

Household debt: evolution and distribution

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Introduction

In recent decades, household debt in most euro area countries has risen considerably both in absolute terms and in relation to GDP. Belgium is no exception to this international trend. In nominal terms, Belgian household debt has doubled in the past ten years to reach € 217 billion at the beginning of 2014. As a result, the household debt ratio also climbed from 40 to 56.5 % of GDP during that period. Despite this upward trend, however, the debt ratio at the beginning of 2014 was still below that of households in the euro area (63.7 % of GDP).

It is important to monitor the debt ratio closely, as a rising debt ratio may have significant implications for (the volatility of) macroeconomic activity, and possibly also for financial stability if the debt position becomes unsustainable (i.e. if sufficiently large numbers of households default). The usual method of monitoring these risks, and in particular assessing the sustainability of the debt, involves indicators which relate the debt level to the resources available to the borrowers. For that purpose, one can rely on both liquidity ratios, i.e. flows (debt-service-to-income ratio expressing repayments in relation to income) and solvency ratios, i.e. outstanding amounts (debt-to-asset ratio), or a combination of these two concepts (debt-to-income ratio). Debt levels and debt ratios are often estimated on the basis of macroeconomic statistics (national accounts) in view of their timeliness and international comparability. However, these statistics have a major drawback in that they are compiled for the household sector as a whole, so that some risks specific to certain types of households may go undetected (e.g. in the case of uneven distribution of incomes, assets or debt).

This article tries to overcome that drawback by also using microeconomic data to examine the risks inherent in household debt. For that purpose, the writers base their work on the Household Finance and Consumption Survey (HFCS), in which households were questioned in 2010 about their financial situation, plus the Central Individual Credit Register (CICR), which records both the loan contracts and defaults. These data have the advantage of measuring the financial health at the level of the household or individual. The microeconomic data, and particularly those from the HFCS, also make it possible to link debt to socio-economic variables, such as age and income. In the CICR, that analysis is only possible on the basis of age, permitting the identification of vulnerable groups within a population. Moreover, debt sustainability often also depends on these socio-economic variables, and particularly on age. Young people frequently expect to see their income increase during their career, so that they can generally afford a heavier debt in relation to their current income, particularly as they need to make substantial investments. This aspect has to be taken into account in assessing sustainability. Thus, there may be demographic reasons for a high debt ratio at the level of the economy as a whole (e.g. if there is a larger proportion of young people in the population).

The article gives a detailed account of the evolution and distribution of Belgian household debt. It is arranged as follows. Section 1 explains, in theory, why and at what point households take on debt. Section 2 presents the indicators for assessing debt sustainability, and takes a closer look at the databases used, which can be divided into macroeconomic data sources (national accounts) and those providing microeconomic data (HFCS, CICR).

Section 3 uses these sources to investigate the evolution and distribution of debt in Belgium and in the euro area, distinguishing between mortgage loans (secured) and consumer credit (unsecured). Section 4 uses debt ratios and thresholds to identify households with excess debt in the various age and income categories. It also examines how debt sustainability responds to a range of shocks (income, interest rate and asset price shocks) both on the basis of the HFCS and *ex post* on the basis of defaults recorded by the CICR. Finally, the conclusion gives a brief summary of the main findings of the analysis.

1. Theory: the role of debt for households

Economic theory, and in particular the life cycle theory (Ando and Modigliani, 1963), considers the accumulation and repayment of debt during life as a normal – even crucial – process for individual households. According to the life cycle hypothesis, consumers aim at a stable consumption corresponding to the resources which they expect to have at their disposal during their life (permanent income). This consumption smoothing throughout life is possible only by building up and repaying debt via financial intermediation, whereby the resources of economic agents with a temporary surplus (disposable income exceeding permanent income) can be allocated to agents with a deficit (disposable income less than permanent income). In so far as this process is accompanied by a more efficient allocation of consumption, it enhances the well-being of both the debtor and the creditor. Since income normally increases during working life, young households generally borrow a relatively large amount compared to their disposable income. At the same time, at an early stage in their life they make substantial investments (such as buying a home), which entails taking on debt.

However, the life cycle theory is based on the assumption of a population of perfectly rational consumers, who also know exactly what resources they will accumulate during their life. In practice, the future income situation is often unknown – perhaps with over-optimistic expectations – and major adverse economic shocks may occur, such as a rise in unemployment, a fall in asset prices or a reduction in productivity, all factors which may become persistent. These shocks may reveal that the debt level is based on an over-estimate of permanent income, and therefore constitutes excess debt. Thus, excess debt levels are often the consequence of over-optimistic expectations and/or failure to take account of risks concerning the future progress of the economy and/or the personal situation (e.g. in regard to the individual's health), and are always bound to affect part of the population.

However, it is necessary to prevent excess debt from becoming systemic and concerning a large section of the population. Apart from personal suffering and loss of well-being for the individual or the household, a high debt level may have considerable detrimental effects for the economy as a whole. In macroeconomic terms, a high debt level may make household consumption more sensitive to (unexpected) interest rate or income shocks, etc. In so far as these (negative) shocks are reflected in household consumption (owing to financial restrictions and/or an inadequate capital buffer), this greater volatility may seriously damage well-being. In the event of a financial bust, these shocks may also trigger a deleveraging trend which in turn is liable to reinforce the downward economic spiral (known as a “balance sheet recession”). In addition, excessive debt levels may impair financial stability, as failure to honour commitments leads to a loss of value for creditors, often concentrated in the banking sector, especially in the case of household debt. Finally, excess debt often exacerbates inequality between economic agents, so that a change in fiscal and/or monetary policy could have significant (and perhaps unintended) distribution effects between debtors and creditors.

In order to examine whether households face immoderate or excessive debt, it is necessary to look at what is happening at microeconomic level, as well as considering the macroeconomic aspect, as the financial stability of households needs to be assessed case by case, in contrast to the financial position of governments, for example. In this regard, the distribution aspects are crucial. Household debt at the level of the sector as a whole may be accompanied by substantial income flows or assets concentrated among non-indebted households. The macroeconomic figures have the advantage of providing a timely picture of general trends, while the microeconomic data permit a more accurate evaluation of the risks associated with the debt of (certain groups of) households.

2. Debt indicators

The theoretical framework of the life cycle shows that, in order to assess debt sustainability, it is necessary to take account of various factors. Apart from debt, interest rates and disposable income, there are other important variables such as age and level of education (linked to expected or permanent income), or assets. Hence the need to make use of multiple sources (both microeconomic and macroeconomic).

Debt sustainability is generally assessed not only according to the debt level (measured in euros or in relation to GDP) but also on the basis of indicators which link debt

to the debtors' available resources. For that purpose, it is possible to use both liquidity ratios and solvency ratios, or a combination of the two concepts. In the economic literature, the most common indicators – which are also used in this article are as follows:

- debt-to-income ratio: outstanding debt in relation to income; this indicator measures the number of yearly incomes (net or gross) needed to repay the outstanding debt.
- debt-service-to-income ratio: the amount of capital and interest to be repaid in relation to income; this indicator measures the proportion of income (net or gross) allocated to debt repayment.
- debt-to-asset ratio: the outstanding debt in relation to all financial and immovable assets; this indicator measures whether the debt incurred can be repaid by liquidating the available (movable and immovable) assets.

The indicators range between zero (no debt) and infinity (no assets or income). The higher the ratio, the greater the risk of the debt becoming unsustainable. Section 4.1 defines thresholds for these indicators beyond which debt is considered unsustainable. The indicators for assessing the size of the debt in relation to income (debt-to-income ratio and debt-service-to-income ratio) concern the liquidity position of households, and make it possible to determine whether the household can meet its commitments with its current income flow. More specifically, they define the households' repayment effort, either in terms of the proportion of current income devoted to debt repayment (debt-service-to income ratio), or from the point of view of the time required to repay the entire debt (debt-to-income ratio). The indicator linking debt to assets concerns household solvency and assesses the proportion of the debt that can be repaid by liquidating assets immediately, assuming that is possible. These indicators are subject to different macroeconomic shocks. Thus, an interest rate shock will essentially affect the debt-service-to-income ratio, whereas a fall in property prices will primarily affect the debt-to-asset-ratio. Excess debt generally implies that both the liquidity and the solvency of households are affected. Thus, a household with a high debt-to-income ratio may be unable to meet its commitments with its current income, but does not have a debt problem since it can sell assets to pay off the debt. Conversely, a household with weak solvency may never encounter problems if it has a sufficiently large, permanent and secure income flow.

It is important to measure these indicators on the basis of both macroeconomic and microeconomic information. The macroeconomic indicators are devised for the sector as a whole and therefore disregard distribution aspects. If the distribution of debt, income and/or assets is uneven,

that may conceal certain problems. The microeconomic information on distribution is therefore vital to supplement the macroeconomic analysis. For their part, the microeconomic indicators give the values for indebted households, so that the risks for the economy as a whole may be overestimated. Since the microeconomic information is confined to the group of indebted households, the resulting median or average values are generally higher than the macroeconomic indicators. For a number of indicators, and especially for the debt-service-to-income ratio, microeconomic data are likewise an important supplement to macroeconomic data. For instance, capital repayments are not recorded fully, if at all, in the macroeconomic statistics and they can only be determined on the basis of a range of assumptions, notably concerning the maturity of the outstanding debt. The microeconomic information, which is based on survey data, offers a direct reading of this indicator and/or makes it possible to test the assumptions contained in the macroeconomic information.

The macroeconomic information on debt, income and assets is based largely on the national financial (and non-financial) accounts. The main advantage of these data is that they offer a complete picture of households and are available rapidly. They also lend themselves to international comparison, particularly within the EU where the statistics are compiled by the same harmonised methodology, namely the European System of National and Regional Accounts (ESA). In the case of the financial accounts, the national accounts permit a subdivision by sector (households, corporations, etc.) and by financial instrument (loans, equities, etc.). Nonetheless, the macroeconomic statistics also have their drawbacks. Thus, the analysis has to take account of sometimes significant revisions, and also suffers from a number of gaps which have repercussions on the assessment of debt sustainability. For instance, these statistics do not record the value of the housing stock. However, most of the institutions compiling statistics, including the NAI for Belgium and the ECB for the euro area, have produced good quality estimates lately. Another shortcoming of the national accounts concerns the recording of the repayment burden, particularly the capital redemption, so that assumptions must inevitably be used (see section 3.3).

