

ECONOMIC COMMENTARIES

Evidence of a change in banks' lending practices after the financial crisis

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Evidence of a change in banks' lending practices after the financial crisis

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Abstract

We analyse the behaviour of Norwegian households using tax return data that covers debt, income, financial assets and housing wealth. In the period from 2004 to 2008 borrowing in Norwegian households increased significantly. Behaviour changes after 2008. The Financial Supervisory Authority of Norway has recommended that banks impose stricter LTV (loan-to-value) requirements. We find that debt-to-housing value (DTV) has fallen from 2008 to 2012, especially among younger households. High income groups have been able to maintain a high level of debt to income, but have increased their holdings of liquid financial assets. Lower income groups take on less debt relative to income and have not been able to increase holdings of financial assets.

1 Introduction

Like many countries, Norway experienced an economic boom in the period from 2003 to 2008. High economic growth was combined with low interest rates and a sharp increase in household debt levels, causing increasing concern about financial stability. Norway was hit by a liquidity squeeze in the banking sector at the height of the financial crisis in 2008-09, but stable terms of trade, not least due to high oil prices, helped sustain economic growth at trend levels in 2010-12. Unemployment has remained low. However, since 2009 we have seen a sharp increase in the household saving ratio.

In 2011 the Financial Supervisory Authority of Norway (FSAN) recommended banks to reduce the maximum of LTV on new mortgages from 90 to 85 per cent unless other factors strongly indicated that the borrower could handle a larger loan, see Financial Supervisory Authority of Norway (2011). Norges Bank's survey of banks' lending practices has reported a gradual tightening in lending standards since 2009. The reported tightening was especially strong in the last part of 2011 and in the first part of 2013.

Using micro data on Norwegian households, we show that this tightening of lending standards has affected Norwegian households. There is evidence that the level of housing wealth behind loans has improved, especially among younger borrowers. Evidence also seems to indicate that middle income households try to compensate for stricter LTV requirements by increasing savings. The results are in line with other findings, e.g. see Financial Supervisory Authority of Norway (2013), that reports a fall in loans with high LTV from 2011 to 2012.

2 Data

We analyse Norwegian households using a comprehensive dataset of Norwegian tax returns covering all Norwegian households, compiled by Statistics Norway, see Statistics Norway (2014). The data cover the period from 2004 to 2012¹. We exclude self-employed households. Households are defined as the persons sharing the same dwelling. The *age* of a household is defined by the age of the main income earner. The data set covers income after tax, total debt, taxable financial assets and taxable housing

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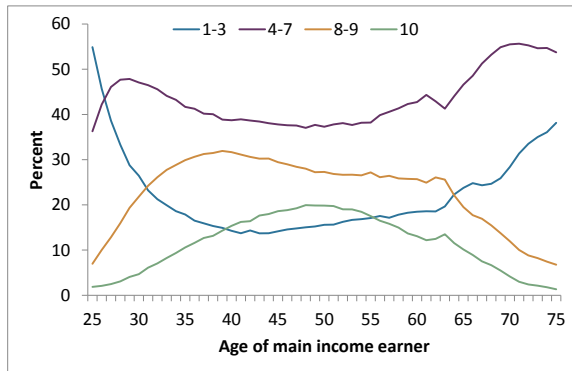
¹We have a similar dataset covering the period 1987-2003, but this covers only a subsample of the population.

wealth, however it does not cover insurance claims or most pension-related savings. For a comprehensive presentation of these data, see Lindquist et al. (2014).

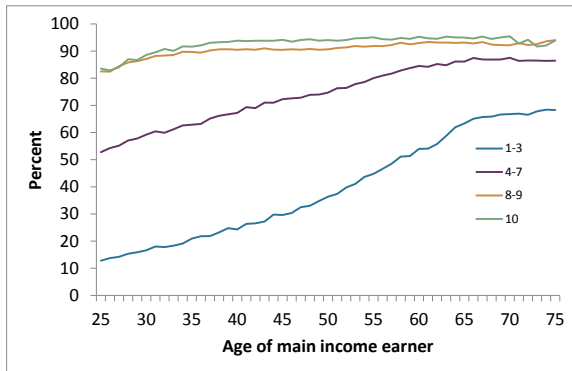
In this article we focus on the average values of households divided into age groups. We look at the age groups where the age of the main income earner spans from 25 to 75 years. Further, we split each age group in four income tiers, based on whether the household is in after-tax income deciles 1-3, 4-7, 8-9 or 10. The income deciles are defined based on the population as a whole.² Consequently, the number of households in each income groups varies with age, see Figure 1. The figure shows the share of the population in each age group split across the four income groups. Young households (under 30 years) and old households (over 70 years) are primarily in the two lowest income groups. The highest income group is dominated by the age groups between 40 and 60 years.

