



EUROPEAN CENTRAL BANK

EUROSYSTEM

OCCASIONAL PAPER SERIES

NO 125 / APRIL 2011

**HOUSEHOLD SECTOR
BORROWING IN THE
EURO AREA**

**A MICRO DATA
PERSPECTIVE**

by Ramon Gomez-Salvador,
Adriana Lojschova and
Thomas Westermann



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NOTE: This Occasional Paper should not be reported as representing the views of the European Central Bank (ECB). The views expressed are those of the authors and do not necessarily reflect those of the ECB.

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² The views expressed in this paper do not necessarily reflect those of the European Central Bank.

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ABSTRACT

This paper uses micro data from the European Union Statistics on Income and Living Conditions (EU-SILC) to generate structural information for the euro area on the incidence of household indebtedness and the debt service burden. It breaks down incidence by characteristics such as income, age and employment status, all features that can be cross-referenced in the light of theories such as the life-cycle hypothesis. Overall, income appears to be the dominant feature determining the debt status of a household. The paper also examines the evolution of indebtedness and debt service burdens over time and compares the situation in the euro area with that in the United States. In general, the results suggest that the macroeconomic implications of indebtedness for monetary transmission and financial stability are not associated with the mean but with the tails of the distribution.

Jel code: C42, D12, D14, G21.

Keywords: household indebtedness, financial vulnerability, micro survey data, monetary transmission.

NON-TECHNICAL SUMMARY

The purpose of this paper is to generate and structure information on household indebtedness and show that “the distribution matters”. Macroeconomic implications of indebtedness may not be associated with the mean but with the median or the tail of the distribution. The paper uses micro data from the European Union Statistics on Income and Living Conditions (EU-SILC), which are available for all euro area countries and provide a relatively high degree of comparability. The dataset contains data on home ownership, incidence of mortgage and consumer debt, and – to some extent – the debt servicing burden, all of which are relevant to a study of household indebtedness and its various linkages.

A better understanding of the incidence of indebtedness and the characteristics of indebted households is an important step in exploring the consequences which the aggregate level of indebtedness and the shocks which affect that indebtedness have for the transmission of monetary policy and for financial stability. This is particularly so since aggregate euro area household debt has increased considerably in the last decade, and the nature of the worldwide financial crisis that started in 2007 may mean that households have few options through which to avoid or cushion shocks affecting their ability to service their debts.

The findings of this paper can be summarised along three main lines. First, as regards the incidence of indebtedness, the likelihood of holding mortgage debt increases with the level of income. This relationship is less clear for consumer debt, as would be expected given that the role of consumer debt may be to provide bridge financing when regular income is not available or sufficient. The likelihood of holding mortgage debt first increases and then decreases with age, while for consumer debt the incidence decreases with age. Such patterns are in line with the life cycle hypothesis, where consumption smoothing leads households to borrow at younger ages. It is also in line with precautionary

saving theories, whereby the precautionary saving motive weakens as borrowing constraints become more relaxed. This is especially true of young households, whereas older ones tend to use accumulated wealth to protect themselves from income uncertainty.

Second, as regards the vulnerability of households arising from debt servicing or housing costs, both interest payments and the estimated debt servicing ratio are higher the lower the level of income. This is in line with the results of other studies that show that low-income households have to make a higher effort than high-income households in servicing their debt. Furthermore, households whose housing costs or debt servicing are associated with late payments (arrears) are more likely to be found in the low-income and low level of education brackets, both for mortgage and consumer debt. Looking at the evolution over time, for the period from 2004 to 2007 the overall perception of whether housing costs and debt servicing are burdensome shifted slightly towards a more benign assessment. More generally, however, the perception of being burdened by housing costs seems to be relatively persistent since cohorts hardly changed their assessment over the period for which data are available.

Third, household balance sheet problems in the euro area can be benchmarked both with regard to international comparisons and with regard to their evolution over time. In this respect, it appears that the incidence of debt is much lower than for instance in the United States, in particular in the case of mortgage debt. This lower incidence applies to all income levels and all age groups considered. At the same time, the debt service ratio appears to be lower than in the US mainly for the lowest income groups. However, as there is considerable heterogeneity at the country level within the euro area, some euro area countries are more comparable to the US than others. Risks associated with household balance sheets increased between 2004 and 2007 in some specific groups. In particular, the debt-service-to-income ratio

increased mainly for relatively low-income households and those in which the head of household is very young, unemployed or a migrant, or has a low level of education. At the same time, the incidence of debt servicing problems, i.e. mortgage debt arrears, has mainly increased for households at the lowest income level and for those in which the head of household is above retirement age.

A full account of the impact that household indebtedness and debt servicing problems have on the responsiveness of spending in the context of the monetary transmission mechanism requires microeconomic data not only on liabilities but also on asset holdings and savings. Moreover, the impact at the micro level always depends on the particular macroeconomic situation, and is thus ideally tested in the context of micro-macro simulations. The information contained in the forthcoming Eurosystem Household Finance and Consumption Survey (HFCS) will considerably increase the scope of such more comprehensive research.

I INTRODUCTION

Preserving price stability in the medium term is the primary objective of the monetary policy of the European Central Bank (ECB). At the same time, the US sub-prime mortgage crisis and the ensuing worldwide financial crisis that started in 2007 have shown that macroeconomic stability and financial stability are intimately related. Monetary policy thus needs explicitly to take into account the relevant macro-financial links, particularly when there is financial turmoil/crisis. Issues related to the sustainability of household debt, the household sector's vulnerability and the possible implications for banks' loan losses are a case in point and should be properly understood so that policy-makers can design appropriate measures.

The transmission of monetary policy may be designed at the macro level, but it effectively takes place at the level of individuals. A better understanding of the degree of indebtedness of individuals and the characteristics of indebted households is thus an important step in exploring the consequences for macroeconomic and financial stability of the aggregate level of indebtedness and the shocks which affect that indebtedness. Only micro data can, for instance, reveal with any certainty whether there is a mismatch between debt on the one side, and income/assets on the other side.

A number of European central banks collect and/or use household micro data for policy purposes, with most of these data coming from interview-based surveys.¹ However, the comparability of the existing survey data in terms of coverage and definitions is often poor. This paper uses micro data from the European Union Statistics on Income and Living Conditions (EU-SILC), which are available for all euro area countries and provide a relatively high degree of comparability, to examine the incidence of indebtedness of the household sector in the euro area.

The purpose of the paper is to generate and structure information on household

indebtedness and show that “the distribution matters”. This information can then be used in model-based analysis and simulations, but it is not the purpose of this paper to conduct such further analysis. The paper is structured as follows. Section 2 explains why micro data should be looked at in the context of monetary policy, sets out the macro background on household sector indebtedness and discusses the scope and limits of macro data in addressing the relevant issues. Section 3 describes the EU-SILC database, while Section 4 examines the incidence of indebtedness for different household characteristics. Section 5 provides a summary and some tentative policy conclusions.

¹ For more details see Eurosystem Household Finance and Consumption Network (2009), *Survey data on household finance and consumption*.

2 WHY MICRO DATA ARE IMPORTANT FROM A MONETARY POLICY PERSPECTIVE

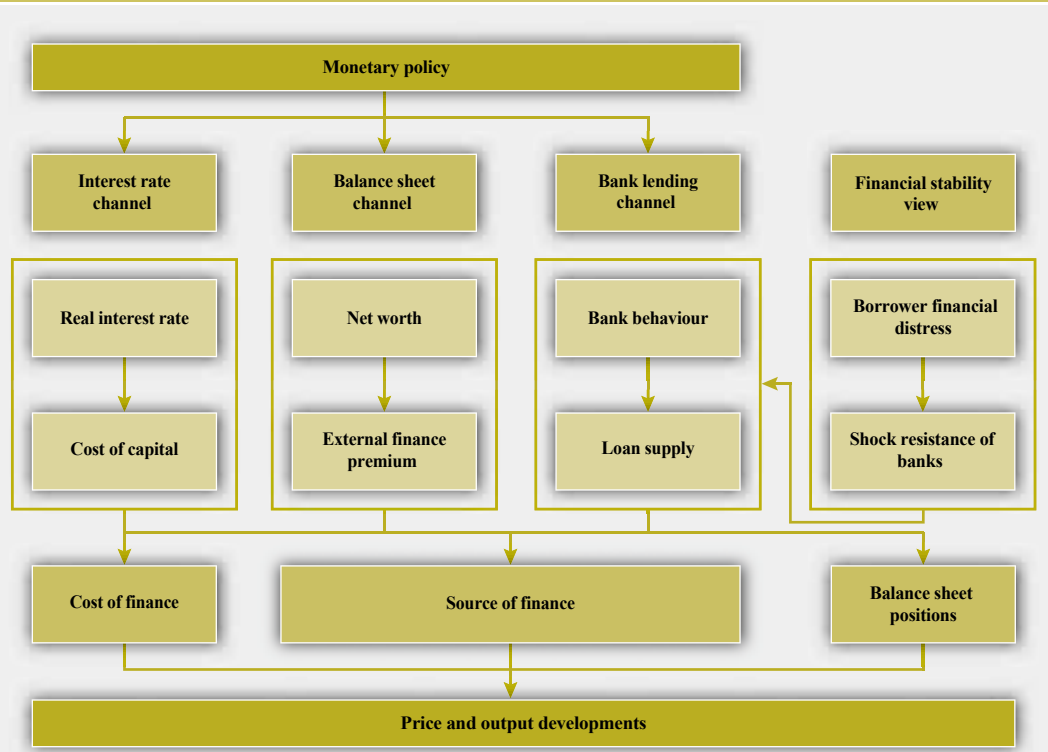
Monetary policy influences price developments over the medium term through the so-called transmission mechanism. This mechanism comprises a number of different channels, including those that affect the financing conditions of households through the cost of finance or borrowers' balance sheet positions. Household indebtedness is a key indicator in the analysis of these channels.

First, the level of indebtedness determines the changes in the debt servicing burden that typically result from changes in central bank interest rates and may then curtail or enhance the income disposable for consumption or residential investment purposes (*interest rate channel*). Second, it determines borrowers' net worth or net value of collateral

and thus the risk premium included in the retail interest rates that banks charge for debt financing (*balance sheet channel*). Third, indebtedness determines the financial distress and default risk of the borrower. This can have implications for the role that bank credit supply plays in the transmission (*bank lending channel*). For instance, a higher default risk may necessitate more loan-loss provisioning and thus affect banks' capital positions. This, in turn, can magnify the impact that monetary policy has on the funding of banks and their ability to provide credit to the bank-dependent parts of the economy. Chart 1 below illustrates these various channels in a schematic way.

These examples show that the analysis of household indebtedness also provides an important link between monetary policy and financial stability considerations. Highly indebted households may not only lead to

Chart 1 Stylised view of the monetary transmission channels



Source:

a stronger transmission of monetary policy impulses but their vulnerability may also mean more defaults and thus more banking sector stress. At the same time, monetary policy analysis and financial stability analysis look at household indebtedness from somewhat different angles. While the former typically focuses on baseline scenarios within a possible distribution of outcomes, the latter focuses on the size and shape of the tail of that distribution.

There is increasing consensus that an effective assessment of transmission channels and household sector vulnerabilities should involve the analysis of both macro and micro data. Drawing purely on macro data, it is often difficult to find clear evidence for the working of specific channels and to uncover tail risks. This may be because macro data reflect the average over different types of households and blur the transmission effects that may hold only for specific groups.

