The Swedish Mortgage Market

24 March 2021

Ref. 21-4799

Contents

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Summary

Finansinspektionen's (FI) assignment is to contribute to a stable financial system through well-functioning markets and strong consumer protection. We should also contribute to sustainable development and limit financial imbalances. As part of this assignment, FI is following the ongoing development of household debt, and this mortgage survey provides key data. Large debt can pose risks for individual households, banks, financial stability and macroeconomic development. Household debt has risen faster than household disposable income for a long time. One important reason for this is that house prices have been increasing rapidly.

The trend in recent years of borrowers taking on larger loans continued in 2020. Both the average loan-to-value ratio and the average loan-to-income ratio increased in 2020. The share of new mortgagors with a loan-to-income ratio of more than 450 per cent (using gross income) increased to 11.3 per cent. This percentage thus continues to be lower than it was before FI introduced the stricter amortisation requirement in 2018. In general, new mortgagors have good buffers that enable them to service their loans even if they were to experience weaker finances. Since more new borrowers have taken larger mortgages in relation to their income, they are more sensitive to higher interest rates than they were before.

The pandemic has caused an economic downturn and created considerable uncertainty about the future. Governments, central banks, and supervisory authorities have implemented extensive measures that have mitigated the economic impact of the pandemic. Support measures and expectations of low interest rates going forward have also helped asset prices recover after their initial turbulence, and they are now higher than they were before the crisis began. This also applies to house prices, which once again are rising much faster than income.

Since April 2020, banks have had greater possibilities for temporarily exempting households with mortgages from amortisation payments. The general guidelines that FI introduced meant that the banks could grant exemption from the amortisation requirements during a period of considerable macroeconomic uncertainty or following a strong economic shock. Up through January 2021, a total of 230,000 households in the banks' mortgage portfolios were granted temporary exemption from amortisation payments. In FI's sample of new mortgagors in 2020, roughly 9 per cent had applied for and been granted exemption from amortising all or parts of their new mortgages. New mortgagors who were granted exemption tend to have larger loans in relation to both the value of their home and their income relative to other mortgagors who amortise.

The temporary exemption from amortisation payments pursuant to the general guidelines applies until 31 August 2021. The macroeconomic development has sta-

bilised and the outlook for Sweden's economy and household optimism are increasingly brighter. Therefore, FI makes the assessment that the temporary exemption will not be extended; it will expire on 31 August 2021.

The Mortgage Survey

Swedish households' borrowing has been increasing rapidly for a long time. The mortgage survey provides an important basis for FI's analysis of household borrowing and the associated vulnerabilities for households, banks, and, by extension, macroeconomic growth and financial stability. This report presents the results from the 2020 survey.

The purchase of a home is in many cases the largest investment households make. Households generally need to take out a mortgage in order to finance this purchase. It is therefore important that the credit market functions well. At the same time, large loans entail risks to not only individual households, banks and financial stability, but also to the economy as a whole.

Household borrowing has increased rapidly over the past 20 years, by an average of 8.1 per cent per year. In December 2020, borrowing from monetary financial institutions amounted to SEK 4,468 billion. This is equivalent to 89 per cent of Sweden's GDP. Mortgages represent 82 per cent of households' total loans. One important reason why Swedish households are borrowing increasingly large amounts has been a combination of increased disposable income, lower mortgage rates and rapidly rising house prices. The combination of favourable income growth and an expanding population has increased demand for home ownership. The historically low interest rates of recent years have also increased the potential to cope with increasingly large loans at a lower cost. This has further increased demand. Structural factors in the housing market have also contributed to increased demand for mortgages. These include an increase in the construction of single family homes and tenant-owned apartments and the conversion of rental apartments into tenant-owned apartments. House prices increased even more in 2020, in spite of the fact that the pandemic had caused major disruption to the global economy. In December, the annual rate of growth in mortgage lending was 5.9 per cent. This is 0.7 percentage points higher than at the beginning of 2020.

FI has implemented several measures in order to mitigate the vulnerabilities associated with high levels of borrowing among households. These measures include a mortgage cap and two amortisation requirements. The aim has primarily been to counteract rapid increases in the indebtedness of households relative to their financial circumstances. FI has also introduced a risk weight floor for mortgages with the aim of strengthening the resilience of banks.

As a result of the economic impact of the pandemic, FI decided in April 2020 to allow banks to temporarily exempt all households with mortgages from amortisation payments on all or parts of their mortgages. Banks are able to grant exemptions to both existing and new borrowers up to and including August 2021. We have been clear that this potential exemption from amortisation payments for all households is temporary and is linked to the macroeconomic situation in the wake of the coronavirus pandemic.

Purpose and data

The purpose of the mortgage survey is to chart the situation for people who are taking out new mortgages. The survey contains information about both new mortgages and any mortgages and other loans these new mortgagors already had. FI uses this information to assess what potential risks and vulnerabilities these households' mortgages entail and it is one component of our assessment of whether the rules in the mortgage market need to be changed. The information is also used to evaluate measures that have already been implemented. In addition, the survey also provides an important basis for FI's supervision of and dialogue with banks.

The report includes an analysis of new mortgagors' repayment capacity. This is important in order to give FI the ability to assess their financial resilience and thus banks' credit risks. FI estimates borrowers' cash flow and calculates their repayment capacity through what is known as a discretionary income calculation. FI's discretionary income calculation is similar to that which banks use in their own credit assessments. The calculation treats all banks equally; input values (standardised figures for subsistence costs and stressed mortgage interest rate) are the same for all borrowers, irrespective of bank. The report also contains our assessment of repayment capacity in strained situations with higher interest rates, loss of income and falling house prices.

The survey includes data from Danske Bank, Handelsbanken, Länsförsäkringar Bank, Nordea, SBAB Bank, SEB, Skandiabanken and Swedbank. They accounted for around 92.5 per cent of the total mortgage volume in 2020. Their combined market share has fallen by almost two percentage points in the past five years.

The mortgage survey consists of three parts:

- *Household sample (microdata)*. The sample includes all new mortgage agreements entered into during the periods 28 August – 4 September 2020 and 28 September – 5 October 2020. After processing the data, 26,987 households remained in the survey.[1] The information includes household income and composition, total loan burden, loans collateralised by homes, unsecured loans linked to the new home purchase, agreed interest rates and amortisation pay-

[1] Processing denotes the validation of reported data that FI conducts, which involves deficient and extreme observations being removed.

ments, and the market value of the home. However, FI does not receive information about any financial assets the borrowers may have. This is the eleventh time FI has compiled this data. The previous samples are from the years 2009 and 2011–2019.[2]

Data concerning new mortgages that FI collects in its mortgage survey pertains not only to new mortgages for purchases of homes. *New mortgages* also includes increases in the size of existing mortgages (known as *equity withdrawal loans*) and loans where existing loans have been moved from one bank to another (known as *bank switchers*). Graph 1 shows the distribution of new mortgages by purpose in the samples from the last four years. The proportion of equity withdrawal loans in this year's sample has increased compared with previous years.

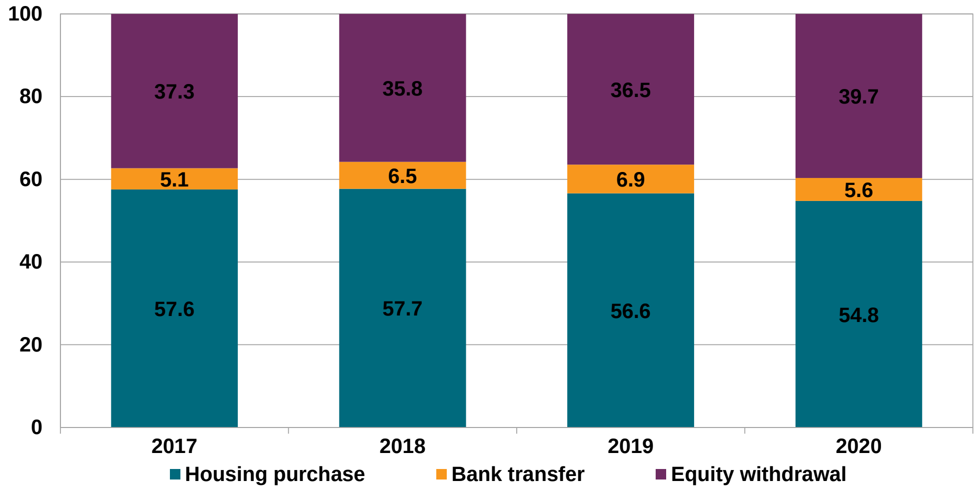
- *Aggregate data*. FI also gathers data about the banks' total lending to households for housing purposes. This data includes, for example, total volume of new lending, number of households, existing loans, amortisation payments and loan-to-value ratios. FI has gathered aggregate data since 2006.

- *Qualitative information*. By answering a number of in-depth questions, banks provide both general and detailed information about their situation. Among other things, this relates to the methods banks use to value homes, the credit assessments of mortgagors they conduct and how they protect consumers in conjunction with mortgage lending.

[2] Some revisions have been made to samples from previous years in conjunction with this year's survey. The calculations of equity withdrawal loans for two institutions have been adjusted between the years 2017 and 2019. In addition, around 250 loans between the years 2016 and 2019 have been removed due to errors in certain essential data points.

1. New mortgages by purpose

Per cent



Source: The mortgage survey.
Note: Denotes distribution according to number of new loans.

Table 1 compares the borrowers' average disposable income, total loan burden and the market value of their homes with the samples from previous years. The average market value of the homes that serve as collateral for mortgages increased by 3.5 per cent.[3] The market values in FI's samples has increased by around 53 per cent since 2012. New mortgagors' average total loan burden increased by 5.8 per cent. New mortgagors' average total loan burden has increased by around 51 per cent since 2012. Their disposable income has increased by slightly more than 24 per cent over the same period.

Tables 2 and 3 describe new mortgagors in the 2020 sample across regions and age groups. The average for total loan burden in Stockholm was almost double that of the region with the lowest figure for total loan burden (rest of Sweden) and the average market value of homes was 120 per cent higher. At the same time, the average disposable income in Stockholm was just 22 per cent higher. Higher disposable income means that new mortgagors in Stockholm have greater potential to cope with larger loans that borrowers in other parts of the country. The youngest borrowers (18–30 years old) had approximately the same level of disposable income as the oldest borrowers (over 65 years old) but bought homes that were 29 per cent

[3] The fact that the change differs from other information about the price trend in the housing market is due to several factors. The most significant is that FI's sample does not just encompass homes that have been involved in a transaction (bought and sold). For example, it includes the market value of homes used as collateral by bank switchers and those who are taking out an equity withdrawal loan. It is not certain that the market value of this collateral has been adjusted up to the level for 2020 in conjunction with switching banks or when the equity withdrawal loan is taken out.

cheaper. One reason for this is that older people have greater wealth to put towards the purchase of a home than those who are younger.

