Household Heterogeneity in the Euro Area Since the Onset of the Great Recession*

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Abstract

We extend household-level data from the Household Finance and Consumption Survey using aggregate series and micro-simulations to investigate heterogeneity in the euro area. We quantify shocks to wealth, income and financial pressure faced by various categories of households since the onset of the Great Recession. The shocks differ substantially both across countries and across economic and socio-demographic characteristics. We find that the rising unemployment rate disproportionately affected the income-poor, while the declining wealth the income-rich. Although borrowers benefited from the substantial decrease in interest rates, debt service–income and debt–income ratios for poor households went up as they faced falling incomes. Household deleveraging was primarily driven by the restrained mortgage borrowing by the young. In several countries and at the euro-area level the unprecedented declines in asset prices substantially contributed to the sluggish consumption growth driven by both rich and poor households: while the former were hit by large shocks to wealth, the latter also significantly cut their spending because of their high MPCs.

Keywords: Household Heterogeneity, Wealth, Income, Financial Pressure, Deleveraging, Wealth Effect, Great Recession, Household Finance and Consumption Survey

JEL classification: D12, D31, E21

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Non-Technical Summary

During the Great Recession, economic activity in the euro area declined by 6 percent in real terms and has not recovered for more than five years thereafter. Most households faced a prolonged series of considerable adverse shocks to their income and a decline in their housing wealth unprecedented in the post-war era.

The aggregate figures hide considerable heterogeneity at the micro level—for households with various social, demographic and economic characteristics living in different countries—pervasive for many economic variables. The dynamics in asset prices varied both across countries and across asset classes. In particular, while stock prices declined in all countries except Germany, house prices fell in nine countries and bonds appreciated in ten countries. Heterogeneity in other variables, such as income, unemployment and interest rates, has been similarly pronounced.

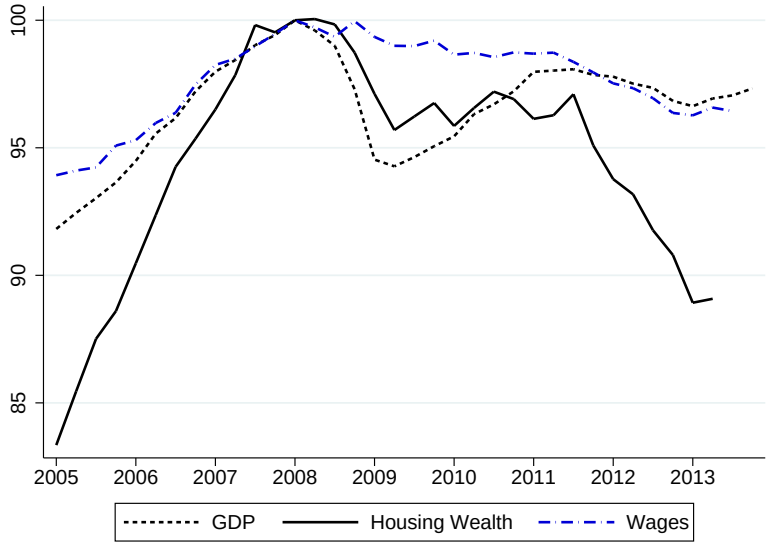
To approximate the evolution of the distribution of income, wealth and debt service, this paper combines the household-level data from the Eurosystem Household Finance and Consumption Survey (HFCS) with country-level aggregate time series. The HFCS covers in detail balance sheets of more than 62,000 households from fifteen euro area countries, giving a comprehensive snapshot of household heterogeneity during its reference year, mostly 2010. We complement this cross-sectional information with the dynamics captured in aggregate data, and provide a timely approximation of household heterogeneity. We also use micro-simulation models to account for the recent substantial increase in the unemployment rate (across many countries) and for heterogenous dynamics of aggregate household debt. This procedure constitutes the first stage of a model in which economic shocks are translated into endogenous household decisions. We leave this extension for further research.

We first document shocks to wealth, income and debt service experienced by various categories of households. While much of the variation stems from cross-country developments, important differences among households exist even within countries, because holdings of various classes of assets and liabilities vary substantially over economic and socio-demographic characteristics. For example, we find that the increase in the unemployment rate has disproportionately affected income-poor households, while the decline in wealth the income-rich. Although borrowers benefited from the substantial decline in interest rates, debt service–income and debt–income ratios for poor households rose because of the drop in their incomes.

We then explore the implications of the recent wealth shocks for consumption dynamics. Because empirical evidence strongly suggests that spending of poor households reacts more to shocks, we allow for variation in the marginal propensity to consume (MPC) across the income distribution. Under such scenario, the drop in spending is caused by both rich and poor households: while the former were hit by large shocks to wealth, the latter also significantly cut their expenditures because of their high MPCs. Overall, our back-of-the-envelope calculations suggest that the unprecedented declines in household wealth have substantially contributed to the weak consumption growth in several countries and at the euro-area level.

In addition, we investigate the evolution of the cross-sectional distribution of debt. We approximate household debt holdings over the life cycle combining the HFCS data on borrowing and repayment behavior with aggregate data on new loans. We find that the reduction in mortgage debt burden is mainly due to redemptions of middle-aged and older households, while in countries with large net redemptions also the young borrow less. In contrast, the reduction in non-mortgage debt is more sizeable and more evenly distributed over age.

Figure 1: GDP, Housing Wealth and Wages, Euro Area 2005–2013



Notes: Real values, normalized to 100 in 2008Q1.

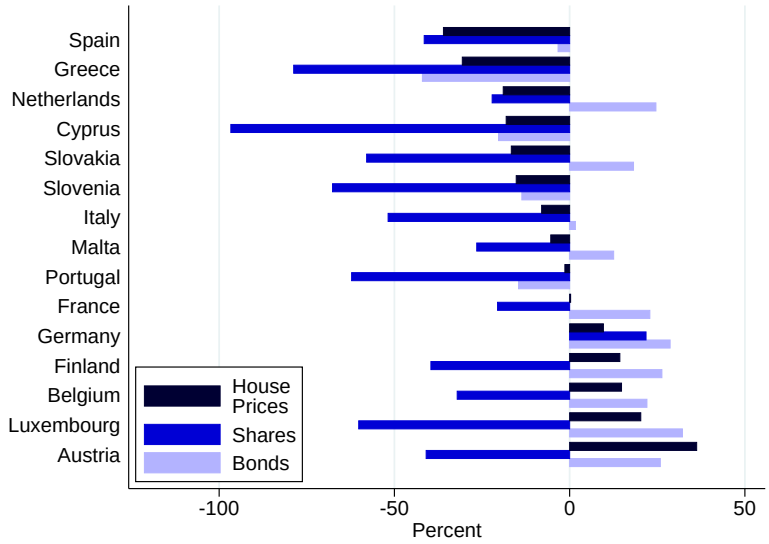
1 Introduction

During the Great Recession, economic activity in the euro area declined by 6 percent in real terms and has not recovered for more than five years thereafter (see Figure 1). Most households faced a prolonged series of considerable adverse shocks to their income and a decline in their housing wealth unprecedented in the post-war era.

The aggregate figures hide considerable heterogeneity at the micro level—for households with various social, demographic and economic characteristics living in different countries—pervasive for many economic variables. Figure 2 documents the diverse dynamics in asset prices, both across countries and across asset classes. In particular, while stock prices declined in all countries except Germany, house prices fell in nine countries and bonds appreciated in ten countries. Heterogeneity in other variables, such as income, unemployment and interest rates, has been similarly pronounced.

To approximate the evolution of the distribution of income, wealth and debt service, this paper combines the household-level data from the Eurosystem Household Finance and Consumption Survey (HFCS) with country-level aggregate time series (section 2). The HFCS covers in detail balance sheets, income and indicators of consumption of more than 62,000 households from fifteen euro area countries, giving a comprehensive snapshot of household heterogeneity during its reference year, mostly 2010. We complement this cross-sectional information with the dynamics captured in aggregate data, and provide a timely approximation of household heterogeneity. We also use micro-simulation models to account for the recent substantial increase in the unemployment rate (across many countries) and for heterogenous dynamics of aggregate household debt.

Figure 2: Asset Prices, Growth Rates 2008Q1–2013Q2 (in Percent)



Notes: Nominal terms; countries are sorted by the growth of house prices.

We first document shocks to wealth, income and debt service experienced by various categories of households (section 3). While much of the variation stems from cross-country developments, important differences among households exist even within countries, because holdings of various classes of assets and liabilities vary substantially over economic and socio-demographic characteristics.[1] For example, we find that the increase in the unemployment rate has disproportionately affected income-poor households, while the decline in wealth the income-rich. Although borrowers benefited from the substantial decline in interest rates, debt service–income and debt–income ratios for poor households rose because of the drop in their incomes. This procedure constitutes the first stage of a model in which economic shocks are translated into endogenous household decisions. We leave this extension for further research.[2]

We then explore the implications of the recent wealth shocks for consumption dynamics (section 3.5). Because empirical evidence strongly suggests that spending of poor households reacts more to shocks, we allow for variation in the marginal propensity to consume (MPC) across the income distribution. Under such scenario, the drop in spending is caused by both rich and poor households: while the former were hit by large shocks to wealth, the latter also significantly cut their expenditures because of their high MPCs. Overall, our back-of-the-envelope calculations suggest that the unprecedented declines in household wealth have substantially contributed to the weak consumption growth in several countries and at the euro-area level.

[1] See Figure 4 below for an example of heterogeneity across the income distribution.

[2] Our descriptive results on household heterogeneity can also serve as an input into calibrated models with heterogeneous agents (see Glover et al. (2011), Alan et al. (2012) and Hur (2013) for recent examples).

In addition, we investigate the evolution of the cross-sectional distribution of debt (section 4). We approximate household debt holdings over the life cycle combining the HFCS data on borrowing and repayment behavior with aggregate data on new loans. We find that the reduction in mortgage debt burden is mainly due to redemptions of middle-aged and older households, while in countries with large net redemptions also the young borrow less. In contrast, the reduction in non-mortgage debt is more sizeable and more evenly distributed over age.

2 Combining Household-Level and Aggregate Data

We combine household-level data from the HFCS and aggregate data to approximate the evolution of wealth, income and indicators of financial pressure since the beginning of the Great Recession. In addition, we use a micro-simulation model to account for changes in the unemployment rate.

2.1 The Eurosystem Household Finance and Consumption Survey

The HFCS, released in April 2013, is a unique ex ante comparable household-level dataset on the distribution of household wealth in fifteen euro area countries.[3] It contains rich information on the structure of household balance sheets and their variation across individual households. The dataset also collects information about socio-demographic variables, assets, liabilities, income and indicators of consumption for a sample of more than 62,000 households that is representative both at the national and the euro-area level. The surveys in each country were conducted between end-2008 and mid-2011, mostly in 2010. Wealthy households are oversampled in most countries.

Eurosystem Household Finance and Consumption Network (2013a) documents substantial heterogeneity in household portfolios, both across and within countries. Although reference periods for variables in most countries are 2010, these periods are not completely synchronized (see Table 7 in the Appendix, taken from Eurosystem Household Finance and Consumption Network (2013b), Table 9.1). In addition, because of the careful statistical processing (e.g., editing and imputation) the data are released roughly two years after the collection.

This is not a serious issue in 'normal' times, when changes in the wealth distribution and the structure of assets and liabilities tend to be small and gradual. However, unlike much of the post-war history, the past several years have been substantially different in the extent of changes in asset prices that households have experienced.[4]

2.2 Using Aggregate Data to Extrapolate the HFCS

To gain insight into the recent dynamics of wealth and income at the household level, we extend (and synchronize) the HFCS using information from country-specific

[3]The HFCS covers all euro area member countries except for Estonia, Ireland and Latvia. The results from the first wave are described in detail in Eurosystem Household Finance and Consumption Network (2013a). Eurosystem Household Finance and Consumption Network (2013b) describes the construction and key statistical properties of the dataset.

[4]See Figure 2, Bricker et al. (2012a) and Banco de España (2014) for evidence from various countries.

Table 1: HFCS Series and Aggregate Counterparts Used to Extrapolate Them

HFCS Variable Name	HFCS Variable	Aggregate Series Used to Extrapolate
Real Assets		
DA1110	Value of household's main residence	House price index
DA1120	Value of other real estate property	House price index
DA1130	Value of household's vehicles	HICP
DA1131	Valuables	HICP
DA1140	Value of self-employment businesses	Unquoted shares and other equity[1]
Financial Assets		
DA2101	Deposits	Deposits
DA2102	Mutual funds	Stock price index
DA2103	Bonds	Zero-coupon-bond price index (derived from the convergence interest rate)
DA2104	Value of non-self-employment private business	Unquoted shares and other equity[1]
DA2105	Shares, publicly traded	Stock price index
DA2106	Managed accounts	HICP
DA2107	Money owed to households	HICP
DA2108	Other assets	HICP
DA2109	Voluntary pension/whole life insurance	Insurance technical reserves[2]
Income		
DI1100	Employee income	Wages per employee
DI1200	Self-employment income	Gross operating surplus and mixed income[3]
DI1300	Rental income from real estate property	Gross operating surplus and mixed income[3]
DI1400	Income from financial investments	Interests[4]
DI1500	Income from pensions	HICP
DI1600	Regular social transfers (except pensions)	HICP
DI1700	Income from private transfers	Miscellaneous current transfers[5]
DI1800	Other income	HICP
Debt and Financial Pressure		
DL1000	Total liabilities	HICP
DL2100	Payments for mortgages (flow)[6]	House purchase interest rate[7]
DL2200	Payments for non-collaterised debt (flow)[6]	Consumption interest rate[8]

[1] Stock price index used for Germany, Greece and Portugal.
[2] HICP used for Luxembourg, Malta and Slovakia.
[3] HICP used for countries with missing values (Cyprus, France, Germany, Greece, Malta and Portugal).
[4] HICP used for countries with missing values (Austria, Belgium, Cyprus, Luxembourg, Malta, Portugal and Slovakia).
[5] HICP used for countries with missing values (Austria, Belgium, Cyprus, Germany, Italy, Luxembourg, Malta, Portugal and Slovakia).
[6] The increase in interest payments is calculated for the outstanding amounts of debt using formula (1).
[7] Total calculated by weighting volumes (defined for cost of borrowing purposes); excludes revolving loans and overdarfts.
[8] Total initial rate fixation; excludes revolving loans and overdarfts.