For instance, the interest rate channel may be mainly effective for those households that have variable rate debt, face a high cost of refinancing debt (e.g. early repayment fees), or have not set up debt repayment buffers to smooth interest rate effects. Similarly, the strength of the balance sheet channel may be particularly strong for those households whose assets consist only of their home and whose debt-to-capital (gearing) ratios are thus heavily affected by shocks to house prices. Finally, the bank lending channel may be particularly strong if a funding or capital buffer problem occurs in banks specialising in customers who are particularly vulnerable in terms of unsustainable debt levels and overstretched or uncertain incomes, such as was the case for sub-prime mortgage banks.

This paper examines the distribution of indebtedness across households which fall into different categories. Such a categorisation is important, as it generates relatively homogenous subsets of the household sector and then allows an examination of whether macroeconomic outcomes reflect different behaviours of households that have otherwise similar

characteristics, or whether they reflect similar behaviour among households with different household characteristics. Such information can be essential in steering the use of specific theories and models – and the way in which they should deviate from the representative agent assumption – in the analysis of debt accumulation and monetary transmission.

For instance, two households may have the same level of indebtedness and the same preferences or risk profiles, and their consumption/saving response to an increase in interest rates may simply differ because one household has financed its debt with a variable interest rate while the other has financed it at a fixed rate. However, the two households may also show a similar response, despite their different debt characteristics, if the household with variable rate debt is forced by the circumstances to adjust consumption/saving while the household with fixed rate debt simply reacts to the macroeconomic news concerning the interest rate increase even though it is not individually affected.

In the specific case of the euro area, the use of micro data is also important in assessing differences in the transmission of monetary policy across member countries. If individual countries primarily host households with certain behaviours and/or certain characteristics that influence the strength of transmission such differences may stem from compositional effects. For instance, in Spain and Finland, almost all mortgage debt is taken out at a floating rate or initial rate fixation period of less than one year, while in Germany, France and Belgium the corresponding share is rather low. Against this background, it is important that micro data are not by construction biased towards specific types of households, but are sufficiently all-embracing to bring out the main characteristics as well as the many different characteristics that households have in each country.

What is missing when looking only at the aggregate data for the household sector of the euro area? Integrated accounts statistics point to

a ratio of the sector's debt to the sector's disposable income of 95% in 2008, an increase from around 70% in 1999. Measured per household, real debt has increased considerably from about €25,000 to close to €35,000 (at 1999 prices). At the same time, the interest payment burden and the overall debt servicing burden (including repayments) of the household sector (as a ratio of disposable income) has shown a more cyclical pattern despite the continuous increase in the debt level, reflecting the pronounced changes in interest rates in the period between 1999 and 2008 (see Chart 2).²

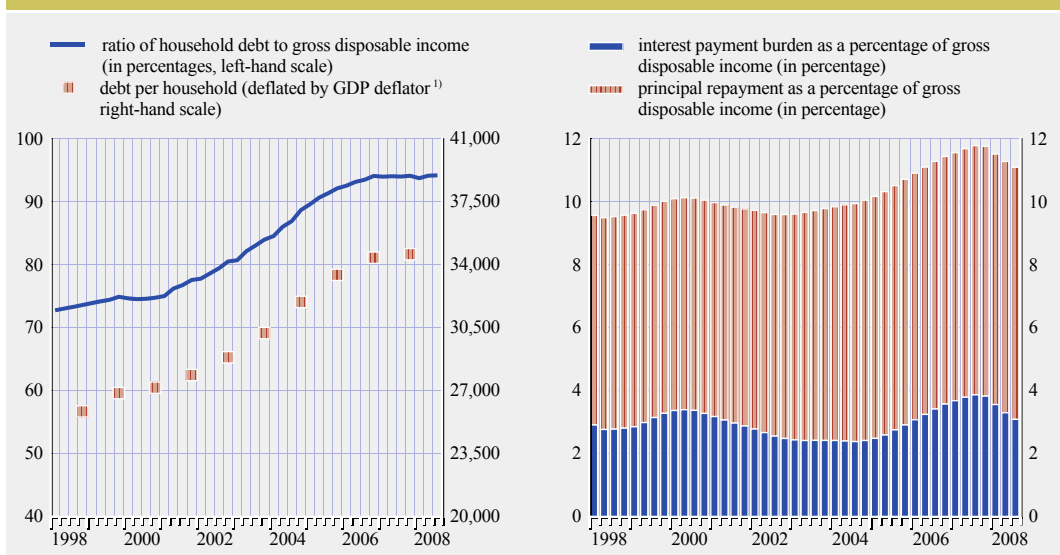
These aggregate numbers conceal potentially relevant information about the distribution of debt and the interest payment burden. For instance, aggregate indebtedness of 95% does not say anything about the number of indebted households or about their individual debt levels. In an extreme case the numerator and the denominator of the ratio may refer to different groups of households, i.e. households holding high debt but which have very low income on the one side and households with a high income but very low debt on the other. The figures for aggregate debt per household do not

help much more in this respect, as it is not clear whether €35,000 is too low or too high to be representative for each household.

Assuming that all debt is mortgage debt and correcting using the home ownership ratio for the euro area, around 62% in 2007, the implication is that average real debt per owner-occupied household would be over €55,000 – but it is also difficult to assess whether this figure might be representative or not. If the bulk of households in the economy were at the typical “home-buying” age, then an average real debt per owner-occupied household of around €55,000 would probably be low, given that the current value of future rents also needs to be taken into consideration. By contrast, if the bulk of households were either at a late or an early stage of their life cycle, where they should either already have paid back large parts of their initial debt or not yet have any debt, then an

2 The estimate of the rise in the repayment burden is based on the assumption that the duration of mortgage loans remains stable. However, in some countries, the lengthening of the loan duration has had the effect of reducing the ratio of annual repayments to total loans, thus partly or fully offsetting the effect of the rise in the debt level on repayment flows.

Chart 2 Household debt and debt servicing burden in the euro area



Sources: Eurostat, Structural Housing Indicators Statistics, ECB, and authors calculations.
1) GDP deflator set to 100 in 1999. Interest payments include mortgage-related as well as non-mortgage related interest costs paid by households.

average real debt per owner-occupied household of around €55,000 could be regarded high, not least because it would imply a much higher indebtedness for those households that would naturally be expected to actually have debt on the basis of their life cycle position.

However, even if it were known that aggregate indebtedness would only capture households that actually hold debt, information would still be needed on the distribution of that indebtedness. Aggregate indebtedness of 95% of disposable income could result from each individual indebted household having a debt ratio of 95%, but it could also reflect a situation where the distribution is heavily skewed, i.e. some of the indebted households have a uniformly high debt ratio and others have a uniformly low ratio. Given the fact that the distribution of the individual debt ratios can be skewed, the median of the sample may provide a more appropriate picture of the “typical” debt ratio (or debt servicing burden) of the households than the sample mean. One feature of the move from macroeconomic to microeconomic data is thus the shift from mean to median when discussing general tendencies or “averages” of one kind or another.



3 UNDERLYING MICRO DATA

Micro data on household balance sheets are typically obtained from income and wealth surveys that include, among other things, information on real assets and the debts associated with them, other debts, financial assets, labour and non-labour income, pension plans and insurances, and consumption and savings.³ This type of survey is available for some euro area countries, for instance the Spanish Survey of Household Finances and the Italian Survey of Household Income and Wealth, but there is not at present a common European source. The European Community Household Panel (ECHP) survey, produced between 1994 and 2001, provided harmonised information at the micro level for many of the countries which now make up the euro area, but its focus was very much on issues related to demographics, employment and income positions, or social security and living conditions, and less on issues directly related to households' financial situation. Moreover, it suffered from various operational problems, such as timeliness, reliability, country coverage and the use of definitions that are not fully in accordance with international practice, in particular for income.

This paper uses the micro information from the EU Statistics on Income and Living Conditions (EU-SILC), which can be seen as the successor of the ECHP. Although the EU-SILC is not a pure household finance survey, it contains relevant information for the analysis of household indebtedness. In addition, compared to the ECHP, the EU-SILC gives priority to: (i) timeliness; (ii) flexibility; (iii) comparability; and (iv) full geographical coverage (i.e. EU25 plus candidate countries). As the first official release of the survey was in 2007 (although some countries have been providing data since 2004), it still faces some gaps related to the fact that the statistics are new and some countries are still adjusting to the problems which have been detected.⁴ In addition, from the survey design point of view, the EU-SILC uses a rotational panel (the minimum panel duration is four years), which means that new population

sub-groups are brought in each year, thereby enriching the cross-sectional data derived and avoiding problems of attrition.⁵

The EU-SILC contains valuable information for the study of household indebtedness and its various linkages. For instance, it provides information on housing tenure and means that households with a mortgage and consumer debt can be identified. At least in part, the debt servicing burden faced by households can also be measured, as the survey includes information on mortgage debt interest payments. It also contains information on financial distress, both objective (e.g. arrears on mortgage loan payments and on hire purchase instalments or other loan payments) and subjective (such as an assessment of total housing costs and of the repayment of debts from hire purchase or loans as a financial burden). As regards income, following the international recommendations of the UN "Canberra Manual", the EU-SILC focuses on gross household disposable income, including among its components interest paid on mortgage loans, imputed rent and non-cash employee income (income in kind).⁶

3 The surveys typically allow for an over-sampling of wealthy households, to control for the fact that the distribution of wealth is heavily skewed and that some types of assets are owned only by a small fraction of high-income households.

4 In particular, Germany has gaps with one of the variables used in our study (interest payments on mortgage debt) and has had to be excluded from some parts of the analysis.

5 EU-SILC collects information at two levels, the household and the individual. From a household perspective, it covers variables related to income, social exclusion and housing, and, at the individual level, on education, employment situation, health and income. Data are mainly collected via interviews, but information from registers is also used. These data are then presented in two formats, cross-sectional and longitudinal (i.e. panel). The reference population is all private households and their current members residing in the territory of the individual Member States at the time of data collection. The data are based on a nationally representative probability sample of the population with regard to language, nationality or legal residence status. The aim is to have representative probability samples both for households, which form the basic units of sampling, data collection and data analysis, and for individuals. The cross-sectional sample sizes were calculated so as to achieve an effective size of around 120,000 households at the European level, thus ensuring a minimum of precision at the country level. This means that the survey can be used for cross-country analyses. For more details regarding weights and imputation, see European Commission (2009).

