STOCKHOLM SCHOOL OF ECONOMICS
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Cross-country Comparison of Household Characteristics within Eurozone

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Abstract

This paper aims to explore differences and similarities in the household characteristics of different countries within Eurozone. This is done by using the first wave of data from the Household Finance and Consumption Survey, a new, extensive and harmonized dataset collected by the European Central Bank. Through a cross-country analysis we draw conclusions on the main trends. We have found that the average net wealth varies significantly; by contrasting to average total assets, we conclude that the differences in net wealth mainly derive from the difference in total assets; we looked into the leverage ratio and analyzed thoroughly its asset components. Lastly, we discussed the possible explanations of the observed results.

Keyword: Household Finance, Cross-country Comparison, Eurozone, Assets

Tutor: Paolo Sodini

Acknowledgements: We would like to thank our tutor Paolo Sodini for his valuable insights, guidance, support and constructive feedback on our thesis. This paper uses data from the Eurosystem Household Finance and Consumption Survey.

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Abbreviation

AT: Austria

BE: Belgium

CY: Cyprus

DE: Germany

ES: Spain

FR: France

FI: Finland

GR: Greece

LU: Luxemburg

IT: Italy

MT: Malta

NL: Netherlands

PT: Portugal

SI: Slovenia

SK: Slovakia

HFCN: Household Finance and Consumption Network

HFCS: Household Finance and Consumption Survey

HMR: Household Main Residence

1 Introduction

Household finance on its own is a relatively new economic field. The finance literature, until not so long time ago, was divided into corporate finance and asset pricing. Household finance was back then part of the asset pricing field and was in some way neglected.

Campbell (2006) has introduced the name "Household Finance" for the field that studies how households use financial instruments and markets to achieve their objectives of maximizing household welfare. Financial instruments have played an indispensable role in households' investments. Cashes, deposits, bonds and shares are inevitable topics in household daily lives. They transfer resource temporally held to invest in durable goods and human capital, or to finance present and future consumption (Guiso and Sodini, 2012). Unlike risks faced by corporates or institutions, households have to face the risk of health. Hence, their reaction regarding payment choice, debt financing or portfolio investing can be quite different, with the limited ability to collect sufficient information and gain adequate knowledge to use it. Under this circumstance, households usually turn to third party for advices or rely on external expert to manage their wealth.

Tufano (2009) finds out that the financial products and services used by households has already been a substantial element of the financial sector. Taking the United States as an example, at the end of 2013, households held $ 94,5 trillion in assets, with $ 27,5 of these funds held in tangible assets (mostly real estate), and $66,9 trillion in financial assets. In aggregate, households held $13,8 trillion in liabilities, mostly home mortgages ($ 9,4 trillion) and consumer credit ($ 3,1 trillion, primarily in credit cards). In contrast, corporation have $ 35,0 trillion in assets, particularly real assets $ 18,2 trillion and financial assets $ 16,7 trillion, and $ 14,9 trillion of outstanding liabilities . These numbers suggest that the industry size of household finance is larger than corporate finance at the assets side, and as large as corporate finance at the liabilities side. Similar situation could be found in Europe as well. Hence, household finance deserves as much attention as corporate finance.

Besides the size of the household finance market, there are some unique features of household finance that have distinguished itself from the other part of the assets pricing

field. Households mainly focus on four key functions: payments, risk management, saving/investing and borrowing (Tufano, 2009). They have to decide to pay in cash or credit cards, take personal or collateralized loans, invest in what kind of insurance and choose financial intermediaries for the family, etc. In addition, human capital as the main source of labor income for households is non-tradable, hard to measure and carries substantial idiosyncratic and uninsurable risk. The rest of household wealth is tangible and typically invested in real assets and financial assets. As mentioned before, households are confined by their ability to collect sufficient information and gain adequate knowledge to use it regarding the financial assets. Household members' poor understanding of financial instruments will bring obstacles in participation in financial market. Moreover, households' limited access to credit impairs their ability to invest in real assets as well. Guiso and Sodini (2012) argue that some of these features have long been incorporated in models of micro-economic behavior. Although others are not directly related to the finances of households, and have been modeled dispersedly in several strands of economics, such as banking, the economics of insurance or household economics, there are still some factors that are simply ignored by standard models, even though they play an important role in constraining and shaping household financial decisions.

Household decisions are also affected by macroeconomic environment as well as microeconomic environment. Dynan and Kohn (2007) prove that the real estate price is the key driver behind the pre-Great Recession increase in debt. Additionally, an unexpected increase in inflation will hurt savers and benefit borrowers (Doepke and Schneider, 2006), while Albanesi (2007) argues that it will also hurt households that tend to hold relatively more currency. Institutions often have stronger influence on household decisions than corporates decisions, since they are fundamentally different from each other. Household finance is no longer restricted to asset pricing, and tends to concentrate on valuation principles. This can be one reason of why household decisions are shaped by the institutional environment in which they are taken (Guiso and Sodini, 2012).

Overall, household finance concentrates in the structure of household wealth and features affecting household decisions, which takes into account the heterogeneity of household characteristics and the variety of institutional environments.

One of the main challenges, if not the biggest, to conduct household finance research was and still is data collection. Understandably, people are very reluctant to disclose their own financial status to strangers. To overcome this issue the surveys conducted shall not be too detailed in order to get as much answers as possible and reliable ones. When it comes to cross country studies, the use of comparable data becomes of paramount importance. Having said this it is easy to realize that it is quite expensive to collect meaningful data since long interviews have to be done for each household and the interviewers need to be experts.

A sizable amount of analysis exists for countries with a tradition of collecting these data, such as the United States, Italy or Spain (HFCS statistics series paper, 2013). In contrast, there is few work or results on the cross-country comparison within euro area available. Christelis et al. (2013) investigate differences in ownership and holdings of various asset and debt types across 13 countries (among households aged 50 or more).

The Household Finance and Consumption Survey (henceforth HFCS) is an initiative of the European Central Bank and gathers over 62 000 observations from 15 different countries within Eurozone. There were surveys in these countries before but this one is the first to be done with the main purpose of getting comparable data across countries. Having been given access to such rich dataset one has an endless amount of possible research themes.

At this stage we propose ourselves to dig in this amazing dataset and shed some light on the asset side of the household balance sheet on a country level. We aim to conclude whether there is or not heterogeneity among the Euro countries and if it exists, how big.

This paper is structured as follows: in the next section an overview of the previous literature is presented. In section 3 we provide a description of the data used in the production of the analysis. Section 4 talks about the net wealth and total assets of each

country with emphasis on variation in wealth distribution respectively. Section 5 contrasts total liabilities to total assets. Section 6 focuses on assets side of household balance sheets, and discusses household participation in decomposed levels. Section 7 concludes.

2 Literature review

2.1 Household finance

Campbell (2006) proposes that by analogy with corporate finance, household finance solves the problem that how households use financial instruments and markets to attain their objectives of maximizing household welfare. He also realizes that the field of household finance have faced many specific features, such as households have important non-traded assets, notably their human capital which is extremely hard to evaluate; they also hold illiquid assets, notably housing which usually accounts for the majority of the family wealth; they face constraints on their ability to borrow; and they are subject to complex taxation. Because of these factors, even though households seek advice from financial planners and other experts, some households make decisions that are hard to reconcile with advice or with any standard model. A possible explanation is that households may not express their preferences optimally. The discrepancies between what households actually do – positive household finance - with what household should do – normative household finance –also known as investment mistakes are central to the field of household finance.

Household wealth consists of various components. Human capital typically referring to labor income as the largest component of most household is non-traded and difficult to measure (Campbell, 2006). In practice, the risk of labor income is idiosyncratic and therefore unhedgeable. This background risk increases the effective risk aversion and leads households to invest more cautiously (Heaton and Lucas, 2000; Viceira, 2001). Moreover, labor income gives households the choice to cancel out the effect of poor investment returns, either by increasing hours worked or by delaying retirement. This added flexibility increases willingness of households to take financial risks (Bodie et al., 1992; Farhi and Panageas, 2005). In line with this, Cocco, et al. (2005) claim that labor income is similar to an implicit holding of safe assets, stimulating investment in risky financial assets.

Houses are another important asset for most households. It can be seen as a long-term asset that delivers a stream of housing services to their owners, which analogy to long-term bonds that can be used to hedge changes in the relative price of housing and

non-housing consumption (Pelizzon and Weber, 2005; Sinai and Souleles, 2005). On the other hand, houses are also illiquid assets so that it is costly for households to adjust their consumption in response to economic shocks. This illiquidity may prevent households participating and taking financial risk[3] (Fratantoni, 2001; Cocco, 2005).

Private business assets also play an important role in wealthy households' assets. Gentry and Hubbard (2004) report that private business owners' wealth accounts for as much as 40% of total net wealth even though they comprise less than 10% of the population, indicating that this small portion of households are particularly important for aggregate assets demands and assets pricing. Heaton and Lucas (2000) emphasize that private business assets substitute public equity in the portfolios of some wealthy households. This finding has been also claimed by Mankiw and Zeldes (1991) and by Haliassos and Bertaut (1995) as well. Hamilton (2000), Moskowitz and Vissing-Jorgersen (2002) also argue that private business assets also bring substantial nonpecuniary benefits. Since fringe benefits are not included in the measurement, it is difficult to estimate the expected return and riskiness, and compare them with other assets. However, there are some constraints regarding the household participation in equity market. First, a household may be unable to borrow at the riskless interest rate to finance equity investment (Constantinides, et al., 1998); second, a household may face fixed costs of equity market participation: if these fixed costs exceed the benefit of participation, the household may hold no equities (Abel, 1998).

In terms of financial assets, one of the imperative components is shares. The research of Guiso et al. (2003) indicates that stock market participation correlated robustly with wealth and education, which have only small effects, however, on the asset share invested in stocks by household who do participate. These empirical results point to the relevance of entry cost, and furthermore higher participation is brought about by lower participation costs. Mutual-fund separation theorem states that all investors should hold the same composition of risky assets. In practice, experienced advisors recommend that aggressive investor hold a lower ratio of bonds to stocks than conservative investors.

[3] See Flavin and Nakagawa (2004), Shore and Sinai (2005), Yao and Zhang (2005) and Davidoff (2006) for similar information.

The assumption of fully rational investor in theorem is hard to be realized in reality. Besides, that the advice being offered does not match economic theory suggests that our understanding of investor objectives is deficient (Canner et al., 1997).

Another inevitable topic about household finance is pensions and/or insurance. Because of the unfavorable demographic trends, the implicit rate of return on contributions to the social security system has declined as the system has matured, and this rate of return is projected to decline further in the 21st century (Geanakoplos et al., 1999). Bertaut and Starr-McCluer (2002) show that defined benefit pension rights increase the allocation to risky assets, while self-employment decreased it. In contrast to this finding, Agnew et al. (2003) prove that participants in retirement savings plans rarely alter the allocations of their contributions or rebalance their portfolios, and default options have long-lasting effects on these portfolios. Ameriks and Zeldes (2004), Choi et al. (2002, 2004b) and Madrian and Shea (2001) have similar findings.

2.2 Cross-country comparison

Except the discussion about household balance sheet, there are also some literatures of cross-country comparison in this field. Gioso, et al. (2003) discuss household stockownership in major European counties, drawing parallels and contrasts with the US experience. The analysis shows that more US, UK and Swedish households participate in stock market than is the case in the Netherlands, France, Germany and Italy.

Christelis, et al. (2010) further contrast the participation and holding of stocks, private business, homes and mortgages among households aged 50+ in thirteen countries. Ownership across the range of assets considered tends to be more widespread among US households. European owners tend to invest smaller amounts in stocks and larger amounts in homes. These can be related to economic environment, which has more pronounced effect on the amount held of European countries. During the sub-prime crisis, US households tend to hold much higher mortgage amounts, as well as smaller home values, relative to their European counterparts shortly prior to the crisis that created negative equity for many homeowners. Carroll (2002) finds a phenomenon that wealthy households are willing to take greater risk in their portfolio in several European countries.

3 Data description

The dataset used in this paper is originated from the Eurosystem Household Finance and Consumption Survey conducted by all of the central banks of the Eurosystem and three National Statistical Institutes jointly. This survey provides detailed household-level data on various aspects of household balance sheets and related economic and demographic variables, including private pensions, income, employment and measures of consumption. As a distinguished survey, HFCS provides individual household data of more than 62 000 households, which have been collected in a harmonized way in 15 euro area members.

Although there were other surveys conducted before to gather data of household wealth, HFCS is the first survey that attempts to collect comprehensive wealth data on a consistent basis across euro-zone. As a survey of wealth, it faces certain obstacles: wealth is often considered as a sensitive topic to discuss with strangers; interviewees may not have sufficient knowledge to understand the questions, or they even might have poor understanding of their own financial status.

One essential fact is that a survey such as HFCS cannot be carried out within a small period, therefore there are different fieldwork periods as figure 1 demonstrates. Wealth and income sometimes refers to different years. It is clear that the survey conducted in Spain is almost two years older than those in other countries. This could have fundamental effect when we conduct the cross-country comparisons, thus additional attentions and cares are required.

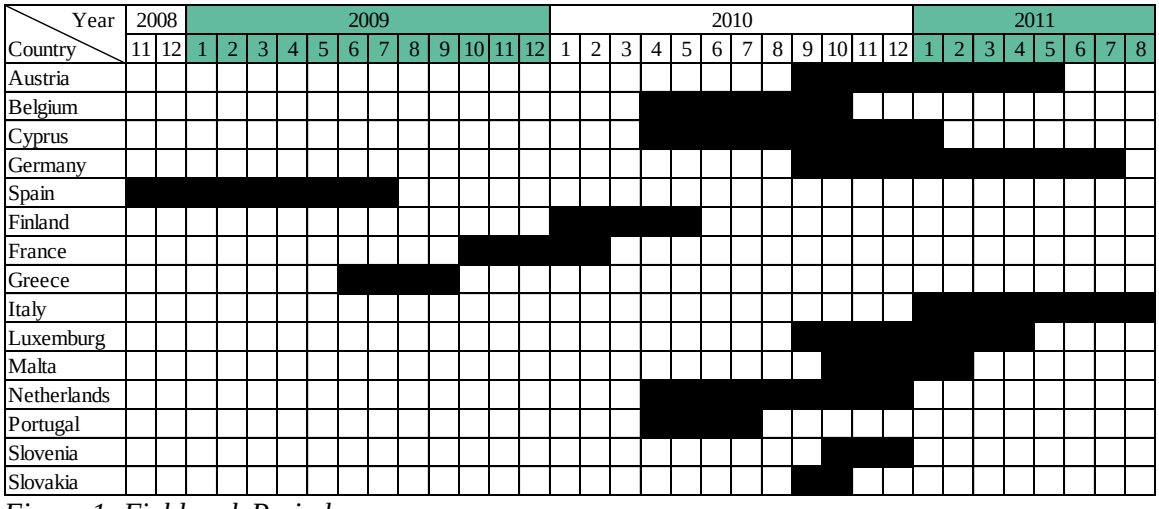

Figure 1: Fieldwork Periods

It is also notable that the sample size of 15 euro countries varies significantly. When we start the analysis and categorized sample by various characters, countries with small sample size can be confronted with the situation that there will be no observation in specific sub-groups.

Country	Sample size	Country	Sample size
Austria	2380	Italy	7951
Belgium	2327	Luxemburg	950
Cyprus	1237	Malta	843
Germany	3565	Netherlands	1301
Spain	6197	Portugal	4404
Finland	10989	Slovenia	343
France	15006	Slovakia	2057
Greece	2971		

Table 1: Sample size

All the graphs and tables in this paper are based on the first wave of the Eurosystem Household Finance and Consumption Survey unless otherwise stated. The HFCS provides 5 versions of dataset resulting from the process of multiple imputation, which called implicates in Stata. Each version can be used as complete data, however, all 5 implicates are used in our analysis to more accurately produced graphs from original datasets.

In order to illuminate the difference between households in the following analysis, the concept of "household reference person" is introduced. Typically, it is defined as the household member who earns the highest income[4].

[4] For more detailed definition, please refer to the Appendices

4 Net wealth & Total assets

4.1 Average net wealth & total assets

In this paper, net wealth is simply defined by total assets excluding public and occupational pension plans minus total outstanding balance of household's liabilities. Figure 2 reports the average net wealth per household for countries respectively. The mean values vary largely among the fifteen countries. For instance, Slovakia has the lowest average net wealth of only €70 000, while Spain has the highest value of €1 119 000. However, due to the sovereign bond crisis in Europe recently, the countries like Portugal, Ireland, Greece and Spain who suffered the most are expected to have a lower level of net wealth when compared to other euro-zone countries since the net wealth is considered to be closely linked to the overall economic situation of the specific country. The high value of Spain is clearly controversy to the expectation. Besides that, the abnormal high values of Luxemburg and Cyprus also draws attentions. A possible mathematic explanation could be that the samples do not represent well enough the situation of specific countries because of the limitation of sample size.

