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ADEMU WORKING PAPER SERIES

Towards Understanding Differences in European Household Finances

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July 2016

WP 2016/017
www.ademu-project.eu/publications/working-papers

Abstract

This paper documents facts about differences in household portfolio composition across European countries, using the Eurosystem's Household Finance and Consumption Survey (HFCS) as a data source. On the asset side of balance sheets, the focus of our analysis is on the distinction between housing wealth and other assets. On the liability side, we distinguish types of debt which are collateralized by housing. As a consequence, this paper addresses cross-European differences in home-equity positions. These facts inform the design of a European Household Finance Common Reference Model (HFCRM). This reference model identifies a common structure of key factors in household financial decision making. At the same time the HFCRM is flexible enough to admit parameterizations which fit the diversity of financial and legal institutions across European countries.

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Horizon 2020
The Framework Programme for Research and Innovation

***Keywords**: European household portfolios, international comparative finance, housing, household debt.*

Acknowledgments

Thomas Hintermaier gratefully acknowledges support through the project ADEMU "A Dynamic Economic and Monetary Union" funded by the European Union's Horizon 2020 Program under grant agreement No. 649396. This paper uses data from the Eurosystem Household Finance and Consumption Survey (HFCS). The results published and the related observations and analysis may not correspond to results or analysis of the data producers.

The ADEMU Working Paper Series is being supported by the European Commission Horizon 2020 European Union funding for Research & Innovation, grant agreement No 649396.

1 Introduction

Distributions of household wealth across and within European countries have recently received considerable interest in economic debates. The inequality encoded in these distributions is by itself an interesting economic topic. In a broader context, a proper understanding of differences in European household finances is key to an informed design of economic policy. Potential asymmetric effects of monetary policy conducted at the level of the overall euro area are a case in point. Another example is macro-prudential policy to assure the resilience of household balance sheets, both at a European and at a national level.

An essential ingredient for the systematic analysis of the above-mentioned issues has been the provision of the Eurosystem's Household Finance and Consumption Survey (HFCS). The data side of applied empirical research about European household finances has been addressed by the efforts underlying the HFCS. It aims at cross-country comparability of the micro data collected at the household level for European countries. This is implemented by common principles underlying the design of surveys conducted for all participating countries.

In this paper we extend the principle of a common design of analysis from the statistical data side to the economic model side of research on European household finances. In order to explain the data facts documented by the HFCS in a common framework, we propose a European Household Finance Common Reference Model (HFCRM). Like its survey data counterpart, this structural model of household behavior aims at cross-country comparability. This is implemented by a common structure of key factors affecting household financial decision making. The diversity of financial and legal institutions across European countries is accounted for by country-specific parameterizations within a common structural reference model.

Our approach is guided by prominent areas of interest in household finance, which we describe in the following. In the area of financial stability a systematic match of data with a reference model facilitates the conduct of macro-prudential policy. The importance of analyzing inequality and the corresponding economy-wide distributions of asset positions as potential sources of economic instability has been reaffirmed by recent macroeconomic events. The US-sub-prime crisis which emerged in 2007 and the ensuing economic crises in several EU countries (e.g., Spain and Ireland) have shown that it is vital to understand the distribution of wealth in the cross-section of households for at least two reasons.

First, any modern approach to the trade-off between consumption and saving takes into account the relevant wealth position and the uncertainty faced by decision-making

individuals.[1] A valid quantitative assessment of the response of aggregate consumption - which constitutes the main component of GDP in EU countries - must therefore consider the heterogeneity of saving incentives based on the distribution of individual wealth positions (see, e.g., Aiyagari (1994) and Krusell and Smith (1998)).

Second, the distribution of specific components of wealth has important implications for an economy's exposure to systemic risk. The distribution of home equity, i.e. the value of housing net of the mortgage debt written against it by a household, has turned out to be essential for an assessment of potentially adverse feedback loops. For instance, an economy with a large fraction of households who finance the value of their homes with low levels of home equity is particularly vulnerable to declines in house prices. Mian and Sufi (2011) deal with the link between home-equity based borrowing and house prices. At an aggregate level, Schularick and Taylor (2012) rely on long historical time series to confirm that credit growth predicts financial crises. Jordà et al. (2016) provide a detailed account of the historically increasing role played by mortgage lending.