The age distribution of new mortgagors has remained roughly the same for the past four years. The youngest borrowers (18–30 years old) accounted for just over 20 per cent of the new mortgages in 2020. At the same time, the age groups 31–50, 51–65 and over 65 years old made up 47, 25 and 9 per cent, respectively, of the sample for 2020. Because different age groups are taking out different sized loans, the distribution measured as volume of new loans is different (Table 3).

Table 1. New borrowers 2012–2020

Denotes average	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Number of households	24,122	24,967	28,214	31,226	25,747	27,808	24,097	25,372	26,987
Total loan burden (SEK)	1,659,236	1,703,365	1,894,730	2,072,055	2,121,996	2,251,034	2,239,764	2,365,217	2,503,185
Since last year (%)		2.7	11.2	9.4	2.4	6.1	-0.1	5.2	5.8
Since 2012 (%)		2.7	14.2	24.9	27.9	35.7	35.5	42.5	50.9
Market value (SEK)	2,221,153	2,332,864	2,519,785	2,865,787	3,053,136	3,276,598	3,118,603	3,276,077	3,390,759
Since last year (%)		5.0	8.0	13.7	6.5	7.3	-4.5	4.7	3.6
Since 2012 (%)		5.0	13.4	29.0	37.5	47.6	40.9	47.5	52.7
Disposable income (SEK/month)	39,453	38,498	40,143	41,962	43,056	44,719	45,987	47,728	48,970
Since last year (%)		-2.4	4.3	4.5	2.6	3.9	2.9	3.6	2.6
Since 2012 (%)		-2.4	1.7	6.4	9.1	13.4	16.7	20.9	24.1

Source: The mortgage survey.
Note Average total loan burden refers to all of the households' loans (mortgages, loans with collateral other than a home and unsecured loans). Cohabitants denotes households where more than one borrower lives in the home.

Table 2. Geographic distribution new borrowers 2020

Denotes average	Stockholm	Gothenburg	Malmö	Other large cities	Rest of Swe-den	Total
Proportion of households (%)	27	10	7	20	36	100
Proportion of volume new loans (%)	39	12	7	18	23	100
Total loan burden (SEK)	3,459,555	2,960,959	2,531,535	2,265,239	1,786,863	2,503,185
Single-person household	2,342,697	2,008,181	1,582,257	1,491,195	1,158,662	1,691,335
Cohabitants	4,187,952	3,430,893	3,027,218	2,677,586	2,112,052	2,951,365
Market value (SEK)	4,893,780	4,282,516	3,545,013	2,981,919	2,224,100	3,390,759
Single-person household	3,668,155	3,208,210	2,464,390	2,173,882	1,617,717	2,545,919
Cohabitants	5,693,114	4,812,390	4,109,279	3,412,375	2,537,994	3,857,151
Disposable income (SEK/month)	54,528	52,243	49,331	47,431	44,616	48,970
Single-person household	34,883	33,556	29,742	29,210	28,141	31,040
Cohabitants	67,340	61,460	59,560	57,138	53,144	58,868

Source: The mortgage survey.
Note Average total loan burden refers to total loans. Cohabitants denotes households where more than one borrower lives in the home.

Table 3. Age distribution of borrowers 2020

Denotes average	18–30	31–50	51–65	65+	Total
Proportion of volume new loans (%)	23	53	19	5	100
Total loan burden (SEK)	1,990,942	2,844,710	2,576,984	1,645,606	2,503,185
Single-person household	1,416,435	1,893,144	1,817,105	1,243,985	1,691,335
Cohabitants	2,503,624	3,271,195	2,982,875	1,866,188	2,951,365
Market value (SEK)	2,359,755	3,705,179	3,665,956	3,330,237	3,390,759
Single-person household	1,852,162	2,649,950	2,993,286	2,975,342	2,545,919
Cohabitants	2,812,724	4,178,125	4,025,263	3,525,157	3,857,151
Disposable income (SEK/month)	39,560	52,713	52,481	40,805	48,970
Single-person household	26,500	32,973	34,145	27,411	31,040
Cohabitants	51,214	61,561	62,275	48,161	58,868

Source: The mortgage survey.
Note Average debt denotes total debt. Cohabitants denotes households where more than one borrower lives in the home.

New mortgagors' loans

The trend over the past two years of a slightly higher average loan-to-value ratio and loan-to-income ratio among new mortgagors continued in 2020. Accordingly, the proportion of new mortgagors with a high loan-to-value ratio or a high loan-to-income ratio continues to be high.

Borrowers' capacity to cope with loans is crucial

Borrowers' repayment capacity is the basis of our assessment of how vulnerable households with mortgages are to various shocks. How large loan amount a borrower is able to take depends on their financial circumstances (income and wealth). Consequently, the fact that borrowers are taking larger loans need not be inherently problematic for either the individual borrower or from the perspective of financial stability. What is important is instead how the size of the loan affects the borrower's situation if their financial circumstances change. This relates partly to whether the borrower is able to pay interest and amortisation payments on their loans, and partly to whether they are able to maintain their consumption when their income falls or interest rates rise. One way to identify groups that may be more vulnerable is to relate borrowers' loans and their loan payments with other variables. This allows comparisons to be made between different borrowers and over time. This can involve relating loans to the market value of the home or the borrowers' income in the form of loan-to-value ratio and loan-to-income ratio, respectively. It can also involve relating loan payments to the borrowers' income.[4]

The loan-to-value ratio is calculated as the size of the loans a borrower has used to finance a home as a proportion of the market value of the home.[5] If a fall in house prices result in the value of the home becoming less than the size of the mortgage, borrowers who need to sell their home may end up in a vulnerable financial position. This means that a high loan-to-value ratio makes the borrower less resilient to falling house prices. The loan-to-income ratio is another measure of the borrower's loan burden and is calculated as total loans relative to net income (after tax) or gross income (before tax).[6] A high loan-to-income ratio means that the borrower

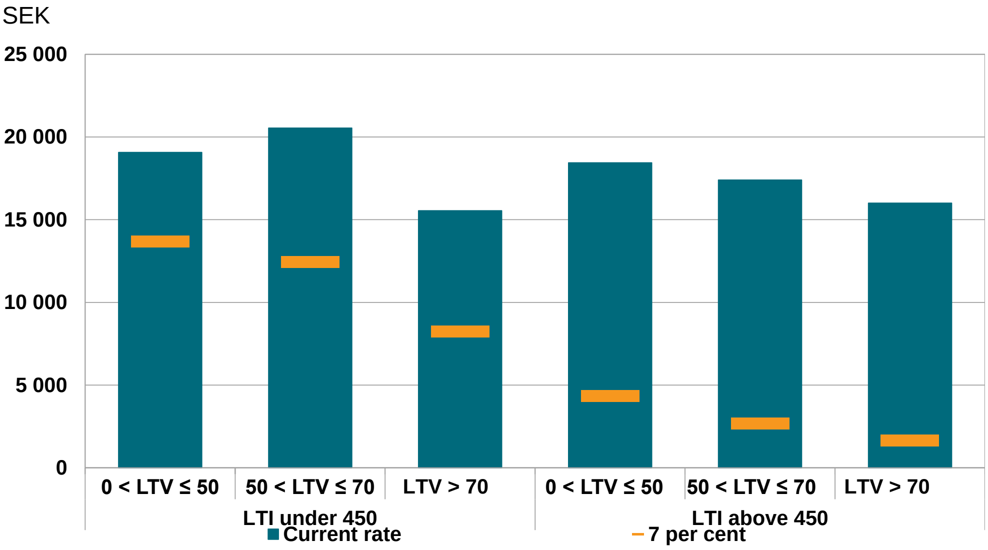
[4] This perspective is presented in the chapter 'Borrowers' Repayment Capacity".
[5] The calculated loan-to-value ratio for new borrowers includes any unsecured loans a household has taken out in conjunction with the new mortgage from the same bank as has issued the mortgage.
[6] From an economic perspective, a loan-to-income ratio based on net income offers the best information. This shows the income a household actually has to pay off its debts. On the other hand, a loan-to-income ratio based on gross income is easier for borrowers and banks to calculate. The graphs in this report show the loan-to-income ratios calculated using gross income. The statistical appendix to this report also includes the same graphs with the loan-to-income ratio calculated using net income.

must devote a larger proportion of their income to interest payments at any given level of interest rates. Accordingly, the loan-to-income ratio indicates how vulnerable a borrower is to rising interest rates. A borrower with a high loan-to-value ratio need not have a high loan-to-income ratio or vice versa.

If house prices fall, interest rates rise or there is a loss of income, borrowers may need to adapt by reducing their consumption. If a large number of borrowers act in a similar way, this weakens macroeconomic growth. To reduce this vulnerability, borrowers can amortise in order to reduce their loan-to-value ratio and loan-to-income ratio or they can create a buffer through other forms of saving.

The combination of borrowers' loan-to-value ratio, loan-to-income ratio and repayment capacity in the event of various strained situations provides a more complete picture of their vulnerability. Most vulnerable are those borrowers who have a low surplus in relation to their disposable income after they have paid their fixed expenses (including standardised subsistence costs, housing fees and loan payments). At current interest rates, new mortgagors generally have relatively good surpluses. However, the borrowers who are taking out the largest loans in relation to the value of the home and their income tend to have somewhat less of their income left over after fixed expenses. At a mortgage interest rate of 7 per cent, this becomes even more distinct (see Graph 2).

2. Surplus in the discretionary income calculation broken down by loan-to-value ratio and loan-to-income ratio



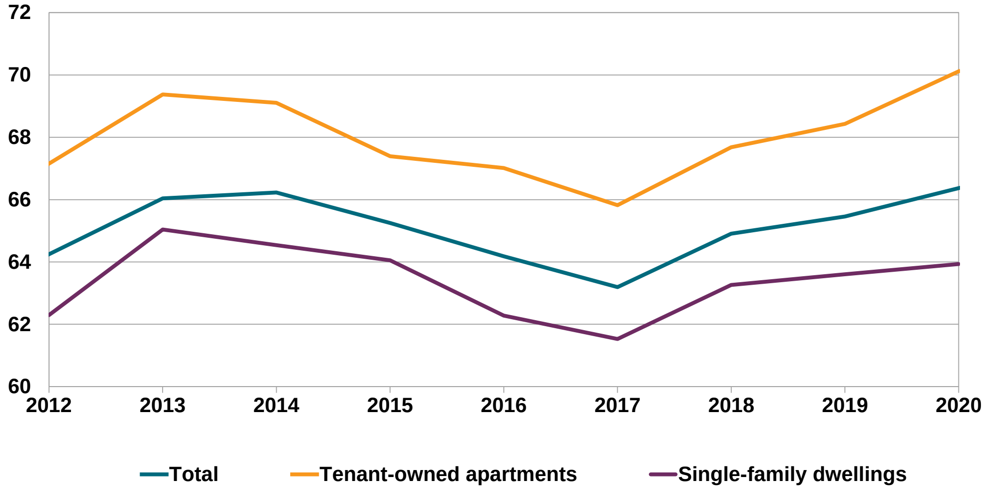
Source: The mortgage survey.
Note: The median surplus in the discretionary income calculation at current mortgage rates and a mortgage rate of 7 per cent for borrowers' (home buyers, equity withdrawal borrowers and bank switchers) total loans in 2020, broken down by loan-to-value (LTV) ratio and loan-to-income ratio. Refers to loan-to-income ratio calculated using gross income.