One possible reason for such large differences across countries might be that in countries with sound pension systems, people are not so afraid of the future and can afford to spend their money in an early stage of life, not saving money for their retirement.

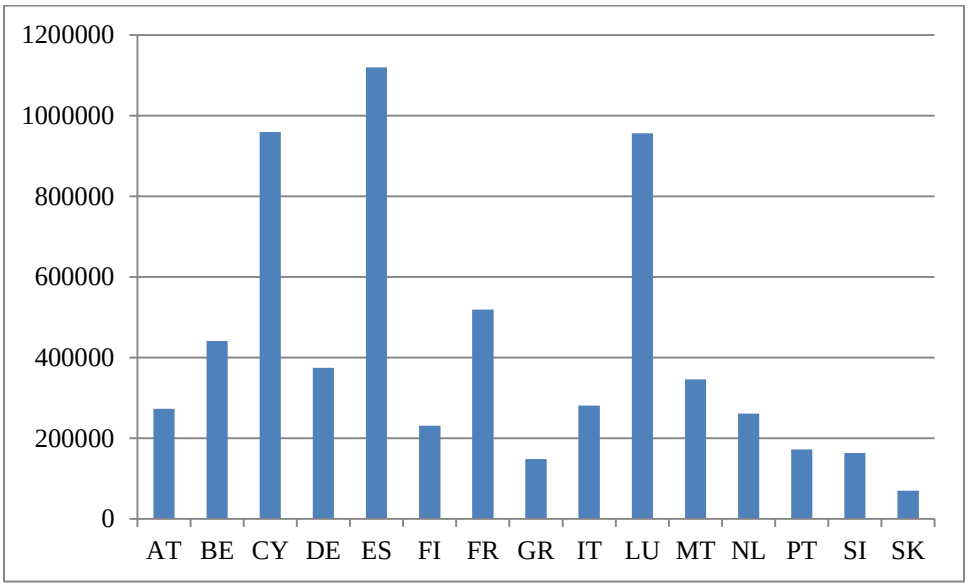

Figure 2: Average net wealth for each country

In order to analyze the differences across countries of the net wealth we plotted the average total assets for each country (figure 3). It is straightforward to see that the two graphs are very similar so we can say that the net wealth is mainly driven by the asset side (the liabilities do not distort the image).

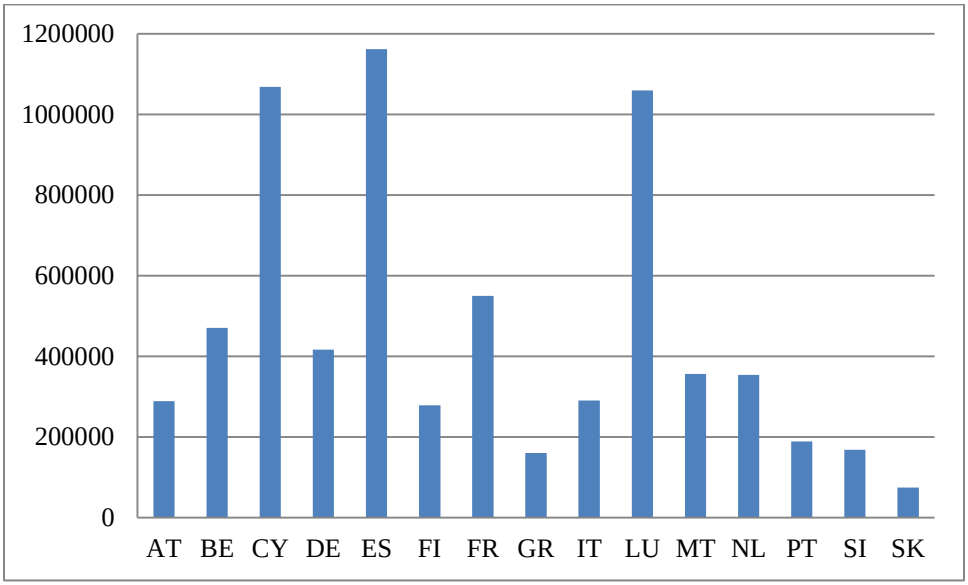

Figure 3: Average total assets for each country

4.2 Net wealth & total assets over age

Figure 4 shows the average net wealth for each country over age. To plot this graph we decided to winsorize the data for each country in order to eliminate the effect of possible spurious outliers (98% winsorization).

It is expected that the amount of net wealth would rise at the beginning, reaching the peak during people's middle age, and go down afterwards with the increasing age. The trend of most countries is consistent with the hypothesis, such as Cyprus and Spain, but there still are a few countries that the theory cannot be applied to.

The trend of Luxemburg and Netherland demonstrates that the right side of the curves have a relative high value, implying that the net wealth keeps increasing with the age of household reference persons, namely that eldest people own a lot of wealth. The rest of the countries have curves with little fluctuation which indicates that wealth distribution is flat among people in different ages.

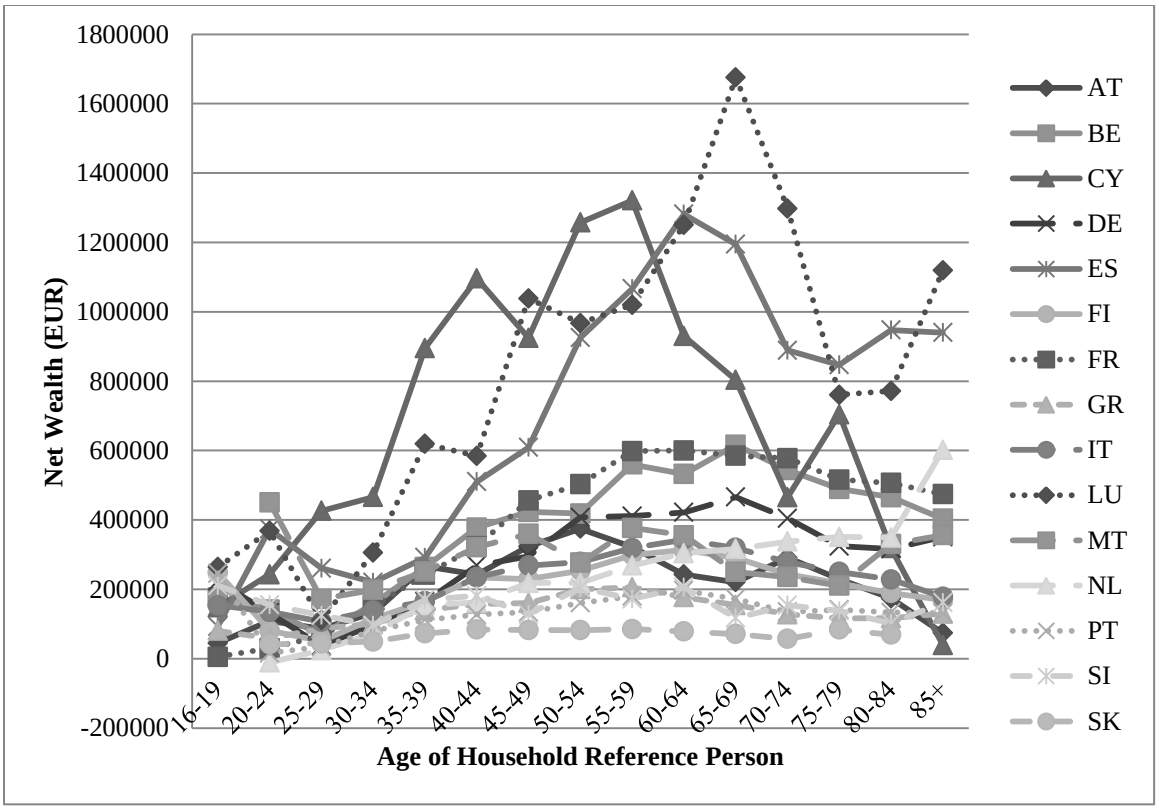

Figure 4: Average net wealth for each country over age

Again, a similar graph was plotted but now with respect to total assets. Like the average net wealth and average total assets, Figure 5 (average total assets for each country over age) seems to be a mirror of the average net wealth for each country over age.

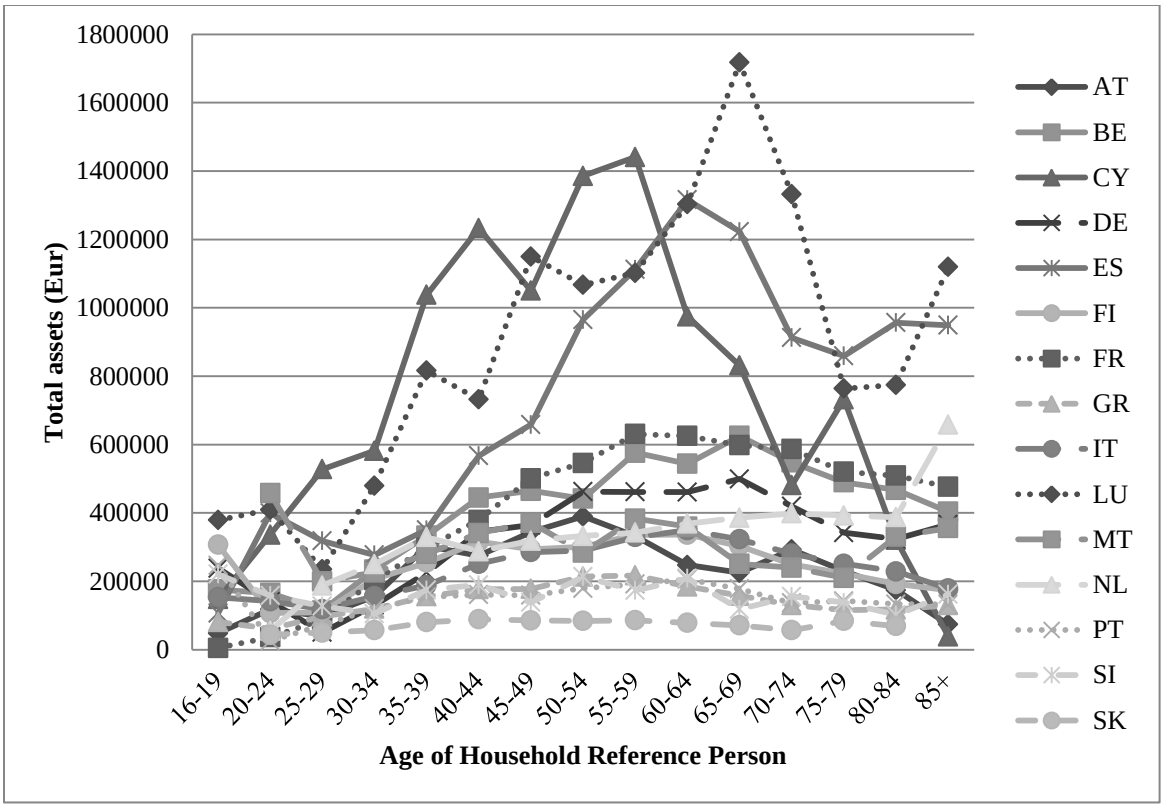

Figure 5: Average total assets for each country over age

5 Leverage ratio

Leverage ratio in this paper is defined as total liabilities over total assets. Figure 6 shows the leverage ratios for each country. From the graph, it is easy to observe that most of markers, which represent the fifteen countries respectively, gather in the lower left corner, suggesting a leverage ratio around 0,2. The exception is Netherlands, with a relatively larger leverage ratio, where households tend to bear more liabilities compared to other countries. The amount of average total assets of Netherlands is around €400 000, close to a few countries such as Malta and Germany, but the amount of liabilities that it carries is far more than the two aforementioned countries.

A possible explanation for the situation of Netherlands could be related to the public pension plan system. Since Netherlands has a more completed pension system, Dutch households have less burden of accumulating wealth to cover the life after retirement and thus more capacity of taking debts. Another fact that draws attention is that the total assets does not take the public and occupational pension plans into consideration. Therefore, the advantage of Dutch pension system does not reflect in the data of average total assets, which lead to this abnormal high value of leverage ratio.

Another interesting observation is that although the leverage ratio of Cyprus and Luxemburg is also around 0,2 as those countries in the lower left corner, the absolute value of total assets and liabilities is far more than the others.

As discussed before, the high value of average total assets of Cyprus could be related to the bubble in real estate market. Because of the growing house price, the wealth of households is increasing as well. Therefore households have a tendency to borrow more debt since they believe that liabilities can be repaid by the increased value of properties. However, considering the fact that the pension system is less perfect in Cyprus, the action of households borrowing more debt might not be very wise. As for Luxemburg, which is with a well-functioned pension system[5] as Netherlands[6], the

[5] Luxemburg pension system: http://euracs.eu/summaries/luxembourg-pension-summary-6/
[6] OECD (2013) covers 13 of the 15 HFCS countries and estimates that the average public pension wealth in Luxembourg and the Netherlands substantially exceeds the values for the remaining countries.

leverage ratio is actually much lower, implying that Luxemburg is indeed a country with more wealth.

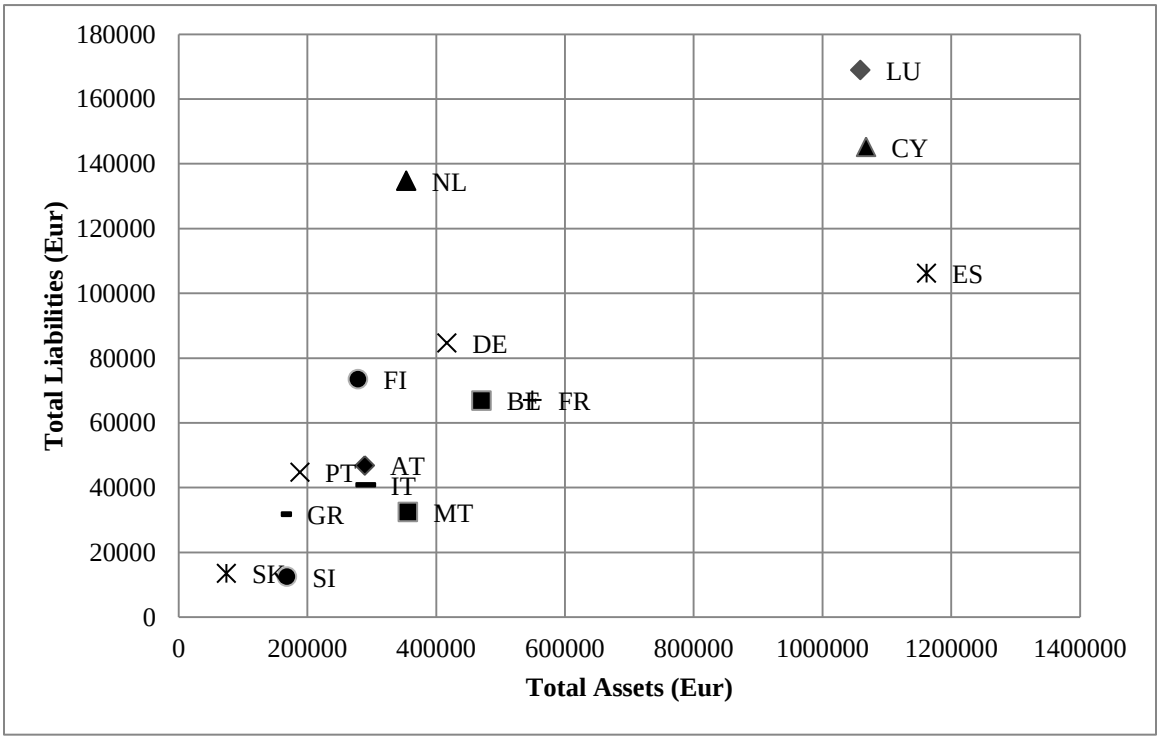

Figure 6: Leverage Ratio

Besides comparing the leverage ratio among the fifteen countries, we would also like to investigate the leverage ratio for people in different wealth level and age group.

5.1 Leverage ratio by deciles

Figure 7 depicts the average leverage ratio by deciles of total assets, namely the indebtedness of groups with different levels of wealth. The scale of the average leverage ratio by deciles is limited to 0,5 so that the graph from the 2nd decile and onwards could be more straightforward to be interpreted. The first decile of all countries is out of the graph and varies tremendously from 1 of Italy to 147 of Germany. The average leverage ratio of the first decile of the 15 countries is 26, which shows that the 10% holding fewest assets in each country is living well above their possibilities.

In terms of the overall trends for all countries, it is clear that the more assets households hold, the less indebted they will be. This situation is in line with the

expectations since people who hold more assets are wealthier and do not need to borrow money.

