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# Economic commentaries

## Housing and debt

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# Housing and debt

*Residential mortgage loans account for more than half of banks' total lending. It is therefore important to understand the risk factors related to housing debt when analysing financial stability. Two factors are of particular interest: household debt-servicing capacity and the ratio of mortgage debt to the value of the dwelling.*

*According to income tax self-assessment forms, 80 per cent of total household debt was held by homeowners in 2007. One third of household debt growth was related to home purchases. In one in nineteen households, debt was higher than the value of the dwelling while more than 20 per cent of household income was spent on interest payments. These households accounted for close to one fifth of household debt. Stress tests show that households with large mortgages are vulnerable to higher interest rates and a fall in house prices.*

## Introduction

New data from Statistics Norway (SSB) have made it possible to link information from income tax self-assessment forms with data on dwelling characteristics: type of dwelling, size and location. The value of the dwelling can be estimated using house statistics<sup>1</sup>. The loan-to-value (LTV) ratio provides important information about credit risk related to household debt.<sup>2</sup> The latest available information is taken from the 2007 income tax self-assessment form.

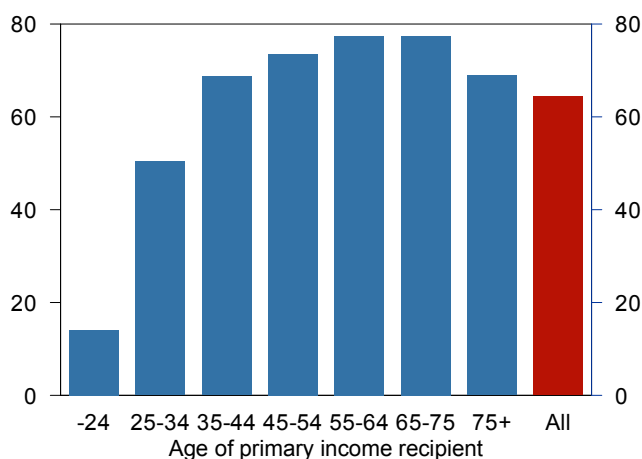
## Housing and debt in 2007

### *Two out of three households were owner-occupiers*

Among private households, i.e. households in which the primary income recipient is a wage earner or benefit recipient, 64 per cent of households reported a positive assessed value of the dwelling (see Chart 1). For households with the primary income recipient in the age group 45 to 74 years, three out of four were owner-occupiers.

According to Statistics Norway's survey of living conditions, however, as many as 80 per cent of the survey respondents were owner-occupiers. This can be explained by the fact that the share of owner-occupier households increases with the number of persons in the household.

**Chart 1.** Share of owner-occupiers<sup>1)</sup> by age of primary income recipient. Private households. 2007. Per cent



1) Households with positive assessed value of dwelling  
Sources: Norges Bank and Statistics Norway

### *Over 80 per cent of total debt held by homeowners*

Homeowners held 83 per cent of household debt (see Chart 2). Student debt is disregarded in this analysis as this debt is not secured on dwellings. Total household debt at end-2007 was NOK 1 530 billion. Average debt among homeowners was NOK 934 000 compared with NOK 351 000 among tenants.

<sup>1</sup> Norges Eiendomsmeglerforbund (NEF) Eiendomsmeglerforetakenes Forening (EFF), Finn.no, and Econ Pöyry (Norwegian)

<sup>2</sup> See *Economic Bulletin* 2/2008 and 4/2006 for more detailed analyses of these data

## Underlying data

The data used in the analysis are based on Statistics Norway's Income statistics for households<sup>1)</sup>. Information on income was obtained by linking various administrative and statistical sources of whole-population data as of 31 December of the fiscal year. Information on debt including student debt, post-tax income and assessed value of dwellings was obtained from income tax self-assessment forms. Student debt is disregarded in this analysis as this debt is not secured on dwellings. The latest observation was from 31 December 2007.

The sample used in the analysis comprises private households, i.e. wage earners and benefit recipients. Self-employed persons have been excluded. The sample comprises persons who submitted self-assessment forms both in 2006 and 2007. Data from Income statistics are linked to Housing statistics data at household level. The most important characteristics are type of dwelling, utility floor space and municipality of residence. A household is defined as the group of people living in the same dwelling.