6 The definitions and the details of the socio-economic characteristics used are summarised in Annex 1.

As an example of the value added of using household level information to analyse household indebtedness, Chart 3 illustrates the median of the interest payments-to-income ratio in 2007, which is lower than the mean by slightly more than 4 percentage points; this suggests that the distribution is somewhat skewed towards lower interest repayment ratios (see left-hand part of Chart 3). In contrast, the ECHP, the predecessor of the EU-SILC, provided information on the overall debt servicing burden (including both interest payments and actual debt repayment). The median and the mean of the distribution of the debt servicing-to-income ratio also differed in this case, suggesting that the distribution was to some extent skewed towards lower debt servicing ratios (see right-hand part of Chart 3).⁷

Looking forward, the Eurosystem is planning to launch a Household Finance and Consumption Survey (HFCS) based on the experience of some

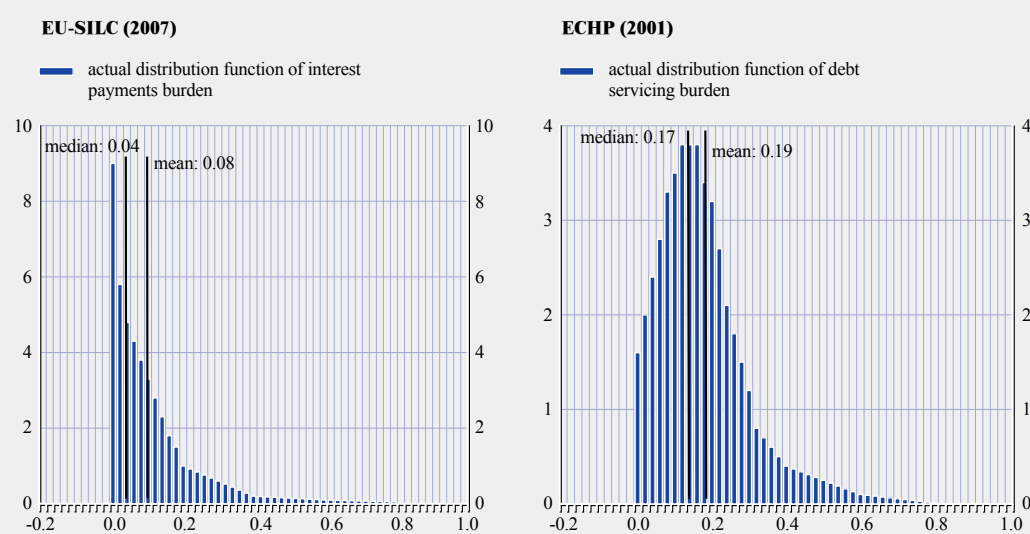
national central banks. This should produce a more comprehensive picture of household level balance sheets and their distribution. It will help to deepen the analysis of key research and policy questions at the euro area level, including the relationship between consumption and wealth, the implications of household indebtedness and, more generally, the impact across households of shocks in income, interest rates and house prices.⁸

7 See box 4 entitled “The debt servicing burden of euro area households – some macroeconomic and microeconomic evidence”, *Monthly Bulletin*, ECB, December 2005.

8 For a comprehensive approach on the use of household micro data for research and policy analysis, see Eurosystem Household Finance and Consumption Network (2009).

Chart 3 Actual distribution function of interest repayments burden from EU-SILC and debt servicing burden from ECHP

(as a ratio of gross disposable income)



Sources: Eurostat (EU-SILC and ECHP cross-section database) and authors' calculations.
Note: Interest payments include only mortgage-related interest costs paid by households.

4 MICRO EVIDENCE

This section is intended to give a detailed picture of household indebtedness in 2007, the most recent year for which the EU-SILC offers a representative euro area picture. Annex 2 contains a table summarising the final sample used for this paper. Developments over time are restricted to the period between 2004 and 2007 but, wherever possible, a longer term comparison is also made, on the basis of the results of the ECHP for 1995.

The aggregate figures for the euro area include information on Austria, Belgium, Spain, Finland, France, Greece, Ireland, Italy, Luxembourg, the Netherlands and Portugal for 2007, and on Germany for 2005, as information for 2007 for the latter is not available for all relevant variables. The developments between 2004 and 2007 are also based on the first group of countries, while those between 1995 and 2007, used for long-term comparisons, include all countries. Country and euro area aggregates have been obtained using household cross-sectional weights reported by the survey.

In order to provide an overview of the distribution of all households, independently of their debt status, Table 1 reports the main characteristics of the population surveyed by the EU-SILC. It shows that in 2007 around one third of the households had an income below 20,000 euro, while only 1.9% of households had an income above 100,000 euro (income ranges are shown at 2007 prices throughout the paper), and that 62.9% were home owners. Moreover, regarding the characteristics of the head of household, around 40% were between 35 and 54 years old, 46.3% were employees, 91.3% were non-migrants and 41.8% had a medium level of education.⁹

9 Information on households collected by Eurostat allows the picture derived from the EU-SILC to be cross-checked, albeit only in part, against that which emerges from census sources. For instance, according to census data published by Eurostat for 2001, around 4.5% of households are from outside the EU and the activity rate is around 65%. These figures are respectively slightly below and above the figures estimated using the EU-SILC for 2007 (8.5% and 60.5%), although migration developments in the last few years may have reduced the gap.

Table 1 Distribution of households by selected characteristics, euro area 2007 and change 2004-07

(percentage and percentage points)

	2007	Change 2004-07		2007	Change 2004-07
By:			By:		
Income level (2007 prices)			Working status		
<10,000	7.9	-1.7	Employee	46.3	0.9
10,000-20,000	23.5	-1.4	Self-employed	9.5	0.0
20,000-30,000	22.3	0.1	Unemployed	4.6	-1.0
30,000-50,000	28.2	1.0	Inactive	39.7	0.1
50,000-100,000	16.2	1.8			
>100,000	1.9	0.2			
Age group			Migration status		
Under 35	15.7	-0.7	Non-migrant	91.3	-0.4
35-44	20.1	-0.5	Inside EU	2.9	0.2
45-54	18.8	0.1	Outside EU	5.9	0.1
55-64	16.8	0.5			
65-74	15.8	-0.2			
75 and over	12.8	0.8			
Housing status			Education level		
Owner	62.9	0.8	Low	31.8	-3.3
Tenant or other	37.1	-0.8	Medium	41.8	1.1
			High	26.4	2.1

Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.

Notes: Germany is not included in the migration status categories because of a lack of information. Age group, employment and migration status, and educational level are based on the head of household.

Developments between 2004 and 2007 are consistent with well-known economic developments. For instance, an environment of ongoing economic and employment growth over this period translated into an increase in the proportion of households with high levels of income and those in which the head of household has a job. The proportion of heads of household who were employees was 0.9 percentage point higher in 2007. At the same time, it appears that home ownership increased somewhat, as well as the proportion of migrants. Some of these developments are even more marked from a longer-term perspective, i.e. comparing the situation in 2007 with that in 1995 (see Table 3 in Annex 3). This is especially true of the influence of economic and employment growth, as the proportion of households in the higher income levels is estimated to have increased significantly – by 10 percentage points for those above 50,000 euro – while the proportion of those which fall into the lowest income level has declined by around 7 percentage points. At the same time, the proportion of heads of household with a job has increased (by 1 percentage point), as has the proportion of households which own their own home, which in 2007 was 4.2 percentage points higher. Finally, these developments are in line with the ageing of the population, as shown by the fact that households in which the head falls into one of the older age groups are becoming more preponderant.

The rest of the section deals with the incidence of debt, the ability to repay mortgage debt obligations, households with high mortgage debt-service-to-income ratios and with experience of late payments, and changes in housing costs as a burden for individual households over time.

4.1 INCIDENCE OF MORTGAGE AND NON-MORTGAGE DEBT

The EU-SILC provides information on whether households have a mortgage on their main residence, on whether they are holding consumer

credit, and on interest payments associated with the mortgage debt.

Starting with the incidence of debt, around 22% of households had a mortgage outstanding and 17% had a consumer loan in 2007.¹⁰ These figures are, respectively, 1.7 percentage points above and 0.9 percentage point below the level observed in 2004 (see Table 5 in Annex 4). The incidence of mortgage and consumer debt shows significant variations when different socio-economic characteristics, in particular the level of income, are examined. In 2007 only 4.4% of households with the lowest level of income (below 10,000 euro) had a mortgage outstanding, while the proportion was 41.5% for households with a high level of income (between 50,000 and 100,000 euro). For consumer debt, the proportion of households holding a loan is 10.2% for the lowest income level and 17.3% for those with the highest level of income. Overall, the likelihood of holding a mortgage increases with the level of income (see Chart 4), while the correlation is less marked for consumer debt. This should not be surprising if consumer debt serves as bridge-financing expenditure for households constrained by current income.¹¹

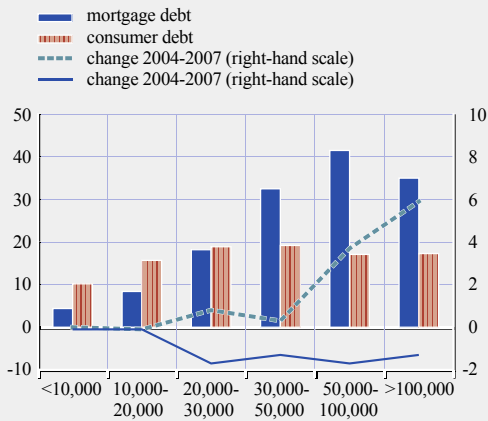
Other aspects that also turn out to be relevant are the age, employment status and education level of the head of household (see Chart 5). Regarding age, the incidence of holding a mortgage tends to grow with age, before declining again, while for consumer debt the relationship with age is mostly inverted, i.e. a lower proportion of households hold consumer debt as age of the head of household increases. In the case of mortgages, the proportion varies between 2.3% for heads of household aged 75 and older and 38.9% for those aged between 35 and 44; as regards consumer debt, it varies between 3.4% for those aged 75 and older

¹⁰ Households are classified as having consumer debt if they have only a consumer loan and are classified as mortgage debtors if they have a mortgage loan, irrespective of whether they also hold consumer debt.

¹¹ The statistics presented in Chart 4 are broadly the same when plotted by income quartile.

Chart 4 Households holding mortgage and consumer debt in the euro area, by income level

(2007 and change 2004-2007; percentage and percentage points)



Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.

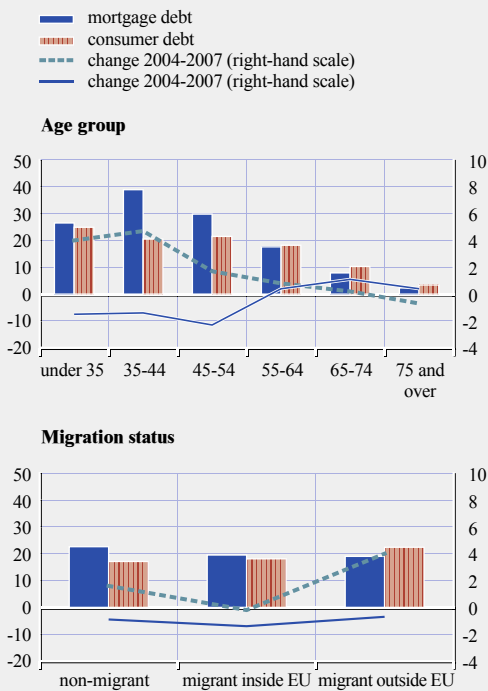
Notes: Income levels in euro (2007 prices). The estimate for 2007 includes 2005 data for Germany. Germany is not included in the estimate of the change between 2004 and 2007. The results by income *quantile* are broadly similar.

and 24.9% for those under 35. This picture is in line with the life cycle hypothesis, according to which individuals tend to smooth consumption over their lifetime, subject to intertemporal budget constraints, and therefore borrow when young. It is also in line with precautionary savings theories, which see this motive weaken as borrowing constraints become more relaxed. This is especially the case for young households since older ones tend to use accumulated wealth to protect themselves from income uncertainty.¹² As regards employment status, an inactive head of household makes it less likely that the household will hold a mortgage (7.8%), while employees have the highest incidence (34.2%). For consumer debt, the difference across employment status is smaller, and the highest proportion is observed among the unemployed (25.2%). Lastly, a higher level of education

¹² See, for instance, Gourinchas and Parker (2002).

Chart 5 Households holding mortgage and consumer debt in the euro area, by socio-economic characteristic

(2007 and change 2004-2007; percentage and percentage points)



Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.

