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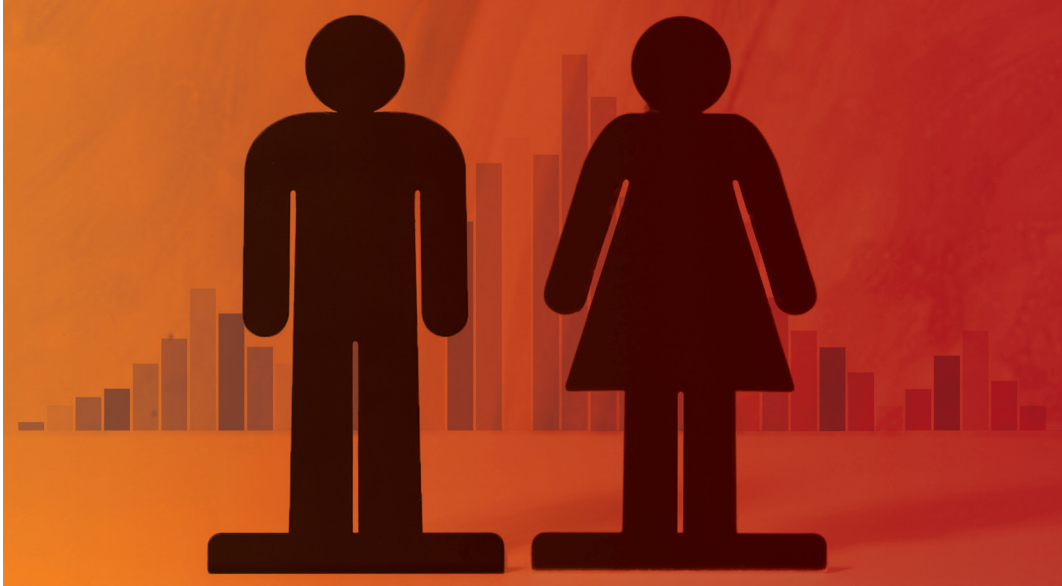

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A FIRST GLIMPSE INTO THE GENDER WEALTH GAP IN LUXEMBOURG:

REPORT ON THE WEALTH SITUATION OF WOMEN AND MEN[1]

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March 2017

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The goal of this report is to provide an overview of the wealth situation of women and men in Luxembourg. Luxembourg is the country with the highest mean and median value of household net wealth among euro area countries, but to date no studies have analyzed the gender wealth gap in Luxembourg.

The descriptive findings of this report indicate that households, where men report being the more financially knowledgeable person on average have higher levels of net wealth. The difference in wealth levels of never married women and men is sharper than on average for the overall population.

When comparing investment levels of particular assets, this report finds that men invest a higher proportion of their wealth in financial assets, while women do so in housing. This suggests that women prefer to save, while men prefer to invest. In addition, women are more likely to own real estate compared to men, while men are more likely to own risky assets. Debt participation varies by marital status: single men are more likely to have some type of debt than single women, while it is the opposite for households where both partners are present.

Conditioning on participation in assets and debts, women in the middle of the distribution are more indebted than men. The opposite is true for financial, business and non-financial wealth – a median man has a higher value of assets.

1. Introduction

There is very limited research on wealth differences by gender in general. In fact, this will be the first attempt to document differences in the wealth situation between women and men in Luxembourg. One of the reasons research on wealth differences by gender is very limited is due to the scarcity (until recently) of high quality micro data.

The scarce research on wealth is not due to lack of interest in this areas. In fact, wealth, in addition to income and consumption, is a measure of economic well-being. Although some argue that research on income can be linked to research on wealth, the correlation between the two measures is not very high. In fact, wealth differences within a population are more pronounced than labor income differences and lead us to search for additional explanations of why this is the case.

The data used in this report is the Luxembourgish part of the Household Finance and Consumption Survey (HFCS). The HFCS is a collection of household surveys undertaken in Eurozone countries. Although, the data is collected at the household level it nevertheless allows us to take a detailed glimpse at wealth heterogeneity with a gender focus. Research points to labor market factors as being the most important in explaining the gender wealth gap. This is questionable, however. Research on the gender pay gap is quite up to date, but research on possible gender specific behaviour in portfolio allocation is at its beginnings and might shed light on varying disparity of wealth over the life-cycle. On the basis of descriptive statistics, this report will be a first such attempt to receive insights on this subject in Luxembourg.

The structure of this report is as follows: First, the HFCS dataset and selected variables are described. Next, the existing research on wealth in Luxembourg is reviewed and the first insights on possible gender wealth differences are revealed. As a next step, the analysis on the gender wealth gap begins with a more general view on cross-national wealth levels, the cross-sectional distribution of wealth in Luxembourg, the available wealth time trends and related institutional information. Descriptive statistics by gender conditional on marital status and age group follow in the next section. As a final step, the focus lies on the portfolio composition, the participation in assets and debt and the conditional asset and debt levels by gender. The report will end with conclusions, suggestions, and insights for further research.

2. Household Finance and Consumption Survey (HFCS)

2.1 Data description

The data source used is the Household Finance and Consumption survey, which offers data at the household-level on households' assets and liabilities. The part for Luxembourg was conducted by the *Banque centrale du Luxembourg* together with the *Luxembourg Institute of Socio-Economic Research (formerly CEPS/INSTEAD)* at the end of 2010 and the beginning of 2011.[4] The HFCS data was collected in 15 euro area countries in a harmonised way allowing for cross-country comparisons.