Another area of interest which has shaped our approach is the discussion about potential cross-country asymmetries in responses to measures taken at the European level. A prime example is monetary policy conducted for the euro area. The functioning of the monetary transmission mechanism will be country specific to the extent that it operates through the specific composition of assets held in the population. The potential side-effects of monetary policy in terms of inequality in an economy have by now received considerable attention, see, e.g., the work by Coibion et al. (2012). Inequality of monetary-policy responses for the distribution within a country carries over to cross-country asymmetries, if the distributions of asset positions are different across countries. The HFCS provides the empirical foundation to establish these differences. The HFCRM provides a testbed for the quantitative analysis of country-specific responses to common policy measures. This approach assists well-informed policy making.

In terms of its methodological positioning, a common reference model for household finances complements the existing research in the following three ways: First, because of the structural approach taken in this model, it allows to perform the analysis of *counterfactuals*. While the HFCS documents the investment behavior of European households given the history of economic policy they have been subject to, the HFCRM allows to infer the consequences of alternative policy scenarios. The key element for making predictions about alternative scenarios is the endogenous determination of household behavior in a structural model. While policy may alter the parameters of the environment faced by a household, the structural model continues to serve as a representation of household be-

[1] Pham-Dao (2016) quantitatively assesses the importance of cross-country differences in labor market risk and social security systems for explaining the observed euro area differences of inequality in *net* wealth.

havior.

Second, the methodology of macroeconomics has developed to accommodate heterogeneity of individual behavior, as well as the resulting distribution of individual asset positions. For this type of models of the overall economy, the HFCRM constitutes an inner-core of household behavior, around which aggregate features of the economy are built.

Third, a structural model which rationalizes choices of individuals, thereby relying on their preferences, allows for welfare-relevant statements in normative analysis. This seems particularly useful for economic (and political) debates which have gone along with data facts about cross-country wealth differences documented in the HFCS. Any choice to accumulate assets of various types is just a means to the end of behaving in line with preferences and with the economic environment. Across countries these environments may differ strongly. For instance, insurance systems may be operating effectively in some countries but might have to be substituted for by the individual accumulation of assets in other countries. The data facts of the HFCS in isolation do not speak to welfare comparisons across countries. The HFCRM considers individual behavior within country-specific economic environments. Such a structural model that matches the data facts can thus allow for welfare-relevant statements about the cross-country differences documented by the HFCS.

There are several guiding principles underlying our specification of a common reference model. Such a companion model needs to be in line with the salient features of the HFCS data, which we document in Section 2. Our empirical analysis in Section 2 shows that housing debt and secured debt written against housing are major components of the balance sheet for a large share of the population. We therefore stipulate that the consideration of these components is a basic requirement for a common reference model. This also allows for the quantitative analysis of the country-specific distributions of home equity, as related to the above-mentioned consideration of financial stability issues.

The taxonomy used in Section 3 for the proposition of a common reference model is flexible enough to fit various degrees of specialization. A high degree of specialization within this framework amounts to a close match with specific variables collected in the HFCS. For instance, an appropriate specialization within the category of liabilities on the balance sheet can provide for a direct match with variables distinguishing fixed-rate and adjustable-rate mortgages in the survey data. Depending on the research or policy question at hand, a more or less detailed account of the balance sheet may be appropriate. Similarly, depending on the focus of analysis, research about European household finances may decide to neglect or to elaborate on specific aspects of the economic environment. The common reference model in Section 3 fits a broad spectrum of household

finance applications.

2 Empirical evidence

The recent Eurosystem Household Finance and Consumption Survey (HFCS) provides an opportunity to analyze and compare household portfolios across euro area countries. Eurosystem Household Finance and Consumption Network (2013a) describes the survey and its methodology. The survey has been used, for example, in the empirical analyses by Ehrmann and Ziegelmeyer (2014) to explore the determinants of demand for different types of mortgages in the euro area and by Adam and Zhu (2014) and Adam and Tzamourani (2015) to investigate the distributional consequences of price changes across euro area households.