Notes: Income levels in euro (2007 prices). The estimate for 2007 includes 2005 data for Germany. Germany is not included in the migration status categories because of a lack of information nor in any of the estimates of change between 2004 and 2007.

makes it more likely that a household will hold a mortgage, the incidence ranging from 13.9% for households whose head has a low level of education to 31.4% for those with a high level, while for consumer debt the highest incidence is to be found among those with a medium level of education (19.8%). Assuming this pattern is not purely capturing income effects, it would be in line with the economic theories that suggest that literacy has a positive impact on access to credit markets.¹³ By contrast, the incidence of debt does not vary much depending on migration status, although it is slightly lower in the case of mortgage debt for migrants and slightly higher in the case of consumer debt for non-EU migrants.

To assess the impact that the incidence of debt may have on the transmission mechanism or financial stability issues, this information needs to be complemented with other financial indicators, such as the financial effort that holding these debts involve. For instance, the fact that the likelihood of holding mortgage debt increases with income is not indicative of a weaker transmission of monetary policy, as in the end the debt-to-income ratio and the financial effort made in servicing this debt are the decisive factors, and these may still be high at either end of the income distribution. Similarly, heads of households that are relatively old or unemployed are less likely to hold mortgage debt, but this does not mean a weaker transmission either as the households concerned may still have a high debt servicing burden and may thus be affected by interest rate changes. The next section will provide information on financial effort by household characteristic.

Focusing on the developments over time, the increase observed in mortgage debt incidence between 2004 and 2007 is concentrated mainly among households with higher income levels (above 50,000 euro) in which the head of household falls into one of the younger age groups (especially between 35 and 44), has a stable labour market situation (either employee or self-employed), is mainly non-migrant (but may also be a migrant from outside the EU), and has a medium or high level of education. By contrast, the decline in consumer debt incidence is led by high-income households and those with a head of household who is young, employed and non-migrant and has a medium level of education.

A longer-term perspective points to an increase in mortgage and consumer debt incidence since 1995, by around 2 and 3 percentage points respectively. However, while high-income households and those in which the head of household is young and employed have led the increase in the rate of mortgages outstanding, the incidence of consumer debt has shown an increase more broadly based across socio-economic characteristics (see Table 4 in Annex 3). This more pervasive element in consumer debt development may have to do with changing conditions in the financing of consumer durables (such as car makers offering particularly low interest rates) or with the more wide-spread use of credit cards across all types of households.

Box 1 gives details of country variations in the euro area for home ownership, mortgage debt incidence and mortgage debt servicing.

¹³ See OECD (2005).

Box 1

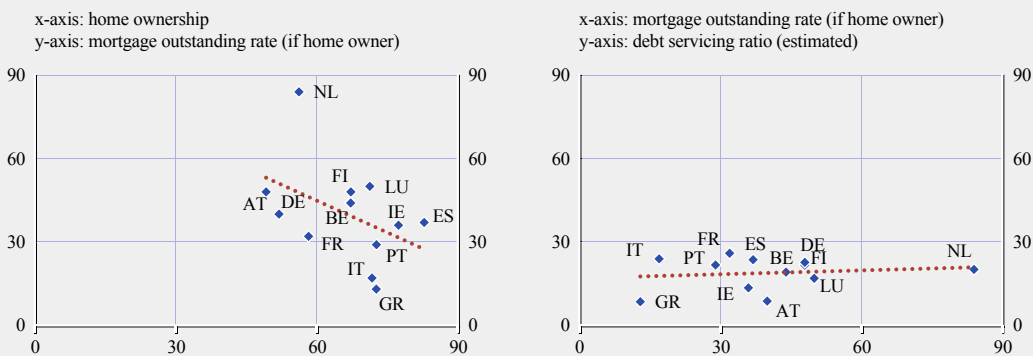
THE INCIDENCE OF HOUSEHOLD DEBT AND HOME OWNERSHIP, BY COUNTRY

Table 5 in Annex 4 reveals significant differences in the rates of mortgage debt holding across the euro area countries. This box explores to what extent these differences in (conditional) mortgage outstanding rates are driven by differences in home ownership rates. The chart below shows that there is a slightly negative relationship between these two variables, i.e. high mortgage outstanding rates tend to be associated with low ownership rates. In fact, while some of the Southern European countries (Greece, Italy, Spain and Portugal) exhibit very high home ownership rates with only a minority of households holding an outstanding mortgage, at the other extreme, countries such as the Netherlands shows a much lower home ownership rate, but the vast majority of households which do own a home also have an outstanding mortgage (see left-hand part of chart).¹ One possible explanation could be that households in the Southern European countries more frequently use alternative sources of financing to purchase a home (for example loans or money transfers from relatives) or inherit property. The role of such informal credit channels can be particularly important in countries with less developed credit markets. By contrast, mortgages are very widespread among homeowners in the Netherlands, where the mortgage and credit markets are rather more developed, and households may benefit from the greater availability of credit allowing them easier access to liquidity and more refinancing options. For example, households in the Netherlands have a greater variety of financial products (specialised loans) from which to choose and a bigger supply of loans via the securitisation of mortgages, and are able to take out a larger mortgage relative to the value of the property purchased.²

The right-hand part of the chart presents developments in the debt servicing ratio among households with a mortgage outstanding. It shows a very stable average ratio of around 17% in the euro area, with some heterogeneity among countries, for example with levels above 20%

1 See Georganakos, Lojschova and Ward-Warmedinger (2010) for a similar analysis based on data from the ECHP.
 2 See “Structural factors in the EU housing markets” Structural Issues Report, ECB, March 2003.

Home ownership, percentage of households holding a mortgage and mortgage debt-service-to-income ratio (estimated) across euro area countries, 2007



Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.
 Notes: German data refer to 2005. Mortgage debt service ratio, i.e. the percentage of income devoted to servicing mortgage debt, is obtained at the household level by adding an estimate of capital repayments derived from the ECHP to the interest payments derived from EU-SILC.

in Spain, France and Portugal and the lowest levels in Austria, Greece and Ireland. In sum, significant national differences in both home ownership and mortgage outstanding rates suggest large differences in housing and mortgage markets across euro area countries. Southern countries may have tended to finance their home ownership through channels other than mortgage debt, which is symptomatic of relatively less-developed credit markets. These national differences in perceptions about borrowing may be partly shaped by a country's history, traditions and norms, and may be partly the outcome of interactions with the prevailing institutional environment.

4.2 ABILITY TO REPAY MORTGAGE DEBT OBLIGATIONS

In order to provide a more precise picture of the burden that debt represents for households, the literature has proposed a number of ratios that might be used, such as that of outstanding loans to income, of total debt to total financial assets and of repayment burden to income. Each of them has pros and cons. For instance, the ratio of total or outstanding debt held by a household over income does not reflect the actual burden that has to be serviced on a regular basis. Moreover, a higher debt ratio may be less of a problem if there are financial assets that can be used to pay the debt off if necessary. However, these assets may not all be equally liquid and therefore they are not fully indicative of capacity to compensate for existing debt at any time. Lastly, the repayment burden does not take into account household assets and the alternative income earned on them. In some cases it may thus be rational for a household to hold debt and incur a higher debt servicing ratio and at the same time hold financial assets and realise high or better rates of return on them.

The literature has focussed to a large extent on the percentage of income devoted to servicing mortgage and non-mortgage debt obligations as this helps to measure the cuts in disposable income that households experience in repaying their debt. The EU-SILC does not provide a direct estimate of overall debt service, but only of interest payments on mortgage debt (excluding capital payments). In this subsection we therefore concentrate on the percentage of income used to service interest payments on mortgage loans.

A proxy of the overall mortgage debt service, i.e. interest payments and capital repayments, at the household level is also provided. It is obtained by extrapolating a measure of capital payments – the part missing in the EU-SILC – from a comparison of the total debt-service-to-income ratio from the ECHP and the interest-payments-to-income ratio from the EU-SILC at the country level for three income and three age groups. This measure is then added to the interest-payments-to-income ratio derived from the EU-SILC for each household.

It is worth signalling some caveats regarding the debt service ratio proxy presented. First of all, the year of comparison is not the same: for the ECHP the last available year (2001) is used, while the EU-SILC data are based on the most recent results (2007). However, the fact that interest rates were broadly comparable in these two years makes the estimate of capital repayments more reliable. Secondly, the denominator is not fully comparable, as the ECHP uses net income, while the EU-SILC measures gross disposable income. Given the steps followed in each case, the impact of the denominator on the estimation is expected to be small, however. Finally, a more important drawback is that the estimation of debt service at the household level ultimately obtained is a combination of purely household level information (interest payments) and more aggregate information, i.e. the estimated capital repayments for various income and age groups by country, which goes somewhat against the grain of the whole exercise. However, the estimate of the debt service ratio is used only to compute patterns regarding socio-economic characteristics, and as the indicator used to measure these patterns

is the median, the impact of the lower degree of variability at the household level is expected to be very small.

The interest payments ratio and the estimated debt service ratio stood at 6.2% and 22.4% respectively in 2007 (see Table 5 in Annex 4). In line with the results for the incidence of mortgage debt, both the interest payments and the estimated debt servicing ratio also show considerable variation across the socio-economic characteristics considered. In particular, the greatest variation again turns out to be across income levels, showing an inverted relationship with both ratios, that is to say, the lower the level of income, the higher the interest payments and the higher the estimated debt servicing ratio (by contrast, the relationship between income and incidence of mortgage debt was positive). Households with the lowest incomes devoted 19.2% and 32.5% of their income to servicing interest and overall mortgage debt respectively,

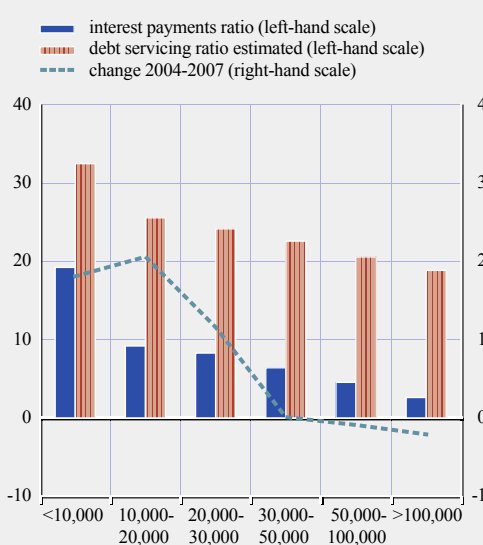
while the figures were around 3% and just under 20% respectively for households at the top of the income distribution (see Chart 6). As reported in other studies, low-income households have to make a greater effort than high-income households to be able to service their debt.

Among the characteristics of the head of household, the differences are not as striking as in the case of income, except where age is concerned. The interest payments ratio has a slightly U-shaped relationship with age, as the highest level is revealed in the youngest group, and levels then decline before increasing slightly again for the oldest group (see Chart 7); in contrast, the estimated debt servicing ratio declines steadily as age increases. At the same time, for both indicators there is a broadly positive relationship with the degree of involvement in the labour market, a marginal upward relationship with level of education (especially for interest payments), and a slightly positive relationship for migrants. The most significant differences, with respect to the average, can be seen among the youngest heads of household and migrants from outside the EU, who have high interest payments ratios (and estimated debt servicing ratios) of 10.5% (25.7%) and 9.2% (25.3%) respectively. A multivariate approach relating the fact of holding a mortgage and a consumer loan and the interest-payments-to-income ratio to socio-economic characteristics is presented in Box 2.