In Luxembourg, data on 950 households is collected. To account for the higher variability in the portfolio composition of wealthier households and to represent the total mass of wealth, a stratified sampling procedure is adopted, which includes the oversampling of the wealthiest strata. This is advantageous for the purpose of this report, given the unequal distribution of household wealth and the fact that certain financial assets are mostly held by wealthier households (for example, risky financial assets). In order to make the sample statistics representative of the Luxembourgish population, weights are used. Wealthier strata are hereby down weighted. The data is edited by using multiple imputations to deal with missing values, and item non-response. Missing values are replaced by five different values to account for the uncertainty in the imputation procedure.[5]

2.2 Key variables and definitions

In the HFCS methodological report (2013), the household is defined as "a person living alone or a group of people who live together in the same private dwelling and share expenditures, including the joint provision of the essentials of living."

The main household respondent is the most *financially knowledgeable person*. In the following report, this person is referred to as the household head and is the main respondent that provides financial information for the whole household. The gender of the household is defined by the gender of the household head. At the sample level (i.e. unweighted), 61.6% (585) of the respondents are male and 38.4% (365) are female.[6]

Based on the household head's marital status we define two household types: couple and single. In a "couple" household, the household head reports being either married or living in a legal relationship. In a "single" household, the household head reports being divorced, widowed or never married. At the population level (i.e. weighted), about 52.8% of the household heads live in a couple, 24.7% are never married, 9.1% are widowed and 13.4% are divorced. In 69.9% of households living in a couple (married or in a legal relationship), the man is identified as the more financially knowledgeable person. This is consistent with Prince's (1993) findings on gender disparity in money style. His findings suggest that men are more likely to feel competent in money handling and in financial decision making, compared to women.[7]

In general, in couple households we cannot attribute ownership perfectly. In this report, we focus on households led by individuals (women or men) that are identified as the most financially knowledgeable within the household in order to have some indication of the differences between those led by women and those led by men. This is clearly not ideal. When discussing differences

[4] *For more details on the Luxembourg HFCS, see Mathä, Porpiglia and Ziegelmeyer (2012).*
[5] *For more details on multiple imputation and weighting, see the methodological report (HFCN, 2013).*
[6] *At the population level (i.e. weighted), 59.5% of the respondents are male and 40.5% are female.*
[7] *In Luxembourg, according to Bousselin (2012), 71% of the couples share their income, while 20% opt only for partially sharing and 9% opt for total separation. Merging income is more common among couples that are married for at least five years and have children. The traditional sharing of income is less frequent within couples where both partners work, have high income and are highly educated.*

between these two types of households, we do observe some differences, but we cannot say with certainty whether this is a result of gender or other characteristics that need to be controlled for. Thus, we also focus on single households to have ownership clearly defined.

Given the unique situation of Luxembourg in terms of the prevalence of foreign born individuals, we also take into account the immigrant status in our analysis. In the HFCS, the household head is asked where he/she is born. We define the household to be an "immigrant" household if the household head is born outside of Luxembourg and "native" otherwise. At the population level, 57.1% of the household heads are natives and 42.9% are immigrants. Among native households, 55.9% are headed by men and among immigrant households, 64.4%.

Net wealth is the difference between total (gross) assets and liabilities as defined in the Appendix.

Gross income of a household is equal to the sum of employee income, self-employment income, income from pensions and regular social transfers (Unemployment benefits + gross income from regular social transfers).

3. Background information

As this is the first report focusing on differences in wealth by gender in Luxembourg, there is no directly related literature available. Nonetheless, there exist up to date findings concerning wealth differences in several respects. Some focus on wealth disparities between immigrants and natives, others on differences between resident households in Luxembourg and cross-border commuters. In addition, Luxembourg is a prominent member of cross-national studies on wealth distribution and portfolio composition.

Although not explicitly, the existing research on wealth can provide first indications of the possible gender differences in Luxembourg. Factors explaining wealth differences in the aforementioned analyses can contribute to the understanding of the wealth accumulation process in Luxembourg and reveal the potential for gender differences.

When focusing on explaining wealth differences between residents and cross-border commuters despite their similar incomes, Mathä, Porpiglia and Ziegelmeyer (2014) explore the link between homeownership and house price dynamics using the same Household Finance and Consumption Survey as used in this study. Since the household's main residence is for many the biggest asset in their portfolio, house price dynamics can play a substantial role in their wealth accumulation process and thereby could also have an impact on possible gender differences. There might be gender differences in the decision to own a home and the preferred residence characteristics. Indeed, there exist different house price dynamics, depending on the region within Luxembourg and depending on the type and size of residence, so that individual preferences in this matter can have an impact on the wealth accumulation process.

The findings of Mathä, Porpiglia and Sierminska (2011) concerning immigrant and native wealth differences indicate that there exists a sizeable wealth gap between the two groups. As Luxembourg is characterized by having the highest foreign population share in the EU, this result raises the interest to also look for a gender wealth gap conditioning on the country of birth of the household head.

In Sierminska and Doorley (2013) and Doorley and Sierminska (2014), cross-national differences in wealth portfolios in Luxembourg and other countries are analysed. In the first paper, the authors focus on explaining differences at the extensive margin (the decision to own) of investment, whereas in the second paper the focus lies on explaining the differences at the intensive margin (magnitude) of investment. Also here, in both papers, the significance of homeownership in the wealth portfolio of Luxembourgish households stands out. Compared to other European countries, the U.S. and Canada, the holdings of both household main residence and other real estates are consistently higher across the earnings distribution in Luxembourg. The debt levels in Luxembourg, which are mainly composed of mortgages, are also among the highest, especially for households younger than 50 years old, whereas the participation rate in debts does not stand out compared to other European countries. Nevertheless, gender differeces most likely do exist in the type of debt held and it's prevalence.

4. Background information and wealth levels in Luxembourg

Consistent with the descriptive findings found in Mathä, Porpiglia and Ziegelmeyer (2012), the average net wealth level of the Luxembourgish households corresponds to €710,100 and is the highest mean level of wealth in the euro area (*see Table 1*). The median, which is less affected by the top percentiles of the wealth distribution, is comparably lower than the mean and suggests a right-skewed distribution of net wealth among households. With a median net wealth level of €397,800 Luxembourgish households still dominate the country rankings.

