included in the social security register. This is why dedicated surveys are needed to fill information gaps. Compared to other dedicated surveys among cross-border commuters working in Luxembourg, the XB-HFCS focuses on their household economic and financial situation; it collects detailed information on their assets and liabilities, income, etc. and is explicitly designed to complement the LU-HFCS conducted among resident households in Luxembourg. XB-HFCS data makes it possible to assess the financial and economic situation of cross-border commuters and compare it to that of resident households and of households living and working in one of neighbouring countries. This is important for Luxembourg, given the contribution of cross-border workers and the fact that they are poorly covered by official statistics, and hence under-researched. For each wave of the XB-HFCS, results are published in a dedicated technical report (see Mathä, Porpiglia and Ziegelmeyer (2012) for wave 1 in 2010 and Mathä, Pulina and Ziegelmeyer (2018) for wave 2 in 2014). Preliminary results are usually released in the BCL bulletin as text boxes (see BCL, 2012, 2017).

For instance, the first wave XB-HFCS in 2010 contained a dedicated module to quantify cross-border commuters' consumption expenditures in Luxembourg for specific expenditure categories, linking them to the respective household final consumption expenditure (HFCE) category in the national accounts. This made it possible to provide an estimate of the contribution of cross-border commuters to total HFCE in Luxembourg. The results, reported

by Mathä, Porpiglia and Ziegelmeyer (2012, 2017a), showed that 17% of cross-border commuters' gross annual income earned in Luxembourg is spent in Luxembourg, which in turn meant that they contributed about 10% of total household final consumption expenditure in Luxembourg in 2010. These estimates are in line with earlier estimates by Zanardelli (2005) for the years 2002 and 2003, and Genevois and Zanardelli (2008) for the year 2007. In addition, as Mathä, Porpiglia and Ziegelmeyer (2017a) report, cross-border commuters' expenditures in Luxembourg typically decrease with longer commuting distance. Expenditures are also linked to price differences (of tradeable goods but not services) between the country of residence and Luxembourg, confirming that cross-border commuters systematically make use of arbitrage opportunities.

Early findings from the Eurosystem Household Finance and Consumption Network reported higher household net wealth in Luxembourg than in other euro area countries (HFCN, 2013), which motivated analysis of the explanatory factors. Mathä, Porpiglia and Ziegelmeyer (2018) systematically compare net wealth among employed households resident in Luxembourg and corresponding cross-border commuter households. Differences between groups were decomposed according to differences in observable characteristics, such as gender, age, education, income and homeownership, and unobservable factors. The results show that a main contributing factor was differences in property price developments, which translate for homeowners into differences in unrealised accumulated capital gains. Thus, the high net wealth of households resident in Luxembourg is largely driven by high homeownership rates coupled with high past property price increases.[1] This effect is particularly strong in the middle of the net wealth distribution.

Despite the high share of homeowners among Luxembourg residents and cross-border commuters, many households reported they faced financial obstacles to acquire their own home. Some postponed the purchase or resort to own labour contributions. About 71% of all cross-border commuter households reported that they provided own labour when acquiring their home, which is 11 percentage points higher than for employed households living in Luxembourg (Claveres et al., 2020). As shown by Lindner et al. (2020) for resident households,

[1] In a companion paper, Mathä, Porpiglia and Ziegelmeyer (2017b) extended this analysis to the 12 euro area countries taking part in the first wave of the Eurosystem HFCS. The results confirmed the relevance of homeownership and differences in real estate price developments as explanatory factors for differences in household net wealth across countries.

own labour is particularly prevalent among low-income households and those with low initial own funds to finance the acquisition of their home. Alternatively, some households acquired their main residence in Luxembourg's neighbouring regions to avoid high property prices in Luxembourg. Indeed, for cross-border commuter households, the most frequently cited reason (90%) for acquiring a home across the border was that property was too expensive in Luxembourg. Other major reasons relate to family and cultural ties (Claveres et al., 2020). It is therefore not surprising that between 84% and 91% of all cross-border commuters in 2014 lived in the country where they were born (Mathä, Pulina and Ziegelmeyer, 2018, Table 6).[2]

3. General overview and inflation adjustment

The XB-HFCS is a cross-sectional survey. Each wave aims to be representative of the cross-border commuters in the Greater Region in the reference year for which data are collected; therefore, respondents vary between waves. Thus, when comparing assets or liabilities over time, one should be aware that households in a specific sub-group differ across waves. The household characteristics refer to the cross-border commuter in the household.[3] In the third wave, the reference year for household socio-demographic and economic characteristics, assets and liabilities is 2018 (referring to the time of the interview). The reference year for variables related to income is 2017. All monetary figures in the text, tables or graphs are rounded to the nearest €100 or €1,000.

The report distinguishes between the extensive and intensive margin. The extensive margin reflects the participation rate, meaning whether a household holds a particular type of asset or liability. The intensive margin, referred to as conditional value, is the value of a particular type of asset or liability for those households that hold this particular type of asset or liability. In contrast, unconditional values refer to the whole (sub-)population considered, including those who do not hold the particular type of asset or liability in question. Furthermore, we

[2] We obtain comparable results if we restrict the analysis to those cross-border commuters who acquired their HMR after they started working in Luxembourg.

[3] When several cross-border commuters live in the same household, the reference person is the person that received the invitation letter to participate in the survey. To the extent possible, the sampling design tried to avoid sampling several cross-border commuters within the same household. In case one household received more than one invitations to participate in the survey, the financially most knowledgeable person is asked to answer on behalf of the whole household.

report the shares 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 and conditional values. Our discussion focuses on the 2018 findings and the changes relative to 2014. The first survey wave in 2010 asked much less detailed questions about the household balance sheet, and was conducted by paper and pencil interviews, which limits its comparability to the more recent surveys conducted in 2014 and 2018 by a computer assisted web-based interview (CAWI).

Inflation adjustment

Unless expressly stated, text, tables and figures throughout this report provide nominal comparisons over time. This is as region-specific inflation rates are generally not available for Belgium, France and Germany. It may be misleading to report real values simply computed with the respective national inflation rates, as the inflation in Luxembourg's neighbouring regions may be quite different from overall inflation in the respective countries.

Interpreting the results

As the survey data are multiply imputed, point estimates, such as e.g. shares, means and medians, are calculated across the five implicates and averaged. Standard errors and confident intervals are calculated across the five implicates by using 1,000 replicate weights. This accounts properly for sampling uncertainty and sampling design. The confidence band provides the lower and upper bounds of the interval within which we expect the true value to lie with a 95% probability. The confidence attached to a reported value depends, among other factors, on the sampling variability of the outcome and on the sample size.

Unless explicitly indicated, the results discussed in this report are mainly based on the median values, which are more robust to extreme values and outliers in the sample than arithmetic averages, and therefore better suited in case of skewed distributions to describe the central tendency. The median, its standard error and confidence interval are calculated using the STATA command MEDIANIZE, version 0.4.[4]

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

4. Main characteristics of cross-border commuters

Table 1 presents the main characteristics of cross-border commuters in 2018 by country of residence. In addition, it also provides the characteristics of households residing in Luxembourg with at least one employed or self-employed member (henceforth labelled "employed residents"). Employed residents are further divided into "native-born" (i.e. born in Luxembourg) and "foreign-born" (i.e. born abroad). Note that the subsequently reported individual characteristics relate to the reference person in the household. In the XB-HFCS, the reference person is the cross-border commuter while in the LU-HFCS it is the most financially knowledgeable person in the household.

4.1. General characteristics

Overall, in 2018, general characteristics of cross-border commuters remained similar to those reported for the second wave in 2014 (Mathä, Pulina and Ziegelmeyer, 2018). Typically, they are male (65.1%), highly educated (48.8%) and live together with a partner (66.0%) (Table 1). According administrative data, the overall male share was similar at 65.5% in 2019 (CES, 2020). The male predominance is a structural feature that has existed for a long time. In the past, it reflected the high share of blue-collar workers among the cross-border commuters (STATEC, 1995). According to Pigeron-Piroth (2019) likely reasons for this continuing imbalance are the longer commute compared to residents, coupled with women working more often part-time and taking care of more household chores and child minding duties.

According to the 2018 XB-HFCS figures, cross-border commuter households were on average slightly younger than employed resident households. Figures from administrative data for 2019 (CES, 2020) suggest however no age difference on average. The educational attainment of cross-border commuters was significantly above that of the employed residents, which agrees with results reported by CES (2020). About one-half of cross-border commuters completed at least the tertiary level of education (high level of education) while only 9.5% reported having completed a maximum level of lower secondary education (low level of education).

Table 1: General household characteristics in 2018

General household characteristics (mean)	Cross-border commuters				Employed residents			
Characteristic	Belgium	France	Germany	Overall-XB	Native-born	Foreign-born	Overall-LU	
Age	41.4	41.0	43.1	41.6	44.1	43.6	43.8	*
	(0.5)	(0.3)	(0.5)	(0.1)	(0.6)	(0.4)	(0.3)	
Household size	3.0	2.8	2.8	2.9	2.7	2.8	2.8	*
	(0.1)	(0.0)	(0.1)	(0.0)	(0.1)	(0.0)	(0.0)	
Male (%)	68.8	62.4	66.9	65.1	65.9	56.0	60.2	*
	(0.6)	(0.5)	(0.5)	(0.3)	(2.3)	(2.1)	(1.4)	
Residing in the country of birth (%)	85.7	89.6	87.5	88.2	100.0	0.0	41.8	*
	(1.8)	(1.1)	(1.7)	(0.8)	(0.0)	(0.0)	(1.4)	
Marital Status (%)								
Single	22.7	27.4	23.4	25.3	37.4	27.3	31.5	*
	(2.3)	(1.7)	(2.3)	(1.1)	(2.5)	(2.0)	(1.4)	
Couple	69.4	64.4	66.2	66.0	49.8	56.5	53.7	*
	(2.4)	(1.8)	(2.6)	(1.2)	(2.4)	(2.0)	(1.3)	
Divorced	7.7	7.7	10.2	8.3	10.4	14.2	12.6	*
	(1.2)	(0.9)	(1.6)	(0.7)	(1.3)	(1.6)	(1.1)	
Widowed	0.3	0.5	0.3	0.4	2.4	2.0	2.1	*
	(0.2)	(0.3)	(0.2)	(0.2)	(0.7)	(0.6)	(0.4)	
Level of education (%)								
Low	10.7	3.4	20.4	9.5	11.5	26.1	20.0	*
	(1.5)	(0.7)	(2.4)	(0.8)	(1.5)	(1.8)	(1.3)	
Middle	29.5	45.6	45.4	41.7	51.8	26.4	37.0	*
	(2.3)	(1.8)	(2.6)	(1.2)	(2.6)	(2.1)	(1.7)	
High	59.8	51.0	34.3	48.8	36.7	47.5	43.0	*
	(2.3)	(1.7)	(2.4)	(1.2)	(2.3)	(2.0)	(1.5)	

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
*Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. * denotes that values reported in the two "Total" columns are significantly different from each other at the 5% level of significance.*

4.2. Employment characteristics

Table 2 shows the employment characteristics of cross-border commuter and employed resident households. Most of the cross-border commuters had a permanent contract.[5] The car or private vehicle remained the main means of commuting. About 86% of cross-border commuters used their car in 2014 and 2018. These figures support previous findings from surveys among cross-border commuters, such as the *Enquête Mobilité des Frontaliers* (Cross-Border Mobility Survey) of 2010 and the *Enquête sur les Dépenses des Frontaliers* (Survey on the expenses of cross-border workers) of 2007. According to these sources, the private car was

[5] The share of cross-border commuters with permanent contract is slightly higher than the share obtained from IGSS administrative data (90%). This upward bias is likely to be related to the time lag between sampling and the fieldwork of the survey. Temporary contracts may have already been converted to a permanent contracts.

used by 91% of cross-border commuters in 2007 and by 86% in 2010 (Gerber et al., 2018).[6] Hence, this suggests that the share of cross-border commuters relying mainly on private transport has not decreased much over the years despite the substantial efforts of the Luxembourg government to improve the (cross-border) public transport network in recent years. In contrast to the cross-border commuters, residents use public transport, their bike or go to work on foot more often. According to LU-HFCS data, in 2018, 16% of households of employed residents mainly used public transport. In addition, 11% used their bicycle or went to work on foot, while not surprisingly, few cross-border commuters reported to do so (Chen et al., 2020).

Table 2: Employment characteristics (mean) in 2018

	Cross-border commuters				Employed residents			
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total	
Employment Status (%)								
Employee	98.1	99.2	98.0	98.6	83.1	82.5	82.8	*
	(0.6)	(0.3)	(0.8)	(0.3)	(1.7)	(1.7)	(1.2)	
Self-employed	1.9	0.8	1.4	1.2	5.2	6.7	6.1	*
	(0.6)	(0.3)	(0.6)	(0.3)	(0.9)	(1.1)	(0.7)	
Type of contract (%)								
Permanent contract	97.5	96.4	98.1	97.1	94.9	93.5	94.1	*
	(0.9)	(0.8)	(0.9)	(0.5)	(1.2)	(1.3)	(0.9)	
Main means of transport (%)								
Car or private vehicle	89.1	80.5	92.4	85.6	83.7	65.0	72.8	*
	(1.4)	(1.5)	(1.4)	(0.9)	(2.0)	(2.5)	(1.7)	
Public transport	10.0	19.2	7.2	14.0	7.5	21.9	15.9	
	(1.4)	(1.5)	(1.3)	(0.9)	(1.4)	(2.2)	(1.4)	
By bike or on foot	0.9	0.3	0.4	0.5	8.8	13.1	11.3	*
	(0.5)	(0.2)	(0.4)	(0.2)	(1.5)	(1.8)	(1.2)	
Working hours per week	40.3	40.4	39.1	40.1	38.6	39.5	39.1	*
	(0.3)	(0.2)	(0.4)	(0.2)	(0.5)	(0.5)	(0.3)	
Commuting time (minutes)	51.3	55.1	48.6	52.5	23.2	26.9	25.3	*
	(1.2)	(0.9)	(1.0)	(0.6)	(0.9)	(1.2)	(0.8)	

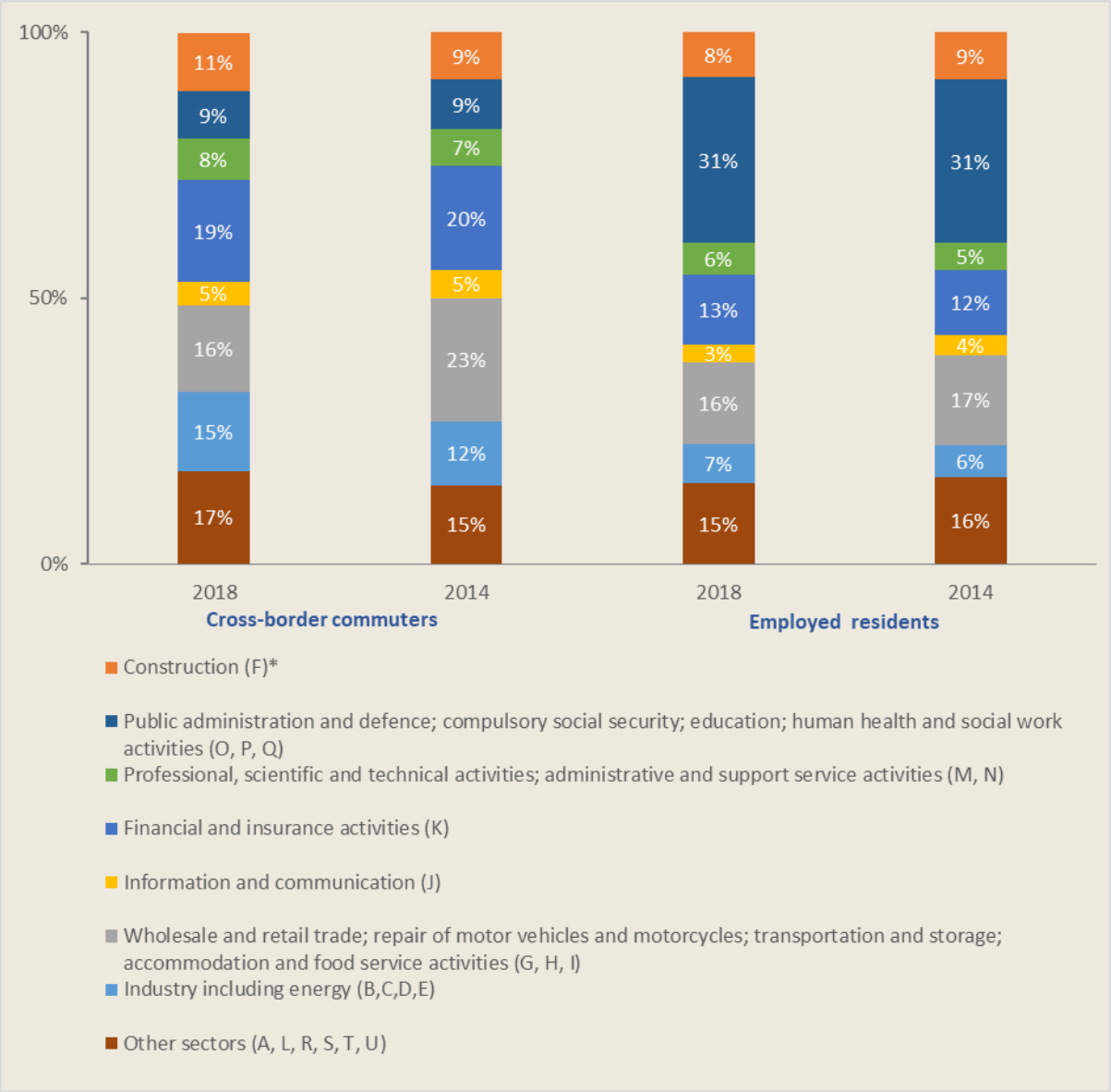
Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
*Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. * denotes that values reported in the two "Total" columns are significantly different from each other at the 5% level of significance.*

The commuting time has increased over the years. This is not surprising; the number of employed people in Luxembourg has steadily increased in the last decades, and so has the

[6] When comparing results, attention needs to be paid to the target group of the survey: While many personal characteristics refer to the cross-border commuter as reference person in the XB-HFCS, it is the household as decision unit for their economic and financial behaviour that is the primary target of the survey (hence household weights are applied). Many but not all other surveys focus on the individual cross-border commuter.

number of cross-border commuters. For cross-border commuters, the average one-way commute took 53 minutes in 2018 and 46 minutes in 2014 [7] while it increased only slightly (by 2 minutes) to 25 minutes for employed residents.

Figure 1: Employment sectors, shares in %, in 2014 and 2018



Source: Own calculations based on XB-HFCS, LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.
*Note: The characteristics refer to those of the reference person. The reference person is the cross-border commuter in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. If the LU-HFCS financially knowledgeable person is not employed, we use the NACE code of the next employed household member. *The grouping of the employment sectors is based on the NACE A*10, which is used in the ESA Transmission Programme.*

[7] Average commuting time of cross-border commuters from Belgium increased from 45 minutes in 2014 to 51 minutes in 2018. The corresponding time taken by commuters from France increased from 48 minutes to 55 minutes and from 46 minutes to 49 minutes by commuters from Germany.

Considering the sectors of employment, as in 2014, cross-border commuters were statistically more likely to be employed in the sectors of "Industry including energy" and "Financial and insurance activities" in 2018. We observe a 7 percentage point decline in the share of cross-border commuters employed in "Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities" in 2018 compared to 2014 (Figure 1).

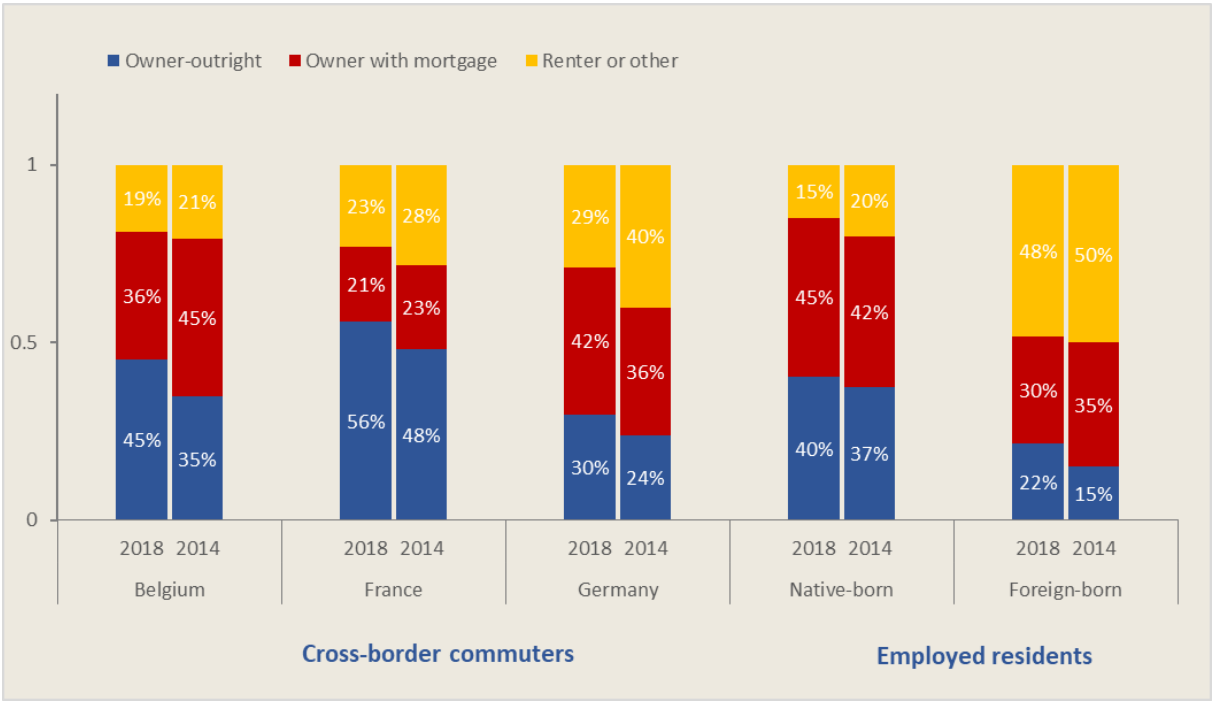
By contrast, the share of Luxembourg residents in the different employment sectors remained roughly constant between 2014 and 2018. Overall, cross-border commuters were less likely to be employed in the public and semi-public sectors, as these sectors remain largely inaccessible for foreigners due to Luxembourg language and nationality requirements (e.g. Pigeron-Piroth, 2009).

4.3. Housing tenure

Previous results from the 2014 XB-HFCS (Mathä, Pulina and Ziegelmeyer, 2018) and the *Enquête Mobilité des Frontaliers* in 2010 (Schmitz et al., 2012) showed that homeownership rates among cross-border commuters were high. The 2018 XB-HFCS figures indicate that, overall, homeownership of cross-border commuter households increased between 2014 and 2018. Cross-border commuters from France saw an increase of 5 percentage points to 77%, while homeownership of those from Belgium rose by 2 percentage points to 81% (Figure 2). Homeownership of those from Germany increased the most (11 percentage points), reaching 72% in 2018. This increase is consistent with the development of new residential areas and the high number of planning and building permissions in the region (Statistisches Landesamt Rheinland-Pfalz, 2018, pp. 74 and 77). Furthermore, among employed residents in Luxembourg, homeownership increased by 5 percentage points for native-born residents, while it remained stable for foreign-born residents.

Among cross-border commuters, homeowners from France were more likely to be outright homeowners compared to those from Germany or Belgium (Figure 2). Among employed residents, we observe marked differences between native- and foreign-born residents regarding their housing tenure. Nearly one-half of the foreign-born rented their residence, while just 15% of the native-born were renters.

Figure 2: Housing tenure in 2014 and 2018



Source: Own calculations based on XB-HFCS, LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.

5. Assets and liabilities

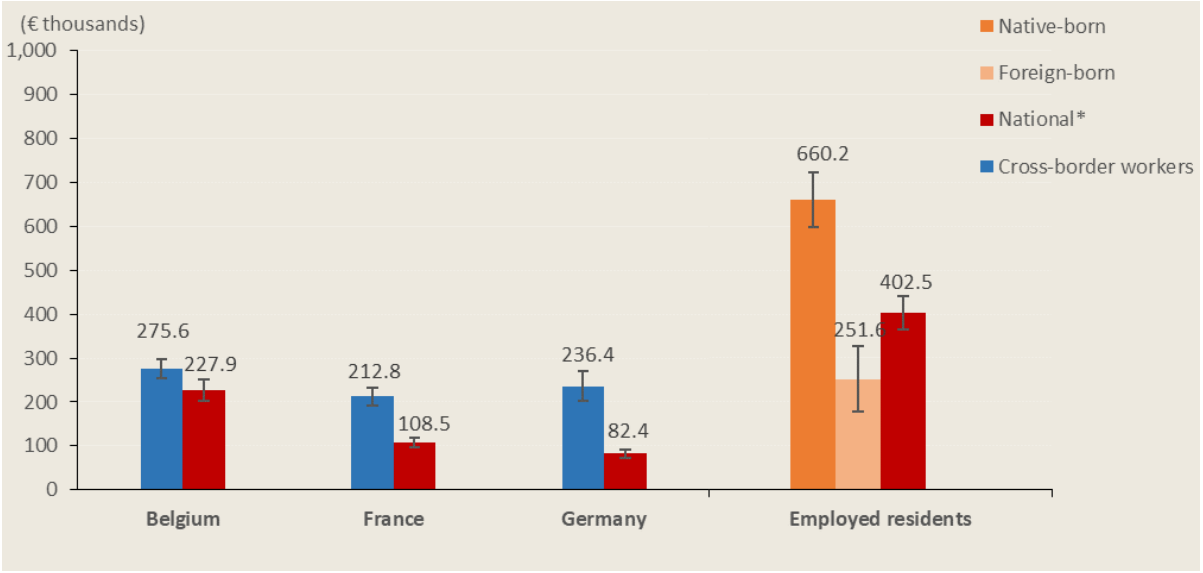
Various distributional measures use (net) wealth and its components to foster a better understanding of the economic well-being of households. The XB-HFCS collects detailed information on assets and liabilities of cross-border commuter households. In the following, we first discuss household net wealth, which is the sum of the total value of real and financial assets minus the total value of outstanding liabilities. Thereafter, we focus on assets, liabilities and their main components.

5.1. Net wealth

Net wealth in 2018

In 2018, the median net wealth of cross-border commuter households was €232,700, which is €169,700 lower than the median household net wealth of employed residents. This difference is mainly explained by higher HMR values in Luxembourg (Figure 9). The ratio of mean to median household net wealth was 1.3 for cross-border commuters and 1.9 for employed residents. As the mean is substantially influenced by the right tail of the distribution, differences in this ratio indicate that household net wealth of cross-border commuters is distributed more evenly than that of employed residents.

Figure 3: Median household net wealth in 2018



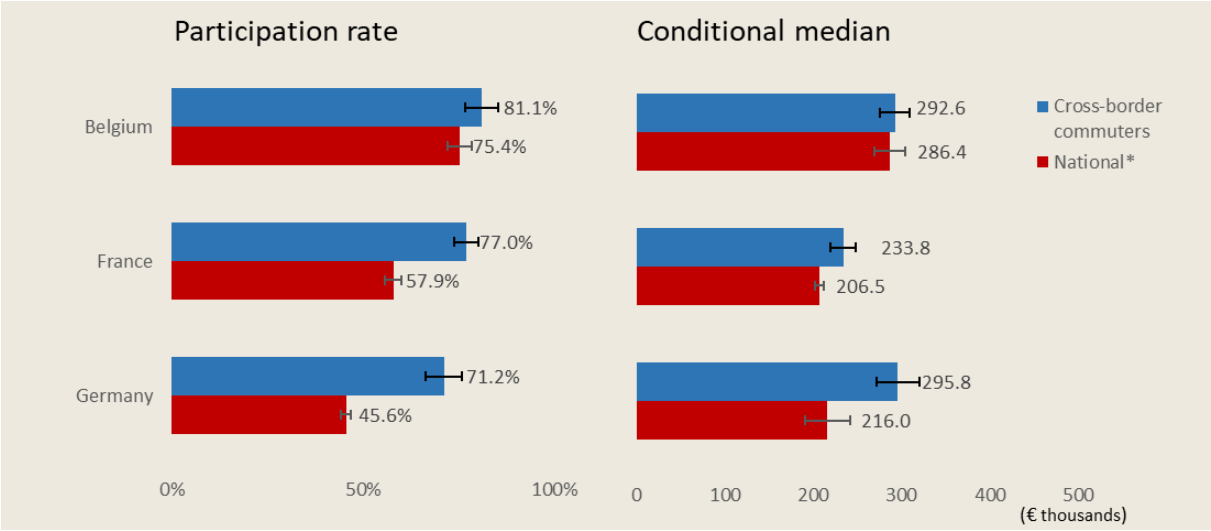
Source: Own calculations based on XB-HFCS, LU-HFCS, wave 2018, and Eurosystem HFCS, wave III; data are multiply imputed and weighted.
*Note: Error bars indicate the 95% confidence interval. * The respective national median is calculated using HFCS data for Luxembourg, Belgium, France or Germany for employed households only. For Belgium, France or Germany, the reference year of the wealth components is 2017, while for the LU- and XB-HFCS, it is 2018. Figures for Belgium, France or Germany are therefore inflation adjusted to 2018 levels using the respective national consumer price index.*

Figure 3 presents the median household net wealth by country of residence. Cross-border commuters from Belgium reported the highest median household net wealth, at €275,600, which was €62,700 and €39,200 more than the median net wealth of cross-border commuters from France and Germany. These differences may be due to the higher homeownership and ownership of other real estate property of cross-border commuter households from Belgium (see Table 4). Moreover, the median household net wealth of foreign-born employed residents was similar to that of cross-border commuters, but significantly lower than of native-born employed residents.

Figure 4 also compares the median net wealth of cross-border commuter households with that of households employed in their country of residence. The net wealth of cross-border commuters from France or Germany was significantly higher than the respective national median. This is particularly true for cross-border households from Germany, which reported almost three times the median net wealth of employed households in Germany. As shown in Figure 4, this difference is mainly due to a higher homeownership rate and a higher HMR value. In fact, in 2018, the share of cross-border commuter households from Germany which owned their HMR was 25.6 percentage points higher than overall homeownership of

employed households in Germany. Among homeowners, the median HMR value of cross-border commuter households from Germany was €79,800 higher than their national median.

Figure 4: Homeownership participation rate and conditional median value in 2018



Source: Own calculations based on XB-HFCS, LU-HFCS, wave 2018, and Eurosystem HFCS, wave III; data are multiply imputed and weighted.
*Note: Error bars indicate the 95% confidence interval. * The respective national median is calculated using HFCS data for Belgium, France or Germany for employed households only. For Belgium, France or Germany, the reference year of the wealth components is 2017, while for the XB-HFCS, it is 2018. Figures for Belgium, France or Germany are therefore inflation adjusted to 2018 levels using the respective national consumer price index.*

Wealth accumulation usually varies with household characteristics (Table 3). Median net wealth tends to increase with the age of the household reference person. This is true for all sub-populations compared and is related to the target population consisting of employed households only.

There is a net wealth gap between cross-border commuter and employed resident households. This gap widens as we move across the age groups. For cross-border commuters younger than 35 years of age, the median household net wealth was around €137,200 while it was €156,900 for employed residents. In the next age group (35-44 years), the differences in median household net wealth was more than five times larger (€115,400). The gap further widens to €300,000 for households between 45 and 54 years of age. The median net wealth of households older than 55 years of age amounted to €317,900 for cross-border commuters and €764,500 for employed residents.

As explained in Mathä, Porpiglia and Ziegelmeyer (2018), the increase in the wealth gap in age is related to the higher past HMR appreciations in Luxembourg compared to its neighbouring regions, which benefitted households in Luxembourg. Another important factor is that

households of employed residents earned more than cross-border commuter households (see section 6). Households with high income are likely to save more than households with low income, which over time increases their wealth.