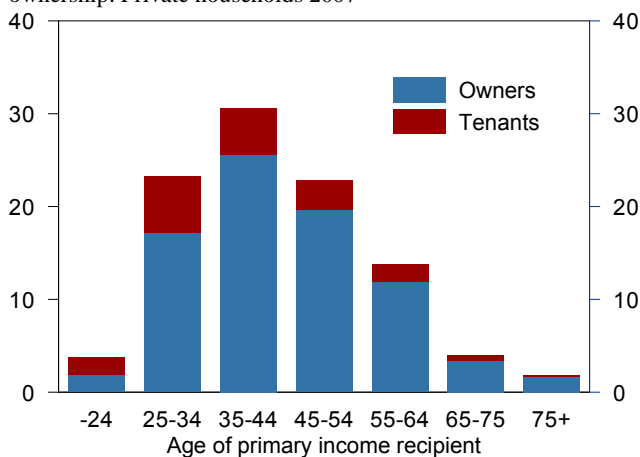
A household is regarded as owning a dwelling if one or more persons are listed in the self-assessment form with a positive assessed value for a dwelling. Household behaviour in the housing market is determined based on changes in assessed value from 2006 to 2007.

The assessed value of a dwelling provides little information as to its market value. To estimate market value, we use information on prices per square metre for various types of dwellings and locations obtained from the Norwegian Association of Real Estate Agents (NEF), the Association of Real Estate Agency Firms (EFF), Finn.no, and Econ Pöyry. Price statistics are grouped roughly by region and do not contain information about housing standards or location other than regional location.

The calculation of housing wealth in this article is a rough estimate and therefore uncertain. Statistics Norway has developed more advanced methods and introduced a new estimate of housing wealth<sup>2)</sup>. These data will be included in the underlying data in future studies.

1) For descriptions and analyses of the statistics, see: [www.ssb.no](http://www.ssb.no) and [www.nef.no](http://www.nef.no)  
 2) A. Thomassen and I. Melby (2009) Beregning av boligformue (Calculation of housing wealth)". Notater 2009/53. Statistics Norway

**Chart 2.** Share of debt<sup>1)</sup> by age of primary income recipient and home ownership. Private households 2007

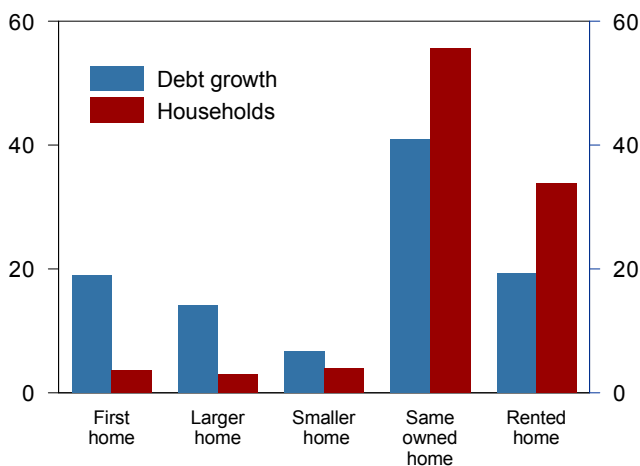


1) Total debt minus student debt  
 Sources: Norges Bank and Statistics Norway

### *One third of household debt growth was related to home purchase*

Household debt rose by an average NOK 68 000 per household in 2007. 39 per cent of households increased debt by an average NOK 322 000 kroner. 40 per cent of the increase in debt was related to home purchases (see Chart 3). The remaining households reduced debt by an average of NOK 91 000.

**Chart 3.** Debt growth and households after housing market correction<sup>1)</sup>. Per cent



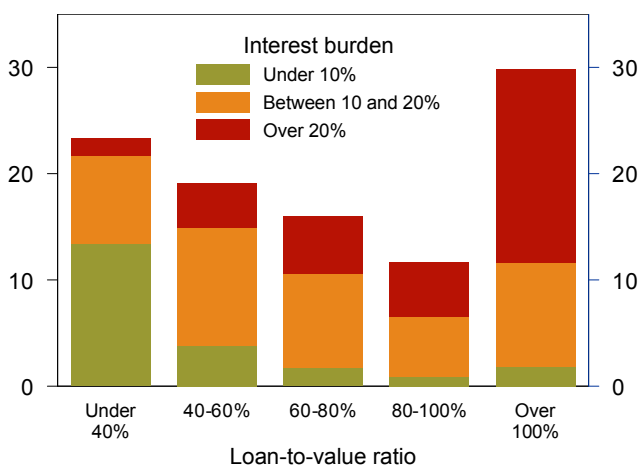
1)  
 Based on changes in assessed value of dwellings  
 Sources: Norges Bank and Statistics Norway

First-home buyers accounted for 19 per cent of the debt increase. 11 percent of households purchased a home in 2007. One third of these were first-time buyers. About 60 per cent of the debt increase occurred in households that did not change their status on the housing market. Debt growth among owner-occupier households may to a large extent reflect investment in the dwelling that does not affect the assessed value, such as renovation. 13 per cent of the debt was related to purchases of holiday homes.