This article also analyses debt on the basis of two microeconomic sources. The first is the Central Individual Credit Register (CICR) which provides rapidly available time series on individual borrowers. Its job is to record all borrowings (positive central register), consumer credit (instalment loans and hire purchase), mortgage loans concluded for private purposes by individuals, and any defaults relating to such credit (negative central register).

Authorised overdrafts, namely credit facilities which enable consumers to exceed the amount available on their current accounts, are also recorded. Furthermore, lenders are required to consult the register before granting any credit to individuals, encouraging a more responsible approach. Since these data must be recorded by law, they are exhaustive; they are available per type of credit (mortgage loans and consumer credit: instalment loans, hire purchase and credit facilities) and can be broken down according to the borrowers' age, number of contracts or initial contract amount.

However, the CICR contains hardly any further information on borrowers. For instance, it says little about the borrowers' socio-economic characteristics (only their age) and nothing about their income or assets. To overcome these defects it is necessary to use supplementary, more structural data. The second microeconomic source, the HFCS, fills these gaps. The data come from a survey on the financial behaviour of households in the euro area, conducted by a research network set up specifically for the purpose (Household Finance and Consumption Network – HFCN). The Bank's Economic Review has already given a detailed account of the operation of the HFCN and the organisation of the HFCS in Belgium (see Du Caju, 2012 and 2013). The interviews for the first wave were conducted in 2010 in most countries, including Belgium. Altogether, more than 62 000 households were polled in the euro area, including 2 364 in Belgium. The survey data at household level offer the advantages of permitting separate examination of the group of indebted households and supplying information on the distribution of debt across those households, possibly broken down according to the various characteristics of the types of household considered. Conversely, they have the drawback of never being exhaustive (e.g. because of incomplete reporting by the persons questioned) and being published infrequently and after some delay. That is why the survey data always supplement but never replace the macroeconomic statistics.

3. Evolution and distribution of household debt

This section deals with the composition and pattern of household debt and calculates the debt indicators defined above for Belgium and for the euro area. On the basis of microeconomic data (HFCS), the authors also calculate these indicators for Belgium for a number of age groups and income categories. This subdivision can identify vulnerable groups. According to the life cycle theory, the level of debt varies according to age, in particular, highlighting the need to assess debt sustainability per age group. An analysis

by income is also relevant, as the same debt-to-income ratio may entail a greater risk for low-income households since their savings ratio is generally low and they therefore probably have only limited assets. In addition, if they encounter a negative shock, these households risk having to cut back sooner on essentials as their "margin" of non-essential consumption is relatively small.

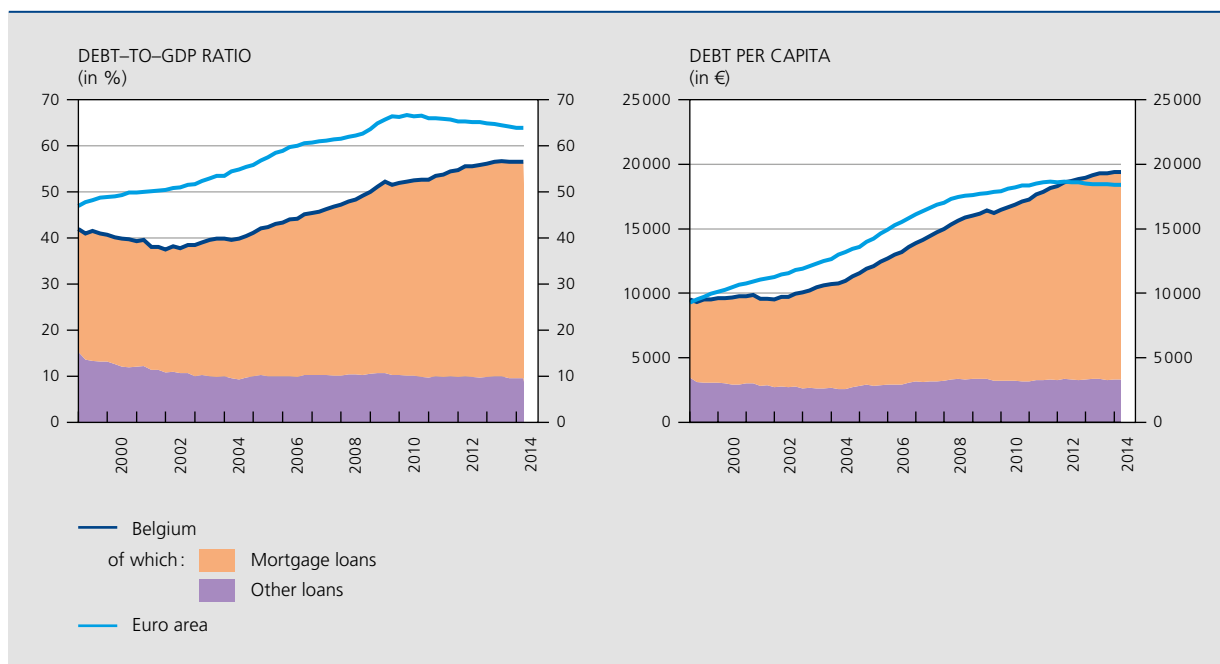
3.1 Household debt levels

Over the past decade the absolute nominal debt of Belgian households has doubled to reach €217 billion, raising the household debt ratio from 40 % of GDP in 2003 to 56.5 % at the beginning of 2014. A comparable increase was seen in the euro area, at least up to mid-2010 when the crisis forced households in some countries to reduce their debt levels. Despite a noticeable upward trend, the debt ratio in Belgium at the beginning of 2014 was still below the figure for the euro area (63.7 % of GDP). Viewed in relation to the population, the debt continues to pursue an upward trend, though in this case the rise is exaggerated by inflation. However, unlike the debt ratio, the debt level per capita in Belgium (€19 400) exceeded that in the euro area at the beginning of 2014 (€18 400). Compared to the debt ratio as a percentage of GDP, however, the per capita debt level says less about the associated risks since it is not related to income and/or assets. It should be noted that the level of financial assets per capita of Belgian households is considerably higher (€98 500) than for households in the euro area (€62 900). Similarly, per capita disposable income in Belgium (€21 400) exceeds the figure for the euro area (€19 000).

The macroeconomic assessment of the financial position of households in Belgium is therefore relatively favourable, particularly taking account of the relatively low debt level and the high level of assets which they own. Be that as it may, from a macroprudential point of view it is necessary to pay attention to the fact that the debt ratio is still rising significantly, given the macrofinancial risks mentioned above (see section 2), and particularly the increased sensitivity of household spending to fluctuations in interest rates, unemployment and asset prices. Moreover, it may be that favourable macroeconomic figures – i.e. the figures for the economy as a whole – conceal more serious problems for indebted households or for a subgroup of that population.

In Belgium as in the euro area, the main reason for the rise in household debt is the significant increase in mortgage lending (Bruggeman and Van Nieuwenhuyze, 2013). At the beginning of 2014, mortgage loans represented

CHART 1 MACROECONOMIC EVOLUTION IN HOUSEHOLD DEBT LEVELS



Sources: ECB, NBB.

47 % of GDP, whereas they were in the region of 30 % of GDP in the first half of the 2000s. The marked increase in property prices has driven up the average amount borrowed. Consumer credit has remained stable at around 10 % of GDP.

This upward trend in the debt ratio over the past decade is often attributed to the easing of credit access conditions for households, resulting partly from a series of financial innovations (such as the extension of loan maturities). In addition, the increase in the debt occurred in a context of favourable financial conditions (for example, in relation to interest rates or loan-to-value ratios). These conditions were often encouraged by low nominal and real interest rates and by fierce competition between banks, reflected in particular in narrow margins on mortgage loans. The growth of mortgage loans is also linked to tax factors, in view of the often more favourable treatment of interest charges that some governments have introduced over the years. Thus, the expansion of mortgage lending in Belgium since 2005 has coincided with the introduction of a new tax treatment for mortgage loans contracted from that date onwards, bringing a more transparent advantage for those loans in the form of the "housing bonus". In addition, since 2009, one element of the "recovery plan" established a range of tax incentives for energy-saving investments ("green loans"). From 2009 to 2011, when most of those measures were suspended, these

concessions led to a steep rise in the number of loans for renovation purposes. These factors enabled households to afford larger loans for the same level of income or assets.

The above statistics, based on the financial accounts, give some insight into the financial situation of all residents or households, whether they have debt or not. However, the data taken from the HFCS for 2010 reveal that less than half of households have debt. Participation in the credit market – i.e. the proportion of households with one or more loans – stands at 44.8 % in Belgium compared to 43.7 % in the euro area. Taking these indebted households on their own, and more specifically the value of the outstanding debt for a household in the middle of the distribution, we obtain a conditional median value for the outstanding debt. In Belgium, a "median" household has a debt of € 39 300 (median value), compared to € 21 500 in the euro area.