Table 3: Median household net wealth in 2018, by household characteristic

Characteristic	Cross-border commuters	Employed residents	
(€ thousands)			
Age Group			
Younger than 35	137.2	156.9	
	(15.8)	(30.7)	
35-44	241.6	357.0	*
	(10.6)	(44.9)	
45-54	275.9	575.2	*
	(11.1)	(65.4)	
55 or older	317.9	764.5	*
	(25.3)	(63.8)	
Level of Education			
High	274.4	538.3	*
	(8.3)	(54.9)	
Middle	197.9	387.6	*
	(9.7)	(35.2)	
Low	204.4	175.4	
	(27.4)	(56.4)	
Housing Status			
Owner-outright	307.1	796.3	*
	(7.2)	(38.8)	
Owner with mortgage	221.5	505.9	*
	(10.4)	(30.2)	
Renter or other	20.8	29.0	
	(4.0)	(5.7)	

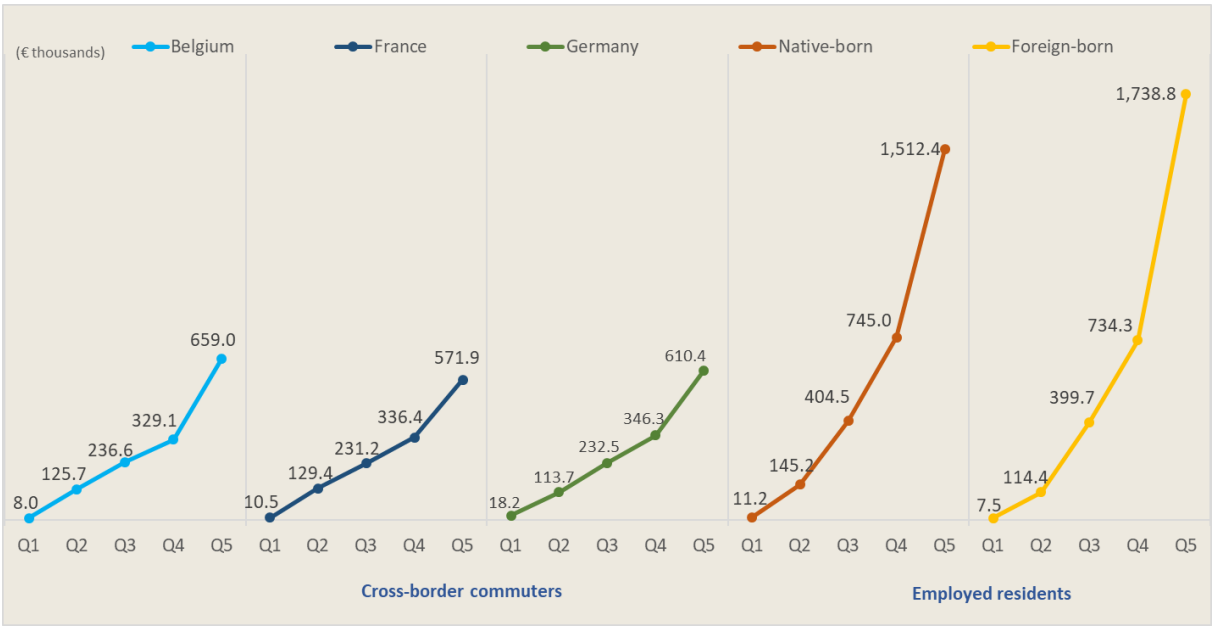
Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
*Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. * denotes that values reported in the two "Overall" columns are significantly different from each other at the 5% level of significance.*

Wealth accumulation correlates with the level of education. Highly educated households, i.e., those that completed tertiary or higher education, reported the highest median net wealth. The household net wealth differences between cross-border commuters and employed residents vary across education categories. There is little difference in the median household net wealth for cross-border commuters and employed residents with low level of education. Among

households with medium or higher level of education, however, net wealth was much higher for employed residents than for cross-border commuters. Household net wealth grew more substantially with additional educational attainment for employed residents than for cross-border commuters.

Considering the housing status, as expected, renters had the lowest net wealth. The household median net wealth was €20,800 for cross-border commuters and €29,000 for employed residents. Considering homeowners with mortgage, the median household net wealth of employed residents was more than twice as high as that of cross-border commuters, despite having larger mortgages (Table 6). As explained before, the higher net wealth is mainly driven by the higher property values in Luxembourg compared to neighbouring regions.

Figure 5: Median household net wealth in 2018, by net wealth quintile



Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.

In Figure 5, we report median household net wealth quintiles by country of residence to provide more details regarding the net wealth distribution of each group of households. The median net wealth rose remarkably in all quintiles. This is independent of the country of residence. Among cross-border commuter households, median net wealth at the bottom quintile (the poorest 20%) was €8,000 for those from Belgium, which was €2,500 lower than that of those from France and €10,200 lower than those from Germany. In contrast, with a median household net wealth of €659,000, the top 20% of cross-border commuters from Belgium were wealthier than the top 20% from France or Germany. This indicates that

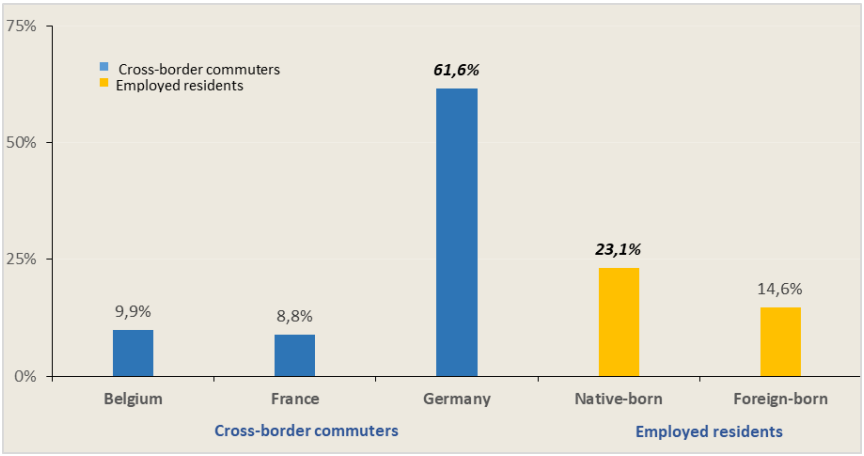
household net wealth was distributed more unequally among cross-border commuters from Belgium than for those from either France or Germany.

In the first two quintiles of the net wealth distribution, employed resident households do not appear to be much wealthier than cross-border commuter households (Figure 5). This is especially true if we refer to the foreign-born residents for whom the median household net wealth of the poorest 20% was €7,500. However, the differences in household net wealth between cross-border commuters and employed residents become more substantial as we move along the net wealth distribution towards the top quintile. The household net wealth held by the richest 20% of employed residents was about €960,200 higher than that of cross-border commuters (€1,574,000 compared to €613,800). The median household net wealth in the top quintile was €1,512,400 for native-born and €1,738,800 for foreign-born employed residents.

Changes in net wealth between 2014 and 2018

Overall, median net wealth of households employed in Luxembourg, be it either cross-border commuters or residents, increased between 2014 and 2018 (Figure 6). Concerning cross-border commuters, median household net wealth rose considerably and significantly for those from Germany (€90,100 or +61.6%). This increase was partly due to higher homeownership and value of real assets (Figure 10), as well as lower outstanding mortgage amounts (Figure 13).

Figure 6: Median household net wealth, changes 2014-18 in %

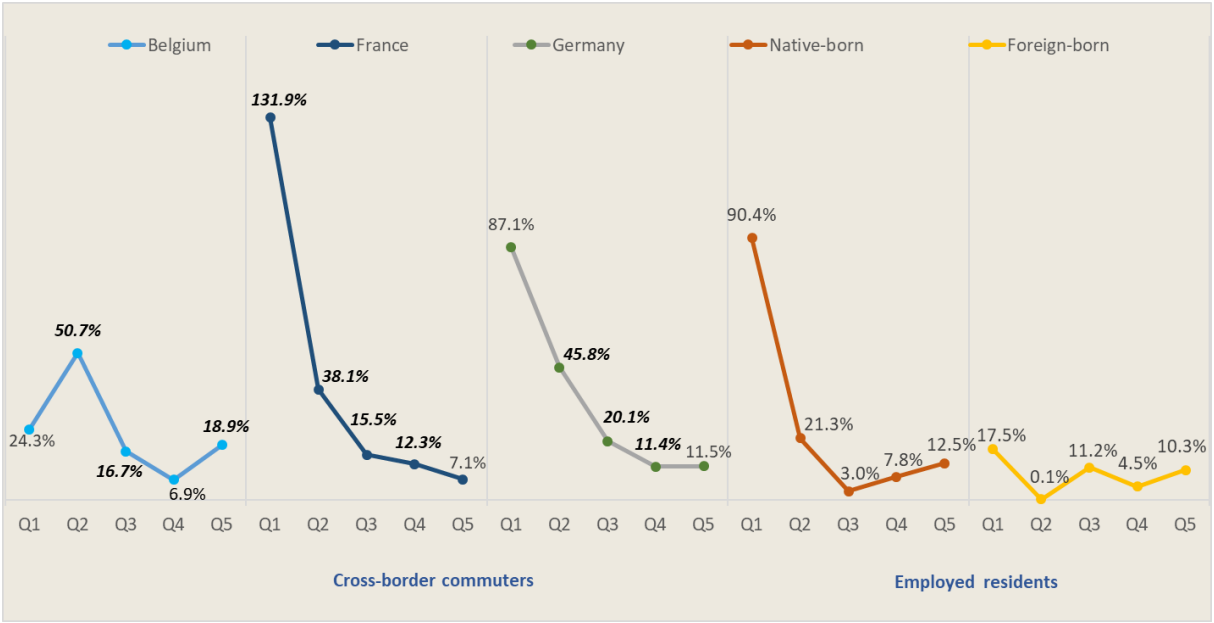


Source: Own calculations based on XB-HFCS and LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.
Note: Bold and Italic font denotes that the difference between 2014 and 2018 is statistically significant from 0 at the 5% level of significance.

By contrast, the household net wealth increase for cross-border commuters from France or Belgium was statistically not significant. The substantial increase in household net wealth for cross-border commuters from Germany is related to the recent rises in property prices in Germany. More details in the change of HMR value are presented in Section 5.2.

Figure 7 shows the relative changes in the median household net wealth across the net wealth distribution. Overall, for each quintile and for all sub-groups presented, median household net wealth increased between 2014 and 2018. Among cross-border commuters from France, median household net wealth in the bottom quintile increased by €6,000, while there was no statistically significant increase in the top quintile. This suggests a reduction in wealth inequality between 2014 and 2018 for cross-border commuter households from France.

Figure 7: Median household net wealth, changes 2014-18 in %, by net wealth quintile



Source: Own calculations based on XB-HFCS and LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.
Note: Bold and Italic font denotes that the difference between 2014 and 2018 is statistically significant from 0 at the 5% level of significance.

Net wealth changes are also observed for other household characteristics (figures not shown). For example, cross-border commuters of all ages saw their median household net wealth increase, with young households (< 35 years) experiencing the highest gains, with an increase of €35,100 (+34.4%). Median household net wealth of cross-border commuters with high level of education rose by €54,200 (+24.6%). This increase was (considerably) higher than that recorded for those with middle and low levels of education, for whom the increase amounted to €20,100 (+11.3%) and €45,700 (+28.8%) respectively. Considering housing tenure, outright homeowners saw their median household net wealth increase by €15,000 (+5.1%) between

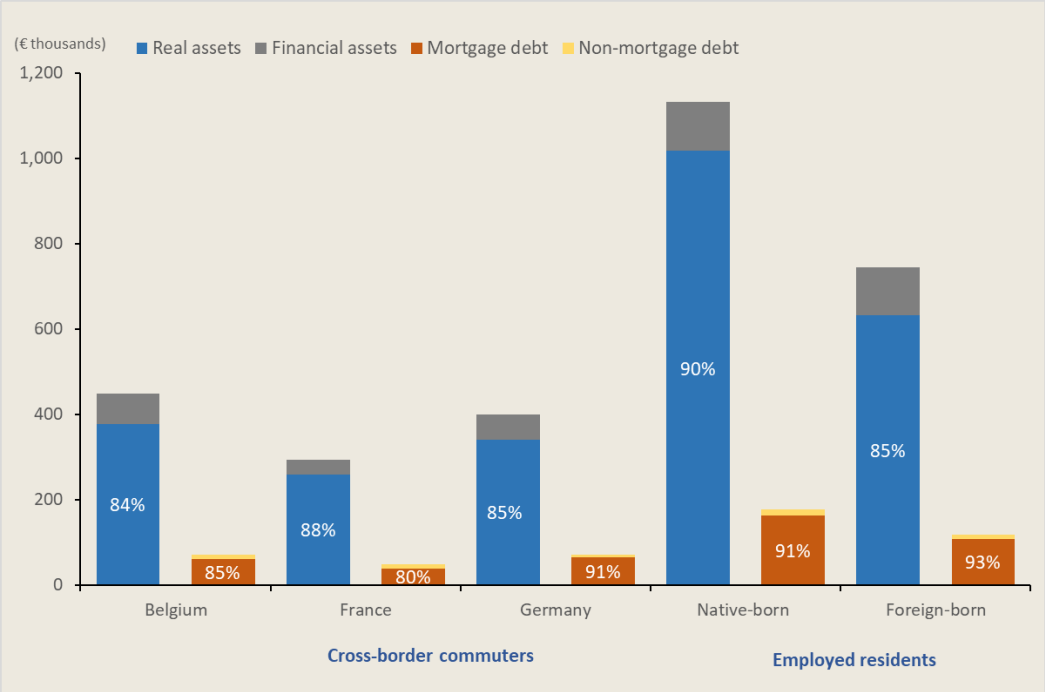
2014 and 2018. Median household net wealth of renters and homeowners with mortgages increased by €2,000 (+10.6%) and €5,700 (+2.6%) respectively.

5.2. Components of net wealth

Wealth composition

Figure 8 shows differences in the composition of main assets and liabilities and how these vary across the country of residence. Corresponding figures for native- and foreign-born employed resident households are also presented. Total assets are divided into real and financial assets, and total liabilities into mortgage and non-mortgage debt. With a share between 84% and 90% of mean total assets, real assets represented the most important wealth component for cross-border commuter and employed resident households in 2018. Regarding outstanding liabilities, mortgage debt accounted for more than 80% of mean total debt of households.

Figure 8: Household assets and liabilities in 2018



Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.

Overall, differences in the composition of wealth and total debt between 2018 and 2014 are limited (figures not shown). The real asset share in total assets increased by around 5 percentage points except for commuters from Belgium, which only reported marginal changes. In addition, the share of mortgage debt in total debt fell by about 4 percentage points

for cross-border commuters from France and Germany while it increased by 4 percentage points for those from Belgium. The debt composition of employed resident households did not change.

Real assets and their components

The XB-HFCS classifies real assets into the following categories: household main residence (HMR), other real estate property (OREP), business wealth (from self-employment and silent investments), vehicles and valuables, such as jewellery, pieces of art or antiques.

Table 4 shows the structure of real assets and participation rates for each asset category in 2018. The conditional median, which refers to the median value for those households who held the respective asset category, are presented in Figure 9. Due to the high ownership rate of vehicles (94.6% for cross-border commuters and 90.8% for employed residents), almost every household reported holding at least one type of real assets.

Table 4: Real asset categories, participation rates in 2018

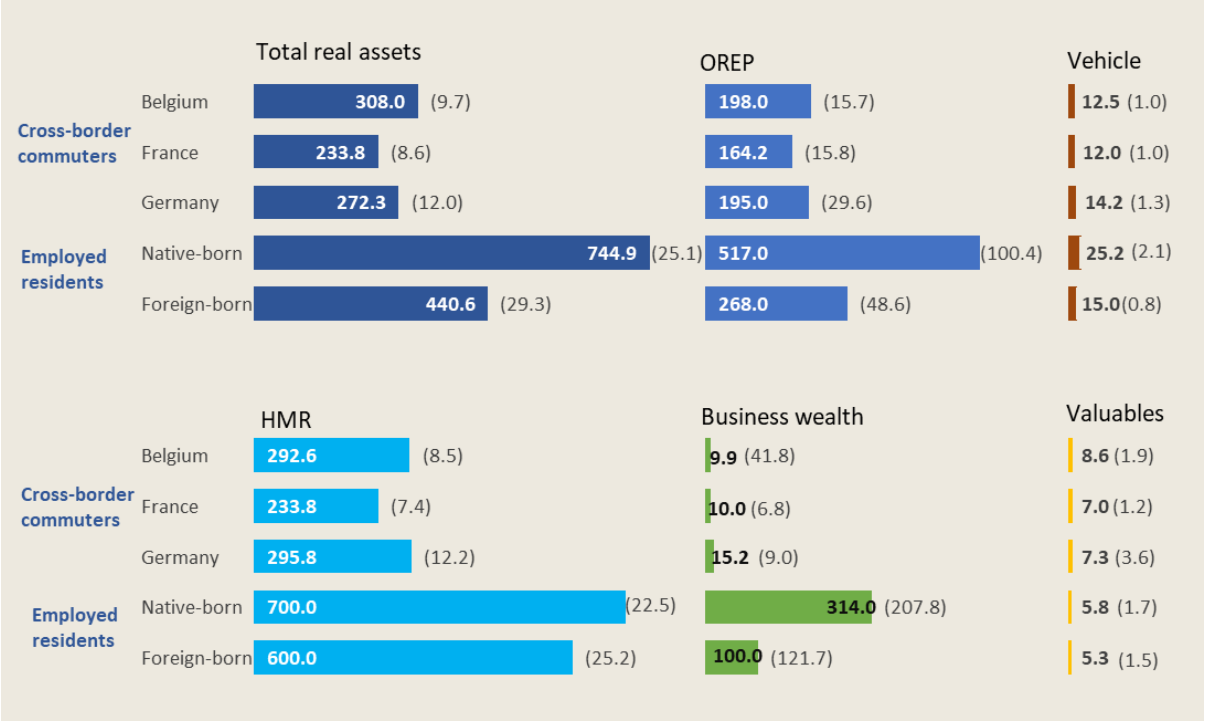
(percent)	Cross-border commuters				Employed residents			
	Belgium	France	Germany	Total	Native-born	Foreign-born	Total	
Total real assets	98.7	97.7	98.9	98.2	99.9	91.3	94.9	*
	(0.6)	(0.6)	(0.5)	(0.4)	(0.1)	(1.4)	(0.8)	
HMR	81.1	77.0	71.2	76.5	85.0	51.8	65.7	*
	(2.2)	(1.7)	(2.5)	(1.1)	(1.9)	(2.3)	(1.6)	
OREP	26.6	19.3	22.3	21.8	24.2	25.7	25.1	
	(1.1)	(0.9)	(1.2)	(0.6)	(0.5)	(1.7)	(1.1)	
Business wealth	7.7	3.3	7.0	5.3	6.9	6.5	6.6	
	(0.6)	(0.6)	(0.5)	(0.4)	(0.1)	(1.4)	(0.8)	
Vehicles	93.5	94.8	95.1	94.6	98.5	85.4	90.8	*
	(0.5)	(0.1)	(0.6)	(0.2)	(0.6)	(1.8)	(1.1)	
Valuables	12.3	14.7	12.5	13.6	28.7	19.1	23.1	*
	(1.3)	(0.7)	(1.1)	(0.5)	(1.1)	(1.1)	(0.8)	

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
*Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. * denotes that values reported in the two "Total" columns are significantly different from each other at the 5% level of significance.*

The median value of total real assets was however much lower for cross-border commuter than that for native- or foreign-born employed resident households (Figure 9). This is mainly due to lower values of the HMR. The HMR is the second most commonly owned real asset but the ownership rates and median values differed substantially across countries of residence. The share of homeowners among cross-border commuters from Germany (71.2%) was lower

than among those from Belgium (81.1%) or France (77%), but noticeably higher than among those of foreign-born employed residents (51.8%). Besides, for employed residents households, be it native-born (€700,000) or foreign-born (€600,000), the median HMR values were more than twice the median value for cross-border commuter households. Cross-border commuters from Germany reported a median value of €295,800, which was comparable to those from Belgium (€292,600) but €62,000 higher than those from France.

Figure 9: Real asset categories, conditional median in 2018



Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

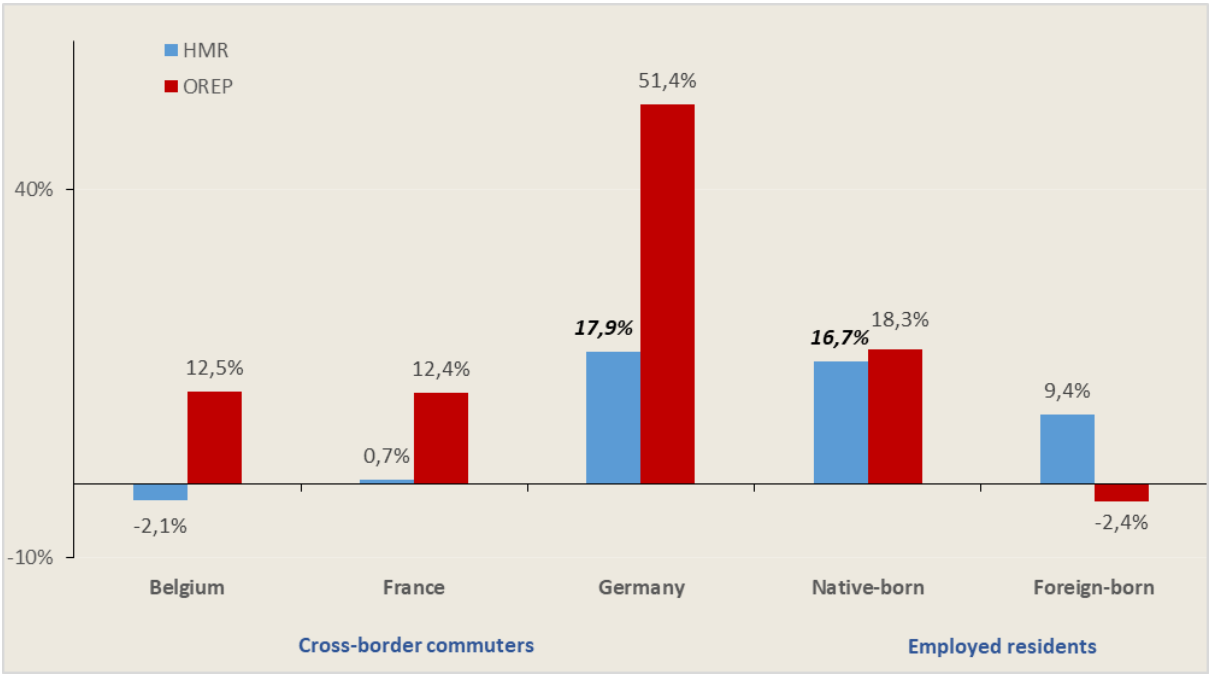
In addition, 26.6% of cross-border commuter households from Belgium owned other real estate property (OREP) while ownership rates were lower for cross-border commuters from France (19.3%) or Germany (22.3%). Although the OREP ownership rate of native-born employed residents was roughly comparable to that of any other group, the median OREP value (€517,000) was much higher.

These differences are most probably related to the location of the OREP, as explained in BCL (2018). On the one hand, the average property prices are higher in Luxembourg than in neighbouring regions. On the other hand, foreign-born employed residents are likely to own real estate property in their country of birth where housing prices tend to be lower. For example, in 2018, among employed residents with OREP, 76.3% of residents born in Portugal

reported that they owned at least one property in Portugal. Among cross-border commuter households, the median values of OREP were similar for those from Belgium (€198,000) and those from Germany (€195,000). Cross-border commuters from France reported a lower median OREP value (€164,200), but this difference is statistically not significant.

From 2014 to 2018, the conditional medians of total real assets increased significantly for cross-border commuters (€30,300 or +13.4%) and employed residents (€89,500 or +18.3%). To determine whether this increase was driven by rising property values, Figure 10 presents the changes in HMR and OREP values for cross-border commuters and employed residents between 2014 and 2018.

Figure 10: Median values of HMR and OREP, changes 2014-2018 in %



Source: Own calculations based on XB-HFCS and LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.
Note: Values conditional on ownership. Bold and Italic font denotes that the difference between 2014 and 2018 is statistically significant from 0 at the 5% level of significance.

The conditional median value of the HMR for cross-border commuters from Belgium or France remained stable between 2014 and 2018. The changes in the median OREP value were comparable for cross-border commuters from Belgium (+12.5%) and France (+12.4%). In contrast, cross-border commuters from Germany saw the median OREP value and particularly the median HMR value increase substantially. Homeowners among the cross-border commuters from Germany saw the conditional median HMR value increase by 17.9%. Real estate prices increased in Germany by around 28% from the end of 2014 to the end of 2018,

substantially more than in France and Belgium.[8] Over the same period, the homeownership rate of cross-border commuters from Germany increased significantly (+11.4 percentage points), hence more households profited from rising property prices.

Employed residents born in Luxembourg also saw a significant increase in the median value of their HMR (€100,000 or +16.7%). The corresponding increase for OREP was 18.3% (€79,800) but this was statistically not significant. Similarly, the 9.4% (€51,600) increase in the median HMR value of foreign-born employed residents was statistically not significant. The median value of their OREP dropped slightly by 2.4% (€6,600), but his drop was in statistical terms not significant. This may be a further indication that many foreign-born employed residents invest in real estate property in other countries, such as their country of birth.

Financial assets and their components

Regardless of the country of residence, almost all households reported they held at least one type of financial asset. Table 5 shows the share of households owning deposits (sight and saving accounts), risky assets (mutual funds and stocks), bonds, other financial investments and voluntary pension plans or life insurance contracts in 2018.

Table 5: Financial asset components, participation rates in 2018

(percent)	Cross-border commuters				Employed residents			
	Belgium	France	Germany	Total	Native-born	Foreign-born	Total	
Total financial assets	98.1	91.5	93.5	93.6	99.5	96.3	97.6	*
	(1.0)	(1.2)	(1.5)	(0.7)	(0.3)	(1.0)	(0.6)	
Deposits	96.6	90.3	90.5	91.9	99.5	95.9	97.4	*
	(1.1)	(1.2)	(1.8)	(0.8)	(0.3)	(1.0)	(0.6)	
Bonds	3.1	1.4	1.6	1.8	1.5	1.2	1.3	
	(0.8)	(0.4)	(0.4)	(0.3)	(0.8)	(0.4)	(0.4)	
Risky assets	20.4	14.7	24.2	18.5	15.1	14.6	14.8	
	(1.7)	(1.2)	(2.2)	(0.9)	(1.7)	(1.5)	(1.1)	
Other financial investments	2.3	0.7	3.3	1.7	1.4	1.6	1.5	
	(0.8)	(0.2)	(0.8)	(0.3)	(0.5)	(0.6)	(0.4)	
Voluntary pension/life insurance	45.7	26.0	55.2	38.2	32.3	17.7	23.8	*
	(2.5)	(1.6)	(2.7)	(1.3)	(2.3)	(1.7)	(1.4)	

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
*Note: The household characteristics refer to the reference person. The reference person is the cross-border commuter in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. * denotes that values reported in the two "Total" columns are significantly different from each other at the 5% level of significance.*

[8] ECB Statistical Data Warehouse: Series key RPP.Q.DE.N.TD.00.5.00 for Germany.

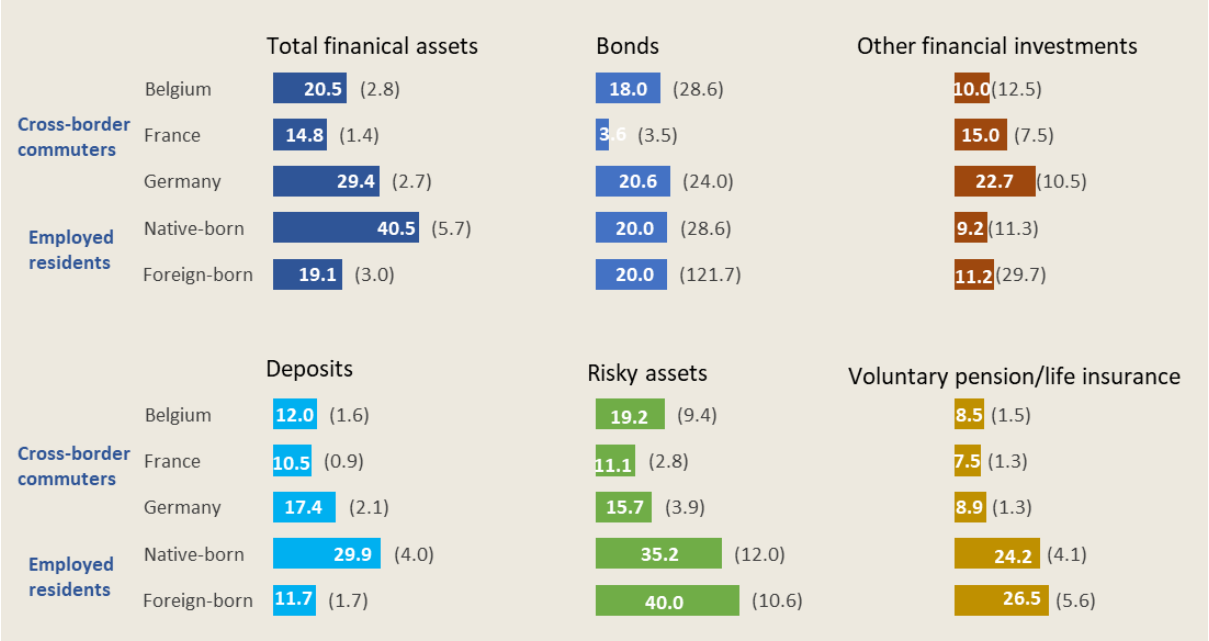
Deposits were the most common financial asset held by households in 2018, especially for native-born employed residents, 99.5% of whom reported holding some deposits. The share of those holding bonds ranged from 1.4% to 3.1%.

Cross-border commuters from Germany were those most likely to have invested in risky assets (stock and mutual funds). Their participation rate in risky assets was almost 10 percentage points higher than for foreign-born employed residents, who reported the lowest participation rate. The low participation rate of the latter partly results from the low share of risky assets held by residents born in Portugal. Just 1.2% of these households held risky assets in 2018 (0.4% in 2014, see also Girshina, Mathä and Ziegelmeyer, 2019).

The participation rates for voluntary pension plans or life insurance policies also varied across the country of residence. This type of asset was more common among cross-border commuters from Germany (55.2%) and Belgium (45.7%) but less popular among employed residents born abroad (17.7%). For the latter this may also be related to their future residence plans, as they may be planning to return to their country of birth.

The conditional median of each financial component is displayed in Figure 11. Native-born employed residents held the highest amount of deposits followed by cross-border commuters from Germany. Among households with bonds, the lowest median was observed for cross-border commuters from France (€3,600). Although foreign-born employed residents had the lowest participation rate in risky assets, they reported the highest amount in terms of conditional median. In contrast, cross-border commuters from France were the most conservative when it comes to risky investments. The median value of their assets was only one-fourth of that of foreign-born employed residents.

Figure 11: Financial asset components in 2018, conditional medians



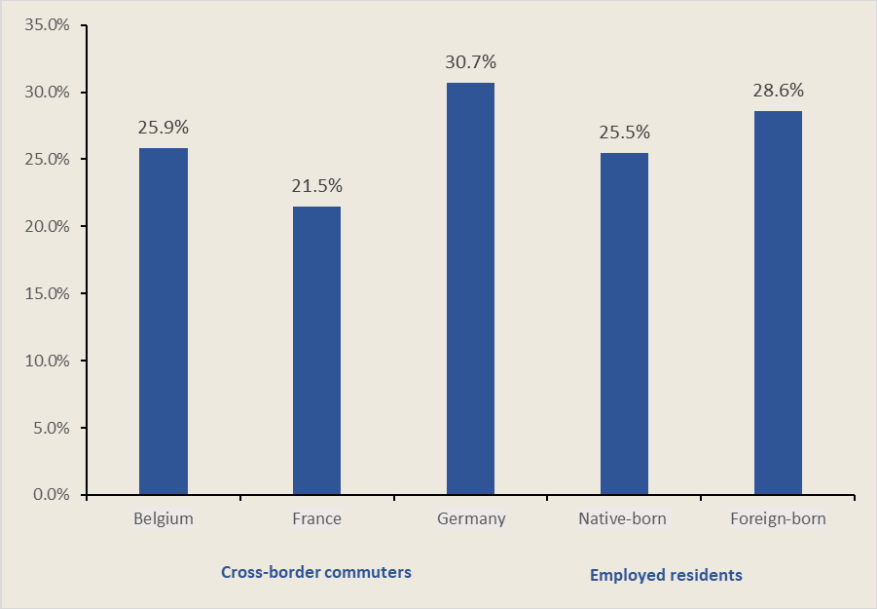
Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Figure 12 plots the share of risky assets that households held in their financial portfolios in 2018. Among those households with risky assets, cross-border commuters from Germany invested in such assets more than 30% of their financial wealth, followed by foreign-born employed residents (28.6%). The lowest share was observed for cross-border commuters from France while those from Belgium and native-born employed residents invested a similar fraction of their financial wealth in risky assets.