Net wealth is defined as: $DN3001 = DA1110 + DA1120 + DA1130 + DA1131 + DA1140 + DA2101 + DA2102 + DA2103 + DA2104 + DA2105 + DA2106 + DA2107 + DA2108 + DA2109 - DL1000$.

aggregate data. We focus on the period since the beginning of the Great Recession, 2008Q1–2013Q2.

We update one by one the various asset types, income components and the rate of debt service with their country-level aggregate counterparts, as described in Table 1 using a procedure similar to Krimmel et al. (2013).[5] Most prominently, for real estate we make use of the house prices data (housing being the most substantial asset of most euro area households). For the remaining asset types we use indexes of quoted and unquoted stocks, and bonds. For the liability side, we assume that debt is constant in real terms; such a scenario fits well the evolution of aggregate household liabilities in the euro area since 2008Q1.[6] Net wealth is defined as the sum of real and financial assets, net of total liabilities.

In addition, we update measures of debt service as follows. The HFCS contains an indicator of fixation of interest rates for mortgages for the household main residence (and for other real estate property).[7, 8] We do not adjust debt service for fixed-interest rate loan contracts. For adjustable-rate mortgages, we assume a complete pass-through of the change in the relevant interest rate to the individual loan rate. Denoting the debt service with DS, the outstanding balance of the loan with O and the change in the interest rate with ΔIR, debt service payments are updated as follows:

$$DS_{t+1} = \begin{cases} DS_t + O_t \times \Delta IR_{t+1} & \text{for adjustable-rate loans,} \\ DS_t & \text{for fixed-rate loans.} \end{cases} \quad (1)$$

We treat all non-mortgage loans as adjustable-rate. We use the relevant volume-weighted interest rates for mortgage and non-mortgage loans (see Table 1).

Clearly, our approximation procedure is not an adequate substitute for a collection of household-level data (in a cross-section or panel). The procedure wipes out much of the idiosyncratic variation in the data and in its baseline form does not account for changes in participation (in various asset and debt types) or behavioral responses.

However, we believe the approximation preserves some important layers of heterogeneity, both across countries, and across economic and socio-demographic categories of households. Consequently, besides serving as a cross-check for the second-wave of the survey, the extended dataset can be used to quantify economic shocks affecting various households and, eventually, to simulate policy experiments and to answer policy-relevant questions where the timeliness of the data is important (see, for example, the stress testing framework developed by Ampudia et al. (2014)).[9]

[5] See also the work by Honkkila and Kavonius (2013) for a comparison between the HFCS and national account variables.

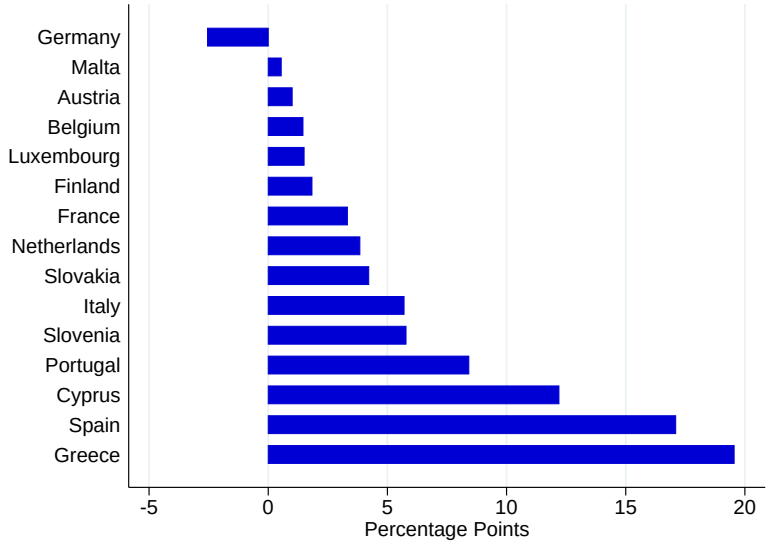
[6] See section 4 below for an alternative scenario for debt dynamics.

[7] These two types of loans account for more than 80 percent of total debt for the whole sample. When the respondent does not know whether the household has a fixed- or an adjustable-rate mortgage, we assume that, within each country, the proportion of adjustable-rate loans to total loans is the same as in the loans about which we have information.

[8] The proportion of adjustable rate mortgages in the HFCS is broadly in line with the statistics reported in European Central Bank (2009), p. 27 (and reproduced in Table 8 below); see also Badarinza et al. (2013).

[9] Such real-time policy simulations are hardly possible with full micro datasets because these are typically available only with a lag of a couple of years or so (mostly due to editing and imputation of the data).

Figure 3: Change in Unemployment Rate, 2008Q1–2013Q2



2.3 Accounting for Changes in Unemployment

Beside the 'mechanical' extension of income using its individual components described above, we also attempt to capture the effect on income of the recent substantial changes in the unemployment rates across euro area countries (see Figure 3).

We use the following two-step micro-simulation approach. First, to match the rate of change of the unemployment rate at the country level we assign to each person a (simulated) work status. This work status depends on personal characteristics and the aggregate state of the labor market. Second, for individuals whose work status has changed we appropriately adjust their income using information on replacement rates.[10] We describe the two steps in more detail below.

2.3.1 Changes in Work Status

To account for possible differences in the unemployment rate between macro data and the HFCS we target *the change* of the unemployment rate at the macro level (rather than its level). Formally, the target unemployment $u^*_{c,t}$ is defined as

$$u^*_{c,t} = \frac{U_{c,t}}{U_{c,r}} \times u_{c,r},$$

where $U_{c,t}$ denotes the unemployment rate from country's c *aggregate* statistics at time t and $u_{c,r}$ the unemployment rate calculated in the HFCS survey. The subscript r indicates that the corresponding value is from the reference year of income from the survey.

[10] A similar approach to simulate the change in unemployment and the associated changes in income is used by Albacete and Fessler (2010); see also Galuščák et al. (2014).

To determine the work status we estimate country-specific probit models

$$\Pr(Y = 1|X = x) = \Phi(x'_{c,i}\hat{\beta}_c), \tag{2}$$

where i denotes a specific individual—not a household. The explanatory variables $x_{c,i}$ are gender, education (dummies for having completed high school and having completed college), age (introduced in brackets to account for possible non-linearities), marital status and the presence of dependent children in the household. Using the estimated parameter vector $\hat{\beta}_c$ we compute for each individual the predicted probability of having a job, $\hat{Y}_{c,i}$. Then, we draw an individual-specific random number $\epsilon_{c,i}$ from the uniform distribution. In addition, we assign each person a shock $\eta_{c,i}$, which is sector-specific and accounts for the fact that unemployment exhibits different dynamics across economic sectors (see below a detailed description of how this $\eta_{c,i}$ is calculated). With this information we calculate a measure of the probability of being unemployed,

$$\Delta_{c,i} = \epsilon_{c,i} + \eta_{c,i} - \hat{Y}_{c,i}.$$

We then use $\Delta_{c,i}$ to construct a ranking of the 'marginal' probability of becoming unemployed (within each country).[11] Using this ranking we determine the marginal employee losing her job so that the increase in the simulated sample unemployment rate matches the change in the unemployment target.

The sector-specific shocks $\eta_{c,i}$ are derived as follows. As we have no information on the employment sector of unemployed respondents, we cannot model sector-specific (un)employment hazards in general. However, we can exploit the information on the currently employed individuals to refine our model. The basic idea is that chances of becoming unemployed are closely linked to the aggregate employment dynamics of the occupational sector. For instance, if we observe that employment in manufacturing dropped by 10 percent but employment in the service sector was constant, we can assume that the *relative* employment probabilities for employed respondents currently working in services are better than in manufacturing.

To capture this idea we use the following strategy. First, we compute the aggregate change in employment (probability to have/lose the job) between the reference year r and the current year t as: $p^E_{c,t} = N_{c,t}/N_{c,r} - 1$. Then, we compute the corresponding change in employment for sector j as $p^E_{c,t,j} = N_{c,t,j}/N_{c,r,j} - 1$. Using these two numbers, we define a sector-specific 'unemployment shock' for individual i working in sector j:

$$\eta_{c,i} = p^E_{c,t} - p^E_{c,t,j}|i = j.$$

Note that this re-scaling of employment probabilities is an idiosyncratic shock, i.e., only a redistribution of the aggregate shock. Technically, defining the weights of each sector $w_{c,t,j} = N_{c,t,j}/\sum_j^J N_{c,t,j}$, we have: $\eta_{c,i}|i = j \times w_{c,t,j} = 0$. In other words, an increase in aggregate unemployment hits primarily individuals working in sectors where employment drops most. While this approach is an imperfect proxy for sector-specific probabilities to become (un)employed and ignores factors such as voluntary reallocation of the labor force between sectors, it is a step forward to make our simulations more realistic.

[11] For each vector of employment shocks, the marginal employed person is always uniquely determined.

2.3.2 Changes in Labor Income

When the work status of an individual changes, we update her labor income accordingly. For the newly employed workers, we replace their current unemployment benefits with the predicted labor income. We estimate this labor income with a two-step Heckman selection model. Our exclusion restrictions are the marital status and whether the individual has children or not. These factors may affect the work status but not the income of those who are employed. The remaining regressors in the model are gender, education (dummies for having completed high school and having completed college) and age (introduced in brackets to account for possible non-linearities).

When people become unemployed, we replace their current labor income with unemployment benefits. Specifically, we use data on *net replacement rates* which vary along three dimensions: income (three categories), marital status (single/married) and whether the person has children or not.[12] Given the length of the ongoing crisis, we use replacement rates applicable to the *long-term* unemployed (between one and five years of unemployment).

3 Shocks Since the Onset of the Great Recession

The extended dataset makes it possible to assess the recent changes in key economic variables for various households: wealth, income and debt service. We focus on growth rates and/or changes over the past five years, 2008Q1–2013Q2, calculated in real terms, deflated with the country-specific HICPs because real values are arguably relevant for economic decision-making of households. We use population weights for all our calculations.[13]

3.1 Shocks to Wealth

The HFCS covers in detail balance sheets of individual households. We have shown in Figure 2 that the dynamics of asset prices since the beginning of the Great Recession have varied considerably across countries and asset types. In this section we discuss

[12]The data can be downloaded from OECD: `http://www.oecd.org/els/benefitsandwagesstatistics.htm`. We use data for 2010, except for Cyprus, where the last available observations are for 2007. The net rates account not only for the gross replacement rates but also include tax and other benefits, which in some countries are important components of the social security net.

The available data provide an even more detailed breakdown but we stick to the three categories as we do not have sufficiently rich information to match the other criteria. Moreover, the dimensions of our choice are the quantitatively most important determinants of the generosity of unemployment insurance.

See Figure 19 in the Appendix for an example of how the replacement rates vary across countries for the two-earner household with two children.

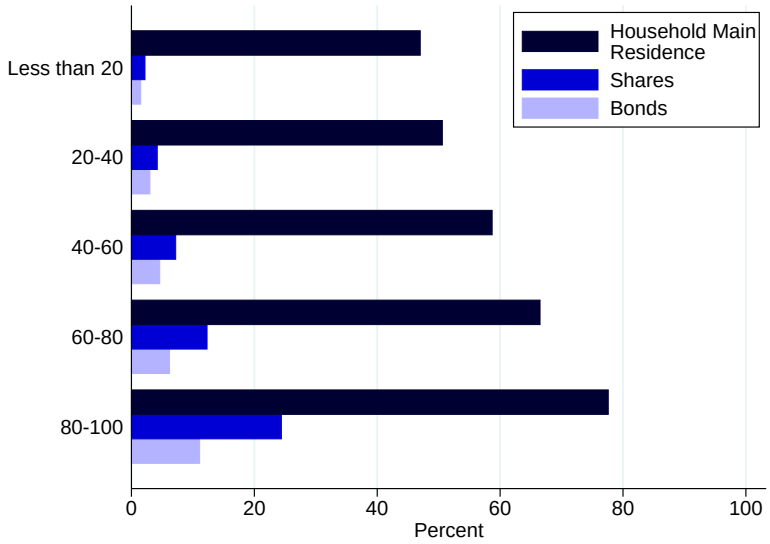
[13]Demographic changes tend to be slow and have little effect on economic shocks over the horizon of a few years. Alternatively to keeping the population weights constant, we allowed them to vary using demographic data on the evolution of the age distribution. This alternative has a relatively small effect on our results, typically around 1–2 percentage points on wealth growth and 0.5 p.p. on income growth. (Of course, such adjustment by age cannot account for all inputs that enter the calibration of weights; see Eurosystem Household Finance and Consumption Network (2013b), p. 42 for details.)