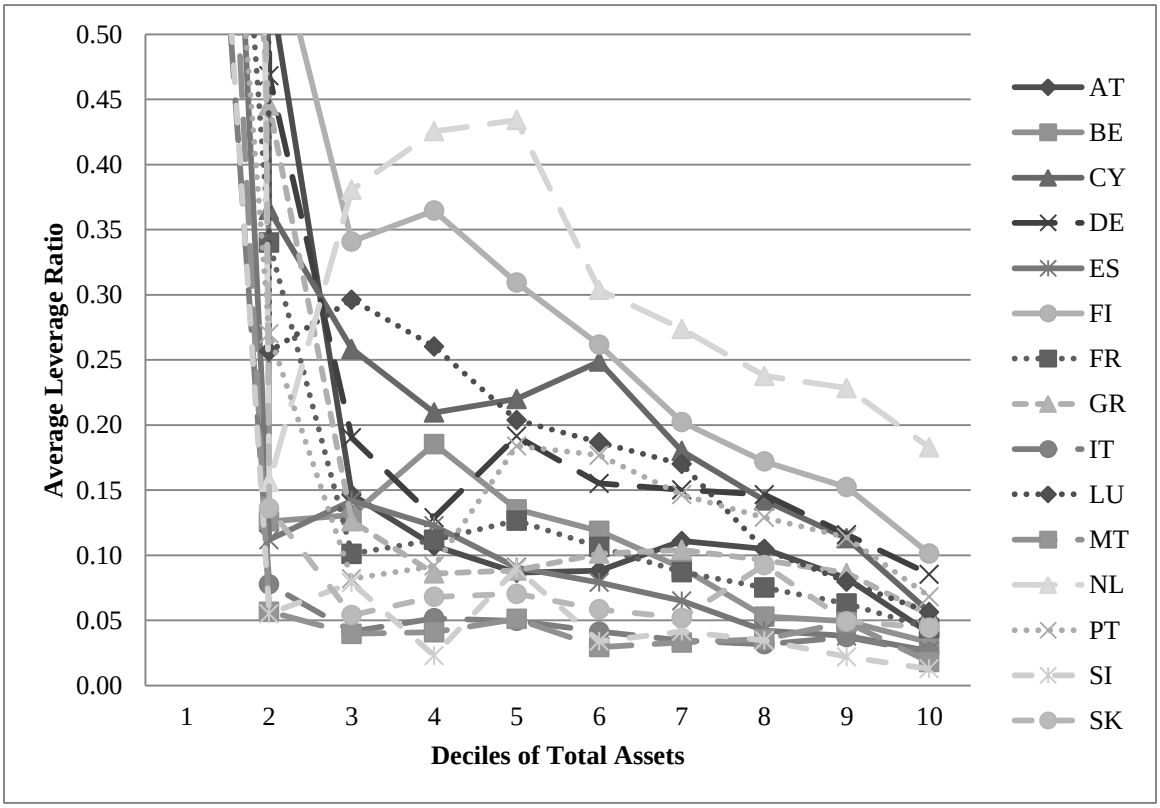

Figure 7: Leverage ratio by deciles of total assets

5.2 Leverage ratio over age

Figure 8 shows the average leverage ratio over age. It is expected that the average leverage ratio would increase early on, around twenties or thirties since it is about this age that people tend to take loans to buy properties. Then the average leverage ratio is expected to drop as people get older and start paying back their debts. However, the observed trend of only half of the countries is aligned with the expectation (Spain; France; Greece; Italy; Malta; Portugal and Slovenia). It is worth noting that the countries which follow the trend have their leverage ratios below 1,5 which contrast with the extreme values of the other countries. From this point of view, the average leverage ratio stays quite stable among people in different age groups and thus it is hard to say there is correlation between the changes of leverage ratio and reference people's age.

The rest of the countries do not follow a clear trend and have some extremely large leverage ratios (for instance the highest value: Germany 130; Luxemburg 90 and Finland

58). However, it is noticed that the overall trend of the average leverage ratio of middle-aged group is higher than the elder's. Again, as discussed in section 3, the sample size of countries with small population would cause a huge fluctuation, which might be one explanation for Luxemburg in this graph.

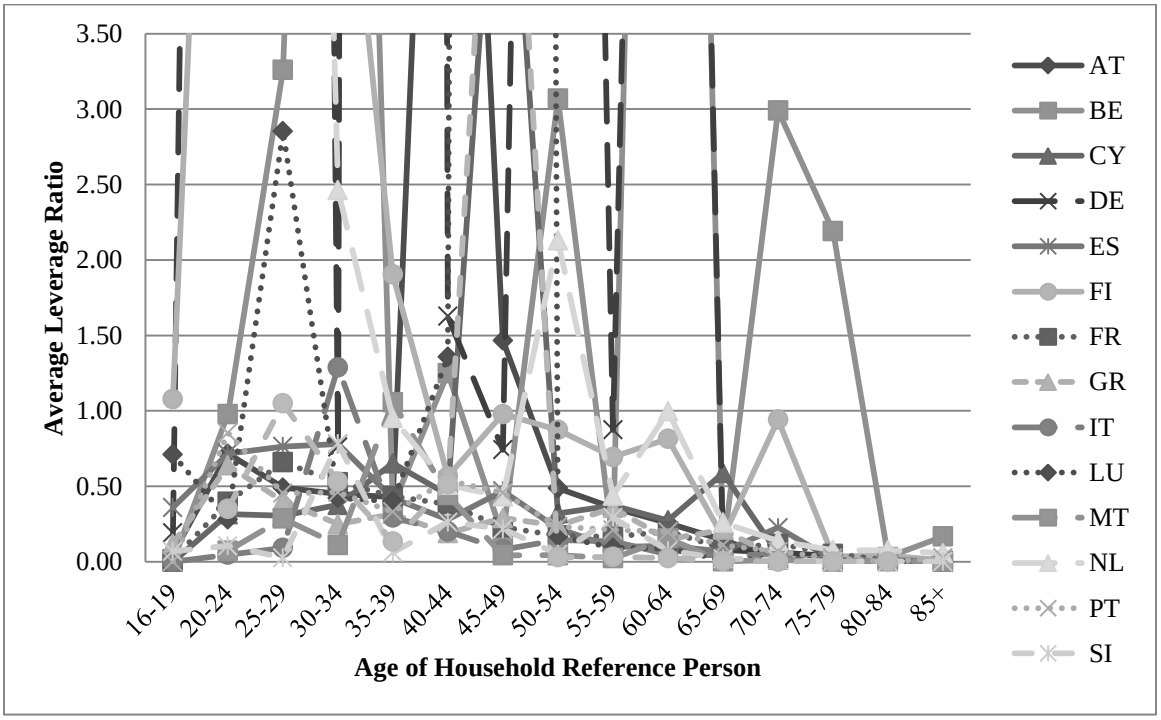

Figure 8: Leverage ratio over age

6 Assets

6.1 Real assets

Real assets are a very important part of the households' assets since they make up a big portion of it. In this section it will be possible to address some question like: when do households start to hold real assets? When do they start to buy their own residence? What percentage of the poorest actually own real assets? How many properties households hold on average?

6.1.1 Composition

In this paper real assets are composed by the value of household main residence; other real estate properties; vehicles; valuables; self-employment business and non-self-employment non-publicly-traded business. We decided to include non-self-employment non-publicly-traded business in real assets since this is rather illiquid compared with other financial assets.

Table 2 gives us the breakdown of relative weight for each component of real assets. The main residence is the predominant component in every country and it varies between 47,5% in France to 74,2% in Slovakia. Vehicles and other real estate property share the second main component depending on the country. It is important to mention that in France the vehicles were included in the valuables component. It is interesting to notice that there are some countries with very high percentages of other real estate properties like Cyprus (25,7%), Spain (21,9%) and Finland (19,6%). This might indicate that people do not trust the financial markets to invest their savings and therefore prefer to buy more real estate that is seen as a very secure investment since real estate prices have been raising in a sustainable way for several years. With regards to vehicles there are also big differences across countries that are hard to explain, Austria and Germany with 34,7% and 27,3% respectively, contrast with only 7,4% in Spain. This might be due to cultural reasons as people in different countries see vehicles with different perspectives; some are very pragmatic with this respect and only see it as a transportation mean, but a lot of people have pleasure to drive fast and or fancy cars. We believe that is likely to be the case in Germany since the car industry is traditionally big. Valuables and self-employment business account for much lower portions in all countries (except for the

valuables of France for the aforementioned reason) with a mean of 3 to 4%. The non-self-employment non-publicly-traded business appears to be a negligible part of real assets being no bigger than 0,7% in all the countries.

	Main residence	Other real estate properties	vehicles	valuables	self-employment business	non self-employment business
AT	48.08%	6.34%	34.72%	6.52%	4.24%	0.11%
BE	69.76%	9.50%	15.91%	2.46%	2.19%	0.18%
CY	52.24%	25.74%	12.74%	0.63%	8.38%	0.27%
DE	51.16%	13.16%	27.26%	4.41%	3.79%	0.21%
ES	63.33%	21.92%	7.42%	1.04%	5.58%	0.70%
FI	61.77%	19.60%	16.61%	0.00%	2.02%	0.00%
FR	47.45%	16.60%	0.00%	30.55%	4.88%	0.51%
GR	57.02%	17.45%	20.99%	0.51%	4.01%	0.02%
IT	60.08%	9.18%	16.88%	10.33%	3.45%	0.08%
LU	58.44%	18.29%	17.40%	3.28%	2.47%	0.13%
MT	64.03%	12.74%	16.12%	3.42%	3.55%	0.14%
NL	70.86%	3.99%	20.68%	2.74%	1.73%	0.00%
PT	64.07%	13.22%	18.32%	1.91%	2.46%	0.03%
SI	71.72%	10.62%	14.76%	0.23%	2.63%	0.04%
SK	74.17%	4.66%	16.36%	2.05%	2.68%	0.07%

Table 2: Composition of real assets (average)

From figure 9 one can take several interesting conclusions. Virtually everyone from the half richer group of each country holds some kind of real assets. France is a very particular case where the entire population holds real assets. Regarding the ten percent poorer there are big differences across countries: on one extreme there is France with 100% participation rate (as aforementioned) and on the other extreme there is a group of countries with less than 40% participation rate (Portugal, Greece, Slovakia, Germany, Austria, Belgium and Finland).

The overall picture of this graph was already expected. A lot of poor people cannot afford to buy real assets but as soon as they start accumulating wealth they start buying real assets, namely vehicles that are usually essential to the working life of a lot of people.

Austria also calls attention for the fact of being the last country to reach a full participation in real assets. In other words Austria is the only country to reach 100% participation rate in real assets only in the 6th decile of total assets.

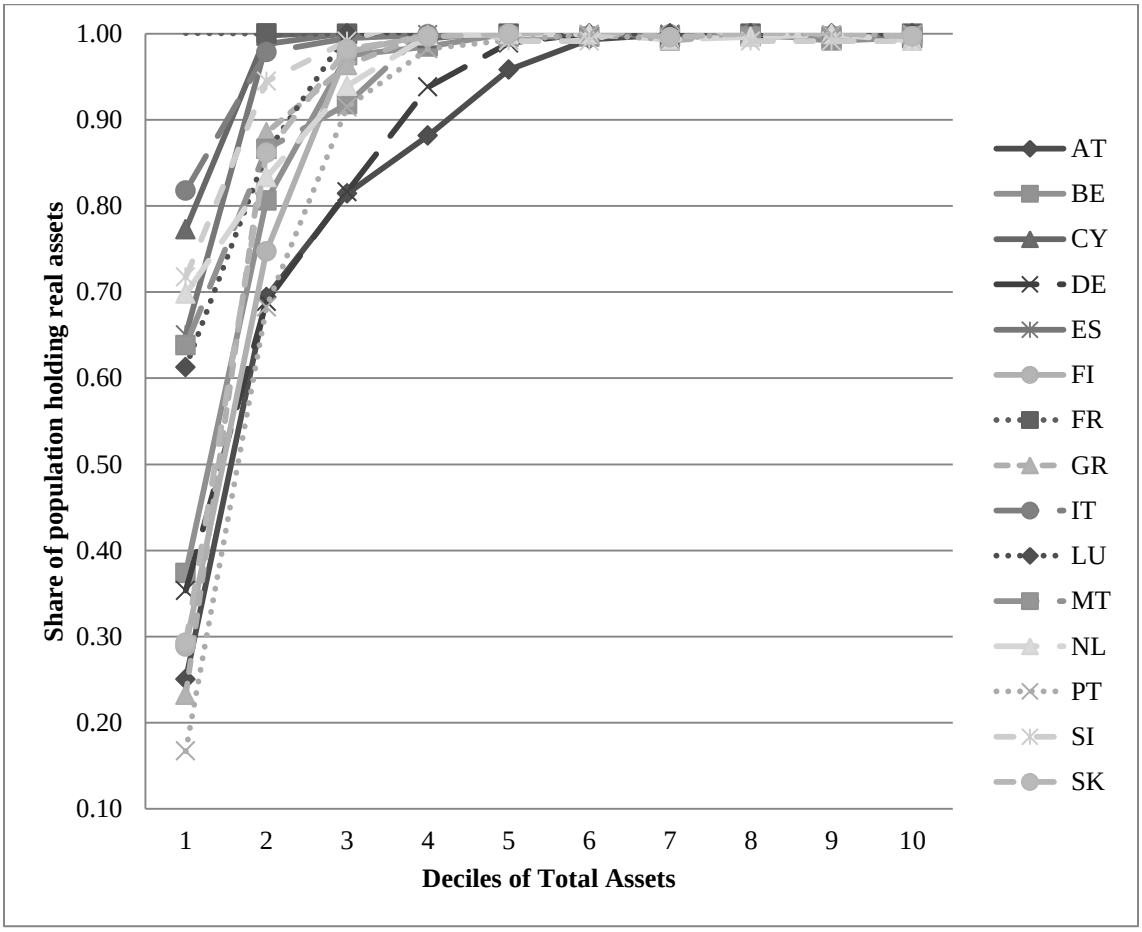

Figure 9: Participation of real assets by deciles of total assets

6.1.2 Real estate

The main component of real assets is undoubtedly real estate so we will dedicate this sub-section entirely to the study and analysis of real estate. The real estate discussed in the following part includes the household main residence (HMR) and other real estate properties.

6.1.2.1 Wealth level

Figure 10 shows the participation rate in real estate by deciles of total assets. It is clear that most of the 10% poorer across countries do not have enough money to buy real estate (only in Spain more than 10% of the 1st decile actually holds real estate). It is easy to spot a generalized trend from 1st to the 4th decile where participation rates skyrocket from

about 0% to about 80%. There are two countries (Germany and Austria) where this trend, even though still present, starts at a "later" stage: the uptrend goes from the 3rd/4th to the 5th/6th deciles. We believe that the reason for this delayed trend is related to differences in the tax law across countries that result in an incentive for people in Germany and Austria not to buy real estate until one accumulates a substantial amount of wealth.