The participation rate in total financial assets increased from 85.6% in 2014to 93.6% in 2018.[9] For households of employed residents, it remained at 97.6%. The increase was caused by more cross-border commuter households reporting deposits in 2018 than 2014. In 2018, the survey asked to provide information on sight and saving account separately while, in 2014, it asked to provide this information as a whole. The lower participation in 2014 may be explained by households with negligible amounts in sight accounts being less likely to report any deposits.

[9] The detailed statistics by country of residence for wave 2014 can be found in Mathä, Pulina and Ziegelmeyer (2018).

Figure 12: Risky assets, as share in total financial assets in 2018 (in %)



Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.

For both cross-border commuters and employed residents, the conditional median of total financial assets was slightly lower in 2018 compared to 2014. It decreased by €2,200 and €3,100, respectively. Regarding risky assets, despite a declining participation rate (1.3% for cross-border commuters and 3.7% for employed residents), the conditional median amount increased, especially for employed residents, for which it rose by 47% or €39,400. For cross-border commuters, the corresponding increase was 27.5% or €15,000.

Total debt and debt components

The majority of employed resident households was indebted (Table 6). This is irrespective of the country of residence. Cross-border commuters from France were the least likely to be indebted among household groups compared. Still, in 2018, they were 15.3 percentage points more likely to be indebted than the average household in the euro area (57.2% vs. 41.9%, see HFCN, 2020). The amount of total outstanding debt varied by country of residence. With a value of €162,600, native-born employed residents held substantially higher debt than cross-border commuters from neighbouring countries or foreign-born employed residents. The lowest conditional median was observed for cross-border commuters from France (€33,100).

The main component of total household debt is mortgage debt. The share of households with outstanding mortgage debt varied between 26.3% for cross-border commuters from France and 50.5% for employed residents born in Luxembourg. For cross-border commuters, the conditional medians ranged between €99,700 and €122,100, with the lowest median being reported by cross-border commuters from Germany and the highest by those from France. However, irrespective of where cross-border commuters reside, employed residents had far higher outstanding mortgages than cross-border commuters.

HMR mortgage was the main type of mortgage debt for most of homeowners. According to Figure 13, in 2018, nearly 45% of employed residents born in Luxembourg had an HMR mortgage. This share was more than twice that of cross-border commuters from France, which reported the lowest participation rate (21%). The share of households with HMR mortgage was also high for cross-border commuters from Germany, amounting to 41.5%. Almost 36% of cross-border commuters from Belgium had an HMR mortgage, while at 30%, this share was smaller for foreign-born employed residents. For the latter, this also reflects the generally lower homeownership compared to native-born residents or cross-border commuters. Not surprisingly, for households with HMR mortgage, employed residents had the largest outstanding amounts, which was far more than that of cross-border commuters. In addition, although the share of households with HMR mortgage was lower for commuters from France, the outstanding amounts were higher than for cross-border commuters from Belgium or Germany.

Non-mortgage debt represents debt that is used for various purposes and not secured by real estate property or backed by other assets. In terms of participation rates, the highest prevalence was observed for cross-border commuters from Belgium and the lowest for those from Germany (Table 6). Foreign-born employed residents had the lowest median outstanding non-mortgage debt while those born in Luxembourg the highest. The outstanding conditional median amount of non-mortgage debt was similar for cross-border commuters from Belgium and France. It was slightly higher for those from Germany.

Table 6: Total debt and debt components in 2018

	Cross-border commuters				Employed residents			
	Belgium	France	Germany	Total	Native-born	Foreign-born	Total	
Participation rate (percent)								
Total debt	69.7	57.2	63.8	61.9	70.9	59.2	64.1	
	(2.4)	(2.0)	(2.9)	(1.4)	(2.2)	(2.4)	(1.7)	
Mortgage debt	43.2	26.3	47.0	35.6	50.5	35.2	41.6	*
	(2.6)	(1.6)	(2.8)	(1.2)	(2.5)	(2.1)	(1.6)	
Non-mortgage debt	47.2	45.1	33.7	42.7	44.5	38.4	40.9	
	(2.6)	(2.0)	(2.7)	(1.4)	(2.5)	(2.3)	(1.7)	
Conditional Median(€ thousands)								
Total debt	59.3	33.1	69.4	49.8	162.6	108.8	131.1	*
	(8.8)	(6.3)	(8.3)	(3.8)	(20.6)	(20.6)	(14.6)	
Mortgage debt	104.8	122.1	99.7	107.3	250.0	237.6	242.4	*
	(9.6)	(9.7)	(9.8)	(8.4)	(27.6)	(22.2)	(17.0)	
Non-mortgage debt	11.4	11.4	12.3	11.6	14.4	9.0	11.0	
	(1.3)	(1.3)	(2.2)	(0.9)	(1.5)	(0.9)	(1.3)	

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
*Note: The household characteristics refer to the reference person. The reference person is the cross-border commuter in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. * denotes that values reported in the two "Total" columns are significantly different from each other at the 5% level of significance.*

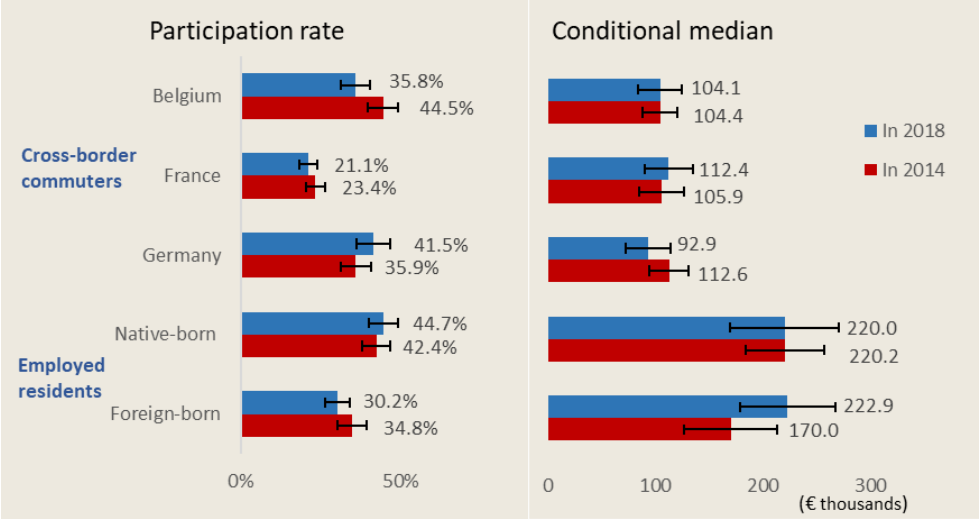
5.3. The financing of HMR

As mentioned before, the majority of cross-border commuters were homeowners. HMR ownership of cross-border commuters from Belgium, France or Germany was higher than those of households employed and resident in the respective countries.[10] Figure 13 presents the differences in the financing of the HMR.

The share of cross-border commuters from Belgium with HMR mortgage declined by 8.7 percentage points between 2014 and 2018, while it increased by 5.6 percentage points for those from Germany. The share of those from France with HMR mortgage remained roughly stable. Regarding the level of the indebtedness, the outstanding amount of those from Belgium remained stable at €104,000, while it increased from €105,900 in 2014 to €112,400 in 2018 for those from France. More cross-border commuters from Germany had an HMR mortgage in 2018 than in 2014, while the outstanding amount fell by €19,700.

[10] According to the third wave of the Eurosystem HFCS, the share of employed households owning HMR in Belgium, France and Germany was 75%, 58% and 46%, respectively.

Figure 13: HMR mortgage in 2018



Source: Own calculations based on XB-HFCS and LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.
Note: Error bars indicate the 95% confidence interval.

The XB-HFCS also asked households with outstanding HMR mortgage to provide information about the application process. On average, cross-border commuters applied for a mortgage to a similar number of banks (Table 7).[11] Nearly one-third of cross-border commuters from France had one of their loan applications rejected. This was the case for only 15.1% and 21.9% of those from Germany and Belgium.

Table 7: HMR mortgage applications for cross-border commuters

	Belgium	France	Germany
Numbers of banks applied	2.4	2.3	2.2
Numbers of banks providing an offer	2.1	1.8	1.9
Having experience being refused by banks	21.9%	27.6%	15.1%
Main reasons being refused			
Insufficient income	41.6%	30.5%	31.6%
fixed-term or temporary contract	17.4%	27.8%	15.1%
Insufficient collateral	39.1%	48.7%	46.8%
Bad credit history	7.7%	9.3%	6.1%

Source: Own calculations based on XB-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The question on the "main reason of being credit refused" is a multiple choice question and allows more than one reason to be mentioned.

[11] Corresponding figures for the resident survey can be found in Andries and Ziegelmeyer (2020).

Insufficient income and collateral were the two main reasons for the rejection of mortgage applications. The very same reasons were also the two most important for the rejection of mortgage applications in Luxembourg. Nearly 30% of cross-border commuters from France declared that they have been previously refused a mortgage because of the lack of a permanent contract.

5.4. Debt burden and financial vulnerability

A measure of households' ability to service their debt can tell much about the potential issues that may arise in case of adverse shocks, such as an interest rate increase or losing the job. Such measure seems all the more relevant in the current situation of increasing housing prices and a low interest rate environment, which can induce households to incur additional debt. Table 8 presents selected debt burden and financial vulnerability indicators for cross-border commuter and employed resident households. The debt-to-asset ratio, which relates total debt to total assets, provides an indication of households' ability to pay off outstanding debt when all their assets are converted into cash. In 2018, the median ratio ranged between 19.2% and 30.6%, with the lowest ratio being observed for native-born and the highest ratio for foreign-born employed residents. This result reflects that employed residents, be it native- or foreign-born, had far more outstanding debt than cross-border commuters (Table 6) and that native-born employed residents also reported relatively high values of real and financial assets (Figure 9 and Figure 11).

The debt-to-income ratio evaluates households' pay-off capacity in the medium- to long-term by taking household income into consideration. Cross-border commuters from France had a ratio of 50.3%, which was 19.7 and 34.7 percentage points lower than the ratio for cross-border commuters from Belgium and Germany. The debt-to-income ratios of employed residents were much higher than those of cross-border commuters. For native- and foreign-born employed residents, the ratios were 141.3% and 109.9%.

The debt-service-to-income ratio provides a view on whether household income is sufficient to cover debt-servicing obligations. According to Table 8, there was little difference in the median debt-service-to-income ratio among employed residents and cross-border commuters.

The last indicator shown in Table 8 is the current loan-to-value ratio of HMR, which captures the outstanding amount of debt relative to the value of the household main residence. With a value of 49.2%, cross-border commuters from France had the highest loan-to-value ratio.

Foreign-born employed residents reported the second highest ratio (43.8%) while the ratios were similar for cross-border commuters from Belgium and France, as well as for native-born employed residents.

Table 8: Debt burden and financial vulnerability

Median (percent)	Cross-border commuters				Employed residents		
	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
Debt-to-asset ratio	19.4	20.7	25.9	22.4	19.2	30.6	24.8
	(1.7)	(2.6)	(3.4)	(1.8)	(3.1)	(2.9)	(2.6)
Debt-to-income ratio	70.0	50.3	85.0	67.4	141.3	109.9	126.4
	(5.5)	(5.8)	(13.7)	(6.3)	(18.1)	(24.2)	(13.9)
Debt-service-to-income ratio	15.4	16.0	15.0	15.5	15.4	14.2	14.5
	(1.2)	(0.7)	(1.5)	(0.7)	(1.2)	(1.1)	(0.8)
Loan-to-value of HMR	35.9	49.2	33.8	39.8	34.5	43.8	39.8
	(2.5)	(4.9)	(3.4)	(1.3)	(4.6)	(3.8)	(2.7)

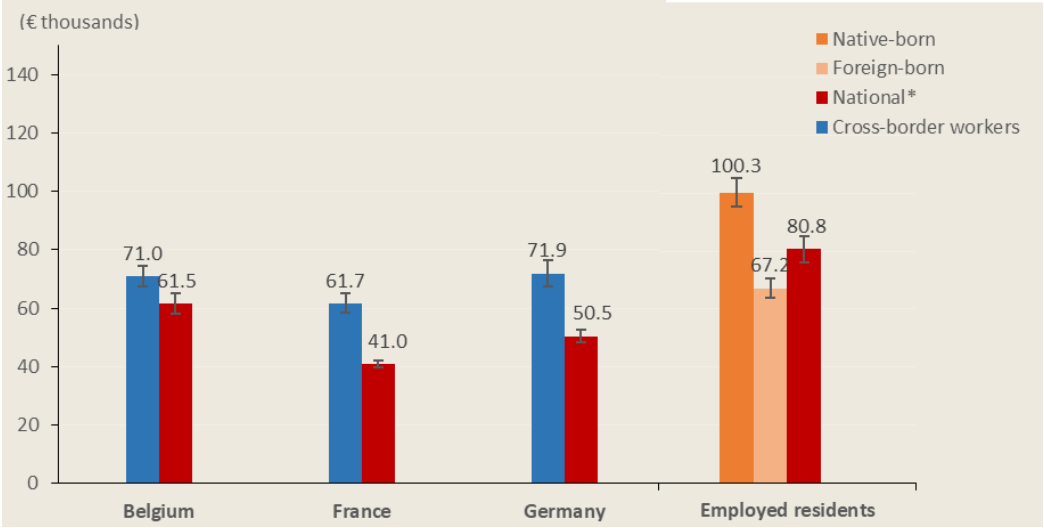
Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

6. Income of cross-border commuter households

XB-HFCS survey respondents were asked about the total household gross income they earned in Luxembourg or elsewhere in 2017. This includes employee and self-employment income, income from financial assets, income from real estate property and income from pensions (public or private). Figure 14 shows cross-border commuters' median household gross income in 2017 by country of residence, and compares it to that of households employed in their respective country of residence.

Cross-border commuter households from France reported the lowest median household gross income, which was €10,200 lower than that of those from Germany and €9,300 lower than that of those from Belgium. The median gross income was substantially higher for native-born employed residents than for cross-border commuters. This income gap can be partly explained by the sector of employment. Native-born employed residents are more likely to work in the "Public sector" (Figure 1) in which salaries are usually higher. In comparison, cross-border commuters had significantly higher median gross income than households employed in their country of residence, which being particularly the case for France and Germany. Cross-border commuters from these two countries reported a median gross income that was 51.8% and 44.7% higher than the median income of employed households in the respective country.

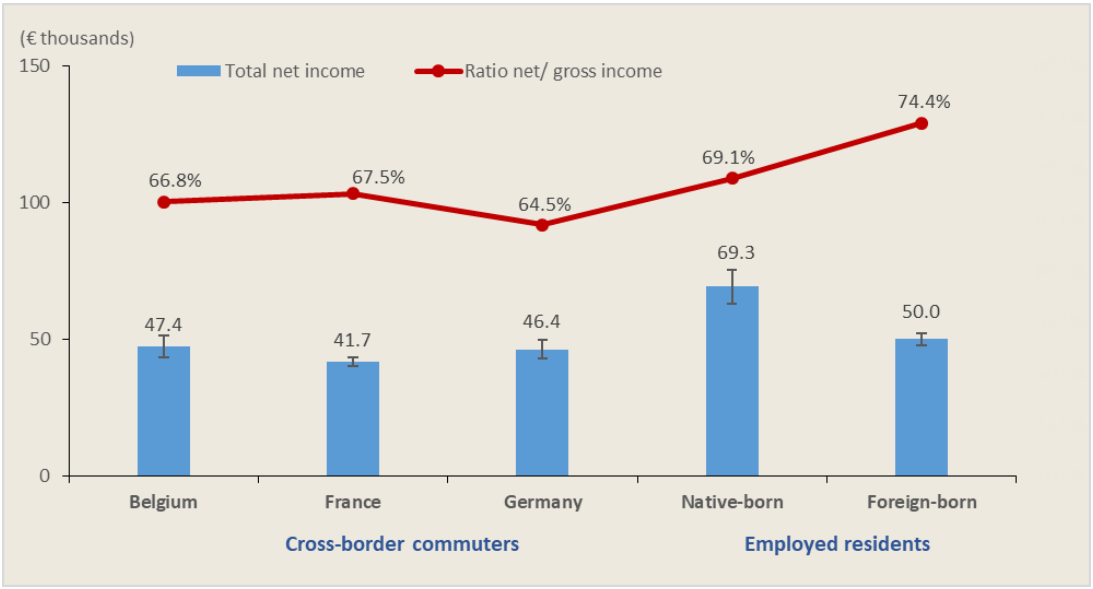
Figure 14: Median gross income in 2017



Source: Own calculations based on XB-HFCS, LU-HFCS, wave 2018, and Eurosystem HFCS, wave III; data are multiply imputed and weighted.
*Note: Error bars indicate the 95% confidence interval. * The respective national median is calculated using national HFCS data for Luxembourg, Belgium, France or Germany for employed households only. For Belgium, France or Germany, the reference year of income is 2016, whereas it is 2017 for the LU- and XB-HFCS. Figures for Belgium, France or Germany are therefore inflation adjusted to 2017 levels using the respective national consumer price index.*

The XB-HFCS also provides information on household net income (Figure 15). Employed residents had relatively higher ratio of net to gross income compared to cross-border commuters, which reflects the lower rates of income tax and social security contributions in Luxembourg compared to the neighbouring countries.

Figure 15: Median net income in 2017



Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: Error bars indicate the 95% confidence interval.

Figure 16 presents how household gross income varies across gross income quintiles. Median gross income in the bottom quintile of each group was comparable. From the second lowest quintile, the gap between cross-border commuters and employed residents widens as we move along the gross income distribution. For both native-born and foreign-born employed residents, the median gross income in the top quintile is substantially larger than for cross-border commuters from Belgium, France or Germany. Regardless of the quintile considered, differences in the median gross income are small among cross-border commuters from different countries.

Figure 16: Median gross income in 2017, by gross income quintile

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.

Age and education had an important and positive impact on household gross income (Table 9). Overall, cross-border commuters aged 55 years or older earned €11,700 more than those aged 35 years or younger; the difference for employed residents was €30,900. In every age category, the median household gross income of cross-border commuters was significantly lower than that of employed residents. This income gap rises as we move along the age categories. Median gross income of employed residents increases across all four age groups, whereas this is not the case for cross-border commuters older than 35 years.

Cross-border commuters with high level of education reported over €23,500 higher median household gross income than those with low level of education. This effect was even more evident among employed residents. Among them, median gross income was over €56,500 higher for households with high level of education than for those with low level of education. The median gross income of cross-border commuters and employed residents differed significantly for those with middle or high level of education.

Table 9: Median gross income in 2017, by household characteristic

Characteristic	Cross-border commuters	Employed residents	
(€ thousands)			
Age Group			
Younger than 35	57.0	66.2	*
	(2.4)	(4.1)	
35-44	71.4	80.5	
	(1.8)	(4.4)	*
45-54	70.0	86.0	
	(1.3)	(5.1)	
55 or older	68.7	97.1	*
	(3.7)	(8.7)	
Level of Education			
High	79.2	111.6	*
	(1.7)	(5.1)	
Middle	56.5	69.5	*
	(1.8)	(4.2)	
Low	55.7	55.1	
	(4.0)	(2.5)	
Housing Status			
Owner-outright	70.0	92.6	*
	(1.0)	(5.8)	
Owner with mortgage	73.1	101.1	*
	(2.1)	(4.2)	
Renter or other	51.3	56.1	
	(2.8)	(2.5)	

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
*Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. * denotes that values reported in the two "Overall" columns are significantly different from each other at the 5% level of significance.*

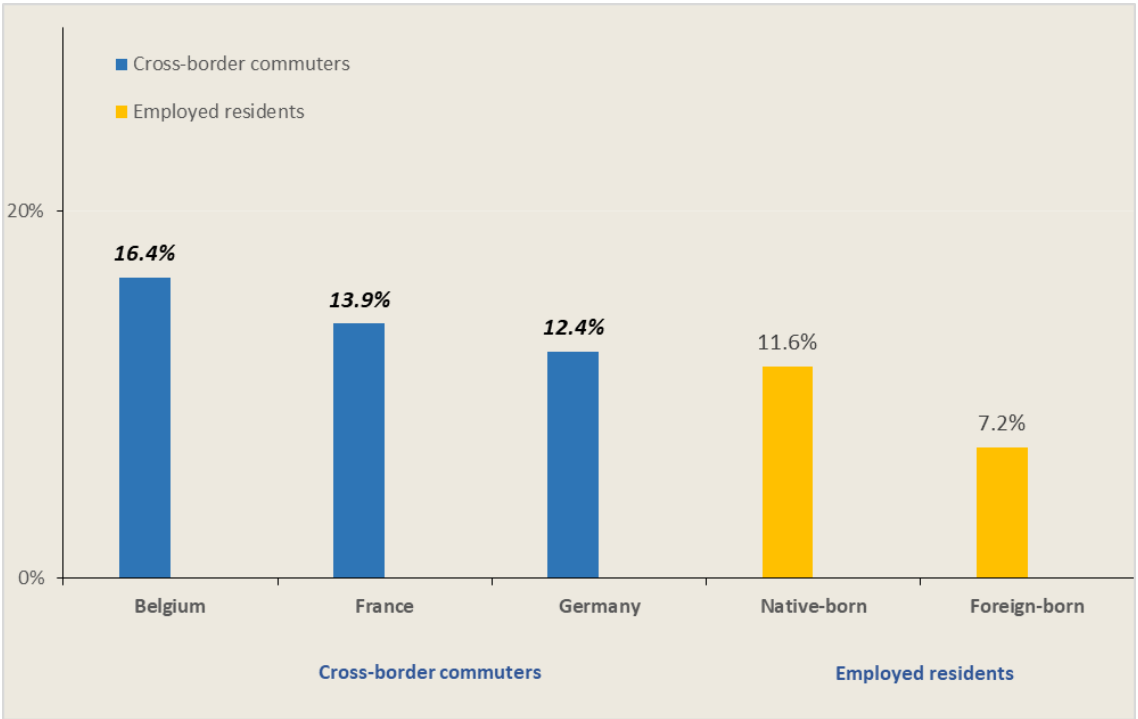
Table 9 also shows how housing tenure varies with household gross income. In general, renters earned less than homeowners did. Among cross-border commuters, the difference in median household gross income between outright owners and renters was €28,700. The

difference for employed residents was larger, amounting to €36,500. In addition, median household gross income differences between cross-border commuters and employed residents were statistically significant for both outright owners and owners with mortgages but not for renters.

Changes in gross income between 2013 and 2017

Median household gross income increased between 2013 and 2017 for those employed in Luxembourg regardless of their country of residence (Figure 17). With an increase of 16.4% or €10,400, cross-border commuters from Belgium saw the largest increase in relative terms. Cross-border commuters from France and Germany experienced an increase of 13.9% (€7,900) and 12.4% (€7,500), respectively. Compared to other subgroups, the income increase was more moderate at 7.2% (€4,500) for foreign-born residents.

Figure 17: Median gross income, change 2013-2017

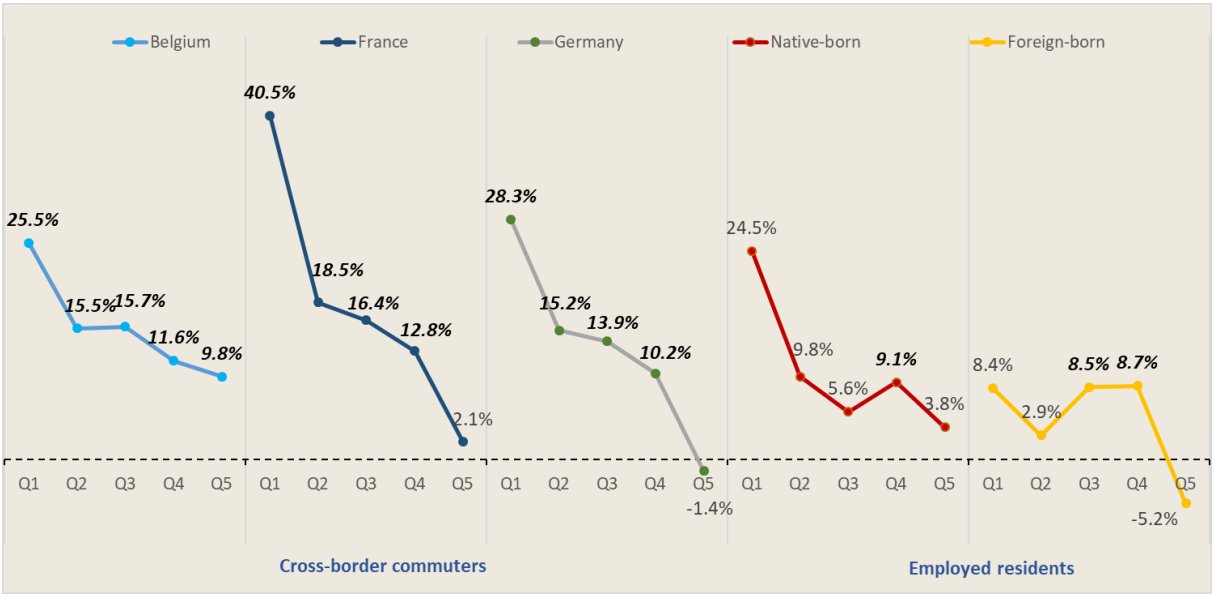


Source: Own calculations based on XB-HFCS and LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.
Note: Bold and Italic font denotes that the difference between two waves is statistically significant from 0 at the 5% level of significance.

Figure 18 shows the changes in median gross income between 2013 and 2017 for different quintiles. Household gross income in the lower four quintiles increased relatively more than

in top quintiles. Overall, for cross-border commuters, the change in the median household income is significant in each income quintile but the top quintile of those from France and Germany. This suggests a reduction in household gross income inequality for cross-border commuters. Median gross income of foreign-born employed residents in the highest quintile fell by 5.2% or €10,100 between 2013 and 2017. For native-born employed residents, it rose for all gross income quintiles, but significantly only for the second highest quintile.

Figure 18: Median gross income, change 2013-2017



Source: Own calculations based on XB-HFCS and LU-HFCS, waves 2014 and 2018; data are multiply imputed and weighted.
Note: Bold and Italic font denotes that the difference between two waves is statistically significant from 0 at the 5% level of significance.

7. Special feature: Residential mobility and the return to the country of birth

Luxembourg's high salaries attract many households from neighbouring countries to work and move to Luxembourg. However, increasing housing prices and limited supply of housing also trigger "reverse" cross-border residential mobility. This refers to the phenomenon that some Luxembourg residents decide to become cross-border commuters, i.e., move their main residence across the border to the neighbouring regions of Belgium, France or Germany while

keeping their main employment in Luxembourg. Hence, they could differ from the usual cross-border commuters, who commute from their home region.[12]

Several studies analysed this phenomenon in the past. Pigeron-Piroth (2008) quantifies the cross-border residential mobility with help of administrative data from the IGSS. Over 2,000 Luxembourg residents, representing about 2% of the Luxembourg population, left Luxembourg between 1995 and 2005 and settled across the border. Among those who left, people with Luxembourg nationality constituted one-third; 41% of them relocated to Germany, 35% to France and 24% to Belgium. However compared to the total number of Luxembourg nationals in employment between 1995 and 2005, only 1% left the country.

In contrast, 15% of French, 14% of Belgian and 11% of German nationals living in Luxembourg relocated across the border during the same period. Concerning the destination, the own country is the most popular for people to move to; 55% of those moving to Belgium were Belgian nationals, 47% of those relocating to France were French nationals. Only for Germany, the largest group leaving Luxembourg were Luxembourg nationals (53%). Germans followed in second place with 32% (Pigeron-Piroth, 2008, p. 62-63).

Carpentier (2010) surveys Luxembourg employees having relocated between 2001 and 2007 and studies their relocation decisions and motives. The most often cited reasons for moving across border were lower housing costs (85%), lower living costs (55%) and the desire to become a homeowner (54%). In 2017, cross-border commuters with Luxembourg nationality accounted for 4% of all cross-border commuters to Luxembourg (IAB/OIE, 2019). This share is relatively small still, however, it has increased six fold since 1999. Of these, 37% live across the border in Rheinland-Pfalz or Saarland, 37% in Wallonie and 22% in Lorraine (IAB/OIE, 2019).

According to the 2014 XB-HFCS, the most frequently cited reason (90%) of cross-border commuters to acquire their home in Luxembourg neighbouring regions was that real estate property is too expensive in Luxembourg. Other major reasons relate to family and cultural ties (Claveres et al., 2020). It is therefore not surprising that, in 2014, between 84% and 91% of

[12] This phenomenon can also be observed at the border between France and Saarland. In 2017, "atypical" cross-border commuters, i.e. those with German nationality, accounted for 28.5% of all cross-border commuters from France to Saarland (IAB/OIE, 2019).)

all cross-border commuters in the Greater Region lived in the country where they were born (Mathä, Pulina and Ziegelmeyer, 2018, Table 6).[13]

In order to understand how widespread this cross-border residential mobility phenomenon is and what the driving reasons are, the 2018 XB-HFCS asked respondents whether they once lived in Luxembourg. In this section, we report the household characteristics and financial situation of those households that had lived in Luxembourg before and moved across the border.

Table 10: Cross-border commuters who once lived in Luxembourg

Characteristics	Percent
Share relative to overall cross-border commuters	9.6
Country of birth	
Luxembourg	22.2
Belgium	25.4
France	29.8
Germany	11.2
Other countries	11.3

Source: Own calculations based on XB-HFCS, wave 2018; data are multiply imputed and weighted.

Almost 10% of cross-border commuters reported that they once lived in Luxembourg. Of those, 22.2% were born in Luxembourg and 29.8% were born in France. Cross-border commuters born in Belgium and Germany represented 25.4% and 11.2%, respectively (Table 10). When relocating across the border, households predominantly returned to their country of birth (Table 11). Of the households that relocated from Luxembourg to Belgium, 66.6% were born in Belgium. The corresponding share for those relocating to France was 65%. Germany was the most popular country of relocation for those born in Luxembourg. Among those that relocated to Germany, more than half of them were born in Luxembourg and nearly 40% were born in Germany.

[13] We obtain comparable results if the analysis is restricted to cross-border workers who acquired their HMR only after they started working in Luxembourg.

Table 11: Residential mobility and the country of birth

Cross-border commuters who once lived in Luxembourg			
	Country of residence		
	Belgium	France	Germany
Country of birth (percent)			
Belgium	66.6	7.7	1.2
France	7.0	65.0	0.5
Germany	3.8	0.3	39.4
Luxembourg	12.7	10.2	55.0
Other countries	9.9	16.8	4.0

Source: Own calculations based on XB-HFCS, wave 2018; data are multiply imputed and weighted.

Dividing households that once lived in Luxembourg into three different groups based on their country of birth reveals that the majority of households returned to the country of birth (59.1%). The second group represents households that were born in Luxembourg and relocated to the neighbouring regions in Belgium, France or Germany (22.2%). The remaining households not in the two groups above are grouped into the category "Other countries" (18.7%).

Table 12 shows the reasons why households lived outside Luxembourg in 2018. Mainly housing prices but also living cost in Luxembourg were two important factors that drove households to live outside Luxembourg. For instance, more than 90% of those that once lived in Luxembourg considered high housing prices in Luxembourg as an important reason for living outside Luxembourg. Furthermore, more than one-half of those born in Luxembourg and living across the border referred to high living cost in Luxembourg.