The debt level of Belgian households can be examined in more detail by dividing households according to age group and income quintile, the first quintile comprising the 20 % of households with the lowest incomes and so on, up to the fifth quintile containing the 20 % of households with the highest incomes. Unsurprisingly, credit market participation increases with income: households with a larger income are more inclined to contract and repay loans. In addition, the banks are more willing to lend

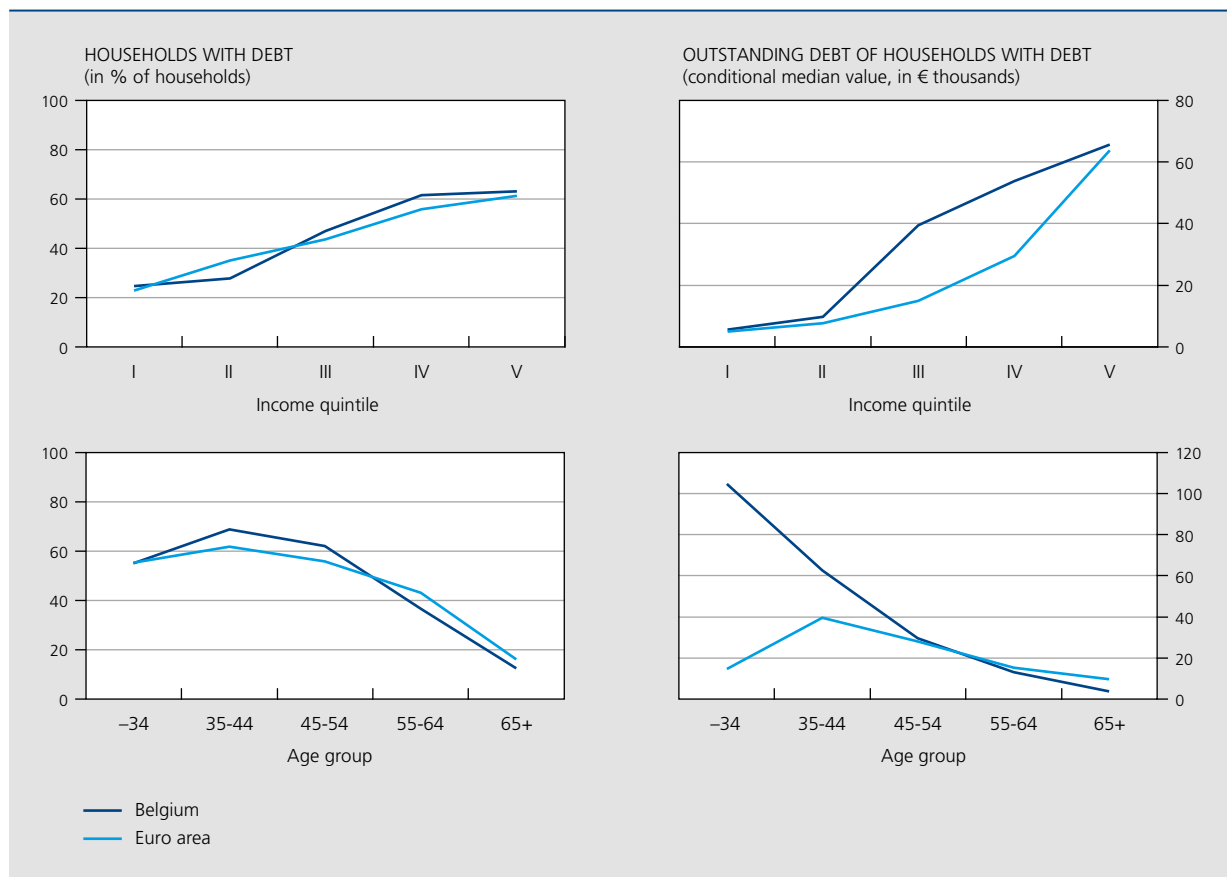
to them. The income profile of credit market participation in Belgium is comparable to the general profile in the euro area. It is mainly in the central income quintiles that the median outstanding amount for a household with debt in Belgium is higher than the figure for the euro area.

In Belgium as in the euro area, the age profile of credit market participation is bell-shaped. Participation increases initially with age, reaching a peak for the 35-44 age group, before subsiding. This pattern illustrates the life cycle mentioned above. In the euro area, the bell-shaped profile of the participation rate is also reflected in the outstanding amount of the debt of the various age groups. In Belgium, in contrast to the euro area, the youngest indebted households are also typically those with the largest outstanding debt. The reason lies in the differing home ownership profiles and the associated mortgage loans. In relative terms, the rate of home ownership is higher for Belgian households (69.9%) than for euro area households (60.1%), a discrepancy which is particularly marked for the youngest age group: in Belgium, 46.4%

of households in which the reference person is under 35 years of age own their home, compared to just 31.9% in the euro area. Moreover, property in Belgium is more expensive on average, and the associated loans are therefore larger than in the euro area.

The income and age profiles of household debt vary according to the type of loan. Households can contract mortgage loans against the collateral of their own home or other property. The non-mortgage debt taken into account by the HFCS includes credit lines and overdrafts, outstanding amounts on credit cards and other loans, such as car loans and other consumer credit (see HFCN, 2013). Focusing on Belgian households and considering the factors 'income' and 'age' together, we find that it is mainly the youngest households in the highest income quintiles that contract mortgage loans (over three-quarters of such households, compared to three in ten for the population as a whole) and that, in relative terms, those households have the largest outstanding debt (on average, double the median for the population

CHART 2 HOUSEHOLD PARTICIPATION RATE AND DEBT LEVELS
(breakdown by income quintile and age group)



Source : NBB (HFCS).

CHART 3 HOUSEHOLD DEBT LEVELS IN BELGIUM
(breakdown by type of debt, income quintile and age group)

Households with mortgage debt (in % of households)						Outstanding amount of mortgage debt (conditional median value, in €)							
	I	II	III	IV	V	Total		I	II	III	IV	V	Total
-34	8.4	26.4	41.7	71.9	75.5	41.1	-34	94 000	99 000	128 000	125 000	140 000	125 000
35-44	14.3	12.8	62.9	67.3	80.3	55.2	35-44	55 000	76 345	60 000	57 706	90 000	70 000
45-54	32.1	19.7	42.7	58.4	51.7	43.9	45-54	18 504	69 728	40 000	36 700	49 500	40 000
55-64	n.	18.6	23.1	16.8	27.6	18.1	55-64	n.	30 000	25 000	20 000	30 000	25 000
65+	3.2	3.5	n.	n.	n.	3.0	65+	18 000	11 000	n.	n.	n.	18 000
Total	9.2	13.2	31.1	46.8	52.4	30.5	Total	50 000	65 119	63 000	75 180	75 000	70 000

Households with non-mortgage debt (in % of households)						Outstanding amount of non-mortgage debt (conditional median value, in €)							
	I	II	III	IV	V	Total		I	II	III	IV	V	Total
-34	17.2	27.3	31.9	36.2	19.3	26.4	-34	1 500	3 000	7 200	7 330	7 500	5 750
35-44	20.7	19.3	52.7	31.0	30.4	31.3	35-44	1 300	4 500	4 500	9 062	7 300	6 000
45-54	24.0	43.0	24.3	39.8	31.8	32.7	45-54	5 000	3 000	3 500	6 906	10 000	7 000
55-64	24.3	18.2	26.1	27.9	31.8	25.4	55-64	2 200	2 400	4 300	2 500	7 847	5 000
65+	12.7	7.4	12.0	7.7	6.4	10.1	65+	1 100	1 200	7 200	4 000	3 750	2 725
Total	18.0	19.2	27.0	28.8	27.8	24.2	Total	2 000	2 765	5 000	7 000	8 280	5 037

Source: NBB (HFCS).

as a whole). Also, in comparison with the euro area, low-income Belgian households with a current mortgage loan have a larger outstanding debt, on average (see Du Caju, 2013). Non-mortgage loans are distributed more evenly across the various income and age groups, although they are slightly less common for the older age groups and the lower-income households. The highest outstanding amounts occur in the case of young households and households of average age from the highest income quintile. However, the amounts concerned are still fairly small, in median values. Moreover, young households in the euro area contract non-mortgage loans far more often than the corresponding households in Belgium (see Du Caju, 2013).

3.2 Debt in relation to income: the debt-to-income ratio

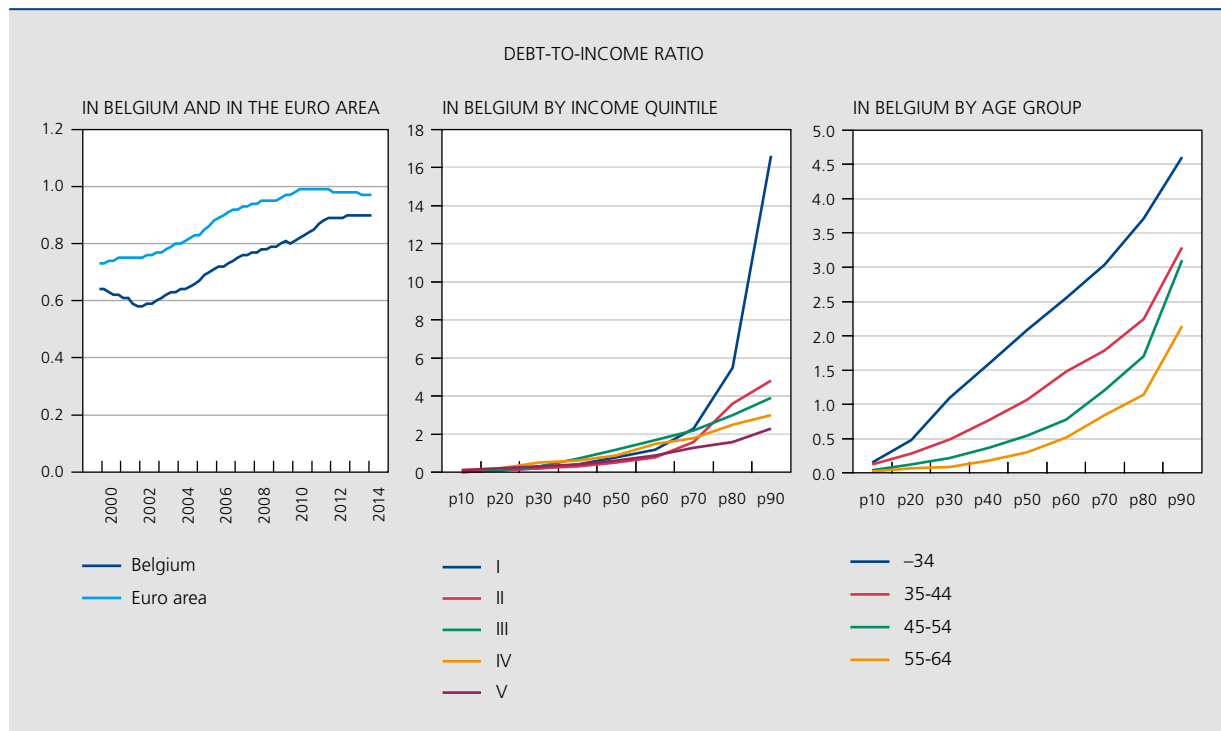
The level of the outstanding amount of household debt does not in itself offer any information on the households' ability to repay the debt. That is why debt has to be viewed in the context of the resources which households have at their disposal to repay it. The first indicator used in this context relates debt to income. The debt-to-income ratio expresses the relationship between the outstanding debt level and households' disposable income. It estimates the number of years' income necessary to repay the

outstanding debt and can be considered a more detailed measurement of the debt as a percentage of GDP: debt is now compared to household income rather than the income generated by the economy as a whole.

