

ECONOMIC COMMENTARIES

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Household debt and links to the housing market.

Consequences for financial stability *

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Household debt in Norway has risen faster than income for a long period. The debt level is high both historically and compared with other countries and is considered to be the most important source of vulnerability in the Norwegian financial system¹. High debt increases the probability that households will need to increase saving and tighten consumption in the event of a decline in house prices or a rise in interest rates. The risk of such a shift in consumption is assessed to be high. This risk is particularly high among households that have recently purchased a dwelling or have substantial exposure to the housing market. Residential mortgage credit risk - the risk of default and possible foreclosure with bank losses - is moderate overall. Higher consumer debt and increased investment in secondary homes may lead to higher credit risk exposure for banks.

1 Introduction

The possibility of borrowing in well-functioning credit markets allows households to spread consumption and saving over a lifetime instead of being constrained by the limits of current income. This increases welfare.

At the same time, debt entails risk. Credit risk refers to the danger that borrowers will not be able to service their debt. As a result, lenders — primarily banks — will incur losses. But even if banks do not incur losses, high debt can amplify the business cycle. A high level of debt constrains household behaviour and entails a risk of a shift in consumption. Debt is a long-term obligation involving higher fixed expenses for a period ahead. In the event of an unexpected negative shock — whether an income, wealth or cost-of-living shock — higher debt will reduce a household’s ability to adapt without making substantial cuts in consumption. If high debt is widespread, such cuts can have self-reinforcing procyclical effects and contribute to a deeper and longer downturn.

Household borrowing is normally closely linked to a home purchase. A household’s status in the housing market can therefore be an important factor in understanding the household’s exposure to different types of risk. Identifying different categories of households based on their status in the housing market can enhance our understanding of the distribution of risk across households.

Norwegian households have a high debt level, both historically and compared with other countries. In addition, the use of consumer credit has risen markedly in recent years (see Hagen et al. (2017)).

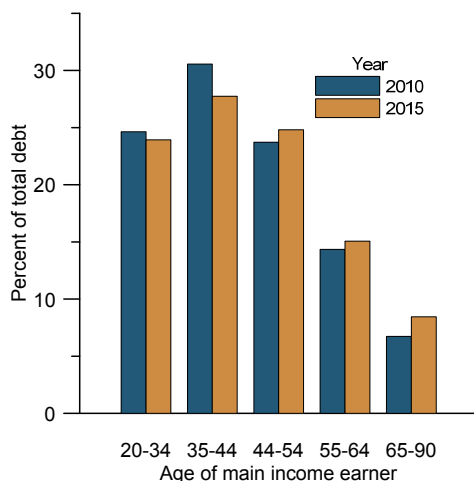
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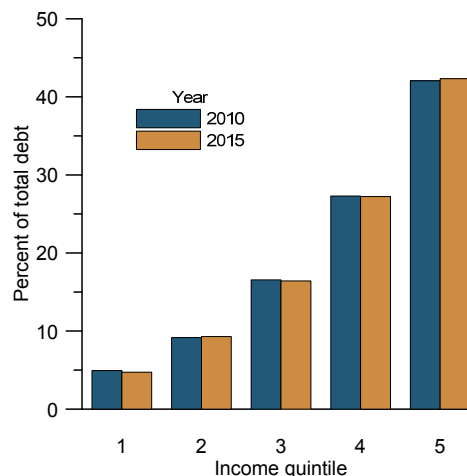
¹See Section 1 of the 2017 Financial Stability Report (Norges Bank (2017)).

Chart 1: Debt distributed across age and income groups. 2015

(a) Age of main income earner



(b) After-tax income



Sources: Statistics Norway and Norges Bank

We know from both Norwegian and international studies that consumer loans have an entirely different default profile from residential mortgage loans. Investing in secondary homes also appears to be more common than previously. International studies show that the default rate for these mortgages is typically higher than for ordinary residential mortgage loans. Both of these trends should be closely monitored.

We identify quantitative measures of risk. Even though credit risk is moderate, the level of debt in many households is so high that there is a substantial risk of a shift in consumption. In 2015, households assessed as vulnerable accounted for almost half of total consumption. For households that have recently changed their status in the housing market or that have substantial exposure to the housing market, risk is consistently higher than for other categories.

2 Data set and household categories: Debt level is determined at the time of purchase

Over 75 percent of Norwegian households and 83 percent of all persons live in owner-occupied dwellings, and about 95 percent of loans from banks and mortgage companies to households (excluding self-employed's business loans) is in the form of residential mortgage loans.² Household borrowing is closely linked to home purchases, and debt ratios for most households are highest at the time of purchase. After buying their home, the household can accumulate housing wealth by repaying their mortgages and reducing their debt. Other factors that will reduce household exposure to debt are income growth or a rise in house prices, which will increase housing wealth. Households can also realise price gains in the housing market by borrowing more. Household debt is

²Data from Statistics Norway on households' and persons' housing conditions, register-based, and from the accounting and supervisory reporting system for banks and mortgage companies (ORBOF).

influenced by the same factors that largely determine housing market behaviour, such as age and income (Chart 1). The age of the household is given by the age of the main income earner.

Since 2004, Norges Bank has published analyses of household debt based on Income and wealth statistics for households (Statistics Norway (2015)), which provide information on income, wealth and debt. In addition, information is available on housing market turnover (Kartverket (2017)). Households are defined as persons listed in the national population register as resident in the same housing unit.

Table 1: Categories of households by age and status in the housing market¹⁾.

Category		Criteria
First-time buyers	FTB	No tax value for housing in preceding two years. Home purchased in current year according to national property register. Age of main income earner: 20-34.
Home movers	HMO	Positive tax value for housing in previous year. Home purchased in current year according to national property register. Age of main income earner: 20-90.
Secondary home owners	SHO	Secondary dwelling and rental income according to tax assessment. Age of main income earner: 20-90.
Younger homeowners	YHO	Positive tax value for housing in current and previous year. No home purchase. Age of main income earner: 20-44.
Older homeowners	OHO	Positive tax value for housing in current and previous year. No home purchase. Age of main income earner: 45-64.
Pensioners	PEN	Positive tax value for housing in current and previous year. Pension most important source of income. Age of main income earner: 65-90.
Tenants	TEN	No tax value for housing in current and previous year. Age of main income earner: 20-90.

¹⁾ The categories are mutually exclusive.

In the analysis, we distinguish between younger first-time buyers and homeowners households that buy a new dwelling, ie home movers trading up in the housing market (Table 1). We further distinguish between three categories of homeowners grouped by age: younger homeowners, older homeowners and homeowners pensioners. Debt, income, liquid assets and housing wealth vary across the categories, in some cases to a considerable extent (Table 2).