Trend of increasing loan-to-value ratios continues

New mortgagors bought slightly more expensive homes in 2020 than in 2019. However, the size of new loans linked to the financing of homes increased even more. Consequently, the average loan-to-value ratio increased in 2020. The average loan-to-value ratio for new mortgagors was 66.4 per cent, which is 0.9 percentage points higher than in 2019 (see Graph 3). This is the highest level that has been recorded in the mortgage survey. Borrowers who live in tenant-owned apartments increased their loan-to-value ratio more than those who live in houses.[7]

3. Average loan-to-value ratio

Per cent



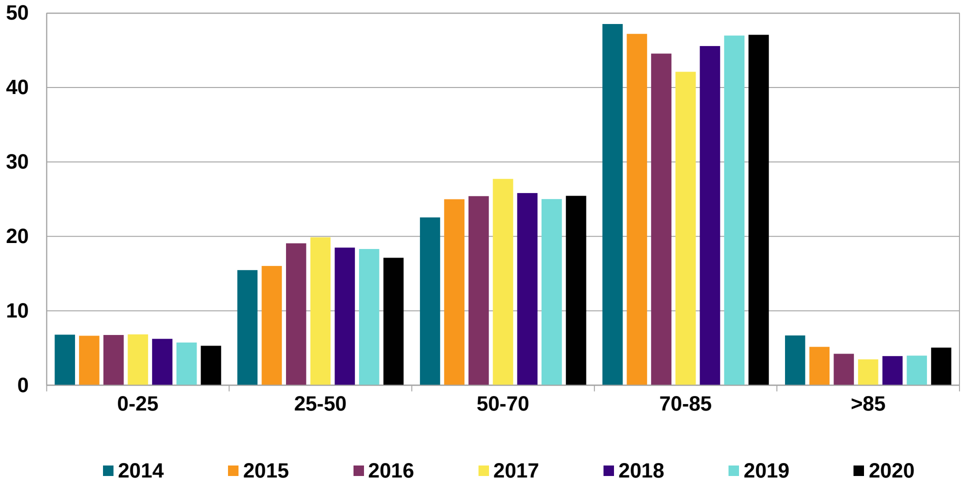
Source: The mortgage survey.

Note: Refers to new loans (mortgages for home purchases, equity withdrawal loans and switching banks).

[7] The distribution between tenant-owned apartments and single-family homes in the sample is 43 and 57 per cent, respectively.

4. New mortgagors distributed by loan-to-value ratio

Per cent



Source: The mortgage survey.

Note: Refers to new loans (mortgages for home purchases, equity withdrawal loans and switching banks).

A large percentage of the new borrowers still had a high loan-to-value ratio. The proportion over 85 per cent increased slightly from 4 per cent to just over 5 per cent (see Graph 4). However, the proportion of new borrowers with a loan-to-value ratio of between 70 and 85 per cent remained almost unchanged from 2019 at 47 per cent.

The loan-to-value ratio varies in different groups

The size of home-related unsecured loans remained unchanged.

Borrowers with new mortgages who have a loan-to-value ratio of over 85 per cent have usually supplemented their mortgage with an unsecured loan in conjunction with the mortgage. The most common reason why a borrower uses an unsecured loan when they are buying a home is to finance part of the deposit. The proportion of new borrowers who took out home-related unsecured loans was 3.6 per cent in 2020 and the average unsecured loan was SEK 165,000. Both the proportion and the size remained unchanged compared with 2019.[8] New unsecured loans that have

[8] Unsecured loans that are included here are those that have been taken out by the borrower from the bank that issued the new mortgage and in conjunction with the new mortgage. Unsecured loans that have been obtained from a bank other than that which has issued the mortgage in order to finance the home are not included in these data. Consequently, the proportion of new mortgagors who are using unsecured loans to finance house purchases is probably underestimated.

been taken out in conjunction with the new mortgage still constitute a small proportion of the total volume of the new loans (around 0.4 per cent). It is primarily borrowers under the age of 50 that are using unsecured loans.

Loan-to-value ratio increased most among older people

The loan-to-value ratio has increased in all age groups. The average loan-to-value ratio increased most among the oldest borrowers, from 41.7 to 43.1 per cent. However, the loan-to-value ratios are higher among younger borrowers and there is a negative correlation between age and loan-to-value ratio. The fact that the loan-to-value ratio decreases with rising age is because borrowers on the lower rungs of the housing ladder and at the beginning of their careers often have limited savings to use as a deposit. Older borrowers often have more equity when purchasing a home as they may have made a profit from the sale of previous homes (due to increases in value), have amortised on previous loans and have other savings.

Largest increase in Gothenburg and Stockholm and among single-person households

New mortgagors in the regions rest of Sweden and other large cities have somewhat higher loan-to-value ratios than new mortgagors in the metropolitan areas. But these differences have decreased in recent years. Compared with 2019, the average loan-to-value ratio increased in all regions except other large cities. The loan-to-value ratio increased most in Stockholm and Gothenburg, by two percentage points. It remained unchanged in other large cities. In a comparison based on household composition, loan-to-value ratio increased mainly among single-person households.[9] This was particularly pertinent for single-person households with children, where the loan-to-value ratio increased by 1.9 percentage points.

Home buyers are driving the increase in loan-to-value ratio

The average loan-to-value ratio differs between borrowers depending on the purpose of the new loan. Borrowers who are taking out a new loan in order to buy a home usually have higher loan-to-value ratios. The average loan-to-value ratio for borrowers who took out a new mortgage in order to purchase a home in 2020 was around 72 per cent. This is just over 1.4 percentage points higher than in 2019. The average loan-to-value ratio for borrowers who switched banks and borrowers who took out an equity withdrawal loan in 2020 was 57 and 60 per cent, respectively. These figures are also slightly higher than those for 2019. However, the increase in total loan-to-value ratio is primarily being driven by borrowers who took out a new mortgage in order to buy a new home.

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[9] Cohabitants (households that consist of more than one borrower) make up 64 per cent and single-person households 36 per cent of the sample. The proportion of cohabitants with children is 51 per cent. The corresponding figure for single-person households is 25 per cent.

The proportion of new loans that are equity withdrawal loans increased in 2020 (see Graph 1). They also made up a larger proportion of the volume of new loans.[10] The fact that an increasing number of people took out equity withdrawal loans in 2020 may be due to an increased desire to renovate homes during the pandemic.[11] It is primarily borrowers in the 31–50 year old age group who drove the increase in equity withdrawal loans. The borrowers who took out an equity withdrawal loan in 2020 borrowed an average of around 24 per cent more than those who took out equity withdrawal loans in 2019. This is equivalent to around SEK 100,000. However, the mortgagors who took out an equity withdrawal loan generally had a somewhat lower loan-to-value ratio before the equity withdrawal loan compared with those who took out an equity withdrawal loan in 2019. They had an average loan-to-value ratio of 45 per cent. This is around 2 percentage points lower than in 2019. The loan-to-value ratio increased to 60 per cent after the equity withdrawal loan had been taken out, which was the same level as in 2019.

More borrowers with high loan-to-income ratios

New mortgagors' loans increased more than their incomes, both net (after tax) and gross (before tax), in 2020. The average loan-to-income ratio (gross income) of new borrowers rose from 296 per cent in 2019 to 307 per cent in 2020. When loan-to-income ratio is calculated using net income, it increased from 398 per cent in 2019 to 411 per cent in 2020. This is the highest level since the mortgage survey started. Average loan-to-income ratio increased most for borrowers who live in tenant-owned apartments.

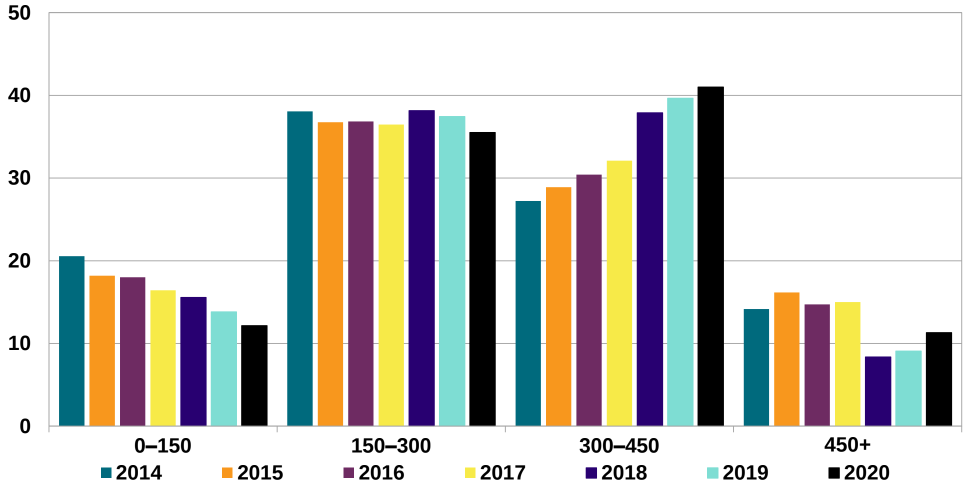
FI introduced the stricter amortisation requirement in 2018. Following this, there was a reduction in the proportion of new mortgagors with loans larger than 450 per cent of their gross income (see Graph 5). The proportion with a loan-to-income ratio of over 450 increased in 2020 by just over two percentage points to 11.3 per cent. This is still lower than before FI introduced the stricter amortisation requirement. The fact that the proportion fell when the stricter requirement was introduced, and then increased over the past two years may be due to, among other things, a normalisation of an amortisation rate of over 2 per cent.[12] In addition, young people with high loan-to-income ratios might accept a higher amortisation rate because they expect their income to develop favourably in the future. Loan-to-income ratios tend to increase when house prices rise. However, the proportion of borrowers who have high loan-to-income ratios would probably have increased

[10] Equity withdrawal loans accounted for 15 per cent of the volume of new loans in 2020, compared with 11 per cent in 2019.
[11] Three of the institutions have reported the purpose of equity withdrawal loans and their responses indicate that, for the majority of the equity withdrawal loans, the purpose was home improvements.
[12] In 2020, this may also be due to the abolition of the austerity tax, which made it possible for those with large incomes to take out loans that are larger relative to their income in banks' credit assessments than before.

more in conjunction with the house price rises of the past year if loan payments connected to the stricter amortisation requirement had not been included in the banks' credit assessments. In this way, the stricter amortisation requirement acts as a brake when house prices rise. Borrowers with a loan-to-income ratio of over 450 per cent are more vulnerable as they are more affected by higher interest rates and loss of income than those with loan-to-income ratios below 450 per cent (see Graph 2).

5. New mortgagors distributed by loan-to-income ratio

Per cent



Source: The mortgage survey.