Table 2: Household Net Wealth, Growth Rate 2008Q1–2013Q2 (in Percent, Real Terms)

	Net Wealth		Real Assets		Financial Assets	
	Median	Mean	Median	Mean	Median	Mean
All Households	−13.7	−10.5	−16.0	−11.5	5.1	0.5
Household size						
1	−3.9	−7.6	−2.0	−9.6	8.5	2.8
2	−12.5	−8.5	−13.5	−9.7	6.3	0.8
3	−21.1	−14.7	−19.6	−14.8	5.7	−1.5
4	−18.3	−15.0	−17.5	−14.7	4.2	−1.4
5 and More	−16.9	−8.1	−11.0	−7.8	6.5	−0.4
Housing status						
Owner-Outright	−12.1	−10.8	−13.0	−12.1	4.7	−1.7
Owner-with Mortgage	−17.6	−13.0	−13.9	−11.0	5.7	2.1
Renter or Other	4.4	−1.7	−0.0	−6.3	5.3	5.0
Percentile of Income						
Less than 20	−1.6	−13.5	16.1	−15.0	6.1	9.8
20-39	−8.0	−11.2	−2.0	−12.1	3.4	5.8
40-59	−10.3	−12.1	−14.1	−14.3	5.3	5.5
60-79	−13.4	−10.3	−13.5	−12.0	6.0	5.7
80-100	−11.4	−9.5	−10.9	−9.6	1.3	−3.9
Percentile of Net Wealth						
Less than 20	−11.4	⋆	4.1	‡	4.2	11.0
20-39	−6.9	−10.1	−5.0	−6.4	−9.1	−7.4
40-59	−13.6	−14.5	−17.4	−16.9	5.6	2.7
60-79	−12.6	−12.4	−12.9	−13.7	6.1	2.1
80-100	−9.9	−9.2	−13.1	−10.7	11.9	0.4
Age of Reference Person						
16-34	−5.9	−16.4	−0.1	−14.2	7.2	5.9
35-44	−15.7	−11.2	−19.4	−10.9	4.4	1.6
45-54	−15.7	−10.9	−13.6	−11.3	3.5	−0.5
55-64	−12.9	−10.0	−12.5	−11.1	3.4	−1.0
65-74	−14.0	−9.6	−14.2	−11.4	7.7	0.4
75+	−10.9	−9.2	−15.0	−12.1	6.3	1.8
Education of Reference Person						
Primary or No Education	−21.4	−16.5	−22.0	−17.9	7.2	2.3
Secondary	−10.0	−7.1	−8.7	−7.9	5.4	1.9
Tertiary	−14.9	−9.9	−12.9	−10.7	4.7	−1.1
Country						
Belgium	5.1	2.8	4.7	5.7	9.3	−4.5
Germany	5.5	5.2	1.2	3.2	9.7	9.6
Greece	−36.3	−37.9	−33.5	−36.3	−11.3	−18.7
Spain	−40.1	−37.8	−37.3	−37.0	9.3	−11.5
France	−4.1	−3.5	−5.5	−4.9	11.2	4.4
Italy	−14.2	−14.6	−13.6	−14.1	0.9	−13.8
Cyprus	−19.9	−9.5	−14.9	−7.2	−10.3	−21.7
Luxembourg	4.7	1.9	4.8	4.8	0.3	−19.6
Malta	−13.2	−10.1	−14.5	−10.9	−0.7	−3.1
Netherlands	−19.1	−19.8	−23.3	−22.1	14.6	10.9
Austria	12.6	14.3	15.9	17.9	0.3	−7.0
Portugal	−8.0	−16.7	−6.3	−16.5	8.2	−4.1
Slovenia	−22.5	−18.1	−20.4	−17.7	4.3	−14.4
Slovakia	−14.6	−13.1	−16.6	−15.1	25.6	19.5
Finland	−0.2	−3.0	0.5	0.9	−2.5	−19.4

Source: The Eurosystem Household Finance and Consumption Survey and authors' calculations. All calculations use population weights. Real values of 2013Q2, deflated with country HICPs. Net wealth is defined as the sum of real and financial assets net of total debt. ⋆: Mean net wealth for the lowest wealth quintile fell from EUR $-2,900$ to EUR $-5,100$. ‡: Mean real assets for the lowest wealth quintile rose from EUR 11,000 to EUR 15,300.

Figure 4: Asset Participation by Income Quintile (in Percent)



Notes: Source: The Household Finance and Consumption Survey.

how these components—in particular, real and financial assets—add up to total net wealth of individual households.

Table 2 shows breakdowns of growth rates of net wealth for various economic and socio-demographic categories of households. The table summarizes the following findings:

- For both the mean and the median, for almost all breakdowns at the euro area level, net wealth declined. Broadly in line with Figure 1, mean net wealth fell by 10.5 percent, median by almost 14 percent. As real assets make up almost 85 percent of the value of total assets, the decline in wealth is primarily driven by the decrease in house prices.

  At the same time many euro area households experienced increases in the value of their financial assets (5.1 percent for the median and 0.5 for the mean), mostly driven by the growth of its two largest items: deposits and voluntary pensions.

- The decline in net wealth was substantially stronger for homeowners[14] (the median and mean among outright owners and owners with a mortgage lie around 13 percent) than for renters (around 0), both because the latter own little real estate and because they also tend to own little stocks, whose value fell significantly in most countries (see Figure 2).[15]

- Figure 4 documents that participation in the household main residence is quite evenly distributed across all income quintiles, ranging between 47 and 78 per-

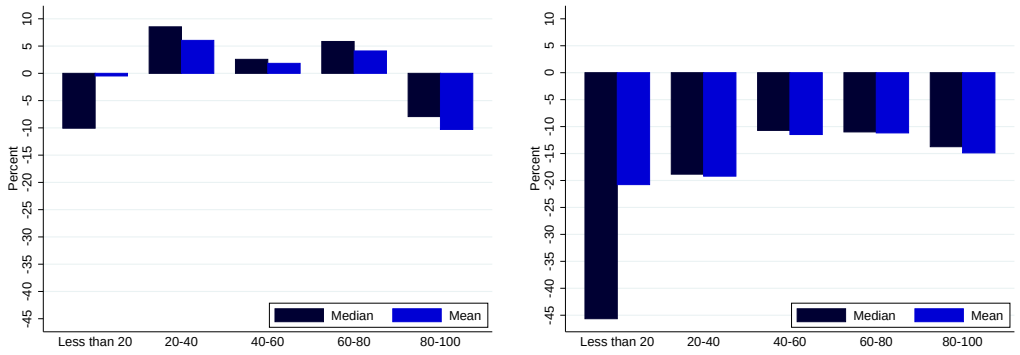
[14]Homeowners are defined as households who own their main residence.
[15]In contrast, the value of their deposits and voluntary pensions typically went up.

cent. In contrast, participation in shares is concentrated to the top income earners. This implies that while the percentage decline in the value of real assets has been around 10–15 percent across income quintiles, the highest income earners have experienced a substantially smaller rise in the value of financial assets (or even a decline). Overall, *percentage* declines in net wealth are quite evenly distributed over the euro area income quintiles, which translates into considerable heterogeneity in terms of *euro amounts* (see Figure 7 below).

- The most striking heterogeneity arises at the country level: while net wealth in countries such as Belgium, Germany, Luxembourg and Austria increased, it declined substantially—by more than 15 percent—in Greece, Spain, Cyprus, the Netherlands and Slovenia. These dynamics are consistent with Figure 2, reflecting the sizable fall in house prices, but also the fact that the home-ownership rate in these countries (except for the Netherlands) considerably exceeds 60 percent, the rate for the euro area.

  Large discrepancies in many countries between the growth of the mean and the median financial assets were driven by the considerable differences in the dynamics and in the participation rates of various asset types, (e.g., shares vs. bonds vs. deposits vs. voluntary pensions).

Figure 5: Growth of Net Wealth Across Income Quintiles, 2008Q1–2013Q2



(a) Finland (b) Italy

- Heterogeneity persists within countries. The diverse dynamics in asset prices (Figure 2) translate due to differences in participation rates into heterogeneous effects on wealth. Figure 5 documents this point by comparing the developments in Finland and Italy. Finnish households experienced rising house prices and declining stock prices. This combination of wealth shocks resulted in an increase in wealth for medium-income households and a decline in wealth for rich and poor households (due to their high exposure to stocks and mutual funds). In contrast, Italian households faced a decline in prices of all asset classes, which translated into a drop in net wealth across the income distribution.

Table 3: Household Income, Growth Rate 2008Q1–2013Q2 (in Percent in Real Terms)

	Mechanical Extension		Unemployment Simulation	
	Median	Mean	Median	Mean
All Households	−2.0	−2.7	−5.6	−4.9
Household size				
1	−1.8	−2.7	−3.4	−3.7
2	−1.4	−2.7	−3.4	−4.2
3	−1.7	−2.5	−7.2	−5.6
4	−2.4	−3.0	−7.1	−6.4
5 and More	−1.7	−2.5	−4.9	−6.0
Housing status				
Owner-Outright	−3.0	−4.5	−6.9	−7.1
Owner-with Mortgage	−1.3	−1.5	−3.9	−3.3
Renter or Other	−0.6	−1.3	−4.5	−3.3
Percentile of Income				
Less than 20	−0.8	−1.3	−7.3	−6.9
20-39	−1.6	−1.8	−6.7	−6.0
40-59	−2.0	−1.9	−5.6	−5.3
60-79	−1.8	−1.9	−4.6	−4.5
80-100	−2.2	−3.7	−3.4	−4.6
Percentile of Net Wealth				
Less than 20	0.7	1.9	−3.3	−1.1
20-39	−3.0	−3.6	−6.7	−5.9
40-59	−4.2	−3.3	−9.3	−6.3
60-79	−0.4	−2.5	−4.9	−5.0
80-100	−1.2	−3.6	−3.6	−5.0
Age of Reference Person				
16-34	−0.6	−0.9	−7.2	−4.8
35-44	−1.4	−1.9	−5.2	−4.5
45-54	−1.8	−2.5	−4.7	−4.8
55-64	−2.6	−3.5	−6.5	−5.8
65-74	−1.4	−3.6	−2.6	−4.6
75+	−1.7	−4.6	−2.4	−5.1
Education of Reference Person				
Primary or No Education	−2.4	−3.5	−8.4	−8.8
Secondary	−1.4	−2.2	−3.3	−3.5
Tertiary	−1.2	−2.7	−2.9	−4.1
Country				
Belgium	0.9	0.6	−2.2	−1.5
Germany	0.9	1.1	4.1	2.8
Greece	−9.4	−9.4	−19.6	−19.7
Spain	−2.9	−2.9	−15.8	−12.0
France	−2.7	−5.3	−4.9	−7.1
Italy	−4.5	−6.4	−10.4	−11.6
Cyprus	−5.6	−4.5	−14.4	−12.4
Luxembourg	0.0	0.1	−1.2	−0.5
Malta	0.3	0.5	−0.0	0.3
Netherlands	−3.5	−4.9	−5.4	−6.4
Austria	−1.2	−1.3	−2.1	−2.1
Portugal	−1.4	−1.3	−9.5	−6.8
Slovenia	0.2	−5.5	−16.8	−14.4
Slovakia	3.0	2.3	0.5	0.2
Finland	−1.2	−4.2	−3.5	−5.7

Source: The Eurosystem Household Finance and Consumption Survey. All calculations use population weights. Real values of 2013Q2, deflated with country HICPs.

3.2 Shocks to Income

Table 3 compares two scenarios for the recent dynamics of real income for various categories of households: the 'mechanical extension' and the 'unemployment simulation.' The mechanical extension assumes (counter-factually) that the proportion of the unemployed in the sample has not changed since 2008Q1 and that nominal wages grew at the same rate as wages per employee in aggregate data. The unemployment simulation attempts to account for country-specific unemployment dynamics using the model described in section 2.3.

Similar to net wealth, most households have experienced sizeable and persistent adverse shocks to their income. Using the mechanical extension we find that both the median and the mean income of euro area households have declined by roughly 2 percent.

Our unemployment simulation reveals quite sizable effects of allowing for an increase in the unemployment rates, roughly 3 p.p. on the mean and the median income, so that the resulting drops in income are broadly in line with aggregate developments for wages shown in Figure 1. This is perhaps not surprising because the aggregate unemployment rate in several countries grew by more than 5 p.p. (see Figure 3) and because we use *long-term* replacement rates. While this choice seems reasonable in view of the length of the crisis, our calculations can be considered as an upper bound on the decline of household income.[16] (Calculations with *initial* replacement rates suggest that the decrease in income was smaller by roughly 2 p.p.[17])

Especially for the mechanical extension, the changes in income are quite evenly distributed across households. This is partly an artefact of our approximation, which cannot capture all idiosyncratic heterogeneity (which can only be revealed using panel data) and demonstrates the need for more elaborate modelling.

On the other hand our unemployment simulation method does preserve some key dimensions of heterogeneity. For example, our simulation and our probit estimates of equation (2) imply that households with low income and education were much more likely to become unemployed. Consequently, once we account for the higher risk of unemployment (in the right-hand panel of the table), such households experienced a particularly severe decline in real income. This effect is further reinforced for households working in sectors with large declines in employment. In particular, for households in the lowest quintile of the income distribution income fell by 6–7 percent for the 'unemployment simulation,' compared with a drop of 3–5 percent for the highest 20 percent of earners.[18] Allowing for unemployment dynamics thus has a substantially larger effect on the *median* income growth (which is by 3.6 p.p. larger than under the mechanical extension) than on the mean (a difference of 2.2 p.p.).

Similar to wealth, the income developments varied considerably across countries. Greece, Spain, Italy, Cyprus and Slovenia experienced a double-digit percentage de-

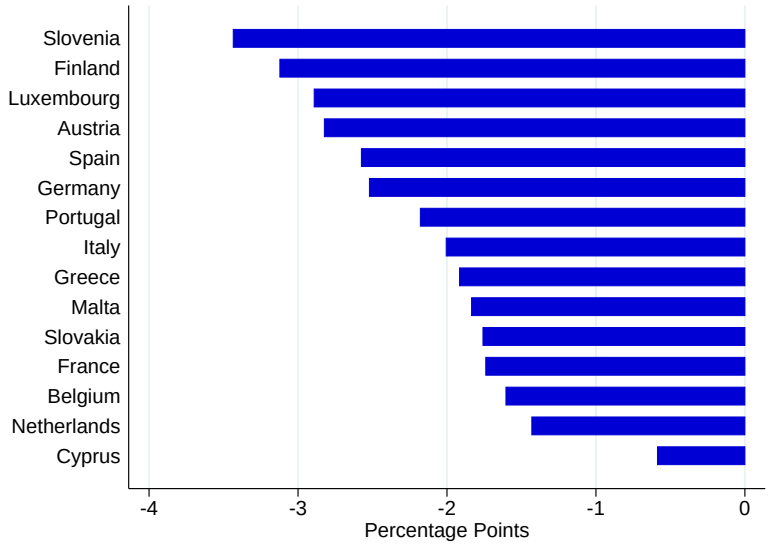
[16]The unemployment simulation also assumes that the changes in unemployment occur immediately after the reference period rather than gradually.