Table 1 : Median and mean net wealth of selected countries

	EU15	LU	DE	BE	GR	IT
Median (.000€)	109.0	397,8	51.4	206.2	101.9	173.5
Mean (.000€)	231.0	710.1	195.2	338.6	147.8	275.2

Source: HFCS wave 1

The economy

The high level of wealth in Luxembourg is due to a longstanding booming Luxembourgish economy. From the end of the 19th century till the mid of the 20th century, Luxembourg owed its wealth to a strong steel industry. The change from an economy predominated by industry to an international financial service centre came in the 1970s, due to the oil shock in 1973 and the resulting European steel industry crisis. Low tax rates and the Luxembourgish bank secrecy initially attracted foreign capital and financial institutions. Nowadays, it is the know-how, political stability, the country's strategic geographic location, the conviction to promote innovation and to provide a business-friendly economic environment that attract high-qualified workers and characterize Luxembourg's financial sector and the economy.

Housing

High wealth levels are also a result of high housing prices. House price appreciation in Luxembourg over the past years has been steady.[8] The household's main residence contributes to more than 70% of Luxembourgish households' total assets thus; the impact of house price dynamics on net wealth is significant. STATEC provides an official index of residential property prices since 1974, which has been on the rise since its inception, except over the years of the 2008/2009 financial crisis. Over the last 20 years, the value of the household's main residence increased on average by 6.2% every year (Mathä, Porpiglia and Ziegelmeyer (2014)).

[8] *Mathä et al., 2014.*

Taxation

National taxation can also have an impact on a household's wealth. The Luxembourgish tax system is among the more generous in Europe. Households are subject to an income tax rate which is progressive, ranging from 8% to 40%. Income-related expenses as for example, insurance premiums for life, accident and sickness; individual pension schemes; charitable contributions; interest on personal and mortgage loans; and home saving and loan schemes; are subject to tax deductions to a certain extent.[9] Investment income in the form of dividends is exposed to a 15% withholding tax. On interest income, including interest on bank deposits, government bonds and profit-sharing bonds a withholding tax of 10% is levied. Tax rates on inheritance can range from 0% to 48% depending on the proximity of the relationship and the amount of the assets bequeathed to a beneficiary. Gifts, as for example, immovable property are also taxed at a rate that ranges from 1.8% to 14.4%, and depend on the relationship between the donor and the beneficiary. The net wealth tax was abolished in 2006. A land tax ranging between 0.7% and 1% on the unitary value of real property is imposed by municipalities.[10]

The labor force

Based on Luxembourg's economic history, one could raise the question of whether in a country, where the driving forces of the economy (and so of wealth) are sectors with a predominately male labour force one could expect the existence of gender wealth differences. According to previous research on wealth and gender inequalities, income differences and labour market experience are one of the main reasons for the gender wealth gap.[11] Although in today's banking sector for example, around 46% of employees are women[12] (unchanged over the past 10 years) this percentage is likely to be misleading when it comes to gender equality in the financial sector due to occupational segregation within these sectors. Eurostat reports an unadjusted gender pay gap for Luxembourg[13] in the financial and insurance activities of 27.4% in 2013,[14] which has remained almost unchanged since 2007. The overall unadjusted gender pay gap in Luxembourg is equal to 8.6% in 2013,[15] which compared to other European countries is considered small.[16]

Table 2 reveals existing gender differences at the household level in gross income in our representative sample, already indicating gender wealth differences. Indeed, male headed households have 32.4% (24.8%) higher median (mean) gross income than female headed households. Results provided by STATEC (2015b) show that labour income costs increased by 50% over the past 15 years. Because of increases in living costs, one can assume that wealth accumulation was affected only indirectly by labour income increases over time. We do not have data on wealth time trends conditional on gender.

[9] *Usually, based on the number of people in the households (up to a limit for each person, which is less than 1000 euros).*
[10] *See Deloitte, 2015, for more information on taxation and investment in Luxembourg.*
[11] *Sierminska et al., 2010.*
[12] *STATEC, 2015a.*
[13] *The unadjusted gender pay gap is calculated (by Eurostat) as the difference between the average gross hourly earnings of male and female paid employees as a percentage of average gross hourly earnings of male paid employees.*
[14] *Using provisional data.*
[15] *Using provisional data.*
[16] *In the survey all paid employees of enterprises with more than 9 employees are considered. Furthermore, some sectors are excluded: Public administration and defense, agriculture, forestry and fishing, activities of households as employers and activities of extraterritorial organizations. One could expect a higher gender pay gap when all the sectors are included. In the public administration the gender pay gap is assumed to be lower but the effect of small enterprises, where the gender pay gap is considered to be higher, is comparable stronger. One has to consider that Eurostat uses all paid employees (this includes cross-border commuters and residents), whereas in our report we only consider households residing in Luxembourg. In 2014, 42.7% of domestic employment are non-resident borderers.*

Table 2 : Gross income by gender for the whole population, natives and immigrants in Luxembourg

	Median		Mean		Ratio fem. vs. male	
	Male	Fem.	Male	Fem.	Median	Mean
Total	67060	50660	84148	67401	0.76	0.80
Natives	75600	52280	89759	67979	0.69	0.76
Immigrants	58480	47020	77678	66447	0.80	0.86

Source: HFCS wave 1

Inequality

In terms of inequality, the Gini coefficient[17] of net wealth in Luxembourg is 0.66 (Table 3), which is close to the euro area Gini coefficient of 0.68. As a Gini coefficient of zero would mean perfect equality, the level of wealth inequality can be considered high, although not as high as for example in Germany. The high level of inequality can also be confirmed by the half squared coefficient of variation (1/2 * (σ/μ)^2) which is equal to 3.31. The wealth quintile share ratio[18] is equal to 25.6, which is lower than in the euro area overall, but nevertheless very high suggesting an unequal distribution of wealth.