The share of secondary home owners has increased in recent years (Chart2). International studies show that the probability of default is higher for debt linked to property other than the borrower's primary home. The probability of default for households owning more than one dwelling is about twice as high as for households owning only one dwelling (see Albanesi et al. (2017) and Reserve Bank of New Zealand (2015)). There may be several reasons for this:

- There is a high level of social stigma related to residential mortgage default, but this could be lower for owners of multiple dwellings.

- Secondary home owners have higher fixed expenses.
- A household's debt-servicing capacity is more uncertain when income depends on rental income. Not least, income and housing market developments may be correlated.

International observations are not necessarily relevant for Norwegian conditions because rules for debt responsibility and bankruptcy vary across countries. Nevertheless, secondary home owners as a separate category should also be monitored in Norway.

Housing units can be registered as secondary homes but used as holiday homes. It is assumed that any extraordinary risk is related to the secondary dwelling as investment object. Secondary home owners are therefore delimited to households that own a secondary dwelling with *rental income*. These households are categorised separately.

Table 2: Statistics on the household categories in the analysis

Category	Households		Debt		Estimated consumption	
	In 1000s	% of all	In billions of NOK	% of total debt	In billions of NOK	% of total debt
First-time buyers	25	1.2	57	2.1	11	0.9
Home movers	62	2.9	182	6.9	40	3.5
Secondary home owners	53	2.4	165	6.2	41	3.6
Younger homeowners	435	20.0	977	36.7	264	23.2
Older homeowners	544	24.9	803	30.2	364	32.1
Pensioners	341	15.6	142	5.3	140	12.3
Tenants	596	27.3	195	7.3	210	18.5

Category	Median (in 1000s of NOK)					% of indebted households ¹⁾
	After-tax income	Debt	Housing wealth	Liquid assets	Estimated consumption	
All	482	670	2262	159	444	60
First-time buyers	417	2189	2230	102	380	96
Home movers	694	2623	3007	240	604	88
Secondary home owners	831	2559	4644	403	732	79
Younger homeowners	657	2049	1993	147	578	94
Older homeowners	672	1196	2324	205	613	75
Pensioners	397	126	2275	438	372	35
Tenants	294	79	0	48	285	30

¹⁾Net debt exceeding NOK 50 000.

Sources: Statistics Norway, the Norwegian Mapping Authority and Norges Bank.

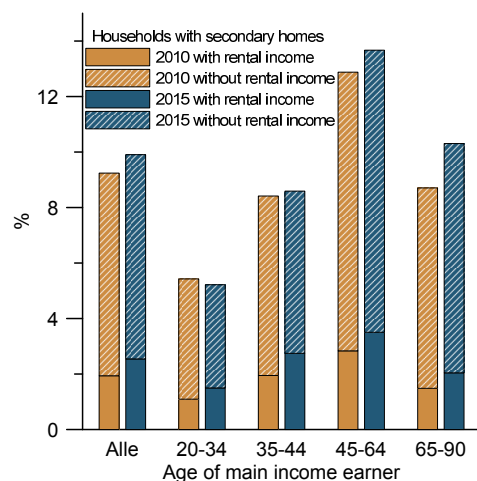
3 Criteria for the assessment of risk

In line with earlier analyses (Solheim and Vatne (2013)), we operationalise credit risk (and also the risk of a shift in the consumption) using a set of indicators that largely correspond to the requirements in the regulation on new residential mortgage loans (see box). We set a critical level for each indicator:

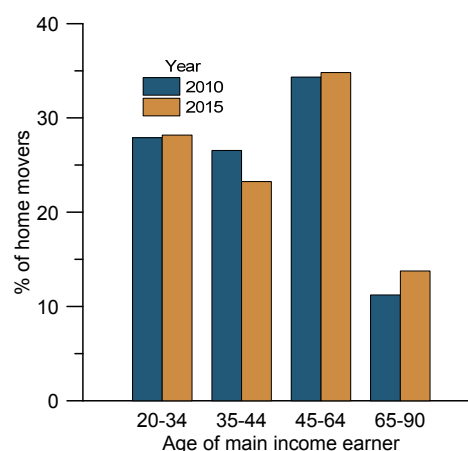
- Loan-to-value (LTV) ratio: total debt less student loans and bank deposits as a share of the value of the dwelling. Critical threshold: 100 percent.

Chart 2: Debt by age and income group. 2015

(a) Share of households with secondary homes with and without rental income



(b) Home movers by age



Sources: Statistics Norway, the Norwegian Mapping Authority and Norges Bank.

- Debt-to-income (DTI) ratio: total debt as a share of gross income. Critical threshold: 500 percent.
- Debt-servicing capacity: income after tax less interest expenses, required minimum principal payment in accordance with the regulation on residential mortgage loans and ordinary consumption as defined by the National Institute for Consumer Research (SIFO). Critical threshold: 1/12 (8.33 percent) of post-tax income.

The LTV ratio is used as an indicator because most household debt is debt secured on dwellings. Student loans are deducted because student debt is not included in the assessment of the collateral required by banks for a residential mortgage loan. Bank deposits are deducted because borrowers can easily use them to reduce their debt. The purpose of LTV ratios therefore reflects on the one hand households' scope to increase their borrowing — and on the other hand the collateral that banks have to back their lending. The regulation on residential mortgage lending caps the LTV ratio for residential mortgage loans at 85 percent. Since the exact value of a dwelling is uncertain and since additional collateral cannot be observed, the critical threshold is set at 100 percent.

Under the assumption that current income provides a good indication of future income, the DTI ratio is a measure of the capacity to repay debt. With a DTI ratio of 500 percent, approximately 25 percent of annual income after tax would have to be set aside to repay the loan over a period of 30 years.

Debt-servicing capacity is a measure of liquidity. Debt-servicing capacity is a function of the DTI ratio, the price of debt and minimum household consumption. Debt-servicing capacity may be solid even when the DTI ratio is high, and vice versa. Since necessary consumption included in the calculation of debt-servicing capacity does not depend on income, low-income households will typically be most constrained by the debt-servicing capacity requirement, while the DTI ratio

will have a relatively stronger effect on higher-income households. The threshold of a 1/12th of annual income reflects an expectation that most households will desire a somewhat higher level of consumption than in the SIFO reference budget. The requirement is relatively moderate — the median Norwegian household has a buffer equal to approximately four months' income once debt expenses and standard consumption are covered.

The risk indicators pertain to categories, not to individual households. It is difficult to determine the appropriate debt level for a given household. A level of debt that is high for one household could be manageable for another. Over time and at the macro level, however, it should be possible to establish a rule of thumb for determining the appropriate debt level.