We proceed to document important facts for household portfolios across euro area countries, based on the existing survey wave from 2009/2010. We first show key statistics on household portfolios for the whole sample in Table 1, with a focus on mortgage debt and home equity.[2] These statistics match closely their counterparts in Eurosystem Household Finance and Consumption Network (2013b). In Table 2 we then convert these statistics into adult equivalents to account for cross-country differences in household size, based on the equivalence scale reported in Fernández-Villaverde and Krueger (2007), Table 1, last column.[3] Because the statistics for the whole sample hide differences at the extensive and the intensive margin, e.g., differences in the incidence of mortgage debt and in the size of the debt conditional on holding it, we provide statistics on household portfolios of mortgage debtors in Table 3.

Table 1 shows that housing wealth and mortgage debt are major items on the average balance sheets of households in countries of the euro area. The table reveals the cross-country heterogeneity of wealth and debt portfolios in the euro area. For example, 45% of households in Austria and Germany own their main residence. Mediterranean countries have much higher homeownership rates, with rates of 82% in Spain and of 69% in Italy. Thus, housing wealth for the main residence is less important for the average Austrian or German household than for the average Italian or Spanish household. Housing wealth amounts to twice the average gross household income in Germany and to more than five times the average gross household income in Spain. These differences in the importance of housing wealth across the euro area have also been documented by Kaas et al. (2015). The differences in absolute amounts remain sizable if we adjust the statistics for household size in Table 2.

[2] Further details on the data and variable definitions are provided in Appendix A.

[3] Our equivalence scale assigns a weight of 0.34 to every additional adult and a weight of 0.3 to every child.

	(1) AT	(2) BE	(3) CY	(4) DE	(5) ES	(6) FI	(7) FR	(8) GR
Wealth composition								
Housing wealth (main residence)	123,154	190,214	243,461	90,961	174,587	108,125	122,840	89,333
− Mortgage debt (main residence)	12,011	24,201	39,475	15,878	19,776	26,163	12,997	7,259
= Home equity	111,143	166,013	203,986	75,083	154,811	81,962	109,843	82,074
+ Net-financial assets	156,619	175,787	477,032	123,391	141,017	89,760	129,678	68,228
− Non-mortgage debt	2,729	3,163	10,107	3,304	4,476	10,188	6,122	2,545
= Net worth	265,033	338,637	670,911	195,170	291,352	161,534	233,399	147,757
Incidence (in percent)								
Home ownership	47.72	69.65	76.68	44.21	82.70	67.79	55.27	72.40
Mortgage debtor	16.52	28.50	34.90	17.97	26.74	32.79	16.91	13.93
LTV-ratio (conditional on home ownership)	12.53	14.29	17.83	20.91	13.84	27.72	11.40	7.37
Debt-service ratio	1.35	4.75	8.54	2.76	6.31	13.06	3.13	2.67
Household income	43,929	49,486	43,255	43,531	31,329	45,141	36,918	27,661
Household size	2.13	2.31	2.76	2.04	2.68	2.08	2.24	2.64

	(9) IT	(10) LU	(11) MT	(12) NL	(13) PT	(14) SL	(15) SK
Wealth composition							
Housing wealth (main residence)	174,524	410,615	167,059	154,460	81,360	103,543	61,724
− Mortgage debt (main residence)	7,780	55,301	6,206	62,934	13,967	2,064	2,572
= Home equity	166,744	355,314	160,853	91,526	67,393	101,479	59,152
+ Net-financial assets	111,584	362,846	208,070	93,158	86,897	50,349	21,129
− Non-mortgage debt	3,123	8,068	2,935	14,440	1,370	3,092	625
= Net worth	275,205	710,092	365,988	170,244	152,920	148,736	79,656
Incidence for main residence (in percent)							
Home ownership	68.72	67.11	77.73	57.02	71.47	81.84	89.89
Mortgage debtor	9.60	32.79	12.07	43.60	24.47	12.36	9.29
LTV-ratio (conditional on home ownership)	5.10	18.14	3.79	44.84	15.66	2.19	4.19
Debt-service ratio	1.75	5.95	1.60	6.68	4.80	1.74	2.14
Household income	34,344	83,658	26,443	45,792	20,310	22,334	13,467
Household size	2.53	2.48	2.85	2.22	2.71	2.57	2.83

Table 1: Mean household wealth and debt portfolios in euro area countries.