Table 3 : Inequality indicators (over net wealth) of selected countries

	EU15	LU	DE	BE	GR	IT
GINI Index	0.68	0.66	0.76	0.61	0.56	0.61
Half the squared coefficient of variation	5.18	3.31	5.76	1.33	0.82	1.83
80th percentile / 20th percentile	40.10	25.60	74.60	26.90	14.70	20.90

Source: HFCS wave 1

Substantial wealth inequality can be expected in Luxembourg due to its population structure. In the past, because of low national labour supply combined with high labour demand and comparatively high labour income, Luxembourg attracted many low-qualified immigrants. Currently, 46% of the population are foreigners, of which 35.6% are from Portugal and 15.2% from France, representing the two biggest communities. Nowadays, Luxembourg attracts also many high-skilled immigrants, but the net wealth gap between native and non-native households persists.[19]

[17] *The Gini coefficient measures the dispersion of the distribution. It is a summary of the differences between each household and all other households in the population. The differences are the absolute arithmetic differences, and therefore a difference of €x between two relatively high wealth household contributes as much to the index as a difference of $x between two relatively low wealth households. It varies between zero and one: a Gini coefficient of one expresses maximal inequality, whereas a Gini coefficient of zero expresses perfect equality.*

[18] *The S80/S20 ratio compares the total wealth of the 20% of the population which have the highest level of wealth to that of the 20% of the population with the lowest level of wealth.*

[19] *Mathä, Porpiglia and Sierminska, 2011.*

Immigrants

According to the HFCS, immigrants have a median (mean) net wealth level of €160,807 (€413,343), whereas for natives it is equal to €522,343 (€933,137), and thus more than 3 times higher. The difference in gross income between natives and immigrants is not as significant. Immigrants have a median (mean) gross income of €54,860 (€73,685) and natives have a median (mean) gross income of €66,460 (€80,144).

Among immigrants, the wealth accumulation process differs from the one of natives. The latter very often inherit wealth, which gives them a boost on the wealth accumulation ladder. Intergenerational transfers are likely to be in the form of property inheritance, which can be of considerable amounts because of the aforementioned house price appreciations. The homeownership rate is clearly lower among immigrants. Only 45.1% of immigrants own, compared to 83.6% of natives. The whole population share in main residence ownership is equal to 67%.

5. Wealth levels by gender, immigrant status, age group and marital status

In this section, we will elaborate on wealth levels by gender and take into account marital status, as well as age. Male headed households have a median (mean) wealth level of €446,000 (€767,200) which is 24.4% (22.5%) higher than the median (mean) wealth level of female headed households, which is equal to €358,900 (€626,100). A slightly different picture evolves, when looking at the median (mean) wealth levels and the W/M ratios for native and non-native respondents separately, as shown in table 4. When comparing male/female headed households of immigrants, the median (mean) wealth W/M ratio is equal to 1.20 (0.66), suggesting that female immigrants are more wealthy compared to male immigrants (but are still at a disadvantage compared to their native counterparts). For natives, the median (mean) wealth W/M ratio is equal to 0.68 (0.80) which suggests that male natives are much wealthier than female natives. It might be interesting to add that in our HFCS among immigrants 35.6% are female and among natives 44.1% are female. So we have more female native household heads than female non-native household heads according to the chosen definitions of the head of the household.

For a first possible explanation of the gender wealth gap, one can look at table 4 in relation to table 2. There we see that the net wealth and net income W/M ratios don't differ much for the total and for the native population. As the following analysis will reveal, it is questionable whether the gender pay gap is the main explanation for the existence of the gender wealth gap.

Table 4 : Net wealth levels by gender for the whole population, natives and immigrants in Luxembourg

	Median (.000)		Mean (.000)		Ratio fem. vs. male	
	Male	Fem.	Male	Fem.	Median	Mean
Total	446.6	358.9	767.2	626.1	0.80	0.82
Natives	621.9	424.2	1024.5	817.6	0.68	0.80
Immigrants	146.3	175.3	470.5	309.7	1.20	0.66

Source: HFCS wave 1

Wealth and Marital Status

Given that the gender of the household is determined by the respondent and households are at different stages of their accumulation process a more detailed analysis is warranted in order to pinpoint the gender wealth gap in more detail. More specifically, we take into account the marital status and the age of the household head. Table 5 provides a more detailed analysis of wealth levels by gender conditional on marital status.[20]

[20] *As mentioned before, in our sample about 59.4% of the household heads live in a couple, 22.5% are never married, 11.9% are divorced and 6.2% are widowed. Compared to other countries, Luxembourg has a higher rate of never married and divorced than on average. The rate of widowed households is in return very low. In Germany, for example: 64.4% couples, 17.2% singles, 9.6% divorced and 8.8% widowed. In France: 55.4% couples, 22.4% singles, 10.1% divorced and 12.1% widowed. In Spain: 65.2% couples, 13.1% single, 6.8% divorced and 14.8% widowed.*

Table 5 : Net wealth levels by gender and marital status

	Median (.000)		Mean (.000)		Ratio Fem. vs. Male	
	Male	Fem.	Male	Fem.	Median	Mean
Total	446.6	358.9	767.2	626.1	0.80	0.82
Couples	551.9	447	921.2	864.5	0.81	0.94
Singles	240	279.8	516.7	472	1.17	0.91
Never Married	154.1	53.7	455.5	411.6	0.35	0.90
Widowed	622.3	449.3	962.6	647.6	0.72	0.67
Divorced	310	318.7	495.5	387.8	1.03	0.78

Source: HFCS wave 1

Here, one can see that gender difference in wealth among couples led by women or men are similar to those for the whole population.[21] The median (mean) wealth W/M ratio is equal to 0.81 (0.94). By doing the same analysis as before, with regard to the country of birth of the respondents, the previously reported gender wealth gaps (*in Table 4*) also remain present for couples (*see Table 6*). For immigrants the median (mean) wealth W/M ratio increases to 1.30, indicating a higher wealth level for women, whereas for natives, the spread slightly decreases. For a clearer identification of gender wealth differences, it is suggestive to focus on households who are not living in a couple.