The information on interest payments and estimates of debt servicing ratios complements that derived from the incidence of debt. In particular, it appears that low-income households and to a lesser extent those that have a head of household who is aged below 35, is a migrant from outside the EU or is unemployed devote the biggest proportion of their current income to servicing their mortgage debt. Although the households with some of these characteristics represent only a small proportion of the total number of households and/or have relatively low mortgage outstanding rates

Chart 6 Mortgage interest payments and overall debt-service-to-income ratio in the euro area, by income level

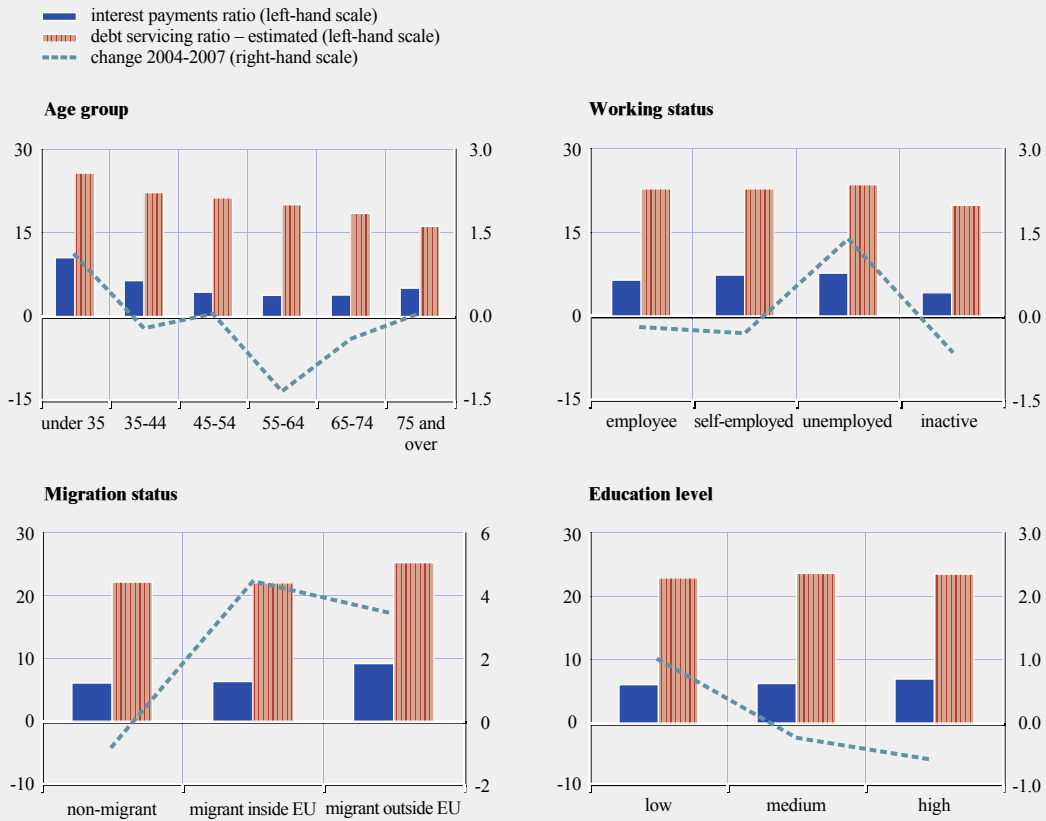
(2007 and change 2004-2007; percentage and percentage points)



Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.
Notes: Income levels in euro (2007 prices). Germany is excluded. Mortgage debt service ratio estimated at the household level by estimating capital repayments using data from the ECHP (see Annex 1).

Chart 7 Mortgage interest payments and overall debt-service-to-income ratio in the euro area, by socio-economic characteristic

(2007 and change 2004-2007; percentage and percentage points)



Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.
 Notes: Income levels in euro (2007 prices). Germany is excluded. Mortgage debt service ratio estimated at the household level by estimating capital repayments using data from the ECHP (see Annex 1).

(e.g. low-income households or those in which the head of household is unemployed), they allow groups to be identified in which a strong impact of monetary policy or financial distress may be an issue. The next section will explore debt servicing problems further.

Finally, regarding recent developments, it is estimated that there was a marginal decline in the interest-payments-to-income ratio between 2004 and 2007.¹⁴ This decline was led by households with relatively high income levels,

above 50,000 euro, (by contrast to the increase observed for income groups with less than 30,000 euro), whose heads of household were in the youngest and oldest age groups (between 35 and 44 years old, and between 55 and 74 years old), employed, non-migrants and with medium and high levels of education.

14 The developments described refer only to interest payments as the debt servicing ratio has only been estimated for 2007. At the same time, as interest payments data are not available for all countries for 2004, developments between 2004 and 2007 have been proxied using the change in total housing costs, of which interest payments are one component.

Box 2

MORTGAGE AND CONSUMER DEBT OUTSTANDING, AND INTEREST-PAYMENTS-TO-INCOME RATIO – A MULTIVARIATE APPROACH¹

As mentioned at the beginning of Section 4, some of the socio-economic characteristics chosen are susceptible to a high degree of correlation. The purpose of this box is to explore to what extent a multivariate approach would confirm the main findings described for outstanding mortgage and consumer debt rates and interest payments regarding their linkages to income and other socio-economic variables.

In order to enrich the analysis, the number of variables has been extended in various directions. First, other socio-economic characteristics have been considered both for the household (including the number of durable goods owned and the number of members) and for the head of household (including gender, marital status and whether as an employee that person has a temporary or a permanent contract). Second, in order to account for the cyclical position of the economy and the level of welfare, the employment rate of the region has been included.²

The results confirm that after controlling for all other factors it is still more likely that a household will have a mortgage if its income is higher and that the interest-payments-to-income ratio will typically be lower. On the other hand, the relationship between income and holding a consumer loan is less clear. Indeed, the proportion of households with consumer debt is significantly higher than the benchmark (lowest income group) only for the mid-income levels. At the same time, the probability of holding a mortgage increases for those aged 35 to 44 and declines for the older age groups, while age is negatively correlated with holding consumer debt. The multivariate approach also confirms that the probability of holding a mortgage increases with the level of education, as does the interest-payments-to-income ratio, while that of holding consumer debt declines rather than showing a slight increase. Also in contrast with the bivariate analysis, being a migrant is positively correlated with holding a mortgage but negatively correlated with holding consumer debt; this factor also reduces the debt servicing ratio, especially for migrants from inside the EU. Finally, the results by employment status are broadly confirmed for the probability of holding a mortgage and consumer debt but, as regards the interest-payments-to-income ratio, only the increase for the self-employed and the decline for those who are inactive are confirmed, while the increase for the unemployed seen in the bivariate analysis is not significant.

Turning to the additional variables considered, a positive economic situation in the region of residence (i.e. a high employment rate) is positively correlated with holding a mortgage and with the interest-payments-to-income ratio, but negatively with holding only consumer debt. This may reflect the fact that in relatively prosperous regions the likelihood that households will take out a mortgage increases (possibly because of lower income risk but also because in such regions households are more likely to be able to resell their homes) and that those households are able or willing to sustain a higher effort to service the debt. Similarly, in prosperous regions households may have to draw less on consumer debt as a means of financing expenditure in the absence of current income. The household size is positively correlated with holding a mortgage and consumer debt, but negatively correlated with the interest-payments-to-income ratio. This

¹ The analysis has also been carried out for the estimated debt-service-to-income ratio but because the results are similar to those for the interest payments ratio only the latter is described in the text.

² See Annex 1 for more details.

reflects the fact that in big households more members tend to be income earners and this in turn tends to lower the burden or reduce the effort somewhat in the face of other expenditure. The same applies with regard to the number of durable goods owned (an indirect measure of wealth), which is positively correlated with holding a mortgage and consumer debt, although in the latter case it could be a sign of reverse causality as it is precisely durable goods that are often financed by consumer credit. The distinction between those heads of household who have a temporary employment contract and those who have a permanent contract indicates that the former are less likely than the latter to hold mortgage debt, but more likely to hold consumer debt. There is, however, no significant difference in terms of payment of mortgage interest debt. At the same time, the fact that the head of household is married, separated, widowed or divorced increases the probability that the household will hold a mortgage, relative to being single, and, in the case of those who are separated or divorced, it is also positively correlated with the interest-payments-to-income ratio. By contrast, a married or widowed head of household reduces the probability that the household will hold consumer debt, relative to being single, while for divorced heads of household it increases. Finally, female heads of household reduce both the probability of the household holding a mortgage and of holding consumer debt and, as regards mortgages, this variable also has a negative effect on the interest-payments-to-income ratio.

In sum, the multivariate analysis tends to corroborate the descriptive results derived from the bivariate analysis. Overall, combining these results with the population weights shown in Table 1 indicates that the typical household holding a mortgage would be in the top deciles of the income distribution and its head of household would be between 35 and 44 years old, employed and have a medium to high education level. The typical household with consumer debt only would be in the middle to lower deciles of the income distribution and its head of household would be under 54 years old, employed and have a medium or low level of education. Finally, a high interest service ratio on mortgage debt is associated with households in the lower income deciles, and with a head of household in either the youngest or oldest age group who is self-employed or unemployed, non-migrant, and has a low to medium level of education.

Impact of socio-economic characteristics on holding a mortgage or consumer debt and the interest-repayments-to-income ratio across euro area countries, 2007

	Mortgage outstanding (1) <i>coefficient</i>		Consumer debt outstanding (1) <i>coefficient</i>		Interest service ratio (2) <i>coefficient</i>	
Constant	-1.954	***	-2.930	***	-2.324	***
Income level						
Decile 3-4	0.267	***	0.135	***	-0.372	***
Decile 5-6	0.499	***	0.120	***	-0.634	***
Decile 7-8	0.657	***	0.061	***	-0.869	***
Decile 9	0.736	***	0.024	***	-1.040	***
Decile 10	0.755	***	-0.015	***	-1.276	***
Age group						
35-44	0.144	***	-0.198	***	-0.363	***
45-54	-0.184	***	-0.121	***	-0.830	***
55-64	-0.477	***	-0.181	***	-1.073	***
65-74	-0.778	***	-0.495	***	-1.329	***
75+	-1.184	***	-1.000	***	-1.318	***
Education level						
Medium	0.103	***	-0.045	***	-0.001	***
High	0.207	***	-0.217	***	0.176	***

Impact of socio-economic characteristics on holding a mortgage or consumer debt and the interest-repayments-to-income ratio across euro area countries, 2007 (continued)

	Mortgage outstanding (1) <i>coefficient</i>		Consumer debt outstanding (1) <i>coefficient</i>		Interest service ratio (2) <i>coefficient</i>	
Working status						
Employee (temporary)	-0.305	***	0.098	***	-0.058	
Self-employed	-0.141	***	0.075	***	0.046	**
Unemployed	-0.393	***	0.122	***	0.006	
Inactive	-0.275	***	-0.040	**	-0.160	***
# Durable goods owned						
1	-0.208	**	-0.231	***	0.150	
2	-0.172	***	-0.072	***	0.100	
4	0.140	***	0.087	***	0.029	
Regional economic activity						
Employment rate	0.009	***	-0.008	***	0.015	***
Household size						
# Members	0.022	***	0.034	***	-0.033	***
Marital status						
Married	0.311	***	-0.080	***	-0.046	*
Separated	0.381	***	0.115	***	0.229	***
Widowed	0.332	***	-0.044	*	-0.041	
Divorced	0.293	***	0.118	***	0.203	***
Gender						
female	-0.149	***	-0.045	***	-0.098	***
Migration status						
Inside EU	0.212	***	-0.141	***	-0.397	***
Outside EU	0.014		-0.071	**	-0.209	***
Country dummies	Yes		Yes		Yes	
# Observations	102,988		102,988		21,752	
LR chi2(q)	27,464.7		7,485.4		-	
R-squared	-		-		0.311	

Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.