The macroeconomic view obtained by linking debt to income is comparable to the view of the debt ratio expressed as a percentage of GDP. In the past decade, that ratio has risen significantly from 0.64 in 2004 to 0.90 at the beginning of 2014, though it is still below the figure for the euro area.

However, when assessing this indicator at macroeconomic level, it is necessary to bear in mind that it is calculated for the entire household sector, and that debt is therefore expressed in relation to overall income, i.e. not just the income of indebted households but also that of households with no debt. Moreover, the average does not reveal anything about the distribution of debt in relation to income within the population. Thus, the analysis based on this macroeconomic indicator may underestimate the debt-to-income ratio of indebted households, and the risks inherent in household debt. The microeconomic data permit a more accurate interpretation of this indicator. The HFCS asks households about their gross income, which includes not just labour incomes but also transfer incomes (pensions and miscellaneous benefits) and property incomes (rental income, interest, dividends).

CHART 4 HOUSEHOLD DEBT IN RELATION TO INCOME: THE DEBT-TO-INCOME RATIO
(macroeconomic and microeconomic views)



Sources: ECB, NBB (HFCS).

In Belgium, the median indebted household (in the middle of the distribution) has a debt-to-income ratio of 0.80, whereas this conditional median value is only 0.62 in the euro area.

If we examine the situation of Belgian households in more detail, and focus on the distribution per income quintile and per age group, the HFCS shows that debt in relation to income can reach quite a high level, especially for households in the lowest income quintile. Thus, 20 % of indebted households in this income quintile have a debt-to-income ratio of more than 5. However, it should be noted that only a quarter of households in this quintile is indebted, so the highest deciles of this ratio concern a small number of households, and the values are therefore estimated on the basis of a relatively small number of observations. The debt-to-income ratio is also substantial for the youngest households, and that applies to the whole distribution. In accordance with the life cycle theory, that ratio declines with age. Thus, 10 % of the youngest indebted households have a debt-to-income ratio of more than 4.5. It should be noted that just over half of households in this age group are indebted. It is therefore evident that the highest ratios may occur in the case of young and/or low-income households. Apart from the

level of the highest ratios (which is difficult to estimate), it is the number of households with a ratio in excess of a critical value that is particularly important, as is demonstrated below (see section 4.1).

3.3 The repayment burden : the debt-service-to-income ratio

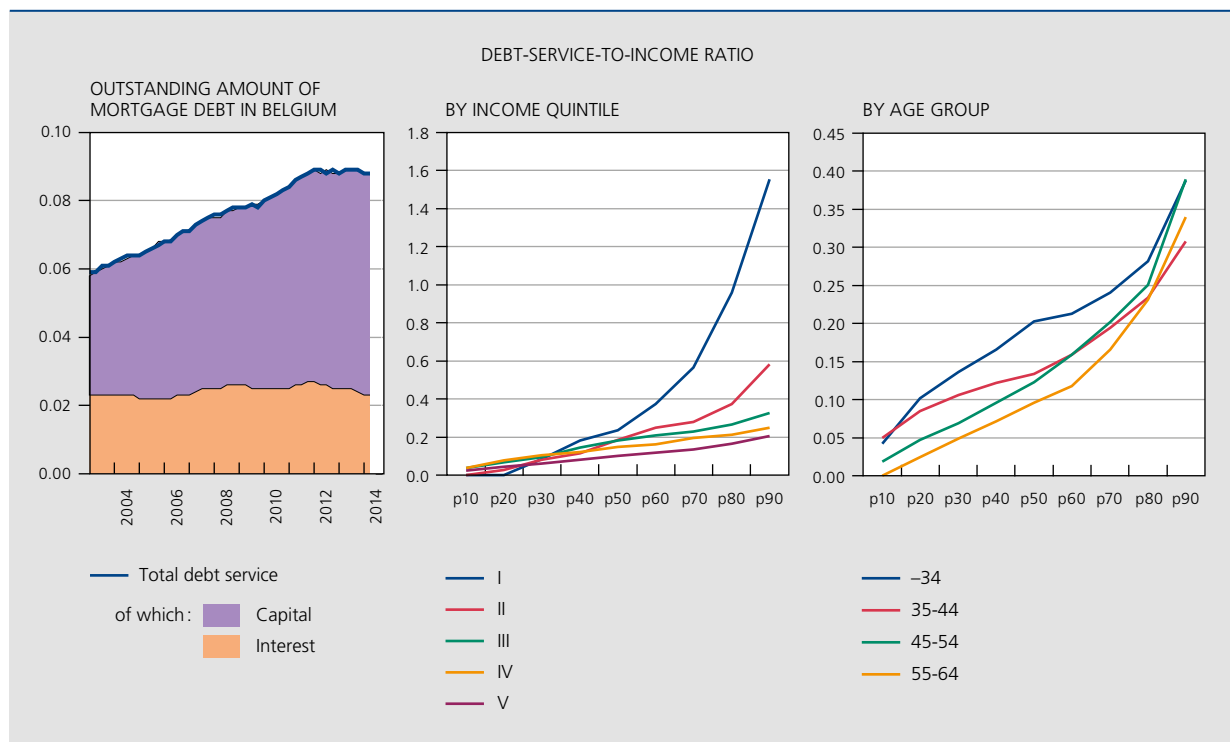
The debt-service-to-income ratio measures the proportion of income that has to be reserved for paying off the debt (capital and interest). As this indicator compares two flow variables, it provides the most direct estimate of the liquidity position of households. Moreover, it is easy to interpret. If, in an extreme case, the ratio is more than 1, that means that the household concerned clearly faces liquidity problems and that, if it lacks liquid assets or additional credit, it cannot meet its commitments. In practice, since households also have to cover other expenditure, the problems will arise at an earlier stage, namely at a considerably lower level of that indicator.

The macroeconomic analysis of this indicator is hampered by the fact that the repayment cost is not recorded in the national accounts. The only available data are the

outstanding debt (financial accounts) and the interest (income accounts). However, on the basis of the outstanding debt and the average implicit interest rate on that debt (MIR survey), it is possible to obtain an indicative estimate of the repayment burden by making a number of specific assumptions regarding the average residual term and the method of repaying these borrowings. For simplicity, this study only calculates the repayment burden relating to outstanding mortgage loans. In Belgium, mortgage loans have the advantage that they are normally repaid in fixed monthly instalments, and the average residual term is relatively stable. This analysis assumes that the average residual term is ten years. Under these assumptions, the debt-service-to-income ratio in Belgium has risen steadily over the past decade, from 6% of total disposable income in 2004 to 9% at the beginning of 2014. A breakdown of this cost between capital repayments and interest shows that the increase is due entirely to higher capital repayments. Despite the increasing debt volume, interest charges have remained stable overall, possibly as a result of the more favourable financing conditions during the period concerned. It should be noted that this ratio is calculated in relation to total disposable income, so that it also includes the income of households with no debt.

The microeconomic data from the HFCS show that the distribution of the debt-service-to-income ratio in Belgium is comparable to that in the euro area. However, as in the case of debt in relation to income, it appears that the median indebted Belgian household has a slightly higher ratio than the equivalent household in the euro area: in Belgium, the conditional median value of the debt-service-to-income ratio is 0.14, compared to 0.11 in the euro area. The distribution of the debt-service-to-income ratio per quintile is fairly marked. The ratio can reach very high values for a low-income household. Thus, in the case of 20% of indebted households in the lowest income quintile, the ratio exceeds 0.80. However, it should be borne in mind that only a quarter of households in this income quintile is indebted. In the case of the debt-service-to-income ratio, the highest deciles therefore concern a small number of households, and the estimate is based on a relatively small number of observations. Nonetheless, those households face a heavy repayment burden. In some cases, they may be households with favourable future income prospects or access to other resources for repaying their debt (such as help from their family), or they may be households which have suffered an adverse income shock. The breakdown by age group shows that the debt-service-to-income ratio tends to be

CHART 5 DEBT REPAYMENTS IN RELATION TO HOUSEHOLD INCOME: THE DEBT-SERVICE-TO-INCOME RATIO
(macroeconomic and microeconomic views for Belgium)



Sources: ECB, NBB (HFCS).

higher in the case of the youngest households. However, the differences are not as marked as in the case of the debt-to-income ratio.

3.4 Debt in relation to assets: the debt-to-asset ratio

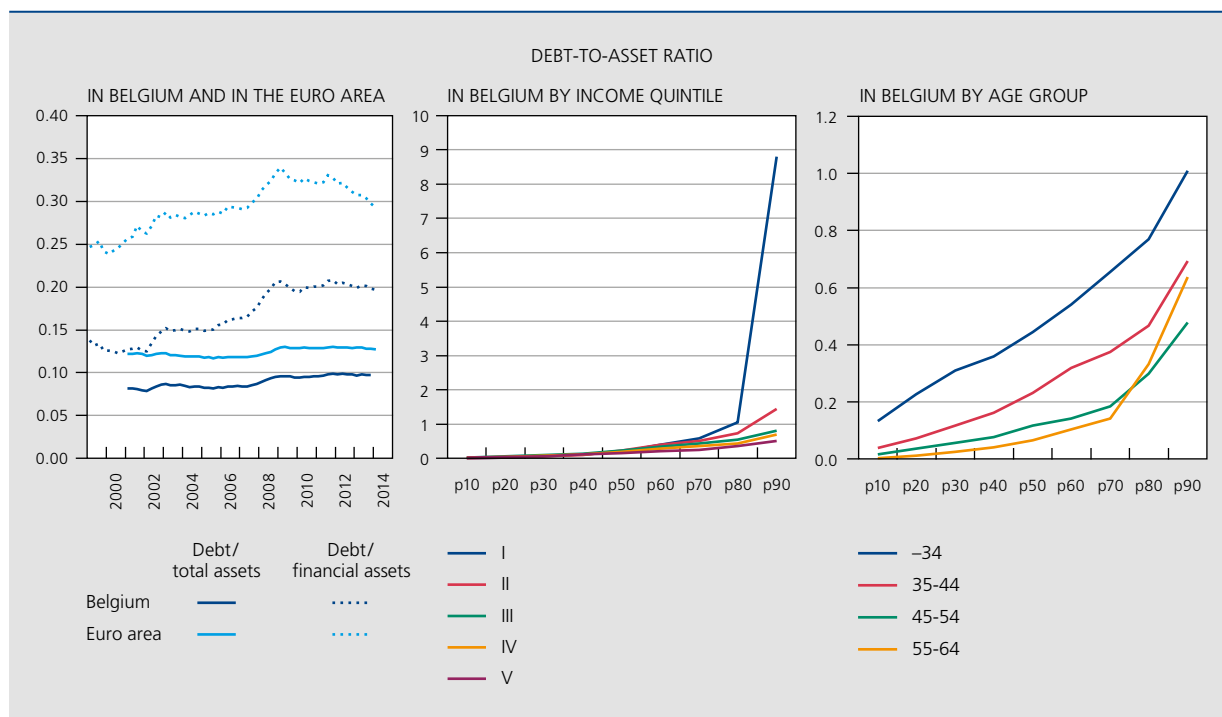
The debt-to-asset ratio compares debt to assets. As already stated, this ratio measures household solvency. In cases where the debt-to-income ratio or the debt-service-to-income ratio reaches alarming levels, that does not necessarily mean that the households cannot meet their commitments, particularly if they have a low debt-to-asset ratio and therefore sufficient assets that can be realised. The debt-to-asset ratio can be defined in the broad sense or in the strict sense, depending on whether the debt is compared to total assets (financial assets and property) or to financial assets (which are more liquid). A ratio (defined in the broad sense) of more than 1 is generally a sign that the household is in difficulty. If the household's income flows are not high enough, it will be unable to meet its commitments.