[17]See Figure 19 in the Appendix for a comparison of long-term and initial replacement rates. The gap between income growth implied by the initial and long-run replacement rates is wider in countries where the two rates differ more, such as Portugal, Spain, Cyprus and Luxembourg.

See Table 5 for extended results for Spain.

[18]Qualitatively similar results hold for education: income of individuals with primary or no education was particularly strongly affected.

Figure 6: Change in Interest Rates, 2008Q1–2013Q2 (in Percentage Points)



Notes: Nominal interest rates on loans for house purchase.

cline in income when accounting for the unemployment developments.[19] At the same time the negative shocks to income were sizeable across almost all countries, especially compared to the pre-crisis growth of income.

3.3 Shocks to Debt Service and Financial Pressure

Figure 6 documents that over the past five years nominal interest rates fell across euro area countries, typically by 1.5–3.0 percentage points. This section (in Table 4) explores in detail how the changes in interest rates translated into two indicators of debt service burden: median total debt service– and mortgage debt service–income ratios. In addition, the table also considers how the evolution of income, assets and liabilities affected additional indicators of financial pressure: the median debt–income and debt–assets ratios. Similar to Table 3, Table 4 compares the results for the mechanical extension (left panel) to those for the unemployment simulation (right panel). The indicators are calculated for households who hold debt (households who do not hold debt are excluded).

The decline in interest rates alleviated the debt burden of households whose debt payments, including payments on mortgages, are adjustable and linked to the level of interest rates. Also due to the rise in nominal income, median debt service–income and mortgage debt service–income ratios of euro area households have since the beginning of the Great Recession declined by 1.5 and 2.2 percentage points, respectively. Mortgage debt service ratios declined more (than total ratios) because the interest rates relevant for consumption loans have typically fallen less than those relevant for house purchase loans (see Figure 20 in the Appendix).

[19]The unemployment rate in these countries rose by more than 5 p.p.; see Figure 3.

Table 4: Change in Indicators of Debt Burden, 2008Q1–2013Q2, Medians (in Percentage Points)

	Mechanical Extension				Unemployment Simulation			
	Debt Serv–Income	Mortgage Debt Serv–Income	Debt–Assets	Debt–Income	Debt Serv–Income	Mortgage Debt Serv–Income	Debt–Assets	Debt–Income
All Households	−2.1	−2.6	2.0	0.8	−1.5	−2.2	2.0	3.2
Household size								
1	−2.3	−3.4	1.3	0.3	−2.0	−3.2	1.3	0.0
2	−1.7	−2.4	1.3	0.5	−1.4	−2.0	1.3	1.7
3	−2.2	−3.1	2.6	0.6	−1.6	−2.6	2.6	5.2
4	−2.2	−2.3	2.6	1.9	−1.5	−1.8	2.6	7.1
5 and More	−2.1	−2.2	2.1	2.1	−1.2	−1.9	2.1	7.0
Housing status								
Owner-Outright	−1.1	−1.8	0.7	1.1	−0.7	−1.3	0.7	2.5
Owner-with Mortgage	−3.5	−2.8	3.7	2.2	−2.8	−2.3	3.7	7.8
Renter or Other	−1.0	−2.5	−1.6	0.1	−0.9	−2.1	−1.6	0.4
Percentile of Income								
Less than 20	−3.2	−8.7	2.8	1.6	1.6	−4.9	0.2	21.9
20-39	−1.9	−5.7	1.6	1.1	−1.0	−2.9	4.0	5.2
40-59	−2.2	−3.7	2.3	0.0	−1.9	−3.5	1.1	2.4
60-79	−2.2	−2.3	1.2	−0.3	−1.7	−1.7	1.1	−3.1
80-100	−1.6	−1.7	2.2	0.3	−1.5	−1.7	2.4	2.1
Percentile of Net Wealth								
Less than 20	−0.1	−5.2	4.5	4.1	0.3	−4.5	4.5	4.5
20-39	−1.1	−3.4	5.1	3.4	−0.5	−2.3	5.1	4.2
40-59	−3.8	−4.0	−0.5	−15.4	−3.0	−3.2	−0.5	−11.4
60-79	−2.9	−2.8	0.9	−4.7	−2.4	−2.4	0.9	−0.2
80-100	−1.9	−2.2	0.6	−1.0	−1.6	−2.0	0.6	1.3
Age of Reference Person								
16-34	−2.4	−4.5	3.6	0.5	−1.9	−3.6	3.6	5.1
35-44	−2.3	−3.1	3.1	2.7	−1.8	−2.5	3.1	6.8
45-54	−1.9	−2.2	1.3	0.5	−1.2	−1.9	1.3	3.0
55-64	−1.5	−1.6	1.2	0.2	−1.1	−1.2	1.2	1.0
65-74	−1.5	−3.3	0.6	1.1	−1.3	−3.2	0.6	2.0
75+	−1.2	−1.4	1.2	0.2	−1.1	−1.4	1.2	0.6
Education of Reference Person								
Primary or No Education	−2.4	−3.6	3.0	1.0	−0.8	−2.0	3.0	4.6
Secondary	−1.7	−2.3	1.4	0.3	−1.6	−2.1	1.4	0.9
Tertiary	−2.6	−2.7	1.7	1.8	−2.3	−2.4	1.7	4.0
Country								
Belgium	−2.3	−2.3	−0.7	−0.7	−2.1	−2.1	−0.7	2.7
Germany	−1.5	−1.6	−1.0	−0.5	−1.7	−1.8	−1.0	−2.3
Greece	−1.3	−1.8	7.1	4.5	0.5	0.3	7.1	11.4
Spain	−4.6	−6.0	8.0	2.0	−2.2	−3.6	8.0	18.3
France	−1.4	−1.6	0.3	0.6	−1.1	−1.3	0.3	1.8
Italy	−1.7	−2.5	1.6	4.3	−0.7	−1.7	1.6	9.7
Cyprus	−1.9	−2.4	2.9	10.4	0.7	0.4	2.9	32.4
Luxembourg	−4.8	−6.3	−0.2	−0.1	−4.6	−6.3	−0.2	2.0
Malta	−3.0	−3.8	0.7	−0.2	−2.9	−3.7	0.7	1.1
Netherlands	−4.0	−4.2	5.9	8.1	−3.8	−3.9	5.9	14.2
Austria	−2.4	−2.5	−1.5	0.3	−2.3	−2.5	−1.5	0.8
Portugal	−3.9	−5.9	2.0	2.6	−2.2	−4.1	2.0	11.4
Slovenia	−3.0	−3.2	0.9	0.9	−1.9	−3.2	0.9	2.9
Slovakia	−1.9	−5.8	0.9	−0.8	−1.2	−4.5	0.9	0.0
Finland	*M*	*M*	0.0	0.6	*M*	*M*	0.0	1.5

Source: The Household Finance and Consumption Survey and authors' calculations. All calculations use population weights. "M" denotes missing values. The debt service–income ratio is defined for indebted households, but excluding households that only hold credit lines/overdraft debt or credit card debt, as for these debt types no debt service information is collected. The mortgage debt service–income ratio is calculated for households that report having mortgage debt. The debt–assets ratio and debt–income ratio are calculated for all indebted households.

The fall in mortgage debt service–income ratio was substantially larger for households in the lowest income and wealth quintile (4.9 and 4.5 p.p., respectively), a finding in line with Ehrmann and Ziegelmeyer (2014), and also for young households (below the age of 40 or so), which tend to acquire substantial debt relative to their current income, as they buy a house (for the first time). A key reason for this finding is that these categories of households tend to have higher debt service ratios (see Table 11).

The decline in (total) debt service ratios was more evenly spread across households as low-income and low-wealth households tend to hold a higher share of liabilities in non-mortgage debt, whose interest rates declined less than mortgage rates.

A comparison of the two panels of Table 4 suggests that debt service ratios for households in the lowest income quintile went up because of the rising unemployment rate: while ratio decreases substantially under mechanical extension (by 3.2 p.p.), it goes up under the unemployment simulation (by 1.6 p.p.).[20]

The size of the decline in the debt service ratio varies substantially across countries, reflecting the size of the decline in the underlying interest rate (Figure 6) and the proportion of adjustable rate mortgages (see Figure 21 in the Appendix). In particular, Spain, Luxembourg, Malta, the Netherlands and Portugal, in which most mortgages are variable-rate, experienced considerable decline in mortgage debt service–income ratios, of 3 percentage points or more. The effects on debt service ratios of the decline in interest rates in countries with predominantly fixed-rate mortgages, such as Belgium, are quite modest (mostly below 2 percentage points).[21]

Debt–assets and debt–income ratios, shown in columns 3 and 4 of each panel, respectively, are primarily driven by the dynamics of their denominators. Debt–assets and debt–income ratios thus reflect an inverse pattern to that depicted in Figure 2: in countries where asset prices declined, debt–assets ratios rose. Analogously, debt–income ratios went up in countries where income in nominal terms fell.

3.4 Cross-Checks with Alternative Data

Given the severity of shocks to wealth and income in some countries, it is important to get a sense about how well our approximation performs. Banco de España (2014) recently published a preview of results of the 2011 wave of the Spanish Survey of Household Finances (EFF). Table 5 reports a comparison of the EFF for 2008 and 2011 with our approximation focusing on the same target periods (2007Q4 and 2010Q4) for three specifications: (i) mechanical extension, (ii) unemployment simulation with the long-run replacement rates and (iii) unemployment simulation with the initial replacement rates. Our median income growth with the long-run replacement rates, −7.9 percent, matches quite closely the figure in the EFF, −8.6 percent.[22]

[20] The same comparison suggests that unemployment dynamics also substantially contribute to the increase of debt–income ratios for low income earners.

The pattern of a considerable increase in debt service–income and debt–income ratios among low earners is also apparent in the 2011 data from Spain, Banco de España (2014); see section 3.4 for a more detailed comparison.

[21] Although debt service ratios are an amalgam of interest rates and income, the effect of income is quite modest, except for Greece, where the sizeable decline in income (even in nominal terms), caused debt service ratios to go up despite the decline in the underlying interest rates.

[22] Similar to EFF, the decline in mean income is substantially smaller than in the median, although our approximation underestimates the actual rate by 2.5 p.p. (as we are not able to capture the

Table 5: Comparison with the Spanish EFF Survey, 2007Q4–2010Q4 (Real Growth Rates in Percent)

	Income		Net Wealth	
Scenario	Median	Mean	Median	Mean
EFF Data	−8.6	−3.1	−20.1	−12.5
Mechanical Extension	2.1	1.4	−21.0	−18.8
Long-Term Replacement Rate	−7.9	−5.6		
Initial Replacement Rate	−6.0	−4.5		

Similar to income, our approximation does a good job at matching the EFF median number on net wealth (a decline of 21 percent), although the EFF reports a somewhat more modest figure on mean wealth growth (a decline of 12.5 percent vs. 18.8 percent using our method).

Finally, while the shocks to wealth in countries such as Spain or Greece may seem large, Bricker et al. (2012b) report a similar drop for the median net worth (38.8 percent) in the U.S. between 2007 and 2010.[23]

3.5 Wealth Effects on Consumption

Having documented changes in the key economic variables, we can now think about how the unprecedented decline in household wealth contributed to the weakness of consumer spending after 2007. Specifically, we ask the following questions: "How did the recent changes in wealth affect spending of individual households?" and "How did these individual consumption dynamics aggregate to developments at the country- and at the euro-area level?"[24]

We do not attempt to estimate the marginal propensity to consume out of wealth ourselves. Instead, we use estimates representative of the large empirical literature on the topic. Specifically, we quantify the effect on consumption under two scenarios: the 'homogeneous' baseline with a constant MPC, and a setup with a heterogeneous MPC, in which spending of low-income households reacts more strongly to wealth shocks.

increase in income recorded by income-rich households).

Aggregate data also document a substantial drop in disposable income in Spain since 2008, 15.5 percent, a number in line with our method (see Table 3).

[23]Bricker et al. (2012b) also document a sizable decline in income, 7.7 and 11.1 percent for the median and the mean, respectively.

In addition, Bricker et al. (2012b) and Banco de España (2014) report that the changes in the participation rates in various assets change slowly, even in times of economic turmoil. This evidence suggests that our approximation, which does not allow for changing participation rates, can still perform well (although the evidence in Bricker et al. (2012b) and Banco de España (2014) does not exclude a sizable active re-balancing of individual types of assets and debts).

[24]We only present simple calculations on the effect of changes in wealth on spending, although, clearly, consumption expenditures have recently been affected by many other factors, such as permanent and transitory shocks to income, credit availability, uncertainty or interest rates.

Table 6: Wealth Effect on Consumption (Percent of Aggregate Consumption, 2013)

Homogeneous MPC: All Households = 0.025
Heterogeneous MPC: Income Quintiles 1–5 = $\{0.04, 0.035, 0.025, 0.015, 0.01\}$

	Homogeneous MPC		Heterogeneous MPC		Consumption Growth
Country	Median	Mean	Median	Mean	2008–2013
Austria	0.8	2.1	0.4	1.5	4.2
Belgium	0.6	0.6	0.3	0.4	3.3
Cyprus	−3.5	−3.7	−2.6	−2.8	−8.5
Finland	−0.1	−0.3	0.0	−0.0	2.8
France	−0.6	−0.5	−0.2	−0.2	2.2
Germany	0.2	0.6	0.2	0.5	4.8
Greece	−2.7	−3.8	−2.3	−3.1	−8.4
Italy	−1.9	−2.8	−1.7	−2.2	−6.0
Luxembourg	0.4	0.5	0.3	0.4	5.7
Malta	−2.8	−3.5	−2.4	−3.1	3.8
Netherlands	−1.6	−2.5	−1.0	−1.9	−5.5
Portugal	−0.5	−2.1	−0.5	−1.3	−9.0
Slovakia	−1.2	−1.3	−1.1	−1.3	−1.4
Slovenia	−2.4	−2.9	−1.9	−2.6	−4.3
Spain	−6.1	−9.2	−5.3	−7.3	−9.2
All Countries	−1.0	−1.7	−0.6	−1.3	−0.9

Notes: The last column shows actual real consumption growth, 2008–2013.