Note: Refers to loan-to-income ratio calculated using gross income, new loans (mortgages for home purchases, equity withdrawal loans and switching banks).

The levels for loan-to-income ratio in Stockholm are notable

The average loan-to-income ratio increased in all regions. It increased most in Gothenburg and Stockholm, by 16 and 15.5 percentage points, respectively. The average loan-to-income ratio in Stockholm was around 375 per cent in 2020. This is 92 percentage points higher than the average for the rest of Sweden. As loan-to-income ratios are generally higher in Stockholm than in the rest of Sweden, the proportion in Stockholm who had a loan-to-income ratio of over 450 per cent is also higher. Around 24 per cent of new mortgagors in Stockholm has a loan-to-income ratio of over 450 per cent. The corresponding figure for the rest of Sweden was 7 per cent.

The loan-to-income ratio increased in all age groups. In particular, it increased among borrowers under the age of 30 and between 31 and 50 years old, by 13 and 11 percentage points, respectively. Young borrowers generally have higher loan-to-income ratios than older borrowers as they often have lower incomes. However, young borrowers' loan-to-income ratios have also increased faster than those of older borrowers since 2013. One reason for this is that young people's incomes have developed less favourably. Consequently, they may have needed to take increasingly larger financial risks, relative to other groups, in order to buy a home.[13] All in all, this means that younger people are more vulnerable if their financial circumstances change.

The loan-to-income ratio increased by about the same amount for both single-person households and cohabitant borrowers, irrespective of whether or not the borrowers had children. However, single-person households generally have a higher loan-to-income ratio than cohabitants.

Loan-to-income ratio increased irrespective of the purpose of the loan

Average loan-to-income ratio varies depending on the purpose of the new loan. The average loan-to-income ratio for borrowers who took out a new mortgage in order to purchase a home in 2020 was around 319 per cent. For borrowers who took out an equity withdrawal loan or switched bank in 2020, the average loan-to-value ratio was 292 and 300 per cent, respectively.[14] Unlike in previous years, the average loan-to-income ratio increased for all types of purpose. The increase was greatest among new home buyers and bank switchers.

Fact box – The banks' total mortgage portfolio

The mortgage survey also includes aggregate information about the banks' total mortgage portfolios, which covers all existing mortgages. The number of borrowers in the mortgage portfolios was just over 2.2 million in 2020. The average volume-weighted loan-to-value ratio for existing mortgages was 57 per cent.[15] This is slightly lower than in 2019. The loan-to-value ratio for the mortgage portfolios is dependent on the trend in terms of the homes' market value and how much has been amortised since the mortgage was taken out. If households increase the size of or pay off their existing mortgages, this also has an impact on the loan-to-value ratio. The marginally lower loan-to-value ratio is probably due to house prices

[13] See Olsén Ingefeldt and Thell (2019), *Young adults and the housing market*, FI Analysis No. 19 Finansinspektionen.
[14] In 2020, the mortgagors who took out an equity withdrawal loan had an average loan-to-income ratio of 229 per cent before taking out the new loan. This is around 3 percentage points lower than in 2019.
[15] The average volume-weighted loan-to-value ratio is determined by first calculating the average loan-to-value ratio for each bank's total lending. The average loan-to-value ratio is then weighted on the basis of each bank's market share of total lending. The sum total of this for all banks is the total average volume-weighted loan-to-value ratio.

having risen further in 2020.[16] The proportion of the mortgage volume that has a loan-to-value ratio of over 70 per cent decreased from around 29 to 27 per cent. This proportion has fallen by four percentage points since 2015, before FI introduced the first amortisation requirement.[17] The proportion with a loan-to-income ratio of over 450 per cent was almost unchanged compared with 2019, at 11 per cent. This proportion has fallen by four percentage points since 2017, before FI introduced the stricter amortisation requirement.

The aggregate data also includes information about new mortgages for 2020 broken down by quarter. The volume-weighted average loan-to-value ratio for these new mortgages was just over 69 per cent, which was marginally higher than in 2019. The proportion with a loan-to-value ratio of over 70 per cent increased by two percentage points to 58 per cent. The proportion with a loan-to-income ratio of over 450 per cent increased marginally, from around 16 to 17 per cent.

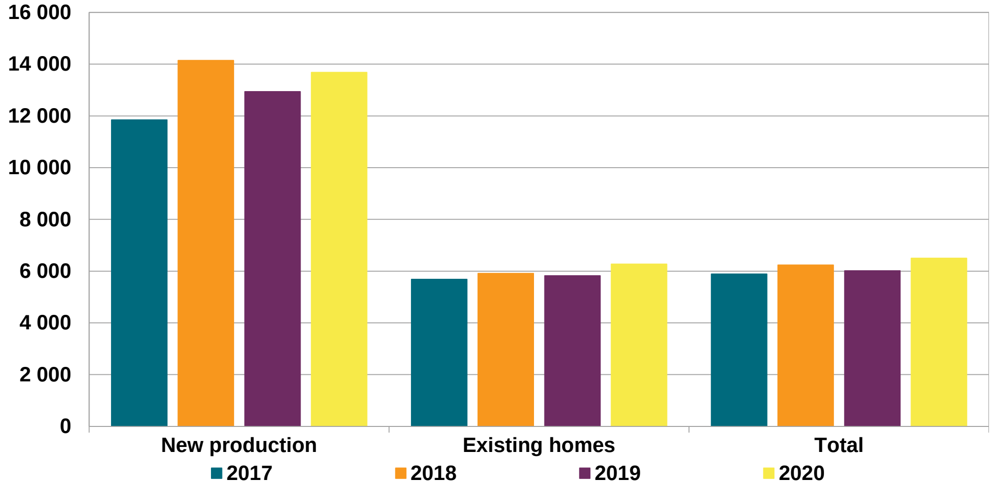
Higher levels of debt in tenant-owner associations

Starting with the mortgage survey for 2017, FI collects information about tenant-owner associations' debt for new mortgagors that have taken out a mortgage collateralised by a tenant-owned apartment. The debt of these associations is an indirect debt for the owner of a tenant-owned apartment. If interest rates rise, the association's interest expenses increase. This means that associations with high levels of debt may need to raise the fees they charge in order to preserve the same standard of maintenance and amortisation rate.

Existing tenant-owner associations' average debt equated to SEK 6,300 per square metre in 2020 (see Graph 6). This is 7.8 per cent higher than in 2019.[18] Associations in the metropolitan areas Stockholm and Gothenburg had slightly higher levels of debt than associations in other regions. For associations that include commercial premises, the economic challenge resulting from the pandemic may have led to some tenants terminating their rental contracts. Associations that have ended up with a higher proportion of empty premises may need to increase their fees, increase their short-term borrowing or make use of savings. For newly produced tenant-owned apartments in newly formed associations, the average debt was SEK 13,700 per square metre. This is higher than in 2019, when the debt was SEK 12,900 per square metre.

[16] The banks adjust market values in line with changes in house prices. The frequency at which banks make adjustments varies, but they all do it at least once a year.
[17] Following the introduction, the proportion with a loan-to-value ratio of over 70 per cent decreased. This proportion has subsequently increased slightly in the past three years.
[18] Lending to tenant-owner associations grew increasingly slowly in 2019, according to Statistics Sweden's financial market statistics. At the end of 2019, this lending was growing at an annual rate of 1.7 per cent. At the end of 2020, lending was slightly higher, 2.9 per cent on an annual basis.

6. Tenant-owner associations' average debt
SEK

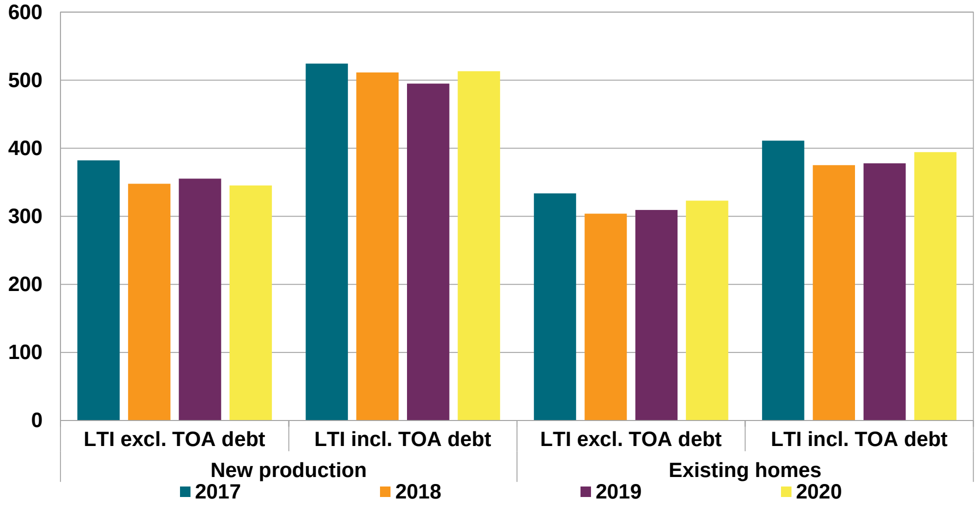


Source: The mortgage survey.
Note: Refers to debt per square metre for new loans (mortgages for home purchases, equity withdrawal loans and switching banks) where the borrower lives in a tenant-owned apartment.

If the borrowers' share of the associations' debts is included in the calculation of the borrowers' loan-to-income ratio, it becomes significantly higher. For borrowers in existing associations, the loan-to-income ratio becomes approximately 71 percentage points higher (see Graph 7). For borrowers in associations with newly produced tenant-owned apartments, the loan-to-income ratio rises by approximately 168 percentage points. When the share of the association's debt is included, the average loan-to-income ratio for borrowers who purchased a newly produced tenant-owned apartment was 513 per cent in 2020. When the association's debt is taken into account, new borrowers who bought newly produced tenant-owned apartments in Stockholm, Malmö and Gothenburg had the highest loan-to-income ratios, with loan-to-income ratios of 542, 507 and 502 per cent, respectively. When the association's debt is taken into account, the loan-to-income ratio among borrowers in existing associations was highest in Stockholm and Gothenburg, at 449 and 429 per cent, respectively.

7. Loan-to-income ratio exclusive and inclusive, respectively, of the share of the tenant-owner association's debt

Per cent



Source: The mortgage survey.
Note: Refers to loan-to-income ratio calculated using gross income for borrowers who live in a tenant-owned apartment, new loans (mortgages for home purchases, equity withdrawal loans and switching banks).

Fact box – Green mortgages may grow in significance

In the past few years, some Swedish banks have begun offering 'green' mortgages. The offers differ between lenders but generally borrowers are given a discount on their mortgage rate if the home meets the energy requirements set by the bank.[19] The banks who offer green mortgages are able to offer a discounted interest rate because they issue covered bonds that have energy efficient homes as the underlying collateral. These bonds are attractive to institutional investors who seeks green investments. Consequently, the banks are able to finance green mortgages at a lower cost. The average interest rate discount for green mortgagors in this year's sample is 0.16 percentage points.