For both the euro area and Belgium, the macroeconomic estimates of the debt-to-asset ratio are well below 1,

indicating that, on average, there are more than sufficient assets to cover the liabilities. This reflects the fact that households have positive net assets. The low debt-to-asset ratio in Belgium compared to the euro area is due to the lower debt ratio of Belgian households, but also and above all to their relatively substantial financial and non-financial assets (as a ratio of GDP). At the beginning of 2014, the financial assets of Belgian households were estimated at 287 % of GDP, compared to 218 % for households in the euro area. The value of their immovable property – measured according to the estimates of the NAI (Belgium) and the ECB (euro area) – came to around 300 % of GDP for both Belgium and the euro area. Since the immovable property is frequently the household's own home, it is very often impossible to use it to repay the debt without selling it, a decision which causes serious upheaval for the household. The concept defined in the strict sense (debt in relation to financial assets) is more relevant here. In that regard, Belgium is in an extremely favourable position, even though the ratio has risen over the past decade from 0.15 to 0.20.

The macroeconomic view indicating relatively good asset coverage for Belgian household debt compared to the euro area is borne out by the microeconomic analysis conducted on the basis of the HFCS. A median indebted

CHART 6 HOUSEHOLDS' DEBT IN RELATION TO THEIR ASSETS: THE DEBT-TO-ASSET RATIO
(macroeconomic and microeconomic views)



Sources: ECB, NBB (HFCS).

Belgian household has a debt-to-asset ratio of 0.18, compared to 0.22 in the euro area. That ratio is lower in Belgium throughout the distribution, but particularly for the highest ratios. In the euro area, 10% of indebted households (the highest decile) have a debt-to-asset ratio of more than 1. In Belgium, that figure for the highest decile is less than 0.80. As in the case of the debt-to-income ratio and the debt-service-to-income ratio, the debt-to-asset ratio is highest for young households and for the households with the lowest incomes.

4. Household debt burden

So far, we have discussed the distribution of three indicators measuring the degree of household debt: the debt-to-income ratio, the debt-service-to-income ratio and the debt-to-asset ratio. Each of these indicators reflects the ability of households to repay their outstanding debt. It is interesting to examine the number (and type) of households which, on the basis of these ratios, run the risk of repayment problems. That is why, for each of these indicators, we shall focus on the thresholds beyond which households begin to run a relatively bigger risk.

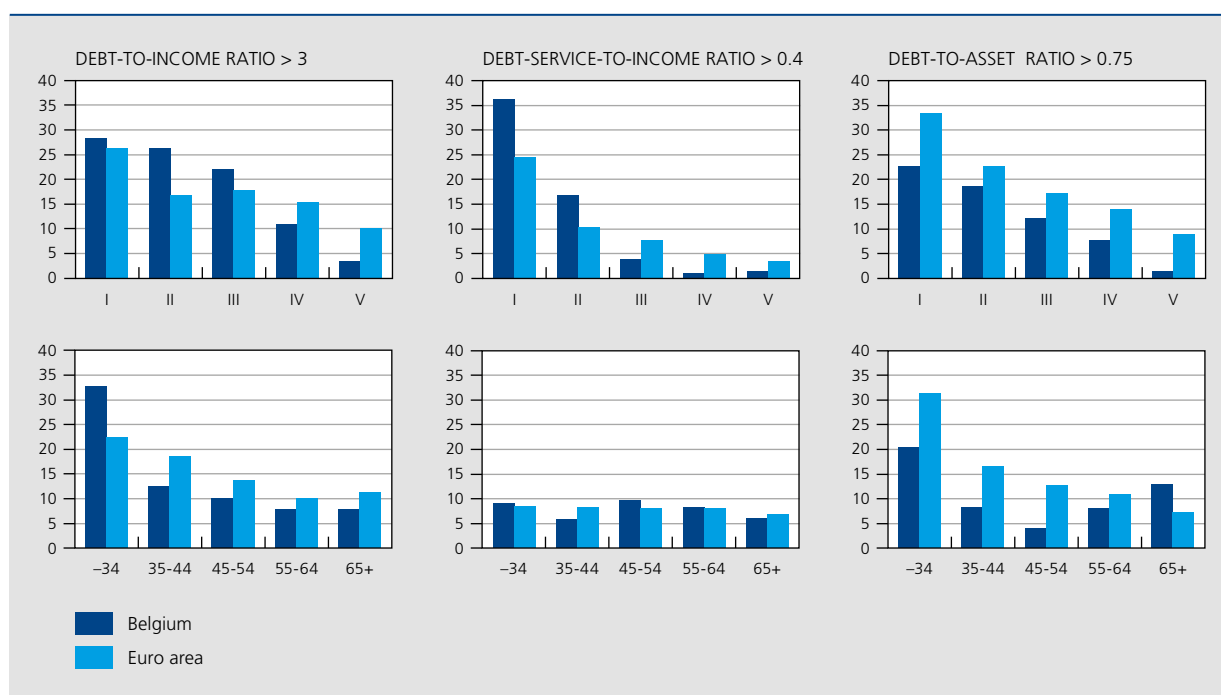
Although there is no rigorous theory underlying the determination of critical values applicable to the ratios

calculated above, the thresholds mentioned in the literature vary little from one source to another (see, for example, HFCN, 2013 and Ampudia *et al.*, 2014). Thus, households considered to be in difficulty are those whose debt is not fully covered by assets and which, after liquidating their assets, are still unable to repay their debt. For the debt-to-asset ratio, the threshold can therefore assumed to be 1. However, it is not always easy to realise assets in full for the value estimated by the household itself, especially in the case of real estate. That is why the critical value is often set at 0.75 for the debt-to-asset ratio, including by the HFCN (2013b). For the debt-to-income ratio, it is harder to determine a critical value because this is a ratio relating a stock variable (the outstanding debt) to a flow variable (annual income). The values are often set at a ratio ranging from 3 for gross income (see HFCN, 2013b) to 6 for net income (see Ampudia *et al.*, 2014). For the debt-service-to-income ratio, 0.3 and 0.4 are the threshold values often used (see once again HFCN, 2013b and Ampudia *et al.*, 2014).

4.1 Households with critical values for debt indicators

We examine each of the three debt ratios separately. For the ratios relating to income, the number of households

CHART 7 HOUSEHOLDS WITH EXCESS DEBT, BY INCOME QUINTILE AND AGE GROUP
(in % of households with debt)



Sources: NBB (HFCS).

with an increased risk in Belgium is relatively similar to the figure for the euro area. The proportion of households with a debt-to-income ratio of more than 3 is 15 % of indebted households in Belgium and 16 % in the euro area. The proportion of households with a debt-service-to-income ratio of more than 0.4 is 8 % of indebted households in both Belgium and the euro area. The debt-to-asset ratio exceeds 0.75 for 10 % of indebted households in Belgium, against 17 % in the euro area. The high value of the assets of Belgian households and the more even distribution of those assets (particularly property) in the population provide a relatively larger buffer in Belgium than in the euro area.

The likelihood of a high (or excessive) debt ratio is not the same for all groups of households. Thus, there are differences both between income groups and between age groups⁽¹⁾. The proportion of households with a problematic debt ratio declines with income for all three ratios. In the lowest income quintile, over a fifth of households have a debt-to-asset ratio of more than 0.75, over a quarter have a debt-to-income ratio of more than 3, and over a third have a debt-service-to-income ratio of more than 0.4. In the highest income quintile, less than 3 % of households exceed the critical value for each of the three indicators. International comparison shows that the proportion of households with a critical value for the debt-to-asset ratio is lower in Belgium than in the euro

area for all income groups. The proportion of households with a critical value for the indicators relating to income is larger in Belgium than in the euro area for the lowest income quintiles. There are also differences between age groups. Young households, in particular, are exposed to a potential risk concerning the debt-to-asset ratio and the debt-to-income ratio. Thus, in the youngest age group in Belgium, around a fifth of indebted households have a debt-to-asset ratio of more than 0.75, compared to around a third in the euro area. In the case of the debt-to-income ratio, the position is reversed: in the youngest age group, there are more households with a higher risk in Belgium, namely about a third compared to around a fifth in the euro area.

If we take the data on the number of households with critical debt ratios, broken down by income and age, and combine them with the data on credit market participation and the conditional median values of the outstanding debt, likewise broken down by income and age, we obtain an overall picture which allows us to estimate the risks. However, it should be noted that, since the household breakdown is obtained by combining age and

(1) In this article, solely the link between debt ratios and income or age is examined. However, the findings are also confirmed in a multivariate analysis which takes account of other factors (such as household size, level of education and the labour market situation) as well as income and age (see Du Caju *et al.*, 2014).