As we do not have access to data that enable us to identify which households will default on their loans or cut their consumption, we have constructed risk indicators by defining identifying risk characteristics. The resulting quantitative measures that are presented here cannot identify which individual households or household categories will default on their loans or make substantial cuts in their consumption, but they enable us to compare categories and assess developments over time.

3.1 Credit risk

Credit risk is related to bank losses and reflects the direct risk that banks incur when they issue loans. Mortgage debt collection is costly for all the involved parties. As long as at least one of the three criteria has been met, it should be possible to find a solution and draw up a revised debt-servicing plan for the mortgage. Credit risk is therefore only assumed to be elevated among households that breach all three requirements at the same time.

Another element that can change the risk assessment is the use of consumer debt. We know that the probability of default for consumer debt is far higher than for other debt (Hagen et al. (2017)). Consumer debt in Norway has shown a sharp rise in recent years, albeit from low levels.

The authorities have decided to establish a register for household consumer credit (Lovdata (2017)). Until this credit register becomes operational there is no fully adequate overview over the distribution of household consumer debt. In this analysis, consumer debt is defined as debt with an implicit interest rate higher than twice the average mortgage rate. The implicit rate is defined as interest expenses as a share of average debt at the end of the current year and the previous year.³ All debt in households with high implicit interest rate is defined as debt with high credit risk. When consumer debt is taken into account, there is a marked increase in the share of households that represent a source of credit risk, especially among older households and non-homeowners.

3.2 Risk of a shift in consumption

The risk of a shift in consumption is meant to reflect the constraints that high debt places on households' ability to cope with negative shocks. This can amplify a decline in consumption. If households breach one of the requirements established above, flexibility will be reduced, increasing the probability that the household will respond to shocks by changing its economic behaviour. The

³This method will typically capture households that only hold consumer debt. However, it will be a poor indicator of consumer debt in households that also have substantial mortgage debt, as the average interest rate on these households' total debt will be low, even if the interest rate on some of the debt may be high.

risk of a shift in consumption is therefore assumed to be elevated for households breaching at least one requirement.

In contrast to increased losses, a shift in consumption will not have a direct impact on financial institutions. However, the spillover effects of such a shift could have a negative impact on banks. There are a number of channels from a shift in consumption to a risk of weaker financial institutions:

- Housing market behaviour. High debt ratios can make homeowners more inclined to trade down in the housing market if they become uncertain about developments in house values. High debt ratios can also influence the willingness to purchase a new home, trade up or renovate, amplifying a negative spiral in the housing market.
- Increased saving. If debt-servicing capacity is weak, homeowners may have to cut consumption to a greater extent in the event of a rise in interest rates or a fall in income (for example owing to unemployment). Lower consumption results in lower GDP and can contribute to making a downturn deeper than it would have been otherwise.
- Reduced flexibility. High debt ratios reduce the scope for borrowing in order to make a life change, for example to pursue a different career. This reduces resource use efficiency and productivity growth over time, which can prolong a downturn.

Such spillover effects reduce banks' and non-financial enterprises' earnings, partly as a result of increased corporate default rates and reduced commercial real estate collateral values.

Regulation on new residential mortgage loans

To contribute to more sustainable developments in the residential mortgage market, the authorities have introduced a regulation on residential mortgage loans (Lovdata (2016)). The regulation was introduced in July 2015 and was revised in January 2017. The requirements in the regulation include a maximum DTI ratio of five times gross annual income, a required capacity to service debt in the event of a five percentage point rise in mortgage rates and a maximum LTV ratio of 85 percent. There is also a minimum principal payment requirement if the LTV ratio exceeds 60 percent. Banks are given some flexibility to provide loans that breach the requirements, a so-called *speed limit*.

For households with low equity, the LTV ratio requirement will be the most important constraint on borrowing for home purchases. For single-person households or households that wish to purchase a dwelling in urban areas, DTI ratios have gained importance as the rise in house prices has outstripped income growth.

4 Exposure depends on stage of the life cycle and status in the housing market

The two categories of households that have recently purchased a home typically have high LTV ratios (Chart 3a).⁴ LTV ratios among younger homeowners are high because they have recently purchased a dwelling. In the period between 2010 and 2015, the share of homebuyers and younger homeowners with very high debt ratios fell somewhat, which may reflect tighter regulation. First-time buyers in particular are expected to be more sensitive to regulatory changes (see box). The LTV ratios of secondary home owners are very similar to those of older homeowners.

Households that have recently purchased a home also have high DTI ratios (Chart 3b). First-time buyers - who often have low incomes but may have expectations of high income growth - have higher DTI ratios than home movers. Other homebuyers and younger homeowners also have high DTI ratios, although there is wide variation within these categories. For other categories, DTI ratios are more moderate. The increase in debt among first-time buyers between 2010 and 2015 can largely be attributed to higher borrowing for home purchases as a result of higher house prices. The price of entering the housing market increased in this period. However, the willingness or ability of this category to borrow based on the value of the dwelling declined in this period (Lindquist et al. (2017)). For other categories, debt growth to a greater degree reflects both income growth and higher housing wealth.

Debt-servicing capacity, measured as income less fixed expenses, is weakest among tenants and first-time buyers (Chart 3c), which indicates that many tenants are financially weak. Pensioners' debt-servicing capacity has historically been weak, but strengthened in the period between 2010 and 2015. Pensioners are particularly vulnerable because they are less able to increase their incomes by working more. Debt-servicing capacity among first-time buyers is often low, but in contrast to tenants and pensioners, first-time buyers below the age of 35 can often expect higher income growth than other household categories.