The 'homogeneous-MPC' scenario is motivated by the first-generation literature estimating the wealth effects mostly in aggregate data (see, among many others, Case et al. (2005)). Overall, these estimates of the MPC range between 0 and 0.10; higher values are typically reported for the U.S. than for European countries. We assume MPC = 0.025, a value taken from Slacalek (2009), Table 5, who reports the estimate of 0.0265 for euro area countries after 1989.[25]

Subsequently, many studies, mostly using household-level or highly granular aggregate data, estimated a significant heterogeneity in spending responses, documenting that spending of households with little liquid wealth, with little income or with high leverage reacts particularly strongly to economic shocks.[26]

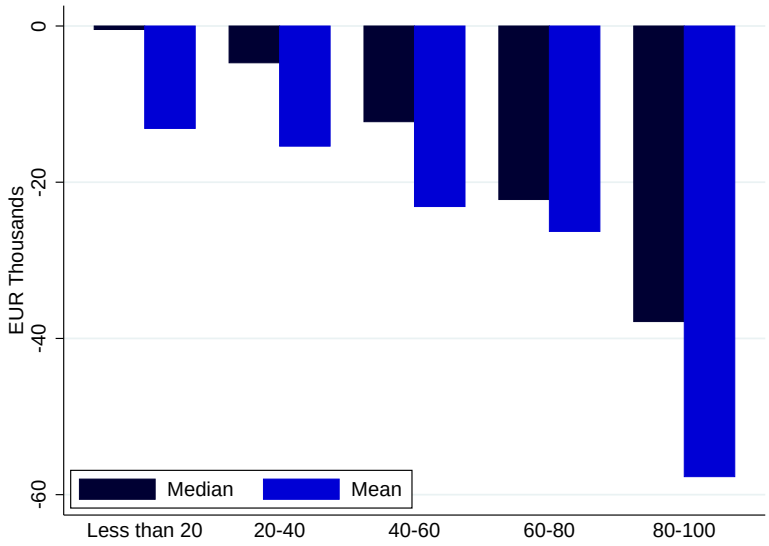
[25]For both scenarios we assumed the MPC is the same across countries.

[26]See Johnson et al. (2006), Agarwal et al. (2007), Blundell et al. (2008), Disney et al. (2010), Blundell et al. (2012), Broda and Parker (2012), Kreiner et al. (2012), Mian et al. (2013), Baker (2013), Jappelli and Pistaferri (forthcoming) and Kaplan et al. (forthcoming).

This heterogeneity can be obtained in a model with precautionary saving or credit constraints; see e.g., Kaplan and Violante (2011) and Carroll et al. (2014) for a recent summary of the literature.

The 'heterogeneous-MPC' scenario should be interpreted as a simple, reduced-form summary of

Figure 7: Change in Net Wealth by Income Quintile, 2008Q1–2013Q2 (in EUR Thousands)



Notes: Real values, deflated with HICP.

Source: The Household Finance and Consumption Survey and authors' calculations.

Our 'heterogeneous-MPC' scenario is based on the new influential estimates of Mian et al. (2013), who find that poorer and more levered households have a significantly higher MPC out of housing wealth. Specifically, we use heterogeneity (i.e., distribution) in the MPCs across the income distribution as estimated by Mian et al. (2013), Figure V, but we normalize the MPCs so that the average MPC for all households equals that of the 'homogeneous-MPC' scenario, 0.025:[27]

$$\{\text{MPC}_{\text{ Income Quintile } i} \,|\, i = 1, \ldots, 5\} = \{0.04, 0.035, 0.025, 0.015, 0.01\}.$$

Table 6 shows country-by-country estimates of the (cumulative) effect of recent wealth changes on aggregate spending (as a proportion of aggregate consumption) under four specifications: median/mean wealth changes for the 'homogeneous-MPC' and 'heterogeneous-MPC' scenarios.

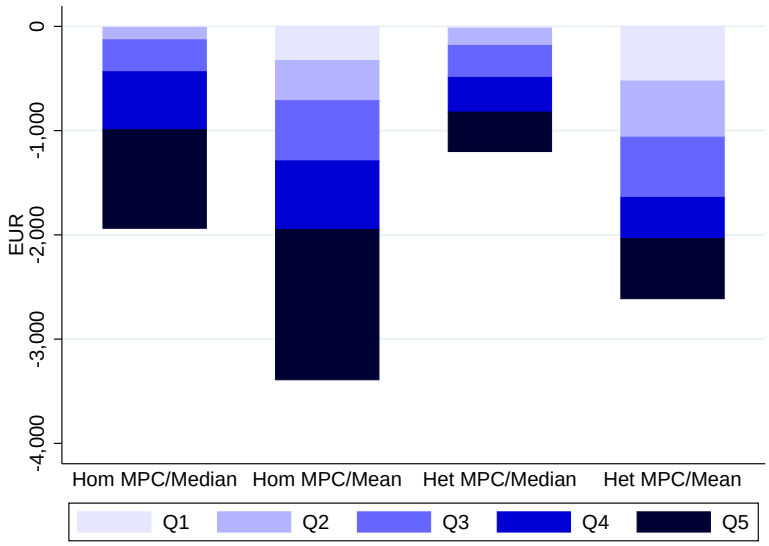
We obtain the results as follows. For each income quintile within each country we calculate its median/mean wealth level in 2008Q1 and 2013Q2. We then evaluate the effect of changes in wealth on household consumption under the assumed value of the MPC. Finally, we aggregate the effects using the total number of households in each country and express as a proportion of aggregate consumption.

The table reports that the substantial adverse shocks to asset prices (Figure 2), which translated into changes in household wealth, caused a substantial drag on

an empirical regularity. A fully specified structural life-cycle model might imply that the MPCs vary along a number of other demographic and economic characteristics of households.

[27] See also Mian and Sufi (2014).

Figure 8: Change in Euro Area Consumption per Household by Scenario and Income Quintile, 2008Q1–2013Q2 (in EUR)



Notes: Real values, deflated with HICP.

Source: Authors' calculations.

spending in several countries. We estimate that aggregate consumption in Cyprus, Greece, Malta, and Spain would have been at least 3 percent higher (depending on the specification) if these countries had experienced flat asset prices (in real terms). The last column with actual consumption growth suggests that the adverse dynamics in household wealth have in these countries substantially contributed to the weakness of consumer spending since 2008.[28]

The following relationship holds between the growth rate of consumption and the MPC:

$$\frac{\Delta C}{C} = \text{MPC} \times \frac{W}{C} \times \frac{\Delta W}{W}.$$

Because we assume the MPCs are the same for all countries, the wealth effect on aggregate consumption growth, $\Delta C/C$, is affected by differences in *levels* of wealth W across countries. This means that while, e.g., Cypriot households experienced a substantially smaller percentage decline in net wealth than Greek or Spanish (see Table 2), the effect of these shocks on their aggregate consumption was comparable because they tend to own substantially more wealth (see Figure 22 in the Appendix).[29]

As we have seen in Table 2, households across the income distribution faced sim-

[28] Note that the last column only reports the actual consumption growth (which can be negative, zero or positive); our estimates in the rest of the table *should not* be interpreted as a decomposition of the actual consumption growth into various factors that affected it.

[29] Consumption per household (in aggregate statistics) is roughly the same in Greece and Cyprus (and somewhat lower in Spain).

ilar declines in net wealth in percentage terms.[30] Given a strong positive correlation between income and wealth, this fact implies that high earners experienced considerably larger wealth losses in euros, as documented in Figure 7 for the euro area. If consumption of these richer households responds less strongly to shocks, as in the 'heterogeneous-MPC' scenario, the implied effect on aggregate consumption is somewhat lower than in the 'homogeneous-MPC' scenario (compare columns 1 and 2 to columns 3 and 4, respectively).

Using the four specifications of the MPC scenarios of Table 6, Figure 8 decomposes the consumption decline in the euro area into the contribution by each income quintile. As we have seen in Table 6 and Figure 7, the effects on consumption are stronger for the specifications with the mean wealth—because the mean wealth fell more than the median—and for the 'homogeneous-MPC' scenario, because higher earners experienced larger losses. Decomposing across income, it is striking that the decrease in consumption is for both 'heterogeneous-MPC' specifications quite evenly distributed across income quintiles, so that even poor households substantially contributed to the fall in aggregate consumption (despite their vastly lower incomes and wealth).

4 Extrapolating the Debt Distribution

This section extends the framework of section 3 and develops a simple procedure to approximate the distribution of household debt and its evolution. While this simulation cannot adequately substitute a fully fledged model or a new wave of the HFCS, it is a useful device to approximate some layers of heterogeneity in the dynamics of debt.

4.1 The Procedure

In contrast with the rest of the paper where we assume debt to be constant (in real terms), in this section we adjust households' debt holdings using the logic of a life-cycle behavior. We distinguish between two types of debt: mortgage and non-mortgage. While to buy real estate most households borrow early in their lives (see Figure 9a), the life-cycle profile of non-mortgage debt is more even (see Figure 9b).[31]

We approximate life-cycle profiles of debt holdings by collapsing the data into cells of households defined using four criteria: age, income, wealth, and geographical location. We then use these cells to compute changes over time and between two adjacent periods, which would not be possible if we relied only on the individual households data.

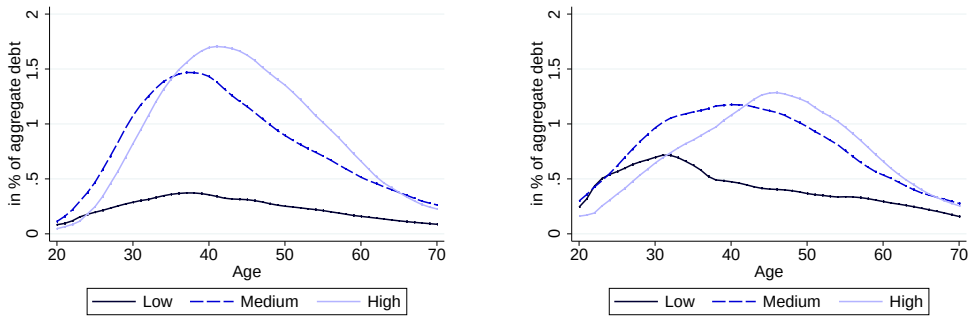
We split countries into two groups: Continental (Austria, Belgium, Finland, Luxembourg, the Netherlands and Slovakia) and Mediterranean (Cyprus, Greece, Portugal, Malta, and Slovenia), and keep Germany, France, Spain, and Italy as individual countries. We divide households into three income and wealth groups: (i) low: the first and second quintiles, (ii) medium: the third and fourth quintiles, and (iii) high: the fifth quintile.[32]

[30] High income earners also recorded a higher percentage decline in financial assets (see section 3.1).

[31] Some households also might take out mortgages later in life (e.g., as investment) but a glance at the cross-sectional distribution of debt reveals that this is of secondary importance.

[32] This split represents a compromise between preserving heterogeneity of borrowing behavior and

Figure 9: The Cross-Sectional Distribution of Debt



(a) Mortgage Debt (b) Non-Mortgage Debt

Notes: "Low" stands for income quintiles 1 and 2, "Medium" for income quintiles 3 and 4, and "High" for the 5th quintile. The profiles were smoothed using the local polynomial smoothing.

Turning to the life-cycle behavior, we construct a four-dimensional distribution of debt, interest payments and debt repayments. Debt of households of age j at time t, $d_{t,j}$, evolves as:

$$d_{t+1,j+1} = d_{t,j}(1 + r_{t,j}) - rep_{t,j} + d^N_{t,j},$$

where r denotes the interest rate, rep (annual) repayments and d^N new borrowing by household with positive debt at age j. Denoting $N_{t,j}$ the number of households of age j in period t, we write debt aggregates as

$$N_{t+1,j+1}d_{t+1,j+1} \quad = \quad N_{t,j}\big(\, d_{t,j}(1 + r_{t,j}) - rep_{t,j} + d^N_{t,j}\big) + N^{d=0}_{t,j} d^{N,d=0}_{t,j},$$

where the superscript $d = 0$ indicates the number of new borrowers (i.e., households which did not have debt in period t). We substitute out $N^{d=0}_{t,j}$ as this is the difference between the number of households with debt in $t + 1$ and t. Consequently, the observed level of debt in $t + 1$, $N_{t+1,j+1}d_{t+1,j+1}$, consists of repayments and interest payments of indebted households in t, and the new borrowing:[33]

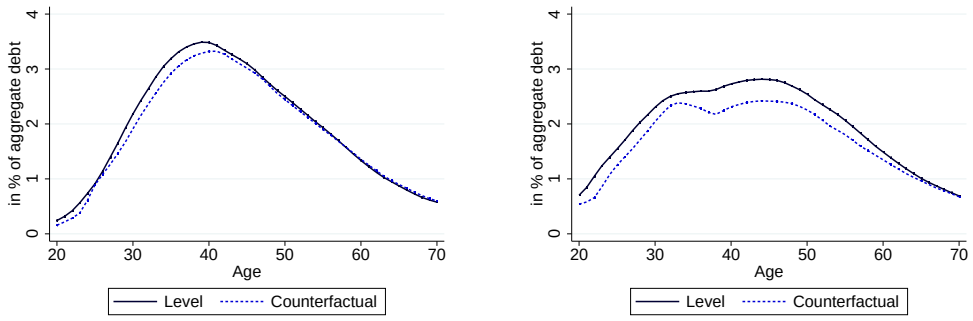
$$N_{t+1,j+1}d_{t+1,j+1} \quad = \quad \underbrace{N_{t,j}\big(d_{t,j}(1 + r_{t,j}) - rep_{t,j}\big)}_{\text{Repayments of households in } t} + \underbrace{\big(N_{t,j}d^N_{t,j} + N^{d=0}_{t,j} d^{N,d=0}_{t,j}\big)}_{\text{New borrowing}}.$$

In Figure 10 we construct the observed and counterfactual levels of debt using the HFCS aggregates. The black lines show total aggregate debt by age, $N_{t,j}d_{t,j}$, while the dashed blue lines indicate the counterfactual debt level which would prevail if households only paid back debt according to their predetermined repayment schedule. The two statistics differ early in life but largely coincide afterwards. This result confirms that new borrowing by the young contributes to the rising part of the hump in the cross-sectional distribution, while older households drive most of the decrease in debt (as they contribute only little to the total new borrowing).

tractability given by data limitations.