CHART 8 HOUSEHOLDS WITH EXCESS DEBT, BY TYPE OF DEBT, INCOME AND AGE
(in % of households with debt)

Debt-to-income ratio > 3							Debt-service-to-income ratio > 0.4							Debt-to-asset ratio > 0.75						
	I	II	III	IV	V	Total		I	II	III	IV	V	Total		I	II	III	IV	V	Total
-34	96.3	86.4	76.2	26.1	26.0	41.8	-34	89.3	30.2	9.7	0.0	0.0	10.2	-34	23.7	28.7	24.1	14.6	2.6	15.8
35-44	87.3	62.9	18.8	7.1	6.8	13.9	35-44	100.0	33.7	2.1	2.3	2.7	7.0	35-44	0.0	7.2	4.3	3.6	0.7	2.6
45-54	46.1	65.9	12.8	6.7	3.0	13.7	45-54	75.2	48.2	6.7	2.3	2.5	12.0	45-54	1.6	2.1	1.7	1.9	0.0	1.1
55-64	n.	27.8	9.8	4.6	0.0	13.8	55-64	60.1	31.9	0.0	0.0	0.0	10.8	55-64	n.	0.0	2.2	0.0	3.3	3.2
65+	25.5	26.1	n.	n.	n.	44.4	65+	19.6	13.2	16.2	0.0	0.0	12.6	65+	0.0	0.0	n.	n.	n.	0.9
Total	66.7	55.8	31.1	12.8	4.1	20.5	Total	75.6	33.7	5.5	1.5	1.9	9.7	Total	8.4	8.6	8.6	6.1	1.0	5.2
Households with mortgage debt ⁽¹⁾							Households with non-mortgage debt ⁽²⁾													
	I	II	III	IV	V	Total		I	II	III	IV	V	Total		I	II	III	IV	V	Total
-34	13.8	27.2	32.7	6.3	7.2	18.2	-34	26.7	24.3	3.7	0.0	0.0	9.5	-34	61.7	62.0	11.8	7.5	5.9	26.6
35-44	9.4	34.3	14.1	13.1	5.2	12.7	35-44	7.5	9.1	2.1	3.6	1.3	3.4	35-44	37.0	34.0	8.4	16.8	2.5	14.1
45-54	23.8	13.5	4.8	4.2	0.1	6.3	45-54	51.3	17.1	8.1	0.0	0.0	8.7	45-54	15.2	14.3	4.4	5.5	2.0	6.8
55-64	14.6	4.0	0.0	0.0	0.0	3.4	55-64	28.4	6.8	0.0	0.0	0.0	6.5	55-64	27.3	16.1	11.3	3.3	2.9	11.2
65+	9.7	0.0	1.0	0.0	0.0	3.6	65+	9.7	0.0	2.7	0.0	0.0	4.0	65+	11.0	14.1	35.0	0.0	0.0	16.1
Total	23.1	12.9	3.4	1.1	0.4	6.6	Total	23.0	13.0	3.0	1.0	0.0	7.0	Total	31.0	25.6	12.3	8.9	2.6	14.2

Source: NBB (HFCS).

(1) These are households with at least one mortgage loan, regardless of whether they also have non-mortgage loans.

(2) These are households with at least one non-mortgage loan, regardless of whether they also have mortgage loans.

income, the number of observations per group is sometimes rather low, making the estimates less accurate.

If we start by examining households with a mortgage loan⁽¹⁾, it is evident that households with critical debt ratios are found mainly among the youngest, lowest-income households. In these groups, more than three-quarters of households with a current mortgage loan have a debt-service-to-income ratio and a debt-to-income ratio which may cause problems. However, it is also specifically in these groups that the number of households with a mortgage loan is smaller (less than one household in four) and the outstanding amount of these loans is generally small. Moreover, the debt-to-asset ratio of the great majority of households in this category is not usually excessive. That is why most of them have sufficient assets to draw on to repay their debt. Nonetheless, a property crisis could put that buffer under strain. Within the group of low-income, young households with a mortgage loan, some therefore experience difficulty in repaying their debt out of current income. However, as these groups comprise relatively few households with a mortgage loan, and as most of the loans are adequately covered by assets, these problems do not necessarily have serious macroeconomic or prudential implications. Conversely, it is mainly young households in the highest income quintiles that are most likely to

borrow, and who borrow the largest amounts. This is the group with the highest rate of mortgage loans and the largest median outstanding amounts. Nonetheless, hardly any households in these groups have risky debt ratios. Thus, in these groups (well) under 10% of households have a debt-service-to-income ratio of more than 0.4. Most households are therefore quite able to repay their debt out of their income flows. Obviously, in that case the income flows must be secure.

As explained above (see section 3), non-mortgage credit is distributed more evenly across households, in terms of both participation and outstanding amounts. However, as in the case of households with a mortgage loan, within the group of households with a non-mortgage loan⁽²⁾ it is once again young low-income households that most frequently have a high (or excessive) debt-service-to-income ratio and debt-to-income ratio. Since the outstanding amounts are smaller in the case of non-mortgage debt, there are fewer households within this group with an excessive debt ratio than in the case of mortgage loans. On the other hand, for many young low-income households (in excess of 60%), this debt is not adequately covered by assets (debt-to-asset ratio of more than 0.75). Ultimately, therefore, the default risk is higher in this case, especially if these households suffer an adverse income shock, such as the loss of a job. In view of the typically rather low outstanding amounts, any macroeconomic implications of these problems are limited, though that does not reduce the social consequences for the households affected.

(1) These are households with at least one mortgage loan, regardless of whether they also have non-mortgage loans.

(2) These are households with at least one non-mortgage loan, regardless of whether they also have mortgage loans.

Box – The impact of macroeconomic shocks on the sustainability of household debt

From the point of view of both macroeconomic and prudential policy, it is necessary to be able to estimate the impact of various types of macroeconomic shocks on the sustainability of household debt. At macroeconomic level, a deterioration in sustainability may have detrimental consequences for household expenditure if it is due to a tightening of lending conditions and/or initiates a deleveraging trend. From the prudential policy angle, in view of the weight of outstanding mortgage loans to households in the total bank balance sheet, it is important to know the sensitivity of credit risk (and hence financial institutions' profitability) to a change in the macroeconomic environment (macroeconomic stress tests).

This box aims to identify for the Belgian economy the impact of a series of significant shocks (namely income shocks, interest rate shocks and property price shocks) on household debt ratios on the basis of the microeconomic data from the HFCs. As is evident from a recent study by Ampudia, van Vlokhoven and Zochowski (2014), these data can be used to simulate – on the basis of several assumptions – the impact of shocks on debt at household level, taking account of the socio-economic characteristics of households and the distribution of income, debt and assets within the population. These data provide microeconomic backing for the results of macroeconomic stress tests, for example.



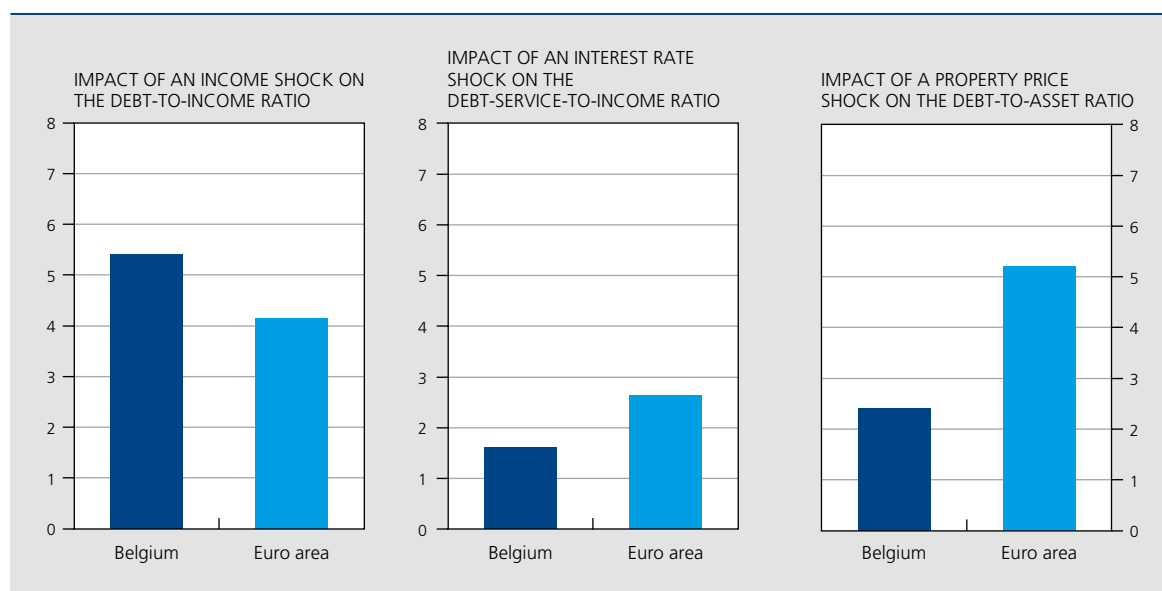
In this box, the results derived from the HFCS are also supplemented with information obtained by linking macroeconomic variables to the pattern of aggregate arrears as recorded by the CICR. Although that analysis has no microeconomic foundation, it offers the advantage of measuring the impact on sustainability *ex post*, in that it is based on the actual arrears.

On the basis of the HFCS data, Ampudia *et al.* (2014) examined for the euro area countries the effect on the debt-to-income ratio, the debt-service-to-income ratio and the debt-to-asset ratio respectively of the following factors:

- an income shock: a 10 % fall in the number of persons employed, with unemployment benefits compensating for labour incomes;
- an interest rate shock: a 300 basis point rise in the interest on variable-rate mortgage loans;
- a property price shock: a 20 % fall in property prices.