Source: Authors' computations based on the HFCS. Notes: For variable definitions see Appendix A. The unit of monetary variables is Euro in the survey year 2009/2010. The sample consists of up to 62,521 observations and differs across variables due to missing values. The means of home equity for each country are computed as the difference of the means for housing wealth and mortgage debt. Analogously, the mean for net-financial assets is computed as net worth − home equity + non-mortgage debt. To contain the effect of outliers, the means for the debt-service ratio are computed by trimming 210 observations for which the ratio is larger than 1.

	(1) AT	(2) BE	(3) CY	(4) DE	(5) ES	(6) FI	(7) FR	(8) GR
Wealth composition								
Housing wealth (main residence)	84,501	137,129	154,531	65,372	117,063	77,071	87,598	57,955
− Mortgage debt (main residence)	7,568	15,292	25,005	10,562	12,386	17,320	8,197	4,298
= Home equity	76,933	121,837	129,526	54,810	104,677	59,751	79,401	53,657
+ Net-financial assets	104,401	127,524	283,555	89,305	91,682	64,470	94,201	42,660
− Non-mortgage debt	1,888	2,202	6,418	2,502	2,650	6,858	4,015	1,540
= Net worth	179,446	247,159	406,663	141,613	193,709	117,363	169,587	94,777
Household income	31,342	34,235	26,605	31,762	19,795	32,198	26,124	17,341

	(9) IT	(10) LU	(11) MT	(12) NL	(13) PT	(14) SL	(15) SK
Wealth composition							
Housing wealth (main residence)	119,816	280,498	105,614	109,610	53,224	70,454	40,357
− Mortgage debt (main residence)	4,853	36,912	3,829	43,407	8,483	1,229	1,573
= Home equity	114,963	243,586	101,785	66,203	44,741	69,225	38,784
+ Net-financial assets	73,979	244,586	121,504	68,428	56,929	28,819	13,087
− Non-mortgage debt	1,961	4,873	1,709	10,385	840	1,842	360
= Net worth	186,981	483,299	221,580	124,246	100,830	96,202	51,511
Household income	22,706	56,507	16,198	33,825	12,933	13,464	8,258

Table 2: Mean household wealth and debt portfolios per adult equivalent in euro area countries.

Source: Authors' computations based on the HFCS. Notes: See the notes of Table 1.

	(1) AT	(2) BE	(3) CY	(4) DE	(5) ES	(6) FI	(7) FR	(8) GR
Wealth composition of households with mortgage debt								
Housing wealth (main residence)	174,650	170,035	218,156	139,318	136,606	109,421	144,474	86,368
– Mortgage debt (main residence)	45,825	53,656	71,657	58,778	46,319	52,822	48,473	30,859
= Home equity	128,825	116,379	146,499	80,540	90,287	56,599	96,001	55,509
+ Net-financial assets	169,996	95,986	289,932	107,457	63,581	61,795	76,649	39,964
– Non-mortgage debt	2,417	2,919	6,414	2,857	3,073	10,723	3,797	2,377
= Net worth	296,404	209,446	430,017	185,140	150,795	107,671	168,853	93,096
Indebtedness of households with mortgage debt (in percent)								
LTV-ratio	36.05	34.92	39.18	51.23	42.78	58.12	37.27	38.31
Debt-service ratio	8.50	16.74	25.62	15.47	23.56	13.06	18.64	19.05