**One in 19 households had borrowed more than the value of the dwelling, spending more than 20 per cent of household income on interest**

Data about dwellings is available for half of the households where the assessed value of the dwelling was positive (670 000 households). It is assumed that these households are owner-occupiers. The market value of the dwelling is estimated on the basis of size, type of dwelling, municipality of residence and price per square metre as recorded by the real estate industry. The debt-to-value ratio is household debt divided by the value of the dwelling.

**Chart 4.** Debt among home owners by LTV ratio<sup>1)</sup> and interest burden. Private households. Per cent 2007.



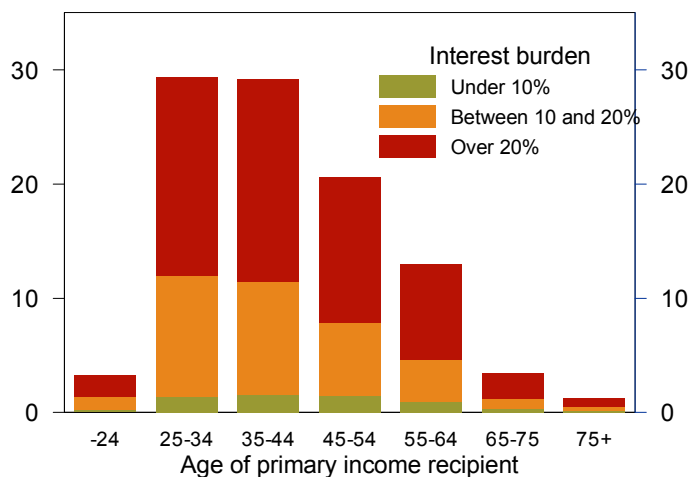
1) The LTV (loan-to-value) ratio is debt excl. student debt as a percentage of the value of the dwelling. The interest burden is interest expenses as a percentage of post-tax income  
Sources: Norges Bank, Statistics Norway, Norges Eiendomsmeidlerforbund (NEF) Eiendomsmeidlerforetakenes Forening (EFF), Finn.no, and Econ Pöyry

Chart 4 shows that 30 per cent of debt was held by households where debt was higher than the value of the dwelling. One third of debt was held by households paying 20 per cent of post-tax income in interest expenses. Note that residential mortgage debt cannot be distinguished from other debt. Nor is it possible to see whether any additional collateral has been pledged for the debt, for example by a mortgage on parents' homes. Households with both an LTV ratio of over 100 per cent and an interest burden of over 20 per cent hold 18 per cent of household debt. This debt is particularly exposed to risk. 5.3 per cent of the households in the survey are in this situation.

However, half of the households in the survey had an LTV ratio of below 40 per cent and paid less than 10 per cent of post-tax income in interest expenses. These households held 13 per cent of household debt.

On the basis of these data, it appears that most housing debt is held by households with satisfactory collateral and debt-servicing capacity. Around one fifth of the debt is exposed to risk. This estimate may, however, be somewhat high as any additional collateral or wealth has not been taken into account in the analysis. The estimates of the dwellings' market value are also uncertain. The value of dwellings among highly indebted households may be systematically low because the statistics do not take factors such as standard of housing or location other than regional location into account.

**Chart 5.** Debt in households where debt is higher than value of dwelling, by age. Home owners. 2007



1) The LTV (loan-to-value) ratio is debt excl. student debt as a percentage of the value of the dwelling. The interest burden is interest expenses as a percentage of post-tax income  
Sources: Norges Bank and Statistics Norway

**Most off the high-risk debt was held by households in the age group 25 to 44 years**

Almost 60 per cent of household debt with an LTV ratio of more than 100 per cent is held by households in the 25-44 age group (see Chart 5). Approximately one third of this debt is held by the 45-64 age group. A large share of this debt is held by households paying a large proportion of income in interest expenses.