INCREASE IN HOUSEHOLD DEBT RATIOS FOLLOWING ADVERSE SHOCKS

(change in the median ratio for indebted households, in percentage points)



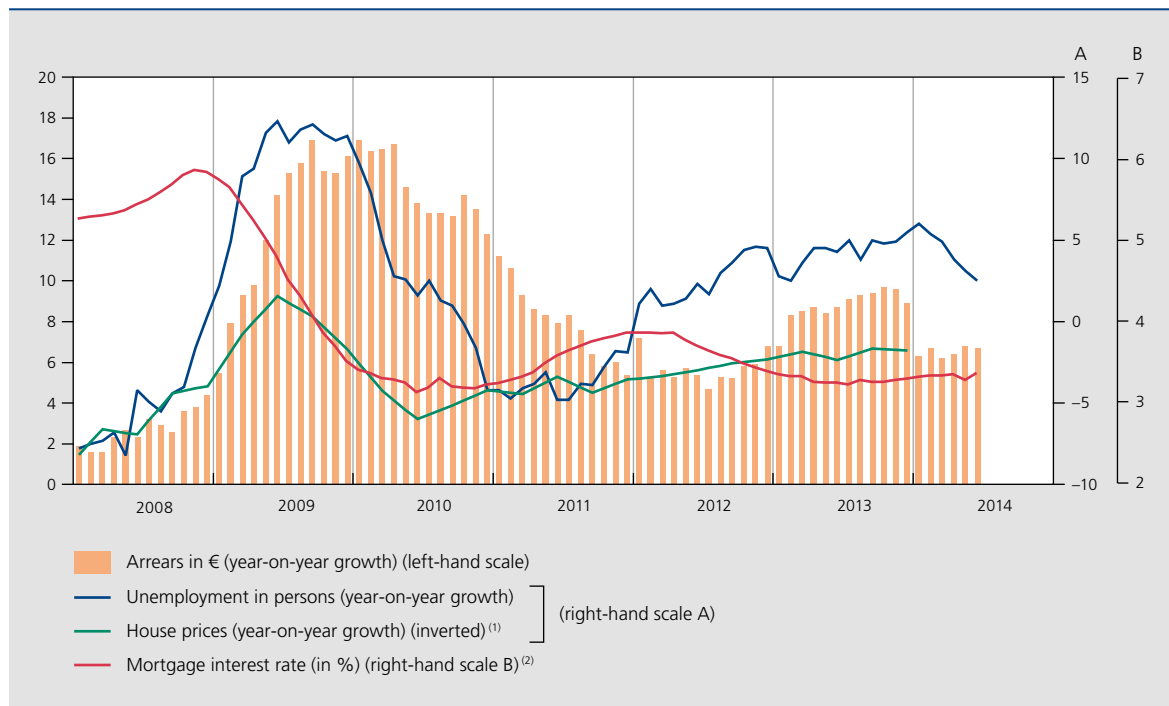
Source: Ampudia *et al.* (2014).

The impact of an income shock on the median value of the debt-to-income ratio is relatively large in Belgium compared to the euro area (5.4 against 4.1 percentage points). However, the effect of the other shocks (interest rate and property price shocks) is smaller in comparison with both the income shock and the figures for the euro area. The interest rate shock causes a bigger increase in the debt-service-to-income ratio in the euro area (2.6 percentage points) than in Belgium (1.6 percentage points). The fall in property prices also has a more marked influence in the euro area, where the rise in the debt-to-asset ratio is 5.2 percentage points compared to 2.5 percentage points for Belgium. The results of this study suggest that (indebted) Belgian households are comparatively more sensitive to income shocks than households in the euro area. In microeconomic terms, these findings are attributable to the fact that in Belgium certain groups already have relatively high debt-to-income ratios, and these consist mainly of younger households. Generally speaking, younger households have not yet built up assets, or not enough assets that they could realise in the face of a negative income shock. Conversely, there is less sensitivity to an interest rate or property price shock, possibly because of the small proportion of debt at variable interest rates and the fairly good asset coverage of Belgian household debt (and hence a low debt-to-asset ratio).



The evolution of arrears of Belgian households confirms these findings overall. Defaults – recorded monthly by the CICR since January 2007 – offer *ex post* verification of how the macroeconomic environment influences household debt sustainability. For that purpose, the correlation between defaults and macroeconomic variables is measured throughout the cycle. The cyclical profile of the nominal arrears (amounts in €) is obtained by calculating year-on-year growth rates. The effect of the crisis is immediately apparent: from 2008 to 2010, arrears increased sharply. The income shock is illustrated by the change in unemployment in persons (year-on-year growth). The interest rate shock is reflected in the movement in the average interest rate on outstanding amounts of mortgage loans (with an initial fixed-interest period of up to one year). Asset prices are represented by the year-on-year growth of residential property prices.

MACROECONOMIC ENVIRONMENT AND HOUSEHOLD DEFAULTS



Sources: NEO, NBB (MIR, CICR).

(1) Nominal house prices, all housing taken together, quarterly observations interpolated linearly on a monthly basis.

(2) Average bank rate on the outstanding amount of mortgage loans with an initial fixed-interest period of up to one year.

During the limited period for which data are available, the fluctuations in arrears in Belgium are most closely correlated with unemployment (0.62). The two series follow a similar pattern over time, with unemployment slightly leading the defaults. Conversely, the increase in arrears is not linked to the interest rate, which pursues a downward trend throughout the period. However, the arrears do reflect the expected link with house price fluctuations. When house prices rise less strongly or decline, arrears show a more marked increase, though the correlation (–0.43) is less than in the case of unemployment. This *ex post* analysis confirms that, for the period 2008-2014, the persistent income shocks measured by the changes in unemployment generally had a significant influence on Belgian household debt sustainability.

However, the results need to be interpreted with caution, particularly as we confine ourselves in this article to a graphical analysis, and it is not possible to capture the whole cycle on the basis of the available history. Various

empirical studies (Marcucci and Quagliariello, 2009; Laeven and Majnoni, 2003) report a non-linear relationship between credit risk and the macroeconomic environment. More particularly, the pattern of defaults would be more sensitive to the macroeconomic environment during recessions than in a boom period. In addition, the relationship is likewise determined by the risk assessment models of the financial institutions. In principle, careful risk monitoring – both the risk analysis within banks and in the context of macroprudential policy – should weaken the link between arrears and factors relating to the macroeconomic environment.

4.2 Households with repayment problems

The HFCS data showed that young low-income Belgian households form a group with a higher potential risk of encountering debt problems than other types of households. On the basis of the study by Ampudia *et al.* (2014) (see box above for more details), it also seems that this group is relatively sensitive (compared to the euro area) to (negative) income shocks. Having established that point, it is interesting to look at the CICR data, as they can be used both to verify the findings based on the HFCS and to analyse the degree to which differences in risk profiles emerge and are reflected in divergences in actual debt problems. In particular, we analyse the evolution over time of the average default rate per borrower age group for mortgage loans and consumer credit. Next, we examine the degree to which differences in these developments may be due to variations in the income shock sensitivity of the various generations. In view of the lack of statistical information on income per age group, these shocks are approximated by changes in the unemployment rates of the various age groups.

The extent of household borrowing and any excess debt problems in the population can be viewed overall, notably on the basis of the CICR data, with the aid of various indicators such as the proportion of the population with a loan, the proportion of the population with repayment problems, or the proportion of borrowers or contracts with payment arrears. The CICR data also permit monitoring of developments in recent years, in this case from 2006 to 2013.

From 2006 to 2010, the proportion of the population aged over 18 years recorded by the CICR on account of at least one current loan increased continuously from 46.1 to 56.9%. If authorised overdrafts are taken into account, that figure climbed to 70.6% in 2012⁽¹⁾. This increase in the proportion of the population with debt was also apparent for the various types of loan. Thus, the percentage of the adult population with a mortgage loan rose from 26.5% in 2006 to 32.2% in 2012. In the

case of consumer credit, the rise was even steeper, from 34.5% in 2006 to 44.1% in 2010, then 63.6% in 2012, with the inclusion of overdrafts. The amounts borrowed also increased over the same period. The average amount of a new mortgage loan stood at €99 000 at the beginning of 2007, whereas it was €109 500 at the end of 2013 (+10.7%). In the case of consumer credit (taking all types together), at the beginning of 2007 a new consumer loan averaged €9 400, compared to €10 900 at the end of 2013 (+16.2%).

With the financial crisis, the expansion of the number of borrowers also brought an increase in defaulting borrowers (among the population over the age of 18 years). However, this increase in defaults was not only due to the expansion in the number of borrowers; the average default rate (measured as the ratio between the number of defaulting borrowers and the total number of debtors over the period in question) has also risen since the crisis. Thus, among the population over the age of 18, the proportion of persons recorded by the negative central register was stable in the years preceding the outbreak of the financial crisis at around 2.8%. Subsequently, from 2009 to 2012, that proportion rose steadily to reach 3.7%. Among borrowers as a whole, the default rate fell slightly from 2006 to 2008 before accelerating again. In 2013, it amounted to 5.5%.

However, since the extent of defaults varies according to the type of credit, it is important to be able to distinguish between mortgage loans and consumer credit. In the case of mortgage loans, the proportion of defaulting borrowers at the end of 2012 came to 0.5% of the population aged over 18 years. For borrowers in general, the default rate tended to decline until 2008 (1.36%). In contrast, it increased slowly but steadily thereafter to reach 1.52% in 2013. In the case of consumer credit (taking all types together), the proportion of defaulting borrowers came to 3.5% of the adult population at the end of 2012. The average default rate (number of defaulting debtors in

(1) Latest figure available for the population.

relation to the number of borrowers) has risen constantly since 2008, standing at 5.7 % in 2013.