Interestingly, other reasons, such as "Education for children" or "Attachment to the region or country of residence", are not significantly more important for households that returned to their country of birth than for those born in Luxembourg or those in the category "Other countries".

Table 12: Reasons for living outside Luxembourg

Cross-border commuters who once lived in Luxembourg			
Reason (percent)	Born in Luxembourg	Moved to country of birth	Other countries
Housing prices	92.4	92.7	91.0
Living cost excluding housing prices	56.7	42.7	44.3
Education for children	17.2	19.6	23.1
Attachment to region or country of residence	7.5	10.3	9.2

Source: Own calculations based on XB-HFCS, wave 2018; data are multiply imputed and weighted.

General characteristics of households that once lived in Luxembourg are displayed in Table 13. Cross-border commuters who returned to their country of birth were slightly older than employed residents (46.3 years vs. 43.8 years). Cross-border commuters born in Luxembourg were younger (42.1 years vs. 44.1 years) and less likely to be single compared to employed residents.

In 2018, the homeownership of cross-border commuters born in Luxembourg was 8 percentage points lower than that of native-born employed residents (77% vs. 85%). However, for those who returned to their country of birth, the homeownership share was similar to that of native-born employed residents (both 85%) and considerably higher than that of foreign-born employed residents (85% vs. 52%).

Table 13: Residential mobility, selected household characteristics

	Cross-border commuters who once lived in Luxembourg			Employed residents	
Characteristic	Born in Luxembourg	Moved to country of birth	Other countries	Native-born	Foreign -born
Share (%)	22.2	59.1	18.7	41.8	58.2
Age (in years)	42.1	46.3	44.0	44.1	43.6
	(1.1)	(0.4)	(1.2)	(0.6)	(0.4)
Single (%)	27.3	22.4	12.3	37.4	27.3
	(2.8)	(3.8)	(5.3)	(2.5)	(2.0)
Housing status (%)					
Owner-outright	35.6	54.6	43.3	40.4	21.5
	(6.7)	(3.4)	(9.6)	(2.4)	(1.9)
Owner with mortgage	41.4	30.4	30.8	44.7	30.2
	(8.6)	(2.3)	(7.2)	(2.4)	(2.0)
Renter or other	23.0	15.0	25.9	15.0	48.2
	(4.7)	(3.0)	(8.6)	(1.9)	(2.3)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

As shown in Table 14, cross-border commuters who once lived in Luxembourg had a lower median household gross income than employed residents. This may reflect the fact that households with high income bought their residential property in Luxembourg and those who cannot afford this tended to relocate in the surrounding regions of Luxembourg. This seems to be particularly true for those born in Luxembourg.

The median household gross income for cross-border commuters born in Luxembourg was €67,800, which was €32,500 lower than for native-born employed residents. The difference in household gross income between cross-border commuters who moved to their country of birth and foreign-born employed residents was round €6,800 (€74,000 vs. €67,200), but this difference is not statistically significant. Besides, if we consider the cross-border commuters

who have never lived in Luxembourg[14], their median gross income was also lower than that of those who returned to their country of birth.

Table 14 also presents the results for net wealth. Not surprisingly, the median household net wealth of cross-border commuters who once lived in Luxembourg was lower than that of native-born employed residents. The latter reported a value of net wealth almost three times as high as that reported by cross-border commuters born in Luxembourg (€660,200 vs. €224,200).

The median household net wealth of cross-border commuters having returned to the country of birth was €326,600, which was €75,000 higher than that of foreign-born employed residents. This gap is however statistically not significant. The median net wealth for cross-border commuters that have never lived in Luxembourg was about €230,000, which is €96,600 lower than that for those who have returned to their country of birth (figures not shown in table).

Table 14: Median of gross income and net wealth

(€ thousands)	Cross-border commuters who once lived in Luxembourg			Employed residents	
	Born in Luxembourg	Moved to country of birth	Other countries	Native-born	Foreign -born
Gross income	67.8	74.0	76.1	100.3	67.2
	(7.6)	(5.8)	(14.6)	(5.1)	(3.5)
Net wealth	224.2	326.6	172.7	660.2	251.6
	(43.9)	(24.8)	(37.4)	(31.5)	(38.1)

Source: Own calculations based on XB-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

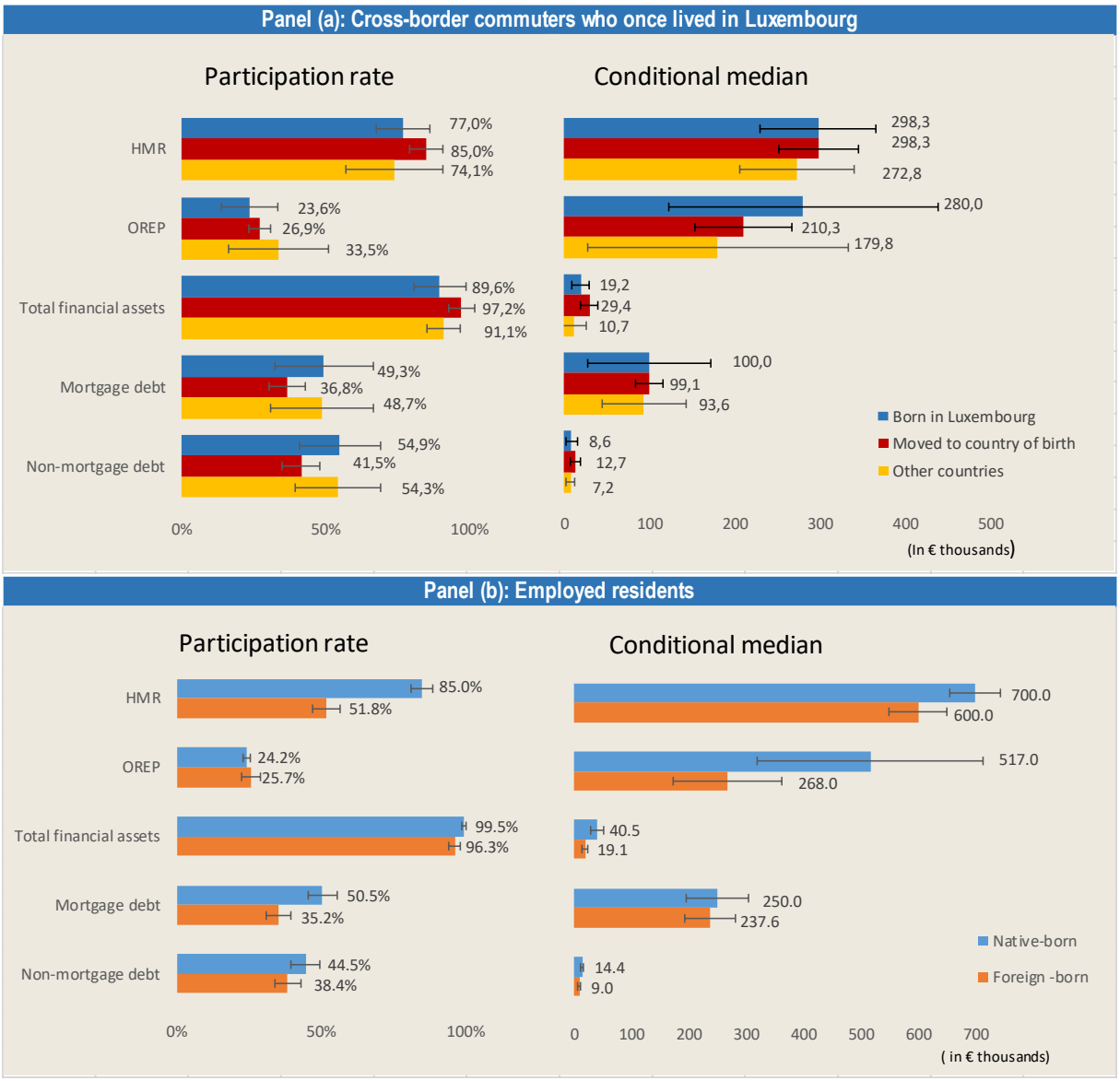
Figure 19 shows the participation rates and conditional medians of asset and debt holdings for those cross-border commuters who once lived in Luxembourg as well as for employed residents. Among homeowners, both cross-border commuters born in Luxembourg and households that returned to their country of birth reported a median value of €298,300 for their HMR (Panel (a) in Figure 3), which was significantly lower than that of native-born (€700,000) or foreign-born employed residents (€600,000) (Panel (b) in Figure 3). This is mainly due to high housing prices in Luxembourg.

The ownership of OREP of cross-border commuters that relocated from Luxembourg to its neighbouring regions did not differ much compared to that of employed residents. Their

[14] According to the third wave of XB-HFCS, in 2018, the median gross income was €67,200 for cross-border commuting households who have never lived in Luxembourg.

conditional median value of OREP was however significantly lower than that of native-born employed residents but similar compared to foreign-born households.

Figure 19: Selected wealth components



Source: Own calculations based on XB-HFCS, wave 2018; data are multiply imputed and weighted.
Note: Error bars indicate the 95% confidence interval.

Among cross-border commuters having returned to their country of birth, the share of those with financial assets was close to that of foreign-born employed residents while the conditional median of financial assets for the former was higher (€29,400 € vs. €19,100). Cross-border commuters born in Luxembourg had fewer financial assets than native-born employed residents in terms of both participation and median amount.

About one half of cross-border commuters born in Luxembourg and of native-born employed residents had mortgage debt, while just over a third of cross-border commuters who returned to their country of birth and of foreign-born employed residents had such debt (36.2% and 35.2%). For those with mortgage debt, the median outstanding amount of employed residents was more than twice as much that of cross-border commuters that once lived in Luxembourg.

Overall, households that once lived in Luxembourg had comparable gross income and net wealth to those of foreign-born employed residents, but had less income and wealth than native-born employed residents. This is particularly the case if we consider only those born in Luxembourg. Among these households, those with relatively higher income and wealth stayed in Luxembourg, while those with lower income and wealth moved to Luxembourg's neighbouring regions. Households that returned to their country of birth were more likely to own their residence than foreign-born employed residents. Due to high housing prices in Luxembourg, the gross wealth of foreign-born employed residents was higher than that of those having relocated to their country of birth. However, the former households were also more indebted. Therefore, the net wealth difference between them was not statistically significant.

8. Survey preparation and fieldwork

This section describes the stratified random sampling, explains the reasons for the selected survey mode, outlines the content of the questionnaire and describes the development of the field phase.

8.1. Sampling

The target population of the XB-HFCS is the entire population of households residing in Luxembourg neighbouring countries within the "Grande Région", with at least one household member working in Luxembourg.[15] We use an indirect sampling technique since registers with information on households of cross-border commuters do not exist. For the third wave of XB-HFCS (wave 2018), the sampling frame contains all cross-border commuters at the end

[15] A household is defined as people living together and sharing their financial resources and/or expenses.

at 31 December 2016, and it is based on the social security register of Luxembourg (Inspection Générale de la Sécurité Sociale, IGSS). Thus, the target unit (the household) can contain more than one sampling unit since more than one cross-border commuter can belong to the same household. The weighting procedure described below accounts for the fact that the link between the sampling and the target population can be either one-to-one or many-to-one.

A stratified random sampling procedure was used to draw 80% of the gross sample (Table 15). The sampling frame of 167,554 fiscal households was divided into 12 strata based on the combination of three auxiliary variables: country of residence, gender and individual monthly gross income, i.e. labour and self-employed income. Cross-border commuters with gross income higher than the 9th decile of gross income were randomly oversampled at a rate of 20%. Since certain asset categories are only held by wealthier households, oversampling is necessary to increase the number of households owning uncommon asset categories in the sample. This increases the reliability of the estimates for these categories. The gross sample consisted of 15,000 cross-border commuters, and the objective was to collect information from at least 1,500 respondents.

Table 15: Sample design by stratum and distribution of the reference population in 2018

Strata	Country	Gender	Income	Population (households)	in %	Gross sample (households)
1	Belgium	Male	≤ 9th decile	23,209	13.9	1,662
2			> 9th decile	4,460	2.7	1,118
3		Female	≤ 9th decile	12,349	7.4	884
4			> 9th decile	1,199	0.7	301
5	Germany	Male	≤ 9th decile	23,399	14.0	1,676
6			> 9th decile	3,683	2.2	923
7		Female	≤ 9th decile	12,901	7.7	924
8			> 9th decile	1,008	0.6	253
9	France	Male	≤ 9th decile	47,952	28.6	3,435
10			> 9th decile	4,696	2.8	1,177
11		Female	≤ 9th decile	30,989	18.5	2,219
12			> 9th decile	1,709	1.0	428
Overall				**167,554**	**100**	**15,000**

Source: Bienvenue et al. (2020).

8.2. Survey mode and questionnaire

The third wave of the XB-HFCS (wave 2018) was also conducted as a computer-assisted web interview (CAWI), as was the case for the second wave in 2014. The questionnaire contains the

following nine main sections. To ensure comparability, they correspond closely to those in the LU-HFCS:

Section 1: Socio-demographic characteristics of the cross-border commuter worker
Section 2: Professional characteristics of the cross-border commuter worker
Section 3: Real assets and their financing
Section 4: Other liabilities
Section 5: Private businesses and financial assets
Section 6: Pensions and insurance policies
Section 7: Income
Section 8: Intergenerational transfers and gifts
Section 9: Consumption

The online questionnaire was available in two languages: French and German. Households in Belgium and France received a cover letter in French and households in Germany one in German. The online program allowed switching from one language to the other while answering the questionnaire.

Although the online survey asked for a precise answer to each question, options such as "Don't know" or "No answer" were available for each question. When questions asked for a value in euro, then the options "Don't know" and "No answer" were followed by an optional question asking to provide upper and lower bounds or to select a specific range of values from various intervals shown on the screen. The total number of questions in 2018 was 25% higher (36 questions were deleted and 67 new questions were added) than in 2014, therefore, the average time of completing the questionnaire rose from 34 minutes in 2014 to 53 minutes in 2018.

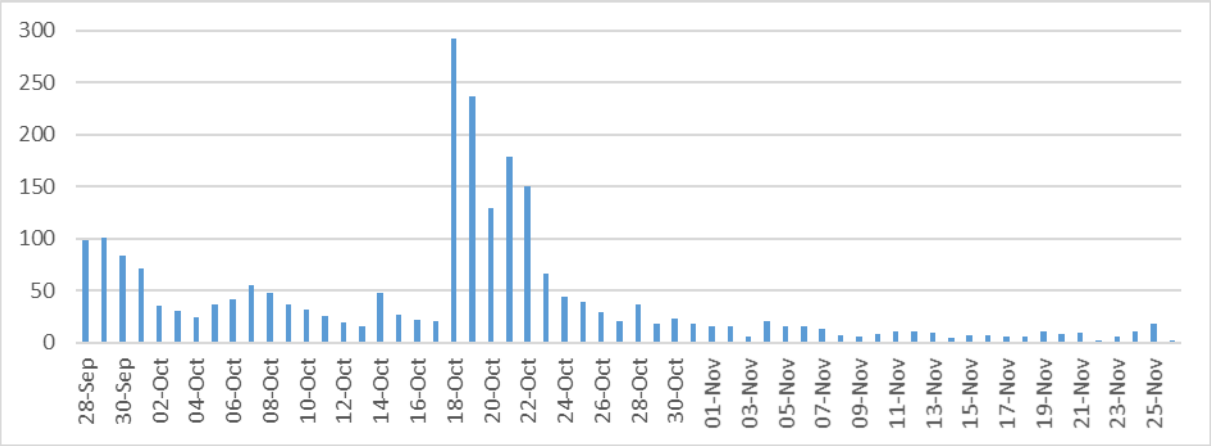
8.3. Fieldwork

The data collection started at the end of September 2018 and ended in November 2018. BCL and LISER announced the start of the fieldwork with a joint press release on 14 September 2018. Cover letters and leaflets were mailed to sampled cross-border commuters. The leaflet described the survey, presented some relevant results from the previous wave in 2014, explained the use of the data and the confidentiality aspects, stressed the importance to participate and provided the contact details of BCL and LISER.

Households were asked to connect to a secured website, to provide the indicated person-specific login name and password, and then to follow the instructions of the online questionnaire. Paper questionnaires could be downloaded online or received by mail if requested. A prize draw was used to encourage households to participate. Participating households could win an iPad or one of 11 numismatic products from the BCL.

The survey was first online on 28 September 2018. The closing date was the 26 November 2018. The Figure 20 presents the number of completed surveys across the period of fieldwork. In total, 14,611 eligible households were contacted by mail in 2018 compared to 14,769 in 2014. The eligible households excluded cross-border commuters who were identified as "out of scope", either because they had moved outside the "Grande Région" or because their addresses from the IGSS register were invalid. After the first mail out, on 16 October 2018, a reminder was sent to the sampled households who had not provided any response (acceptance or refusal) to the survey.

Figure 20: Number of completed interviews in 2018



Source: Bienvenue et al. (2020)

In total, 2,390 online interviews were completed in the 2018 XB-HFCS wave. 752 households started answering the questionnaire but did not complete it, either because they paused the survey and did not return to it or because they reached the timeout. In addition to the households who completed interviews, we also included 78 households who had at least reached the pension section. Though those households did complete the entire questionnaire, they provided a sufficiently high quality of response to the questions they answered.

Finally, we dropped 28 households, despite having completed the questionnaire, as their item non-response rate exceeded 35% and the answers did not contain any reliable information on income and the household main residence (HMR).

As a result, the final net sample contains 2,440 households (2390+78-28), which is roughly comparable to the number of households included in wave 2014. The adjusted response rate, defined as the final net sample size divided by the gross sample adjusted for the "out of scope" cross-border commuters (eligible units), increased slightly from 16.3% in 2014 to 16.7% in 2018.

Table 16: Sample and fieldwork

	Wave 2014	Wave 2018
Sample frame	Luxembourg Social Security Register	
Sampling unit	Cross-border commuting fiscal households	
Target population	Households with at least one cross-border commuting worker in the "Grande Région" as of	
	… 31 December 2013	… 31 December 2017
Gross sample	15,000 XB commuting households	15,000 XB commuting households
	10.9% of target population	8.9% of target population
Oversampling of wealthy	Yes: 20%	Yes: 20%
Eligible units*	14,769 households	14,611 households
Sample size	2,414 households	2,440 households
	(planned 1,500)	(planned 1,500)
Number of strata	60 (country, gender, income)	12 (country, gender, income)
Interview mode	Computer assisted web-based interview	Computer assisted web-based interview
Field phase	06/2014 – 10/2014	09/2018 - 11/2018
Adjusted response rate	16.3%	16.7%

Source: Own calculations based on XB-HFCS, waves 2014 and 2018; Bienvenue et al. (2018, 2020).
Note: Eligible units excludes households who already moved outside the "Grand-Région" at the time when letters were sent out. The number of Strata was reduced from 60 in 2014 to 12 in 2018. There was no benefit of 10 different income classes in 2014, as the weighting process required to aggregate ten different income classes into two.

9. Data treatment

This section discusses the data treatment, which consists of four separate parts: analysis of unit non-response, editing, imputation and weighting.

9.1. Unit non-response

Response rates[16] varied considerably across strata and stratum variables (Table 4). The lowest response rate was around 12.5%; it relates to male cross-border commuters from France with a monthly gross income lower than the 9th decile of the gross income distribution. The highest response rate was 28.8% and obtained for male cross-border commuters from Belgium with a gross income higher than the 9th decile of the gross income distribution. Cross-border commuters from Belgium had the highest response rate (19.2%) and those from France had the lowest (15.0%). In addition, the response rates in 2018 were slightly higher for male than for female cross-border commuters (17.3% versus 14.3%). The response rate for commuters with high income (above the 9th decile) was 10.6 percentage points higher than that for commuters with lower income levels (below the 9th decile).

Table 17: Response rate by stratum

Wave 2014		Wave 2018	
Criteria	Response rate (%)	Criteria	Response rate (%)
Country of residence		**Country of residence**	
France	14,2	France	15,0
Belgium	17,6	Belgium	19,2
Germany	18,3	Germany	15,7
Gender		**Gender**	
Male	17,2	Male	17,3
Female	14,0	Female	14,3
Income		**Income**	
less than 1000	10,5	≤ 9th decile	13,3
1000 - 1999	9,2	> 9th decile	23,9
2000 - 2499	10,1		
2500 - 2999	10,7		
3000 - 3499	13,6		
3500 - 3999	15,4		
4000 - 4999	17,3		
5000 - 6450	21,7		
6451 -7999	21,6		
8000 and more	24,6		

Source: Bienvenue et al. (2018, 2020).

[16] The response rate is defined as the final net sample size divided by the gross sample, which is not adjusted for non-eligible units.

9.2. Editing

The software program contained several automatic checks, which mainly focused on checking continuous variables. These include "informative bounds", "consistency checks", and "critical checks". Based on answers by other respondents in the sample or experience, "informative bounds" alerted respondents that the answer provided may be incorrect. Before moving to the subsequent question, a pop-up screen asked respondents to either confirm or correct their response. For example, if a cross-border commuter stated an average working time per week of 75 hours, then the program subsequently asked: "Are you sure that you work more than 60 hours a week on average?". "Informative bounds" try to rule out typos but do not enforce a specific answer. Similarly, "consistency checks" do not enforce a correction but inform respondents when their answers are inconsistent with responses previously provided. For example, if the date of birth plus 15 years exceeded the starting year in the current job, a pop-up screen showed the following message: "Your starting year in the current job seems to be too early compared to your year of birth." and asked to confirm or to correct the provided value. "Critical checks", on the contrary, enforce the provision of an answer within a specific range. The number of years living in the country of residence, for example, is not allowed to be larger than the age of the respondent.

Although automatic checks were carefully implemented for various questions, they do not guarantee the consistency and reliability of all answers by respondents. For this reason, we additionally implemented a manual editing process that checked the consistency of answers in relation to continuous variables. As a result, 442 observations (0.1% relative to all answers) were set to missing and 116 observations (0.02%) were set to a modified value. As respondents could answer some questions in ranges, those ranges were also validated and if needed set to missing or a modified value.

9.3. Imputation

Missing values occur when respondents select options such as "Don't know" or "No answer", which were available for almost every question. In line with data treatment in the LU-HFCS, missing values in the XB-HFCS were imputed by using the ECB Multiple Imputation Routine "EMIR 2.2" (Biancotti et al., 2014). Girshina, Mathä and Ziegelmeyer (2017) provide a detailed description of this process (see section 2.6.3.).

Across all variables, the structure of the answers provided to the survey resulted in 46.7% non-applicable cases, which is the share of responses correctly skipped due to routing (Table 18). The answers of 52.3% of respondents were recorded as collected (applicable cases), while 1.0% were missing because the answers for the mother variable was not collected (undetermined cases). Out of all applicable cases, around 10% (excluding undetermined cases) were missing values that reflect either "Don't know" or "No answer". Out of those missing, 22% were subsequently provided in brackets. 0.38% were missing, either due to pausing the survey or due to survey timeout.

Table 18: Missing and editing rates

Description	Wave 2014		Wave 2018	
	In %	Values	In %	Values
Applicable in % of total	44,6	334.721	52,3	505.374
Inapplicable in % of total	53,0	397.984	46,7	450.898
Undetermined in % of total	2,4	18.059	1,0	9.967
Min missings in % of applicable	8,8	29.603	10,3	52.014
Max missings in % of applicable	14,2	47.662	12,3	61.981
Bracket values in % of min missing values	23,1	6.828	22,0	11.461
Bracket values in % of max missing values	14,3	6.828	18,5	11.461
Editing: corrected values in % of applicable	0,2	705	0,0	116
Editing: set to missing in % of applicable	0,2	805	0,1	442
Editing: total in % of applicable	0,5	1.510	0,1	558

Source Own calculations based on XB-HFCS, waves 2014 and 2018; data are non-imputed and unweighted.
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 CAWI failure; 'Min missings' = 'Minimum number of values to be imputed' = Number of "Don't know", "No answer", "Collected from brackets" and "Collected value deleted"; 'Max missings' = 'Maximum number of values to be imputed' = Adds to the minimum number of values to be imputed "Not collected due to missing answer to a previous question" and "Not collected due to a CAWI or interviewer failure"; 'Edited' = Number of "Modified values" and "Collected value deleted".

9.4. Weighting

The weighting process takes into account i) the construction of design weights based on the selection probability, ii) the non-contact /non-response adjustment and iii) the adjustment of the weights to external data sources. The XB-HFCS is the representative of 151,961 households and 175,196 cross-border commuters and 433,950 household members residing outside Luxembourg and within the "Grande Région" where at least one household member worked in Luxembourg at the time of the data collection. All statistics reported above, such as personal characteristics of cross-border commuters, income, wealth and consumption, are weighted at

the household level. For some estimates, this report also provides standard errors or confidence bands, which indicate the precision of the estimates. The confidence or standard errors we attach to a specific value uses 1,000 replicate weights and depends, among other factors, on the sampling variability of the outcome and the sample size.

10. Summary of main findings

The Banque centrale du Luxembourg (BCL), in cooperation with the Luxembourg Institute of Socio-Economic Research (LISER), regularly conducts the Cross-border Household Finance and Consumption Survey (XB-HFCS) to better understand the financial and economic situation of cross-border commuters, i.e., those who work in Luxembourg but live abroad in neighbouring regions. This report provides a detailed account of the methodology and main results of the 2018 wave, and compares them to the previous wave conducted in 2014.

Overall, in 2018, most cross-border commuters resided in their country of birth. They were likely to live with a partner and generally attained a high level of education. More than three out of four owned their residence. Most cross-border commuters were employed with a permanent contract. The car was their main means of transport to work and the average commute was 53 minutes, which is substantially longer than that of Luxembourg residents (25 minutes).

Median household net wealth among cross-border commuters was €232,700 in 2018, a 17% increase since 2014 in nominal terms. By country of residence, cross-border commuters from Germany saw their median household net wealth increase the most between 2014 and 2018. Regardless of the country of residence, the median household net wealth of cross-border commuters was significantly higher than that of households employed in their respective country of residence (i.e., Belgium, France or Germany). This mainly reflects a larger share of homeowners among cross-border commuters with higher median home values. Between 2014 and 2018, median household net wealth of cross-border commuters increased in every quintile of their net wealth distribution, whether they were from Belgium, France or Germany. Within-group inequality in the net wealth distribution also shrank for cross-border commuters from all three neighbouring countries. In 2018, the median net wealth of households in the first two quintiles of the employed residents' and cross-border commuters' distributions was comparable. Differences become more pronounced as one moves from the third quintile to the

top quintile of the household net wealth distribution. Household net wealth held by the richest 20% of employed residents was about 2.6 times higher than net wealth held by the top 20% of cross-border commuters.

Despite the increase in net wealth between 2014 and 2018, the composition of household assets and liabilities hardly changed. Real assets remained the most important component for all households regardless of the country of residence, while mortgage debt accounted for most of total debt. Among all cross-border commuters, in 2018, cross-border commuters from Belgium remained those with the highest median value of real assets, while those from Germany experienced the largest increase in real assets since 2014. This result is consistent with the observed real estate price increases in Rheinland-Pfalz and Saarland during this period as suggested by several real estate brokers.[17]

Regarding debt, between 2014 and 2018, the share of cross-border commuters with an outstanding HMR mortgage declined for those from Belgium, increased for those from Germany and was roughly stable for those from France. The outstanding median amount of mortgage debt was stable for cross-border commuters from Belgium, while it slightly increased for those from France. It declined for those from Germany, although more households had an HMR mortgage than in 2014.

Median household gross income grew between 2014 and 2018 for all cross-border commuters, but the extent varied by country of residence. It increased most for cross-border commuters from Belgium (16.4%), followed by those from France (13.9%) and those from Germany (12.4%). In all three countries, cross-border commuters saw larger increases in their median household gross income than employed residents living the corresponding country.

In 2018, nearly 10% of cross-border commuter households reported that they had previously lived in Luxembourg. Of these, 22.2% were born in Luxembourg, 29.8% in France, 25.4% in Belgium and 11.2% in Germany. The main reasons for moving out of Luxembourg were the high level of house prices but also living costs in Luxembourg. In 2018, native-born employed residents reported higher median household gross income and net wealth than those that had moved across the border. Cross-border commuters that returned to their country of birth

[17] See for example https://www.drklein.de/vergleich-immobilienpreise-bundeslaender.html

(Belgium, France or Germany) reported a median household gross income and net wealth that were not significantly different from those of employed residents born abroad.

11. References

Andries, N. and M. Ziegelmeyer (2020): Demandes de prêt hypothécaire et tendances de long terme sur le marché immobilier résidentiel, *BCL Bulletin*, 2020, ***1***: 96-102.

BCL (2012): Revenu et richesse des ménages frontaliers, *BCL Bulletin*, 2012, ***2***: 82-85.

BCL (2017): Enquête sur le comportement financier et de consommation des ménages frontaliers - Premiers résultats de la deuxième vague, *BCL Bulletin*, 2017, ***1***: 33-36.

BCL (2018): Le rôle des biens immobiliers autres que la résidence principale pour les résidents luxembourgeois, *BCL Bulletin*, 2018, ***3***: 67-72.

Biancotti, C., J. Honkkila and P. Lamarche (2014): "€MIR - User guide", Version 2.2, unpublished manuscript, October 2014.

Bienvenue, J.-Y., M. Di Blasi, E. Guastalli, B. Lejealle (2018): Luxembourg Cross-border Household Finance and Consumption survey (XB-HFCS) 2014 – Final Report, April 2018: LISER.

Bienvenue, J.-Y., B. Boehm, S. Breulheid, M. Di Blasi, E. Guastalli, M. Guadarrama, T. Kruten, C. Lellinger, M. Leman, C. Martins, M.-J. Munchen, N. Plavsic, L. Vanni (2020): Cross-border Household Finance and Consumption Survey – Luxembourg. Final Report. February 2020: LISER.

Carpentier, S. (ed.) (2010): *Die grenzüberschreitende Wohnmobilität zwischen Luxemburg und seinen Nachbarregionen*, Schriftenreihe Forum Europa, No. 6, (Luxemburg: Editions Saint-Paul /Forum Europa).

Chen, Y., T.Y. Mathä, G. Pulina, B. Schuster and M. Ziegelmeyer (2020): The Luxembourg Household Finance and Consumption Survey: Results from the third wave, BCL Working Paper 142.

Claveres, G., T.Y. Mathä, G. Pulina, J. Stráský, N. Woloszko and M. Ziegelmeyer (2020): Housing and inequality: The case of Luxembourg and its cross-border workers, OECD Economics Department Working Papers 1608, OECD Publishing Paris.

Comité Economique et Social (2020): Travail transfrontalier: Historique, présent et prévisions, Avis, (Luxembourg: CES).

Genevois, A.-S., and M. Zanardelli (2008): Les dépenses des salariés frontaliers au Luxembourg en 2007, STATEC Bulletin 2008-1, (Luxembourg: STATEC).

Gerber, P., M. Thériault, C. Enaux and S. Carpentier-Postel (2018): Modelling impacts of beliefs and attitudes on mode choices: Lessons from a survey of Luxembourg cross-border commuters, *Transportation Research Procedia*, ***32***: 513–523.

Girshina, A., T.Y. Mathä and M. Ziegelmeyer (2017): The Luxembourg Household Finance and Consumption Survey: Results from the 2nd wave. BCL WP 106.

Girshina, A., T.Y. Mathä, M. Ziegelmeyer (2019): Peer effects in stock market participation: Evidence from immigration, BCL WP 137 and ECB WP 2340.

HFCN (2013): The Eurosystem Household Finance and Consumption Survey – Results from the first wave, ECB Statistics Paper 2, (Frankfurt: European Central Bank).

HFCN (2020): The Household Finance and Consumption Survey – Results from the 2017 wave, ECB Statistics Paper 36, (Frankfurt: European Central Bank).

Interregionale Arbeitsbeobachtungsstelle / Observatoire Interrégional du marché de l'emploi (2019): Die Arbeitsmarktsituation in der Großregion: Grenzgängermobilität, 11. Bericht der Interregionalen Arbeitsbeobachtungsstelle an den 16. Gipfel der Exekutiven der Großregion, Saarbrücken: IBA).

Lindner, P., T.Y. Mathä, G. Pulina and M. Ziegelmeyer (2020): Borrowing constraints, own labour and homeownership: Does it pay to paint your own walls? BCL Working Paper 148.