Six of the eight banks in the survey are currently offering green mortgages. One per cent of the borrowers in the sample have taken out a green mortgage. This product is still new and this proportion is therefore small. As more lenders are offering green mortgages, at the same time as climate issues are growing, this product is expected to become a more prominent feature of the Swedish mortgage market.

[19] The general requirement is that the home has energy class A or B in accordance with the National Board of Housing, Building and Planning's energy classification from 1 January 2014.

It is primarily those who live in Stockholm and Gothenburg that have taken out a green mortgage in 2020. They made up 38 and 16 per cent, respectively, of those who took out new green mortgages. Those who have green mortgages are on average slightly younger than other mortgagors, 41 years old compared to 45 years old. They also have a higher average income, which is due to the fact that the majority of these borrowers are in Stockholm, where incomes are usually higher.[20]

The proportion with a detached or terraced house as the underlying collateral for the mortgage is slightly higher among green mortgagors than among other mortgagors. The reason for this may be that people who live in detached or terraced houses are able to make their home more energy efficient by, for example, installing solar panels or ground source heating. On the other hand, it may be more difficult for someone who owns a tenant-owned apartment in an older building to make the necessary changes as this can involve the entire building being upgraded. It may require approval from the tenant-owner association and entail large initial costs for upgrading the building, even though the cost of energy consumption is reduced. However, newly produced tenant-owned apartments are usually more energy efficient. Among green mortgagors that have a tenant-owned apartment as underlying collateral, it is four times more common to have a newly produced tenant-owned apartment.

The trend of larger loans has continued

In summary, both the average loan-to-value ratio and average loan-to-income ratio increased for new borrowers. These are at the highest level since the Mortgage Survey began. The proportion of borrowers with both a high loan-to-income ratio and high loan-to-value ratio increased. In the mortgage survey for 2020, 5.9 per cent of borrowers had both a loan-to-income ratio of over 450 per cent of gross income and a loan-to-value ratio of over 70 per cent. This is more than in 2019 when the proportion was 4.3 per cent. The size of this group decreased gradually between 2015 and 2018 but has since begun to increase again. The trend in 2020 can be explained to some extent by the fact that interest rates remained low and the value of various assets grew rapidly, in spite of the pandemic. At the same time as pre-tax incomes increased moderately, the removal of the temporary austerity tax resulted in high-income earners keeping a larger share of their income. All in all, this means that borrowers were able to take out and cope with larger loans.

All else being equal, a higher loan-to-value ratio and loan-to-income ratio makes the borrower more vulnerable. However, changes in interest rates and incomes also mean that what are considered sustainable levels for loan-to-value ratio and loan-

[20] Within Stockholm itself, the average income of borrowers who have green mortgages is also higher.

to-income ratio can change. At the same time, it is not possible to rule out a situation in which mortgage rates rise in the long term or in which the prices of other assets such as shares fall. This would impair borrowers' financial situation and make it harder for them to cope with their loan payments. If the trend of rising loan-to-value ratios and loan-to-income ratios continues, an increasing number of mortgagors will be vulnerable to unexpected shocks. At the same time, the loan-to-value ratio and loan-to-income ratio only provide certain information about the vulnerability of borrowers. If a more complete view is to be obtained, it is also important to analyse borrowers' repayment capacity in the event of strained situations as well (see the chapter Borrowers Repayment Capacity).

Amortisation

The proportion of new mortgagors who are amortising has increased since the amortisation requirements were introduced by FI. If the temporary exemption from the amortisation requirements is excluded, the proportion who were amortising in 2020 was unchanged compared to 2019. The average amortisation rate also remained unchanged. Just over 9 per cent of new mortgagors have made use of the exemption.

Borrowers reduce the size of their loans over time by amortising. The loan-to-value ratio and loan-to-income ratio decrease at the same time. The stricter amortisation requirement from 2018 supplements the first amortisation requirement from 2016. Both amortisation requirements have contributed to increasing amortisation by new mortgagors.

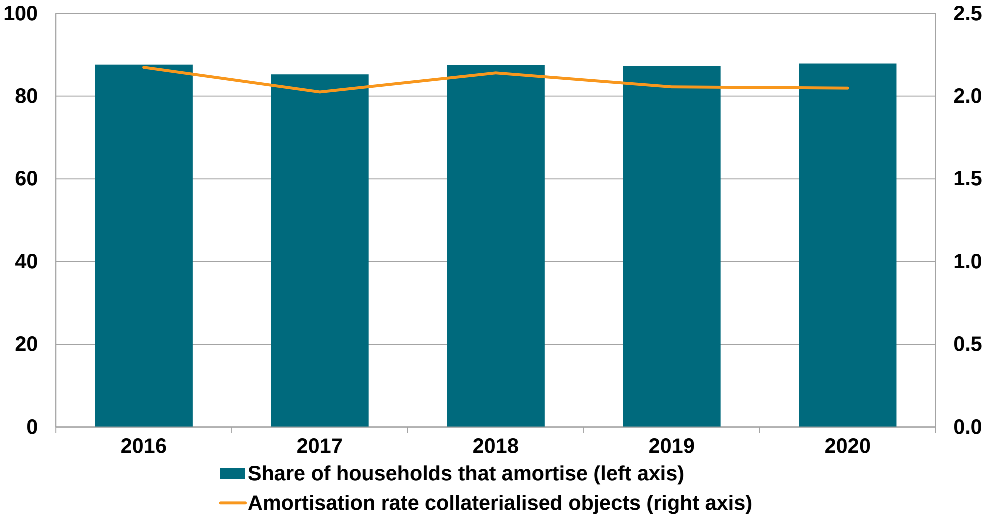
Unchanged amortisation rate

Just over 88 per cent of the new borrowers amortised in 2020 and the average amortisation payment was SEK 3,150 per month (see Graph 8). Among the borrowers who are subject to at least one of the amortisation requirements, the proportion who amortise was high. There may be several reasons why not all borrowers amortised. One explanation is that new mortgagors are able to use one of the exemptions permitted under the amortisation requirements.[21] This section does not take into account temporary exemptions from the amortisation requirement that were granted in 2020. Borrowers with temporary exemptions have an agreed amortisation rate with the bank that starts to apply between one and eleven months after the mortgage is taken out. As borrowers have to and will be amortising, the agreed amortisation rate is used. An overview of those who have been granted a temporary exemption is presented in the fact box 'Which borrowers are using the exemption from amortisation?' New mortgagors' total amortisation payments on mortgages,

[21] Borrowers who, because of their loan-to-value ratio or loan-to-income ratio, or both, normally amortise in accordance with the amortisation requirement are able to avoid amortising under the exemptions there are in the amortisation requirement. An exemption is available for borrowers with new loans that arise when moving an existing loan to a different bank. In this case, the borrower is able to keep their original amortisation terms. A borrower who acquires a newly produced home is able to obtain an exemption from amortisation payments for five years. Banks also have the opportunity to grant exemptions from the amortisation requirements for equity withdrawal loans granted prior to 1 March 2018. In such cases, the borrower amortises at least 10 per cent of the equity withdrawal loan rather than amortising the entire loan in accordance with the amortisation requirements.

i.e. the sum total of amortisation payments for all homes, remained relatively unchanged compared with 2019 (see Graph 8). The average annual amortisation rate for new mortgagors was 2 per cent in 2020.[22]

8. Proportion of new mortgagors who amortise and annual amortisation
Per cent



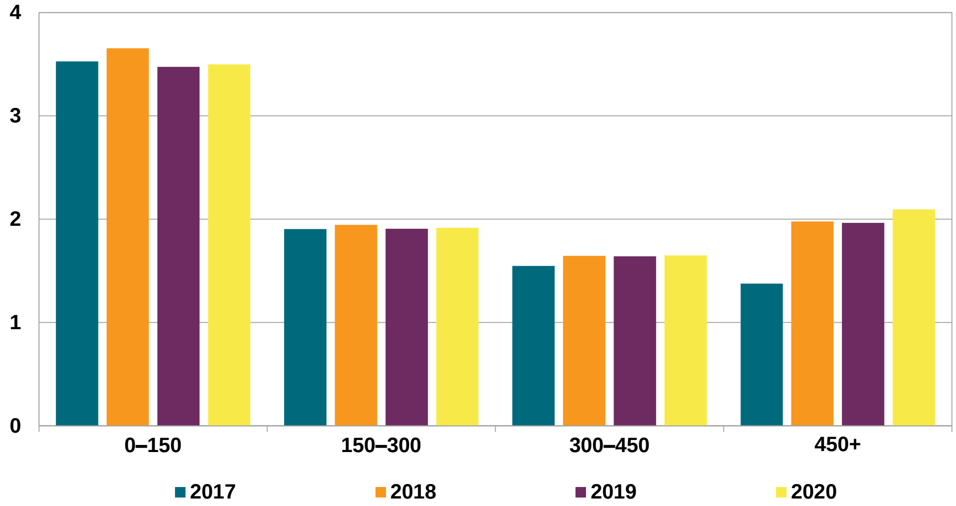
Source: The mortgage survey.
Note: Refers to new borrowers' total mortgage amortisation payments.

The average amortisation rate for new borrowers in various loan-to-income intervals remained almost unchanged compared with 2019 (see Graph 9). If the new borrowers are instead divided up on the basis of loan-to-value ratio, the average amortisation rate increased in 2020, compared with 2019, for borrowers with a loan-to-value ratio of under 25 per cent (see Graph 10). For borrowers with a loan-to-value ratio of over 25 per cent, the average amortisation rate remained relatively unchanged compared to 2019.

[22] The average amortisation rate for the banks' total mortgage portfolios was 1.6 per cent in 2020. This is slightly lower than in 2019, which is due to some borrowers having been granted a temporary exemption from the amortisation requirement in 2020. Around 60 per cent of total amortisation payments in the mortgage stock are attributable to the amortisation requirements.

9. Amortisation rate as a proportion of loan, distributed by loan-to-income ratio

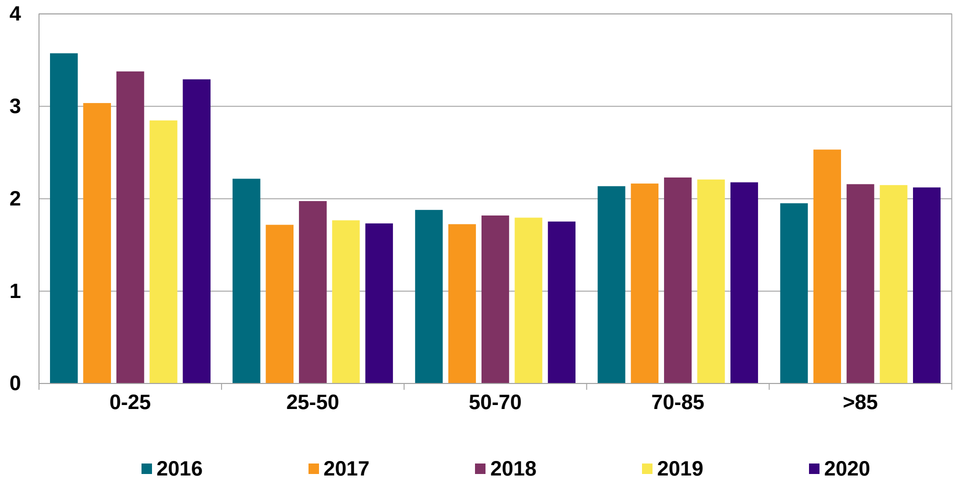
Per cent



Source: The mortgage survey.
Note: Refers to new borrowers' total mortgage amortisation payments. Loan-to-income ratio calculated using gross income.