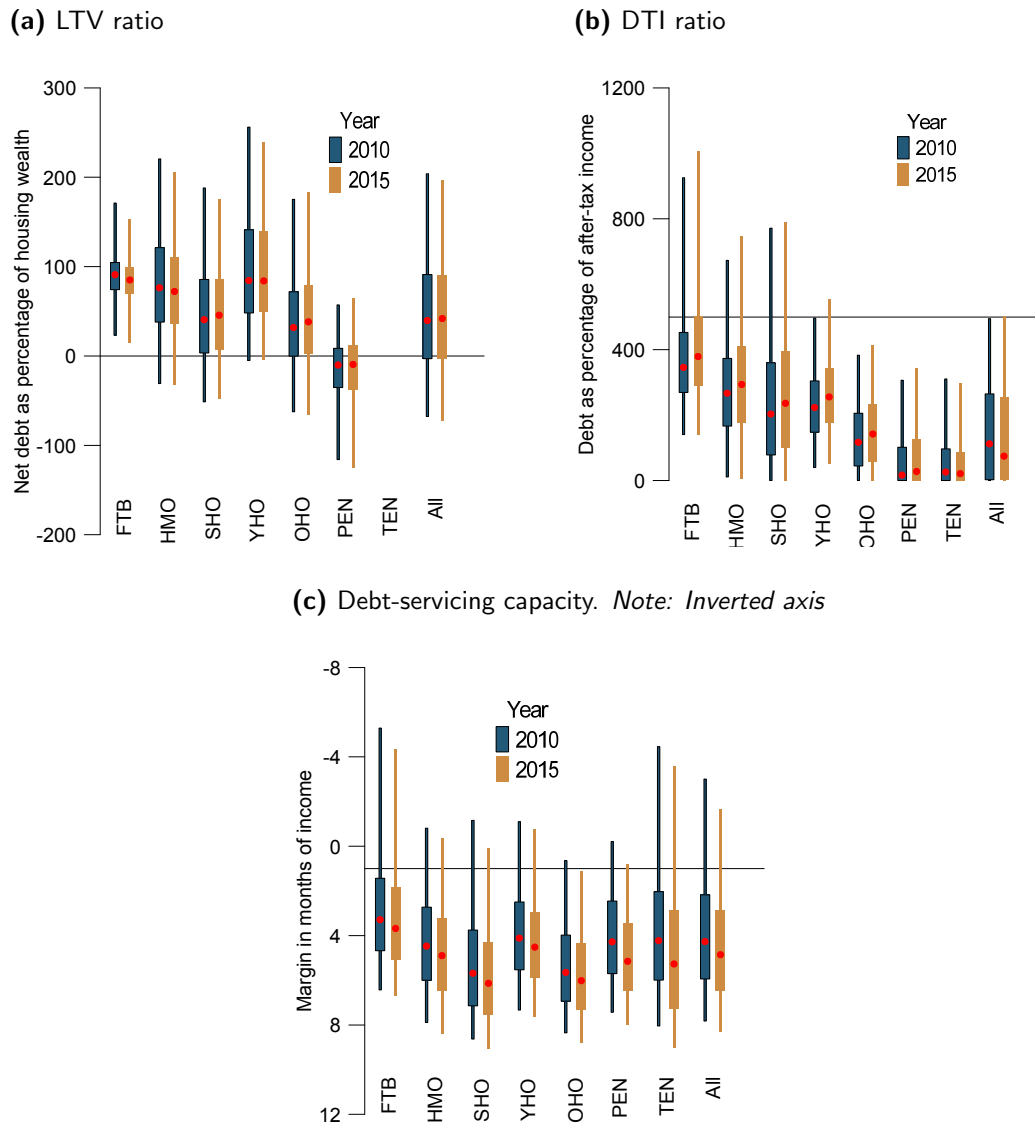
4.1 Risk concentrated on categories with high housing wealth or low income

Credit risk and the risk of a shift in consumption are presented in terms of both the share of households in a given category, the share of debt among these households and the share of total consumption that these households account for. In the assessment of credit risk, high risk debt is the most relevant variable. Credit risk is an indication of the risk of bank losses and is related to the level of debt. The share of households that breach the credit risk requirements is found to be higher than the share of debt among these households.

However, in the assessment of the risk of a shift in consumption, the share of consumption in the high-risk categories is the most relevant variable. Our concern is that a shift in consumption would lead to a tightening of total consumption. If high-risk households account for a small share of total consumption, effects on the real economy will be less pronounced. The share of consumption among

⁴Note that this indicator appears to show less variation for first-time buyers than for other categories. This is primarily because we can use exact turnover values from the Norwegian Mapping Authority for first-time buyers, while housing wealth for other categories is based on the estimated market prices used to determine tax values.

Chart 3: Risk assessment criteria¹⁾. 2010 og 2015



1) The wide bars denote the 25th-75th percentile, the narrow bars denote the 5th-95th percentile, while the dot marks the median.

LTV: total debt less student loans and bank deposits/value of the dwelling.

DTI: total debt/gross income.

Debt-servicing capacity: income less tax and interest expenses, the required minimum principal payment in accordance with the requirements for new residential mortgage loans and ordinary consumption as defined by SIFO.

Sources: Statistics Norway, Norwegian Mapping Authority and Norges Bank

high-risk households is found to be higher than the share of households in these categories (Chart 4 to Chart 6 and Table 3). However, the share of total consumption in the category with a risk of a shift in consumption is not a measure of how much consumption could be expected to fall. It only provides an indication of the share of total consumption accounted for by high-risk households.

Credit risk is dominated by household categories that have recently purchased a dwelling or that are secondary home owners. Credit risk is also high among tenants, but is in this case driven by a high share of consumer debt. For older homeowners and pensioners, consumer debt is also an important factor in explaining the level of credit risk.

The risk of a shift in consumption is highest among first-time buyers and younger homeowners. For these categories, it is estimated that households with an elevated risk of a shift in consumption account for over 50 percent of consumption. Among tenants and pensioners, only a relatively small share of consumption is considered to fall into this risk zone. There is a risk that a shift in consumption would affect almost 50 percent of total consumption, which highlights the vulnerability of the Norwegian economy to high household debt.

4.2 Sensitivity analyses

The level of the risk indicators depends on the assumptions on which they are based. In the sensitivity analyses, the indicators are calculated for a scenario involving a five percentage point increase in the interest rate level and/or a 15 percent reduction in house prices.

The credit risk indicator is particularly sensitive to interest rate increases, but not as sensitive to changes in house prices (Chart 7a). The reason is that a considerable number of households already breach LTV ratio requirements at today's house prices. A fall in house prices while LTV ratios and debt-servicing capacity remain unchanged will have little impact on credit risk. However, higher interest rates will increase the number of households with weak debt-servicing capacity. Since these households often already breach LTV and DTI requirements, this increase will be directly reflected by the credit risk indicator. This does not mean that expected bank losses are independent of house price developments. As is well known, the level of expected losses is a function of two variables:

- probability of default (PD)
- loss given default (LGD)

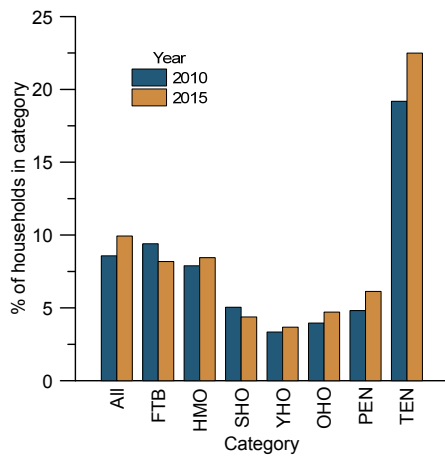
The LGD has two components:

- One component — largely independent of the size of the loan — to cover the costs related to the actual bankruptcy process.
- A second component that depends on the value of the underlying collateral.