Table 6 : Net wealth levels of married or cohabiting couples by gender for the whole population, natives and immigrants in Luxembourg

	Median (.000)		Mean (.000)		Ratio fem. vs. male	
	Male	Fem.	Male	Fem.	Median	Mean
Total	551.9	447	921.2	864.5	0.81	0.94
Natives	769.5	615.6	1222.1	1189.6	0.80	0.97
Immigrants	249.6	325.8	608.7	432.6	1.30	0.71

Source: HFCS wave 1

Table 5 reports the wealth levels of households that are single, which includes the never married,[22] widowed and divorced households. The median wealth level of never married women is equal to €53,700 and equal to €154,100 for never married men, which results in a W/M ratio of 0.35. Given that one speaks of gender wealth equality when the W/M ratio is close to 1, this indicates a considerable gender wealth gap. With regard to the country of birth of the respondents, as reported in Table 7, the gap among immigrants is considerably smaller, but the level of median wealth is very low. More specifically, never married male (female) immigrants have a median net wealth level of €25,600 (€19,500) compared to €379,500 (€105,700) for never married male (female) natives. In the subsample of never married immigrants, the median W/M ratio is equal to 0.76 and in the subsample of never married natives the median W/M ratio is equal to 0.28.

[21] *The median (mean) net wealth W/M ratio is equal to 0.80 (0.82).*
[22] *In our sample, 22.5% of the household heads are never married. Of those, 54.2% are men and 45.8% are women.*

Table 7 : Net wealth levels of never married by gender for the whole population, natives and immigrants in Luxembourg

	Median (.000)		Mean (.000)		Ratio fem. vs. male	
	Male	Fem.	Male	Fem.	Median	Mean
Total	154.1	53.7	455.5	411.6	0.35	0.90
Natives	379.5	105.7	716.0	579.6	0.28	0.81
Immigrants	25.6	19.5	175.2	138.5	0.76	0.79

Source: HFCS wave 1

Looking at the median age reveals that in our subsample of never married households there are only minimal differences. Women are younger than men. Native male respondents have a median age of 40 and native female respondents have a median age of 35. The age of non-native respondents is 38 and 36 respectively. We will now examine whether the gross income of the never married household might explain the gender difference in wealth, reported in table 8. When not considering the country of birth, the median (mean) income W/M ratio for never married is with 0.93 (0.98) very close to 1, suggesting no gender income gap at the population level. On the other hand, a gender income gap appears, when considering only native born never married households: the median (mean) income W/M ratio is equal to 0.86 (0.88). The median (mean) income for female and for male never married natives is equal to €48,000 (€59,687) respectively to €56,000 (€68,166). Although there is a gender wealth gap, when considering the subsample of never married immigrants, the median (mean) gross income level for women is equal to €42,200 (€58,733) and thereby higher than €38,440 (€52,318), which is the men's median (mean) gross income. The higher income could be due to the higher level of education of never married female immigrants compared to their male counterpart. Among them, 55% compared to 47% have obtained tertiary education.[23] It is surprising to see that female never married immigrants have a higher income level than their male counterparts, but have lower wealth levels. Although it may be the case that they remit funds to their home country or have higher spending patterns. This can be examined in the future.

One thing we can say is that compared to the total population (examined in Table 2 and 4), the gender income gap seems to be less significant in explaining the gender wealth gap among never married households.

Table 8 : Gross income of never married households by gender overall, for natives and immigrants in Luxembourg

	Median		Mean		Ratio fem. vs. male	
	Male	Fem.	Male	Fem.	Median	Mean
Total	50440	47000	60533	59323	0.93	0.98
Natives	56000	48000	68166	59687	0.86	0.88
Immigrants	38440	42200	52318	58733	1.10	1.12

Source: HFCS wave 1

[23] *Tertiary education corresponds to the Enseignement supérieur in Luxembourg.*

The number of never married parents and the number of children (≤18 years) could be factors explaining the gender wealth gap between never married households. In our subsample at the population level, 4.6% of the native men and 12.2% of the native women have children. Among immigrants these numbers are higher: 8.9% of males and 24.5% of females have children. For immigrants, if not income (as we saw before), having children might play a significant role in the wealth accumulation process of never married females and explain the gender wealth gap.

There is a gender wealth gap among widowed households as well, as can be seen in table 5. The median (mean) wealth W/M ratio is equal to 0.72 (0.67). A majority of these households are headed by women both among native and immigrant households.[24] Most likely, due to a higher life expectancy for women, which is in Luxembourg 84.3 years for females and 79.5 years for males in 2010/12 (STATEC, 2015a). It is difficult to explain the gender difference among widowed households because the household heads inherit net wealth and the portfolio structure.

Among divorced households the median wealth W/M ratio is equal to 1.03, so very close to 1, suggesting no gender differences. One reason for this could be that upon divorce each member of the couple receives one half of the formerly joint net wealth (portfolio). In some sense, both partners "inherit" the portfolio structure and past portfolio choice decisions made by the couple. The gender wealth gap may also be reduced due to statutory subsistence allowance received for children, because in case of divorce, in most cases the children stay with the mother. In our sample at the population level, 32.1% of the female headed divorced households have children (≤18 years) in their household, compared to 9% for male headed divorced households.