10. Amortisation rate as a proportion of loan, distributed by loan-to-value ratio

Per cent



Source: The mortgage survey.
Note: Refers to new borrowers' total mortgage amortisation payments.

New borrowers amortised an average of 6.5 per cent of their disposable income in 2020. This was approximately the same level as in 2019. Amortisation payments as a proportion of income were highest for the youngest borrowers. This is because younger people often have a higher loan-to-value ratio and loan-to-income ratio than other age groups. Young people who live in single-person households and do not have children amortise most, closely followed by single-person households in the age group 31–50 years old who do not have children. Among these borrowers, amortisation payments equated to just over 8.5 per cent of disposable income in 2020. Amortisation payments as a proportion of income fall with rising age and are lowest among the oldest borrowers (over 65 years old).

Fact box – Which borrowers are using the exemption from amortisation?

FI makes the assessment that the amortisation requirements have increased mortgagors' long-term resilience. New borrowers are taking out smaller loans and are amortising their loans faster since the requirements introduction. In April 2020, FI decided that banks would be able to grant all borrowers a temporary exemption from amortisation payments, regardless if the household was suffering from financial problems or not. The aim was to give households with mortgages more room for manoeuvre in order to manage their financial situation during a period of uncertainty. . As of January 2021, a total of 230,000 households in the banks' mortgage portfolios were granted temporary exemption from amortisation payments.[23] This corresponds to just over 10 per cent of all mortgagors. In March 2021, FI decided not to extend the temporary exemption, which will therefore expire on 31 August 2021.

Just over 9 per cent of the new mortgagors in this year's sample have been granted a temporary exemption from the amortisation requirement on all or parts of their mortgage.[24] New borrowers who have used the exemption are generally younger than other borrowers – their average ages are 41 and 46 years old, respectively.[25] Those who have been granted an exemption live primarily in Stockholm and Gothenburg. They constituted just over 40 and 15 per cent, respectively, of the group who had been granted exemptions.[26] The exemption from amortisation has, on average, entailed a supplement of around SEK 4,500 per month. On average, borrowers have been granted an amortisation-free period of just over ten months from the time the loan was taken out. This means that the group have been able to increase its liquidity buffer during the period.

[23] Refers only to borrowers from the mortgage banks that are included in the mortgage survey. Exemptions have not just been granted to mortgagors who need to amortise pursuant to the amortisation requirements. Some borrowers who are amortising in excess of the amortisation requirements on the basis of agreements with banks have also been granted temporary exemptions.
[24] Some borrowers have only applied for a temporary exemption from amortisation for parts of their mortgage. In total, the group with exemptions have applied for and been granted exemptions for around 90 per cent of their total amortisation payments.
[25] Other borrowers in this fact box refers to borrowers who are amortising and have not applied for or been granted a temporary exemption.
[26] Among new mortgagors who are amortising, and have to amortise after the exemption, 17 and 16 per cent have been granted a temporary exemption in Stockholm and Gothenburg, respectively.

The borrowers who have used the exemption have larger incomes, have bought more expensive homes and have a somewhat shorter interest rate adjustment period than other borrowers. They also have a higher loan-to-income ratio and loan-to-value ratio (see Graph 11). The average loan-to-value ratio was about 77 per cent for borrowers with exemption and around 70 per cent for other borrowers. The corresponding figures for loan-to-income ratio were 409 and 300 per cent. The difference between the groups is partly because borrowers with exemptions from amortisation in Stockholm often having a higher loan-to-income ratio than borrowers in the rest of Sweden. However, even within the Stockholm region, it is primarily those with the highest loan-to-income ratios who have applied for and been granted temporary exemptions from amortisation. These borrowers also have higher incomes, they have bought more expensive homes and have a shorter fixed interest rate period than other borrowers from Stockholm who are subject to the amortisation requirements. If factors that normally affect the size of the loan are controlled for – those who have used the exemption have also borrowed slightly more and bought slightly more expensive homes.[27] The exception can be one of several reasons for this.

FI's discretionary income calculation shows that the group who have received temporary exemptions have slightly better resilience to moderate increases in interest rates than those who have not applied for an exemption from amortisation. Nevertheless, they are more sensitive to high interest rates. They are also slightly more resilient to loss of income in the form of unemployment with income protection insurance.[28] This indicates that they have the capacity to cope with large loans and are able to amortise even under stressed conditions.

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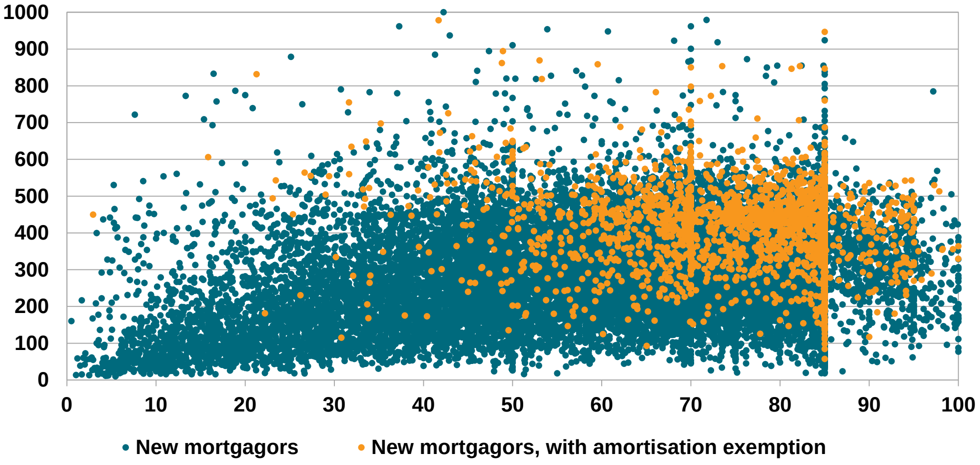
[27] We are estimate a model that compares those with exemptions and other borrowers who have the same characteristics but who are still amortising in accordance with the requirement. The size of the new mortgage is dependent on factors including age, family composition, geographic region, surplus in FI's discretionary income calculation and loan-to-income ratio. FI will provide more details about this in an FI analysis later in the spring.

[28] Mortgagors can be granted exemption from amortisation in the event of unemployment, which is why we disregard amortisation payments in this calculation of FI's discretionary income.

11. Distribution of borrowers, with and without exemption from amortisation, 2020



Source: The mortgage survey.
Note: Each point refers to one borrower in this year's sample. The x-axis is loan-to-value ratio and the y-axis is loan-to-income ratio (gross income).

Borrowers’ Repayment Capacity

FI assesses new mortgagors’ repayment capacity using stress tests. On the whole, these stress tests show that their repayment capacity is good. However, they also show that individual mortgagors can get strained cash flow if interest rates rise or they lose their employment.

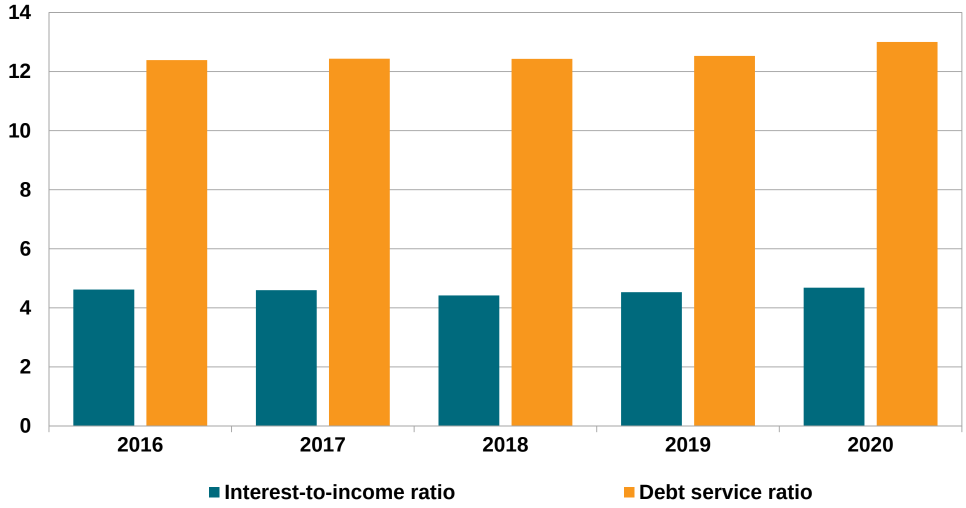
In a situation where the economic conditions have deteriorated, the margin between income and expenditure may become smaller for many households. FI’s stress tests calculate how many borrowers with new mortgages may have a deficit in various negative scenarios. FI assesses borrowers’ repayment capacity by calculating discretionary income on the basis of their total loans. FI’s calculations use an estimate of essential expenses rather than the household’s actual expenses at the time the loan is taken out. Consequently, our calculations differ somewhat from those of the banks. The method we use to calculate borrowers’ discretionary income is described in Appendix 1. Borrowers whose expenses are greater than their income may find it difficult to pay off their loans if they do not have a buffer of savings. If a large number of borrowers have a deficit simultaneously, this could lead, by extension, to the banks suffering significant credit losses. However, a deficit in our calculations does not necessarily mean credit losses for the banks. Borrowers may be granted a temporary exemption from amortisation payments, use any savings they have or choose to live more frugally for a period of time. Conversely, borrowers that do not have deficits may also be forced to adapt – for example by reducing the amount they save or their consumption – in tough economic situations. These stress tests do not focus on such effects, instead they focus exclusively on new mortgagors’ capacity to make interest and amortisation payments.

Marginally higher interest payments for new borrowers

One way to calculate a mortgagor’s repayment capacity is to measure how much of the borrower’s disposable income are used for loan payments. The interest-to-income ratio measures interest payments as a proportion of disposable income. The average interest-to-income ratio for new mortgagors fell between 2012 and 2018, from 8.5 to 4.4 per cent. This is due to generally low interest rates. The interest-to-income ratio has subsequently increased only marginally, and was 4.7 per cent in 2020 (see Graph 12). The increase since 2018 is due to new mortgagors taking out increasingly larger loans relative to their income, because interest rates have not increased. The average mortgage rate for new borrowers was 1.55 per cent in 2020, which was almost unchanged compared with 2019. The debt service ratio, which also takes into account amortisation payments, has also increased slightly.[29] New borrowers' interest and amortisation payments amounted to an average of 13 per cent of their disposable income in 2020.

12. Interest-to-income ratio and debt service ratio

Per cent



Source: The mortgage survey.