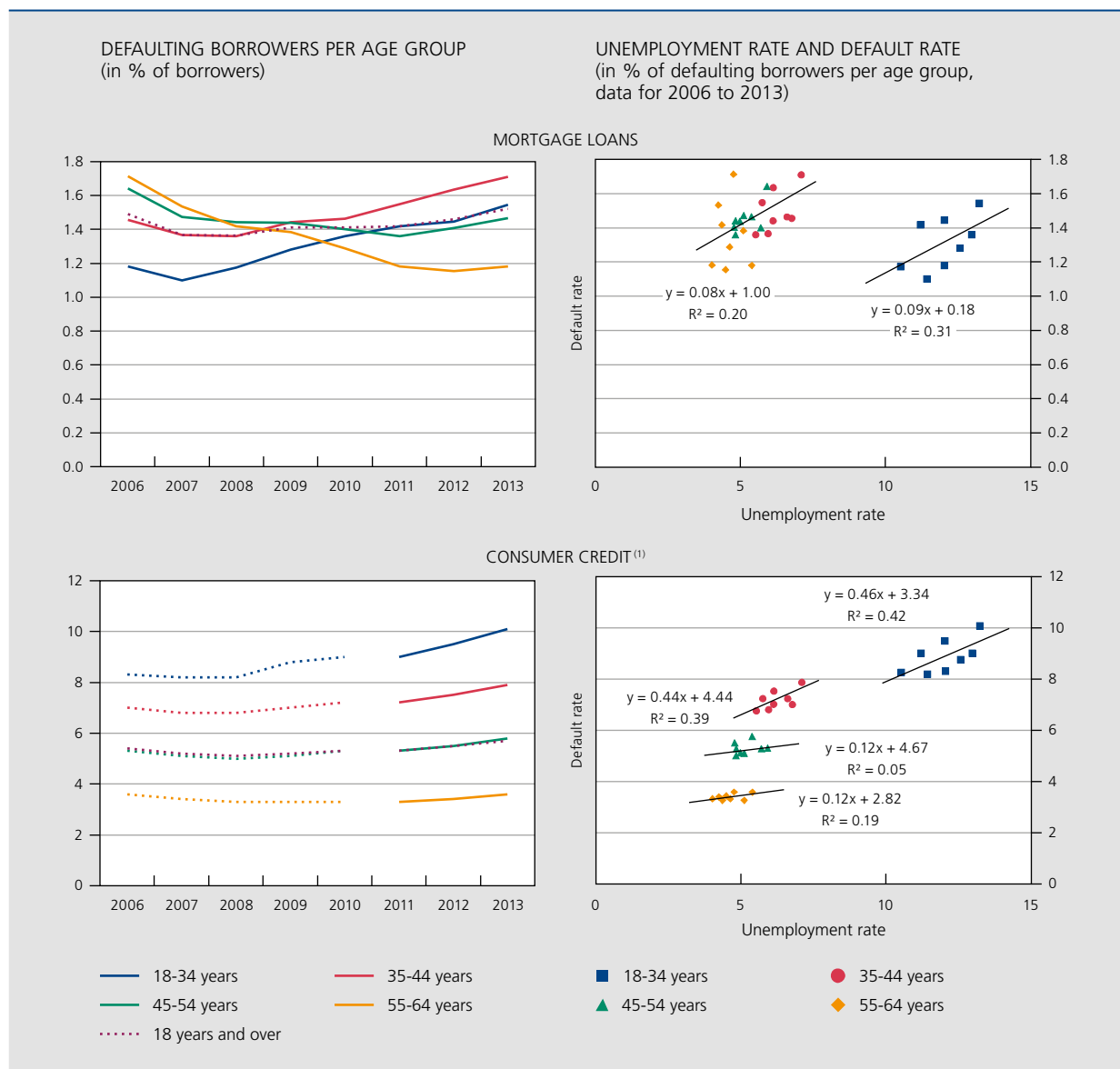
The default risk also depends on the borrower's age, as is evident from the HFCS data. The CICR series were therefore similarly broken down according to that variable.

The overall default rate on mortgage loans is still relatively low in Belgium. However, the curves vary according to the borrower's age group, as the default rate increases from 2007-2008 for the youngest age groups (18-34 years and 35-44 years), whereas it declines for the oldest age group

(55-64 years). In the case of the intermediate age group (45-54 years), the default rate declines up to 2011, then rises at the end of the period. The low default rate on mortgage loans in comparison with defaults on consumer credit probably reflects the concentration of mortgage debt among households earning relatively high incomes.

The changes in the average default rate on mortgage loans may be due in part to – permanent – changes in income. Analysis of developments in unemployment rates in parallel with default rates seems to confirm the existence of a significant positive link between these two

CHART 9 AVERAGE DEFAULT RATES ON HOUSEHOLD LOANS AND THE MACROECONOMIC SITUATION



Sources: DGSEI (LFS), NBB (CICR).

(1) Note: The methodological change introduced in 2011, requiring the CICR to record authorised current account overdrafts, led to a break in the series in the data on consumer credit between 2010 and 2011. In order to eliminate that break, the default rate in 2010 was put at the same value as in 2011. The series was then retroprojected over the period 2006-2009 by applying the growth rates of the original series.

variables, and to highlight the relevance of persistent income shocks as a key factor explaining the fluctuations in defaults. More specifically, the results taken from the analysis by age group are as follows. First, there seems to be no structural effect linked to age groups, as default rates on mortgage loans are generally similar whichever generation is considered. Second, there is a positive correlation between the level of the unemployment rate and the default rate for both the youngest generation (18-34 years) and the older age group (35 years and over). The steeper rise in default rates within the groups aged 18-34 years and 35-44 years at the end of the period could be partly due to the differences in the unemployment rate picture for each generation. Finally, however, there seems to be no significant difference in sensitivity compared to a change in the unemployment rate, since the regressions conducted on the two datasets produce relatively similar slopes.

To sum up, in the case of mortgage loans, a decline in income (approximated by a rise in the unemployment rate) is accompanied by an increase in the percentage of defaulting borrowers. Conversely, the youngest generations taken as a whole do not appear to be more affected at present. Likely factors here include the relatively strict regulation of the mortgage loan market in Belgium, and the banks' cautious approach to lending.

In regard to consumer credit (taking all types together), the rise in the default rate over the past three years applies to all generations of borrowers. However, the trend is more marked in the case of the youngest borrowers (18-34 years), of whom one in ten (10.1%) defaulted on at least one consumer loan in 2013. That proportion was 7.9% for the 35-44 age group, 5.8% for the 45-54 age group, 3.6% for the 55-64 age group and 1.6% for persons over the age of 64 years.

As in the case of mortgage loans, the average default rate on consumer credit was viewed in conjunction with the level of the unemployment rate (as an approximation for a decline in the level of income) between 2006 and 2013. The overall finding is similar: the default rate tends to rise as the unemployment rate increases, whichever group is considered. However, for this type of credit, and in contrast to mortgage loans, there is a generational effect: the higher average unemployment rate among the youngest generations is in fact reflected in a higher default rate. Moreover, for the generations aged 18-34 years and 35-44 years, the correlation between the percentage of defaulting borrowers and the level of the unemployment rate seems closer than for the older age groups. That could be a sign that young generations are more sensitive to a decline in income, resulting in a more serious impact

on their repayment capability. That effect is specific to consumer credit.

Conclusion

This article has analysed the evolution and distribution of Belgian household debt. By making simultaneous use of macroeconomic and microeconomic data, which offer mutually complementary information, it has been possible to draw a number of conclusions about household debt at both aggregate and individual level. We can summarise those conclusions as follows.

The macroeconomic statistics show that the debt situation of Belgian households is fairly favourable compared to the euro area. The various indicators relating to debt are lower in Belgium. However, they reveal a significant, steady rise in household debt over the past ten years. That upward trend needs to be taken into account and monitored in view of its potentially negative impact on economic activity and financial stability, particularly in the event of serious adverse shocks.

However, the microeconomic data reveal that there are certain groups of borrowers with a vulnerable debt-to-income ratio, and the proportion is roughly the same as in the euro area. Furthermore, it is evident from the HFCS data that it is mainly young and low-income households that face a relatively high debt in relation to their income, suggesting a fragile liquidity position. However, these groups make relatively little use of the credit market, and if they have debt, it is often in the form of small loans. On the other hand, Belgian household debt generally has better asset coverage than that in the euro area.

Of the households with an outstanding mortgage loan, it is the youngest low-income groups that have the highest debt in relation to their income. However, most of those households do not face an excessive volume of debt in relation their assets (debt-to-asset ratio). The results show that most households have sufficient assets to pay off their debt in the event of problems. The other types of credit – non-mortgage loans – are more evenly distributed (in terms of both participation and volumes) across households resorting to that type of borrowing. In the case of households with at least one non-mortgage loan, it is again the younger households with a lower-income that often have debt-to-income ratios which are (too) high, possibly because they also have a current mortgage loan. For many young households with a low income who have contracted a non-mortgage loan, the debt is not fully backed by assets. This is therefore the group of households with the highest default risk.

The data from the Central Individual Credit Register point to an increase in default rates in the post-crisis years, although the number of defaults is small in Belgium, at least in the case of mortgage loans. The CICR data also confirm that younger people, in particular, are more likely to be in arrears on their loans. For this group, there is also a closer correlation between repayment problems and the level of unemployment, illustrating their greater sensitivity to income shocks. However, this difference in sensitivity applies specifically to consumer credit.

Bibliography

Ampudia M., H. van Vlokhoven and D. Żochowski (2014), *Financial fragility of euro area households*, ECB Working Paper (forthcoming).

Ando A. and F. Modigliani (1963), "The 'life-cycle' hypothesis of saving: aggregate implications and tests", *American Economic Review*, 53 (1), 55–84.

Bover O., J.M. Cassado, S. Costa, Ph. Du Caju, Y. McCarthy, E. Sierminska, P. Tzamourani, E. Villanueva and T. Zavadil (2013), *The Distribution of Debt Across Euro Area Countries: The Role of Individual Characteristics, Institutions and Credit Conditions*, NBB Working Paper 252.

Bruggeman A. and Ch. Van Nieuwenhuyze (2013), "Size and dynamics of debt positions in Belgium and in the euro area", NBB, *Economic Review*, June, 57-77.

Du Caju Ph. (2012), "Asset formation by households during the financial crisis", NBB, *Economic Review*, June, 87-100.

Du Caju Ph. (2013), "Structure and distribution of household wealth: an analysis based on the HFCS ", NBB, *Economic Review*, September, 41-62.

Du Caju Ph., F. Ryx and I. Tojerow (2014), "What Drives Household Over-indebtedness? A Microeconomic Perspective", mimeo.

HFCN, Eurosystem Household Finance and Consumption Network (2013), *The Eurosystem Finance and Consumption Survey: Methodological Report for the First Wave*, ECB Statistics Paper Series 1, April.

HFCN, Eurosystem Household Finance and Consumption Network (2013), *The Eurosystem Finance and Consumption Survey: Results from the First Wave*, ECB Statistics Paper Series 2, April.

HFCN, Eurosystem Household Finance and Consumption Network (2013), *The Eurosystem Finance and Consumption Survey: Statistical Tables*, ECB Statistics Paper Series, April.

For more information on the HFCN and the HFCS, see the website of the European Central Bank:
http://www.ecb.int/home/html/researcher_hfcn.en.html.

Laeven L. and G. Majnoni (2003), "Loan loss provisioning and economic slowdowns: too much, too late?", *Journal of Financial Intermediation*, 12 (2), 178–197.

Marcucci J. and M. Quagliariello (2009), "Asymmetric effects of the business cycle on bank credit risk", *Journal of Banking and Finance*, 33 (9), 1624–1635.