Figure 1: Age and income groups

(a) Distribution of households across age and income groups, 2012



(b) Share of home owners in each group, across age and income, 2012



Wage earners and benefit recipients. Self-employed excluded.
Sources: Statistics Norway and Norges Bank

An important feature in Norway is the high level of home ownership of housing. The level does however vary with both age and income, as we see in Figure 1b. People in the high income groups own their house from a relatively low age. Lower income groups tend to rent. This is especially the case for the lowest income group. However, even in the lowest income groups home ownership increases over time. When a household buys a house, it tends to remain a homeowner. For the highest age groups we must also take into account that some of the low wage earners are former high wage earners that have retired. They will keep their dwelling as their relative income falls.

A challenge in the data is that taxable housing wealth in the first years of our sample does not necessarily reflect the market value of dwellings. This is corrected from 2010. After 2010 we have detailed assessment of market value for each housing unit. For 2004-2009 we therefore deflate the 2010 housing values with the changes in the Norwegian house price index.

3 Supply and demand for household credit

In assessing the creditworthiness of a household, banks usually consider several indicators, such as the debt service-to-income, the debt-to-income ratio (DTI) and the loan-to-value ratio (LTV). It can be useful to think of the credit evaluation process in banks in terms of a two-step procedure:

1. Observing developments in debt-servicing capacity, decide on a maximum loan level given the income of the household (decide on DTI)
2. Determine collateral requirements for this loan (decide on LTV)

²The average income in 2012 in group 1-3 was appr. NOK 188,000, in group 4-7 NOK 433,500, in group 8-9 NOK 733,000 and in group 10 NOK 1,170,000.

First, the bank will determine how much debt the applicant can manage by looking at available margins and DTI. However, the amount that a bank is willing to lend also depends on the amount of collateral in fixed property. The second step for the bank is therefore to set a limit on the LTV. This limit might be affected by banks internal risk calculations, but it might also be affected by regulations or statements from the FSN. For a given income, the household must:

- Identify the size and quality of a house that is available, given the credit limit and the set LTV.
- If the loan is not sufficient to obtain the house size and quality the household wants, try to accumulate more savings before entering the property market.

Households can therefore respond to stricter LTV rates by increasing savings. Another alternative would be to increase intergenerational transfers. However, we are not able to observe such transfers in the current data set.

4 Four indicators of financial stability

We focus on four indicators of households' financial situation:

1. **Debt-servicing capacity (DSC):** the level of *standard cost of consumption* and debt-servicing costs (i.e. interest payments) to income. Standard cost of consumption are defined by the reference budget given by SIFO, the National Institute for Consumer Research, See SIFO - National Institute for Consumer Research (2014), and is dependent of the size of households.
2. **Debt-to-income (DTI):** gross debt over household income after tax and interest payments. This indicator is frequently used by banks when they analyse the ability of a household to service debt. In Norway two measures are used: total debt should not exceed five times disposable income or three times income before tax. The two requirements are approximately equal. Norges Bank traditionally defines DTI in the form of disposable income. DTI should react to changes in available margins. If available margins decrease, one should expect banks to be more cautious about DTI.
3. **Debt-to-value (DTV):** gross debt minus student debt over the market value of the dwelling. Note that we distinguish between DTV and LTV. Loan-to-value (LTV) is the defined as the ratio of collateral to the value of a loan. Since we can not distinguish between mortgage debt and other debt we use "debt" instead of "loan". About 90 per cent of household debt is mortgage debt.
4. **Income-to-deposit (ITD):** the ratio income after tax relative to bank deposits. Bank deposits are the most liquid funds a household can hold. Higher deposits might be used as collateral in the case of large purchases, or a buffer against shocks, such as periods with high interest payments. We expect that household savings would react to a stricter implementation of LTV, because households would then need to increase their share of equity in their housing investments.