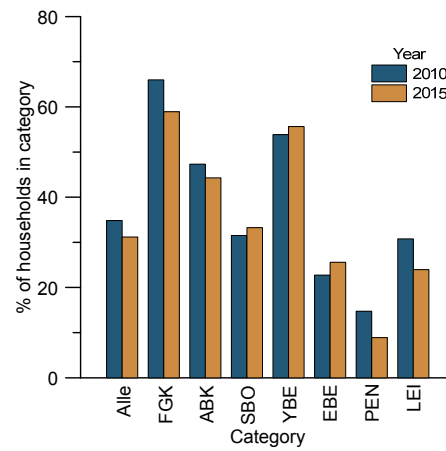
The second component will in turn be a function of house prices. When we translate the credit risk indicator into actual bank losses, we must therefore consider changes in the indicator in the light of house price developments. Even if a fall in house prices does not substantially increase the share of high-risk debt, the risk of losses will still increase. The risk of a shift in consumption is sensitive to the levels of both house prices and interest rates. The categories with the highest debt

Chart 4: Share of households that breach different requirements. 2010 and 2015

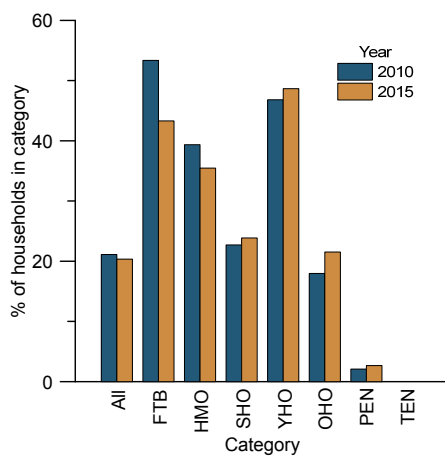
(a) Credit risk incl. consumer debt



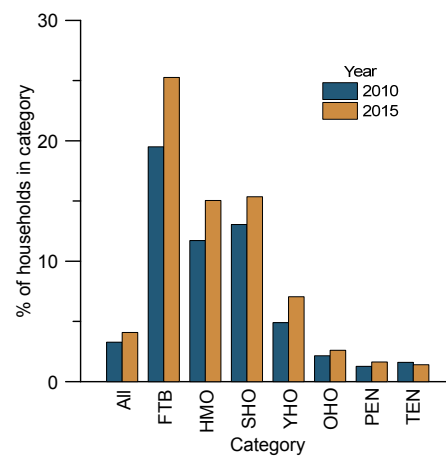
(b) Risk of a shift in consumption



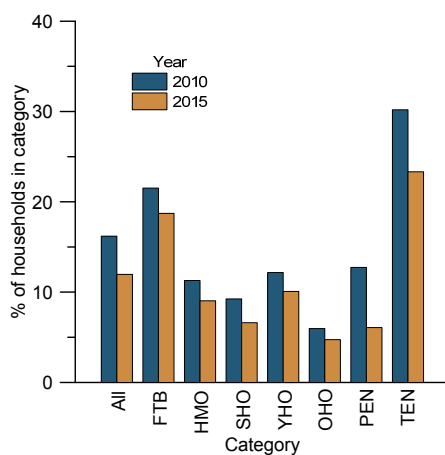
(c) LTV-ratio



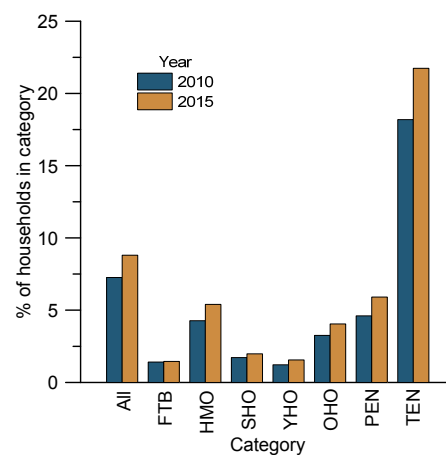
(d) DTI-ratio



(e) Debt-servicing capacity



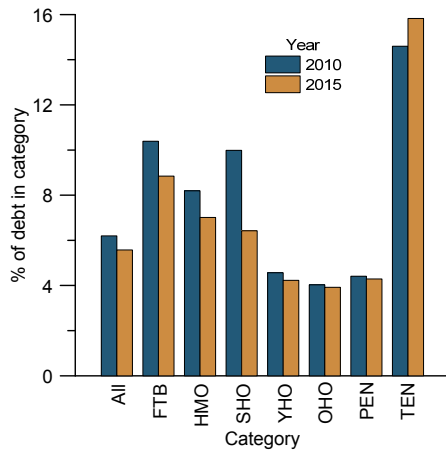
(f) Consumer debt



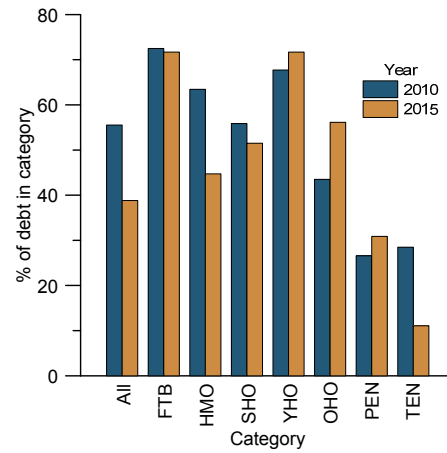
Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank

Chart 5: Share of debt in households that breach different requirements. 2010 and 2015