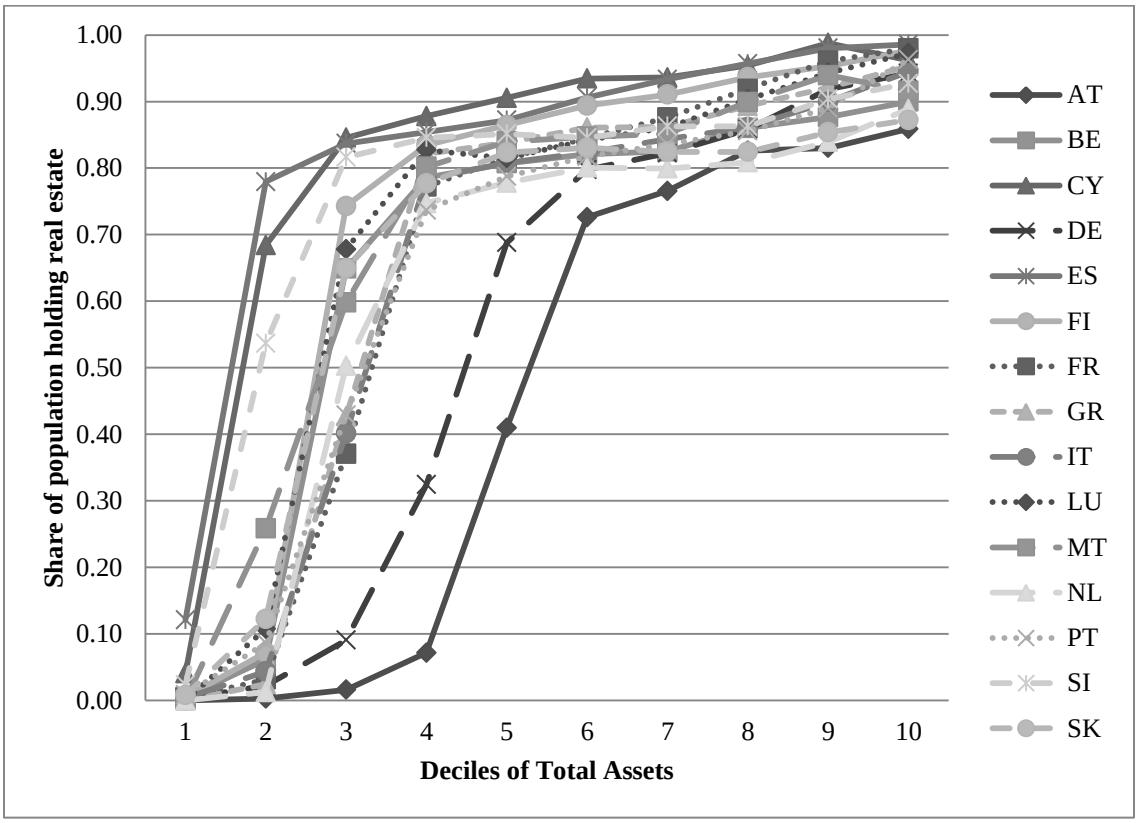

Figure 10: Participation of real estate by deciles of total assets

Figure 11 gives us an idea about the average weight of real estate on real assets held by the household by groups of people with different levels of total assets, among people who actually hold real estate. From figure 10, and given the fact that figure 11 is conditional on participation, it was already expected that it would be missing the value of the first decile for some countries since they have a participation rate of 0% in the first decile. The rest of the countries range from 70% to 100% at the first decile, showing a wider gap than we expected. Given that people in the first decile are relatively poor if they have real estate this will probably be the only real asset they will have. Countries with extreme values at the first decile converge in the second. In countries that have 100% in the first decile this probably means that they start buying vehicles while in countries

that have about 70% in the first decile this probably means that they had already a car and will invest in a better/bigger residence. The overall picture resembles a hump shape where the middle deciles are bounded by 90% and 95%. Although with different magnitudes, the downtrend in the last deciles is present in all the countries. The reason for this decreasing sharp of relative weight of real estate to real assets is the inclusion of self-employment business in real assets which value typically surge in the last deciles.

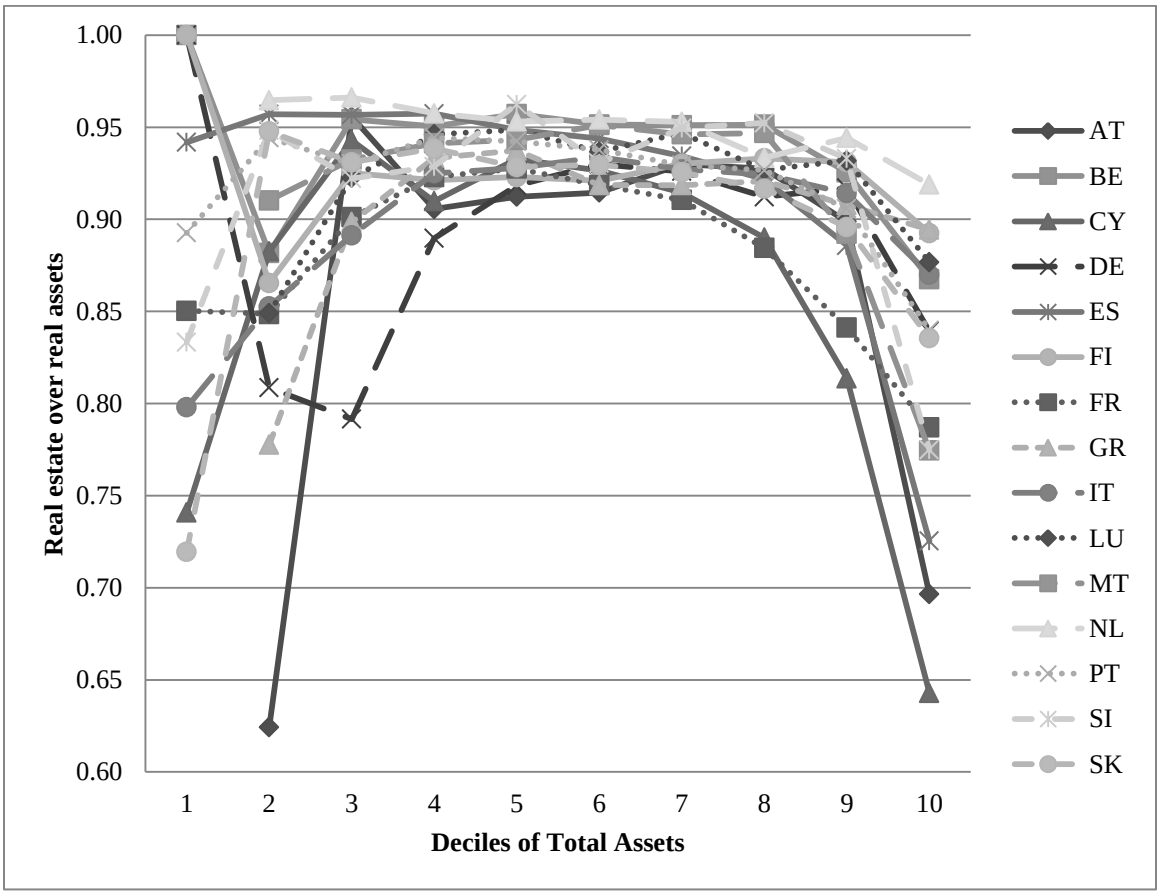

Figure 11: Fraction of real estate over real assets by deciles of total assets, conditional on participation

6.1.2.2 Age

Figure 12 depicts what percentage of each age group holds real estate. With it we are able to answer the question when do households tend to start buying their own residence. The general trend is well-aligned with what one would expect, that participation rate of young people is low but increase dramatically in their late twenties or early thirties, reaching the life peak in their middle age. At this stage of life participation in real estate across the fifteen countries is roughly concentered between 70% and 90%. In the last years of life

people tend to decrease their participation in real estate. We believe that this is mainly due to two reasons: first old people might have to sell their properties in order to fund their last days (nursing homes or general health care expenses); second old people might put their real estate under their children to avoid inheritances' taxes. This second reason might also help to explain why there are several countries with so high values very early in life like Cyprus, Slovenia, Luxemburg and Malta with 100% participation rate.

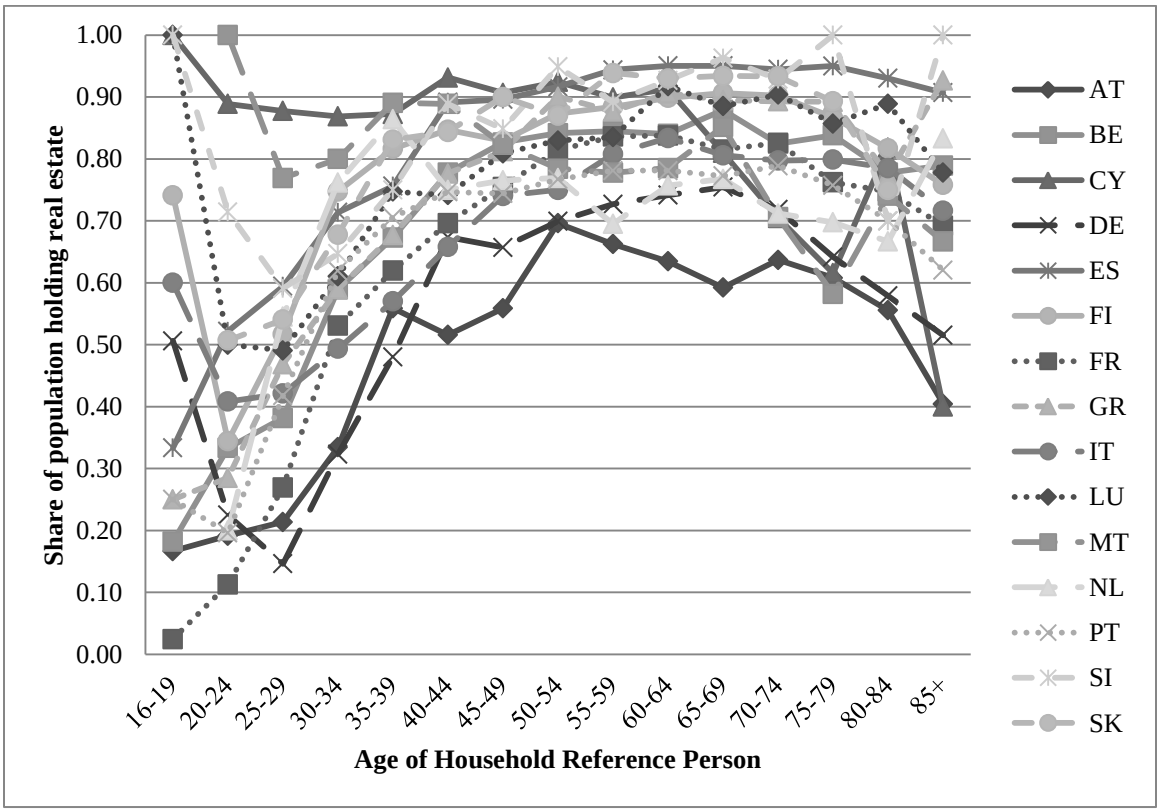

Figure 12: Participation of real estate over age

Figure 13 illustrates the weight of real estate on real assets over age given that one holds real estate. Here it is especially important to pay attention to the scale of the Y axis, in order to be somewhat meaningful it is zoomed into 75% to 100%. One can notice a u-shape in the general tendency of the fifteen countries. Young people start by having a high ratio of real estate to real assets since real estate is likely to be the only real asset they hold. As people get older, this ratio will decrease slightly until middle age. At this stage of life people have accumulated a substantial amount of wealth and are likely to have several types of real assets. In the right tail of the graph, the ratio increases again as retired people have to sell other types of real assets if they chose to keep their real estate.

Again, it is worth noting that the scale is rather small in this graph so differences across countries are not as big as they seem. In fact all the countries, except Malta and Portugal, have the ratio higher than 80% at all the age groups and Belgium and Finland even higher than 90%.

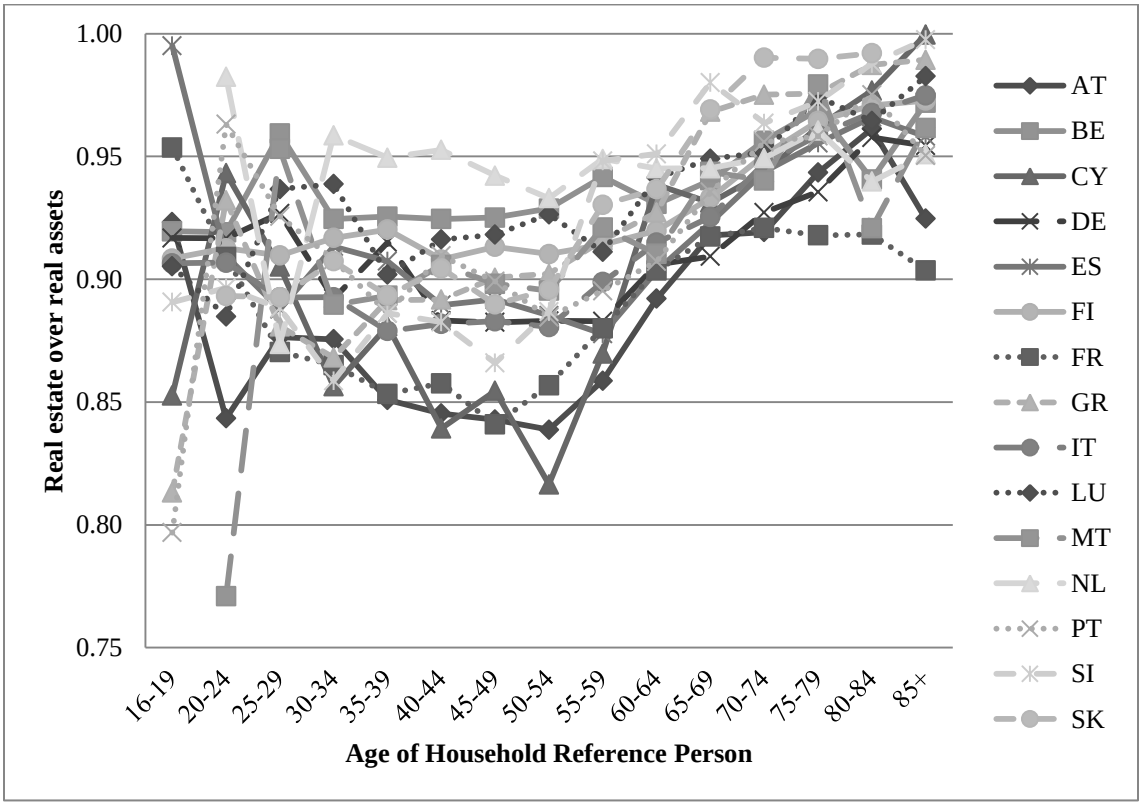

Figure 13: Fraction of real estate over real assets over age, conditional on participation

6.1.3 Discussion

Regarding real assets, we focus on the distribution of real estate since it accounts for the majority of real assets. In practice, it is indeed one of the most important investments for a household. From graphs described above, we can easily conclude that real estate has a dominant role for middle class households in terms of either participation or fraction to real assets conditional on participation, which is in line with findings in Campbell's (2006) paper. In particular from the figure 10 we can see how important is for a household to own some kind of real estate; as soon as they accumulate some wealth participations in real estate surge and then continue to increase slowly. It is worth noting that participation in real estate in every country never decreases with wealth. It is in the human nature to seek a shelter. While to some extent the trend of participation rates of

households grouped by age of reference person is similar to that of participation rates of households categorized by household wealth. That shape shows a general uptrend; the average fraction of households in different age groups demonstrates a hump shape of distribution.

Moreover, it is even more interesting to investigate the possible reasons why countries show such significant differences in distribution of real estate. Typically, there are two direct factors that affect the value of household real estate properties: one is the number of properties and the other one is the average price of properties.

Hence we decided to look into the average number of properties held by the household apart from the household main residence. It should be noticeable that there is no data available for Finland.

Looking at figure 14 one can see that in every country each household has at least, on average and conditional on participation, one property other than the household main residence. It is also surprising the fact that, on average, each household in Cyprus, Spain and France have one property more than households from Austria, Netherlands and Slovakia (roughly 2,25 against 1,25).

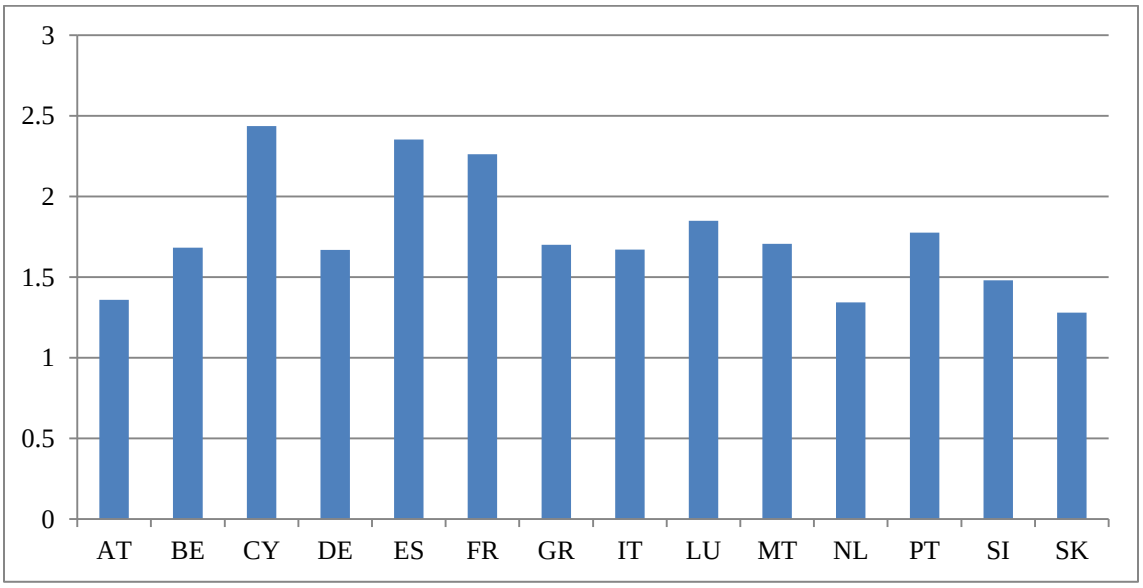

Figure 14: Average number of Properties other than household main residence, conditional on participation

Apart from the average number of properties, we are able to estimate the price per square meter respectively with the price of the household main residence and its size. Since HMR accounts for the biggest portion of real estate for most households and with the limitation of data, we choose to use the price of HMR for each country to illustrate the price level of the real estate market. (See figure 15)

Most of the countries fit the gap between €1 000 and €2 000. Although there are two clear outliers: Luxemburg and the Netherlands with €4 000 and €7 500 respectively, and Slovakia is the country with the lowest value of less than €1 000.