Notes: (1) Probit estimate; German data refer to 2005. (2) OLS estimate (logit transformation); excludes Germany. Statistically significant at *** 1%, ** 5% and * 10%. In both (1) and (2), the benchmark is a household in the income decile 1-2 with three durable consumer goods (e.g. telephone, washing machine, colour TV, PC) whose head is under 35 years old, has a low level of education, and is a permanent employee, single, male and non-migrant.

4.3 HOUSEHOLDS WITH A HIGH TOTAL HOUSING-COSTS-TO-INCOME RATIO AND LATE PAYMENTS

Exposure to debt repayment problems can be assessed by looking at households that have a high debt servicing ratio. These are typically defined as families for whom debt servicing, including both interest payments and capital repayments, represents more than 30 or 40% of their income and thus goes beyond what renting would normally absorb. As the EU-SILC does not provide a direct measure of debt service at the household level, and the estimate given in the previous section is considered to be an informative proxy for median values by income

levels and other socio-economic characteristics, but not a valid estimate at the household level, this section focuses instead on the proportion of households holding a mortgage for whom the ratio of total housing costs – which includes inter alia interest payments on mortgages – to income is over 40%. This may be a good indicator of financial stress at the household level.¹⁵

In 2007, 6.8% of households in the euro area had such a high total housing-costs-to-income ratio, only slightly below the figure for 2004

¹⁵ See Annex 1 for more details.

Table 2 Households with a high total housing-costs-to-income ratio and with experience of late payments, euro area

2007 and change 2004-2007 (percentage and percentage points)						
	Households with total housing costs ratio above 40% (mortgage debt)		Debtors with arrears (mortgage debt)		Debtors with arrears (consumer debt)	
	2007	Change 2004-07	2007	Change 2004-07	2007	Change 2004-07
Overall	6.8	-0.9	3.9	-0.5	11.1	-0.6
Country range [max., min.]	15.8	0.9	18.3	0.8	43.0	1.3
By:						
Income level (2007 prices)						
<10,000	60.7	0.4	16.7	5.5	25.3	0.2
10,000-20,000	26.8	5.5	7.0	-1.6	16.4	-0.6
20,000-30,000	9.4	0.5	5.9	0.0	12.4	1.3
30,000-50,000	3.4	-1.4	3.1	-0.3	7.7	-1.0
50,000-100,000	1.9	-0.9	1.9	-0.4	3.8	-1.5
>100,000	0.8	-0.1	1.4	0.3	1.5	-1.3
Age group						
Under 35	9.3	-0.4	4.0	0.2	12.6	-0.2
35-44	6.6	-0.8	4.4	-0.4	12.4	-0.8
45-54	5.2	-0.9	3.9	-1.3	11.9	-0.4
55-64	6.8	-0.5	3.1	-0.9	8.9	-0.3
65-74	5.7	-2.4	2.7	0.2	6.9	-0.5
75 and over	8.2	-5.4	1.5	0.0	8.5	-2.0
Working status						
Employee	5.4	-0.6	3.3	-0.2	9.8	-0.3
Self-employed	13.4	-1.0	6.7	-0.5	12.7	0.6
Unemployed	10.7	-4.5	9.8	-6.6	27.0	-3.9
Inactive	7.6	-1.1	3.3	-0.5	9.2	-0.8
Migration status						
Non-migrant	6.6	-1.0	3.7	-0.5	10.6	-0.4
Inside EU	5.2	-0.5	4.0	-2.7	7.5	-0.9
Outside EU	11.8	0.9	7.9	-0.9	17.7	-3.0
Education level						
Low	9.4	1.1	6.4	0.0	16.0	1.1
Medium	6.0	-0.9	4.1	-0.2	10.9	-1.2
High	5.8	-2.3	1.7	-0.9	6.0	-0.7

Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.

Notes: Income levels in euro (2007 prices). Total housing costs defined in Annex 1. Germany is excluded in the first and second columns. The estimates in column three include 2005 data for Germany; Germany is not included in the migration status categories because of a lack of information, nor is it in any of the estimates of change between 2004 and 2007.

(see Table 2).¹⁶ This ratio shows a negative relationship with the level of income and with the level of education of the head of household, while it tends to increase for migrants (from outside the EU) and for non-employees. The relationship with age is slightly U-shaped, i.e. the ratio is higher for the youngest and oldest age groups. In particular, the highest proportion across household characteristics is observed for those with the lowest income level (60.7%). In addition, characteristics of the head of household that are associated with high total housing costs include being under 35 or 75 or over, self-employed or unemployed, a non-EU migrant and low-skilled.

It should be noted that the slight overall decline observed between 2004 and 2007 masks a more marked increase for certain socio-economic characteristics. In particular, the percentage of households with a high total cost ratio in the income bracket between 10,000 and 20,000 euro increased by 5.5 percentage points and by 2007 it was every fourth rather than every fifth household in that bracket that had a high housing cost ratio. At the same time, the proportion of

¹⁶ Estimates of the proportion of households with total housing costs above 40% do not include Germany because of the measurement problem detected in this country regarding interest payments on mortgages.

households with a high total housing costs ratio increased mainly in those cases where the head of household was a non-EU migrant and had a low level of education.

Debt repayment problems could alternatively be assessed by looking at late payments, i.e. whether the household has been in arrears (unable to pay scheduled mortgage or consumer loan instalments) at any time in the previous 12 months.¹⁷ In line with the developments in the percentage of households with a high total housing costs ratio, the proportion of households in this position was lower in 2007, standing at 3.9% and 11.1% for mortgage and consumer debt respectively. However, a slight increase was observed for some household characteristics. Overall, the results show that there is a negative relationship between households facing debt repayment problems and the level of income and level of education, both for mortgage and consumer debt, while the risk increases for migrants (mainly from outside the EU) and the unemployed. Regarding age, the proportion is broadly balanced across groups for those with mortgage debt, but tends to decrease with age for those with consumer debt.

Across household characteristics, between 2004 and 2007, significant increases for mortgage debt were recorded for those households with relatively low incomes (below 10,000 euro) and, to a lesser extent, for those aged under 35 or between 65 and 74. For consumer debt, where

developments appear to be more balanced, it is worth pointing out the increase among those households with a medium level of income (between 20,000 and 30,000 euro) and the low skilled.

From a policy perspective, information on late payments and relatively high housing costs confirms, and in some cases accentuates, the results for the debt service ratio discussed earlier. Indeed, although these ratios remained contained in broad terms, they indicate that the balance sheets of households with certain socio-economic characteristics may be fragile; they include low-income households and households where the head of household is young, unemployed, low skilled and a non-EU migrant. This fragility may give rise to risks in some tails of the distribution. An ongoing evaluation of the evolution of how debt servicing difficulties, among other variables, are distributed, by household characteristics, is therefore essential for an early assessment of the impact of monetary policy measures and the risks of financial vulnerability.

Box 3 presents a detailed comparison of the euro area and the US in terms of the incidence of mortgage debt, mortgage debt service and late payments.

¹⁷ For an in-depth analysis of late payments, country heterogeneity and the role of institutions, see Duygan-Bump and Grant (2009).

Box 3

DEBT-REPAYMENTS-TO-INCOME RATIO: EURO AREA VERSUS THE US

Estimating household sector borrowing in the euro area using micro data allows a comparison to be made with the US for specific socio-economic characteristics, on the basis of which it might be possible to reach some general conclusions on the relative situation of households' balance sheets in the euro area. This box puts together euro area estimates based on the EU-SILC and US estimates derived from the Survey of Consumer Finances (SCF), both for 2007, and focuses on the two socio-economic characteristics that account for most of the variability across households, namely income and age.

The concepts examined are the holding of a mortgage on the main residence (percentage of households), the debt-service-to-income ratio (in %) – estimated in the case of the euro area – and a measure of late payments (percentage of households). There are some conceptual differences in the definition of income and household that should be mentioned. Regarding income, the US definition refers to a family's cash income before tax while the euro area definition is total disposable income at the household level. The fact that euro area figures are after tax should reduce somewhat the variability across income groups relative to the US. Another issue is the definition of household: while the euro area uses the standard definition (everyone living in the household), the US focuses on the primary economic unit, i.e. the economically dominant single person or couple together with anyone else who is economically interdependent with that person or couple. This is, however, expected to have a very small impact in the comparison.¹

Bearing in mind these caveats, the proportion of households holding a mortgage on their main residence in the US is 48.7%, compared with an estimated 22.1% in the euro area. This difference is observable across all income levels and age groups. However, the most significant differences are in the highest income levels: between 30 and 45 percentage points for those above the 60th percentile, and in older age groups, around 35 percentage points for those between 45 and 74 years old. The different picture presented is certainly related to the role mortgages play in

1 From a statistical point of view, German data included in the euro area estimates of mortgage outstanding rates and arrears refer to 2005, and the debt-service-to-income ratio excludes Germany and is estimated using both household level and non-household level information (see Annex 1 for details). The exclusion of Germany in the calculation of the debt service ratio is not expected to have a big impact on the overall figure, although it may distort somewhat the breakdown by level of income because available sources estimate a more compressed distribution than in other euro area countries (see Eurosystem Household Finance and Consumption Network (2009)). By contrast, the use of 2005 data for Germany to estimate 2007 euro area aggregates is expected to have a negligible effect, as mortgage outstanding and debt service ratios have in the past shown a high degree of stability over time in this country.

Percentage of households holding a mortgage, mortgage debt-service-to-income ratio and share of mortgage debtors in arrears in the euro area and in the US

(2007)

	Mortgage outstanding rates			Debt service ratio			Percentage debtors with arrears (mortgage debtors)		
	EA	US	Diff. US-EA	EA ¹⁾	US	Diff. US-EA	EA	US	Diff. US-EA
Overall	22,1	48,7	26,6	22,4	17,2	-5,2	8,1	26,9	18,8
By:									
Income level (percentile)									
Less than 20	5,9	14,9	9,0	27,2	42,2	15,0	15,1	50,6	35,5
20-39.9	15,7	29,5	13,8	24,2	25,2	1,0	11,9	40,9	29,0
40-59.9	28,2	50,5	22,3	23,0	20,2	-2,8	8,9	28,5	19,6
60-79.9	38,8	69,7	30,9	21,1	17,3	-3,8	5,3	18,2	12,9
80-89.9	38,3	80,8	42,5	21,3	14,6	-6,7	6,5	13,2	6,7
90-100	41,1	76,4	35,3	20,6	9,7	-10,9	4,1	5,6	1,5
Age group									
Under 35	26,5	37,3	10,8	25,7	20,3	-5,4	8,0	32,9	24,9
35-44	38,9	59,5	20,6	22,2	17,4	-4,8	9,4	28,5	19,1
45-54	29,8	65,5	35,7	21,3	16,1	-5,2	7,1	23,3	16,3
55-64	17,6	55,3	37,7	20,0	15,5	-4,5	5,9	21,3	15,4
65-74	7,9	42,9	35,0	18,5	16,5	-2,0	9,9	22,1	12,3
75 and over	2,3	13,9	11,6	16,2	23,1	7,0	9,2	38,5	29,3

Sources: Eurostat (EU-SILC cross-section database), Survey of Consumer Finance and authors' calculations.

Notes: Euro area aggregates have been obtained using 2005 data for Germany.

1) Mortgage debt service ratio, excluding Germany, estimated at the household level by estimating capital repayments using data from the ECHP (see Annex 1).