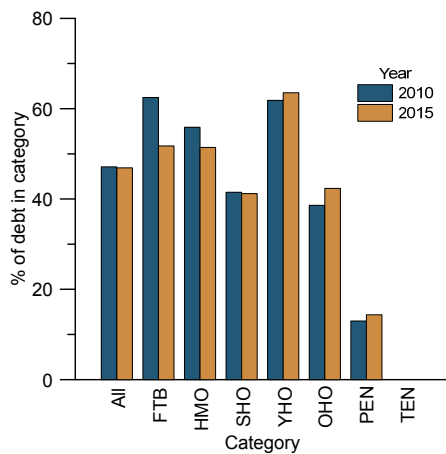
(a) Credit risk incl. consumer debt



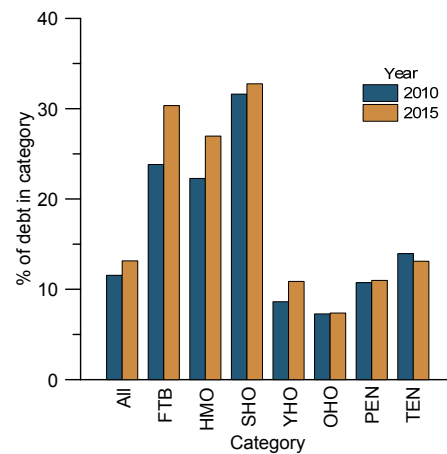
(b) Risk of a shift in consumption



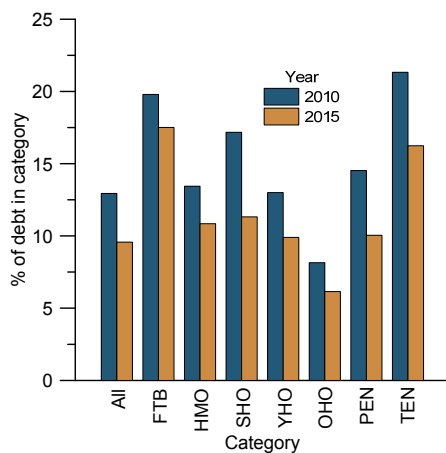
(c) LTV-ratio



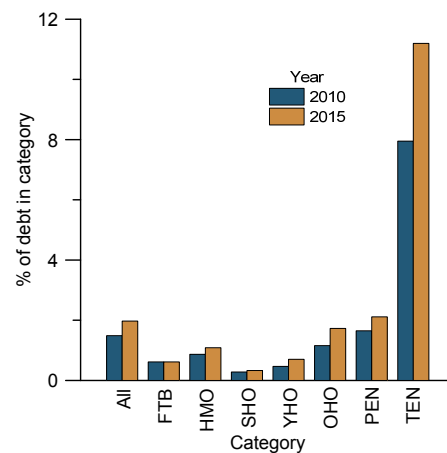
(d) DTI-ratio



(e) Debt-servicing capacity



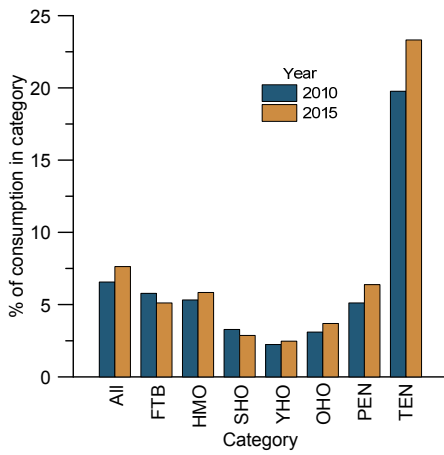
(f) Consumer debt



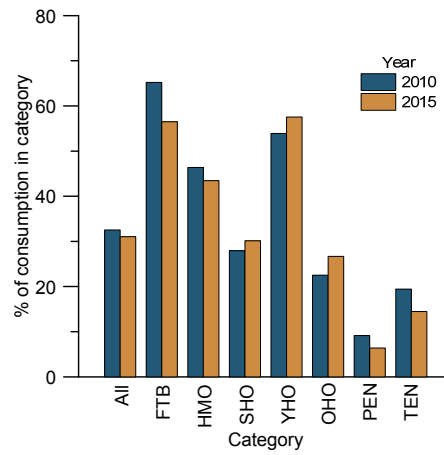
Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank

Chart 6: Share of estimated consumption in households that breach different requirements. 2010 and 2015

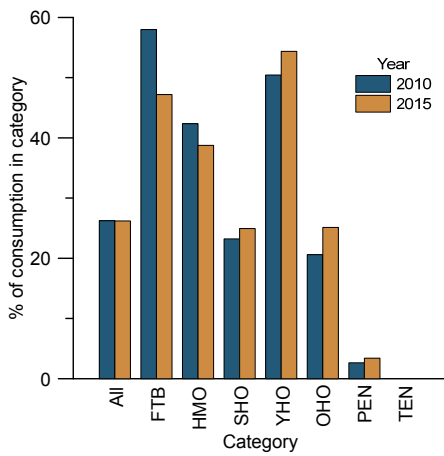
(a) Credit risk incl. consumer debt



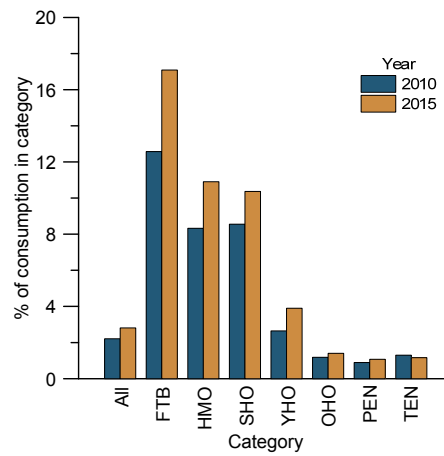
(b) Risk of a shift in consumption



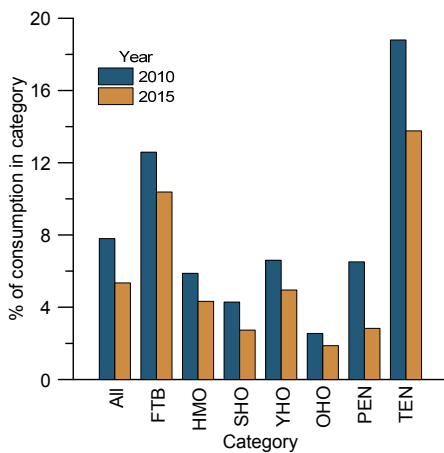
(c) LTV-ratio



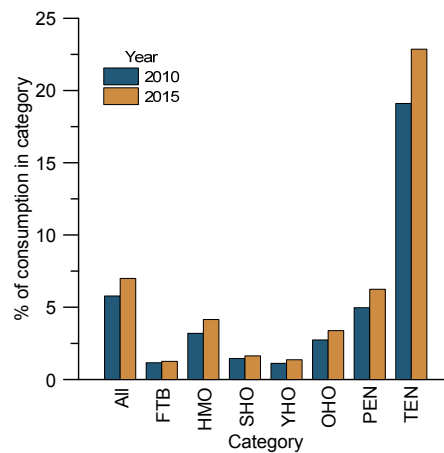
(d) DTI-ratio



(e) Debt-servicing capacity



(f) Consumer debt



Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank

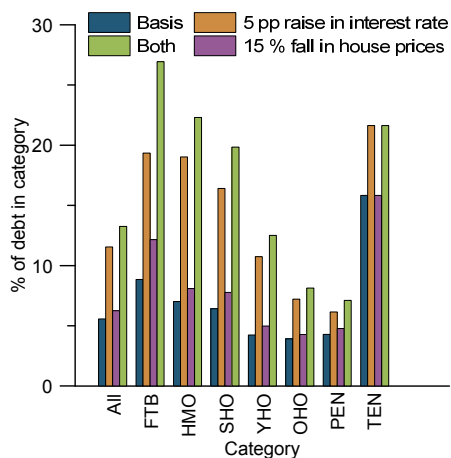
Table 3: Categories and criteria. 2010 and 2015