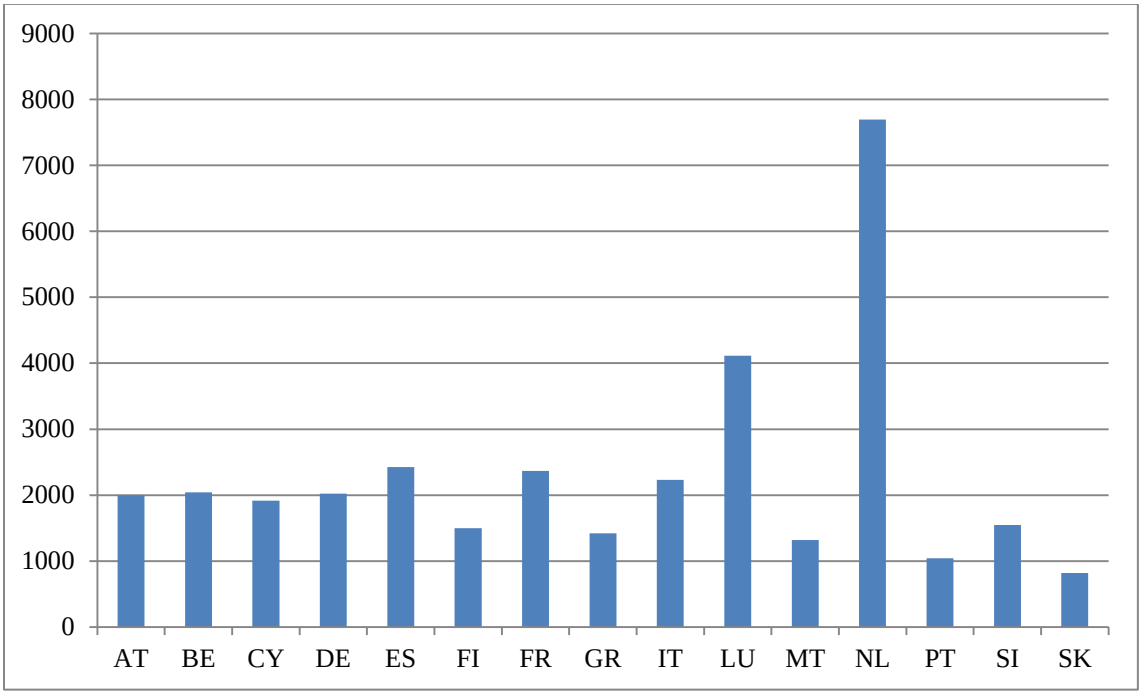

Figure 15: Price per square meter of the household main residence

The taxation treatment of real estate properties also influences households' investment decision profoundly. Poterba and Samwick (2003) have found that households with higher marginal tax rates are more likely to hold tax-advantaged assets such as stock and tax-exempt bonds, and are more likely to hold assets in tax-deferred accounts. The same reason can be hold for real estate as well. In fact, governments in the fifteen countries actually encourage households to invest in real estate market. To support the affordability of households' demand, many governments provide subsidized mortgage loans, or implement income tax-deductible interest payments, etc.

For example, in most euro area countries interest payments of mortgage are tax-deductible, except in Cyprus, Germany, Malta and Slovenia (Table 3, Task Force of the Monetary Policy Committee of the European System of Central Banks, 2009). Although this is usually restricted to primary residence, it still increases household affordability of principal dwellings and other properties. This can explain why the uptrend of participation rates in Germany is postponed.

Moreover, the tax treatment on capital gains of housing assets can be different from that on financial assets as well. In some countries (Austria, Belgium, Germany, Finland, France, Italy, Luxemburg, Netherlands and Slovenia), capital gains on household main residence may be exempted from capital gain tax, especially if the owner has lived in the residence for certain years before sale; but in some other countries (Austria, Belgium, Finland, Greece and Netherlands), capital gains on real estate are treated more or less the same as other kinds of capital gains.

Some euro countries have the tradition that children will inherit housing from elders. Hence, inheritance/gift tax and wealth tax could also have an impact on households' affordability. Most countries have abandoned inheritance tax and wealth tax already; however, Italy, for instance, has reintroduced inheritance tax recently.

			Capital gains tax			Inheritance tax				
	Tax on imputed rent	Tax deductibility of interest payment	on selling own home after 10 years	Different treatment financial-housing assets?	Maximum tax rate applicable	On own principal home	Different treatment financial-housing assets?	Wealth tax	real estate/property tax	Transaction tax/fees/stamp duties
Austria	no	yes	no	no	50%	yes	yes	no	yes	yes
Belgium	yes	yes	no	no	16.50%	yes	no	no	no	yes
Cyprus	no	no	yes	yes	20%	no	no	no	yes	yes
Germany	no	no	no	yes	45%	yes	yes	no	yes	yes
Spain	no	yes	yes*	yes	18%	yes	yes	yes	yes	yes
Finland	no	yes	no	no	28%	yes	no	no	yes	yes
France	no	yes	no	yes	16%	yes	no	yes	yes	yes
Greece	no	yes	yes*	no	n.a.	no	no	no	yes	yes
Italy	no	yes	no	yes	20%	yes	yes	no	yes	yes
Luxemburg	yes (4%)	yes	no	yes	38.95%	yes	no	no	yes	yes
Malta	no	no	yes	yes	12%	no	no	no	no	yes
Netherlands	yes (0.6%)	yes	no	no	n.a.	yes	yes	no	yes	yes
Portugal	no	yes	yes*	yes	42%	no	no	no	yes	yes
Slovenia	no	no	no	yes	20%	yes	yes	no	no	yes

Table 3: Housing related-market taxation[7]

[7] Source: Task Force of the Monetary Policy Committee of the European System of Central Banks, 2009

6.2 Financial assets

As the other component of assets, financial assets are also an important part of households' balance sheet. Financial assets, with the possible exception of sight accounts that are often held for transaction purposes, are generally the result of pure portfolio allocation decisions (HFCS statistics paper series, 2013).

6.2.1 Composition

Decomposing financial assets, the results of detailed components are demonstrated in table 4. Deposits accounts for the largest part of financial assets for each country which is traditionally widely known for broader public. However, the fraction of deposit still varies among countries. For instance, over 90% of financial assets of Greek are held as deposits and therefore the percentage of other types of financial assets is extremely low. The lowest faction of deposit occurs in Cyprus, which is 47,78%. Apart from the two countries representing the limit of deposits, the proportion for other countries is with the interval of 50% to 90%. The difference in deposits might reflect the various habits of saving, that some countries' households are more conservative about savings. Nevertheless, the high or low fraction of deposits also related to the pension plans of each country, which typically showing that households living with an incomplete pension system have a tendency to accumulate more money in their bank account, rather than invest their money in riskier projects.

	Deposits	Mutual fund	Bonds	Shares	Managed accounts	Money owed to household	Other assets	Voluntary pension/Life insurance
AT	86.64%	2.82%	1.02%	1.16%	0%	2.99%	0.26%	5.11%
BE	60.48%	7.67%	3.29%	3.60%	0.36%	2.35%	0.78%	21.47%
CY	47.78%	0.58%	1.63%	8.30%	0.05%	3.80%	0.17%	37.69%
DE	58.56%	5.59%	2.31%	4.08%	0.09%	3.47%	2.18%	23.70%
ES	70.39%	4.46%	1.12%	8.65%	0.53%	3.19%	0.02%	11.65%
FI	73.44%	7.55%	0.24%	8.01%	0%	0%	0%	10.76%
FR	68.11%	2.94%	0.43%	4.96%	0.08%	1.19%	1.11%	21.18%
GR	92.93%	0.58%	0.26%	1.18%	0%	2.65%	0.00%	2.40%
IT	73.43%	3.41%	10.67%	1.76%	0.63%	0.39%	0.84%	8.87%
LU	66.74%	8.24%	1.73%	2.84%	0.08%	2.14%	0.46%	17.76%
MT	71.75%	2.45%	10.42%	3.72%	0.18%	1.16%	0.13%	10.20%
NL	53.32%	4.64%	1.85%	1.91%	0.12%	1.81%	0.53%	35.82%
PT	87.39%	1.02%	0.12%	1.30%	0.03%	4.07%	0.02%	6.05%
SI	70.57%	6.69%	0.53%	4.39%	0.27%	4.09%	0%	13.46%
SK	84.24%	1.73%	0.23%	0.13%	0.31%	4.05%	0%	9.32%

Table 4: Composition of financial assets (average)

Another commonly-held financial instrument is stocks. Typically, there are two ways to hold stocks, one is direct holding through stock market and the other one is indirect holding through mutual fund (Guiso et al., 2003).Based on the results, it can be seen that households in Belgium, Germany, Finland, Luxemburg and Slovenia have invested more than 5% of financial assets in mutual fund. On the other hand, households of Cyprus, Spain and Finland have occupied the top three in terms of stockholding. There are several factors that could affect the households' choice of stockholding, including the stock market return, entry cost and educational level, which are going to be discussed later (Guiso,et al., 2003).

Bonds are also considered as a widely-used financial instrument for numbers of households when building their investment portfolio. The table shows that the bonds that households in Italy and Malta have owned exceed 10% of total financial assets, which could be seen as a large number compared to other countries' proportion of less than 4%.

Another variable that shows a large variation among countries is the voluntary pension plan/whole life insurance. With the results that it only accounts for less than 10% in households of a few countries, while there are households in countries such as Cyprus

and Netherlands, whose portion of pension plans has exceeded 30%, it is obvious that there are various factors affecting the decisions of households whether joining voluntary pension plans or life insurance. A clear factor is the size of public and occupational pension plans, of which growth will eliminate the participation in voluntary plans or life insurance.

6.2.2 Classification of financial assets

In order to illustrate households' investment habits, we intend to classify financial assets into three categories depending on different risk profiles and transaction costs of financial assets. It is useful to distinguish between traditional bank products such as deposits (sight and saving accounts), and financial investment products such as shares and mutual funds. Non-risky assets is less risky but with lower return, including deposits and bond in this study. It is noticeable that the item Bonds in HFCS survey not only include government bonds and bonds issued by banks or other financial intermediate, but also corporate bonds which is typically considered as risky. However, the data itself does not distinguish the amount of different types of bonds from each other. Hence the bonds in our later discussion are classified as non-risky, as government bonds usually account for the majority.

On the contrary, in this paper risky financial assets is defined as mutual fund, share, managed account, money owed to household and other assets, since all of the components mentioned is usually described as instrument with higher return and larger risk.

A separate class of financial products is insurance-type products such as voluntary private pension plans and whole life insurance. Due to the fact that there is no more detailed information about them regarding the difference among countries from the survey and both of them are actually quite different from country to country, it is rather hard to classify it as risky or non-risky. Therefore, voluntary pensions/whole life insurance is categorized as a separate group called other financial assets in the following analysis. The classification is summarized below:

Non-risky financial assets

- Deposits
- Bonds

Risky financial assets

- Mutual funds
- Shares
- Managed account
- Money owed to household
- Other assets

Other financial assets

- Voluntary pension/whole life insurance

6.2.3 Non-risky financial assets

As aforementioned classification, non-risky financial assets consist of deposits and bonds. Deposits is the most common way to save wealth for households, while the bonds is less prevalently held among households as a relatively safe option of investments. There are several factors that might affect the households' saving habit, such as wealth level, age, etc. (Guiso, et al., 2003). The following analysis aims at investigating how those factors influence the households' saving habits.

6.2.3.1 Wealth level

All observations are grouped by their total wealth for each country. The participation rate shows the fraction of households with positive holdings of non-risky financial assets. Looking at figure 16 it is obvious that the general trend is that the participation rate in non-risky financial assets increases with wealth. Finland is the only country that every households interviewed in all deciles have participated in non-risky financial assets. Most of other countries have a participation rate over 90% from 2nd decile onwards, while it is relatively lower at the lowest decile. An implication of the graph is that the poor owns deposits and bonds as soon as they accumulate more wealth. Furthermore, non-risky financial assets still accounts for the majority of total financial assets in terms of richer households.

However, there are countries as Cyprus, Greece and Italy with a relatively lower participation in all wealth deciles, but still with the same uptrend. Especially in the 1st decile, participation is below 60% for those three countries. The difference in participation might imply different saving habits. As discussed before, the participation

of real assets of Cyprus, Greece and Italy is relatively higher, even at the lowest decile. This could explain the abnormal low participation of non-risky assets, since households in these three countries prefer purchasing real assets when they get richer.

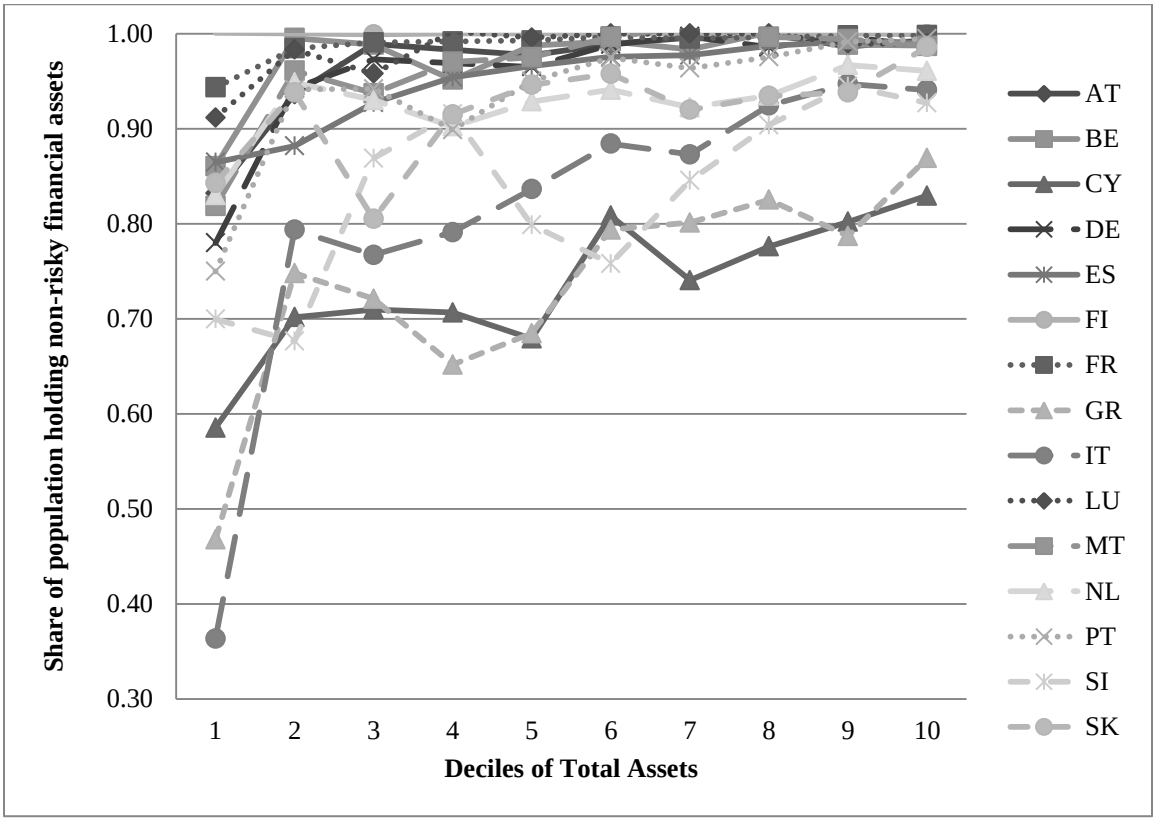

Figure 16: Participation of non-risky financial assets by deciles of total assets

Conditional on the participation, figure 17 depicts the average fraction of non-risky financial assets over total financial assets. It is quite clear that the proportion at the lowest decile is considerably high with all countries above 80%. Then the percentages generally decline with total assets, indicating that although more household have participated in non-risky financial assets, the relative amount held by households actually goes down. It is rather easy to understand that households would build a more diversified portfolio with accumulated wealth. It is worth noting that the absolute value of non-risky financial assets held by households can (and is likely to) be growing.

Interestingly, Greece has a very high value of average fraction. Along with the fact that the participation of Greece is low, it reveals that Greek have two group of people who with different investment preference. There are households preferring non-financial

assets a lot that the majority of financial assets they held is in the format of non-risky assets. On the contrary, France is a country with the lowest value of only 30% at the highest decile, which means that the richest in France have a tendency to invest their wealth in other kinds of assets. Those low return low risk financial instruments do not suit their investment preference any more. The differences of the highest decile disclose the dissimilarities of how richer people in different countries decide their investment method. However, the more intriguing thing is the causes of differences which will be discussed later.