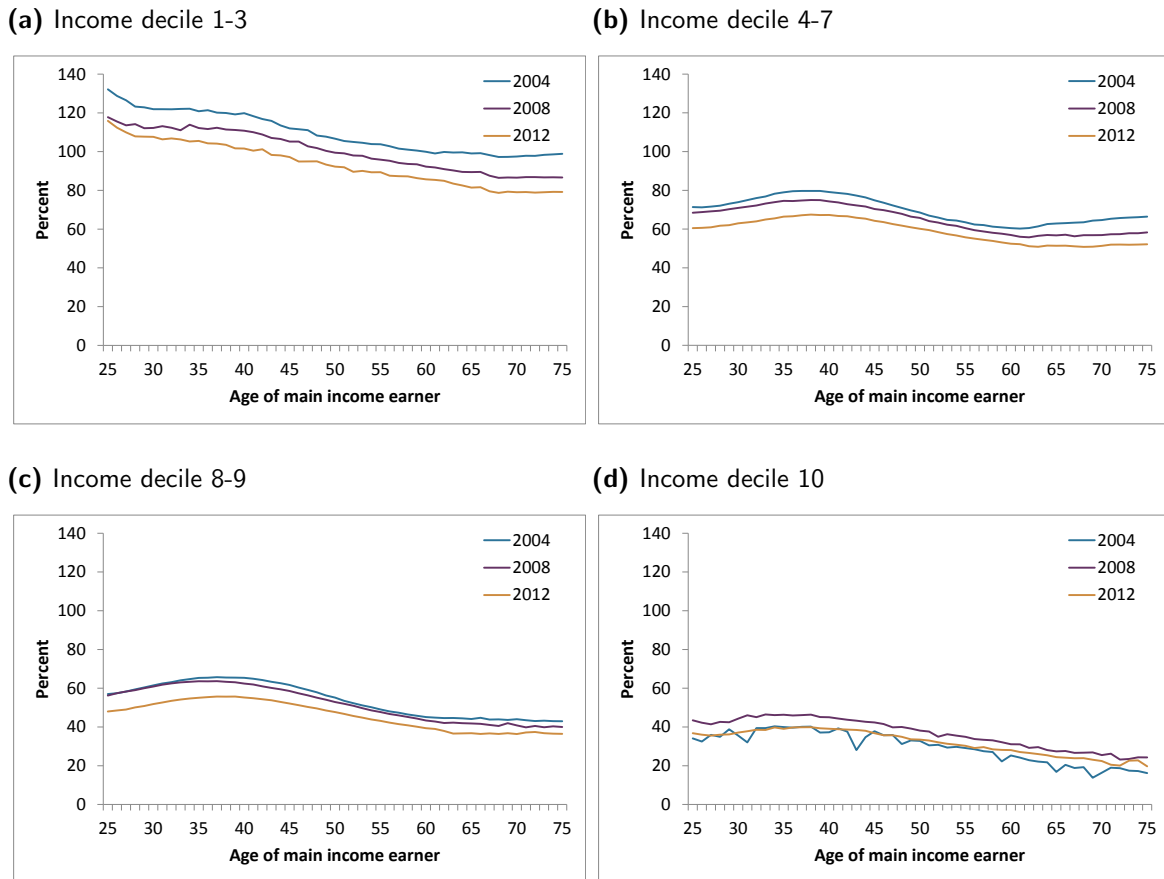
We illustrate the indicators using four panels. Each panel covers one indicator, and contains four figures. Each figure covers the indicator for one income group and age groups from 25 to 75. We show the situation in 2004, 2008 and 2012.

4.1 Debt-servicing capacity (DSC)

Panel 2 shows the sum of the standard cost of living and interest payments as a share of income. This number would normally not exceed one, although it does for some groups. As one should expect, debt-servicing capacity improves with income. For a given level of income, DSC is quite stable across age groups, indicating that income and the standard cost of consumption are the two most important variables to determine DSC.