Note: Interest-to-income ratio refers to interest payments on total loans as a proportion of borrower' disposable income. Debt service ratio refers to interest and amortisation payments on total loans as a proportion of borrower' disposable income.

More borrowers are fixing their mortgage rates

The fact that new borrowers have financial margins helps them to cope with higher interest expenses. Borrowers can also protect themselves against higher interest rates by fixing their mortgage rate. In this year's mortgage survey, almost 50 per cent of new mortgagors had a (volume-weighted) interest rate adjustment period of more than one year (see Graph 13).[30] This is approximately ten percentage points higher than in 2019 and 20 percentage points higher than in 2016.[31] The fact that a larger number of borrowers are fixing their interest rates is positive because it makes them more resilient to rapidly rising mortgage rates in the short term. At the

[29] In this section, as in the section on amortisation, we have not taken into account whether the borrower has been granted a temporary exemption from amortisation. All borrowers' agreed amortisation payments are included in all calculations involving amortisation payments.

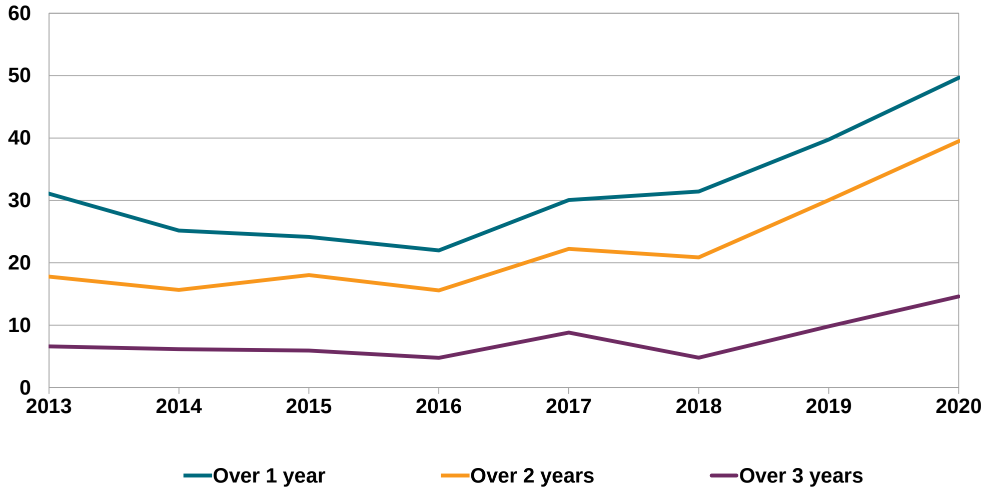
[30] Mortgagors have often split up their mortgage into different interest rate adjustment periods. The interest rate adjustment period therefore applies to the volume-weighted interest rate adjustment period for new mortgages and the proportion denotes the proportion of new mortgagors that have a volume-weighted interest rate adjustment period of over 1, 2 and 3 years, respectively.

[31] One reason why more new mortgagors are fixing their interest rates is that the banks have set more favourable interest rates for longer interest rate adjustment periods with the aim of retaining customers for a longer period.

same time, they are not able to benefit from lower mortgage rates during the interest rate adjustment period. Those who fix their mortgage rates have slightly lower discretionary income surpluses than those borrowers who do not fix the rate of their mortgage. Securing yourself against higher interest rates is more important for mortgagors with smaller margins.

13. Large increase in proportion of new mortgagors with a fixed interest rate

Per cent



Source: The mortgage survey.
Note Refers to the proportion of borrowers with a volume-weighted interest rate adjustment period of more than 1, 2 or 3 years for new mortgages.

The surplus increased for new borrowers

As in previous years, the youngest and oldest new mortgagors had the lowest average monthly surplus in FI's discretionary income calculation (see Graph 14). This is explained by the fact that they often have lower incomes and are more likely to be single-person households than borrowers in other age groups. The average surplus increased for all new borrowers compared with 2019.[32] The surplus increased most for borrowers over 65 years old.

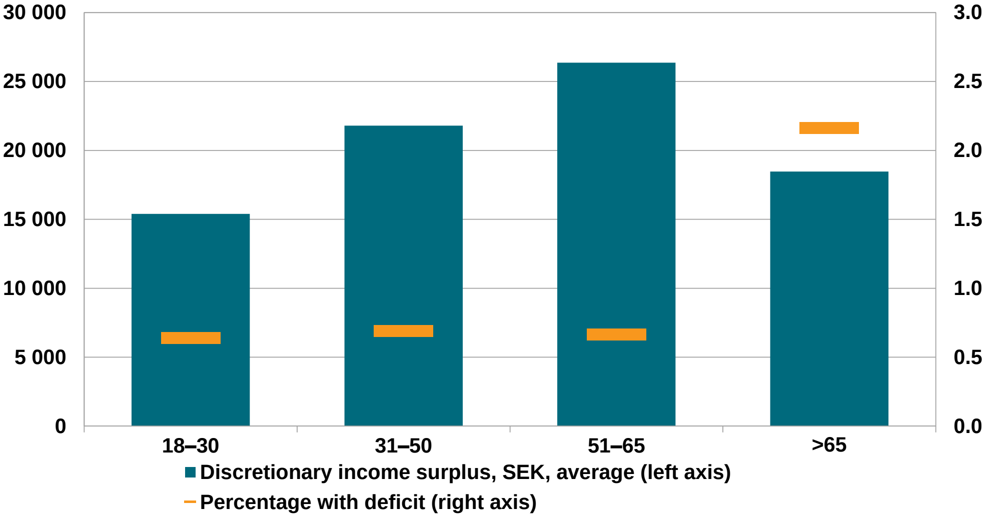
The proportion of borrowers over 50 years old who have a deficit at the agreed interest rate and amortisation rate decreased in 2020 compared with 2019.[33] At the

[32] However, there are larger differences in the distribution relative to the other groups within the groups of borrowers under 30 years old and 51 to 65 years old. The increase in surplus in these groups was more concentrated among a smaller number of borrowers. If we look instead at the median, the increase was relatively limited.
[33] FI's discretionary income calculation is based partly on the average of the standardised expenses the banks used in their respective calculations in 2015. This standardised cost has then been adjusted upwards in line with the CPIF for each year.

same time, the proportion with a deficit in the age group 18–30 years old increased and remained unchanged for the age group 31–50 years old.

The fact that borrowers are able to get temporary exemptions from amortisation when needed makes them more resilient. At the agreed interest rate and with no amortisation payments, only a few new borrowers under 65 years old had a deficit in 2020. On the other hand, a relatively large proportion of new borrowers over 65 years old have a deficit both with and without amortisation payments, 2.2 and 1.5 per cent, respectively. Compared with previous years, fewer borrowers over 65 years old have a deficit.

14. Monthly surplus in various age groups.
SEK (left axis) and per cent (right axis)



Source: The mortgage survey.
Note: Refers to monthly surplus at the actual agreed interest rate and amortisation rate for borrowers' (home buyers, equity withdrawal borrowers and bank switchers) total loans.

Stress tests for assessing repayment capacity

In order to assess new mortgagors' resilience, FI conducts various stress tests in which their financial circumstances are impaired. These stress tests involve FI estimating how borrowers' repayment capacity is affected in the event of higher interest rates, if the borrowers were to become unemployed or if the market value of their homes were to fall. Interest rate increases and unemployment mean that borrowers will have a lower discretionary income. Falling house prices make the loan-to-value ratio rise. We have analysed a total of five negative scenarios:

- Higher interest rates.
- Higher interest rates and higher monthly charges due to the tenant-owner associations' debts.
- Unemployment (where all borrowers have unemployment insurance and income protection insurance).

- Unemployment (where all borrowers have unemployment insurance but not income protection insurance).
- Lower house prices combined with higher interest rates.

We calculate the proportion of new mortgagors who have a deficit in the discretionary income calculation in the event of higher interest rates. For new borrowers with tenant-owned apartments as collateral we also take into account the tenant-owner associations' debts.[34] If the interest rate increases for the tenant-owner association, this may mean that they will need to raise their fee.[35] In this stress test we assume that the fee covers the association's interest rate expenses at the outset. When the interest rate increases, the association's increased interest payments will result in a corresponding increase in the monthly fee.[36] In the final scenario, the proportion of new mortgagors for whom the value of their home falls below the size of the loan – i.e. a loan-to-value ratio of over 100 per cent – and have a deficit in their cash flow in the event of higher interest rates.

New borrowers are more sensitive to interest rates

FI calculates new mortgagors' sensitivity to interest rates by increasing the interest rate on borrowers' total loans in order to see how many have a deficit in their monthly calculation. Interest expenses are calculated using borrowers' total loans, not just mortgages, because other interest rates typically rise in line with mortgage rates, but starting from a higher level (see Appendix 1).[37] The basic premise for the calculations is to include amortisation payments at all interest rate levels. However, we also perform the calculations without amortisation payments because, under the amortisation regulations, banks have the opportunity to grant temporary exemptions from amortisation.[38]

[34] Banks also take into account the indirect debt from tenant-owner associations in their credit assessments. Three of the banks state in the mortgage survey that they always stress the fee paid to the association through an increase in the interest rate. Three banks stress the fee if the association's debt exceeds a threshold they set internally. The threshold used varies between SEK 9,000 and SEK 15,000 per square meter.

[35] This stress test is possible because FI has been collecting data on the size of tenant-owned apartments and the associations' debt per square metre since 2017.

[36] It is probable many associations have sufficiently strong cash flow, a combination of strong cash flow and liquid assets, or a fixed interest rate, which means that they do not need to increase the fee in the event of small interest rate rises. It is also possible that some associations will choose to reduce their investments and maintenance of the property instead of raising the fee when interest payments increase.

[37] In the calculations it is also assumed that the fixed interest rates increase in the same way. This means that the borrower's sensitivity to interest rates in the short term is overestimated and consequently so is the proportion who have a deficit. Over time, however, fixed interest rates will also be affected by higher interest rates.

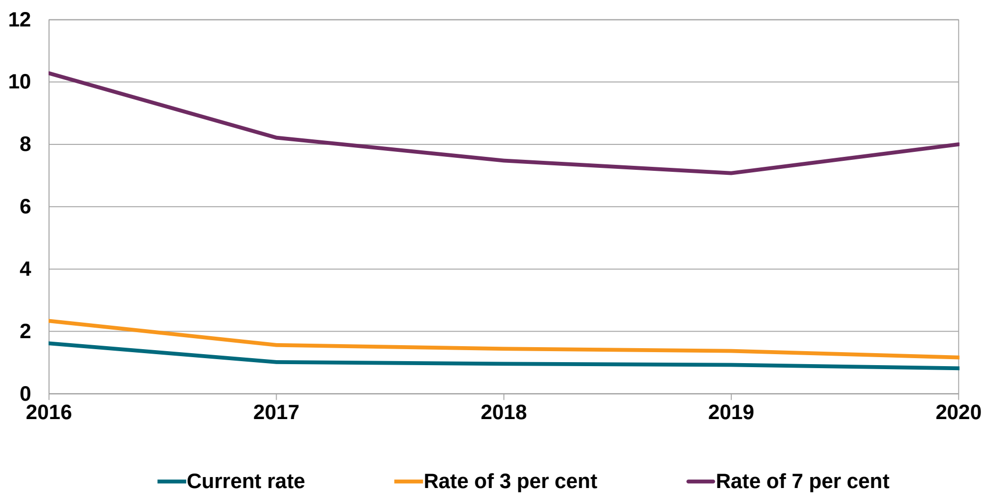
[38] Banks are permitted to grant individual borrowers temporary respite from amortisation if there are specific grounds. Typical situations include unemployment, a death in the family or illness. In some case, banks are able to determine what constitutes specific grounds.