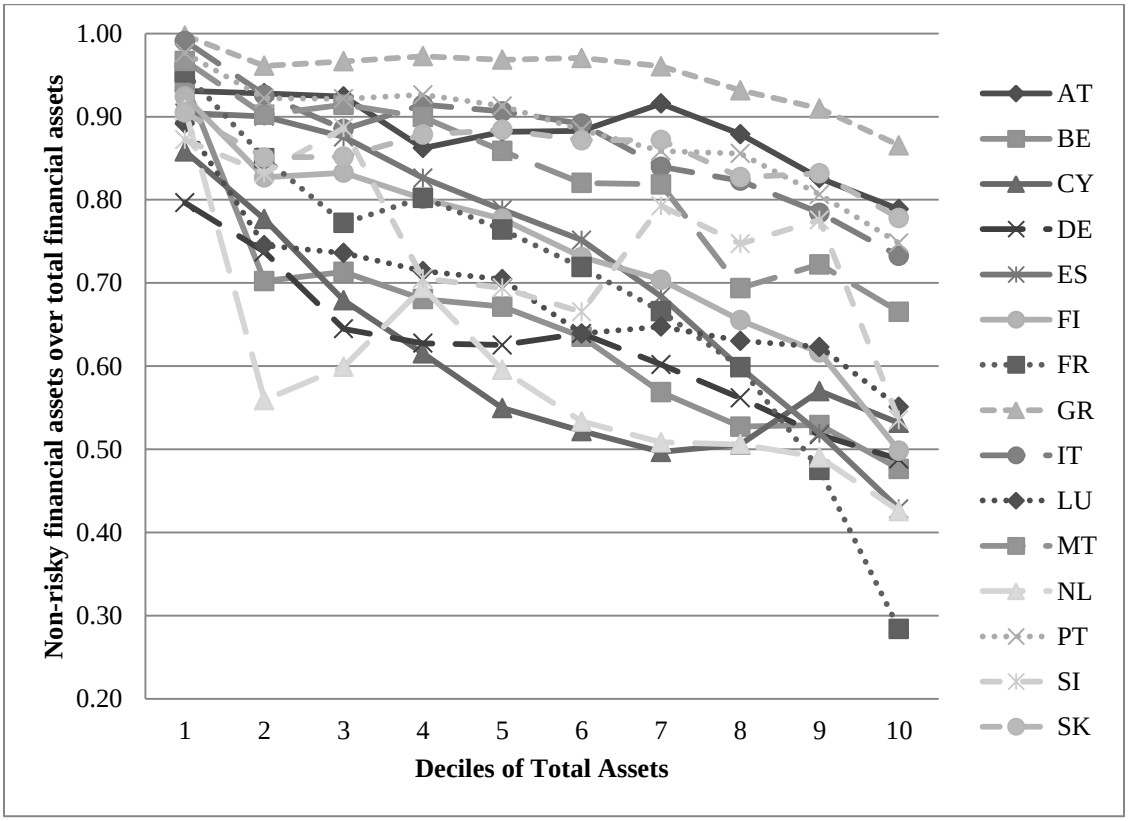

Figure 17: Fraction of non-risky financial assets over total financial assets by deciles of total assets, conditional on participation

6.2.3.2 Age

Another feature that might make a difference regarding the investment in non-financial assets is expected to be age. However, it is considerably difficult to take every household member's age into account, so we choose the age of household reference person to represent the age of households due to the fact that reference person is the one who

usually has the most important status of making the decision of family investment. (See figure 18)

Most of the countries have a participation rate over 90% through all age categories. The flat shape of participation curve shows that whether households take non-risky financial assets or not has a weak correlation with reference person's age.

Again, Cyprus, Greece and Italy have a lower value of participation among all age groups, displaying that fewer households in those three countries have involved in non-risky financial assets. Spain has a similar trend from the 2nd decile and onwards, but also has the lowest rate at the 1st decile, although it could be explained by the fact that sample size of household interviewed with a reference person aged 16 to 19 of Spain. There are also two countries, Cyprus and Slovakia, fluctuating widely and eventually the fraction of older people drops sharply.

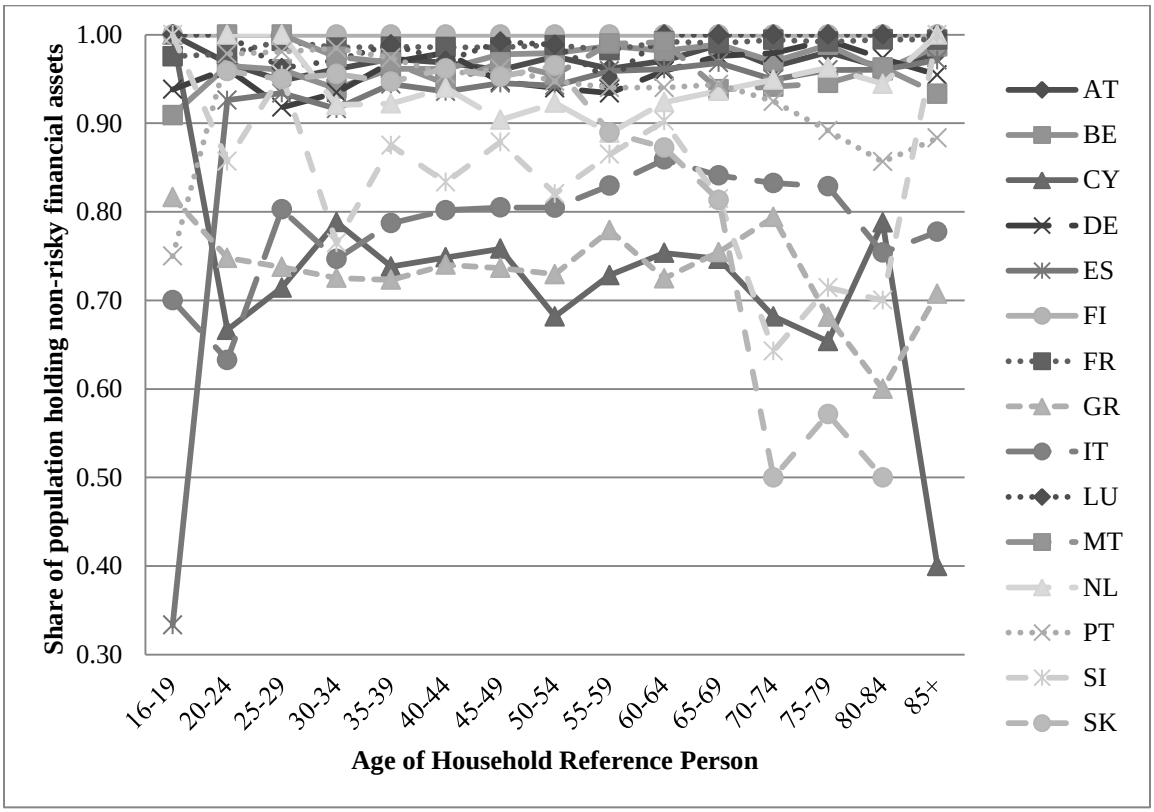

Figure 18: Participation of non-risky financial assets over age

Additionally, figure 19 demonstrates the average fraction of non-risky financial assets over total financial assets among household who hold it grouped by the age of

household reference person. Majority of countries is u-shaped above age 20, which suggests that households in the middle-age tend to build a more diversified portfolio. For the younger group, the lowest faction occurs in Luxemburg with a value of around 60%. With the limitation of their spare wealth, the youth usually do not have the opportunity to invest in various kinds of assets; therefore it is common that the young put the majority of their wealth in just one kind of assets, which in this case is non-risky financial assets. The right tail of curves, however, shows a downtrend for most countries, suggesting that older households are less keen on non-risky financial assets.

Greece is the only country that fraction through all age groups is above 90%. Along with the figure 18, it is concluded that although not as many Greek household at different ages as most of countries have participate in non-risky financial assets, the portion who do participate are likely to hold their majority financial assets as non-risky.

The results for middle-aged households vary significantly. Households in countries as Belgium, Germany and Netherlands have a far low proportion around 50%, and also a relatively lower ratio among older group. It is implied that households in these countries have invest their wealth not restricted to less-risky assets.

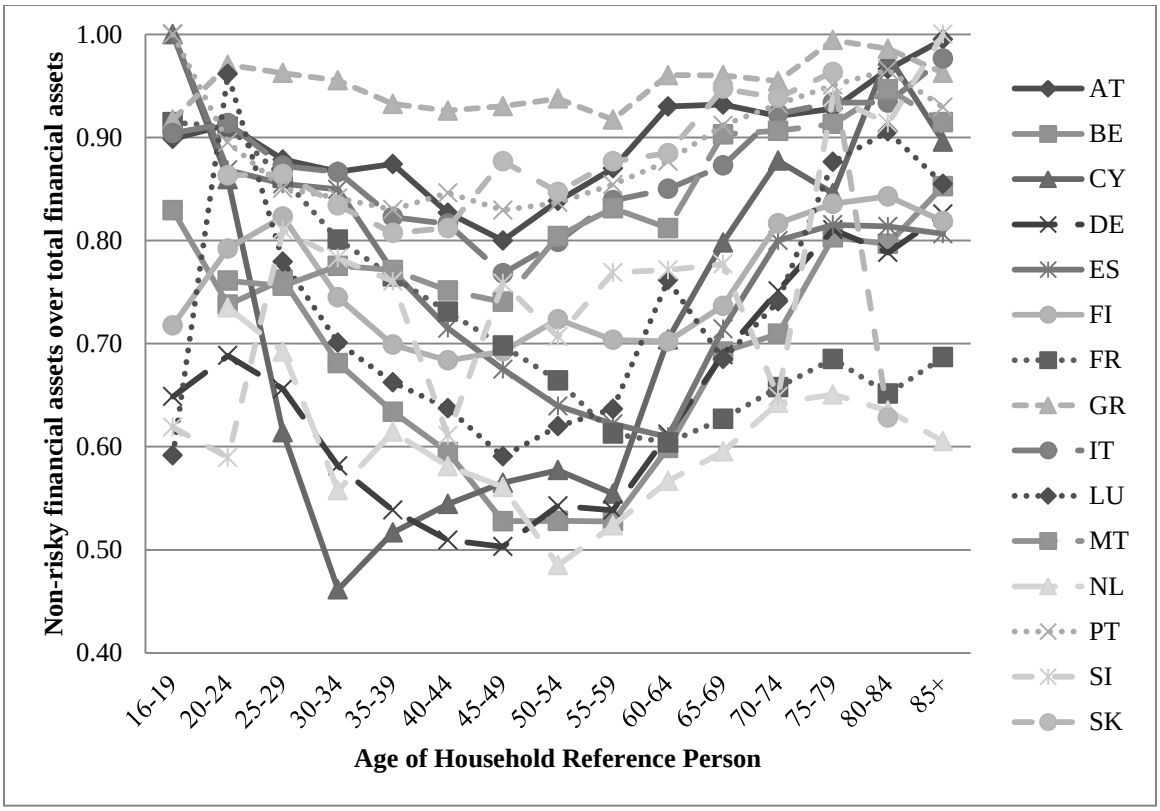

Figure 19: Fraction of non-risky financial assets over total financial assets over age, conditional on participation

6.2.4 Risky financial assets

Based on the classification of financial assets, risky financial assets are constituted of mutual fund, publicly-traded shares, managed account, money owed to household and other assets. Among those components, mutual fund and publicly-traded shares are the main part of risky financial assets, and the other three components only account for a small amount from table 4 In order to discover the households' preference regarding risky-financial assets, a few figures are produced and planned to be analyzed, similar to the analysis of non-risky financial assets.

6.2.4.1 Wealth level

The trends of participation rate of wealth groups for each country are quite alike, that the wealthier households become, the more household would involve in the investment of risky financial assets. (See figure 20)The ratios at the lowest decile differ among countries with an interval of 0 to 20%, while the ratios at the highest decile show greater differences with a range of 20% to 80%.

Greece has the lowest participation rate among all countries, even at the highest decile the ratio is only 20%. The exceptional appearance suggests that the fraction of Greek households which hold risky financial assets is quite small. In other words, households in Greece do not like to take part in risky financial assets. Besides, the portion of Austria, Italy, Portugal and Slovakia is relatively lower as well. The reason for low participation rates might the household education level, market entry cost or development of financial institutions (Guiso, et al., 2003).

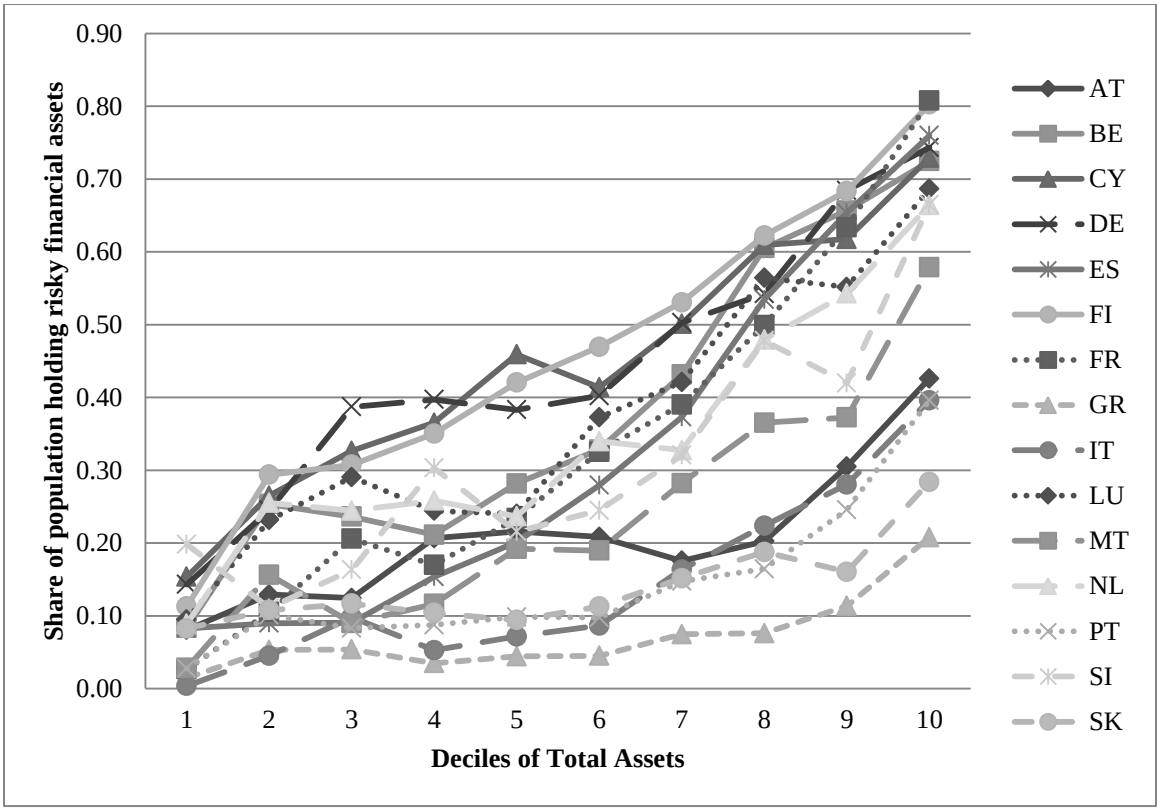

Figure 20: Participation of risky financial assets by deciles of total assets

Apart from the participation rate, the average fraction of risky financial assets over total financial assets is also very essential to reveal the investment habit of households in different countries. (See figure 21)The overall trend shows that the largest fraction appears at the lowest decile and then the fractions drop from the 2nd decile. While the fraction stays relatively flat from 3rd decile and onwards, the proportion at last decile get a slight rise. The only exception is Slovenia, in which there is an obvious increase among middle-class households.

The absolute value of faction at 1st decile also draws attention. Italy is the country with the highest ratio of close to 90%, and Greece occupies the lowest of 30%. The rest of countries are within this range. The huge difference may reflect the different investing habits and opportunities, regarding the fact that those countries have dissimilar environment of financial market which might have effects for households on making investment decisions. Since households in Italy are willing to invest more in risky financial assets, countries as Italy are less conservative than countries as Greece from this point of view.