	(9) IT	(10) LU	(11) MT	(12) NL	(13) PT	(14) SL	(15) SK
Wealth composition of households with mortgage debt							
Housing wealth (main residence)	165,843	337,652	131,106	186,705	82,703	81,902	49,812
– Mortgage debt (main residence)	50,574	112,589	31,737	99,568	34,666	9,945	16,936
= Home equity	115,269	225,063	99,369	87,137	48,037	71,957	32,876
+ Net-financial assets	101,727	172,371	251,368	69,838	44,335	48,753	15,085
– Non-mortgage debt	3,057	5,900	3,605	10,900	1,062	2,205	639
= Net worth	213,939	391,534	347,132	146,075	91,310	118,505	47,322
Indebtedness of households with mortgage debt (in percent)							
LTV-ratio	36.55	37.13	24.39	58.53	45.69	14.50	40.58
Debt-service ratio	18.43	18.19	13.23	15.94	19.81	14.54	23.48

Table 3: Conditional means of wealth and debt positions per adult equivalent in euro area countries.

Source: Authors' computations based on the HFCS. Notes: See the notes of Table 1.

Tables 1 and 3 show that households in the euro area make very different use of mortgage debt to finance their housing wealth. This can be seen both at the extensive and intensive margin. We illustrate this by comparing Italy and Germany. At the extensive margin, Table 1 shows that only 10% of Italian households are mortgage debtors although 69% are homeowners. Germany has twice as many mortgage debtors as Italy although the home ownership rate is 24 percentage points lower than in Italy.

At the intensive margin, Table 3 shows that German mortgage debtors leverage their housing collateral more than Italian mortgage debtors, resulting in less home equity and a higher loan-to-value (LTV) ratio (the 95% confidence intervals, which are not reported, do not overlap). This does not imply that Italian mortgage debtors have lower payment commitments because of their smaller mortgage, as is highlighted by the debt-service ratio, which measures the size of the mortgage payments relative to the gross income. This ratio is slightly *higher* on average for Italian than for German households (again, there is no overlap of the 95% confidence intervals).

The differences in housing wealth and mortgage debt across euro area countries are striking but hard to interpret without imposing some structure on what may have generated these equilibrium outcomes. The observed differences may be generated by determinants on the demand or supply side. We thus provide structure by proposing a common reference model to understand the observed market outcomes.

The above-mentioned salient features of the HFCS shape the reference model we propose in Section 3. In particular, the survey data motivate the relevant classes of household portfolio positions to be captured by a structural model. Of course, the design and the parameterization of an appropriate model benefit from a much broader class of data sources. For example, the facts about housing finance in the euro area compiled by Drudi et al. (2009) are a rich source of information for the country-specific parameterization of supply-side factors in the model.

3 The common reference model

In the light of the salient features of data about European household balance sheets documented in Section 2 on the basis of HFCS data, we propose the following Household Finance Common Reference Model (HFCRM) for a structural representation of European household finances.

The reference model is configured to capture household financial decisions, as well as the environment in which household behavior is set. Figure 1 gathers the building blocks of the HFCRM. The main features of the reference model are used for the classification of building blocks of the HFCRM. This principle applies to features concerning preferences

Figure 1: Building blocks of the HFCRM

(Block 1), earnings and endowments (Block 2), and portfolio items (Block 3). It applies equally to the structure of uncertainty (Block U) faced by households in an economy, and to the demographic structure (Block D).

The principle of survey data collection at the household level for the HFCS mirrors in the focus on household decisions in the HFCRM. The reference model is designed to capture the distribution of portfolio positions of households in an economy. Taking earnings and endowments into account, consumption needs to be in line with the evolution of household wealth. This design also makes the HFCRM an appropriate tool for gauging consumption demand responses of these households.

The reference model is flexible enough to fit the diversity of situations faced by households in Europe in their financial decision making. Each of the following building blocks is suitable for accommodating country-specific features by using appropriate parameterizations.

Block 1: Preferences

This building block specifies the motives underlying household behavior. It considers the time horizon and the preferences over consumption streams. Relevant consumption items in this context include: non-durable consumption, durable consumption, housing services obtained by renting or by owning real estate.

Typical sources of European cross-country variation (Block 1)

Cross-country differences in life-expectancy, need for shelter varying with country characteristics such as climate.