Mathä, T.Y., A. Porpiglia and M. Ziegelmeyer (2012): Income, Wealth and Consumption of Cross-border Commuters to Luxembourg. BCL Working Paper 78.

Mathä, T.Y., A. Porpiglia and M. Ziegelmeyer (2017a): Cross-border commuting and consuming: An empirical investigation, *Applied Economics*, ***49***(20): 2011-2026. [Version BCL WP 89].

Mathä, T.Y., A. Porpiglia and M. Ziegelmeyer (2017b): Household wealth in the euro area: The importance of intergenerational transfers, homeownership and house price dynamics, *Journal of Housing Economics*, ***35***: 1-12. [Version BCL WP 91].

Mathä, T.Y., A. Porpiglia and M. Ziegelmeyer (2018): Wealth differences across borders and the effect of real estate price dynamics: Evidence from two household surveys, *Journal of Income Distribution*, ***26***: 15-49. [Version BCL WP 90].

Mathä, T.Y., G. Pulina and M. Ziegelmeyer (2018): The Cross-border Household Finance and Consumption Survey: Results from the second wave, BCL Working Paper 119.

Pigeron-Piroth, I. (2008): La mobilité résidentielle des personnes travaillant au Luxembourg (1995-2005), STATEC Bulletin 2008-2, (Luxembourg: STATEC).

Pigeron-Piroth, I. (2009): Le secteur publique, Economie et Statistique, Working Papers du STATEC, no. 34.

Pigeron-Piroth, I. (2019): Le travail frontalier au Luxembourg: Eléments de contexte et de portrait statistique, in *Borders in Perspective - UniGr cahier thématique,* Les travailleurs au Luxembourg et en Suisse: Emploi, Quotidien et Perceptions, **2**: 13-25.

Schmitz, F., G. Drevon and P. Gerber (2012): Die Mobilität der in Luxemburg beschäftigten Grenzgänger: Dynamik und Perspektiven (auch auf französisch.: La mobilité des frontaliers du Luxembourg: dynamiques et perspectives), Sonderheft, Les Cahiers du CEPS/INSTEAD, Geographie und Entwicklung, (CEPS/INSTEAD).

STATEC (1995): La main d'œuvre frontalière au Luxembourg: Exploitation des fichiers de la sécurité sociale, Cahier Economiques no. 84, (Luxembourg: Statec).

STATEC (2019): Note de conjoncture: La situation économique au Luxembourg – Évolution récente et perspectives, no. 1, (Luxembourg: STATEC).

Statistisches Landesamt Rheinland-Pfalz (2018): *Kreisfreie Städte und Landkreise in Rheinland-Pfalz – Ein Vergleich in Zahlen*, Bad Ems.

Zanardelli, M. (2005): La dépense des frontaliers sur le territoire luxembourgeois – Comparaison des enquêtes menées en 2002 et 2003, in Allegrezza, S., J. Brosius, P. Gerber, P. Hausman, J. Langers, G. Schuller and M. Zanardelli (eds.): Les salariés dans l'économie luxembourgeoise, p. 45-70, STATEC Working Paper 100. (Luxembourg: STATEC).

12. Appendix

Table A1: Net wealth, median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
All households	275.6	212.8	236.4	232.7	660.2	251.6	402.5
	(11.0)	(10.4)	(17.1)	(6.3)	(31.5)	(38.1)	(18.9)
Age Group							
Younger than 35	166.8	150.3	75.3	137.2	312.2	83.2	156.9
	(36.2)	(16.6)	(22.0)	(15.8)	(63.4)	(20.0)	(30.7)
35-44	268.2	225.4	253.7	241.6	573.0	240.3	357.0
	(20.8)	(13.2)	(27.9)	(10.6)	(62.6)	(56.6)	(44.9)
45-54	342.8	246.1	276.6	275.9	821.4	364.0	575.2
	(15.2)	(17.2)	(24.3)	(11.1)	(58.5)	(38.2)	(65.4)
55 or older	392.6	252.5	437.0	317.9	1,047.5	474.4	764.5
	(46.4)	(21.1)	(80.4)	(25.3)	(89.7)	(97.0)	(63.8)
Level of Education							
High	302.7	256.3	282.2	274.4	739.6	407.7	538.3
	(19.0)	(14.6)	(33.1)	(8.3)	(75.1)	(48.7)	(54.9)
Middle	236.2	175.5	215.6	197.9	663.4	100.5	387.6
	(25.3)	(16.6)	(23.5)	(9.7)	(56.2)	(25.1)	(35.2)
Low	188.9	194.6	215.7	204.4	411.1	147.9	175.4
	(42.1)	(55.2)	(36.2)	(27.4)	(129.8)	(50.1)	(56.4)
Housing Status							
Owner-outright	350.4	279.1	382.0	307.1	918.5	711.0	796.3
	(17.9)	(7.8)	(41.1)	(7.2)	(61.5)	(45.9)	(38.8)
Owner with mortgage	248.0	166.4	259.2	221.5	528.0	447.3	505.9
	(23.2)	(13.3)	(21.2)	(10.4)	(54.2)	(47.3)	(30.2)
Renter or other	29.3	13.1	34.8	20.8	41.6	26.6	29.0
	(12.8)	(2.8)	(7.1)	(4.0)	(15.4)	(5.6)	(5.7)
Net wealth quintiles							
Bottom 20%	8.0	10.5	18.2	11.3	11.2	7.5	8.5
	(4.8)	(1.5)	(5.0)	(1.8)	(3.7)	(1.6)	(1.6)
Next 20%	125.7	129.4	113.7	126.0	145.2	114.4	126.9
	(18.7)	(5.1)	(7.2)	(6.1)	(19.6)	(11.2)	(10.4)
Middle 20%	236.6	231.2	232.5	232.7	404.5	399.7	402.6
	(6.3)	(4.4)	(9.5)	(3.7)	(19.9)	(11.6)	(8.1)
Next 20%	329.1	336.4	346.3	336.0	745.0	734.3	740.9
	(6.5)	(9.1)	(9.7)	(6.2)	(20.8)	(16.2)	(10.6)
Top 20%	659.0	571.9	610.4	613.8	1,512.4	1,738.8	1,574.0
	(31.8)	(29.5)	(28.6)	(15.4)	(102.6)	(214.9)	(110.8)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A2: Net wealth, mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
All households	378.0	246.0	328.1	298.5	954.1	626.8	763.7
	(16.9)	(6.5)	(23.1)	(10.8)	(46.3)	(40.9)	(12.2)
Age Group							
Younger than 35	211.5	180.1	154.0	182.4	436.8	248.1	337.0
	(28.3)	(15.7)	(30.4)	(13.0)	(57.7)	(41.8)	(35.2)
35-44	382.8	256.4	302.7	298.3	811.8	667.2	713.1
	(35.4)	(16.1)	(27.1)	(13.8)	(146.4)	(172.8)	(126.2)
45-54	482.5	287.1	386.1	361.4	1,105.0	650.4	838.8
	(32.5)	(14.5)	(44.0)	(16.0)	(84.6)	(102.2)	(71.2)
55 or older	535.5	304.2	548.5	432.2	1,541.6	1,034.0	1,288.8
	(62.1)	(25.3)	(93.1)	(34.0)	(162.5)	(291.4)	(168.4)
Level of Education							
High	450.5	291.5	429.4	362.6	1,061.0	995.2	1,018.7
	(26.0)	(14.0)	(46.3)	(13.6)	(73.4)	(158.4)	(104.6)
Middle	287.2	194.5	287.1	235.9	981.5	300.9	699.4
	(30.4)	(9.9)	(31.6)	(11.7)	(99.1)	(63.8)	(65.1)
Low	224.3	256.2	249.2	243.7	491.2	284.9	334.6
	(31.6)	(52.4)	(28.9)	(19.9)	(64.0)	(34.4)	(29.8)
Housing Status							
Owner-outright	494.6	336.5	493.6	398.5	1,353.9	1,222.3	1,297.9
	(27.5)	(10.4)	(47.8)	(11.6)	(101.1)	(242.0)	(115.4)
Owner with mortgage	369.6	212.9	352.3	307.4	844.6	867.6	855.8
	(27.1)	(12.8)	(26.8)	(13.6)	(83.0)	(168.6)	(92.8)
Renter or other	114.9	56.3	123.5	88.6	202.5	209.6	208.3
	(38.3)	(16.6)	(45.6)	(17.9)	(72.6)	(58.0)	(48.9)
Net wealth quintiles							
Bottom 20%	3.1	7.9	11.6	8.1	8.9	8.0	8.2
	(8.1)	(3.6)	(5.2)	(3.0)	(4.7)	(2.5)	(2.1)
Next 20%	121.6	124.6	116.1	121.8	143.6	129.7	133.9
	(8.5)	(3.9)	(5.5)	(3.8)	(10.4)	(7.1)	(6.0)
Middle 20%	233.0	231.2	231.3	231.7	418.2	408.4	412.7
	(5.3)	(3.8)	(4.7)	(3.4)	(13.0)	(8.4)	(6.9)
Next 20%	337.8	341.8	347.8	342.0	769.5	743.6	757.9
	(4.7)	(5.1)	(6.7)	(2.9)	(12.3)	(12.6)	(9.5)
Top 20%	888.4	669.5	835.6	789.6	2,201.1	3,003.9	2,513.7
	(45.0)	(27.9)	(71.4)	(27.4)	(157.7)	(488.9)	(212.7)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A3: Gross income, median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
All households	71.0	61.7	71.9	67.5	100.3	67.2	80.8
	(1.8)	(1.7)	(2.3)	(1.1)	(5.1)	(3.5)	(2.3)
Age Group							
Younger than 35	64.6	53.2	65.8	57.0	73.6	61.8	66.2
	(6.1)	(2.7)	(5.2)	(2.4)	(6.7)	(5.0)	(4.1)
35-44	71.9	70.3	72.2	71.4	95.5	73.0	80.5
	(2.8)	(2.7)	(4.3)	(1.8)	(9.5)	(6.1)	(4.4)
45-54	73.5	66.3	73.8	70.0	105.5	68.4	86.0
	(3.0)	(3.1)	(3.3)	(1.3)	(7.8)	(5.5)	(5.1)
55 or older	78.4	61.1	90.9	68.7	121.8	68.9	97.1
	(10.7)	(3.4)	(8.7)	(3.7)	(7.3)	(10.1)	(8.7)
Level of Education							
High	81.8	72.9	89.6	79.2	128.2	99.8	111.6
	(3.1)	(2.3)	(4.4)	(1.7)	(6.9)	(5.9)	(5.1)
Middle	56.1	52.5	68.0	56.5	86.2	54.9	69.5
	(5.2)	(2.1)	(3.0)	(1.8)	(6.2)	(3.6)	(4.2)
Low	55.3	52.4	59.6	55.7	72.3	53.4	55.1
	(5.3)	(7.8)	(6.3)	(4.0)	(7.3)	(2.7)	(2.5)
Housing Status							
Owner-outright	72.2	67.3	77.0	70.0	107.3	79.5	92.6
	(2.8)	(2.0)	(4.7)	(1.0)	(6.5)	(7.6)	(5.8)
Owner with mortgage	76.9	67.8	75.1	73.1	105.9	97.1	101.1
	(4.2)	(4.0)	(3.4)	(2.1)	(5.8)	(5.9)	(4.2)
Renter or other	51.6	47.9	62.8	51.3	61.1	55.8	56.1
	(6.5)	(2.7)	(7.0)	(2.8)	(10.4)	(2.9)	(2.5)
Income quintiles							
Bottom 20%	35.6	35.8	36.1	35.7	35.9	31.5	33.2
	(2.3)	(0.8)	(1.9)	(0.7)	(2.8)	(1.9)	(1.5)
Next 20%	49.9	51.0	49.9	50.3	56.9	55.6	55.8
	(0.8)	(0.9)	(0.9)	(0.6)	(2.6)	(1.1)	(1.0)
Middle 20%	68.4	67.5	67.5	67.7	80.3	81.7	80.9
	(1.1)	(0.9)	(1.7)	(0.7)	(2.3)	(1.7)	(1.2)
Next 20%	86.5	85.7	86.7	86.3	121.4	118.1	120.2
	(1.7)	(1.2)	(1.7)	(0.7)	(2.1)	(4.1)	(2.1)
Top 20%	129.5	123.2	124.0	125.7	186.8	184.2	184.5
	(2.9)	(3.3)	(3.5)	(2.1)	(5.9)	(7.1)	(3.9)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A4: Gross income, mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
All households	81.8	70.9	80.5	76.0	119.0	92.4	103.5
	(1.9)	(1.4)	(2.0)	(1.0)	(4.1)	(3.4)	(2.5)
Age Group							
Younger than 35	69.5	59.5	69.5	64.0	86.3	79.6	82.7
	(3.9)	(2.1)	(4.1)	(1.7)	(5.6)	(5.8)	(3.8)
35-44	84.2	79.3	79.2	80.5	109.6	89.0	95.5
	(3.6)	(3.6)	(3.6)	(2.1)	(5.8)	(4.5)	(3.7)
45-54	87.8	74.4	83.8	80.2	134.8	97.8	113.1
	(3.5)	(2.2)	(3.6)	(1.7)	(10.3)	(6.1)	(5.7)
55 or older	92.1	71.7	94.5	83.3	149.0	107.7	128.4
	(5.7)	(3.7)	(6.0)	(2.9)	(10.4)	(14.9)	(9.2)
Level of Education							
High	93.9	81.7	98.9	88.3	154.7	123.1	134.4
	(2.6)	(2.1)	(3.7)	(1.5)	(9.0)	(5.7)	(5.0)
Middle	63.8	60.0	72.8	64.2	101.9	69.2	88.3
	(3.4)	(1.9)	(2.4)	(1.4)	(4.8)	(7.4)	(4.0)
Low	63.8	56.0	66.5	63.9	82.2	59.9	65.3
	(4.3)	(5.0)	(4.4)	(2.8)	(6.9)	(3.3)	(3.1)
Housing Status							
Owner-outright	84.3	75.7	86.4	79.4	138.0	103.6	123.4
	(2.6)	(2.2)	(3.6)	(1.5)	(8.6)	(10.1)	(6.4)
Owner with mortgage	88.5	77.1	85.7	83.4	116.3	121.6	118.9
	(3.3)	(3.0)	(3.2)	(1.9)	(4.4)	(7.0)	(4.1)
Renter or other	63.0	53.8	66.9	59.7	75.8	69.1	70.3
	(5.0)	(2.1)	(3.4)	(1.8)	(6.8)	(3.4)	(3.0)
Income quintiles							
Bottom 20%	35.2	34.8	34.8	34.9	33.2	30.1	31.0
	(1.4)	(0.6)	(1.4)	(0.6)	(1.7)	(1.2)	(1.0)
Next 20%	50.4	51.2	50.6	50.8	57.2	55.5	56.0
	(0.7)	(0.6)	(0.9)	(0.5)	(1.5)	(0.7)	(0.8)
Middle 20%	67.5	67.1	67.2	67.2	81.2	82.0	81.6
	(0.7)	(0.6)	(0.9)	(0.4)	(1.1)	(1.5)	(1.0)
Next 20%	87.2	86.4	86.9	86.8	121.1	119.8	120.5
	(1.0)	(0.8)	(0.8)	(0.5)	(1.5)	(2.0)	(1.2)
Top 20%	147.1	138.8	140.9	141.7	228.6	231.9	230.1
	(3.7)	(4.6)	(3.7)	(2.5)	(11.9)	(13.9)	(9.1)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.

Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A5: Real asset components, participation rate

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Total real assets	98.7	97.7	98.9	98.2	99.9	91.3	94.9
	(0.6)	(0.6)	(0.5)	(0.4)	(0.1)	(1.4)	(0.8)
HMR	81.1	77.0	71.2	76.5	85.0	51.8	65.7
	(2.2)	(1.7)	(2.5)	(1.1)	(1.9)	(2.3)	(1.6)
OREP	26.6	19.3	22.3	21.8	24.2	25.7	25.1
	(1.1)	(0.9)	(1.2)	(0.6)	(0.5)	(1.7)	(1.1)
Business wealth	7.7	3.3	7.0	5.3	6.9	6.5	6.6
	(0.6)	(0.6)	(0.5)	(0.4)	(0.1)	(1.4)	(0.8)
Vehicles	93.5	94.8	95.1	94.6	98.5	85.4	90.8
	(0.5)	(0.1)	(0.6)	(0.2)	(0.6)	(1.8)	(1.1)
Valuables	12.3	14.7	12.5	13.6	28.7	19.1	23.1
	(1.3)	(0.7)	(1.1)	(0.5)	(1.1)	(1.1)	(0.8)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A6: Real asset components, conditional median

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Total real assets	308.0	233.8	272.3	259.1	744.9	440.6	578.1
	(9.7)	(8.6)	(12.0)	(4.1)	(25.1)	(29.3)	(18.6)
HMR	292.6	233.8	295.8	251.6	700.0	600.0	650.0
	(8.5)	(7.4)	(12.2)	(4.7)	(22.5)	(25.2)	(17.5)
OREP	198.0	164.2	195.0	178.4	517.0	268.0	382.0
	(15.7)	(15.8)	(29.6)	(10.2)	(100.4)	(48.6)	(24.1)
Business wealth	9.9	10.0	15.2	11.0	314.0	100.0	154.0
	(41.8)	(6.8)	(9.0)	(5.2)	(207.8)	(121.7)	(90.7)
Vehicles	12.5	12.0	14.2	12.7	25.2	15.0	18.0
	(1.0)	(1.0)	(1.3)	(0.7)	(2.1)	(0.8)	(1.2)
Valuables	8.6	7.0	7.3	7.4	5.8	5.3	5.7
	(1.9)	(1.2)	(3.6)	(1.1)	(1.7)	(1.5)	(1.2)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted. Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A7: Real asset components, conditional mean

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Total real assets	381.8	264.3	344.7	313.1	1017.6	691.8	835.3
	(14.8)	(8.6)	(22.6)	(7.9)	(54.4)	(80.5)	(49.8)
HMR	313.4	251.9	332.4	286.6	779.8	674.6	731.6
	(6.1)	(4.7)	(17.4)	(4.9)	(21.2)	(22.9)	(15.3)
OREP	303.3	226.4	293.7	266.3	962.6	543.5	712.7
	(26.8)	(23.9)	(40.8)	(15.8)	(97.8)	(72.4)	(59.7)
Business wealth	277.5	106.7	258.8	217.7	1048.7	1835.7	1495.9
	(78.8)	(83.9)	(169.7)	(66.7)	(341.2)	(896.8)	(527.0)
Vehicles	18.8	16.1	18.4	17.3	36.5	20.5	27.8
	(1.7)	(0.6)	(0.9)	(0.6)	(2.0)	(1.0)	(1.1)
Valuables	25.5	12.0	27.0	18.5	45.0	31.5	38.5
	(10.2)	(1.6)	(7.1)	(2.9)	(17.6)	(10.2)	(10.4)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted. Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A8: Financial assets components, participation rate

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Financial assets	98.1	91.5	93.5	93.6	99.5	96.3	97.6
	(1.0)	(1.2)	(1.5)	(0.7)	(0.3)	(1.0)	(0.6)
Deposits	96.6	90.3	90.5	91.9	99.5	95.9	97.4
	(1.1)	(1.2)	(1.8)	(0.8)	(0.3)	(1.0)	(0.6)
Bonds	3.1	1.4	1.6	1.8	1.5	1.2	1.3
	(0.8)	(0.4)	(0.4)	(0.3)	(0.8)	(0.4)	(0.4)
Risky assets	20.4	14.7	24.2	18.5	15.1	14.6	14.8
	(1.7)	(1.2)	(2.2)	(0.9)	(1.7)	(1.5)	(1.1)
Other financial investments	2.3	0.7	3.3	1.7	1.4	1.6	1.5
	(0.8)	(0.2)	(0.8)	(0.3)	(0.5)	(0.6)	(0.4)
Voluntary pension/life insurance	45.7	26.0	55.2	38.2	32.3	17.7	23.8
	(2.5)	(1.6)	(2.7)	(1.3)	(2.3)	(1.7)	(1.4)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A9: Financial assets components, conditional median

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Financial assets	20.5	14.8	29.4	19.7	40.5	19.1	29.2
	(2.8)	(1.4)	(2.7)	(1.2)	(5.7)	(3.0)	(2.5)
Deposits	12.0	10.5	17.4	12.4	29.9	11.7	18.0
	(1.6)	(0.9)	(2.1)	(0.9)	(4.0)	(1.7)	(1.9)
Bonds	18.0	3.6	20.6	9.8	20.0	20.0	20.0
	(28.6)	(3.5)	(24.0)	(3.7)	(28.6)	(121.7)	(11.1)
Risky assets	19.2	11.1	15.7	15.0	35.2	40.0	39.4
	(9.4)	(2.8)	(3.9)	(2.1)	(12.0)	(10.6)	(7.1)
Other financial investments	10.0	15.0	22.7	16.8	9.2	11.2	11.2
	(12.5)	(7.5)	(10.5)	(6.5)	(11.3)	(29.7)	(15.7)
Voluntary pension/life insurance	8.5	7.5	8.9	8.3	24.2	26.5	25.0
	(1.5)	(1.3)	(1.3)	(0.8)	(4.1)	(5.6)	(2.9)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A10: Financial asset components, conditional mean

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Financial assets	72.7	39.0	62.9	53.5	115.2	116.2	115.8
	(2.7)	(2.0)	(5.9)	(1.3)	(10.8)	(13.2)	(6.5)
Deposits	44.1	28.1	34.4	33.7	64.8	46.3	54.2
	(2.7)	(1.1)	(1.9)	(0.8)	(4.1)	(3.2)	(1.6)
Bonds	67.4	9.4	49.6	41.1	32.6	241.4	144.0
	(14.2)	(2.9)	(18.1)	(8.4)	(10.8)	(195.2)	(90.0)
Risky assets	102.9	45.9	75.9	71.1	104.8	202.1	160.6
	(13.0)	(15.5)	(31.0)	(9.1)	(16.5)	(40.0)	(26.0)
Other financial investments	20.3	18.9	20.8	20.0	39.3	47.0	42.7
	(1.8)	(2.5)	(3.2)	(1.3)	(4.1)	(7.5)	(4.4)
Voluntary pension/life insurance	36.2	20.3	36.1	33.1	17.8	34.5	28.1
	(17.2)	(5.1)	(4.7)	(6.1)	(3.7)	(16.7)	(10.1)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A11: Debt components, participation rate

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Total debt	69.7	57.2	63.8	61.9	70.9	59.2	64.1
	(2.4)	(2.0)	(2.9)	(1.4)	(2.2)	(2.4)	(1.7)
Mortgage debt	43.2	26.3	47.0	35.6	50.5	35.2	41.6
	(2.6)	(1.6)	(2.8)	(1.2)	(2.5)	(2.1)	(1.6)
HMR mortgage debt	35.8	21.1	41.5	29.8	44.7	30.2	36.3
	(2.3)	(1.5)	(2.7)	(1.1)	(2.4)	(2.0)	(1.6)
OREP mortgage debt	13.1	8.2	9.2	9.6	9.9	8.7	9.2
	(1.9)	(1.0)	(1.4)	(0.8)	(1.4)	(1.2)	(0.9)
Non-mortgage debt	47.2	45.1	33.7	42.7	44.5	38.4	40.9
	(2.6)	(2.0)	(2.7)	(1.4)	(2.5)	(2.3)	(1.7)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A12: Debt components, conditional median

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Total debt	59.3	33.1	69.4	49.8	162.6	108.8	131.1
	(8.8)	(6.3)	(8.3)	(3.8)	(20.6)	(20.6)	(14.6)
Mortgage debt	104.8	122.1	99.7	107.3	250.0	237.6	242.4
	(9.6)	(9.7)	(9.8)	(8.4)	(27.6)	(22.2)	(17.0)
HMR mortgage debt	104.1	112.4	92.9	100.3	220.0	222.9	220.0
	(10.3)	(11.4)	(10.6)	(4.6)	(26.0)	(22.7)	(17.2)
OREP mortgage debt	64.0	99.0	114.2	91.8	269.2	156.0	229.0
	(11.0)	(18.9)	(27.0)	(11.4)	(43.7)	(50.0)	(40.4)
Non-mortgage debt	11.4	11.4	12.3	11.6	14.4	9.0	11.0
	(1.3)	(1.3)	(2.2)	(0.9)	(1.5)	(0.9)	(1.3)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights

Table A13: Debt components, conditional mean

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Total debt	100.5	83.7	112.0	95.7	250.1	197.3	221.7
	(6.1)	(4.6)	(8.7)	(3.7)	(17.9)	(13.8)	(11.3)
Mortgage debt	138.7	145.2	138.4	141.0	321.4	307.0	314.3
	(8.1)	(7.1)	(9.8)	(5.1)	(22.4)	(18.1)	(14.5)
HMR mortgage debt	128.9	125.3	117.8	123.6	273.3	272.0	272.7
	(7.1)	(6.0)	(7.4)	(4.0)	(15.3)	(14.7)	(10.3)
OREP mortgage debt	104.8	143.5	175.6	138.8	404.6	297.8	345.9
	(12.9)	(15.5)	(31.7)	(12.4)	(81.3)	(47.6)	(45.2)
Non-mortgage debt	21.6	21.5	19.3	21.1	34.2	22.8	27.9
	(2.8)	(1.9)	(2.6)	(1.3)	(5.0)	(3.8)	(3.0)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A14: Total real assets, participation rate by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	96.3	95.6	98.7	96.4	100.0	90.2	94.8
	(1.9)	(1.5)	(1.3)	(1.0)	(0.0)	(3.1)	(1.7)
35-44	99.3	99.2	99.2	99.2	99.6	89.9	93.0
	(0.7)	(0.5)	(0.7)	(0.3)	(0.0)	(2.7)	(1.9)
45-54	99.9	98.7	99.2	99.1	100.0	92.9	95.8
	(0.1)	(0.9)	(0.8)	(0.5)	(0.0)	(2.5)	(1.5)
55 or older	100.0	97.0	97.7	97.9	100.0	93.0	96.5
	0.0	(2.2)	(1.8)	(1.2)	(0.0)	(3.2)	(1.6)
Level of Education							
High	98.2	97.7	99.1	98.1	99.8	93.1	95.5
	(0.9)	(0.8)	(0.7)	(0.5)	(0.2)	(1.9)	(1.3)
Middle	99.2	97.6	98.8	98.2	100.0	92.6	96.9
	(0.8)	(1.0)	(0.8)	(0.6)	(0.0)	(2.5)	(1.1)
Low	100.0	97.9	98.7	98.9	100.0	86.9	90.0
	(0.0)		(1.3)	(1.1)	(0.0)	(3.4)	(2.7)
Housing Status							
Owner-outright	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.2)
Owner with mortgage	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.2)
Renter or other	93.0	90.0	96.1	92.5	99.5	82.0	85.2
	(3.1)	(2.5)	(1.8)	(1.5)	(0.6)	(2.8)	(2.3)
Net wealth quintiles							
Bottom 20%	93.5	91.3	94.7	92.6	99.1	75.3	79.5
	(3.4)	(2.5)	(2.5)	(1.7)	(1.0)	(4.2)	(3.6)
Next 20%	100.0	98.7	99.9	99.3	100.0	92.9	95.1
	(0.0)		(0.0)		(0.2)	(2.8)	(2.0)
Middle 20%	98.2	99.6	100.0	99.4	100.0	100.0	100.0
	(1.8)	(0.4)	(0.0)	(0.5)	(0.2)	(0.2)	(0.2)
Next 20%	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.2)
Top 20%	99.9	100.0	100.0	100.0	100.0	100.0	100.0
	(0.1)	(0.0)	(0.0)	(0.0)	(0.2)	(0.2)	(0.2)
Income quintiles							
Bottom 20%	95.7	94.5	98.2	95.4	100.0	78.4	84.1
	(3.2)	(2.1)	(1.8)	(1.5)	(0.2)	(4.4)	(3.3)
Next 20%	98.9	96.8	95.4	97.0	100.0	90.0	92.9
	(1.1)	(1.4)	(2.6)	(1.0)	(0.2)	(3.1)	(2.2)
Middle 20%	100.0	99.1	99.8	99.5	100.0	97.0	98.4
	(0.0)	(0.6)	(0.2)	(0.3)	(0.2)	(1.7)	(0.9)
Next 20%	98.5	99.6	100.0	99.4	99.9	98.9	99.4
	(1.4)	(0.8)	(0.0)	(0.5)	(0.2)	(1.1)	(0.5)
Top 20%	99.4	99.9	99.9	99.8	99.8	100.0	99.9
	(1.0)	(0.1)	(0.0)	(0.3)	(0.2)	(0.2)	(0.2)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing standard error is because the participation rate in the corresponding category is 100% in at least one implicate.