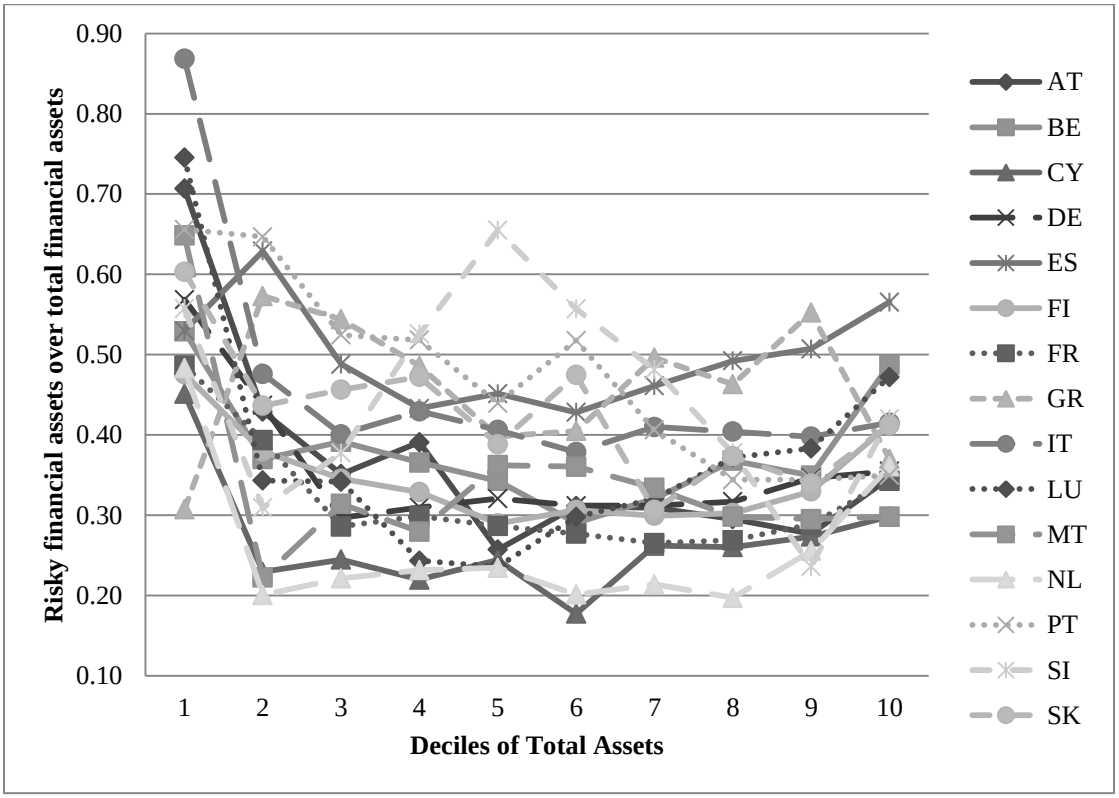

Figure 21: Fraction of risky financial assets over total financial assets by deciles of total assets, conditional on participation

6.2.4.2 Age

The participation rate over age for risky financial assets is produced from data as well to illustrate the correlation between risky financial assets holding and reference person's age. (See figure 22) With all fifteen countries showing different values at each age group, it is still possible to observe that the peak of curves usually appears among middle-aged groups. However, ratios at the younger and older groups could be quite different from

country to country. For those younger groups, participation of some countries, as Austria and Portugal, is below 20%, while countries as Malta and Finland over 40%.

From the perspective of country character, Greece, Italy, Portugal and Slovakia have a rather low participation rates over all age groups, which correspond to the results of participation by the deciles of total assets. This indicates that the power to make investment decision of households in these four countries may be confined by some other factors apart from the age of household reference person, while households in other countries might have less influence from those factors.

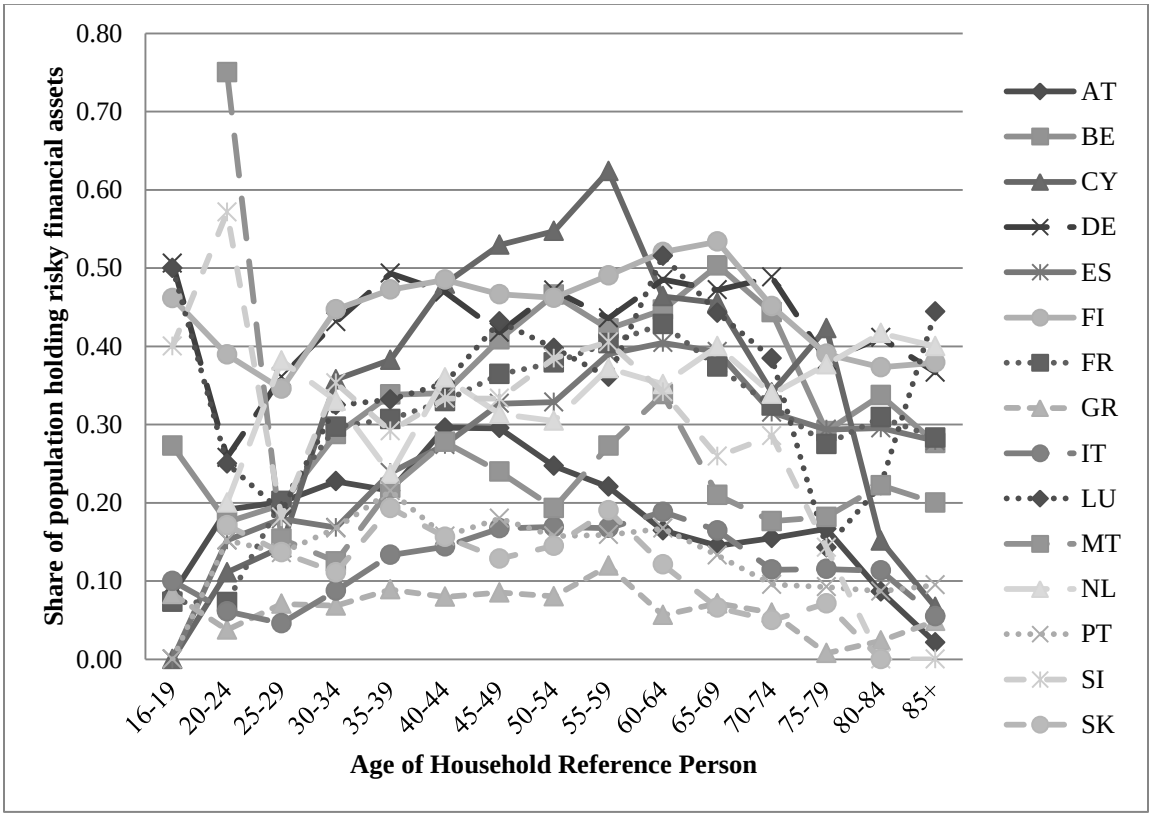

Figure 22: Participation of risky financial assets over age

It is difficult to recognize obvious trends from figure 23, which describes what percentage of risky financial assets account for total financial assets over age. Ratios of left tails of curves differ significantly among countries. Giving the fact that the sample size of younger group is limited, the fluctuated results are less likely to mean that there are fundamental features affecting households' decisions about investing in risky financial assets. Same reason may hold for older age groups as well.

The faction for reference person with age from 25 to 69 is relatively stable for each country, varying from 20% to 50% mostly. Specifically, Netherlands is the country with the lowest value, and Greece gets the highest value. Most of the other countries gather around the line of 30%.

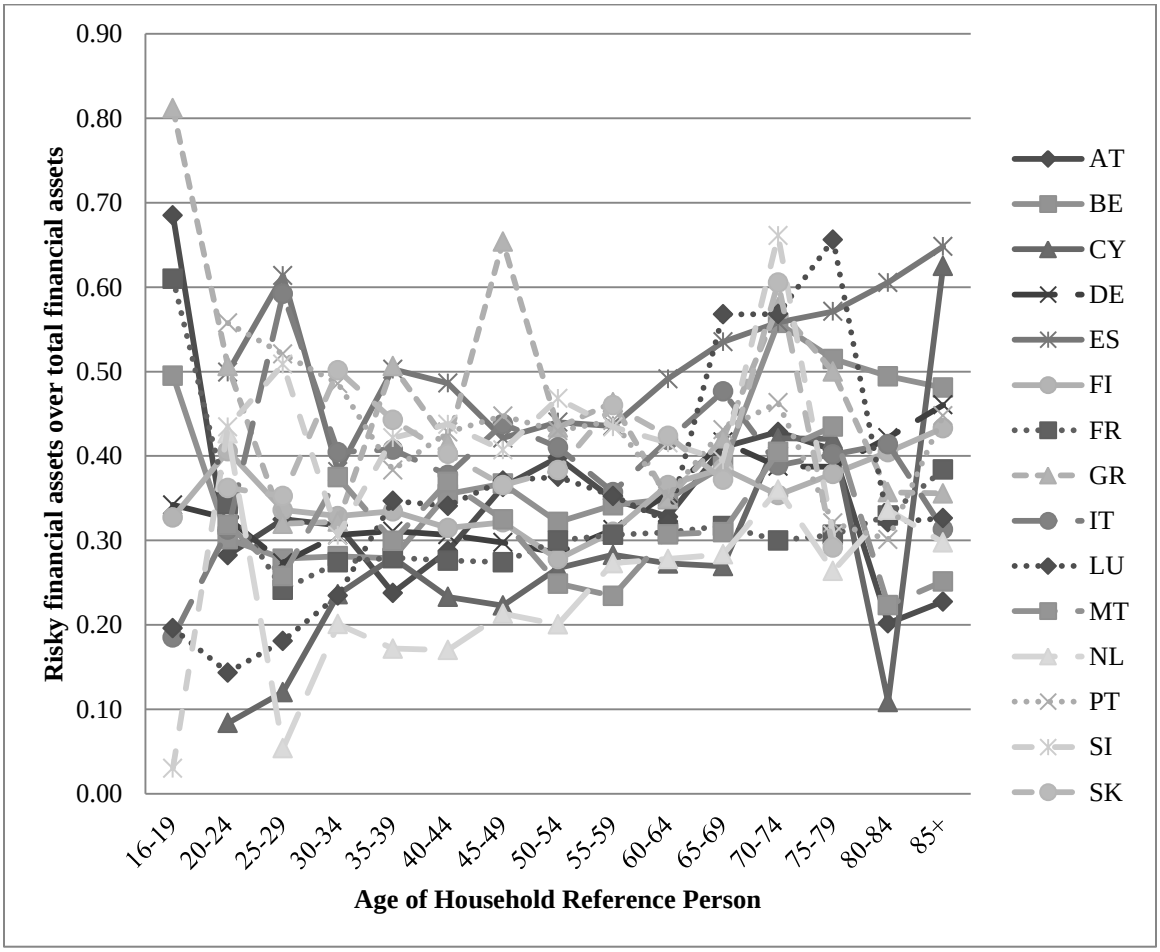

Figure 23: Fraction of risky financial assets over total financial assets over age, conditional on participation

6.2.5 Other financial assets

Other financial assets refer to voluntary pensions and whole life insurance in this paper. Since voluntary pensions and life insurance may differ significantly from country to country and this item do account for a large portion in some countries, it is appropriate to probe it separately.

6.2.5.1 Wealth level

A figure of participation rate by groups of total assets is produced, same as those ones of non-risky financial assets and risky financial assets (figure 24). The general shape of the

fifteen curves is uptrend, giving the fact that households start to participate in other financial assets with the accumulation of wealth. The all participation rates of household at the lowest decile are beneath 20%, while it at the highest decile can be over 60% for a few countries. Since other financial assets is a supplement to public and occupational pension plans, aiming at covering life of people concerned after retirement or other accidents, it is understandable that only when households have extra wealth could they participate in assets classes like this.

The most interesting country in figure 24 is Greece, with a participation of not exceeding 13% in all wealth deciles. The extremely low values imply the little enthusiasm for taking part in other financial assets.

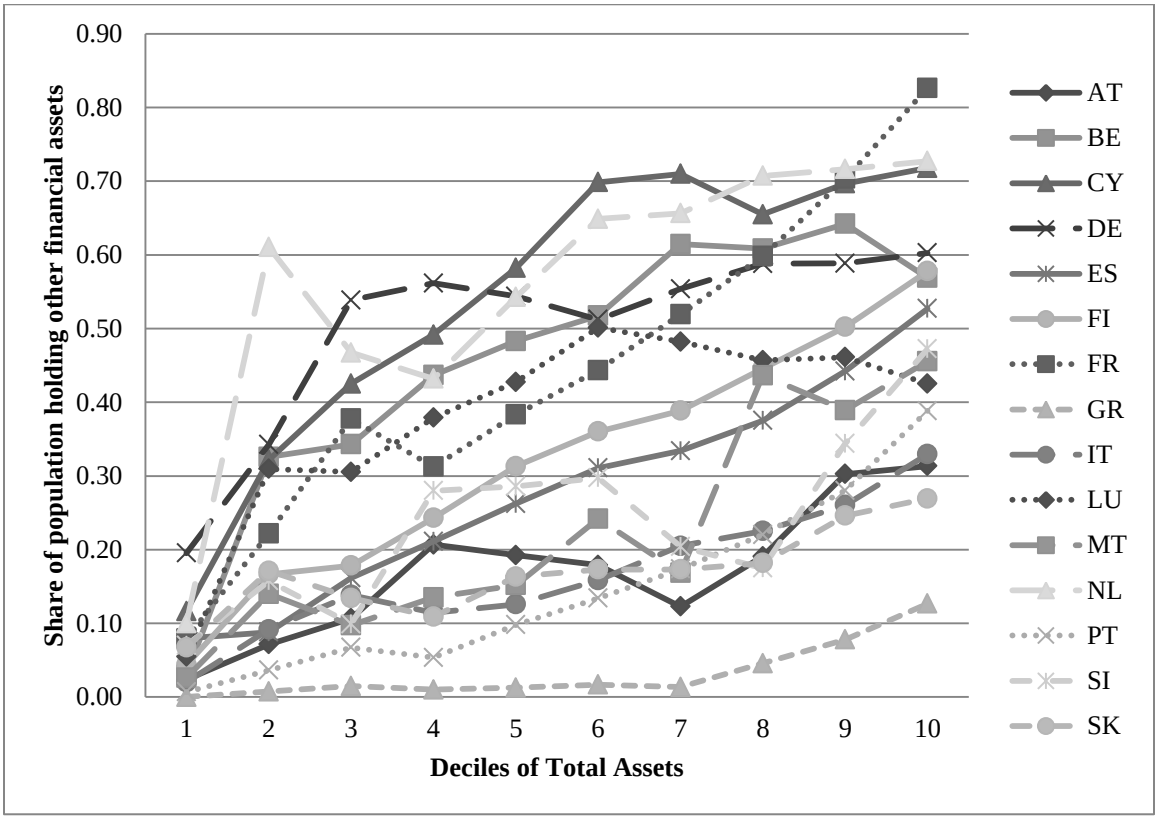

Figure 24: Participation of other financial assets by deciles of total assets

Based on the participation graph, the fraction of other financial assets over total financial assets is produced. Most countries have flat curves with a slight downtrend. Cyprus, Greece and Netherlands are countries with higher values among all wealth

deciles, while Austria and Finland have a relatively lower proportion. Countries with values in the middle are fluctuate around the 50% line.

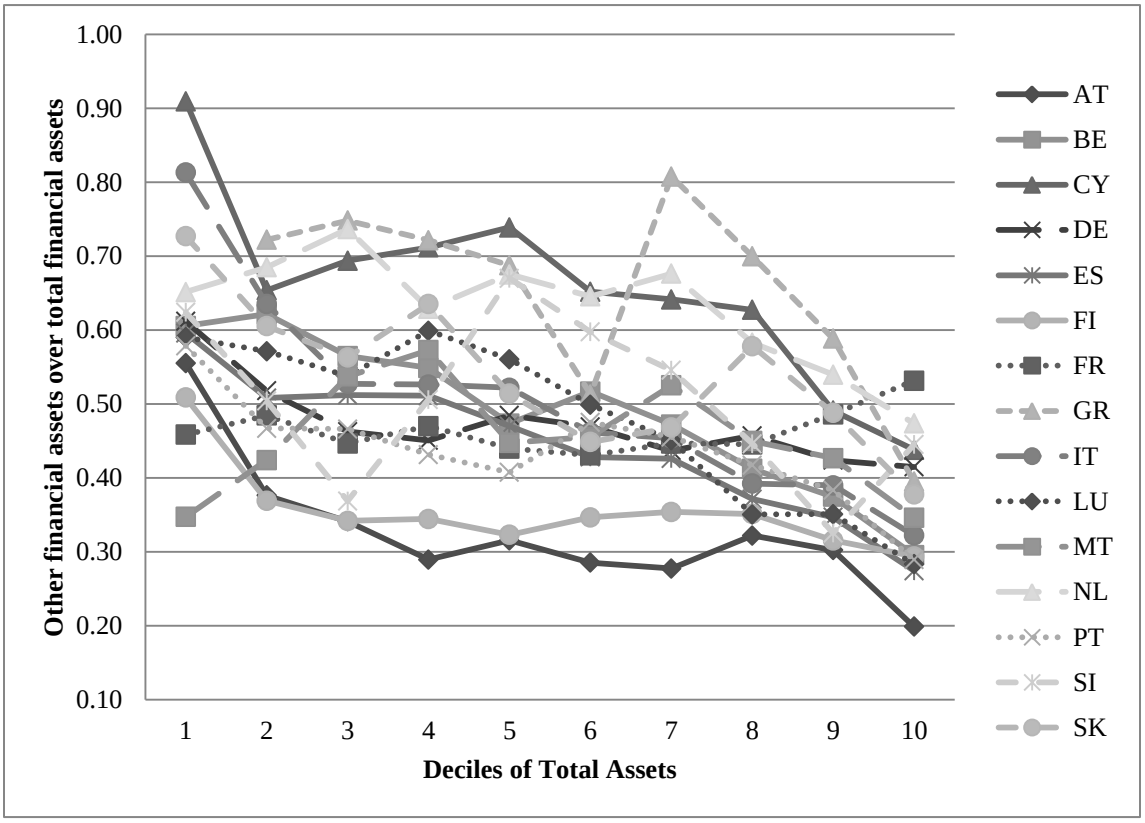

Figure 25: Fraction of other financial assets over total financial assets by deciles of total assets, conditional on participation

Combined with figure 24, households in Greece reveal a trend of polarization that either the households do not participate in pensions and/or insurance, or they participate and invest a large proportion in it.