[33] We do not distinguish between debt changes along the extensive and intensive margins.

Figure 10: The Observed and the Counterfactual Distribution of Debt



(a) Mortgage Debt

(b) Non-Mortgage Debt

To better highlight the difference between the observed and counterfactual distribution of debt we plot this area in Figures 11 and 12 for mortgage and non-mortgage debt, respectively. The figures are constructed by dividing the new borrowing of each cell with the total new borrowing in that country in the reference year.[34]

To control for the time effect induced by inflation, we adjust new mortgage borrowing with an age-specific deflator constructed using the following two-step procedure.[35] First, guided by the data, we assume that most of the borrowing happens between the age of 30 and 40. Then, for each household we compute the average inflation rate for the years when a person was in that age bracket. For households younger than 30 today, we use the current inflation.[36] This strategy thus controls for the effect of higher prices on borrowing by younger cohorts by giving more weight to old households in the distribution of new debt.

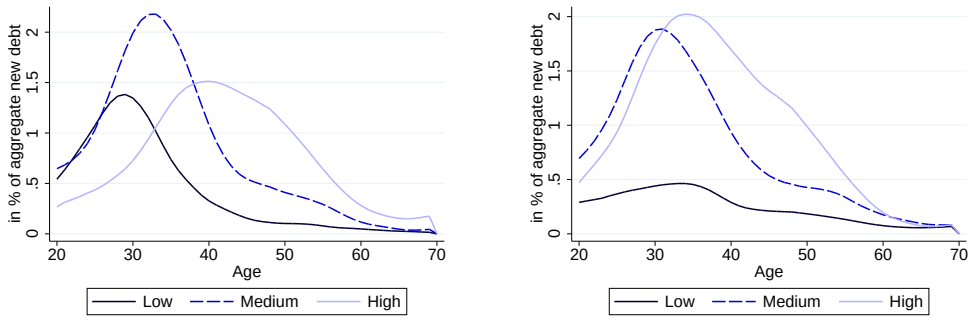
New borrowing for mortgages (Figure 11) increases initially and peaks in mid–late thirties, driven in part by the hump-shaped evolution of income over the life cycle. The peak for medium- and high-income households is considerably later than for the low-income borrowers. Households above sixty account only for a small share, except if they belong to the wealthiest group. Note that high-income and wealthy households borrow a considerable share of the aggregate and, being a smaller group, borrow substantially more *per household*. Further, for each income group, wealthy households borrow also at relatively high ages, probably reflecting investment motives. Finally, non-mortgage borrowing (Figure 12) is more evenly distributed. For

[34]The charts show unweighted averages for the euro area using the country groups for calibration. In the computations we use the country-specific numbers and aggregate using corresponding weights.

[35]We do not make any adjustment to borrowing for consumption purposes (i.e., non-mortgage debt) given its maturity shorter than five years.

[36]We also adjust the deflator for households older than 48 years (denoted $\widehat{defl}$): $\widehat{defl}_t = (13 - j)/13 \times defl_t + j/13 \times defl_{t-13}$ for $j > 13$, and $\widehat{defl}_t = defl_{t-13}$ otherwise. We do this because otherwise borrowing by, e.g., 60 year-old households would imply discounting debt over a period of 25 years. However, the average repayment period implied by the HFCS data is 13 years, and applying the "standard" procedure would artificially lengthen the maturity of loans. Our adjustment implies a smooth transition from the standard procedure and an index value lagged by 13 years. For instance, borrowing by a 70-year-old household is now discounted by the price level 13 years ago instead of 35 years.

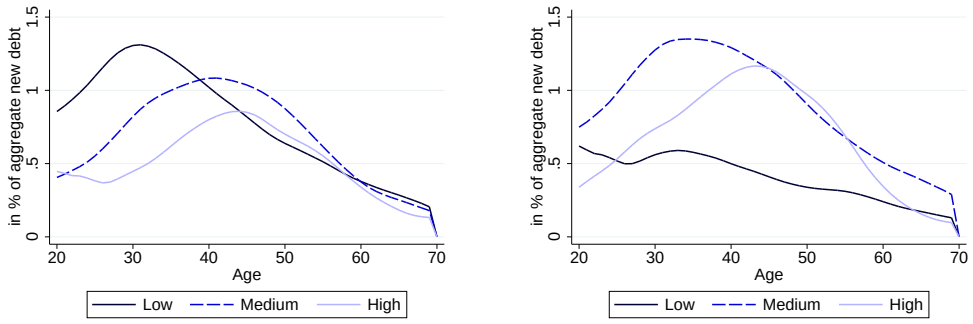
Figure 11: The Distribution of New Debt: Mortgage Debt



(a) By Wealth (b) By Income

Notes: "'Low" stands for income/wealth quintiles 1 and 2, "Medium" for income/wealth quintiles 3 and 4, and "High" for the 5th quintile.

Figure 12: The Distribution of New Debt: Non-Mortgage Debt



(a) By Wealth (b) By Income

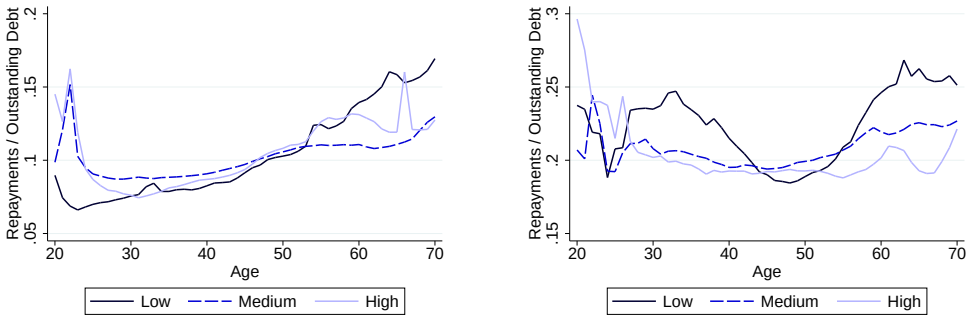
Notes: "'Low" stands for income/wealth quintiles 1 and 2, "Medium" for income/wealth quintiles 3 and 4, and "High" for the 5th quintile.

low-income consumers, it is concentrated among the young as they borrow to finance consumption, and peaks at a low age, around 30.

Next, we construct the life-cycle profile of the repayment–debt ratio (also by category, shown in Figure 13) by dividing the total repayments with the total outstanding amount of debt over age. The repayment ratio is upward sloping as younger households tend to be less cash-rich and repay a lower share of their debt. On the other hand, older households have higher income and hence more resources for additional payments.[37]

[37]The mean repayment ratio is somewhat distorted by a few young households with imprecisely measured repayments and low levels of debt. However, these households make up only a small share of total new borrowing.

Figure 13: Repayment Ratios



(a) Mortgage Debt (b) Non-Mortgage Debt

Notes: "Low" stands for income/wealth quintiles 1 and 2, "Medium" for income/wealth quintiles 3 and 4, and "High" for the 5th quintile.

4.2 Construction of Aggregate New Debt

We now describe how we combine micro and macro data to construct the aggregate amount of debt which will be distributed each period according to the distribution discussed in the last section.

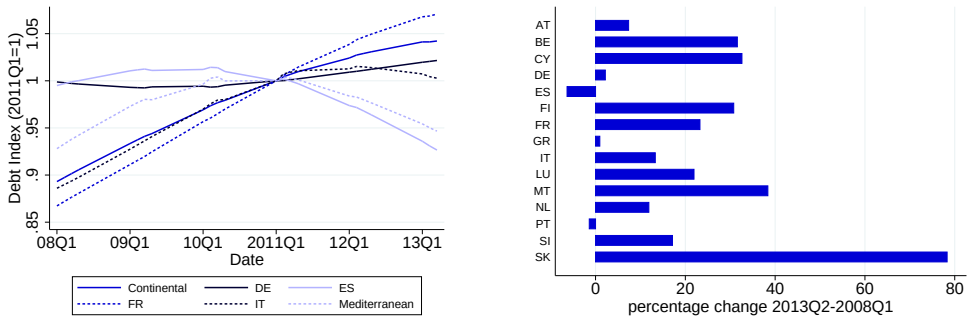
First, using the current distribution of debt, the prevailing levels of interest rates and the sum of repayments, we compute for each period the counterfactual amount of debt for the entire economy. The repayment ratios are held constant but interest rates are updated every period with country-specific values. For mortgage loans we use the interest rate on the total volume on outstanding loans and hence capture country specific patterns of borrowing (i.e., fixation period and maturity of loans). For (short-term) non-mortgage debt we use the volume-weighted interest rate for non-collateralized consumer loans. This procedure works well for countries with a high share of flexible rate loans (for housing, e.g., Spain) but is not ideal for countries with interest rate fixation (e.g., Germany). Applying the repayments and the interest payments on the outstanding stock of last period gives us the aggregate debt levels if no household took out new debt.

Second, we use data from the Quarterly Euro Area Accounts (EAA) to compute an index of outstanding aggregate debt by cumulating flows over time (starting in the reference year, when the data were collected).[38, 39] The difference between the *aggregate* debt level computed from the EAA and the debt level implied by mechanical "forwarding" of the previous period's cross-sectional distribution is the sum of new debt required to make the micro- and macro developments mutually consistent. Consequently, if aggregate debt in a country is increasing but the micro data imply that total debt should fall, the difference between these two values must have been

[38]Euro area accounts are available at: `http://www.ecb.europa.eu/stats/acc/html/index.en.html`.

[39]We do this instead of modelling debt levels (including potential write-downs) as this number from the macroeconomic aggregates corresponds to our procedure on the household level. At the same time, this means that our aggregate debt levels are higher than the aggregate outstanding volumes. We plan to correct for this in the future by including also information about write-downs.

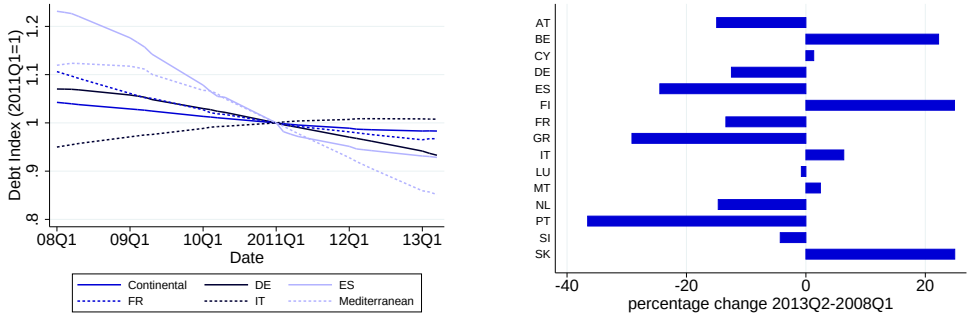
Figure 14: Aggregate Debt Indexes for Mortgage Debt



(a) By Country Groups

(b) By Individual Country

Figure 15: Aggregate Debt Indexes for Non-Mortgage Debt



(a) By Country Groups

(b) By Individual Country

borrowed by some households. These households are pinned down by the distribution of new debt as computed in the previous section.

Loan developments for mortgage debt are heterogeneous across countries (Figure 14).[40] While cumulated loan flows over the whole horizon are positive for most countries, stressed countries experienced a slowdown in growth rates or even net redemptions more recently. Non-mortgage debt varies even more across countries. In some non-stressed countries loans fell since 2008, implying a sizable reduction in debt levels. Among non-stressed countries Slovakia, Belgium, and Finland experience high growth rates, while other countries' debt levels declined by around 10 percent (Figure 15).

Note that our approach has a built-in mechanism to deal with negative flows without the need to model write-downs. For instance, modest new borrowing by young households might be outweighed by redemptions from older households. Similarly, zero net flows are compatible with some new, small borrowing by younger households

[40]The EAA data are not seasonally adjusted; we do an ad-hoc correction by a locally weighted regression.

and deleveraging by old households.

This approach is not without caveats. First, it is purely mechanical and cannot substitute for a heterogeneous-agent model with micro-founded household specific behavioral responses (also taking households' intertemporal budget constraint into account). Second, it does not take into account changes in lending practices with a tightening of lending standards (and a corresponding lowering of volumes) for specific subgroups, e.g., young households. In the current economic circumstances, we would then attribute too much new debt to young households and overestimate the deleveraging of older households.[41] Third, the estimate of the life-cycle profile is prone to the well–known problem to separate time, cohort, and life-cycle effects. While a clean separation is not possible without additional assumptions, the estimates are even less reliable with only one cross-section. In particular, we might overestimate the weight of young households in the distribution of the new debt, as in the run-up to the crisis, aggregate debt levels were rising. We would then attribute the time trend of rising indebtedness to higher new borrowing by young households.[42]

4.3 Results

In this section we discuss our main findings for selected countries to highlight the most important features of our results.[43] We compare the simulated cross-sectional debt distribution for 2008Q1 (black line), to the original country-specific distribution (dark blue, see Table 7) and to the simulated current debt distribution (2013Q2, light blue). Note that while the computation is done for each wealth and income group separately (and then aggregated), we only use the life-cycle dynamics to generate new debt distributions.

Our procedure consists of two steps. First, we estimate country-/country-group-specific life-cycle profiles of new debt and repayment behavior by age, wealth and income. Second, we apply these profiles to the country-specific profiles of initial debt and interest rate developments to update the cross-sectional debt distribution.