We note that the households in income deciles 1-3 are literally on the margin. The youngest households in these groups have an average income that is less than the standard cost of consumption and interest payments. This reflects that the standard cost of consumption will not be an absolute

Figure 2: Debt-servicing capacity across age and income groups. 2004, 2008 and 2012



Debt-servicing capacity is the sum of the standard cost of living and interest payments as a share of income.

Sources: Statistics Norway, SIFO and Norges Bank

minimum. However, it also reflects that we do capture all transfers in the economy. E.g. we do not include changes in student loans in the income definition, thereby underestimating the actual available resources for many young households who are still students. Neither do we capture intra-generational transfers.

The two highest income groups have considerable free margins. The highest income group can reduce their wages by almost 50 per cent and still be above the critical limit. The relative position between groups seems to be quite stable across this time period.

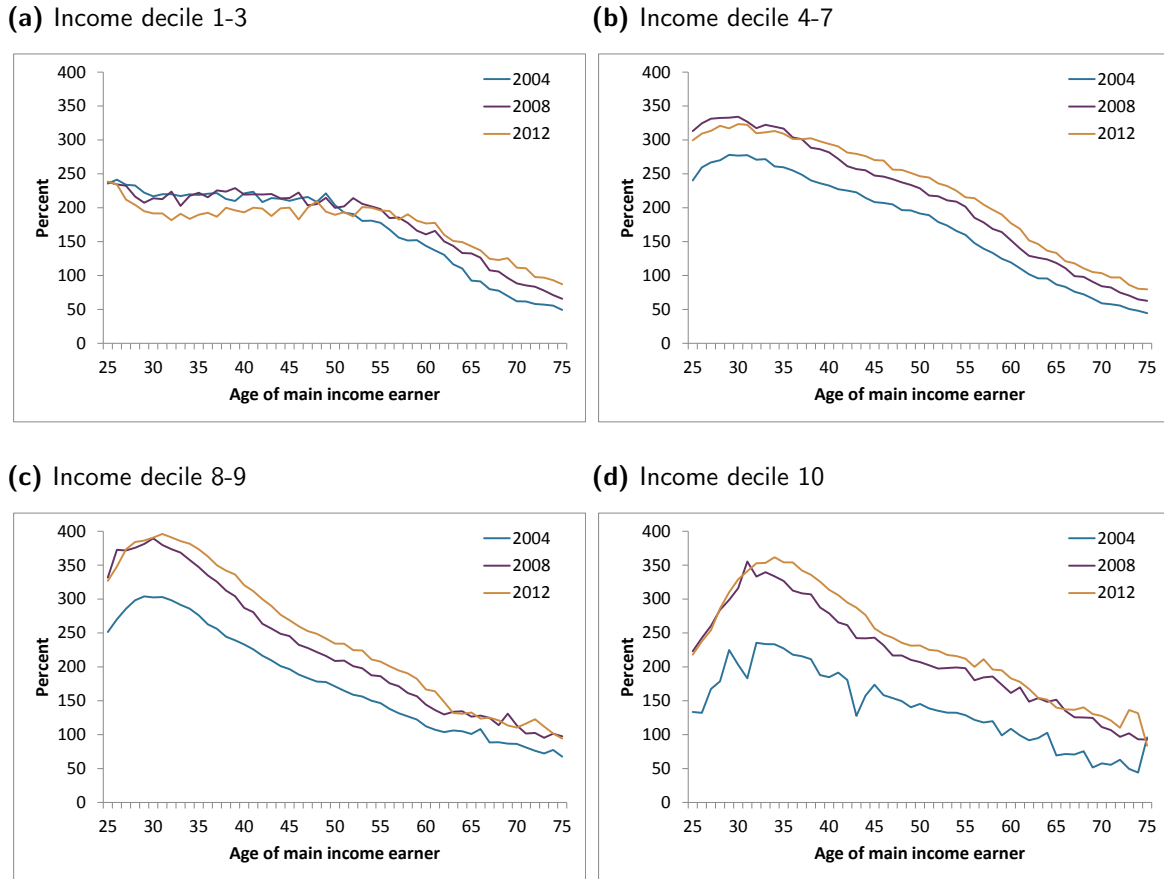
The lowest income groups improved their margins from 2004 to 2008. All income and age groups improved their margins from 2008 to 2012. This is mainly a consequence of lower interest rates. For a majority of households, their ability to service debt is therefore better in 2012 than almost ever before.