Table A15: Total real assets, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	228.3	178.5	26.5	175.7	485.8	85.0	398.5
	(28.5)	(16.8)	(36.5)	(14.7)	(64.7)	(132.2)	(56.7)
35-44	329.1	244.3	300.9	271.9	751.6	484.4	574.8
	(23.4)	(12.8)	(27.2)	(11.2)	(44.6)	(55.1)	(36.0)
45-54	337.8	257.6	299.8	295.2	820.0	450.0	647.6
	(18.5)	(12.3)	(17.7)	(11.5)	(55.1)	(56.2)	(29.4)
55 or older	344.0	262.2	397.2	310.1	956.0	489.4	755.5
	(39.4)	(19.6)	(52.9)	(20.5)	(69.2)	(63.2)	(62.4)
Level of Education							
High	350.3	271.3	319.1	300.1	849.8	560.4	694.8
	(17.8)	(11.4)	(29.5)	(8.5)	(52.8)	(42.5)	(39.2)
Middle	271.6	207.7	263.0	230.4	702.9	266.5	577.0
	(22.1)	(8.4)	(13.4)	(8.6)	(32.4)	(135.0)	(33.2)
Low	227.0	212.6	250.7	230.2	521.0	352.2	382.6
	(38.0)	(25.9)	(28.9)	(19.4)	(112.4)	(58.0)	(47.3)
Housing Status							
Owner-outright	319.6	261.3	335.1	286.6	844.0	615.7	740.2
	(12.6)	(6.5)	(44.4)	(9.0)	(55.3)	(41.8)	(40.8)
Owner with mortgage	364.1	293.3	335.2	322.9	765.0	672.2	736.0
	(20.9)	(12.0)	(20.9)	(11.3)	(28.8)	(30.2)	(23.0)
Renter or other	10.5	10.3	15.0	12.9	21.2	16.6	17.0
	(4.6)	(2.1)	(1.9)	(1.9)	(5.0)	(2.8)	(2.5)
Net wealth quintiles							
Bottom 20%	8.5	11.1	13.8	10.6	15.0	9.9	10.0
	(3.7)	(2.5)	(2.9)	(2.1)	(13.1)	(1.2)	(1.3)
Next 20%	192.0	157.6	161.1	163.3	252.2	141.4	171.6
	(27.2)	(6.7)	(18.3)	(6.0)	(86.7)	(41.4)	(42.4)
Middle 20%	252.2	227.3	262.4	244.1	617.0	496.1	537.0
	(15.7)	(5.7)	(12.1)	(7.0)	(38.4)	(26.7)	(26.3)
Next 20%	333.6	324.3	343.7	330.4	768.4	727.0	759.5
	(12.4)	(7.7)	(14.5)	(6.9)	(22.5)	(27.2)	(15.9)
Top 20%	572.3	518.6	578.5	549.4	1,506.4	1,498.2	1,506.8
	(28.9)	(19.9)	(30.2)	(13.1)	(108.8)	(236.3)	(117.9)
Income quintiles							
Bottom 20%	193.9	155.7	130.0	160.0	271.8	25.4	48.9
	(43.4)	(15.9)	(76.5)	(14.7)	(94.7)	(40.1)	(77.0)
Next 20%	250.5	201.4	226.9	218.5	569.9	306.5	404.6
	(23.5)	(17.6)	(34.0)	(10.6)	(83.8)	(106.0)	(51.2)
Middle 20%	279.1	254.5	261.7	263.1	654.4	461.4	553.2
	(20.4)	(19.4)	(18.2)	(10.8)	(39.4)	(66.7)	(31.0)
Next 20%	332.5	295.4	291.1	306.3	811.0	643.6	736.9
	(27.6)	(21.1)	(34.2)	(14.3)	(43.4)	(45.3)	(30.1)
Top 20%	459.3	365.4	440.3	415.0	1,244.7	1,043.0	1,142.6
	(26.3)	(22.0)	(31.1)	(13.2)	(92.4)	(118.2)	(70.4)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A16: Total real assets, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	257.0	207.1	169.9	211.4	572.5	318.7	444.8
	(28.1)	(16.3)	(30.6)	(13.1)	(64.3)	(37.4)	(37.1)
35-44	404.2	276.5	354.4	326.8	977.8	820.7	874.1
	(25.5)	(15.3)	(28.7)	(12.3)	(145.0)	(181.0)	(128.1)
45-54	448.9	301.2	391.6	362.1	1,177.8	686.7	899.0
	(26.7)	(14.0)	(43.9)	(15.3)	(88.5)	(93.4)	(67.0)
55 or older	466.1	295.8	515.1	402.7	1,410.1	956.8	1,192.5
	(58.0)	(22.9)	(93.3)	(33.1)	(136.8)	(297.1)	(159.4)
Level of Education							
High	449.2	307.0	426.6	370.2	1,149.9	1,015.1	1,065.4
	(22.8)	(12.9)	(47.8)	(12.8)	(76.0)	(158.8)	(102.9)
Middle	297.9	214.0	314.9	256.5	1,033.3	390.5	778.9
	(21.4)	(9.7)	(31.8)	(11.1)	(90.3)	(70.0)	(62.0)
Low	242.3	298.4	272.8	269.0	527.2	385.2	423.2
	(30.2)	(69.0)	(27.5)	(20.7)	(63.7)	(40.7)	(34.6)
Housing Status							
Owner-outright	425.9	313.1	431.7	358.4	1,252.8	1,120.8	1,196.6
	(20.5)	(9.7)	(43.5)	(10.4)	(88.7)	(227.8)	(105.7)
Owner with mortgage	463.4	336.5	436.4	408.3	1,072.1	1,029.1	1,051.2
	(23.6)	(13.5)	(30.6)	(13.1)	(81.8)	(160.3)	(89.3)
Renter or other	102.7	58.4	114.7	85.3	216.6	200.0	203.5
	(38.0)	(18.3)	(45.7)	(18.7)	(80.2)	(60.2)	(49.7)
Net wealth quintiles							
Bottom 20%	53.9	46.0	43.2	46.6	100.4	38.8	52.5
	(17.5)	(7.7)	(11.8)	(6.4)	(39.7)	(13.2)	(13.3)
Next 20%	197.1	175.5	156.7	175.1	298.3	228.2	251.1
	(15.4)	(9.6)	(13.2)	(6.7)	(37.5)	(24.1)	(19.9)
Middle 20%	275.8	242.2	279.4	257.8	612.6	523.2	562.6
	(13.6)	(5.5)	(14.3)	(5.3)	(24.1)	(25.1)	(18.1)
Next 20%	361.3	343.6	370.1	354.4	840.8	775.3	811.5
	(10.3)	(8.1)	(17.4)	(5.7)	(35.8)	(25.0)	(23.9)
Top 20%	762.9	613.9	778.3	711.5	2,105.8	2,647.7	2,316.8
	(36.7)	(29.5)	(74.5)	(27.2)	(149.8)	(466.2)	(201.1)
Income quintiles							
Bottom 20%	203.2	146.2	225.8	172.9	328.4	255.6	278.8
	(33.9)	(11.4)	(80.6)	(17.8)	(64.1)	(72.4)	(51.8)
Next 20%	260.1	206.7	260.5	231.1	645.4	576.0	597.5
	(27.7)	(19.0)	(50.2)	(14.5)	(99.5)	(219.9)	(154.1)
Middle 20%	316.5	256.5	273.5	275.5	744.4	421.0	575.5
	(26.1)	(18.2)	(25.9)	(13.2)	(61.8)	(43.1)	(38.7)
Next 20%	394.5	337.6	329.3	349.3	990.2	750.9	880.9
	(43.4)	(23.9)	(34.5)	(16.8)	(81.5)	(76.6)	(55.2)
Top 20%	645.5	435.7	575.3	534.6	1,849.3	1,634.9	1,747.8
	(48.8)	(24.2)	(69.1)	(26.0)	(167.0)	(319.5)	(176.1)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A17: Homeownership rate, by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	61.2	61.0	34.0	55.5	67.5	38.7	52.2
	(5.7)	(3.7)	(5.9)	(2.7)	(5.4)	(4.9)	(3.9)
35-44	89.3	84.6	77.7	84.0	90.4	52.8	64.7
	(3.1)	(2.5)	(4.2)	(1.8)	(3.3)	(4.3)	(3.3)
45-54	91.3	84.6	82.7	85.6	93.8	59.0	73.4
	(2.7)	(2.5)	(3.5)	(1.7)	(2.2)	(4.2)	(2.8)
55 or older	84.4	82.9	93.0	86.3	91.2	55.6	73.5
	5.7	(4.6)	(3.3)	(2.7)	(2.9)	(5.8)	(3.5)
Level of Education							
High	83.3	77.8	67.6	77.5	87.7	53.9	66.0
	(2.8)	(2.2)	(4.2)	(1.7)	(2.9)	(3.4)	(2.6)
Middle	78.4	75.1	73.6	75.2	86.9	46.2	70.0
	(4.7)	(2.6)	(3.8)	(1.9)	(2.8)	(4.8)	(2.8)
Low	76.4	92.3	71.9	76.7	68.2	53.5	57.1
	(7.3)	(6.3)	(5.7)	(3.9)	(6.8)	(4.6)	(3.9)
Housing Status							
Owner-outright	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Owner with mortgage	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Renter or other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Net wealth quintiles							
Bottom 20%	18.0	18.2	9.8	15.9	13.2	2.4	4.3
	(6.5)	(3.4)	(4.2)	(2.7)	(7.5)	(1.2)	(1.6)
Next 20%	75.4	85.9	66.0	78.6	57.8	39.0	44.8
	(6.1)	(3.2)	(6.0)	(2.9)	(7.8)	(4.9)	(4.2)
Middle 20%	95.4	96.6	91.6	95.2	99.5	81.7	89.5
	(3.0)	(1.8)	(4.5)	(1.4)		(4.3)	(2.5)
Next 20%	98.5	98.3	97.8	98.2	98.3	91.3	95.2
		(1.4)	(2.1)	(1.2)	(1.1)	(3.4)	(1.6)
Top 20%	94.5	95.3	94.2	94.7	97.5	90.6	94.8
	(3.0)	(2.2)	(3.5)	(1.6)	(1.3)	(3.0)	(1.4)
Income quintiles							
Bottom 20%	58.7	60.5	48.8	58.0	58.5	31.6	38.7
	(7.9)	(4.8)	(8.8)	(3.5)	(8.5)	(4.9)	(4.4)
Next 20%	78.4	73.0	65.1	72.6	79.6	41.9	52.8
	(6.7)	(3.8)	(7.0)	(3.1)	(7.4)	(5.2)	(4.4)
Middle 20%	85.1	81.2	76.6	80.9	88.0	59.0	72.6
	(6.1)	(4.2)	(5.5)	(3.6)	(4.2)	(6.3)	(3.8)
Next 20%	84.1	87.5	72.6	82.1	88.1	71.4	80.5
	(5.2)	(3.5)	(5.9)	(2.8)	(4.1)	(6.8)	(3.5)
Top 20%	91.8	91.0	84.3	89.3	95.8	71.4	84.3
	(3.5)	(2.7)	(4.2)	(2.0)	(1.9)	(5.7)	(3.1)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing standard error is because the participation rate in the corresponding category is 100% in at least one implicate.

Table A18: Household main residence, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	254.2	213.2	249.4	231.3	600.0	550.0	576.0
	(18.2)	(13.0)	(17.8)	(9.6)	(45.9)	(45.7)	(37.6)
35-44	293.5	235.9	305.0	261.2	748.0	584.0	650.0
	(15.0)	(10.2)	(21.3)	(10.3)	(43.1)	(53.0)	(36.5)
45-54	300.0	244.9	292.7	264.9	740.0	604.0	686.0
	(7.8)	(11.4)	(20.3)	(11.8)	(44.1)	(43.3)	(36.6)
55 or older	300.0	250.0	298.1	271.2	750.0	566.0	716.0
	(19.9)	(13.9)	(36.9)	(17.8)	(26.4)	(69.0)	(41.2)
Level of Education							
High	310.4	258.8	346.5	292.9	800.0	716.0	750.0
	(15.6)	(10.2)	(26.8)	(8.2)	(33.1)	(50.4)	(28.7)
Middle	270.2	215.4	264.5	244.7	660.0	548.0	636.0
	(16.0)	(8.8)	(19.4)	(7.7)	(30.0)	(32.3)	(26.5)
Low	247.0	196.8	256.6	245.5	600.0	460.0	500.0
	(20.1)	(14.4)	(19.2)	(12.5)	(29.8)	(32.8)	(33.2)
Housing Status							
Owner-outright	283.7	230.0	281.4	250.0	700.0	542.0	648.0
	(13.9)	(6.3)	(25.5)	(2.3)	(28.4)	(37.3)	(31.3)
Owner with mortgage	301.4	250.8	296.8	280.1	708.0	608.0	650.0
	(14.5)	(11.2)	(11.8)	(9.2)	(32.0)	(29.8)	(22.7)
Renter or other							
Net wealth quintiles							
Bottom 20%	203.3	152.6	208.0	160.4	322.0	610.0	540.0
	(51.4)	(25.5)	(55.9)	(20.4)	(154.0)	(208.0)	(130.7)
Next 20%	199.8	153.2	179.7	162.0	418.0	360.0	386.0
	(17.3)	(7.7)	(20.8)	(7.5)	(55.6)	(38.9)	(38.2)
Middle 20%	228.8	210.3	250.0	222.5	576.0	476.0	502.0
	(12.5)	(5.5)	(5.6)	(5.2)	(44.7)	(31.7)	(23.3)
Next 20%	300.3	293.7	300.0	300.0	710.0	696.0	700.0
	(8.9)	(8.3)	(8.7)	(2.0)	(35.9)	(25.9)	(15.4)
Top 20%	390.7	372.0	450.0	400.0	1,000.0	1,000.0	1,000.0
	(20.0)	(21.7)	(24.4)	(5.2)	(24.0)	(73.3)	(18.1)
Income quintiles							
Bottom 20%	229.6	191.1	250.0	206.6	350.0	384.0	376.0
	(19.6)	(12.6)	(20.7)	(9.1)	(53.6)	(52.5)	(39.7)
Next 20%	250.0	216.3	261.4	237.3	566.0	454.0	508.0
	(10.1)	(13.2)	(30.2)	(10.2)	(54.3)	(42.2)	(38.1)
Middle 20%	251.6	232.8	257.4	250.0	600.0	498.0	560.0
	(12.8)	(14.6)	(25.2)	(5.1)	(33.7)	(26.5)	(31.7)
Next 20%	303.7	266.8	302.7	293.8	734.0	664.0	700.0
	(17.5)	(19.6)	(20.8)	(9.3)	(36.1)	(44.2)	(22.2)
Top 20%	353.9	300.0	381.8	342.5	900.0	946.0	920.0
	(17.0)	(10.9)	(33.0)	(11.8)	(53.8)	(81.2)	(52.8)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing meidan value or standard error is due to no observations in the corresponding category.

Table A19: Household main residence, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	282.5	225.4	278.0	247.5	631.5	612.0	623.8
	(14.9)	(10.0)	(25.4)	(8.1)	(35.6)	(38.1)	(26.1)
35-44	321.4	252.0	337.2	289.6	736.0	680.4	705.1
	(11.7)	(7.9)	(13.2)	(6.3)	(31.8)	(45.0)	(28.6)
45-54	319.4	267.5	343.2	301.4	832.3	673.5	757.5
	(9.8)	(8.9)	(41.0)	(12.1)	(39.1)	(41.5)	(28.6)
55 or older	333.3	267.3	333.7	304.0	890.0	726.7	828.4
	(18.4)	(10.3)	(21.3)	(9.8)	(50.7)	(71.1)	(41.9)
Level of Education							
High	337.8	277.6	375.9	311.8	905.1	819.0	859.9
	(8.6)	(6.7)	(14.5)	(5.3)	(37.3)	(38.0)	(26.8)
Middle	281.2	226.6	326.1	263.3	719.7	561.9	676.5
	(10.9)	(6.5)	(34.7)	(10.3)	(27.9)	(33.0)	(22.6)
Low	255.8	201.5	277.9	255.5	611.6	508.2	538.0
	(20.9)	(15.3)	(15.9)	(10.7)	(46.3)	(33.6)	(27.5)
Housing Status							
Owner-outright	297.0	246.1	345.7	274.1	782.7	640.2	722.0
	(8.3)	(5.4)	(39.4)	(7.4)	(31.7)	(37.5)	(24.3)
Owner with mortgage	334.1	267.1	323.0	306.1	777.2	699.1	739.4
	(10.2)	(9.2)	(10.8)	(5.8)	(29.4)	(31.4)	(21.5)
Renter or other							
Net wealth quintiles							
Bottom 20%	212.0	140.2	217.1	166.9	413.1	718.9	555.1
	(29.4)	(16.0)	(41.4)	(15.4)	(118.5)	(165.8)	(117.3)
Next 20%	209.9	171.8	188.1	182.9	435.5	388.6	407.5
	(13.6)	(7.9)	(12.6)	(5.4)	(36.1)	(33.6)	(24.7)
Middle 20%	243.6	219.3	263.9	234.1	565.6	499.2	531.7
	(10.4)	(4.4)	(12.0)	(4.5)	(22.6)	(20.6)	(15.4)
Next 20%	323.8	290.4	311.7	304.4	713.4	691.8	704.0
	(8.8)	(6.9)	(11.9)	(4.9)	(21.7)	(31.7)	(16.1)
Top 20%	418.0	383.0	491.7	427.0	1,117.6	1,099.3	1,110.8
	(11.9)	(15.4)	(46.4)	(16.1)	(44.6)	(60.3)	(35.6)
Income quintiles							
Bottom 20%	246.6	186.4	366.0	227.0	492.9	472.8	480.9
	(15.5)	(8.3)	(155.2)	(26.0)	(83.7)	(49.4)	(43.8)
Next 20%	268.3	223.9	295.0	248.7	577.3	506.8	537.5
	(12.3)	(12.1)	(67.0)	(13.0)	(38.6)	(42.9)	(29.8)
Middle 20%	270.2	240.6	287.4	260.2	660.4	542.0	609.3
	(13.9)	(11.3)	(19.5)	(8.6)	(34.6)	(33.7)	(26.5)
Next 20%	328.7	288.4	316.8	306.7	800.1	724.9	769.7
	(13.0)	(10.6)	(17.4)	(7.7)	(38.7)	(40.2)	(29.5)
Top 20%	396.3	321.0	397.5	363.5	1,040.9	1,039.9	1,040.5
	(13.2)	(10.0)	(15.6)	(7.3)	(42.5)	(58.2)	(34.6)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing mean value or standard error is due to no observations in the corresponding category.

Table A20: Other real estate property, participation rate by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	20.9	18.6	17.6	19.0	12.7	11.2	11.9
	(4.5)	(3.1)	(4.6)	(2.2)	(3.3)	(3.0)	(2.2)
35-44	27.3	18.6	19.8	21.0	16.8	26.3	23.3
	(3.9)	(2.5)	(3.8)	(1.9)	(3.9)	(3.5)	(2.7)
45-54	31.0	20.4	24.2	24.0	28.8	28.1	28.4
	(3.7)	(2.5)	(3.4)	(1.8)	(4.1)	(3.5)	(2.7)
55 or older	27.6	20.3	31.2	25.3	39.6	40.6	40.1
	5.2	(4.5)	(6.6)	(3.1)	(4.8)	(6.0)	(3.8)
Level of Education							
High	32.0	25.5	26.5	27.6	25.9	37.0	33.0
	(2.7)	(2.1)	(3.6)	(1.5)	(3.0)	(3.2)	(2.4)
Middle	19.1	12.4	20.6	15.8	25.3	9.0	18.6
	(4.0)	(2.0)	(3.4)	(1.6)	(3.2)	(2.3)	(2.2)
Low	17.1	18.3	18.8	18.2	13.6	22.0	20.0
	(6.4)	(9.4)	(4.9)	(3.7)	(4.4)	(3.6)	(3.0)
Housing Status							
Owner-outright	28.7	19.3	24.1	22.2	31.7	25.9	29.2
	(3.2)	(2.0)	(4.0)	(1.6)	(3.4)	(4.6)	(2.8)
Owner with mortgage	27.4	25.3	23.0	25.1	20.6	31.1	25.7
	(3.4)	(3.4)	(3.4)	(1.9)	(2.9)	(3.7)	(2.4)
Renter or other	19.8	13.7	19.4	16.7	14.6	22.2	20.8
	(5.9)	(2.9)	(4.5)	(2.3)	(4.8)	(2.8)	(2.4)
Net wealth quintiles							
Bottom 20%	1.9	6.1	7.7	5.8	7.0	2.7	3.5
	(1.5)	(2.5)	(3.6)	(1.7)	(5.3)	(1.2)	(1.4)
Next 20%	17.6	11.4	17.8	14.4	5.6	25.0	19.0
	(5.6)	(3.1)	(5.4)	(2.4)	(3.9)	(4.6)	(3.5)
Middle 20%	16.5	11.7	11.9	12.8	4.6	27.4	17.4
	(4.8)	(2.9)	(5.1)	(2.2)	(2.0)	(5.3)	(3.3)
Next 20%	17.4	24.1	22.1	21.7	16.6	38.1	26.2
	(4.0)	(4.3)	(5.8)	(2.6)	(3.7)	(6.1)	(3.5)
Top 20%	61.0	55.1	46.1	54.2	59.8	58.9	59.4
	(3.9)	(5.1)	(5.4)	(2.9)	(4.3)	(5.9)	(3.5)
Income quintiles							
Bottom 20%	18.5	9.7	9.3	11.4	4.0	6.8	6.1
	(8.5)	(2.8)	(5.4)	(2.4)	(2.5)	(2.4)	(1.9)
Next 20%	19.7	9.8	15.1	13.3	8.7	25.4	20.6
	(6.3)	(2.6)	(6.5)	(2.3)	(4.8)	(4.9)	(3.8)
Middle 20%	23.9	23.0	17.4	21.8	17.1	27.7	22.7
	(6.0)	(4.1)	(5.5)	(2.5)	(4.2)	(6.5)	(4.0)
Next 20%	25.1	21.0	29.0	24.5	24.6	34.2	29.0
	(5.3)	(3.5)	(5.3)	(2.6)	(4.6)	(5.8)	(3.6)
Top 20%	41.0	39.7	34.0	38.4	48.9	45.7	47.4
	(4.6)	(3.9)	(4.6)	(2.5)	(4.3)	(5.4)	(3.5)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A21: Other real estate property, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	195.8	145.6	260.3	173.8	400.0	310.0	400.0
	(37.5)	(23.6)	(143.9)	(19.1)	(156.9)	(201.5)	(88.0)
35-44	175.7	150.1	180.9	162.4	379.0	348.0	369.0
	(49.0)	(24.6)	(65.3)	(19.0)	(171.9)	(91.1)	(46.5)
45-54	202.6	180.0	179.0	186.9	508.0	198.0	318.0
	(38.3)	(17.8)	(51.6)	(15.4)	(192.7)	(53.4)	(50.5)
55 or older	241.4	196.0	170.0	200.0	691.0	300.0	450.0
	(77.5)	(54.8)	(66.5)	(30.1)	(121.9)	(109.6)	(87.1)
Level of Education							
High	201.4	172.1	212.1	186.6	431.0	400.0	410.0
	(17.7)	(15.6)	(46.2)	(12.2)	(105.2)	(63.8)	(43.0)
Middle	199.4	143.2	167.8	150.0	620.0	355.0	488.0
	(58.8)	(17.8)	(47.9)	(17.1)	(134.0)	(85.9)	(101.5)
Low	100.6	500.0	218.1	200.7	364.0	118.0	143.0
	(73.0)	(295.0)	(96.3)	(58.0)	(128.1)	(41.6)	(35.3)
Housing Status							
Owner-outright	190.8	175.6	180.5	180.0	693.0	350.0	456.0
	(27.2)	(18.4)	(44.7)	(14.3)	(160.1)	(101.7)	(113.7)
Owner with mortgage	189.0	143.5	186.1	165.8	384.0	272.0	357.0
	(32.9)	(27.2)	(52.5)	(20.0)	(69.6)	(61.0)	(43.3)
Renter or other	232.0	160.5	203.0	188.8	620.0	182.0	325.4
	(112.7)	(34.0)	(84.0)	(28.3)	(454.0)	(100.2)	(106.5)
Net wealth quintiles							
Bottom 20%	100.0	68.0	37.5	67.2	620.0	46.8	87.4
	(45.5)	(53.6)	(81.3)	(34.5)	(243.6)	(99.6)	(194.7)
Next 20%	104.1	119.8	94.7	107.9	396.0	132.0	142.0
	(51.8)	(18.1)	(42.3)	(20.2)	(106.5)	(31.7)	(30.6)
Middle 20%	103.0	108.1	140.8	114.0	374.0	313.6	330.0
	(81.3)	(46.2)	(122.8)	(51.6)	(100.7)	(80.1)	(70.2)
Next 20%	110.0	142.6	151.8	137.9	355.0	230.0	254.0
	(50.2)	(17.3)	(65.6)	(21.6)	(130.6)	(51.6)	(41.8)
Top 20%	284.3	266.3	301.0	281.6	726.1	800.0	780.0
	(51.8)	(44.4)	(76.3)	(26.1)	(119.0)	(111.2)	(86.1)
Income quintiles							
Bottom 20%	197.7	165.6	236.3	172.0	462.9	150.0	180.0
	(69.4)	(26.8)	(283.9)	(23.0)	(406.8)	(50.4)	(63.6)
Next 20%	111.7	126.0	230.0	131.3	840.0	188.0	256.0
	(45.4)	(35.7)	(222.5)	(26.7)	(1015.7)	(81.0)	(99.6)
Middle 20%	181.7	142.8	162.8	147.2	452.0	126.0	230.4
	(70.7)	(30.5)	(72.4)	(29.5)	(178.1)	(50.9)	(70.3)
Next 20%	181.4	202.3	169.9	191.0	398.0	305.4	368.0
	(59.1)	(39.0)	(70.7)	(27.5)	(128.7)	(77.0)	(39.3)
Top 20%	319.5	196.9	227.8	223.9	615.0	712.0	702.0
	(69.1)	(29.7)	(44.1)	(25.5)	(152.7)	(84.3)	(80.8)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A22: Other real estate property, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	260.2	217.3	321.9	248.6	627.4	303.8	467.0
	(66.3)	(39.6)	(93.4)	(30.8)	(149.7)	(75.7)	(88.0)
35-44	300.6	230.1	304.4	269.9	776.8	687.9	708.3
	(51.6)	(42.7)	(77.2)	(31.4)	(199.1)	(166.7)	(136.2)
45-54	297.8	241.4	302.3	276.1	1,027.5	384.8	654.6
	(33.7)	(27.8)	(78.8)	(26.2)	(186.5)	(63.9)	(92.9)
55 or older	419.1	200.5	232.4	267.7	1,111.7	638.0	872.9
	(95.1)	(36.9)	(45.7)	(34.6)	(181.7)	(165.8)	(122.1)
Level of Education							
High	334.0	233.7	355.4	288.6	960.1	692.4	767.3
	(33.0)	(25.4)	(78.0)	(20.9)	(140.3)	(105.0)	(87.0)
Middle	250.3	183.0	229.3	213.3	1,024.6	362.3	891.8
	(53.4)	(29.8)	(49.2)	(24.1)	(154.9)	(75.2)	(127.4)
Low	145.6	472.6	305.1	295.1	459.9	163.6	212.3
	(65.0)	(195.6)	(79.2)	(62.1)	(151.7)	(35.8)	(44.3)
Housing Status							
Owner-outright	300.5	239.9	225.2	255.4	1,160.6	749.3	1,005.4
	(40.9)	(29.5)	(34.5)	(20.4)	(157.2)	(197.3)	(123.0)
Owner with mortgage	296.1	187.6	345.8	273.2	649.8	476.2	548.0
	(34.0)	(23.0)	(76.9)	(29.9)	(104.3)	(72.2)	(60.2)
Renter or other	333.2	246.3	292.5	282.2	1,123.2	495.5	575.8
	(93.3)	(63.2)	(84.4)	(40.0)	(401.0)	(130.7)	(125.3)
Net wealth quintiles							
Bottom 20%	110.9	112.5	100.0	108.0	457.9	134.3	252.4
	(43.8)	(40.8)	(55.9)	(27.3)	(204.6)	(121.0)	(126.4)
Next 20%	127.6	106.6	101.6	110.6	370.5	160.7	179.6
	(36.8)	(14.4)	(26.5)	(15.1)	(99.4)	(29.1)	(31.2)
Middle 20%	146.9	126.0	189.2	144.7	353.7	305.3	310.7
	(41.4)	(28.5)	(82.4)	(24.2)	(79.5)	(43.9)	(39.1)
Next 20%	134.9	145.3	177.7	151.0	514.0	279.3	362.4
	(33.6)	(12.7)	(43.0)	(14.4)	(156.1)	(41.0)	(62.5)
Top 20%	410.4	357.3	444.9	399.5	1,155.0	1,227.9	1,183.1
	(37.6)	(38.9)	(70.1)	(25.9)	(124.0)	(199.1)	(106.9)
Income quintiles							
Bottom 20%	207.5	161.8	295.3	202.2	569.5	160.0	232.3
	(62.9)	(26.9)	(205.4)	(49.7)	(232.5)	(43.5)	(75.0)
Next 20%	130.6	152.5	290.7	179.0	1,208.0	452.7	540.8
	(33.5)	(44.1)	(187.1)	(49.8)	(473.8)	(203.3)	(189.0)
Middle 20%	215.2	179.9	189.1	190.0	653.5	217.7	372.9
	(83.5)	(36.6)	(55.0)	(29.3)	(169.2)	(62.6)	(87.9)
Next 20%	272.1	278.3	219.7	255.6	710.5	425.9	558.1
	(50.9)	(51.4)	(46.1)	(25.6)	(183.7)	(131.8)	(107.2)
Top 20%	469.0	276.2	410.9	368.1	1,187.3	1,023.5	1,112.7
	(51.1)	(40.0)	(93.8)	(33.7)	(166.2)	(144.4)	(110.4)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A23: Total financial assets, participation rate by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	97.3	89.5	96.3	92.8	99.1	97.2	98.1
	(2.3)	(2.5)	(2.6)	(1.7)	(0.9)	(1.8)	(1.0)
35-44	100.0	94.2	90.1	94.5	99.4	96.7	97.6
	(0.0)	(1.7)	(3.4)	(1.2)	(0.6)	(1.9)	(1.3)
45-54	97.8	91.7	92.0	93.2	99.7	95.9	97.5
	(1.6)	(2.0)	(3.0)	(1.3)	(0.4)	(1.8)	(1.0)
55 or older	95.5	89.5	100.0	94.1	100.0	94.7	97.4
	(4.2)	(3.5)	(0.0)	(1.9)	(0.4)	(2.5)	(1.2)
Level of Education							
High	97.8	94.4	96.9	95.8	99.6	97.6	98.3
	(1.4)	(1.3)	(1.6)	(0.9)	(0.4)	(1.1)	(0.7)
Middle	99.5	88.5	94.3	92.0	99.3	95.2	97.6
	(0.5)	(2.0)	(2.2)	(1.3)	(0.5)	(2.4)	(1.0)
Low	95.6	89.3	85.8	89.1	100.0	94.9	96.2
	(4.2)	(6.9)	(5.1)	(3.3)	(0.4)	(2.0)	(1.5)
Housing Status							
Owner-outright	99.4	91.8	93.8	93.9	98.8	96.8	97.9
	(0.6)	(1.5)	(3.3)	(1.1)	(0.7)	(2.1)	(1.0)
Owner with mortgage	99.5	91.9	93.7	94.7	100.0	98.3	99.2
	(0.4)	(2.5)	(2.3)	(1.2)	(0.4)	(1.0)	(0.5)
Renter or other	92.2	90.5	92.7	91.5	100.0	94.8	95.7
	(4.8)	(2.9)	(3.1)	(2.0)	(0.4)	(1.7)	(1.4)
Net wealth quintiles							
Bottom 20%	92.6	87.3	89.1	88.7	100.0	91.5	93.0
	(5.0)	(3.3)	(4.5)	(2.3)	(0.4)	(2.8)	(2.3)
Next 20%	96.1	89.6	93.6	91.9	100.0	96.7	97.7
	(3.3)	(3.0)	(4.1)	(2.3)	(0.4)	(2.1)	(1.4)
Middle 20%	99.0	90.4	90.9	92.4	100.0	98.1	98.9
		(2.7)	(5.0)	(1.9)	(0.4)	(1.7)	(0.9)
Next 20%	100.0	96.2	93.3	96.5	99.9	99.2	99.6
	(0.0)	(1.5)	(4.0)	(1.3)	(0.4)	(1.3)	(0.6)
Top 20%	100.0	96.2	99.2	98.3	98.5	99.6	98.9
	(0.0)	(2.1)	(0.7)	(0.9)	(1.0)	(0.4)	(0.7)
Income quintiles							
Bottom 20%	97.5	85.7	88.2	88.4	100.0	87.8	91.0
		(3.4)	(5.6)	(2.6)	(0.4)	(3.6)	(2.7)
Next 20%	95.9	91.8	96.3	93.7	99.7	99.3	99.4
	(3.6)	(3.8)		(2.8)	(0.4)		
Middle 20%	98.4	93.0	94.0	94.5	99.3	98.7	99.0
	(1.6)	(2.4)	(3.4)	(1.7)	(0.7)		(0.9)
Next 20%	97.9	93.6	93.7	94.7	99.9	99.7	99.8
		(2.4)	(3.2)	(1.6)	(0.4)	(0.4)	(0.4)
Top 20%	99.9	96.1	94.0	96.6	98.9	99.1	99.0
	(0.0)	(1.7)	(3.1)	(1.1)	(1.0)	(1.2)	(0.8)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: Total financial assets include deposits (sight and saving accounts), risky assets (mutual funds and stocks), bonds, other financial investments and voluntary pension plans or life insurance contracts. The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing standard error is because the participation rate in the corresponding category is 100% in at least one implicate.