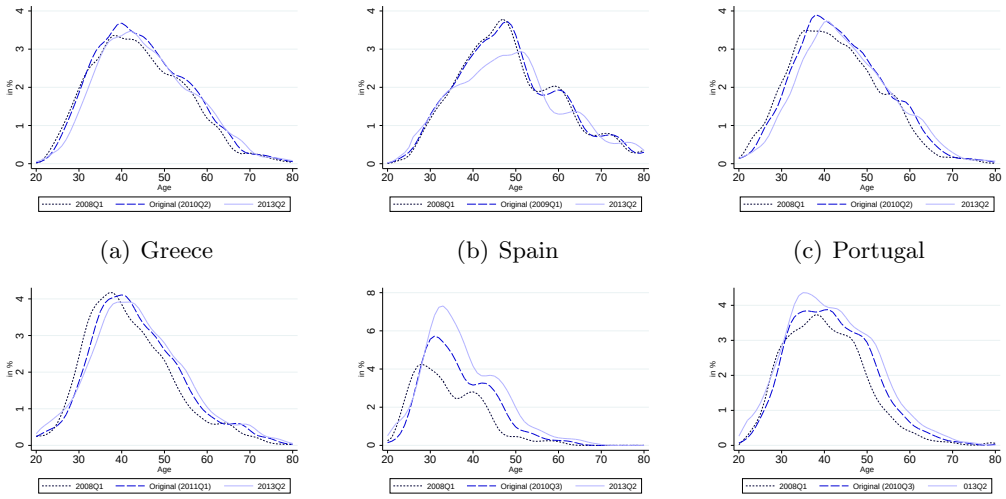
Figures 16 and 17 summarize our main results. In stressed countries, the reduction in mortgage debt is mainly due to redemptions of middle-aged and older households. In addition, lower borrowing by younger households considerably decreased the debt burden. This squares well with the fact that unemployment (especially in the crisis countries) among the young is much higher than the average. Importantly, the debt level of highly indebted households in their peak borrowing years has not fallen much in Greece and Portugal. This is partly due to a lower drop in interest rates compared to Spain (see Figure 6) and a low share of adjustable-rate mortgages in Greece (see Figure 21). In addition, while older households are mechanically paying down their debt, the new debt flows to young households are historically low.

[41] Such additional information can be either collected by direct surveys (e.g., the Household Debt and Credit Report of the New York Fed for the U.S.) or must be proxied by data from sources like the ECB's Bank Lending Survey.

[42] We plan to correct for this by using aggregate debt time series to control for these time effects and at least partially reduce the bias.

[43] We choose Austria, Belgium and Slovakia as examples of non-stressed countries. This choice is motivated by the fact that Austria shows a relatively modest debt growth, while Slovakia and Belgium experienced the highest growth in debt. For stressed countries, Greece, Spain and Portugal show the smallest cumulated debt flows. Hence, we show results for three different scenarios of debt dynamics.

Figure 16: Cross-Sectional Distribution of Mortgage Debt (Selected Countries)

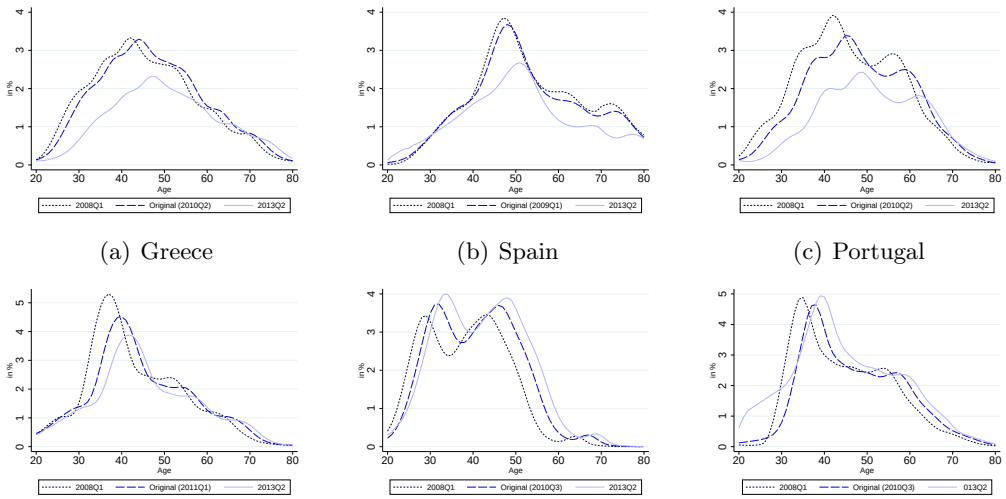


(a) Greece (b) Spain (c) Portugal

(d) Austria (e) Slovakia (f) Belgium

Notes: The vertical is defined as a percentage of the initial aggregate debt.

Figure 17: Cross-Sectional Distribution of Non-Mortgage Debt (Selected Countries)



(a) Greece (b) Spain (c) Portugal

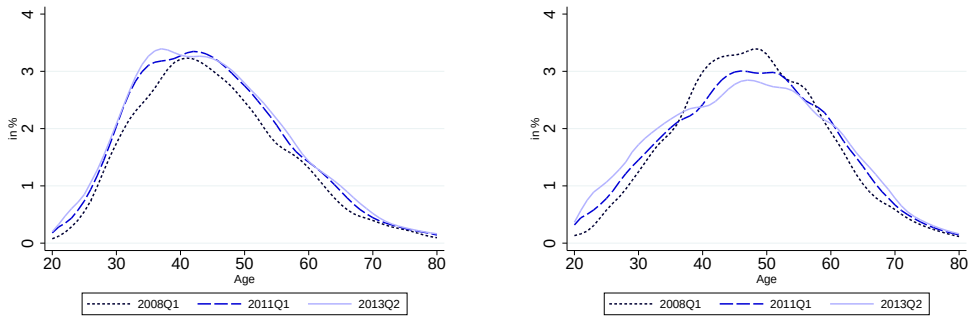
(d) Austria (e) Slovakia (f) Belgium

Notes: The vertical is defined as a percentage of the initial aggregate debt.

Second, the cross-sectional debt distribution has been stable in countries with small debt flows, e.g., Austria. A high share of adjustable mortgage loans combined with a drop in interest rates led to a decline of debt in the peak borrowing years (late 30s).

Last, for countries with higher growth rates of mortgage loans, e.g., Slovakia and Belgium, debt likely increased for younger and older households. This result reflects the mechanical allocation of new debt and hence the absence of a separate cohort

Figure 18: Cross-Sectional Distribution of Mortgage and Non-Mortgage Debt



(a) Mortgage Debt (b) Non-Mortgage Debt

Notes: Reference year for HFCS aggregate is 2011Q1. The vertical is defined as a percentage of the initial aggregate debt.

effect whereby, e.g., young households would scale up their borrowing more than old ones. In Slovakia, debt increased by more than 80 percent since 2008 with initial debt levels being relatively low and skewed towards young households. The high growth rates led to an increase in debt levels for middle-aged and old people pushing the cross-sectional debt distribution more towards the European "norm". In Belgium, where the initial distribution was peaking around forty-five years, the peak has not shifted much, but became more pronounced. Similarly to Slovakia, the large amount of new debt implies that, in addition to younger households, also households around fifty-five increased their debt holdings.

Our estimates of the distribution of new and initial debt for *non-mortgage* debt are probably less precise, reflecting a smaller sample size. In Portugal and Greece debt declined strongly, with the majority concentrated on households with the highest debt levels. While the repayment ratios are held constant, the decline is driven by lower interest rates (increasing effective repayments) and smaller volumes of new borrowing leading to net redemptions. In addition, the outstanding amounts of non-mortgage debt are much smaller and households find it easier to cut back borrowing for consumption relative to borrowing for housing. In Spain, net redemptions are relatively low compared to Greece and Portugal, which leads to a smaller decline in debt. For Belgium and Slovakia, the argument from mortgage debt still holds: as the total increase in borrowing is sizeable, an increase over the entire age-range is plausible. For Austria, debt fell by about 15 percent, mostly due to the indebted households in the mid-30s.

Looking at the euro area aggregate, the cross-sectional distribution of mortgage debt has changed little since 2011Q1 (see Figure 18), as net flows were small on the euro area level. Going back to the counterfactual distribution in 2008Q1 reveals that borrowing by young households changed relatively little but that households in their "prime borrowing age" accumulated more debt. In contrast, outflows from non-mortgage debt were more sizeable, which resulted in less borrowing by households around age of forty. Older households were primarily affected by a carry-over effect from the past rather than by higher new borrowing as such.

5 Conclusions

This paper documents that individual euro area households have recently experienced substantial shocks to their portfolios, income and debt service. Much of the heterogeneity turns out to be due to variation in developments at the country level. However, important differences among households exist even within countries because holdings of various types of assets and liabilities, and exposure to unemployment risk vary substantially across economic and socio-demographic characteristics.

We back out the implications of the wealth changes for aggregate consumption since the Great Recession. We find that the unprecedented declines in asset prices have substantially contributed to the weakness of consumption spending in several countries and at the euro-area level. These spending dynamics were driven by both rich and poor households: while the former were hit by larger shocks to wealth, the latter also substantially cut their spending because of their high MPCs.

More generally, our findings illustrate that household-level data can provide important additional insights to the information from aggregate data. Compared to a rather limited variation in macro data, heterogeneity across households in many aspects of their economic behavior is substantial and highly pervasive. Household-level data make it possible to document such heterogeneity by focusing on specific categories of households. In addition, both theory and the available evidence suggest that individual households, depending on their characteristics, respond differently to shocks. These differential responses are interesting *per se* and can have sizable aggregate implications.

Our work can be extended by introducing more structural and behavioural elements using a life-cycle framework along several dimensions: consumption–saving choice under uncertainty, portfolio choice, borrowing for housing and durable consumption goods, saving for retirement, and more detailed modeling of income and social benefits (see e.g., Rehder Harris et al. (2005) and Smith et al. (2010)).

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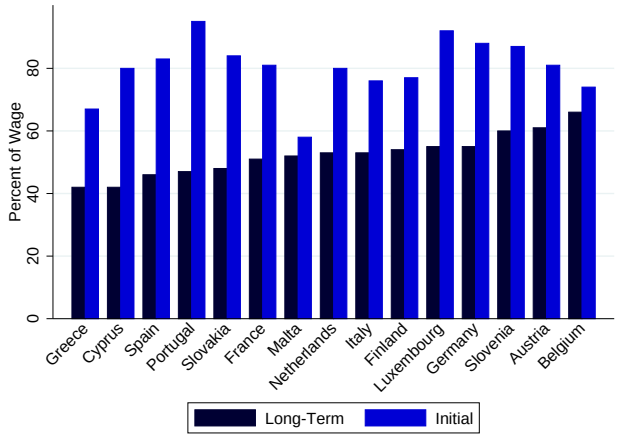
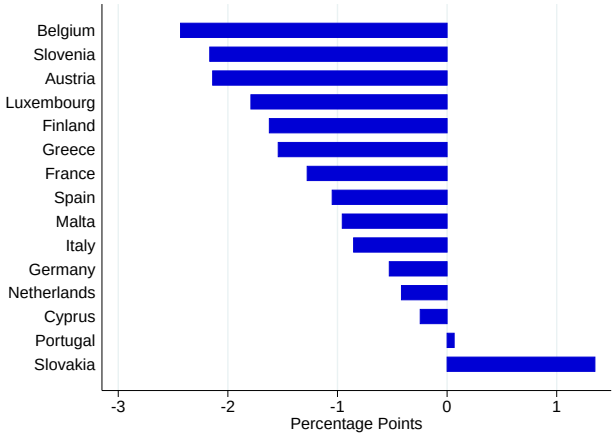
Appendix

Figure 19: Replacement Rates, 2010



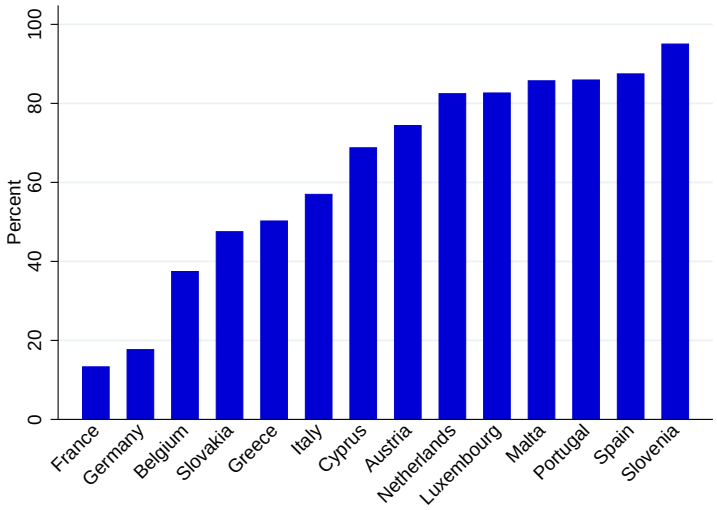
Notes: Replacement rates for a family with two married earners and two children, earning 100 percent of average wage, 2010 (Cyprus 2007).

Figure 20: Change in Interest Rates for Consumption Loans, 2008Q1–2013Q2



Notes: Nominal interest rates on loans for consumption.

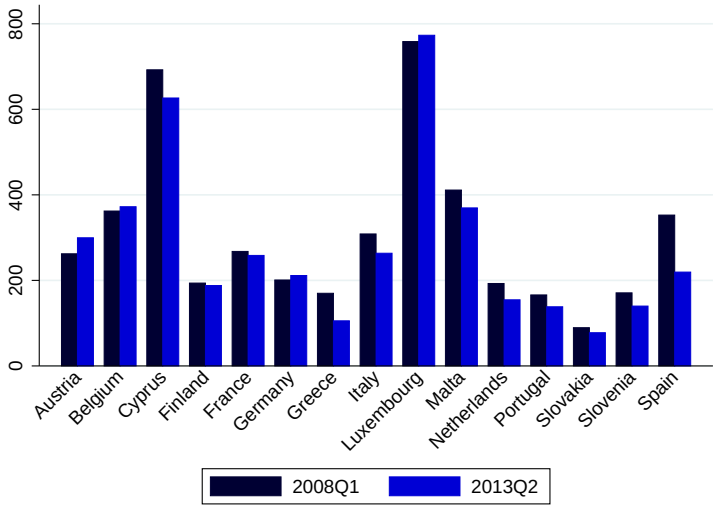
Figure 21: Share of Adjustable-Rate Mortgages (in Percent)



Notes: Share of adjustable-rate loans in total value of HMR mortgages by country. Data for Finland are not available.