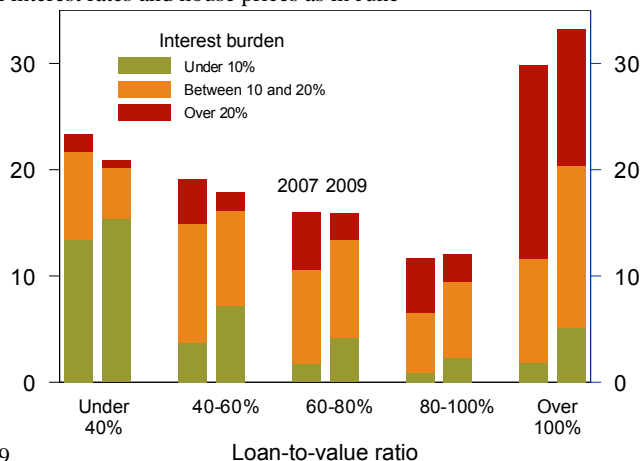
**Projections and stress test**

**Projections up to 2009**

Banks' average household lending rate fell from 5.8 per cent in June 2007 to 4.4 per cent in June 2009. House prices fell by 6.7 per cent in the same period. What would the interest burden and LTV ratio have been with interest rates and house prices as they were in 2009? For the sake of simplicity, debt and household income are assumed to be constant at the 2007-level.

Because of the fall in house prices, the LTV ratio increases. The share of household debt with an LTV ratio of more than 100 per cent increases from 30 to 33 per cent (see Chart 6). The decrease in interest rates reduces the interest burden. The share of debt held by households with an interest burden exceeding 20 per cent is reduced from 35 to 20 per cent of debt. The share of debt held by households with an LTV ratio of more than 100 per cent and an interest burden exceeding 20 per cent falls from 18 to 13 per cent.

**Chart 6.** Debt among home owners by LTV1) and interest burden with interest rates and house prices as in June



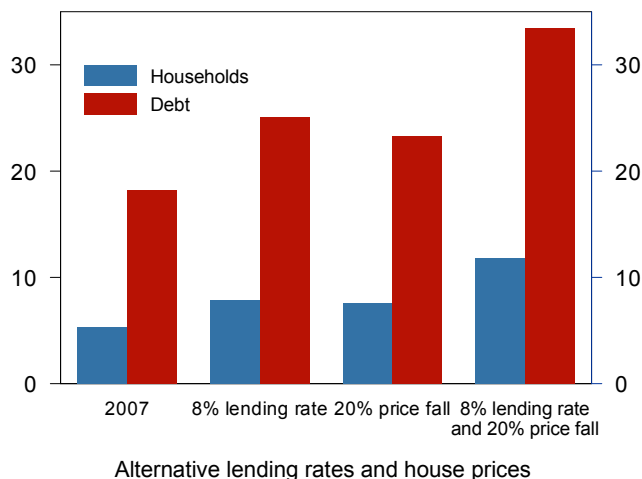
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Sources: Norges Bank, Statistics Norway, Norges Eiendomsmeglerforbund (NEF) Eiendomsmeglerforetakenes Forening (EFF), Finn.no, and Econ Pöry

### ***How vulnerable are households to higher interest rates and lower house prices?***

A simple stress test of the vulnerability of home-owning households is performed by raising bank lending rates to 8 per cent and allowing house prices to fall by 20 per cent from the 2007-level. An estimate is made of the share of households that experience financial strain because debt exceeds the value of the dwelling and interest expenses total more than 20 per cent of post-tax income. Increases in interest income and any changes in tax rates are disregarded.

**Chart 7.** Share of households and debt in scenario where debt is higher than value of dwelling and more than 20% of income is spent on interest in context of interest rate rise and fall in house prices. Home-owners 2007. Per cent



Sources: Norges Bank, Statistics Norway, Norges Eiendomsmeglerforbund (NEF) Eiendomsmeglerforetakenes Forening (EFF), Finn.no, and Econ Pöry

With an increase in the interest rate to 8 per cent, the share of home-owners experiencing financial strain will rise from 5 to 8 per cent (see Chart 7). The share of debt in these households will increase from 18 to 25 per cent. A fall in house prices of 20 per cent will have approximately the same effect. If interest rates rise and house prices fall at the same time, 12 per cent of home-owners will be in this risk group. More than one third of debt in home-owning households will then comprise weakly collateralised debt in households with weak debt-servicing capacity.

## **Conclusion**

Housing is the most important object of household debt. Around two-thirds of households were home-owners in 2007 and held 80 per cent of household debt excluding student debt.

Most of this debt was held by households with a moderate interest burden and a low LTV ratio. However, households with an LTV ratio of more than 100 per cent and an interest burden of more than 20 per cent held 18 per cent of household debt. This debt may be vulnerable to higher interest rates and lower house prices.