4.2 DTI–Debt-to-income ratio

We expect DTI to fall with age. The age distribution seems to be consistent across income groups. Households in all income groups tend to have a higher DTI when young, and a DTI close to 100 when they are 75 years old.

On the other hand, the maximum DTI should reflect the ability to service debt, and thereby the level of DSC. We have seen that DSC varies fairly widely across income groups. As expected, DTI therefore also varies across income groups for the most constrained, i.e. the younger households. For households in income deciles 8–9, DTI is close to 400 at the age of 35. DTI is high for young households even in income deciles 4–7. In the highest income group DTI is somewhat lower for young households, probably reflecting a high degree of liquidity in these households.

Figure 3: Debt-to-income ratios across age and income groups. 2004, 2008 and 2012



Households are divided into ten equal-sized groups ordered by after-tax income. Sources: Statistics Norway and Norges Bank

The lowest income group is an exception. While the youngest households (25-30) are not very different from other income group households, low income households between 30 and 50 years of age tend to hold lower levels of debt than the same age group in other income groups. This probably reflects small margins to service debt, excluding this group from home ownership. At higher ages, the age profile is more similar across all income groups.

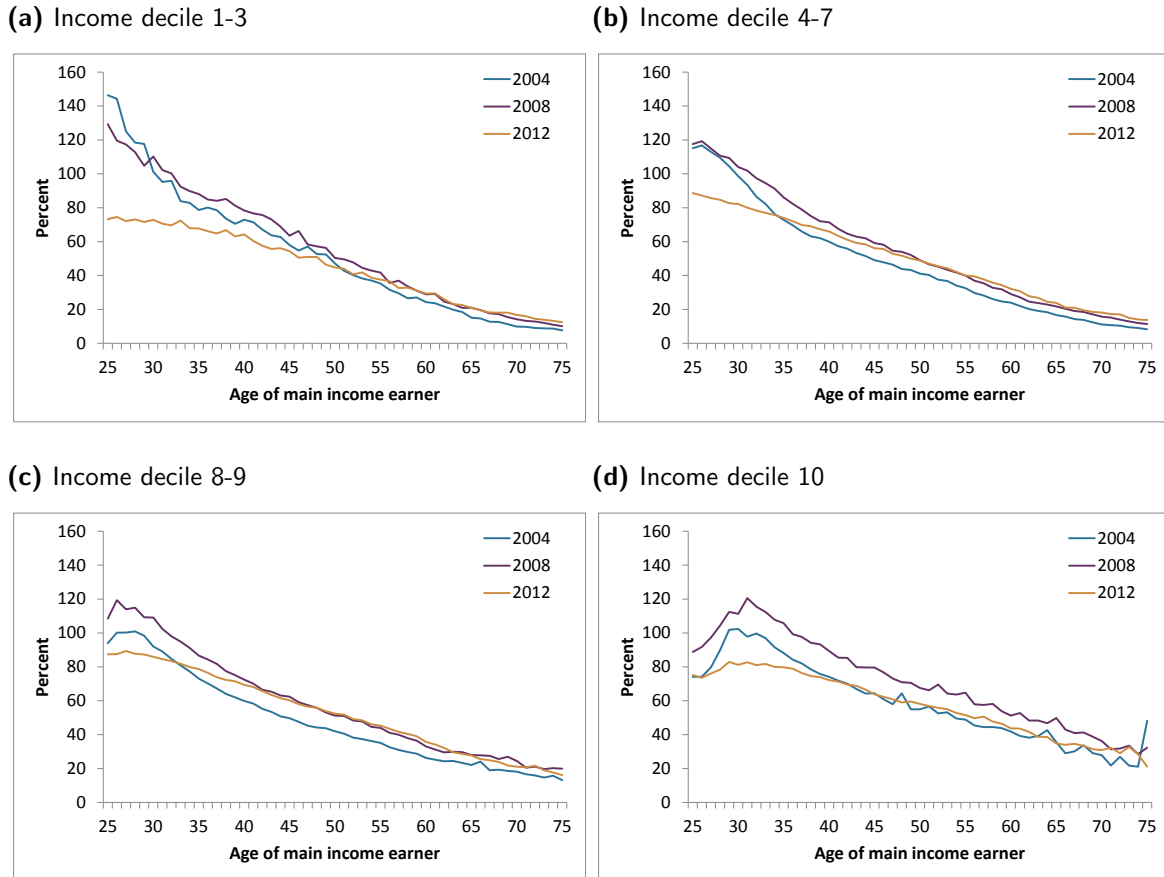
Improving DSC indicates that the households can handle a larger amount of debt. This should be reflected in banks' willingness to offer more loans for a given level of income, i.e. increasing the DTI. Most households have a higher DTI in 2012 than in 2008 or 2004. However, the shift in DTI between 2004 and 2008 is larger than the shift from 2008 to 2012. Among young households the DTI has stabilised across income groups after 2008, and has fallen somewhat for young and middle aged households in the lowest income group. This might reflect a tightening in supply of credit towards groups that are perceived as high risk.