Source: Household Finance and Consumption Survey.

Figure 22: Mean Net Wealth, 2008Q1 and 2013Q2 (2013 EUR Thousands)



Source: Household Finance and Consumption Survey.

Table 7: Reference Years for the HFCS

	Fieldwork	**Assets & Liabilities**	**Income**
Austria	09/10–05/11	Time of interview	2009
Belgium	04/10–10/10	Time of interview	2009
Cyprus	04/10–01/11	Time of interview	2009
Finland	01/10–05/10	31/12/09	2009
France	10/09–02/10	Time of interview	2009
Germany	09/10–07/11	Time of interview	2009
Greece	06/09–09/09	Time of interview	Last 12 months
Italy	01/11–08/11	31/12/10	2010
Luxembourg	09/10–04/11	Time of interview	2009
Malta	10/10–02/11	Time of interview	Last 12 months
Netherlands	04/10–12/10	31/12/09	2009
Portugal	04/10–07/10	Time of interview	2009
Slovakia	09/10–10/10	Time of interview	Last 12 months
Slovenia	10/10–12/10	Time of interview	2009
Spain	11/08–07/09	Time of interview	2007

Reproduced from Eurosystem Household Finance and Consumption Network (2013b), Table 9.1.

Table 8: Main Characteristics of Loans for House Purchase

	Prevailing type of interest rate	Percentage share of variable rate loans in total new loans	Index for adjusting variable interest rate
Austria	Variable	61	3-month EURIBOR
Belgium	Fixed (over 10 years)	10	Treasury bills (12 months) bonds (1–10 years)
Cyprus	Variable	N.A.	3-month EURIBOR
Finland	Variable	96	12-month EURIBOR, prime rate
France	Fixed (over 10 years)	15	12-month EURIBOR
Germany	Fixed (over 5 and up to 10 years)	15	long-term market rates
Greece	Variable[1]	28	ECB main refinancing rate 3-month EURIBOR
Italy	Variable	47	3-month EURIBOR
Luxembourg	Variable	90	ECB main refinancing rate
Malta	Variable	85[2]	ECB main refinancing rate
Netherlands	Fixed (over 5 and up to 10 years)	18	long-term market rates
Portugal	Variable	99	6-month EURIBOR
Slovenia	Variable	80	6-month EURIBOR
Spain	Variable	91	12-month EURIBOR

[1] Variable interest rates have prevailed in recent years up to 2006. In 2007, however, the interest rate fixation period of over one year and up to five years was dominant in the new business volumes.
[2] Refers to January 2008.

Reproduced from European Central Bank (2009), p. 27.

Table 9: Household Net Wealth, 2013Q2 (in EUR Thousands)

	Net Wealth		Real Assets		Financial Assets	
	Median	Mean	Median	Mean	Median	Mean
All Households	104.3	229.6	111.4	211.1	11.2	47.0
Household size						
1	40.7	137.3	16.1	114.4	7.2	35.4
2	142.0	282.4	141.8	246.5	16.5	61.6
3	118.5	237.0	142.3	232.0	11.5	42.9
4	160.4	274.3	186.3	277.0	13.3	46.3
5 and More	113.6	312.3	168.8	324.7	9.4	42.5
Housing status						
Owner-Outright	234.5	388.7	204.7	334.5	17.6	65.4
Owner-with Mortgage	157.3	259.2	219.9	319.3	18.0	49.0
Renter or Other	9.9	52.8	3.1	32.5	5.3	27.2
Percentile of Income						
Less than 20	25.1	82.7	15.5	77.0	2.0	12.7
20-39	52.5	122.9	51.5	115.4	5.2	18.6
40-59	101.0	167.8	106.3	156.1	11.0	32.0
60-79	152.4	224.8	167.5	214.4	19.4	46.3
80-100	294.5	549.8	283.5	492.5	53.4	125.3
Percentile of Net Wealth						
Less than 20	1.1	−5.1	0.6	15.3	1.1	3.4
20-39	26.5	28.3	11.7	31.9	9.5	14.3
40-59	104.4	105.5	102.9	109.9	11.1	26.2
60-79	224.4	228.1	211.0	216.5	21.1	39.3
80-100	505.1	791.4	442.4	682.0	67.8	151.8
Age of Reference Person						
16-34	16.0	67.3	8.6	86.0	5.3	17.7
35-44	86.9	189.1	112.2	200.9	10.6	36.2
45-54	138.9	264.9	150.0	251.6	14.0	50.3
55-64	181.0	345.7	165.9	300.2	18.4	68.6
65-74	155.9	283.1	138.8	237.5	13.4	57.1
75+	123.0	221.5	95.7	170.1	11.2	53.8
Education of Reference Person						
Primary or No Education	86.7	156.8	86.5	145.0	5.1	24.8
Secondary	86.1	209.1	95.6	195.8	11.2	39.9
Tertiary	169.5	365.5	188.4	328.6	30.8	90.0
Country						
Belgium	225.8	372.2	220.6	286.4	28.7	118.0
Germany	55.5	211.4	23.3	188.3	18.2	51.3
Greece	73.3	105.5	78.6	109.4	1.4	9.0
Spain	126.2	219.4	138.3	219.0	6.7	36.4
France	129.1	258.4	135.8	229.2	12.1	55.7
Italy	166.6	263.5	162.5	247.3	8.5	28.8
Cyprus	225.6	626.5	266.4	646.2	15.8	56.2
Luxembourg	440.0	773.2	492.1	775.2	28.5	85.2
Malta	223.0	369.5	193.5	327.7	27.4	54.6
Netherlands	94.2	154.6	153.7	162.4	38.9	81.4
Austria	86.8	299.7	60.6	270.1	13.7	47.2
Portugal	71.5	138.3	79.7	135.8	4.0	21.2
Slovenia	92.2	139.9	94.5	137.2	1.4	8.4
Slovakia	59.5	77.7	57.3	73.4	2.4	7.9
Finland	102.1	187.9	134.4	196.6	8.1	31.4

Source: The Eurosystem Household Finance and Consumption Survey and authors' calculations. All calculations use population weights. Real values of 2013Q2, deflated with country HICPs. Net wealth is defined as the sum of real and financial assets net of total debt.

Table 10: Household Income, 2013Q2 (in EUR Thousands)

	Mechanical Update		Unemployment Simulation	
	Median	Mean	Median	Mean
All Households	30.7	40.5	30.3	40.1
Household size				
1	18.9	24.7	18.8	24.6
2	33.7	44.0	33.5	43.8
3	38.6	47.4	37.4	46.7
4	43.8	54.1	42.9	53.2
5 and More	44.0	53.9	43.7	53.2
Housing status				
Owner-Outright	30.5	41.4	30.0	40.8
Owner-with Mortgage	46.5	56.5	46.0	56.0
Renter or Other	24.8	31.7	24.5	31.5
Percentile of Income				
Less than 20	10.7	9.9	10.5	9.8
20-39	20.3	20.4	19.9	20.0
40-59	30.7	30.9	30.3	30.4
60-79	45.4	45.8	44.8	45.2
80-100	77.5	95.3	76.9	94.8
Percentile of Net Wealth				
Less than 20	18.8	23.7	18.7	23.6
20-39	26.7	31.6	26.1	31.3
40-59	29.0	35.0	28.3	34.5
60-79	36.2	42.7	35.5	42.1
80-100	54.0	69.2	53.3	68.8
Age of Reference Person				
16-34	26.6	32.0	25.5	31.1
35-44	36.5	45.2	36.1	44.7
45-54	39.4	50.5	39.0	50.1
55-64	36.3	48.1	35.8	47.6
65-74	26.0	33.7	25.9	33.6
75+	19.5	26.0	19.5	26.0
Education of Reference Person				
Primary or No Education	20.8	26.4	20.2	25.6
Secondary	32.5	39.7	32.2	39.5
Tertiary	48.6	61.4	48.4	61.2
Country				
Belgium	36.9	54.3	36.9	54.3
Germany	35.4	47.3	36.0	47.8
Greece	21.9	27.4	19.8	24.6
Spain	27.2	34.4	25.5	32.9
France	31.2	39.2	31.1	39.0
Italy	27.4	35.4	26.4	34.1
Cyprus	33.0	44.9	30.6	42.1
Luxembourg	71.9	94.0	71.2	93.7
Malta	22.9	28.0	23.0	28.0
Netherlands	42.9	48.3	42.5	47.9
Austria	34.9	47.7	34.8	47.6
Portugal	15.2	21.3	14.8	20.8
Slovenia	19.2	23.5	18.0	23.0
Slovakia	12.2	14.8	12.2	14.8
Finland	39.9	49.5	40.3	49.8

Source: The Eurosystem Household Finance and Consumption Survey. All calculations use population weights. Real values of 2013Q2, deflated with country HICPs.

Table 11: Indicators of Financial Pressure, 2013Q2, Medians (in Percent)

	Mechanical Extension				Unemployment Simulation			
	Debt Serv–Income	Mortgage Debt Serv–Income	Debt–Assets	Debt–Income	Debt Serv–Income	Mortgage Debt Serv–Income	Debt–Assets	Debt–Income
All Households	12.6	14.6	23.4	61.6	13.0	14.7	23.4	62.6
Household size								
1	12.6	17.2	34.5	42.6	12.9	17.2	34.5	42.5
2	11.5	13.5	19.1	48.8	11.6	13.6	19.1	49.5
3	12.7	14.6	23.9	72.1	12.9	14.8	23.9	73.9
4	13.5	14.3	20.8	88.7	13.9	14.5	20.8	90.7
5 and More	14.4	15.1	26.8	79.2	14.7	15.2	26.8	81.1
Housing status								
Owner-Outright	10.3	11.4	4.2	27.8	10.6	11.5	4.2	28.8
Owner-with Mortgage	16.6	14.9	32.5	174.2	16.8	15.1	32.5	177.9
Renter or Other	7.4	12.8	40.8	16.2	7.4	13.1	40.8	16.1
Percentile of Income								
Less than 20	25.0	38.7	39.5	66.7	27.1	40.4	38.1	76.3
20-39	15.3	21.6	27.6	39.3	15.8	22.8	28.8	43.3
40-59	13.8	17.9	25.0	54.6	13.9	18.0	24.4	53.4
60-79	12.5	14.4	21.9	65.4	12.8	14.7	22.0	64.7
80-100	10.2	10.4	18.8	74.3	10.2	10.3	18.7	74.4
Percentile of Net Wealth								
Less than 20	10.8	20.8	114.8	28.1	10.9	21.8	114.8	28.2
20-39	12.4	17.8	31.5	32.5	12.8	18.5	31.5	32.4
40-59	15.7	15.3	29.9	116.5	16.1	15.7	29.9	117.9
60-79	12.4	12.7	13.1	75.1	12.6	12.7	13.1	77.4
80-100	11.5	11.7	7.4	73.1	11.6	11.8	7.4	74.1
Age of Reference Person								
16-34	14.1	18.5	49.5	63.3	14.4	19.1	49.5	67.0
35-44	14.8	15.7	31.6	96.9	15.0	15.9	31.6	99.0
45-54	11.9	12.5	18.5	66.0	12.1	12.6	18.5	67.1
55-64	10.6	11.8	11.8	39.3	10.8	11.9	11.8	39.5
65-74	10.9	12.6	8.8	37.0	11.0	12.6	8.8	37.3
75+	7.5	9.8	7.2	15.7	7.5	9.9	7.2	15.9
Education of Reference Person								
Primary or No Education	13.8	16.3	21.3	49.8	14.5	17.3	21.3	52.5
Secondary	11.7	14.1	24.0	46.5	11.8	14.2	24.0	46.5
Tertiary	13.4	13.9	23.7	103.7	13.5	13.9	23.7	105.0
Country								
Belgium	13.7	13.5	17.8	77.8	13.7	13.5	17.8	78.7
Germany	9.8	11.5	27.8	36.0	9.6	11.4	27.8	35.0
Greece	13.9	15.3	21.3	51.3	15.5	17.1	21.3	56.8
Spain	17.5	17.9	25.2	112.7	18.8	19.2	25.2	120.0
France	13.5	16.1	18.3	50.4	13.6	16.1	18.3	50.6
Italy	13.3	15.8	12.8	53.4	14.0	16.4	12.8	56.1
Cyprus	25.1	25.5	20.0	165.8	26.9	27.4	20.0	176.7
Luxembourg	14.8	14.4	17.9	83.3	14.9	14.4	17.9	83.4
Malta	10.8	11.9	6.4	51.5	10.7	11.9	6.4	51.3
Netherlands	11.5	11.1	46.6	201.3	11.7	11.3	46.6	202.7
Austria	5.0	4.1	15.9	34.7	5.0	4.1	15.9	34.9
Portugal	18.4	18.4	28.3	138.7	18.9	18.7	28.3	143.3
Slovenia	15.0	10.9	4.4	26.5	15.2	10.9	4.4	27.4
Slovakia	11.6	18.1	7.3	22.7	11.6	18.1	7.3	22.7
Finland	*M*	*M*	32.9	64.2	*M*	*M*	32.9	63.6

Notes: Source: The Household Finance and Consumption Survey and authors' calculations. All calculations use population weights. "M" denotes missing values. The debt service–income ratio is defined for indebted households, but excluding households that only hold credit lines/overdraft debt or credit card debt, as for these debt types no debt service information is collected. The mortgage debt service–income ratio is calculated for households that report having mortgage debt. The debt–assets ratio and debt–income ratio are calculated for all indebted households.