6.2.5.2 Age

In figure 26, the inversed-U shape represents the participation rates over age for almost all countries. Participation rates increase with ages, reach the peak for the age group 45 to 54 and afterwards declines to less than 20% with a reference person aged 70+.

Although the fraction of majority of countries drops when household getting older, there are still exceptions: France and Netherlands have much higher rates among reference person aged over 70. It might be explained by the limited sample size.

Again, Greece becomes the country with lowest ratio through ages. The value of percentages always stays below 10%, which means that less than 10% of Greek households have taken part in it, compared to other countries it is a very small portion.

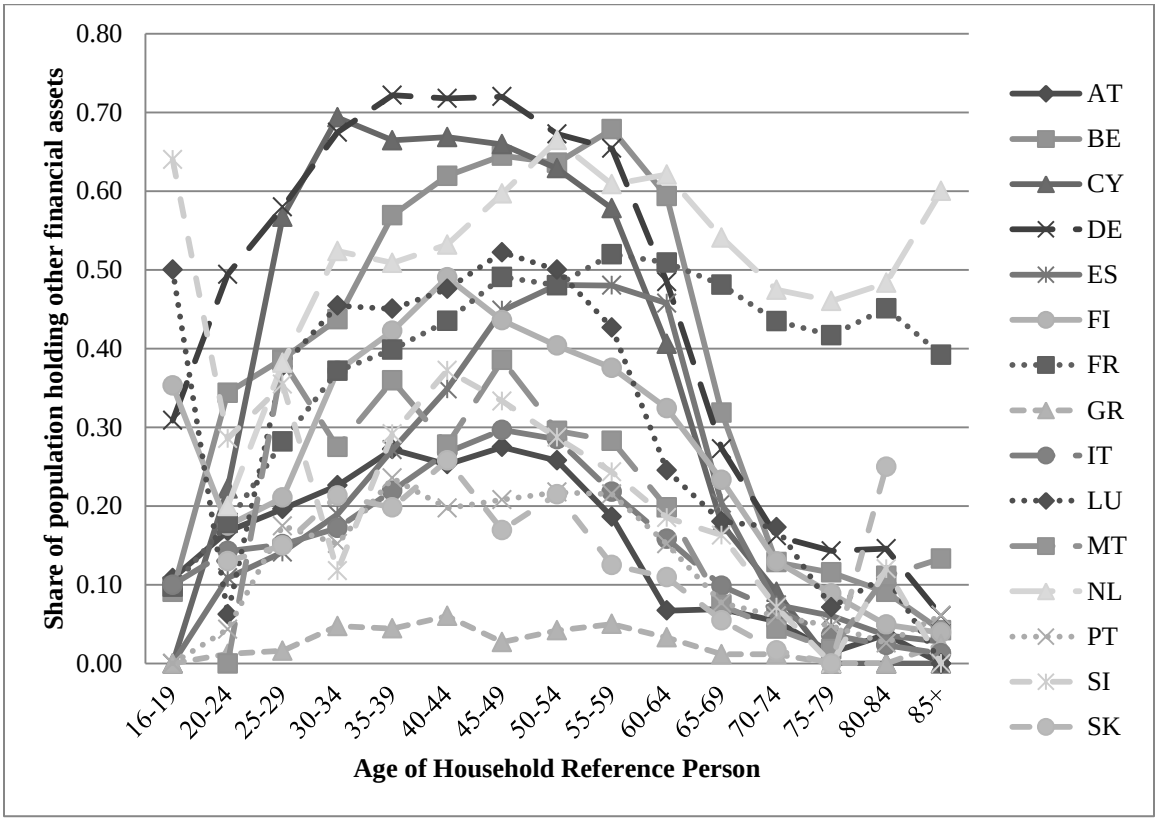

Figure 26: Participation of other financial assets over age

Figure 27 demonstrates the percentage of other financial assets over total financial assets with respect to age. Since the values fluctuate considerably, the age of reference person has strong influence on those values. To some extent, the hump shape could be observed here: ratios among young groups are low, then peak for age from 30 to 59, and eventually drop down for households with a reference person over 60. The difference among countries is quite large, as fractions could range from 30% to 60% for middle-aged people.

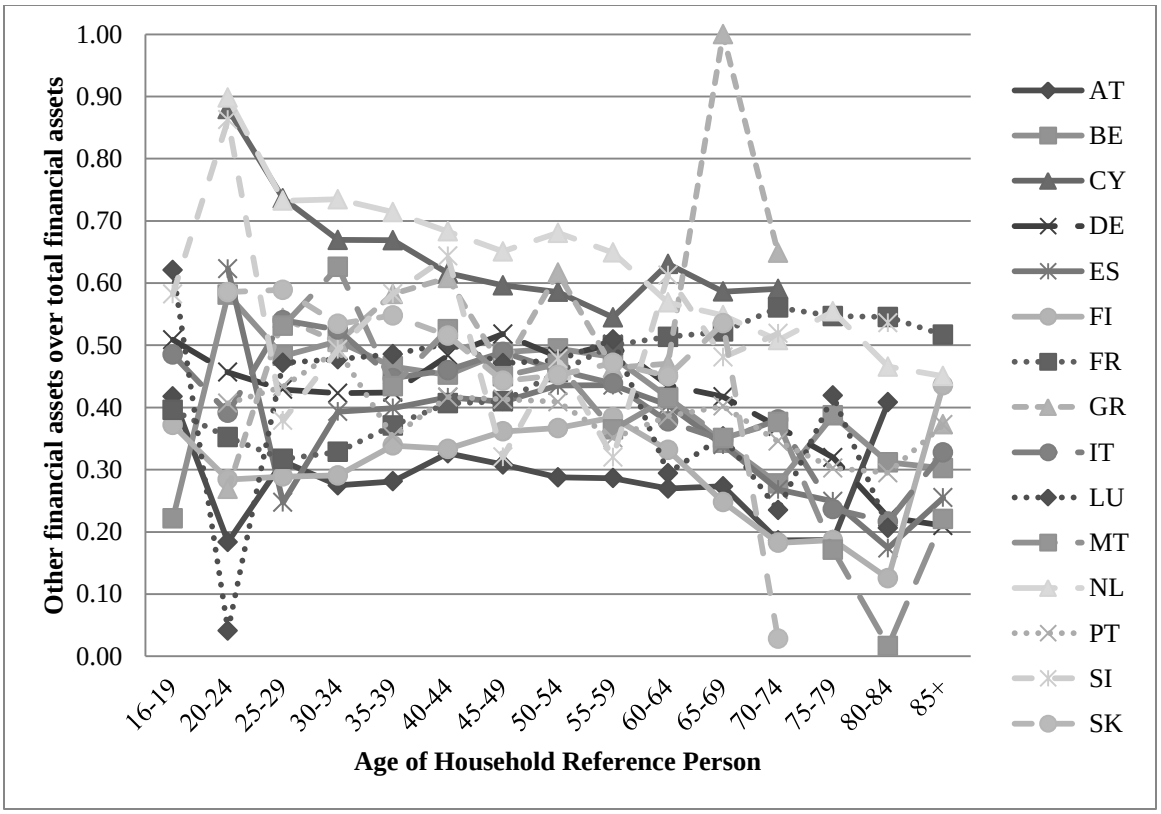

Figure 27: Fraction of other financial asset over total financial assets over age, conditional on participation

6.2.6 Discussion

After going through all graphs, it is easy to see that either the participation or percentage of the three kinds of financial assets varies from country to country. There are reasons applicable in each country that explain the general trends, and other specific reason to address the cross-country differences.

In terms of wealth level, the participation rate of non-risky financial assets grows with it. Meanwhile, the participation rate of both risky financial assets and other financial assets increases. Because financial assets are decomposed into these three sub-categories, it is possible to observe that participation of them have correlations, as the graphs show. The poorer households have less wealth and consequently neither they have the access to diversify their investment nor do they have the sufficient capital to make these investments. As a result, households choose their first investment based on their risk aversion: risk-likers tend to participate in risky assets, and risk-averters, as majority of households, prefer non-risky financial assets. Hence, the difference observed among

countries could be related to the investment preferences of households in the fifteen countries.

Moreover, speaking of the average fraction conditional on participation, the results show that non-risky financial assets declines with the growth of wealth, while risky financial assets and other financial assets stay relatively flat. The stability of fraction suggests that the households usually invest a certain proportion of total financial assets as risky assets or pensions/insurance, although the specific number varies for countries. Households' portfolios become more diversified to balance the return and risk when they get more capital to invest. This is aligned with the diversification strategy of investment (Blume and Friend, 1975). Especially for the participation in mutual fund and publicly-traded shares, all households with positive wealth should hold at least some stocks, either directly or indirectly, for diversification reasons and due to the higher expected return on shares compared to other investment. This finding is therefore consistent with what has been dubbed the "stock market participation puzzle" in the economic literature (Mankiw and Zeldes, 1991).

On the other hand, when households are characterized by the age of reference person, the three components of financial assets demonstrate different shape of curve regarding the participation rates over age. Non-risky financial assets and other financial assets have an inverse-U shape of curve; however, risky financial assets have an inconspicuous hump shape as well. Generally, households with reference person aged 25 to 60 act more actively in financial assets. Giving the fact that people at their prime working age, and to some extent they are also more entitled to invest in various kinds of assets because of their substantial capital and rich experience, it is not hard to understand that the high participation rates among those age groups.

The curves of average fraction of these three components respectively are quite different from those of participation. Graphs of non-risky and risky financial assets depict that younger and older group on both tails have higher values. Although both of them shows small holding, the reason behind might be different: younger households typically get less wealth therefore their choice of investment is limited; however, some old households have traditions of transferring assets to their children as heritage.

Other financial assets show the opposite trend to non-risky and risky financial assets. It could be concluded that the age of household reference person has strong effect on the values of private pensions and/or life insurance, as pension plans usually accumulate value over time when the individuals contribute money to the plan, and gradually consumed upon retirement.

The wealth level and age discussed above provide a simple explanation of overall trends observed directly from graphs. However, we believe that there are deep reasons embedded in the differences across countries.

It is also hard to ignore that results of Greece are quite different from other counties. First of all, with the comprehensive consideration of the fact that the participation rates of three components are the lowest whether in graphs grouped by total assets or by age, it is possible to conclude that few households in Greece are interested in financial assets, especially those poorer households. Secondly, on the contrary the fractions of three kinds of financial assets among those households which do participate in financial assets are one of the highest in the fifteen countries. Such different may suggest inequality in wealth distribution among Greek households, which can be an explanation of the low participation rates, because poor households get less access to financial services. (Honohan, 2007)

Consequently, the education level of poor households is also lower than those rich households. Financial awareness and knowledge played an important role in determining financial assets, especially risky financial assets. Many non-stockholding households appear to lack the experience and financial literacy that might enable them to benefit from direct investment in stocks. (Cardak, Wilkins, 2009) This explains the low participation rate in Greece as well.

In contrast to Greece, households in Cyprus, Germany, Finland and Netherlands have high ratios in terms of participation of risky financial assets both by decile of wealth or over age, implying that households are willing to invest more in risky financial assets. Apart from the reason that households in these four countries might get better education, and hence become more knowledge and experienced to participate in risky financial

assets, another factor that cannot be neglected is that their financial system is more completed. (Demirgüç-Kunt and Levine, 1999) More developed financial system means more active financial intermediates, and thus lower entry cost because of competition. Otherwise, entry cost is also an indicator of how wide the stock market is and how diversified the portfolio that could be offered by assets managers. (Guiso et al., 2003)

In accordance of other financial assets, there is quite some heterogeneity across countries. For instance, Belgium, Cyprus, Germany and Netherlands show higher participation rates. This might be associated with institutional differences in the organization of retirement saving schemes, such as how savings in products of private pension or life insurance are treated by the tax law. (HFCS statistics series paper, 2013) Depends on whether pension funds or insurance funds are taxed or not when money is contributed, when income recognized, or when pensions are repaid, there are two taxation system involved, the "expenditure tax" and "comprehensive income tax". The former system tax only consumption (or expenditure) and at the same rate whether consumption is undertaken now or in the future. In contrast, the latter system taxes all accruals to income, whether from earnings or investments, irrespective of whether they are saved or consumed. Hence, the two systems lead to different post-tax rate of return in funds. In practice, Belgium, Germany and Netherland adopt the "expenditure tax" system which generates a larger post-tax net value, which encourage household to participate in other financial assets. (Whitehouse, 1999)

7 Conclusions

The purpose of this study has been to produce graphs on household balance sheets and to analyze the cross-country difference within Europe based on the data of fifteen HFCS countries. By plotting graphs for over 62 000 observations in 15 countries, we have observed general trends of household assets and furthermore a number of difference among our sample countries. To better understand the difference in household wealth structure for those countries, we start our analysis gradually.

First, we have found that the average net wealth varies significantly. By contrasting to average total assets, we conclude that the differences in net wealth mainly derive from the difference in total assets. Second, liabilities to assets ratios are calculated. The difference shows that most countries (Austria, Belgium, Germany, Spain, Finland, France, Greece, Italy, Malta, Slovenia and Slovakia) are at similar applied levels of around 0,2. The exception of Cyprus, Luxemburg and Netherlands implies that there are factors affecting household credit constraints and assets allocation. Last, we decompose assets into real assets and financial assets as they are the two main components of assets. Real assets are usually considered as more illiquid than financial assets. Through a further decomposition, we found that real estate accounts for the majority of real assets. Number of properties owned by households, price level and taxation are believed to have impact on real estate value and distributions and be able to partially explain the difference detected among countries. Similar analysis is conducted for financial assets, which has been classified into three categories based on risk profile of components. Then we have discussed inequality in wealth distribution, education level of household, entry cost of financial market, and taxation to be the possible explanation of different participation and fraction in financial assets.

Further research

In this paper, a few ideas are proposed to attract more valuable opinions and to facilitate the discussion, debate and ultimately a good explanation. Confined to the lengths of thesis, there are numerous aspects could be further investigated. For example, since this paper focus on the assets side of household balance sheet it gives the space to study the liabilities side of households. Furthermore, household income can also be added to the

analysis to make it more comprehensive. Last but not least, there are 15 countries involved in this paper, which makes it extremely difficult to discuss the situation of each country in detail. A more thorough study could focus on less number of countries and conduct a more detailed analysis.

Our research was based on the first wave of the survey that was released in April 2013. We know that the HFCN is committed to improve the quality of the survey and to collect more waves of data. The second wave of data is expected to be released soon and we believe it would be interesting to analyze if our results have changed over time and if so on which directions.

Appendices

Definitions of terms

Household reference person: is chosen according to the international standards of the so called Canberra Group (UNECE 2011), which uses the following sequential steps to determine a unique reference person in the household:

i. Household type [determined by a) one of the partners in a registered or de facto marriage, with dependent children, b) one of the partners in a registered or de facto marriage, without dependent children, and c) a lone parent with dependent children],
ii. The person with the highest income,
iii. The eldest person.

Net wealth: is defined as the difference between total (gross) assets and total liabilities. Total assets consist of real assets and financial assets.

Real assets include:

- value of the household main residence (for owners)
- value of other real estate property
- value of vehicles (cars and other vehicles, such as boats, planes or motorbikes)
- value of valuables
- value of self-employment businesses of household members.
- investments held in non-self-employment private businesses

Real estate include:

- value of the household main residence (for owners)
- value of other real estate property

Financial assets include:

- deposits (sight accounts, saving accounts)
- investments in mutual funds
- bonds
- publicly traded shares
- managed investment accounts
- money owed to households as private loans
- other financial assets: Options, futures, index certificates, precious metals, oil and gas leases, future proceeds from a lawsuit or estate that is being settled, royalties or any other.
- private pension plans and whole life insurance policies.

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