Table A24: Total financial assets, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	13.9	10.4	25.1	12.8	27.1	12.2	19.4
	(4.9)	(1.7)	(5.7)	(2.0)	(5.3)	(3.9)	(3.9)
35-44	18.3	17.3	33.4	20.6	50.2	24.5	29.5
	(4.0)	(2.9)	(4.8)	(2.4)	(11.6)	(5.7)	(4.9)
45-54	30.5	15.2	30.0	22.9	43.3	20.7	30.2
	(8.9)	(2.9)	(5.3)	(2.5)	(15.0)	(6.5)	(5.3)
55 or older	45.2	18.6	31.9	25.7	66.3	29.4	48.8
	(21.3)	(3.9)	(7.8)	(3.4)	(12.5)	(15.0)	(11.3)
Level of Education							
High	37.1	21.9	50.2	30.0	67.0	51.6	58.9
	(4.8)	(1.9)	(7.0)	(2.1)	(10.0)	(9.9)	(7.2)
Middle	9.4	8.7	26.7	12.3	29.8	10.2	19.4
	(2.5)	(1.7)	(4.4)	(1.7)	(6.5)	(2.4)	(3.0)
Low	4.3	11.8	14.3	10.6	22.8	5.4	7.2
	(3.1)	(6.9)	(4.6)	(3.0)	(10.7)	(1.3)	(1.9)
Housing Status							
Owner-outright	26.6	19.0	37.2	22.0	71.7	25.7	53.6
	(5.8)	(2.0)	(6.7)	(1.5)	(11.1)	(15.0)	(10.0)
Owner with mortgage	19.7	15.2	31.2	22.0	31.5	32.7	31.7
	(3.7)	(2.9)	(3.9)	(2.5)	(3.6)	(5.8)	(2.9)
Renter or other	9.8	6.6	23.8	9.4	20.1	10.6	11.9
	(6.0)	(1.7)	(7.9)	(2.0)	(11.2)	(2.9)	(3.2)
Net wealth quintiles							
Bottom 20%	4.4	4.1	8.4	4.8	5.0	4.4	4.5
	(1.8)	(1.0)	(4.0)	(0.8)	(1.9)	(0.9)	(0.8)
Next 20%	9.3	8.6	32.9	13.1	32.8	30.1	31.2
	(5.7)	(1.9)	(10.9)	(2.7)	(6.9)	(6.5)	(4.3)
Middle 20%	17.1	16.9	23.2	18.1	21.1	15.1	18.3
	(3.3)	(3.2)	(5.5)	(2.4)	(4.5)	(6.8)	(4.2)
Next 20%	17.7	21.9	36.6	24.3	55.7	48.5	51.6
	(5.6)	(3.2)	(7.1)	(3.4)	(11.5)	(11.8)	(7.8)
Top 20%	93.6	67.8	57.0	72.1	128.9	222.0	152.8
	(13.2)	(10.0)	(10.0)	(6.5)	(17.9)	(64.6)	(20.3)
Income quintiles							
Bottom 20%	5.8	6.2	17.8	6.9	10.3	6.2	8.5
	(2.6)	(1.7)	(7.7)	(1.4)	(3.7)	(2.8)	(2.5)
Next 20%	7.1	10.1	25.5	11.1	25.2	7.1	10.0
	(3.4)	(3.0)	(6.6)	(2.3)	(7.7)	(1.6)	(2.6)
Middle 20%	19.2	15.6	22.0	18.0	36.5	20.2	28.3
	(6.0)	(3.0)	(5.9)	(1.9)	(9.3)	(7.8)	(5.5)
Next 20%	32.9	24.9	39.0	31.8	54.5	55.7	55.1
	(8.1)	(5.7)	(6.1)	(4.6)	(16.5)	(11.8)	(10.3)
Top 20%	65.5	39.7	64.3	51.4	100.0	120.8	106.4
	(12.7)	(5.3)	(12.4)	(4.7)	(14.1)	(23.4)	(13.3)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: Total financial assets include deposits (sight and saving accounts), risky assets (mutual funds and stocks), bonds, other financial investments and voluntary pension plans or life insurance contracts. The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A25: Total financial assets, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	31.7	25.1	46.7	31.4	51.0	90.2	71.5
	(4.5)	(3.5)	(9.1)	(2.8)	(7.2)	(33.2)	(17.7)
35-44	75.3	44.4	60.5	56.1	84.6	98.5	94.0
	(17.2)	(5.8)	(14.6)	(6.5)	(12.9)	(23.4)	(16.9)
45-54	99.3	44.4	71.8	65.7	114.5	109.6	111.7
	(14.1)	(4.6)	(8.0)	(4.7)	(13.4)	(24.0)	(15.1)
55 or older	105.7	49.4	74.6	70.8	222.7	201.0	212.2
	(13.8)	(9.5)	(12.8)	(6.6)	(76.3)	(54.2)	(47.4)
Level of Education							
High	94.5	52.8	100.1	73.8	137.4	211.7	184.8
	(8.3)	(4.4)	(14.6)	(3.8)	(14.2)	(30.6)	(20.1)
Middle	46.8	24.1	49.4	35.5	110.8	31.5	78.7
	(16.4)	(2.7)	(6.3)	(3.9)	(34.8)	(5.5)	(21.0)
Low	23.0	18.7	25.3	23.5	64.8	23.2	33.6
	(6.7)	(7.1)	(4.2)	(3.0)	(16.0)	(5.0)	(5.4)
Housing Status							
Owner-outright	88.9	47.3	82.3	63.1	173.8	147.0	162.5
	(12.4)	(4.3)	(11.4)	(4.2)	(45.1)	(31.2)	(29.0)
Owner with mortgage	66.3	35.2	63.9	54.7	83.9	154.1	117.6
	(9.3)	(3.6)	(10.8)	(5.0)	(8.6)	(30.8)	(15.6)
Renter or other	44.1	22.2	41.2	32.5	52.6	77.5	72.7
	(10.0)	(3.1)	(7.0)	(3.4)	(9.5)	(21.6)	(17.6)
Net wealth quintiles							
Bottom 20%	10.2	10.0	13.7	11.0	8.2	8.7	8.6
	(2.3)	(1.7)	(2.6)	(1.3)	(1.9)	(1.4)	(1.2)
Next 20%	25.3	20.0	41.6	26.9	47.8	46.0	46.6
	(3.8)	(2.5)	(6.2)	(2.5)	(7.1)	(5.8)	(4.6)
Middle 20%	30.5	24.1	39.4	28.9	40.6	47.1	44.2
	(6.1)	(2.5)	(10.1)	(2.7)	(7.3)	(7.6)	(5.7)
Next 20%	38.7	40.2	57.5	43.6	82.3	85.7	83.8
	(5.4)	(3.8)	(7.5)	(3.1)	(9.3)	(12.5)	(6.8)
Top 20%	193.3	122.8	137.2	149.9	267.3	579.9	389.8
	(22.3)	(14.5)	(25.4)	(10.8)	(61.7)	(96.4)	(52.8)
Income quintiles							
Bottom 20%	26.6	15.2	23.0	19.1	26.5	27.3	27.0
	(9.5)	(2.7)	(5.1)	(2.7)	(8.0)	(7.5)	(6.2)
Next 20%	26.3	23.2	38.3	27.4	56.0	54.9	55.2
	(7.7)	(4.2)	(23.0)	(5.7)	(19.7)	(22.3)	(16.8)
Middle 20%	65.2	32.1	37.4	41.8	70.7	60.5	65.3
	(23.8)	(6.1)	(9.2)	(6.9)	(12.0)	(22.0)	(12.5)
Next 20%	57.2	58.2	65.1	60.0	157.4	118.3	139.3
	(8.8)	(8.9)	(9.8)	(5.9)	(68.5)	(36.0)	(40.8)
Top 20%	161.4	78.8	130.9	117.3	190.2	395.2	286.9
	(19.9)	(8.7)	(16.8)	(7.4)	(18.1)	(73.5)	(35.4)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.

Note: Total financial assets include deposits (sight and saving accounts), risky assets (mutual funds and stocks), bonds, other financial investments and voluntary pension plans or life insurance contracts. The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A26: Deposits, participation rate by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	96.1	88.3	93.2	91.2	99.1	95.7	97.3
	(2.4)	(2.6)	(3.3)	(1.7)	(0.9)	(2.2)	(1.2)
35-44	97.9	93.1	85.5	92.3	99.4	96.6	97.4
	(1.6)	(1.9)	(3.7)	(1.4)	(0.6)	(1.9)	(1.3)
45-54	96.4	90.4	89.6	91.6	99.7	95.9	97.5
	(1.9)	(2.1)	(3.4)	(1.5)	(0.4)	(1.8)	(1.0)
55 or older	95.1	88.4	99.7	93.4	100.0	94.7	97.4
	(4.2)	(3.6)	(0.0)	(2.0)	(0.4)	(2.5)	(1.2)
Level of Education							
High	96.9	93.9	96.6	95.3	99.6	96.8	97.8
	(1.5)	(1.3)	(1.7)	(0.9)	(0.4)	(1.2)	(0.8)
Middle	98.7	86.4	91.2	89.8	99.3	95.2	97.6
	(1.0)	(2.2)	(2.8)	(1.4)	(0.5)	(2.4)	(1.0)
Low	89.8	89.3	78.8	83.6	100.0	94.9	96.2
	(6.0)	(6.9)	(5.6)	(3.7)	(0.4)	(2.0)	(1.5)
Housing Status							
Owner-outright	97.5	90.4	89.3	91.8	98.8	96.8	97.9
	(1.3)	(1.6)	(3.6)	(1.1)	(0.7)	(2.1)	(1.0)
Owner with mortgage	98.2	90.5	92.5	93.4	100.0	98.3	99.2
	(1.0)	(2.6)	(2.6)	(1.3)	(0.4)	(1.0)	(0.5)
Renter or other	91.6	90.1	88.9	90.0	100.0	94.0	95.1
	(4.6)	(2.9)	(3.8)	(2.0)	(0.4)	(1.8)	(1.5)
Net wealth quintiles							
Bottom 20%	92.6	87.1	86.2	87.8	100.0	91.1	92.7
	(5.0)	(3.3)	(5.3)	(2.4)	(0.4)	(2.9)	(2.4)
Next 20%	95.1	87.7	89.9	89.7	100.0	95.7	97.0
	(3.4)	(3.2)	(5.0)	(2.4)	(0.4)	(2.5)	(1.7)
Middle 20%	96.0	89.4	88.5	90.6	100.0	98.1	98.9
	(2.9)	(3.0)	(5.1)	(2.1)	(0.4)	(1.7)	(0.9)
Next 20%	97.3	94.4	89.7	94.1	99.9	99.2	99.6
	(1.8)	(2.0)	(5.2)	(1.7)	(0.4)	(1.3)	(0.6)
Top 20%	99.8	95.1	96.8	97.1	98.5	99.6	98.9
	(0.0)	(2.2)	(2.3)	(1.1)	(1.0)	(0.4)	(0.7)
Income quintiles							
Bottom 20%	96.9	84.6	86.2	87.2	100.0	86.8	90.3
		(3.6)	(5.6)	(2.6)	(0.4)	(3.7)	(2.8)
Next 20%	92.2	89.7	91.5	90.7	99.7	99.3	99.4
	(4.3)	(4.0)	(5.4)	(2.6)	(0.4)		
Middle 20%	96.9	92.8	89.1	92.8	99.3	98.0	98.6
	(2.3)	(2.5)	(4.3)	(1.8)	(0.7)	(1.9)	(1.1)
Next 20%	97.7	92.6	92.2	93.8	99.9	99.7	99.8
	(2.3)	(2.5)	(3.6)	(1.8)	(0.4)	(0.4)	(0.4)
Top 20%	98.8	94.5	92.2	95.1	98.9	99.1	99.0
	(0.9)	(1.9)	(3.9)	(1.3)	(1.0)	(1.2)	(0.8)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing standard error is because the participation rate in the corresponding category is 100% in at least one implicate.

Table A27: Deposits, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	10.2	9.3	17.7	10.8	19.3	8.2	9.9
	(3.2)	(1.4)	(5.9)	(1.3)	(7.1)	(2.1)	(2.8)
35-44	11.4	12.4	18.8	13.8	28.4	14.9	18.4
	(2.9)	(2.6)	(4.0)	(2.3)	(8.5)	(2.5)	(2.5)
45-54	12.6	10.5	15.6	12.7	29.4	11.6	18.4
	(2.6)	(2.0)	(2.8)	(1.3)	(8.3)	(3.4)	(4.2)
55 or older	19.9	13.3	17.1	15.5	44.9	16.7	33.9
	(15.1)	(3.2)	(6.7)	(2.8)	(10.1)	(10.3)	(7.2)
Level of Education							
High	20.3	16.0	26.7	19.5	45.1	28.9	35.8
	(3.2)	(1.6)	(3.0)	(1.5)	(4.8)	(5.0)	(3.5)
Middle	6.1	6.5	13.4	8.3	19.0	6.4	11.2
	(1.7)	(1.4)	(2.8)	(1.0)	(4.0)	(1.3)	(2.3)
Low	3.7	8.8	7.1	5.9	10.2	5.3	6.1
	(1.8)	(5.9)	(3.1)	(1.6)	(6.7)	(1.2)	(1.2)
Housing Status							
Owner-outright	15.1	13.9	20.0	15.1	48.2	14.6	34.0
	(3.4)	(1.8)	(2.9)	(1.3)	(7.5)	(7.1)	(5.5)
Owner with mortgage	10.1	11.0	17.3	12.8	22.1	19.8	21.0
	(1.6)	(2.3)	(2.8)	(1.6)	(3.7)	(3.3)	(2.2)
Renter or other	8.2	5.4	13.2	7.4	10.4	6.9	7.3
	(4.8)	(1.4)	(5.9)	(1.6)	(7.6)	(1.6)	(1.6)
Net wealth quintiles							
Bottom 20%	3.8	3.8	5.6	4.2	3.3	3.7	3.7
	(1.7)	(0.8)	(2.0)	(0.7)	(1.3)	(0.8)	(0.7)
Next 20%	5.4	7.6	19.4	8.9	25.9	18.2	19.8
	(3.4)	(1.6)	(4.2)	(1.5)	(9.7)	(4.8)	(4.2)
Middle 20%	9.6	12.8	11.9	11.2	15.2	10.0	11.8
	(2.1)	(3.3)	(2.8)	(1.7)	(5.4)	(3.5)	(2.5)
Next 20%	10.3	17.1	19.5	15.4	43.1	29.4	37.4
	(2.5)	(2.5)	(5.8)	(2.0)	(7.1)	(8.4)	(6.3)
Top 20%	56.5	46.7	30.5	44.5	68.7	68.4	68.6
	(10.8)	(7.9)	(6.8)	(4.4)	(10.5)	(20.5)	(9.1)
Income quintiles							
Bottom 20%	5.7	5.1	9.1	5.8	5.8	4.4	4.7
	(2.5)	(1.4)	(6.7)	(1.3)	(1.7)	(1.2)	(0.9)
Next 20%	5.6	7.8	15.2	8.5	16.5	6.3	7.2
	(2.2)	(2.2)	(4.6)	(1.7)	(6.8)	(1.3)	(1.6)
Middle 20%	10.7	11.8	12.1	11.8	29.0	11.6	16.7
	(3.1)	(2.9)	(2.9)	(1.5)	(7.5)	(3.0)	(4.3)
Next 20%	20.6	18.2	19.8	19.0	38.2	28.6	32.9
	(6.7)	(3.8)	(4.1)	(2.4)	(8.8)	(7.2)	(5.8)
Top 20%	36.8	24.7	30.6	29.8	59.2	77.8	66.4
	(10.6)	(4.3)	(5.1)	(3.6)	(8.5)	(14.0)	(9.5)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A28: Deposits, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	25.9	22.2	31.1	25.1	39.5	24.0	31.4
	(3.9)	(3.4)	(4.5)	(2.3)	(6.5)	(4.1)	(3.7)
35-44	51.6	31.4	33.7	37.0	51.8	44.7	47.0
	(13.3)	(3.1)	(5.3)	(4.2)	(7.6)	(8.3)	(6.1)
45-54	47.2	30.0	34.0	35.4	74.9	46.3	58.4
	(5.4)	(2.7)	(3.2)	(2.1)	(9.5)	(6.9)	(5.7)
55 or older	64.3	30.7	42.6	42.5	95.3	80.8	88.3
	(8.5)	(4.3)	(6.8)	(3.6)	(12.7)	(16.5)	(10.0)
Level of Education							
High	53.9	37.7	50.4	44.8	84.2	73.7	77.5
	(4.5)	(2.9)	(5.1)	(2.1)	(8.2)	(8.3)	(6.0)
Middle	33.3	17.5	28.4	23.5	54.1	21.9	41.1
	(12.2)	(1.6)	(2.9)	(2.7)	(6.0)	(4.3)	(4.1)
Low	17.3	15.5	17.0	16.8	50.6	20.0	27.7
	(5.3)	(6.6)	(4.2)	(2.4)	(15.3)	(4.9)	(5.3)
Housing Status							
Owner-outright	55.7	33.4	44.2	40.6	89.2	67.7	80.1
	(8.7)	(2.6)	(5.3)	(2.9)	(9.1)	(13.2)	(7.3)
Owner with mortgage	34.7	25.4	32.8	30.8	51.5	57.7	54.5
	(3.5)	(2.8)	(3.9)	(2.0)	(5.7)	(9.5)	(5.5)
Renter or other	33.4	17.7	26.8	23.6	39.4	28.9	30.9
	(7.6)	(2.6)	(3.9)	(2.3)	(7.8)	(3.4)	(3.1)
Net wealth quintiles							
Bottom 20%	8.7	8.6	11.1	9.3	6.8	7.2	7.1
	(2.2)	(1.7)	(2.3)	(1.3)	(2.0)	(1.3)	(1.1)
Next 20%	20.7	15.4	28.7	20.0	37.6	34.4	35.4
	(3.7)	(1.9)	(3.6)	(1.7)	(6.5)	(5.1)	(4.1)
Middle 20%	21.3	19.6	24.2	21.0	31.1	29.7	30.3
	(5.4)	(2.3)	(5.7)	(2.4)	(6.5)	(5.6)	(4.8)
Next 20%	27.3	31.2	36.6	31.2	61.8	60.0	61.0
	(4.7)	(3.4)	(5.6)	(2.4)	(8.1)	(9.7)	(5.6)
Top 20%	106.3	79.5	62.2	82.9	123.6	150.1	134.0
	(14.2)	(8.1)	(9.5)	(6.3)	(12.1)	(24.5)	(12.1)
Income quintiles							
Bottom 20%	21.4	12.6	18.6	15.6	16.8	17.6	17.4
	(8.0)	(2.5)	(5.2)	(2.2)	(6.6)	(5.3)	(4.5)
Next 20%	20.1	19.7	21.5	20.2	36.2	21.7	25.9
	(6.1)	(3.9)	(4.6)	(2.8)	(10.1)	(5.6)	(5.1)
Middle 20%	40.6	23.8	22.6	27.6	53.9	30.0	41.3
	(16.7)	(3.0)	(5.0)	(4.4)	(9.2)	(5.8)	(5.5)
Next 20%	38.0	39.1	38.2	38.5	66.5	57.9	62.5
	(5.0)	(4.4)	(6.0)	(3.3)	(8.9)	(13.3)	(8.4)
Top 20%	86.5	53.0	61.9	65.3	113.2	130.3	121.2
	(9.9)	(5.0)	(6.9)	(4.1)	(12.3)	(20.1)	(11.7)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A29: Risky assets, participation rate by household characteristics

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	13.3	10.9	23.8	14.2	8.9	13.3	11.2
	(3.3)	(2.4)	(5.0)	(1.8)	(3.1)	(3.6)	(2.4)
35-44	21.6	18.0	26.6	21.0	12.7	18.3	16.5
	(3.4)	(2.3)	(4.3)	(1.8)	(3.1)	(3.1)	(2.3)
45-54	25.9	17.0	22.5	20.7	18.5	13.8	15.7
	(3.4)	(2.3)	(3.5)	(1.6)	(3.3)	(2.4)	(1.9)
55 or older	21.4	10.7	24.2	17.3	20.8	10.6	15.7
	(4.2)	(2.8)	(6.1)	(2.4)	(4.0)	(2.8)	(2.5)
Level of Education							
High	27.4	21.2	35.7	25.6	23.4	27.4	26.0
	(2.5)	(1.9)	(3.7)	(1.4)	(3.2)	(2.9)	(2.1)
Middle	9.3	8.2	20.6	11.8	10.2	4.1	7.7
	(2.7)	(1.7)	(3.3)	(1.4)	(2.0)	(1.7)	(1.4)
Low	12.0	6.0	13.0	11.4	10.5	2.0	4.0
	(5.3)	(4.6)	(4.5)	(3.0)	(4.7)	(1.1)	(1.4)
Housing Status							
Owner-outright	24.6	16.2	27.9	20.0	18.8	16.9	18.0
	(3.0)	(1.8)	(4.4)	(1.5)	(3.2)	(3.7)	(2.4)
Owner with mortgage	22.8	16.9	25.0	21.5	14.4	16.2	15.3
	(2.8)	(2.8)	(3.2)	(1.6)	(2.2)	(2.5)	(1.7)
Renter or other	6.0	9.2	19.4	11.8	7.2	12.6	11.6
	(2.4)	(2.3)	(3.9)	(1.7)	(3.4)	(2.1)	(1.8)
Net wealth quintiles							
Bottom 20%	2.9	2.9	8.4	4.4	1.2	1.4	1.4
	(2.3)	(1.4)	(3.5)	(1.2)	(1.3)	(1.3)	(1.1)
Next 20%	8.7	10.1	21.1	12.6	3.9	14.3	11.1
	(3.4)	(2.7)	(4.7)	(2.0)	(3.0)	(3.3)	(2.4)
Middle 20%	16.3	11.5	19.6	14.4	6.5	10.9	9.0
	(4.3)	(2.9)	(5.6)	(2.2)	(2.6)	(2.9)	(2.0)
Next 20%	21.4	21.1	32.9	23.9	17.5	22.9	19.9
	(4.3)	(3.9)	(6.3)	(2.6)	(3.7)	(4.8)	(3.1)
Top 20%	39.9	35.6	37.3	37.5	28.8	39.0	32.8
	(4.2)	(4.3)	(5.2)	(2.4)	(3.6)	(5.7)	(3.1)
Income quintiles							
Bottom 20%	0.6	6.1	9.9	5.8	0.0	4.8	3.5
		(2.4)	(6.0)	(1.6)	(0.0)	(2.3)	(1.7)
Next 20%	14.0	9.6	20.8	13.1	9.2	8.7	8.8
	(4.4)	(2.7)	(8.9)	(2.2)	(4.4)	(2.7)	(2.3)
Middle 20%	24.4	12.9	18.7	17.3	9.4	11.9	10.7
	(6.8)	(3.1)	(6.8)	(2.4)	(3.1)	(3.9)	(2.5)
Next 20%	21.2	22.2	28.0	23.7	18.0	22.2	19.9
	(5.2)	(3.8)	(5.1)	(2.6)	(3.8)	(4.6)	(2.9)
Top 20%	35.0	28.8	37.9	33.2	28.1	34.9	31.3
	(4.2)	(3.3)	(4.9)	(2.4)	(3.8)	(4.9)	(3.0)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: Risky assets include stocks and mutual funds. The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing standard error is due to insufficient observations to obtain a bootstrapped standard error in the corresponding category.

Table A30: Risky assets, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	7.3	8.1	7.5	8.0	7.4	24.0	20.8
	(22.3)	(3.1)	(7.4)	(2.1)	(24.5)	(16.2)	(12.4)
35-44	6.8	12.8	12.8	11.1	49.0	20.7	23.0
	(7.2)	(6.4)	(7.1)	(3.2)	(33.3)	(13.2)	(12.8)
45-54	53.0	23.0	24.1	28.4	18.4	63.2	34.8
	(18.9)	(8.4)	(13.6)	(6.6)	(9.0)	(24.4)	(11.9)
55 or older	53.7	16.3	23.2	25.0	69.6	277.9	96.8
	(18.0)	(24.1)	(39.7)	(10.6)	(37.1)	(212.6)	(52.1)
Level of Education							
High	26.6	14.0	20.5	16.9	37.8	42.2	41.0
	(14.0)	(3.1)	(6.8)	(2.8)	(15.6)	(12.7)	(8.3)
Middle	10.6	5.0	17.6	14.0	35.8	8.0	27.6
	(20.6)	(9.8)	(6.4)	(5.4)	(20.8)	(52.3)	(18.9)
Low	15.0	0.1	4.9	5.6	50.4	5.0	11.3
	(16.8)		(9.0)	(5.1)	(48.5)	(52.5)	(33.7)
Housing Status							
Owner-outright	26.0	15.0	23.1	17.8	58.8	124.8	62.2
	(16.7)	(3.8)	(11.4)	(4.0)	(16.2)	(113.7)	(19.4)
Owner with mortgage	12.2	8.4	13.7	11.7	14.4	50.0	31.0
	(8.2)	(6.6)	(5.7)	(3.1)	(9.8)	(24.4)	(11.6)
Renter or other	60.0	8.6	10.5	9.2	7.4	20.2	20.2
	(155.0)	(13.6)	(9.2)	(5.2)	(33.2)	(6.6)	(6.3)
Net wealth quintiles							
Bottom 20%	0.5	4.8	5.9	5.2	0.5	30.9	26.2
		(10.1)	(8.5)	(6.8)		(17.3)	(19.2)
Next 20%	2.8	4.3	20.2	7.2	7.4	19.2	15.9
	(3.9)	(6.7)	(9.3)	(4.2)	(4.3)	(8.0)	(7.6)
Middle 20%	5.3	5.7	9.8	6.4	7.1	16.4	9.6
	(7.3)	(4.2)	(15.0)	(2.8)	(17.4)	(20.3)	(11.4)
Next 20%	14.6	9.2	11.3	10.4	19.2	23.0	22.0
	(8.7)	(4.4)	(6.1)	(3.3)	(13.6)	(13.4)	(9.8)
Top 20%	60.3	47.4	36.0	47.8	64.2	183.9	108.0
	(14.4)	(19.1)	(36.7)	(13.7)	(24.1)	(85.4)	(21.7)
Income quintiles							
Bottom 20%	457.0	2.0	6.5	3.9		35.4	35.4
		(3.4)	(7.2)	(7.2)		(67.4)	(67.4)
Next 20%	6.6	9.0	23.4	9.3	49.0	29.9	37.1
	(16.6)	(3.9)	(18.9)	(3.1)	(154.4)	(104.5)	(47.3)
Middle 20%	16.8	13.5	12.5	13.8	12.0	47.3	32.1
	(24.1)	(20.3)	(14.5)	(7.5)	(30.2)	(89.5)	(28.6)
Next 20%	50.2	17.3	16.2	18.0	37.6	15.2	22.0
	(26.1)	(14.5)	(6.0)	(5.0)	(23.2)	(12.0)	(12.1)
Top 20%	36.1	19.5	35.7	26.5	34.0	71.8	51.0
	(12.0)	(7.5)	(23.4)	(6.0)	(15.4)	(29.3)	(13.4)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: Risky assets include stocks and mutual funds. The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing median value is due to no observations in the corresponding category. The missing standard error is caused by insufficient observations to obtain a bootstrapped standard error in the corresponding category.

Table A31: Risky assets, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	31.1	17.5	26.0	23.2	29.7	46.0	39.9
	(23.3)	(7.2)	(33.1)	(12.1)	(12.0)	(13.3)	(9.6)
35-44	48.4	50.2	63.5	54.4	105.1	132.9	126.1
	(17.0)	(28.9)	(51.9)	(20.8)	(41.2)	(70.7)	(55.0)
45-54	166.0	63.2	131.5	117.6	90.2	279.9	187.6
	(48.5)	(23.1)	(45.1)	(22.1)	(37.5)	(114.0)	(62.0)
55 or older	131.1	43.5	73.3	80.9	159.7	539.2	287.2
	(37.7)	(17.4)	(55.6)	(25.2)	(49.4)	(160.6)	(64.5)
Level of Education							
High	122.8	51.8	112.9	87.0	133.1	221.1	192.7
	(26.9)	(15.3)	(49.3)	(13.7)	(35.2)	(51.0)	(36.8)
Middle	42.4	22.0	51.1	40.1	70.2	57.5	67.5
	(21.0)	(11.6)	(33.9)	(16.9)	(29.4)	(36.1)	(24.7)
Low	20.0	1.0	11.5	13.6	55.3	27.6	45.0
	(14.4)		(9.6)	(6.4)	(26.9)	(49.4)	(24.6)
Housing Status							
Owner-outright	89.2	57.4	105.0	77.4	116.6	325.1	199.8
	(21.3)	(21.6)	(44.7)	(14.8)	(31.8)	(116.6)	(54.6)
Owner with mortgage	116.2	28.9	71.9	71.3	103.1	173.0	139.2
	(50.3)	(6.4)	(46.7)	(24.6)	(33.3)	(52.2)	(30.7)
Renter or other	218.7	29.9	33.7	45.1	32.0	152.3	138.7
	(158.7)	(14.0)	(31.5)	(18.4)	(23.0)	(80.6)	(71.5)
Net wealth quintiles							
Bottom 20%	5.3	6.7	9.4	8.1	0.5	27.7	23.2
		(7.1)	(5.2)	(4.6)		(15.3)	(15.0)
Next 20%	5.5	15.9	21.1	16.1	6.3	29.2	26.6
	(2.8)	(10.1)	(8.5)	(5.7)	(4.0)	(9.9)	(9.0)
Middle 20%	16.8	13.4	19.5	15.6	22.2	46.6	38.8
	(8.8)	(5.7)	(16.2)	(5.1)	(11.8)	(18.2)	(13.0)
Next 20%	20.4	17.2	25.7	21.1	34.3	47.8	41.2
	(6.6)	(4.0)	(14.2)	(6.1)	(9.2)	(21.7)	(12.0)
Top 20%	160.4	96.2	163.3	139.3	165.7	495.2	318.3
	(34.8)	(28.5)	(84.8)	(27.5)	(37.2)	(121.7)	(59.3)
Income quintiles							
Bottom 20%	457.0	4.7	8.6	11.2		75.3	75.3
		(2.6)	(4.2)	(19.8)		(44.9)	(44.9)
Next 20%	16.0	20.7	47.1	33.8	125.1	167.5	154.8
	(22.6)	(9.5)	(71.4)	(38.1)	(128.5)	(120.8)	(93.3)
Middle 20%	49.7	54.5	32.3	45.3	55.3	163.4	120.2
	(27.5)	(56.0)	(50.5)	(23.0)	(40.1)	(124.4)	(80.4)
Next 20%	74.8	61.2	33.6	52.9	87.1	67.2	76.9
	(27.1)	(32.4)	(14.1)	(14.3)	(35.5)	(32.4)	(25.0)
Top 20%	173.9	58.7	164.0	123.6	127.8	341.2	240.0
	(45.3)	(22.0)	(51.9)	(20.0)	(37.4)	(97.4)	(55.5)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: Risky assets include stocks and mutual funds. The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights. The missing mean value is due to no observations in the corresponding category. The missing standard error is caused by insufficient observations to obtain a bootstrapped standard error in the corresponding category.