Category	Year	LTV-ratio	DTI-ratio	Debt-servicing capacity	Credit risk	Risk of a shift in consumption
% of households						
All	2015	20.35	11.96	4.08	9.93	31.17
	2010	21.10	16.20	3.27	8.58	34.81
First-time buyers	2015	43.31	18.72	25.26	8.18	58.93
	2010	53.36	21.52	19.50	9.40	65.97
Home movers	2015	35.46	9.04	15.04	8.44	44.27
	2010	39.34	11.29	11.72	7.89	47.31
Secondary home owners	2015	23.87	6.61	15.36	4.38	33.25
	2010	22.70	9.25	13.05	5.05	31.52
Younger homeowners	2015	48.66	10.07	7.05	3.68	55.63
	2010	46.83	12.17	4.90	3.34	53.85
Older homeowners	2015	21.53	4.74	2.61	4.71	25.57
	2010	17.96	5.97	2.14	3.96	22.75
Pensioners	2015	2.65	6.08	1.63	6.13	8.89
	2010	2.08	12.73	1.26	4.81	14.74
Tenants	2015	-	23.33	1.40	22.49	23.96
	2010	-	30.20	1.60	19.19	30.78
% of debt						
All	2015	46.91	9.57	13.15	5.57	55.03
	2010	47.13	12.94	11.55	6.20	55.54
First-time buyers	2015	51.75	17.51	30.34	8.85	65.72
	2010	62.49	19.79	23.82	10.39	72.48
Home movers	2015	51.42	10.84	26.96	7.02	61.05
	2010	55.88	13.44	22.28	8.19	63.44
Secondary home owners	2015	41.18	11.32	32.75	6.42	56.49
	2010	41.51	17.17	31.61	9.99	55.86
Younger homeowners	2015	63.54	9.90	10.88	4.23	69.43
	2010	61.85	13.00	8.62	4.57	67.73
Older homeowners	2015	42.36	6.15	7.38	3.92	46.81
	2010	38.59	8.15	7.28	4.03	43.51
Pensioners	2015	14.36	10.05	10.99	4.29	25.15
	2010	12.97	14.52	10.73	4.41	26.59
Tenants	2015	-	16.24	13.11	15.83	24.60
	2010	-	21.33	13.95	14.60	28.49
% of consumption						
All	2015	44.30	8.51	9.48	6.24	51.40
	2010	43.66	11.53	8.24	6.34	51.32
First-time buyers	2015	47.27	9.50	16.46	4.79	56.05
	2010	58.17	11.43	11.68	5.28	64.74
Home movers	2015	38.74	3.98	10.66	5.68	43.24
	2010	42.33	5.44	8.00	5.12	46.13
Secondary home owners	2015	38.99	9.60	27.29	5.52	52.01
	2010	39.55	14.79	26.55	8.85	51.71
Younger homeowners	2015	63.30	9.30	9.90	4.02	68.82
	2010	61.00	12.03	7.53	4.15	66.48
Older homeowners	2015	41.27	5.47	6.33	3.94	45.23
	2010	36.61	7.03	5.93	3.83	40.90
Pensioners	2015	13.59	9.07	9.28	5.37	23.09
	2010	11.66	12.66	8.47	5.35	23.34
Tenants	2015	-	14.71	7.95	21.60	19.82
	2010	-	19.42	8.12	18.99	23.62

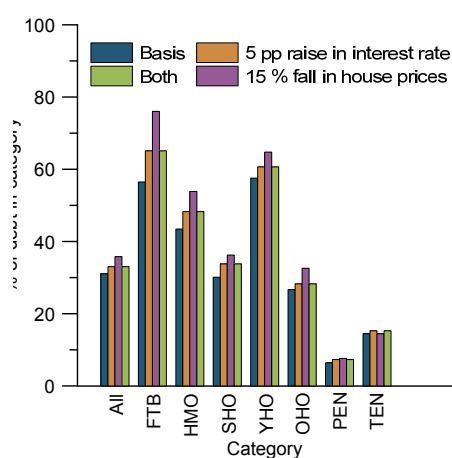
Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank

Chart 7: Sensitivity analyses. 2015

(a) Credit risk



(b) Risk of a shift in consumption



Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank

are, as should be expected, most vulnerable to higher interest rates (Chart 7b). Vulnerability to changes in interest rates or house prices among home movers is approximately on a par with that of first-time buyers. Pensioners, who make up the category with the lowest risk, are also least sensitive to changes in interest rates and house prices.

5 Conclusions

Debt among Norwegian households is high. In spite of this, bank losses on lending to the household sector have been low. In line with these developments, our findings indicate that a relatively small share of household debt is associated with high credit risk. Households that have recently purchased a home or that have large housing market exposures are typically the primary source of risk, while the risk from debt held by older households and tenants is pushed up by consumer debt. Increased mortgage lending for secondary home purchases and greater use of consumer loans may over time contribute to an increase in banks' exposure to household sector credit risk.

For a long period, Norges Bank has assessed the risk that high debt would amplify and prolong a downturn as high. The risk of a shift in consumption is an attempt to quantify approximately the number of households and the share of consumption that fall into this category. Households in the category with a risk of a shift in consumption account for approximately half of total household consumption. Households that have recently purchased a home are particularly vulnerable to a shift in consumption.

Has entering the housing market become more difficult for young people?

There is reason to assume that the regulation on requirements for new residential mortgage loans has a constraining effect on first-time buyers' borrowing in particular. Up to and including 2015, there are few signs that households from this category have not been able to enter the housing market. The share of homeowners under 35 years of age has risen in recent years and the average age of first-time buyers has declined (Charts 8 and 9). Nor do purchase amounts adjusted for overall inflation appear to have fallen for first-time buyers (Chart 10). The size of the dwellings purchased has declined somewhat (Chart 11). One reason for why the effect on first-time buyers has been small so far may be that banks prioritise exercising the flexibility of the so-called *speed limit* for these borrowers. Another reason may be that first-time buyers to a greater extent receive financial assistance from their parents in order to enter the housing market. An empirical study using data for Norway (Halvorsen and Lindquist (2017)) shows that parents' finances have not been a deciding factor for young people entering the housing market, but that the security of having parents with solid finances may influence young people to borrow more and to purchase more expensive dwellings. However, Halvorsen and Lindquist also find that the role of parents has become somewhat more important in recent years.