Wealth across the ages

In Table 9, we observe the gender wealth gap by age groups. We find the gap to be substantial for the youngest group, then it diminishes for older groups and is again substantial for those close to retirement. For the youngest age group (25-34 years), the median W/M ratio is equal to 0.65. This is consistent with our findings on never married household heads as mentioned before. 51.1% of the households in this age group are never married. For the other age groups, the median W/M ratio is quite close to 1, except for the 55-64 years age group. For this age group, corresponding to household heads born in 1946-1955, the median (mean) net wealth W/M ratio is equal to 0.58 (0.69). In this subsample, 60.3% are male headed households and 68.1% of the household heads live in a couple. We also know that most of the household heads that do not live in a couple are female. It is possible that women born at that time had lower job opportunities. Lower labour force participation rates lead to lower accumulation rates, combined with varying marital status (from married to divorced or widowed) could lead to a significant gap. Discontinuous labour-market participation because of child-rearing without parental leave (to create the incentive to return to the labour market) could also be an explanation. In addition, the lack of available formal childcare and no pro-family orientation of the country's welfare state (e.g. joint taxation) could be other possible explanations of the low employment participation of women in the labor market from this cohort. The higher wealth level for the 65-75 years age group can be explained by inheritance due to widowhood, making the gender wealth gap disappear.

[24] *The subsample of widowed households consists at the population level of 76.1% female headed and 23.9% male headed households. Only 27.5% of the widowed households are immigrants, and among those 83.4% are female. Among widowed natives 73.3% are female. Based on the fact that widowhood generally occurs at an older age, this could suggest that immigrants leave Luxembourg in the case of widowhood. This could also explain why compared to other countries there aren't many widowed households in Luxembourg. Another explanation could be that in case of widowhood the survivor moves in with their children and disappears from our sample. The probability of remarriage is higher among widowers.*

Table 9 : Net wealth levels by age group and by gender

	Median (.000)		Mean (.000)		Ratio Fem. vs. Male	
Age group	Male	Fem.	Male	Fem.	Median	Mean
25-34	75.5	49.1	223.3	144.0	0,65	0,64
35-44	292.2	286.0	583.1	391.5	0,98	0,67
45-54	419.8	439.8	765.7	994.0	1,05	1,30
55-64	763.8	443.1	1019.4	705.0	0,58	0,69
65-74	672.0	606.0	1464.0	904.8	0,90	0,62
75+	606.1	516.6	741.2	867.0	0,85	1,17

Source: HFCS wave 1

6. Participation in assets and debts by gender

In order to have a more complete picture of the differences in wealth among women and men and perhaps, also to find additional explanations for the gender wealth gap, we look at the balance sheets and portfolio composition of households. Portfolio choice decisions can play a key role in the rate of wealth accumulation, and mirror the behaviour in financial decisions making. First, we will look at the participation rate in selected asset classes.

Table 10 reports the participation in assets and debt by gender for the whole sample, and for the two subsamples consisting of couples and singles. The participation for both genders is close to 100% for financial and non-financial assets. Looking more in detail into selected asset classes, we see striking gender differences in the participation in real estate and risky assets. The same pattern in all three samples/subsamples can be observed. The participation in real estate is higher for female headed households and the participation in risky assets is significantly lower for this demographic group. In the overall sample, the W/M ratio of participation in risky assets is equal to 0.57 and in the subsample of single households it is equal to 0.46. Knowing that, historically seen, the annual average rate of return on risky financial assets is significantly higher than the risk free rate, the financial decision to participate in risky financial assets can have a detrimental impact on differences in wealth accumulation for women. The W/M ratios of participation in real estate of 1.04 for the overall sample and of 1.11 for the singles subsample reveal a less significant, but still existing gender difference.

Table 10 : Participation (in %) in assets and liabilities by gender and marital status

	Total			Couples			Singles		
	Male	Fem.	Ratio	Male	Fem.	Ratio	Male	Fem.	Ratio
Non-Fin. Assets	95	91,1	0,96	98,9	96,8	0,98	88,6	87,5	0,99
Real Estate	73,7	76,4	1,04	81,7	89,8	1,10	60,9	67,7	1,11
Business Assets	6,4	4,1	0,64	6,6	6,2	0,94	6	2,7	0,45
Financial Assets	97,8	99,3	1,02	98,4	100	1,02	96,8	98,8	1,02
Deposits	97,4	98,9	1,02	98,3	100	1,02	95,8	98,1	1,02
Risky assets	29,5	16,8	0,57	32,3	24,9	0,77	25	11,5	0,46
Liabilities	59,5	56,6	0,95	59,1	74,5	1,26	60,1	44,9	0,75

Source: HFCS wave 1

There are also striking gender differences in participation in business assets and debt. The participation in business assets is in general very low (6% for men and 4% for women). The W/M ratio is equal to 0.64 for the whole sample and equal to 0.45 for the singles subsample.[25] This suggests that there are more male headed households investing in business assets. So being independent is a choice more men are willing to take, which could also be linked to the individual's willingness to take risks, but this is not specific to Luxembourg. What is specific to Luxembourg is that only 40% of the population see entrepreneurship as a good career choice, which is among the lowest in the world.[26] A reason could be that the fear of failure in Luxembourg is the highest in Europe.[27]

[25] *This is consistent with the Acket et al. (2011) study on male and female entrepreneurship in Luxembourg.*
[26] *GEM Adult Population Survey Luxembourg 2015, STATEC.*
[27] *Global Entrepreneurship Monitor 2014.*

In 2009, only 29.7% of the persons setting up their own business were female.[28] Women are more represented in public administration, in education, in health care and social services, which are all sectors characterized as being “protected” (crisis resistant), so with lower unemployment risks.[29]

In the overall sample, there is no significant gender difference in debt participation. When looking at the subsamples, one can see that the debt W/M ratio for households living in a couple is equal to 1.26. There are more female headed households, who live in a couple that have debts compared to their male counterparts. For single households, the debt W/M ratio is equal to 0.75. Here, there are more male headed households that are indebted. As there are predominately never married households in this subsample, this could suggest that young male headed households are more willing or have the means sooner to contract a debt than young female headed households.