Europe and in the US and to the types of contract available. While in the euro area mortgage debt is used primarily for housing investment, in the US mortgages may also serve as a way of obtaining liquidity from residential assets that can be used, for instance, for consumption or financial investment purposes. This may be particularly important in the older age groups, for whom reverse mortgaging is still relatively rare in Europe. Relatively comparable home ownership rates – 63% in the euro area and 69% in the US – seem to confirm this assessment.

The table also shows that, overall, indebted households in the US have a slightly lower debt-service-to-income ratio than in the euro area, 17.2% versus 22.4%, a difference that is biased somewhat downwards as income in the euro area is measured after tax. However, the distribution across income levels points to a higher ratio – and therefore a higher financial effort – at the lower income levels in the US than in the euro area, as the ratio is higher in the US at the lower levels of income (below the 40th percentile). In particular, for those families below the 20th percentile of income – which includes sub-prime households – the debt-service-to-income ratio in the euro area is estimated to be around 27.2%, while in the US it is 15 percentage points higher. Turning to the distribution across age groups, it appears that the difference between the US and the euro area is more balanced than for the income breakdown, the only exception being the oldest age group; it shows a higher ratio in the US, possibly due to practices such as reverse mortgaging.

By contrast, the proportion of debtors with arrears on mortgage payments is much higher in the US, a fact that does not take into account the proportion of foreclosures and personal bankruptcies in the US, which in 2007 was estimated at around 1% of debtor households – while it is expected to be negligible in the euro area. In particular, the percentage of debtors in arrears is more than 30 percentage points higher in the US for the lowest income group and over 20 percentage points higher for the youngest group. Interestingly, the situation is broadly comparable for the highest income levels.

Overall, the higher participation in the mortgage market in all age and income categories in the US than in the euro area, despite the difference being more significant among the higher income level groups, the higher debt-service-to-income ratio for the lowest income level families holding a mortgage, and the higher percentage of families with late payments on mortgages, especially in lower income groups, all tend to suggest that the US is more exposed to the risks associated with household balance sheet problems than the euro area and that the transmission of monetary policy may be stronger.

4.4 CHANGES IN PAYMENTS BURDENS FOR INDIVIDUAL HOUSEHOLDS

It is possible to establish how persistent the debt repayment burden is for households by concentrating on a balanced panel of households over time. The EU-SILC longitudinal database is used to do this; for 2007 it includes all the euro area countries considered except Germany. At the same time, as the debt service ratio cannot be computed in the longitudinal database, the variable used is the perception of households

as to how much of a burden housing costs are (not a burden, somewhat a burden, and a heavy burden).

Table 3 shows the results of this exercise, indicating changes in perception between 2004 and 2007.¹⁸ For instance, the figure in the second row and third (fourth) column indicates that 25.1 % (4.4%) of the families that perceived

¹⁸ The balance panel comprises 23,000 households. No weighting scheme is used to compute the euro area aggregate.

Table 3 Changes in the perception of households with mortgage outstanding about housing costs as a burden between 2004 and 2007

(percentage distribution)

2004 perception	2007 perception				All households
	No mortgage debt	Not burden at all	Somewhat a burden	A heavy burden	
No mortgage debt	93.2	2.0	3.1	1.7	100
Not burden at all	19.0	51.5	25.1	4.4	100
Somewhat a burden	17.6	20.9	47.8	13.6	100
A heavy burden	19.2	8.0	30.4	42.4	100
All households	70.0	9.8	13.7	6.6	100
Pro memoria:					
<i>All households 2004</i>	<i>69.0</i>	<i>9.3</i>	<i>14.7</i>	<i>7.1</i>	<i>100</i>

Sources: Eurostat (EU-SILC longitudinal database) and authors' calculations.
Note: Germany is not included.

housing costs as not being a burden at all in 2004 were in 2007 of the opinion that housing costs were somewhat of a burden (or a heavy burden). However, developments can obviously also go the other way: of the households reporting that housing costs were a heavy burden in 2004, 30.4% (8.0%) said that they were only somewhat of a burden (or no burden at all) in 2007.

There are two main conclusions that can be drawn. First, the perception that housing costs are burdensome seems to have been very persistent between 2004 and 2007, as reflected in the fact that the biggest proportions are observed in the main diagonal of the table, i.e. 51.5% still perceive housing costs as not being a burden at all, 47.8% as being somewhat of a burden and 42.4% as being a heavy burden. Moreover, the persistence is greater at a low level of perceived burden than at a high level. Second, the overall perception has moved slightly to more positive territory. For instance, those who considered housing costs to be somewhat of a burden in 2004 have mainly changed to considering them not a burden at all (20.9%) rather than a heavy burden (13.6%).

5 SUMMARY AND POLICY CONCLUSIONS

The information provided in the EU-SILC microeconomic dataset suggests that the distributions of both household debt and the burden/perceived problems of servicing this debt are skewed in the euro area. In particular, households in the lower income groups and households where the head of household is unemployed or a migrant are less likely to hold mortgage debt. However, if they do hold it, they are more likely to perceive servicing that debt as burdensome, and to make late payments. For consumer debt the situation is less clear cut, as the distribution of holding consumer debt, in particular across income levels and employment status, is more balanced. At the same time, late payment problems seem to be more acute than for mortgage debt, and are mostly concentrated in low-income families and in those where the head of household is unemployed, a migrant and has a low level of education.

Benchmarking the exposure to debt and the vulnerability implied by debt servicing is obviously difficult. One option is to compare the situation with that in the US. In this respect, it appears that the level of exposure to household balance sheet problems is relatively contained in the euro area, at least when measured in terms of the percentage of households holding a mortgage and the percentage of households affected by late payments. On the other hand, there is considerable heterogeneity across countries within the euro area, with a range of mortgage incidence and mortgage debt servicing of between 10% and 48% and between 8% and 25% respectively. This indicates that exposure to household balance sheet problems is not equally distributed and in some euro area countries may be similar to that in the US.

Some benchmarking can also be achieved by looking at developments over time. Data for the period 2004 to 2007 suggest that the increase in the proportion of mortgage holders was not accompanied by increases in the burden that these mortgages imply with regard to interest

payments, total housing costs, or late payment. However, risks associated with household balance sheets have increased in some specific groups. In particular, the debt-service-to-income ratio has increased mainly for relatively low-income households and those in which the head of household is very young, unemployed, a migrant and has a low level of education. Another example is mortgage debt arrears, where the data point to vulnerability of debtor households at the lowest income level and where the head of household is 65 years old or older.

These findings have implications for assessing the effectiveness of the transmission of monetary policy as they suggest that there are pockets of vulnerability in the household sector with regard to indebtedness. This in turn means that the incidence of higher household indebtedness at the aggregate level may not be associated with a deterioration of the household sector's balance sheet and then imply a different responsiveness of spending to changes in monetary policy, but rather that such a different responsiveness can simply occur as a result of a changed distribution in the incidence of debt.

Obviously, whether a higher vulnerability through indebtedness ultimately leads to a changed response to monetary policy impulses in terms of spending depends on the particular economic conditions and the options households have to smooth out shocks in other ways. For instance, if vulnerable households were able to reduce their savings ratios, liquidate financial assets, withdraw equity from their home, or draw on unsecured borrowing, then a *prima facie* greater exposure to changes in interest rates could be cushioned and there would be no direct impact on spending. Of course, through changes in net wealth, such impacts could then arise as a second-round effect. The particular nature of the financial tensions and crisis which started in 2007 curtailed many of the options households had to smooth out interest rate shocks, as house prices slumped at the same time as income uncertainty increased, and banks tightened their standards for unsecured and secured debt.

These considerations show that microeconomic data on indebtedness are a first step to gauging possible changes in monetary transmission, but that in order to get a complete picture, these micro data would need to be complemented with micro data for households' asset holdings and savings. Moreover, the impact that debt and asset positions at the micro level have on aggregate spending in the context of monetary transmission should ideally be tested in micro-macro simulations. These are promising areas for future research, and the forthcoming Eurosystem Household Finance and Consumption Survey (HFCS) with its harmonised structural information on both assets and liabilities will significantly increase the scope for such research.

ANNEX I

DEFINITIONS

Table I Financial and non-financial variables – EU-SILC

Financial variables at the household level	
Mortgage debt holding	Derived from a positive answer to the question on interest payments on mortgages.
Consumer debt holding	Derived from the financial burden of the repayment of non-housing related debts (a heavy burden, somewhat of a burden and not a burden at all); current.
Mortgage interest repayments	Total gross amount of mortgage interest on the main residence of the household; excludes payments on mortgages for repairs/renovation or for non-housing purposes, and repayments of the principal; annual amount over the previous 12-month period.
Mortgage debt-service-to-income ratio (estimated)	Obtained by adding to the mortgage interest payments an estimate of the repayments of the principal derived from the ECHP (annual amount as percentage of income), which contains information on total mortgage service as follows: $dsr_est_i = isr_i + csr_g$ $csr_g = dsr_g - isr_g$ where dsr_est_i ≡ mortgage debt-service-to-income ratio estimated at household level; isr_i ≡ mortgage interest-payments-to-income ratio at household level (EU-SILC); csr_g ≡ mortgage capital (or principal) repayments-to-income ratio estimated at income/age group level (three income groups and three age groups are defined: first/second, third and fourth income quartiles, and under 35, between 35 and 45 and 45 and over respectively); dsr_g ≡ mortgage debt-service-to-income ratio at income/age group level (ECHP); and isr_g ≡ mortgage interest-payments-to-income ratio at income/age group level (EU-SILC).
Total housing cost	Includes mortgage interest payments, structural insurance, mandatory services and charges, regular maintenance and repairs, taxes and the cost of utilities; current monthly cost.
Income	Total disposable household income: based on total gross household income (i.e. the sum of gross personal income for all members) minus taxes on income/wealth, transfers paid and social insurance contributions; annual income over the previous 12-month period. Includes Purchasing Power Parity adjustment across countries. The income level breakdown also includes a Harmonised Index of Consumer Prices adjustment within countries (2007 prices).
Late payments	Arrears on mortgage and consumer loan payments; incidence over the previous 12 months.
Mortgage debt burden	Financial burden of total housing costs (a heavy burden, somewhat of a burden and not a burden at all); current.
Non-financial variables at the household level	
Durable consumer goods owned	Durable goods include telephone, colour TV, computer, washing machine and car; current incidence.
Tenure status	Owner of the house (one member of the family) versus tenant/subtenant and accommodation rented at a reduced price or provided for free; current.
Household size	Number of members of the household; current.
Personal characteristics of the head of household	
Head of household	The head of household is identified via the person answering the questions in the interview: i) if the interviewed person is male, he is considered the head of household; ii) if the interviewed person is female and her spouse/partner is part of the household, the latter is considered the head of household; iii) if the interviewed person is female and does not have a spouse/partner who is part of the household, she is the head of household.
Age and gender	Age on the date of the interview. Male/female.
Marital status	Includes never married, married, separated, widowed and divorced; current.
Nationality	Based on the country of birth: non-migrant (born in the same country as country of residence), EU-migrant (born in any EU-25 country except the country of residence) and non-EU migrant (born in any other country).

Table I Financial and non-financial variables – EU-SILC (cnt'd)

Education level	Highest International Standard Classification of Education (ISCED) level of education attained: low (pre-primary, primary and lower-secondary education), medium (upper secondary and post-secondary non-tertiary education) and high (first and second stage of tertiary education); current.
Employment status	Derived from the basic activity status and the status in employment: working, employee; working, self-employed; unemployed; retired/early retirement/other inactive person; current.
Other variables	
Country	Euro area-12 countries are included, i.e. Belgium, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland.
Regional economic activity	Proxied by the employment rate of the region in which the household is located, which is available for all countries except the Netherlands, Portugal, Ireland and Luxembourg. In the latter cases the employment rate for the country as a whole has been used.