Block 2: Earnings and Endowments

This building block consists of sources of income which are independent of household investment behavior. The major sources are labor earnings, unemployment benefits, public pensions, and endowments inherited. This forms the basis of uninsurable idiosyncratic background risk for household behavior. The earnings and endowments variables are therefore key for the purpose of this analysis. Their life-cycle profiles shape the life-cycle profile of asset accumulation.

Typical sources of European cross-country variation (Block 2)

Cross-country differences in the life-cycle wage profile, unemployment benefits, pension systems, bequests.

Block 3: Portfolio items

The items in this building block map directly into the classification of variables collected in the HFCS survey data. The basic entity for organizing the correspondence between variables in the data set and in the reference model is the household-level balance sheet. Depending on the specific focus of analysis, a specialization on additional dimensions – not captured by the value of balance-sheet positions as such – may be called for. Figure 2 provides a refined view on the portfolio block of the HFCRM.

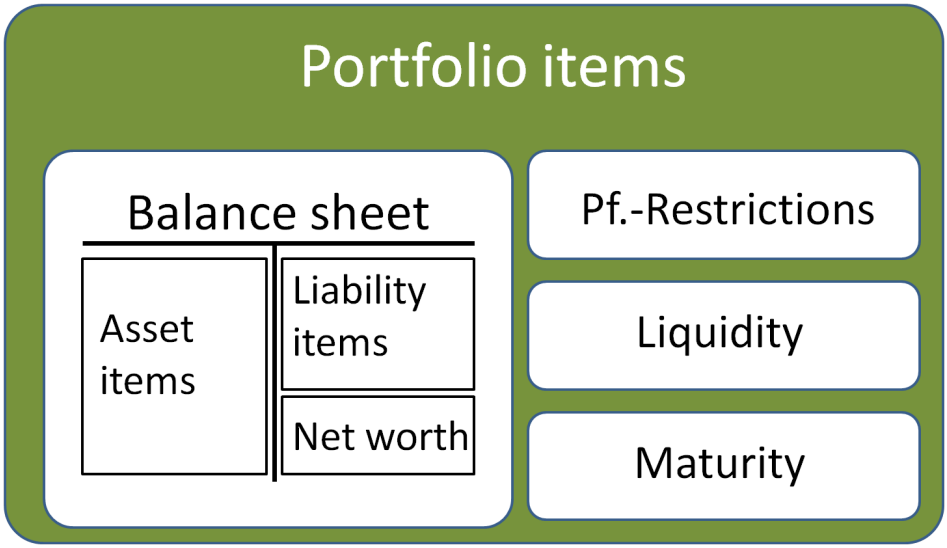

Figure 2: Structure of the portfolio block

The cross-country differences in the HFCS data, as documented in Section 2, suggest that an account of heterogeneity in European household portfolios should consider gross positions of assets and liabilities. On the asset side, the data point to the relevance of

distinguishing between the value of housing and the value of financial assets. On the liability side, mortgage debt is relevant as a predominant gross item on household balance sheets.

Portfolio restrictions are an important feature for household investment behavior. Most household debt is secured by real estate. This explains the importance of the explicit consideration of restrictions between the value of real estate and the amount of debt secured by real estate.

Portfolio items on a household balance sheet differ by their degree of liquidity. Owner-occupied housing is a major asset for households in Europe, but transactions involving this asset tend to imply considerable cost for adjustment and for fees. The financing of owner-occupied housing by mortgages is subject to similar types of cost at origination or if a household decides to refinance.

The maturity dimension of assets and liabilities on the household balance sheet plays a role for the type of risk exposure of households. An example is the distinction between long-term fixed-rate debt and short-term or adjustable-rate debt. The consumption responses resulting from changes in short-term interest rates may vary strongly across countries, depending on the maturity structure of outstanding debt on household balance sheets.

Typical sources of European cross-country variation (Block 3)

Cross-country differences in admissible loan-to-value ratios at loan origination, admissible loan-to-income ratios, country-specific macro-prudential regulation, differences in costs and fees for real-estate transactions, differences in the interest rate fixation-period for long-term debt contracts, differences in the share of short-term debt.