Table A32: Total debt, participation rate by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	63.2	50.9	48.1	53.3	73.1	64.6	68.6
	(5.8)	(3.9)	(6.7)	(2.9)	(4.9)	(5.1)	(3.6)
35-44	75.6	63.6	73.3	68.9	79.4	61.5	67.2
	(4.3)	(3.4)	(4.5)	(2.3)	(4.7)	(4.3)	(3.3)
45-54	70.6	63.1	72.7	67.6	76.6	63.0	68.6
	(4.3)	(3.2)	(4.2)	(2.2)	(4.2)	(4.2)	(3.0)
55 or older	68.8	40.7	47.4	49.2	53.7	40.5	47.1
	(5.6)	(6.1)	(7.2)	(3.9)	(4.9)	(5.5)	(3.8)
Level of Education							
High	66.8	56.2	61.0	60.2	68.3	57.2	61.2
	(3.0)	(2.5)	(4.6)	(1.8)	(3.8)	(3.4)	(2.5)
Middle	71.1	58.6	68.4	63.4	71.7	58.9	66.4
	(4.7)	(3.0)	(3.8)	(2.1)	(3.3)	(4.9)	(2.8)
Low	82.4	52.7	58.5	63.9	75.9	63.0	66.2
	(6.3)	(11.9)	(7.1)	(4.7)	(6.4)	(4.4)	(3.8)
Housing Status							
Owner-outright	50.6	45.4	32.4	44.5	45.6	41.0	43.7
	(3.8)	(2.7)	(4.7)	(1.9)	(4.0)	(5.2)	(3.2)
Owner with mortgage	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Renter or other	58.3	46.6	44.1	48.1	52.4	41.8	43.7
	(7.3)	(4.3)	(6.1)	(3.3)	(7.5)	(3.4)	(3.1)
Net wealth quintiles							
Bottom 20%	68.6	57.3	49.7	57.3	55.4	44.1	46.1
	(7.7)	(4.5)	(8.0)	(3.5)	(10.4)	(4.5)	(4.1)
Next 20%	84.5	68.8	76.2	73.9	78.5	60.7	66.2
	(5.0)	(4.4)	(6.2)	(2.9)	(6.3)	(5.3)	(4.3)
Middle 20%	75.0	49.9	74.4	60.7	83.5	73.7	78.0
	(6.6)	(4.3)	(6.8)	(3.0)	(4.5)	(5.6)	(3.8)
Next 20%	69.5	54.8	68.6	62.0	69.7	61.8	66.2
	(5.2)	(4.6)	(6.9)	(3.2)	(4.8)	(5.9)	(3.8)
Top 20%	57.5	54.4	54.9	55.5	63.7	64.7	64.1
	(4.6)	(4.3)	(5.6)	(2.9)	(4.3)	(6.0)	(3.5)
Income quintiles							
Bottom 20%	56.2	49.8	46.5	50.4	59.0	40.7	45.5
	(8.1)	(4.4)	(8.8)	(3.6)	(8.5)	(5.6)	(4.6)
Next 20%	72.7	52.8	65.2	60.1	72.5	62.4	65.3
	(5.8)	(4.9)	(8.2)	(3.4)	(7.8)	(5.7)	(4.1)
Middle 20%	70.6	55.4	71.2	63.3	71.8	57.1	64.0
	(8.1)	(6.1)	(5.9)	(4.1)	(5.2)	(6.0)	(4.0)
Next 20%	77.6	61.9	66.0	67.2	71.8	71.4	71.6
	(4.3)	(6.1)	(5.4)	(3.7)	(5.1)	(5.1)	(3.4)
Top 20%	68.2	71.1	65.0	68.5	74.7	74.3	74.5
	(4.6)	(3.4)	(4.7)	(2.6)	(3.9)	(4.9)	(3.2)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A33: Total debt, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	67.5	21.3	87.8	42.1	170.0	49.7	149.1
	(24.3)	(6.4)	(30.2)	(12.2)	(74.9)	(85.6)	(62.3)
35-44	82.1	51.5	93.9	75.7	270.0	198.0	219.4
	(13.8)	(19.0)	(26.1)	(9.4)	(38.5)	(27.3)	(25.2)
45-54	49.3	36.9	54.2	46.6	131.2	66.1	97.7
	(9.2)	(8.6)	(10.0)	(5.4)	(23.7)	(24.8)	(15.2)
55 or older	17.7	44.4	26.6	24.2	84.2	57.0	64.5
	(5.3)	(14.9)	(12.5)	(6.7)	(31.4)	(29.1)	(24.7)
Level of Education							
High	79.7	54.8	94.8	76.3	254.9	189.6	218.0
	(8.4)	(15.3)	(18.6)	(8.1)	(38.2)	(40.8)	(25.1)
Middle	36.8	21.9	70.6	35.7	136.9	49.1	113.8
	(16.3)	(4.5)	(11.1)	(6.8)	(32.1)	(47.3)	(31.2)
Low	19.5	52.6	33.0	27.5	54.0	58.9	59.4
	(7.9)	(45.8)	(14.3)	(7.8)	(42.6)	(31.1)	(26.4)
Housing Status							
Owner-outright	16.2	15.6	19.5	16.5	30.2	12.9	23.2
	(2.5)	(2.0)	(5.0)	(1.6)	(4.9)	(5.4)	(4.6)
Owner with mortgage	124.1	128.5	100.5	120.9	260.0	250.4	251.3
	(12.7)	(8.5)	(10.7)	(5.9)	(30.3)	(23.1)	(18.6)
Renter or other	10.7	11.9	18.9	13.0	15.0	10.2	12.2
	(5.2)	(1.8)	(7.0)	(1.7)	(14.6)	(2.0)	(2.0)
Net wealth quintiles							
Bottom 20%	11.5	16.9	24.4	18.4	17.3	8.2	9.4
	(25.7)	(5.0)	(13.5)	(4.3)	(101.4)	(1.6)	(1.6)
Next 20%	99.7	86.5	81.0	88.3	274.9	175.7	190.5
	(27.6)	(21.4)	(23.6)	(13.2)	(80.7)	(51.1)	(40.5)
Middle 20%	52.4	22.6	79.3	49.0	238.2	196.8	214.6
	(18.4)	(7.6)	(11.8)	(7.9)	(46.4)	(20.3)	(19.6)
Next 20%	41.6	27.9	54.9	39.9	108.2	120.5	112.2
	(25.0)	(9.8)	(21.6)	(5.7)	(31.6)	(28.7)	(22.2)
Top 20%	68.3	54.0	85.8	69.5	109.5	200.0	139.4
	(8.0)	(15.4)	(18.4)	(7.4)	(37.0)	(62.6)	(38.2)
Income quintiles							
Bottom 20%	40.5	20.1	22.6	23.2	31.9	8.7	15.3
	(36.3)	(6.4)	(18.8)	(7.5)	(41.3)	(15.5)	(14.7)
Next 20%	34.9	24.9	60.9	33.5	128.6	24.9	54.2
	(24.2)	(7.8)	(22.2)	(9.2)	(80.3)	(30.1)	(39.7)
Middle 20%	39.7	41.2	58.1	46.6	161.2	136.2	147.2
	(17.6)	(17.2)	(16.7)	(10.3)	(63.0)	(40.0)	(27.3)
Next 20%	64.5	32.0	74.6	60.3	173.7	210.2	189.6
	(15.2)	(16.2)	(19.7)	(9.1)	(39.0)	(44.8)	(31.2)
Top 20%	93.8	77.7	98.6	93.5	215.2	251.5	226.3
	(13.0)	(20.9)	(18.3)	(9.0)	(42.1)	(85.0)	(38.7)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A34 Total debt, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	105.6	79.2	122.1	94.9	254.9	196.8	226.0
	(13.3)	(10.3)	(23.1)	(8.0)	(34.3)	(28.3)	(21.5)
35-44	124.2	93.9	141.2	114.6	310.6	269.4	284.8
	(11.8)	(7.6)	(16.0)	(6.8)	(30.9)	(29.2)	(22.0)
45-54	89.1	80.9	94.1	87.0	243.9	146.9	191.8
	(9.3)	(8.4)	(11.4)	(5.8)	(38.7)	(18.6)	(21.3)
55 or older	45.8	65.8	61.6	58.1	170.0	114.9	146.4
	(11.2)	(11.6)	(14.5)	(7.2)	(27.8)	(20.4)	(18.5)
Level of Education							
High	124.2	103.7	148.2	118.5	327.3	272.7	294.4
	(8.1)	(7.1)	(14.8)	(5.1)	(35.3)	(25.0)	(20.4)
Middle	77.2	61.1	103.3	76.8	225.7	153.8	199.2
	(12.6)	(6.0)	(11.3)	(5.4)	(22.7)	(23.7)	(17.2)
Low	48.4	100.6	71.4	67.7	132.8	113.9	119.1
	(12.4)	(38.0)	(18.1)	(11.5)	(26.7)	(14.7)	(13.2)
Housing Status							
Owner-outright	38.8	44.2	47.3	43.1	154.7	99.4	132.6
	(5.7)	(5.5)	(19.1)	(4.4)	(44.4)	(29.1)	(29.0)
Owner with mortgage	159.7	156.0	144.0	152.8	311.3	312.9	312.1
	(8.8)	(7.8)	(10.4)	(5.4)	(18.1)	(18.6)	(12.7)
Renter or other	36.3	35.2	56.4	41.6	125.2	66.6	79.5
	(10.6)	(7.1)	(18.6)	(6.5)	(52.9)	(15.9)	(16.8)
Net wealth quintiles							
Bottom 20%	82.6	74.6	84.2	78.3	178.1	66.2	90.3
	(24.4)	(14.1)	(25.5)	(11.8)	(69.2)	(26.1)	(25.3)
Next 20%	118.0	96.7	104.1	103.7	258.2	208.9	227.1
	(16.9)	(10.9)	(13.9)	(7.2)	(35.6)	(27.4)	(20.6)
Middle 20%	90.8	63.8	112.7	84.2	281.4	218.1	248.0
	(15.8)	(10.5)	(15.6)	(8.0)	(26.5)	(23.2)	(17.7)
Next 20%	89.4	73.8	110.8	88.0	220.0	189.0	207.1
	(12.2)	(10.2)	(19.7)	(7.4)	(47.5)	(27.8)	(29.9)
Top 20%	116.2	115.0	143.8	124.1	263.5	342.0	294.3
	(13.2)	(14.9)	(20.5)	(9.4)	(45.5)	(53.7)	(35.4)
Income quintiles							
Bottom 20%	70.4	53.7	68.6	59.9	126.4	73.6	91.6
	(16.3)	(9.6)	(23.4)	(7.9)	(35.5)	(16.2)	(16.5)
Next 20%	76.2	58.7	88.1	70.3	168.8	117.3	134.1
	(15.8)	(8.6)	(18.1)	(7.9)	(42.5)	(22.2)	(22.4)
Middle 20%	77.9	84.9	95.5	86.3	252.1	187.2	221.6
	(12.5)	(13.5)	(16.4)	(7.8)	(44.6)	(27.5)	(27.2)
Next 20%	111.8	90.1	118.1	105.0	248.9	246.5	247.7
	(16.9)	(13.5)	(18.9)	(8.7)	(40.4)	(34.3)	(28.1)
Top 20%	147.1	133.1	163.7	145.3	342.0	369.1	354.6
	(13.3)	(11.0)	(20.5)	(8.0)	(47.5)	(48.6)	(35.7)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A35: Mortgage debt, participation rate by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	36.6	20.8	28.8	26.3	43.2	31.3	36.9
	(5.1)	(2.8)	(5.9)	(2.3)	(5.4)	(4.6)	(3.6)
35-44	53.4	31.4	58.3	43.5	65.8	42.5	49.9
	(5.0)	(3.0)	(4.8)	(2.3)	(5.6)	(4.2)	(3.6)
45-54	45.4	28.6	55.3	40.2	59.0	37.7	46.5
	(4.3)	(2.8)	(4.6)	(2.2)	(4.5)	(3.9)	(2.9)
55 or older	26.3	21.5	31.8	25.8	34.9	21.9	28.4
	(5.5)	(4.9)	(6.3)	(3.2)	(4.7)	(4.0)	(3.2)
Level of Education							
High	46.3	29.3	49.1	37.8	54.6	40.1	45.3
	(3.0)	(2.2)	(4.7)	(1.6)	(4.0)	(3.2)	(2.5)
Middle	37.2	22.6	48.1	32.2	50.5	29.4	41.7
	(4.9)	(2.5)	(4.3)	(1.9)	(3.8)	(4.1)	(2.9)
Low	42.0	30.0	40.9	39.2	37.1	32.3	33.4
	(8.9)	(10.8)	(6.5)	(4.6)	(6.7)	(4.1)	(3.6)
Housing Status							
Owner-outright	10.9	7.6	7.6	8.4	11.3	5.1	8.7
	(2.5)	(1.3)	(2.8)	(1.1)	(2.3)	(1.8)	(1.6)
Owner with mortgage	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Renter or other	12.7	4.1	11.2	8.0	8.2	8.0	8.1
	(4.9)	(1.5)	(3.8)	(1.8)	(3.8)	(1.7)	(1.5)
Net wealth quintiles							
Bottom 20%	18.4	16.2	15.0	16.2	19.9	3.5	6.4
	(6.5)	(3.4)	(4.8)	(2.7)	(8.7)	(1.4)	(2.0)
Next 20%	62.9	41.6	58.5	50.4	53.8	40.6	44.7
	(7.6)	(4.9)	(6.8)	(3.5)	(7.6)	(5.0)	(4.2)
Middle 20%	49.5	20.7	63.3	36.3	69.8	51.5	59.6
	(6.9)	(3.6)	(7.4)	(3.2)	(5.6)	(6.4)	(4.5)
Next 20%	39.3	21.8	55.6	34.4	47.4	44.0	45.9
	(5.0)	(3.5)	(6.6)	(2.7)	(5.1)	(5.9)	(4.0)
Top 20%	43.1	33.8	47.0	40.8	46.6	59.3	51.5
	(4.5)	(4.1)	(5.6)	(2.8)	(4.3)	(6.0)	(3.5)
Income quintiles							
Bottom 20%	26.8	18.2	22.8	20.8	33.2	15.7	20.4
	(7.2)	(3.6)	(7.0)	(2.9)	(7.5)	(3.5)	(3.3)
Next 20%	40.5	21.1	46.4	31.0	47.0	26.3	32.3
	(7.1)	(3.5)	(7.5)	(3.0)	(9.3)	(4.8)	(4.2)
Middle 20%	41.1	25.3	49.2	35.6	50.2	40.8	45.2
	(7.8)	(3.9)	(7.0)	(3.3)	(6.1)	(5.7)	(3.9)
Next 20%	49.6	29.3	56.1	42.8	53.4	49.2	51.4
	(6.4)	(3.9)	(5.1)	(2.9)	(5.8)	(7.0)	(4.0)
Top 20%	52.0	43.1	52.0	48.1	58.5	59.7	59.1
	(4.0)	(3.5)	(4.7)	(2.3)	(4.6)	(5.8)	(4.0)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A36: Mortgage debt, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	132.5	137.4	137.9	134.1	378.0	350.0	350.2
	(22.5)	(15.1)	(51.1)	(10.9)	(35.8)	(33.9)	(24.5)
35-44	117.9	129.4	132.9	127.8	303.0	281.1	288.8
	(21.7)	(13.0)	(23.1)	(10.5)	(40.7)	(31.0)	(21.9)
45-54	78.6	101.6	70.6	84.6	170.6	150.0	160.4
	(11.0)	(15.8)	(11.5)	(8.6)	(36.0)	(26.0)	(20.8)
55 or older	80.0	73.0	49.2	67.9	125.0	134.4	129.0
	(21.8)	(23.3)	(22.0)	(14.7)	(25.6)	(20.7)	(13.9)
Level of Education							
High	119.9	137.2	131.6	131.9	308.4	299.2	299.6
	(15.5)	(12.5)	(19.0)	(7.5)	(33.4)	(28.8)	(20.8)
Middle	101.4	98.8	100.5	99.8	233.8	269.8	236.2
	(17.5)	(15.8)	(14.3)	(8.5)	(44.7)	(45.5)	(35.5)
Low	52.6	100.0	51.9	68.5	187.0	162.6	163.6
	(30.7)	(79.0)	(20.7)	(17.9)	(36.7)	(16.9)	(16.5)
Housing Status							
Owner-outright	63.0	97.8	93.3	87.6	150.0	240.0	187.7
	(16.2)	(23.7)	(48.5)	(14.4)	(77.5)	(168.7)	(73.0)
Owner with mortgage	116.0	123.6	99.0	113.3	250.0	245.9	248.6
	(11.7)	(9.8)	(10.3)	(8.5)	(28.7)	(22.8)	(17.5)
Renter or other	66.4	184.2	113.0	106.1	670.0	150.1	230.0
	(38.4)	(76.0)	(85.5)	(44.9)	(233.7)	(103.7)	(96.2)
Net wealth quintiles							
Bottom 20%	227.4	172.9	198.2	192.0	427.0	564.0	509.0
	(39.3)	(27.3)	(62.8)	(25.9)	(199.8)	(298.5)	(172.1)
Next 20%	121.7	119.9	113.3	119.5	326.4	278.6	304.8
	(22.2)	(12.4)	(20.5)	(8.1)	(43.7)	(42.7)	(29.0)
Middle 20%	85.2	96.2	86.3	91.0	283.7	231.1	239.8
	(30.5)	(21.4)	(19.1)	(11.6)	(67.6)	(21.0)	(20.0)
Next 20%	113.5	107.1	81.5	100.9	146.3	158.0	150.2
	(24.1)	(17.2)	(29.7)	(12.3)	(28.2)	(52.2)	(22.8)
Top 20%	82.7	113.1	94.6	95.1	235.5	237.3	232.6
	(10.0)	(29.3)	(16.6)	(8.7)	(51.3)	(66.0)	(43.4)
Income quintiles							
Bottom 20%	119.0	99.9	84.3	102.1	149.4	156.8	164.6
	(46.9)	(14.4)	(56.1)	(13.5)	(80.2)	(26.9)	(25.1)
Next 20%	113.5	94.7	89.8	97.3	253.2	206.7	233.4
	(26.3)	(15.6)	(25.9)	(11.2)	(68.5)	(52.2)	(43.1)
Middle 20%	82.3	124.9	93.9	99.4	308.9	194.0	231.6
	(24.5)	(25.9)	(29.2)	(12.4)	(66.4)	(38.8)	(39.3)
Next 20%	111.9	143.5	90.4	119.3	237.6	295.6	262.4
	(24.2)	(17.0)	(23.5)	(13.6)	(43.9)	(33.7)	(31.2)
Top 20%	113.2	163.8	137.1	142.8	279.3	388.8	313.8
	(19.7)	(23.3)	(25.1)	(13.2)	(56.0)	(55.8)	(42.1)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A37: Mortgage debt, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	155.4	161.6	180.4	163.7	391.7	381.8	387.3
	(17.2)	(17.3)	(26.2)	(11.2)	(41.6)	(33.8)	(26.8)
35-44	160.1	153.7	167.3	160.2	354.9	364.6	360.6
	(14.3)	(10.5)	(17.4)	(8.5)	(32.3)	(35.1)	(25.0)
45-54	109.8	138.7	109.5	119.5	287.4	226.4	258.5
	(10.9)	(12.8)	(13.2)	(7.6)	(49.1)	(27.4)	(29.1)
55 or older	91.0	82.9	79.1	83.4	225.3	172.9	205.3
	(18.4)	(15.6)	(19.0)	(10.3)	(38.6)	(28.9)	(25.5)
Level of Education							
High	158.6	168.4	170.7	165.4	377.2	369.5	372.8
	(8.7)	(9.4)	(16.5)	(6.2)	(40.9)	(28.8)	(24.2)
Middle	114.3	110.5	132.5	120.4	295.6	277.0	290.2
	(18.1)	(10.0)	(12.6)	(7.7)	(27.7)	(32.4)	(22.0)
Low	76.4	156.4	88.5	94.3	218.0	193.2	199.8
	(19.7)	(52.3)	(21.2)	(15.9)	(36.9)	(19.6)	(17.7)
Housing Status							
Owner-outright	98.9	138.6	126.7	125.4	454.3	461.9	456.1
	(19.3)	(22.4)	(48.1)	(16.6)	(169.3)	(204.7)	(132.7)
Owner with mortgage	147.6	144.6	137.0	142.7	300.2	306.9	303.5
	(8.7)	(7.4)	(9.9)	(5.1)	(18.0)	(18.6)	(12.7)
Renter or other	89.6	189.5	160.5	146.6	600.9	263.9	326.3
	(25.4)	(44.3)	(55.8)	(26.8)	(162.5)	(60.8)	(62.8)
Net wealth quintiles							
Bottom 20%	233.9	175.3	199.5	192.9	472.0	702.7	576.1
	(30.3)	(30.8)	(49.1)	(23.0)	(98.9)	(272.1)	(129.2)
Next 20%	140.5	133.3	125.4	132.8	339.2	296.4	312.5
	(16.8)	(10.6)	(14.4)	(7.5)	(35.3)	(29.3)	(21.3)
Middle 20%	119.0	122.3	124.8	122.4	311.2	270.1	291.3
	(17.6)	(15.8)	(17.1)	(9.9)	(27.8)	(25.1)	(18.8)
Next 20%	132.9	144.8	125.5	133.7	284.1	255.1	271.7
	(16.4)	(18.7)	(21.5)	(10.3)	(66.7)	(31.1)	(40.4)
Top 20%	134.6	165.8	159.5	153.1	337.0	360.4	347.5
	(15.5)	(20.3)	(22.1)	(11.6)	(58.4)	(57.1)	(41.6)
Income quintiles							
Bottom 20%	115.0	109.0	103.1	108.8	214.3	177.4	193.2
	(24.3)	(18.5)	(33.3)	(11.8)	(49.6)	(24.9)	(25.9)
Next 20%	119.6	104.3	111.4	110.8	238.2	229.6	233.7
	(21.1)	(14.6)	(21.0)	(10.3)	(47.9)	(35.0)	(31.0)
Middle 20%	102.5	137.0	126.9	123.8	337.7	247.1	294.2
	(16.6)	(17.6)	(20.0)	(9.9)	(58.3)	(34.0)	(34.0)
Next 20%	152.2	159.2	129.2	145.1	299.3	326.9	311.1
	(18.4)	(20.6)	(20.4)	(11.4)	(52.7)	(34.6)	(32.8)
Top 20%	173.2	190.5	189.0	184.8	397.3	442.7	418.7
	(14.0)	(14.8)	(22.2)	(9.6)	(54.4)	(49.6)	(36.8)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A38: Non-mortgage debt, participation rate by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In percent)							
Age Group							
Younger than 35	43.1	39.1	32.5	38.7	50.0	45.4	47.6
	(5.8)	(3.9)	(6.3)	(2.9)	(5.3)	(5.3)	(3.6)
35-44	47.4	49.0	33.2	44.6	47.3	36.4	39.9
	(4.6)	(3.3)	(4.8)	(2.3)	(5.4)	(4.2)	(3.4)
45-54	48.2	52.2	36.8	46.8	45.5	42.1	43.5
	(4.1)	(3.4)	(4.3)	(2.3)	(4.7)	(4.1)	(3.1)
55 or older	55.1	32.2	28.7	36.4	33.9	26.1	30.0
	(6.4)	(5.8)	(6.6)	(3.7)	(5.0)	(4.9)	(3.6)
Level of Education							
High	41.3	41.3	27.5	38.8	37.2	29.8	32.5
	(3.2)	(2.5)	(3.7)	(1.8)	(3.6)	(3.1)	(2.4)
Middle	53.7	49.8	40.0	47.7	46.2	46.1	46.1
	(5.4)	(3.0)	(4.3)	(2.3)	(3.8)	(5.0)	(3.1)
Low	62.3	39.6	29.9	40.4	60.2	46.2	49.6
	(7.8)	(11.7)	(6.0)	(4.5)	(7.1)	(4.6)	(4.0)
Housing Status							
Owner-outright	42.4	41.2	28.5	39.4	36.4	39.1	37.6
	(3.7)	(2.6)	(4.6)	(1.9)	(3.9)	(5.2)	(3.1)
Owner with mortgage	53.0	56.0	34.6	47.5	50.8	40.8	45.9
	(3.8)	(4.1)	(4.0)	(2.5)	(3.8)	(3.9)	(2.7)
Renter or other	47.9	44.7	37.8	43.1	47.4	36.6	38.6
	(7.6)	(4.3)	(5.9)	(3.1)	(7.6)	(3.4)	(3.1)
Net wealth quintiles							
Bottom 20%	65.9	52.3	44.9	52.7	40.2	42.5	42.1
	(8.0)	(5.0)	(8.8)	(3.6)	(10.6)	(4.5)	(4.1)
Next 20%	55.4	51.8	35.5	48.3	46.9	40.1	42.2
	(6.9)	(5.0)	(6.5)	(3.5)	(8.5)	(5.4)	(4.5)
Middle 20%	47.9	40.5	35.0	41.0	55.6	48.3	51.5
	(6.3)	(4.6)	(8.0)	(3.5)	(6.1)	(5.5)	(4.1)
Next 20%	51.0	44.4	29.1	42.7	45.0	34.1	40.1
	(5.5)	(4.6)	(5.6)	(3.4)	(5.3)	(5.3)	(3.7)
Top 20%	27.8	32.5	24.9	28.7	36.1	17.2	28.7
	(3.7)	(4.0)	(4.3)	(2.4)	(4.1)	(4.5)	(3.2)
Income quintiles							
Bottom 20%	41.4	40.9	28.6	38.6	34.1	32.9	33.2
	(8.0)	(4.3)	(8.6)	(3.7)	(8.5)	(5.3)	(4.3)
Next 20%	52.2	43.4	38.0	44.3	48.6	50.2	49.7
	(7.3)	(4.5)	(9.7)	(3.8)	(9.4)	(5.6)	(4.5)
Middle 20%	55.7	43.3	37.8	44.7	43.3	40.0	41.5
	(6.9)	(5.5)	(7.0)	(3.9)	(6.5)	(6.1)	(4.3)
Next 20%	45.1	49.4	32.1	43.0	51.7	38.9	45.8
	(5.4)	(6.0)	(6.3)	(3.8)	(5.2)	(5.7)	(3.8)
Top 20%	41.5	51.3	31.5	42.8	41.4	26.9	34.6
	(4.9)	(4.2)	(4.6)	(2.5)	(4.4)	(5.1)	(3.5)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A39: Non-mortgage debt, conditional median by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	9.7	9.8	16.4	10.7	14.5	9.0	10.0
	(1.9)	(1.6)	(6.7)	(1.7)	(3.1)	(1.2)	(1.5)
35-44	10.2	13.1	13.0	12.2	12.1	8.9	9.9
	(2.1)	(2.1)	(3.0)	(1.5)	(3.1)	(2.7)	(2.0)
45-54	13.6	12.4	8.8	12.2	13.9	8.5	10.0
	(2.5)	(2.1)	(4.0)	(1.6)	(2.9)	(2.1)	(2.0)
55 or older	11.4	10.5	8.7	9.5	20.7	14.2	16.8
	(2.8)	(2.6)	(1.9)	(1.3)	(4.6)	(4.2)	(3.5)
Level of Education							
High	12.3	12.6	16.3	12.6	16.4	10.0	12.0
	(1.8)	(1.8)	(7.7)	(1.4)	(3.2)	(1.7)	(1.8)
Middle	9.4	10.4	12.6	10.4	15.0	8.9	12.9
	(2.1)	(1.3)	(2.3)	(1.1)	(2.6)	(2.4)	(2.1)
Low	12.0	15.0	8.7	10.2	13.1	7.9	8.9
	(2.3)	(5.2)	(4.5)	(2.2)	(2.4)	(1.3)	(1.3)
Housing Status							
Owner-outright	13.1	10.7	13.6	11.8	23.0	9.0	15.8
	(2.7)	(1.7)	(4.9)	(1.6)	(4.3)	(3.9)	(3.3)
Owner with mortgage	12.8	14.6	8.9	12.3	13.0	9.6	10.7
	(2.4)	(1.8)	(2.6)	(1.4)	(2.2)	(1.8)	(1.9)
Renter or other	8.4	10.0	13.8	10.2	14.0	8.0	9.4
	(2.3)	(1.6)	(3.9)	(1.3)	(3.5)	(1.1)	(1.2)
Net wealth quintiles							
Bottom 20%	9.1	12.0	18.5	12.1	12.5	7.7	8.8
	(2.3)	(1.7)	(5.0)	(1.5)	(3.9)	(1.4)	(1.3)
Next 20%	14.3	11.0	10.5	11.3	14.0	8.2	9.8
	(3.4)	(2.2)	(3.9)	(2.0)	(4.1)	(1.4)	(1.5)
Middle 20%	11.7	11.2	8.7	10.4	18.1	15.6	16.5
	(5.1)	(3.0)	(4.2)	(2.2)	(5.5)	(4.5)	(3.2)
Next 20%	10.2	10.9	16.1	11.0	12.8	8.0	10.3
	(1.8)	(2.3)	(7.8)	(1.5)	(4.5)	(3.3)	(2.5)
Top 20%	16.2	12.0	8.8	12.4	15.7	19.1	17.4
	(3.7)	(3.6)	(2.7)	(2.3)	(3.8)	(9.7)	(3.0)
Income quintiles							
Bottom 20%	7.9	8.6	14.4	8.8	9.2	4.3	4.5
	(4.3)	(2.1)	(8.7)	(2.0)	(5.0)	(1.1)	(1.4)
Next 20%	9.4	10.8	9.9	9.9	9.2	10.2	9.5
	(1.9)	(1.8)	(3.3)	(1.1)	(1.7)	(2.8)	(1.6)
Middle 20%	10.4	9.9	11.9	10.3	12.5	11.1	11.4
	(2.8)	(2.0)	(5.4)	(1.7)	(5.2)	(2.6)	(2.8)
Next 20%	14.0	14.4	13.0	13.8	23.7	15.0	19.4
	(2.9)	(1.8)	(5.2)	(1.6)	(4.8)	(5.4)	(2.6)
Top 20%	16.7	15.6	17.0	15.9	18.6	13.4	16.2
	(2.7)	(2.6)	(5.6)	(2.1)	(3.5)	(6.4)	(3.3)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

Table A40: Non-mortgage debt, conditional mean by household characteristic

	Cross-border commuters				Employed residents		
Characteristic	Belgium	France	Germany	Total	Native-born	Foreign-born	Total
(In € thousands)							
Age Group							
Younger than 35	23.1	17.4	20.6	19.5	34.0	16.8	25.3
	(7.2)	(3.1)	(3.8)	(2.7)	(10.4)	(6.3)	(6.0)
35-44	18.0	23.2	17.8	20.8	27.1	29.8	28.8
	(2.6)	(3.7)	(2.8)	(2.2)	(8.5)	(9.1)	(6.5)
45-54	27.2	21.9	21.3	23.0	38.2	17.1	26.2
	(5.8)	(2.4)	(5.5)	(2.3)	(8.9)	(2.8)	(4.2)
55 or older	13.7	27.9	14.1	19.7	37.0	33.5	35.5
	(2.1)	(10.6)	(5.2)	(4.6)	(11.2)	(14.8)	(9.0)
Level of Education							
High	23.1	21.7	23.9	22.4	47.0	27.1	35.2
	(3.2)	(2.3)	(3.4)	(1.7)	(11.0)	(6.3)	(5.9)
Middle	23.1	21.7	17.2	20.9	27.1	20.0	24.2
	(6.6)	(3.1)	(3.8)	(2.4)	(6.2)	(7.9)	(4.8)
Low	12.6	15.4	18.1	15.4	33.2	20.4	24.2
	(1.7)	(3.7)	(9.4)	(4.0)	(12.0)	(6.0)	(5.4)
Housing Status							
Owner-outright	20.9	23.2	18.8	22.1	52.7	44.3	49.0
	(3.6)	(2.9)	(4.1)	(2.1)	(11.2)	(13.3)	(8.4)
Owner with mortgage	22.8	20.4	20.3	21.1	21.9	14.7	18.8
	(3.6)	(2.5)	(4.9)	(2.0)	(3.2)	(2.0)	(2.0)
Renter or other	20.5	19.2	18.4	19.2	34.7	18.1	21.8
	(9.8)	(4.0)	(3.0)	(3.0)	(17.9)	(4.5)	(5.5)
Net wealth quintiles							
Bottom 20%	20.5	27.5	26.3	25.7	12.4	10.9	11.2
	(9.2)	(5.0)	(7.5)	(3.8)	(3.0)	(2.2)	(1.9)
Next 20%	20.5	21.4	16.4	20.2	43.0	16.4	25.5
	(4.4)	(4.7)	(3.8)	(3.0)	(19.6)	(6.6)	(8.1)
Middle 20%	19.0	16.2	13.6	16.4	32.0	44.7	38.7
	(4.0)	(2.2)	(3.2)	(1.9)	(8.1)	(13.4)	(8.0)
Next 20%	19.2	20.0	21.2	19.9	41.4	13.3	30.7
	(6.8)	(3.0)	(6.1)	(2.7)	(11.6)	(3.1)	(7.3)
Top 20%	31.9	20.1	16.1	22.7	29.7	44.4	33.1
	(9.2)	(3.7)	(3.3)	(3.4)	(6.9)	(17.3)	(6.6)
Income quintiles							
Bottom 20%	21.6	16.8	30.1	19.7	10.0	6.1	7.1
	(13.8)	(3.9)	(15.9)	(4.4)	(2.7)	(1.5)	(1.4)
Next 20%	13.6	20.8	14.7	17.8	21.4	25.5	24.3
	(6.1)	(4.4)	(4.6)	(2.8)	(9.9)	(9.0)	(7.0)
Middle 20%	23.1	28.4	14.3	23.5	27.1	15.1	21.0
	(5.6)	(7.0)	(4.7)	(3.7)	(7.4)	(3.1)	(4.0)
Next 20%	24.9	18.3	16.5	19.6	36.7	39.8	37.9
	(7.2)	(2.4)	(3.1)	(2.4)	(10.5)	(12.9)	(8.3)
Top 20%	24.6	24.5	25.7	24.8	56.1	36.7	49.0
	(3.2)	(3.1)	(4.8)	(2.0)	(14.6)	(10.8)	(10.0)

Source: Own calculations based on XB-HFCS and LU-HFCS, wave 2018; data are multiply imputed and weighted.
Note: The household characteristics refer to those of the reference person. The reference person is the cross-border commuter in the household in case of the XB-HFCS and the most financially knowledgeable person in case of the LU-HFCS. The standard errors reported in the parenthesis are calculated based on 1,000 replicate weights.

BANQUE CENTRALE DU LUXEMBOURG

EUROSYSTÈME

2, boulevard Royal
L-2983 Luxembourg

Tél.: +352 4774-1
Fax: +352 4774 4910

www.bcl.lu • info@bcl.lu