Chart 8: Average age of first-time buyers and share of homeowners under 35 years of age

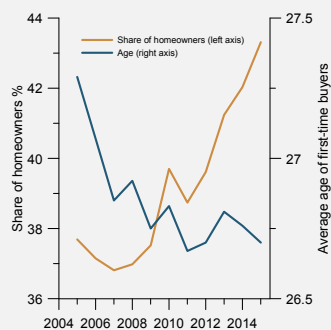


Chart 9: Share of homeowning households

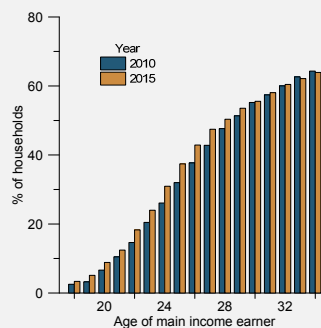


Chart 10: House price developments among home buyers

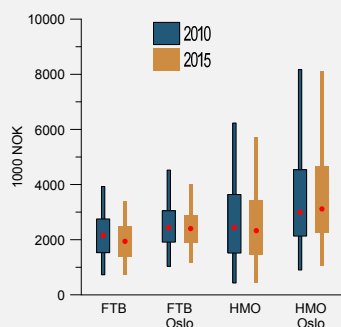
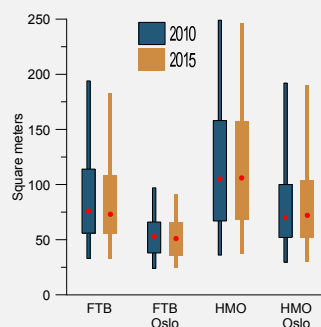


Chart 11: Change in dwelling size in sqm among home buyers



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A Data

The analysis is based on a combination of household income statistics compiled by Statistics Norway (based on tax assessment data from the Norwegian Tax Administration) and information on home purchases from the Norwegian Mapping Authority's National Property Registry. Households are defined as persons living in the same housing unit. The age of a household is determined by the age of the main income earner. The analysis is delimited to households aged between 20 and 90. Self-employed persons are excluded. Certain outliers are also excluded. Housing transactions are delimited to registered property purchased for residential purposes. For 2015, the data set covers approximately 2.2m households and 91 000 housing transactions.

The analysis examines changes between 2010 and 2015. The year 2010 was selected as a base year because tax values for housing in tax assessment data were changed in 2010 and the basis for comparing home ownership before and after 2010 is limited.

B Venn diagrams

The three risk criteria are to a varying degree binding for different categories of households. This can be illustrated by a Venn diagram. The Venn diagram depicts the relative share of households in each category that breach each of the different criteria and also to what degree there is an overlap and the same households breach more than one criteria.

The degree to which the three risk criteria are binding for different household categories

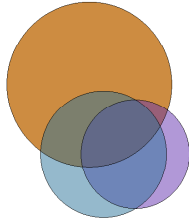
The sum of the area covered by the three circles comprises the share that falls into the risk of a shift in consumption. The size of the areas is presented in Table 3. The areas where all three circles overlap cover what we have defined as credit risk, but excluding debt defined as consumer debt.

We show the share of households that breach the criteria for the LTV ratio, DTI ratio and debt-servicing capacity and the share of debt and total consumption related to these households:

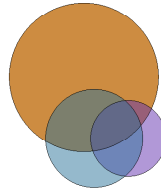
- Share of households
- Share of debt
- Share of consumption

Chart 12: Share of households that breach the requirements. The overlapping area indicates that more than one requirement is breached at the same time. 2015

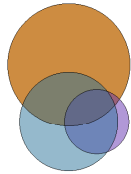
(a) First-time buyers



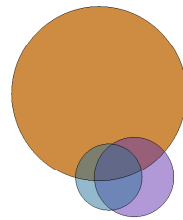
(b) Home movers



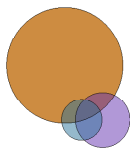
(c) Secondary home owners



(d) Younger homeowners



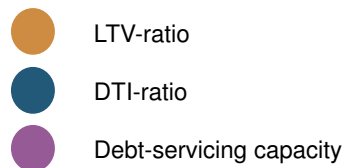
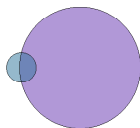
(e) Older homeowners



(f) Pensioners



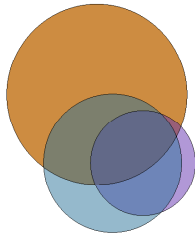
(g) Tenants



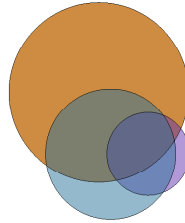
Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank

Chart 13: Share of debt attributed to households that breach the requirements. The overlapping area indicates that more than one requirement is breached at the same time. 2015

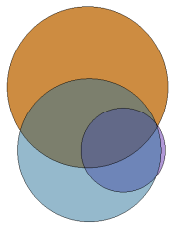
(a) First-time buyers



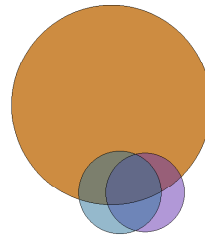
(b) Home movers



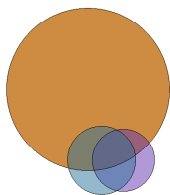
(c) Secondary home owners



(d) Younger homeowners



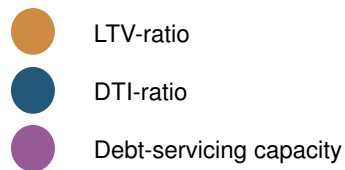
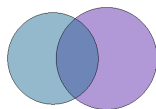
(e) Older homeowners



(f) Pensioners



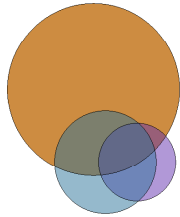
(g) Tenants



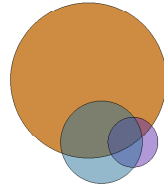
Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank

Chart 14: Share of total consumption attributed to households that breach the requirements. The overlapping area indicates that more than one requirement is breached at the same time. 2015

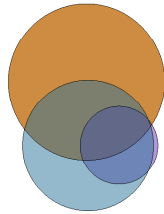
(a) First-time buyers



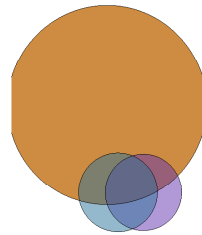
(b) Home movers



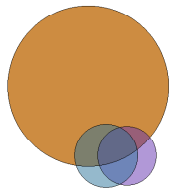
(c) Secondary home owners



(d) Younger homeowners



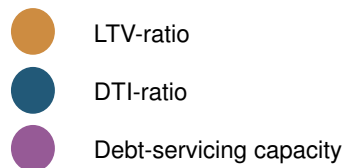
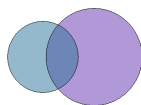
(e) Older homeowners



(f) Pensioners



(g) Tenants



Sources: Statistics Norway, Norwegian Mapping Authority, SIFO and Norges Bank