Source: Eurostat (EU Labour Force Survey).

ANNEX 2

SUMMARY OF DATA AVAILABILITY

Table 2 Summary of data availability, EU-SILC 2004 and 2007

	2004				2007				Pro memoria: 2007 including DE 2005			
	Mortgage outstanding	%	Total	%	Mortgage outstanding	%	Total	%	Mortgage outstanding	%	Total	%
Country												
Austria	236	1.0	1,077	1.1	1,792	6.9	6,806	7.0	1,792	6.1	6,806	6.2
Belgium	1,573	6.6	5,245	5.5	1,959	7.6	6,287	6.5	1,959	6.7	6,287	5.7
Germany	-	-	-	-	-	-	-	-	3,362	11.5	13,040	11.9
Spain	3,532	14.8	13,718	14.4	3,258	12.6	12,159	12.6	3,258	11.1	12,159	11.1
Finland	3,881	16.3	11,184	11.7	3,996	15.4	10,604	10.9	3,996	13.7	10,604	9.6
France	1,910	8.0	10,142	10.7	2,260	8.7	10,493	10.8	2,260	7.7	10,493	9.5
Greece	823	3.5	6,240	6.6	545	2.1	5,632	5.8	545	1.9	5,632	5.1
Ireland	1,350	5.7	5,474	5.7	1,229	4.8	5,608	5.8	1,229	4.2	5,608	5.1
Italy	2,619	11.0	24,256	25.5	2,438	9.4	20,899	21.6	2,438	8.3	20,899	19.0
Luxembourg	1,325	5.6	3,564	3.7	1,229	4.8	3,875	4.0	1,229	4.2	3,875	3.5
Netherlands ¹⁾	5,426	22.8	9,351	9.8	6,394	24.7	10,193	10.5	6,394	21.9	10,193	9.3
Portugal	1,159	4.9	4,977	5.2	772	3.0	4,306	4.4	772	2.6	4,306	3.9
Income level (2007 prices)												
<10,000	555	2.3	8,943	9.4	378	1.5	7,135	7.4	402	1.4	7,828	7.1
10,000-20,000	2,193	9.2	21,985	23.1	1,817	7.0	20,408	21.1	2,020	6.9	23,116	21.0
20,000-30,000	4,285	18.0	20,204	21.2	4,045	15.6	20,162	20.8	4,500	15.4	22,964	20.9
30,000-50,000	9,771	41.0	26,803	28.1	10,235	39.6	28,308	29.2	11,641	39.8	32,436	29.5
50,000-100,000	6,312	26.5	15,308	16.1	8,368	32.3	18,333	18.9	9,531	32.6	20,774	18.9
>100,000	718	3.0	1,985	2.1	1,029	4.0	2,516	2.6	1,140	3.9	2,784	2.5
Age group												
Under 35	4,440	18.6	13,896	14.6	4,429	17.1	12,998	13.4	4,631	15.8	14,156	12.9
35-44	8,143	34.2	19,072	20.0	8,791	34.0	18,688	19.3	9,958	34.1	21,734	19.8
45-54	6,339	26.6	19,557	20.5	7,139	27.6	20,042	20.7	8,246	28.2	23,009	20.9
55-64	3,367	14.1	17,155	18.0	3,989	15.4	18,421	19.0	4,562	15.6	20,824	18.9
65-74	1,145	4.8	14,225	14.9	1,179	4.6	14,404	14.9	1,448	5.0	16,815	15.3
75 and over	400	1.7	11,323	11.9	345	1.3	12,309	12.7	389	1.3	13,364	12.2
Working status												
Employee	16,327	68.5	41,958	44.1	17,988	69.5	43,318	44.7	20,375	69.7	49,807	45.3
Self-employed	3,470	14.6	12,096	12.7	3,770	14.6	12,033	12.4	4,084	14.0	12,921	11.8
Unemployed	708	3.0	4,105	4.3	537	2.1	3,521	3.6	661	2.3	4,340	3.9
Inactive	3,329	14.0	37,069	38.9	3,577	13.8	37,990	39.2	4,114	14.1	42,834	39.0
Migration status²⁾												
Non-migrant	22,208	93.2	88,171	92.6	23,832	92.1	88,464	91.3	26,987	92.3	100,252	91.2
Inside EU	884	3.7	3,041	3.2	1,091	4.2	4,057	4.2	1,091	3.7	4,057	3.7
Outside EU	742	3.1	4,016	4.2	949	3.7	4,341	4.5	1,156	4.0	5,593	5.1
Education level												
Low	7,081	29.7	43,743	45.9	6,188	23.9	39,100	40.4	6,319	21.6	40,275	36.6
Medium	9,353	39.2	33,129	34.8	10,881	42.1	37,182	38.4	12,398	42.4	43,535	39.6
High	7,400	31.0	18,356	19.3	8,803	34.0	20,580	21.2	10,517	36.0	26,092	23.7
# Observations	23,834		95,228		25,872		96,862		29,234		109,902	

Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.

Note: Income levels in euro (2007 prices).

1) 2004 data refer to 2005.

2) Germany not included in the migration status categories because of a lack of information.

ANNEX 3

LONG-TERM PERSPECTIVE

Table 3 Distribution of households by selected characteristics

(1995-2007)			
	1995	2007	Change
By:			
Income level (2007 prices)			
<10,000	15.1	7.9	-7.2
10,000-20,000	29.4	23.5	-5.9
20,000-30,000	23.4	22.3	-1.1
30,000-50,000	23.1	28.2	5.1
50,000-100,000	7.5	16.2	8.7
>100,000	0.6	1.9	1.3
Age group			
Under 35	20.2	15.7	-4.5
35-44	19.0	20.1	1.1
45-54	17.6	18.8	1.2
55-64	16.6	16.8	0.2
65-74	13.7	15.8	2.1
75 and over	12.9	12.8	-0.1
Working status			
Employed	54.8	55.8	1.0
Unemployed	5.4	4.6	-0.8
Inactive	39.8	39.7	-0.1
Housing status			
Owner	58.7	62.9	4.2
Tenant or other	41.3	37.1	-4.2
Pro memoria			
# Observations	58,318	109,902	

Sources: Eurostat (ECHP and EU-SILC cross-section database) and authors' calculations.

Notes: The aggregate for 1995 includes 1996 data for Finland and Luxembourg and the aggregate for 2007 includes 2005 data for Germany.

Table 4 Percentage of households holding a mortgage and consumer debt in the euro area

(1995-2007)

	Mortgage outstanding rates			Consumer debt outstanding rates		
	1995	2007	Change	1995	2007	Change
Overall	20.4	22.1	1.7	14.0	17.2	3.2
By:						
Income level (2007 prices)						
<10,000	5.2	4.4	-0.8	9.7	10.2	0.5
10,000-20,000	9.9	8.4	-1.5	13.8	15.7	1.9
20,000-30,000	22.9	18.2	-4.7	16.9	18.9	2.0
30,000-50,000	35.2	32.5	-2.7	14.5	19.2	4.7
50,000-100,000	40.1	41.5	1.4	12.3	17.1	4.8
>100,000	30.6	35.0	4.4	10.2	17.3	7.1
Age group						
Under 35	20.7	26.5	5.8	22.5	24.9	2.4
35-44	36.9	38.9	2.0	17.6	20.5	2.9
45-54	30.7	29.8	-0.9	16.4	21.5	5.1
55-64	17.1	17.6	0.5	11.7	18.2	6.5
65-74	6.9	7.9	1.0	6.5	10.3	3.8
75 and over	2.6	2.3	-0.3	1.8	3.4	1.6
Working status						
Employed	31.0	33.2	2.3	17.9	21.4	3.4
Unemployed	12.1	13.2	1.1	18.3	25.2	6.9
Inactive	7.8	7.8	0.0	7.7	10.5	2.8
Pro memoria						
# Observations	58,318	109,902		58,318	109,902	

Sources: Eurostat (EHP and EU-SILC cross-section database) and authors' calculations.

Notes: The aggregate for 1995 includes 1996 data for Finland and Luxembourg and 1997 data for Germany and the aggregate for 2007 includes 2005 data for Germany.

ANNEX 4

MORTGAGE OUTSTANDING AND DEBT SERVICING RATIO

Table 5 Households holding a mortgage and consumer debt, mortgage interest payments and overall debt-service-to-income ratio in the euro area

(% and percentage points)

	Mortgage outstanding rates		Consumer debt outstanding rates		Debt servicing ratio (mortgage debt)				
	2007	Change 2004-07	2007	Change 2004-07	Interest payments		Interest + capital repayments-estimation		
					2007	Change 2004-07	2007	Change 2004-07	2007
Overall	22.1	1.7	17.2	-0.9	6.2	-0.3	22.4		
Country range [max., min.]	48.2	9.7	27.4	8.4	14.6	2.3	25.1	7.6	
Standard deviation					9.2		9.7		
By:									
Income level (2007 prices)									
<10,000	4.4	0.0	10.2	-0.1	19.2	1.8	32.5		
10,000-20,000	8.4	-0.1	15.7	-0.1	9.2	2.1	25.6		
20,000-30,000	18.2	0.8	18.9	-1.7	8.3	1.2	24.2		
30,000-50,000	32.5	0.3	19.2	-1.3	6.4	0.0	22.6		
50,000-100,000	41.5	3.7	17.1	-1.7	4.6	-0.1	20.6		
>100,000	35.0	5.9	17.3	-1.3	2.6	-0.2	18.9		
Age group									
Under 35	26.5	4.0	24.9	-1.5	10.5	1.1	25.7		
35-44	38.9	4.7	20.5	-1.4	6.4	-0.2	22.2		
45-54	29.8	1.7	21.5	-2.3	4.4	0.0	21.3		
55-64	17.6	0.8	18.2	0.4	3.8	-1.3	20.0		
65-74	7.9	0.2	10.3	1.1	3.8	-0.4	18.5		
75 and over	2.3	-0.7	3.4	0.4	5.1	0.1	16.2		
Working status									
Employee	34.2	2.6	21.5	-2.2	6.4	-0.2	22.8		
Self-employed	28.4	3.0	20.9	-0.8	7.3	-0.3	22.8		
Unemployed	13.2	-0.9	25.2	1.7	7.7	1.4	23.5		
Inactive	7.8	0.2	10.5	0.5	4.2	-0.6	19.8		
Migration status									
Non-migrant	22.6	1.6	17.1	-0.9	6.1	-0.4	22.2		
Inside EU	19.5	-0.2	18.1	-1.4	6.3	2.2	22.0		
Outside EU	19.0	4.0	22.4	-0.7	9.2	1.7	25.3		
Education level									
Low	13.9	0.4	14.5	-0.8	5.8	1.0	22.0		
Medium	22.7	1.7	19.8	-1.6	6.0	-0.4	22.7		
High	31.4	1.8	16.1	0.1	6.7	-0.8	22.6		

Sources: Eurostat (EU-SILC cross-section database) and authors' calculations.

Notes: Income levels in euro (2007 prices). The estimates of mortgage outstanding rates for 2007 include 2005 data for Germany; Germany is not included in the migration status categories because of a lack of information, nor in any of the estimates of change between 2004 and 2007. The estimates on mortgage debt service ratios also exclude Germany; mortgage debt service ratios have been estimated at the household level by approximating capital repayments using data from the ECHP (see Annex 1).

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