4.3 DTV—Debt-to-value ratio

Our hypothesis is that banks use LTV as a strict requirement determining how much they are willingness to lend. We believe the DTV should be a good proxy for the development in LTV-ratios. If this is the case, maximum DTV rates should be fairly similar across income groups. Again, if we assume that households accumulate wealth over their working life, DTV should fall when households get older. Both assumptions hold up well in the data. DTV is fairly similar across income groups, see Panel 4, and falls with age.

If the banks use LTV as a credit risk indicator, higher house prices should not affect maximum DTI to any great extent. We would expect banks to adjust lending volume upwards as house prices rise.

Figure 4: Debt-to-value ratios across age and income groups. 2004, 2008 and 2012



Margins are basic consumption and interest payments as a share of income.
Sources: Statistics Norway and Norges Bank

Again, this holds fairly well in the data. From 2004 to 2012 house prices almost doubled. Despite higher house prices, DTV ratios actually increased somewhat between 2004 and 2008. This may indicate that households used higher house value as collateral for higher debt levels and that banks relaxed lending standards expecting house prices to continue to rise. In 2008 the average DTV for a person under 40 was above 1 for all income groups.

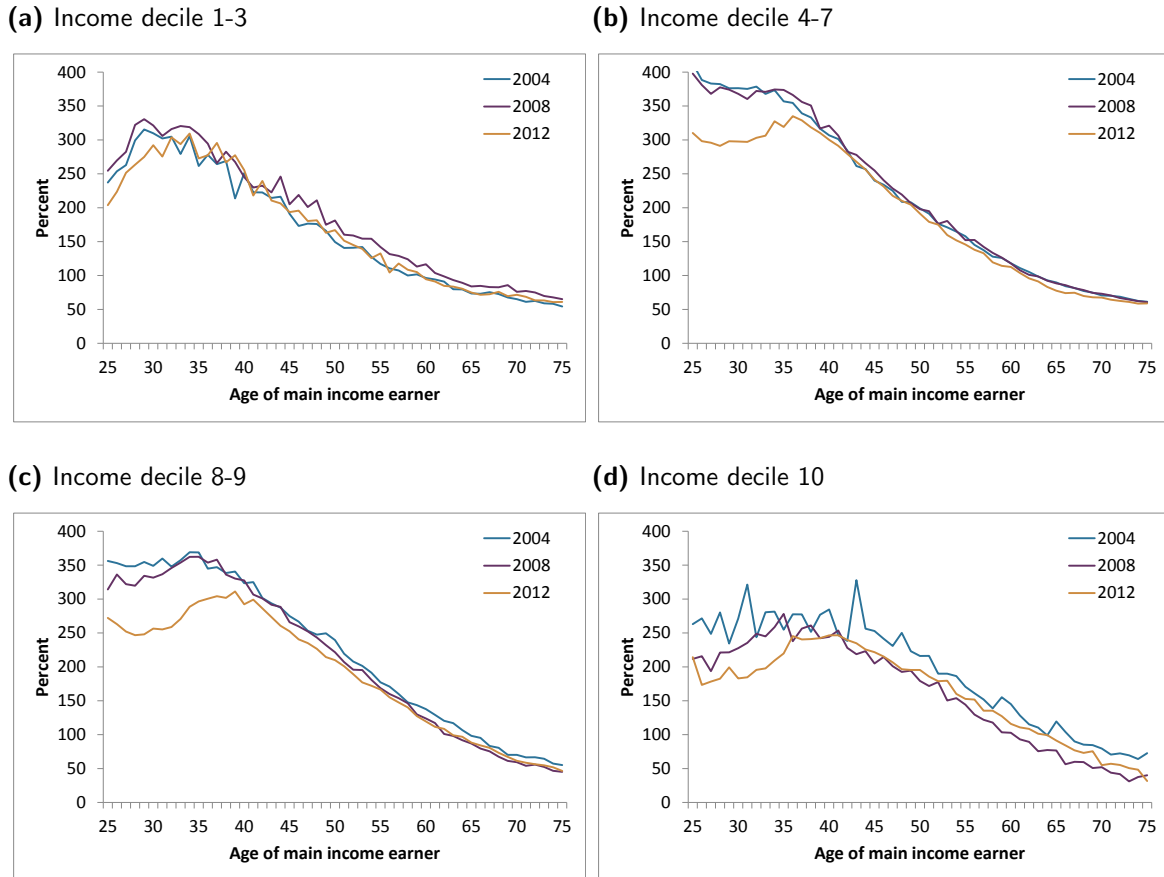
However, from 2008 to 2012 DTV rates fell significantly for younger households. The average DTV is now below 1 for all income groups. The strongest shift is for the low and medium income groups. This suggests a policy shift in banks' lending practices. It is reasonable to believe that the suggestions from the FSAN have been important in this process.