[28] *Barra, Guastalli and Lejealle (2013).*
[29] *STATEC, 2010.*

7. Portfolio composition by gender

Household portfolio composition differences for women and men are highlighted in Table 11 and Table 12. The shares reported in these tables reflect the share of a particular asset out of total assets. Table 11 presents the more aggregate results for financial assets, business assets, non-financial assets and liabilities. While in Table 11 these are broken down in more detail.

In Table 11, at the aggregate level, one can see that female headed households keep 90.4% of their total assets in non-financial assets and 8.8% in financial assets. Male headed households keep a higher share of total assets invested in financial assets, equal to 12.4%. This disparity could be interpreted as a preference for real assets among women or it can be a consequence of women having less wealth. Women invest in housing rather than in the financial market. The high real estate prices in Luxembourg might force households to make a trade-off. Female household heads prefer to first secure their everyday life, meaning opting for ownership when possible instead of taking risks and investing in the financial market. One cannot say that the behaviour of a male headed household is any different. It may be that the higher wealth level simply allows them to invest in both, housing and financial assets, without the trade-off.

Table 11 : Portfolio Composition by gender and marital status

	% out of Total Assets											
	Fin. Assets			Business Assets			Non-Fin. Assets			Liabilities		
	Male	Fem.	Ratio	Male	Fem.	Ratio	Male	Fem.	Ratio	Male	Fem.	Ratio
Total	12,4	8,8	0,71	4,3	0,9	0,21	83,3	90,4	1,09	9,6	11,7	1,22
Couples	12,2	7,5	0,61	3,7	1,2	0,32	84,1	91,3	1,09	8,5	12,9	1,52
Singles	13,2	10,4	0,79	5,8	0,4	0,07	81	89,2	1,10	12,4	10,2	0,82

Source: HFCS wave 1

Table 11 also presents the portfolio composition for single women and men. The share in liabilities is comparatively higher for male headed households in this subsample, which is consistent with the higher participation in debt for men.

Except for singles, female headed households have a higher share of liabilities as a proportion of their total assets than male headed households. The W/M ratio for the overall sample is equal to 1.22 and for the subsample of couples 1.52. Perhaps female headed households opt for mortgage payments over a longer term, in order to smooth consumption due to lower labor income. It could also mean that women don't have enough precautionary savings in order to cover unexpected expenditures, which forces them to take a loan. In fact, female headed households have a lower proportion in financial assets independently of their marital status.

Table 12 : Portfolio Composition by asset class by gender and marital status

	Total			Couples			Singles		
% out of Total Assets	Male	Fem.	Ratio	Male	Fem.	Ratio	Male	Fem.	Ratio
Rest Estate	79,3	86,9	1,10	80,1	87,7	1,09	77,1	86,1	1,12
Valuables and Vehicles	4	3,4	0,85	4	3,6	0,90	4	3,2	0,80
Business	4,3	0,9	0,21	3,7	1,2	0,32	5,8	0,4	0,07
Deposits	5,3	4,2	0,79	5,1	3,9	0,76	5,9	4,4	0,75
Risky assets	3,8	2	0,53	3,8	2	0,53	3,5	2	0,57
Bonds	0,5	1	2,00	0,4	0,1	0,25	0,8	2	2,50
Other Financial Assets	2,9	1,7	0,59	2,9	1,4	0,48	3	1,9	0,63

Source: HFCS wave 1

Note: Risky assets are shares and mutual funds; businesses include both self and not self-employed business assets.

Additional details found in Table 12 indicate that the gap is in favour of women when it comes to real estate. The real estate W/M ratio remains constantly above 1, close to 1.10 for all three subsamples. Female headed households hold a higher fraction of their total assets in real estate than male headed households. For both women and men, real estate and deposits (risk-free financial assets) are the biggest assets in their wealth portfolio. The W/M ratio remains around 0.76 for deposits, suggesting that male headed households hold a higher fraction of them in total assets. The W/M ratio for risky assets is even lower and remains for all, samples and subsample below 0.60. One can conjecture that a household with higher deposits is more willing to invest a fraction in risky financial assets compared to someone who does not have high deposits. Households in general try to smooth their consumption over their life-cycle and in order to do that hold short-term financial assets (deposits), which can be seen as a buffer to absorb uninsurable risks or simply as insurance.

The question is whether the lower risky asset share for women is an indication of higher risk-aversion of women or is it the result of women having lower income/wealth than men. It can be shown that in Luxembourg, the participation in risky financial assets increases along the income/wealth distribution.

In the HFCS questionnaire, there is a question concerning the investment attitude of the household, according to which female household heads are more likely to be more risk-averse than male household heads.[30] The literature argues that there is a negative relationship between risk-aversion and risky-asset ownership, this can be an indicator for gender differences in risky asset holdings.[31] Risky financial assets have a high mean return, providing additional income to their owners and thereby increasing the wealth accumulation rate. Female headed households generate probably less wealth through the lack of risky financial assets.