Block U: Uncertainty

In our reference model we have singled out uncertainty as a separate building block because it may interact with several other blocks simultaneously. For example, uncertain business cycle developments will simultaneously have an impact on earnings in Block 2 and on asset prices for portfolio items in Block 3. Uncertainty faced by individual households is a key factor in explaining the distribution of wealth, which acts as a buffer-stock to self-insure against otherwise uninsurable risk. This principle of assets acting as tools for household-level risk management carries over to the particular portfolio composition of wealth, that is documented by the HFCS data. An appropriate account of the country-specific types of risks faced by households, and of the extent to which the availability of private or public insurance mitigates them, is therefore an essential building block for

understanding household portfolio positions.

Typical sources of European cross-country variation (Block U)

Cross-country differences in unemployment insurance schemes, public and private health insurance schemes, bankruptcy regulations, volatility of asset prices and returns, inflation risk, private markets for longevity risk, uncertainty about future taxation and transfers, related to uncertainty about the sustainability of the stance of fiscal policy.

Block D: Demographic structure

The fact that the reference model we have proposed is a life-cycle model allows for a systematic consideration of demographic differences between European countries. The framework completes the link between the HFCS and the HFCRM by the explicit consideration of the age structure of each country surveyed. The model counterparts of the surveyed data distributions are obtained by an age-weighted composition of variables predicted by the model. This is the approach implemented in Hintermaier and Koeniger (2011). The effects of different age-compositions across countries can thereby be isolated from other structural differences which affect household financial decisions. Depending on the focus of the analysis, the parameters used in all the above-mentioned building blocks of the HFCRM can be specified to capture age-cohort-specific differences. Examples for such differences within the population of a country are: reforms of social security or pension systems, changes in labor market regulation, or macroeconomic events, which have affected the cohorts surveyed in some year at different stages of their life-cycle.

A Data appendix

This data appendix provides information on how we construct the variables displayed in Tables 1, 2 and 3 in Section 2. For information on the survey, its methodology and further descriptive statistics we refer to Eurosystem Household Finance and Consumption Network (2013a) and Eurosystem Household Finance and Consumption Network (2013b).

We interpret the asset data in the survey as end-of-period information at the time when the survey is carried out because the questions in the survey refer to income in the previous year and agents have made their consumption and portfolio choices conditional on this income. We construct all variables for as many observations as possible. While information on net worth, home ownership, the value of the main residence with the corresponding mortgages, non-mortgage debt and gross income is available (if applicable)

for more than 62,000 households in the euro area, information on mortgage payments per month (if applicable) is less complete and available for around 55,000 households.

When computing the statistics in the tables, we use the sampling weights provided in the HFCS to account for the oversampling of wealthy households, we account for the survey structure with five implicates per household (to capture the variance introduced by the imputation of values for some observations) and we use the replicate weights provided by the HFCS to account for sampling error. The variables are defined as follows:

Household income is total gross household income.

Housing wealth is defined as the value of the household's main residence.

Mortgage debt is defined as the sum of all mortgages and loans secured by the household's main residence.

The difference between the value of housing wealth and mortgage debt is the *home equity* held by the household.

Non-mortgage debt is the sum of all debt that is not secured by real estate. In Finland this component contains all debt that is not secured by the household's *main* residence.

Net-financial assets contain all financial assets, other real estate and durables, net of other outstanding debt that is not contained in the variables *mortgage debt* and *non-mortgage debt* (debt secured by real estate that is not the main residence for countries besides Finland). In the tables this residual component of the household balance sheet is computed as *net worth − home equity + non-mortgage debt*.

Net worth is defined as the consolidated wealth position of households. It is the sum of home equity and net-financial assets, net of non-mortgage debt.

LTV-ratio is defined as mortgage debt and loans secured by the main residence divided by the value of the main residence, for those households that own a house.

Debt-service ratio is defined as payments for the mortgages and loans secured by the main residence divided by total gross household income. To contain the effect of outliers, the means for the debt-service ratio are computed by trimming 210 observations for which the ratio is larger than 1.

Home ownership is defined as the ownership of the household's main residence.

Mortgage debtor is whether the household has a mortgage secured by the main residence.

Household size is the total number of household members.

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