4.4 Income-to-deposit ratio (ITD)

Panel 5 shows the income to bank deposit ratio, ITD. Deposits are partly a liquidity buffer and partly long-term savings. In general the need for liquidity should be a function of the flow of payments, and therefore quite similar across income groups. Savings is a means to smooth consumption as income fall, and deposits should therefore be expected to rise with age.

This seems to hold up fairly well in the data. The average young household tends to have about 1/3 of annual income as deposits. Deposits increase with age, and at retirement age households on average hold about a full annual income as deposits. The low ratio of ITD at a high age is common across all income groups. High income earners have somewhat higher deposits relative to income than other groups. This group also holds a larger share of other financial assets than other income groups. The highest ITD has traditionally been found among the young household with middle incomes. This is a group with relatively small margins, but reasonably good access to credit markets.

Figure 5: Income-to-deposit ratios across age and income groups. 2004, 2008 and 2012



Margins are basic consumption and interest payments as a share of income.
 Sources: Statistics Norway and Norges Bank

Above, we suggested that deposits might respond to stricter LTV requirements in banks. We cannot prove the line of causality, but at least we find evidence that ITD has increased in tandem with the decrease in DTV ratios. This is especially the case for the middle income groups. From 2008 to 2012 these groups increased their deposits relative to income significantly. It is noteworthy that these groups have seen a need for higher liquidity buffers after the financial crisis. This might reflect a need for more equity when making large purchases.³

The changes in deposits are less evident for the highest and lowest income groups. For these groups there are only small changes in income-to-deposit ratios between 2004 and 2012. However, it is reasonable to expect that the highest income groups are not liquidity constrained in the first place, while the low income groups — given their low margins — have no capacity to increase savings.

5 Conclusion

Over the past 15 years, Norway has experienced a credit boom, combined with strong income growth and rapidly rising housing prices. This has caused a strong concern for long-term financial stability. After the financial crisis in 2008-09, the Norwegian Financial Supervisory Authority has taken action by suggesting that banks tighten LTV ratios.

This study based on micro data shows that DTV ratios have changed in line with the change in LTV requirements. Maximum DTV ratios have fallen. Younger households in particular are now facing

³It is reasonable to assume that the higher deposits have also been spurred by saving incentives, such as the government subsidized "housing savings for the young" (BSU) program which combine attractive interest rates with a tax rebate on interest income. Our findings might indicate that such alternatives are primarily used by people in middle income groups.

more constrained access to credit. Middle income groups have compensated this by increasing deposits. Low income groups, who are on more depressed margins, have seen their access to credit markets constrained. Older households have continued to increase their debt holdings, but at a slower pace than we observed before the financial crisis.

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