The assumption that female headed households are more risk-averse than their male counterparts is consistent with the bond holdings as bonds are considered to be relatively risk-free financial assets - although participation is very low for both. The W/M ratio is equal to 2.0 for the whole sample and 2.5 for the no-couples subsample.[32]

[30] *The respondent is asked which of the following statements comes closest to describe the amount of financial risk that he (and his partner) is willing to take when he saves or makes investments. Substantial, above average, average or not willing to take financial risk are the possible answers.*
[31] *Indeed there are more female headed households who declare to be risk-averse in the survey.*
[32] *The bond ratio of 0.25 for the only-couple subsample can be considered to be insignificant, when taking into account that the fraction of total assets invested in bonds for both genders is lower than 0.5%.*

8. Asset and debt levels by gender

Table 13 reports median asset and debt levels for women and men conditional on participation for the whole sample and the two subsamples. There are no substantial differences in the observed W/M ratios for the three samples/subsamples. For financial assets, the W/M ratio remains close to 0.60 for the overall and the singles subsample and close to 0.70 for couples. This is consistent with previous findings, which indicate that male headed households have a higher share of total assets in financial assets. There is virtually no gender gap for non-financial asset when looking at the conditional median.

Female household heads in all three samples have a considerably higher debt level than male household heads. This could play a significant role in explaining gender wealth differences. Debt can be used to invest in productive or non-productive assets or to invest in appreciating or depreciating assets. The wealth accumulation is highly influenced by this decision. A detailed analysis could reveal that female headed households have lower net wealth also because of unproductive financial or real investments.

Table 13: Conditional median assets and liability levels by gender and marital status

	Total			Couples			Singles		
(.000€)	Male	Fem.	Ratio	Male	Fem.	Ratio	Male	Fem.	Ratio
Financial Assets	36,9	21	0,57	43,6	29,6	0,68	25,9	15,7	0,61
Business Assets	117,3	45,9	0,39	110,8	45	0,41	119,6	14,8	0,12
Non-Fin. Assets	496,1	443	0,89	551,7	536,2	0,97	367,3	363	0,99
Liabilities	66,8	79,6	1,19	79,5	100	1,26	44,2	59,3	1,34

Source: HFCS wave 1

9. Conclusion

This report is a first attempt to identify and describe various aspects of the existing gender wealth gap in Luxembourg. Luxembourg has the highest mean and median value of household net wealth among the euro area countries, which can be explained by long-term economic growth and by rapid house price appreciation. Wealth however is unequally distributed among its population.

As this report shows, there exists a gender wealth gap both at the median and at the mean and for various household types. Households that identify the man as the more financially knowledgeable person on average have higher levels of net wealth. In the subsample of never married households, the gender wealth difference at the median is relatively stronger compared to other household types. The differences in gross income levels of the never married could not explain this gender wealth gap. In an attempt to find one we investigated household portfolios in more detail.

With respect to the participation decision we observe women's higher preference for real estate. Participation in risky assets is in general very low, but nonetheless there is a significant gender difference in favour of men. Debt participation varies by marital status. Never married men are more likely to have debt than never married women, while the opposite is true among couple households, i.e. households that report having women as the more financially knowledgeable person are more likely to have debt.

Men invest a higher proportion of their wealth in financial assets, while women invest more in non-financial assets. Conditional on participation, men have higher median levels in both financial and non-financial assets independent of their marital status. With respect to liabilities, women have higher median levels independent of their marital status.

We can observe that women have less liquid assets than men, which makes them more vulnerable to shocks over the life-cycle, especially after retirement. It is to be seen whether the social security system is in the position to absorb those shocks, without leading to financial distress. The more we see that households complement national social security and retirement benefits by private insurance contracts, the more important becomes research on wealth. We have started this debate. On top of that, labor and investment income insecurities due to economic and financial instability, lead to an increasing dependence on wealth.

Due to the fact that women have less liquid assets and higher debt levels, they are more exposed to any kind of shocks. In any case, it is recommended for both women and men to have a diversified portfolio for retirement and not totally depend on national social security, especially when this security hasn't been adapted to population ageing. In other words, it is advisable for both women and men to be economically independent, not only from their spouse but also from the state to some extent.

The descriptive statistics in this report form the basis for further analyses on portfolio differences by gender and for identifying the main variables that explain the heterogeneity in financial decision making.

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11. Appendix:

Variables:

a. Net wealth

Net wealth is defined as a difference between total household assets minus household's outstanding liabilities.

Total Assets consist of financial, business and non-financial assets.

Financial Assets include:

- household's deposits (sight accounts and saving accounts)
- mutual funds
- bonds
- publicly traded shares
- managed investment accounts
- private receivables
- voluntary pensions/life insurance
- other financial assets (options, futures, index certificates and other)

Financial Assets exclude public and occupational pension plans.

Business Assets include:

- silent investments in non-self-employment not publicly traded business
- self-employment business

Non - Financial Assets include:

- household's proprietary main residence
- other real estate property
- vehicles (cars and other vehicles, such as boats, planes or motorbikes)
- valuables

Total outstanding balance of household's **liabilities** includes:

- outstanding amount of household main residence mortgages and other real estate property mortgages
- outstanding balance of non-mortgage debt (credit lines/ bank overdrafts, outstanding credit card debt, consumer non-collateralized loans)

b. Instruments of households' portfolios

Household's portfolio consists of non-financial assets, business assets and financial assets.

Non-financial assets consist of **Real estate** (value of household's main residence, value other real estate property) and **vehicles and valuables**.

Business assets include non-self-employment private business and self-employment businesses.

Financial assets include **deposits** (value of sight accounts, value of saving accounts), **risky assets** (value of mutual funds, value of publicly traded shares), **bonds and other financial assets** (managed accounts, private receivables, voluntary pensions/life insurance and other assets)

Financial assets exclude public and occupational pension plans and investments in non-self-employment private businesses.

c. Income

Household income is measured as **gross income** and is defined as a sum of labor and non-labor income for all household members. It includes:

- Employee income of all household members
- Self-employment income of all household members
- Rental income from real estate property of the household
- Income from financial assets
- Income from public, occupational and private pensions
- Regular social transfers, including unemployment benefits
- Regular private transfers

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