More new borrowers with a deficit at an interest rate of 7 per cent

The proportion of new borrowers who have a deficit at lower interest rates has gradually decreased in recent years (see Graph 15). The fact that fewer borrowers have deficit when interest rates are at their current level and at three per cent – when both the average loan-to-value ratio and loan-to-income ratio increase – is partly due to their income has increased more than the standardised figures for cost of living in the discretionary income calculation. This demonstrates there is good resilience in the event of small interest rate rises. However, new borrowers have become somewhat more sensitive to larger changes in interest rates. In 2020 the proportion of borrowers who had a deficit in the monthly calculation at a mortgage rate of 7 per cent increased from 7.1 to just over 8 per cent.

15. Proportion of borrowers with a deficit between income and expenses at different interest rates

Per cent



Source: The mortgage survey.
Note: Refers to borrowers' (home buyers, equity withdrawal borrowers and bank switchers) total loans at agreed amortisation rates.

The proportion with a deficit at an interest rate of 7 per cent is highest among new borrowers under 30 years old, at just over 10 per cent. Borrowers between 31 and 50 years old come next, 9 per cent of whom have a deficit. Borrowers with a high loan-to-income ratio are also overrepresented among those that have a deficit at an interest rate of 7 per cent. This is natural because the loan-to-income ratio shows the degree of sensitivity to interest rates. Among those new borrowers that have a loan-to-income ratio of over 450 per cent, one in three have a deficit in the discretionary income calculations calculation. This is 4 percentage points more than in 2019.

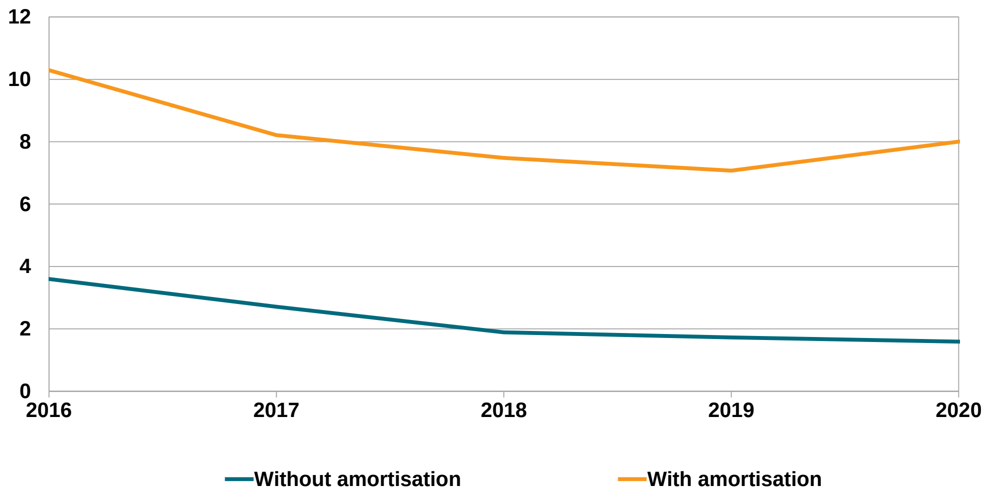
The general trend is that the proportion of new borrowers with small margins in their cash flow has decreased since 2016.[39] This is in spite of the fact that new borrowers have not, on average, borrowed less as a proportion of their income or the value of their home. This year, however, the proportion who have a deficit in the event of higher interest rates increases. Even though new mortgagors are somewhat more sensitive to high interest rates, they generally have good margins. An increasing number are fixing their mortgage rates for a longer period, further improving their short-term resilience against interest rate rises during the interest rate adjustment period. However, if borrowers are taking out larger loans, they will need to devote a larger proportion of their income to interest payments in the event of higher interest rates. In the event of rates that are 1 percentage point higher, new borrowers need to spend an average of 3.1 per cent of their disposable income on interest payments.[40] This equates to an increase in interest expenses of around SEK 1,600 per month. The average debt service ratio rises from 13 to 30 per cent if the mortgage rate were to rise from the current level to 7 per cent. Consequently, increases in interest rates may result in borrowers needing to reduce their consumption despite not having a deficit in FI's discretionary income calculation.

The proportion of new borrowers with a deficit falls when they are exempted from amortisation

When borrowers are exempted from amortisation, their monthly payments are temporarily reduced. When exemption from amortisation is assumed, the proportion of new borrowers who have deficit at an interest rate of 7 per cent is 1.6 per cent. This is 6.4 percentage points lower than without this exemption (see Graph 16). With the exemption and an interest rate of 7 per cent, it is primarily borrowers over the age of 65 that have a deficit. The difference between the proportion of borrowers that have a deficit with and without amortisation has increased compared with the previous year.

[39] FI is only able to assess changes in cash flow because FI does not have access to data concerning households' liquid and financial assets.
[40] Borrowers who have a loan-to-income ratio of over 450 per cent are affected more than other borrowers by changes in interest rates. If the interest rate rises by 1 percentage point, borrowers with a loan-to-income ratio of over 450 per cent need to spend an additional 5.5 per cent of their disposable income on interest payments.

16. Proportion of households with a deficit, with and without amortisation
Per cent



Source: The mortgage survey.
Note: Refers to borrowers' (home buyers, equity withdrawal borrowers and bank switchers) total loans at a mortgage rate of 7 per cent.

The amortisation requirements have led to new mortgagors amortising more. The fact that borrowers are required to amortise more also influences the choice of home and the size of the loan. In the short term, larger amortisation payments have a negative impact on their cash flow and they become more sensitive to shocks. Borrowers can be granted an exemption from amortisation in the event of shocks. In the long term, the amortisation payments reduce the size of the loan and a larger portion of the borrower's cash flow is freed up. Consequently, amortisation gradually increases borrowers' resilience.

Tenant-owners may have higher fees in the event of higher interest rates

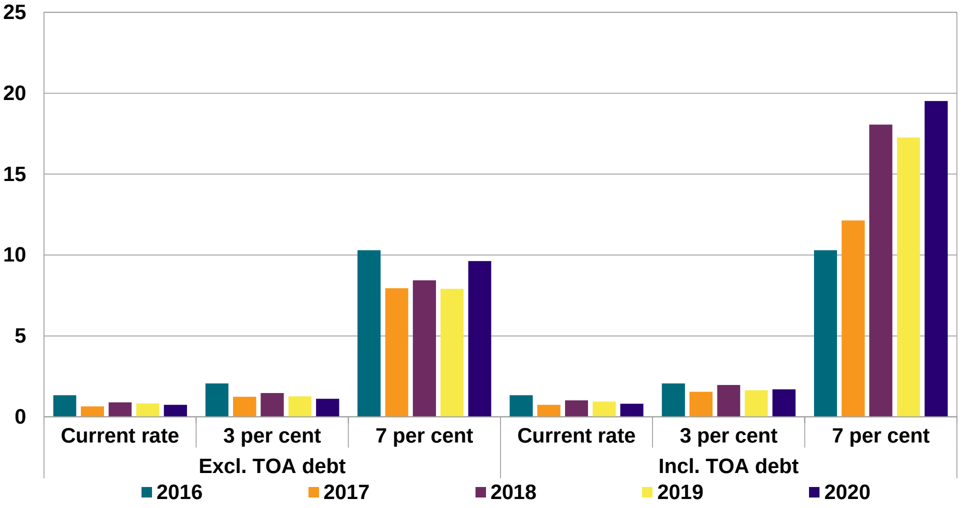
Tenant-owner associations' debts have an impact on those who live in tenant-owned apartments because it is the owners who have to cover the association's interest expenses. When the interest rate on a tenant-owner association's loans increases, the fees it charges may need to be increased.[41] If the interest rate for tenant-owners' mortgages (excluding the tenant-owner association's debt) increases to 7 per cent, around 10 per cent of tenant-owners end up with a deficit, according to FI's calculations (see Graph 17). If the entire increase in the association's interest payments is transferred to the association's members, the proportion with a deficit

[41] In the stress test for tenant-owners, the interest rates used are 2 per cent for tenant-owner associations' debts and 3 per cent for mortgages. In the second scenario, the mortgage rate was set at 7 per cent and an interest rate of 5 per cent is used for the tenant-owner association's debts.

increases to around 20 per cent. This is a higher proportion than in 2019, when the corresponding figures were 8 and 17 per cent, respectively.

17. Proportion of households with a deficit at various interest rates

Per cent



Source: The mortgage survey.

Note: Refers to borrowers' (home buyers, equity withdrawal borrowers and bank switchers) total loans, who live in tenant-owned apartments, calculated using a mortgage rate of 7 per cent and agreed amortisation rates.

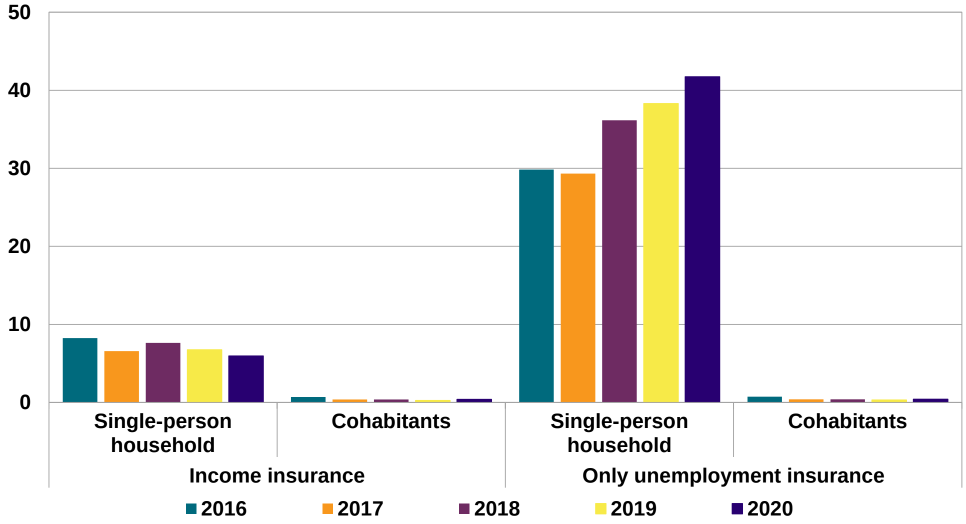
Exemption from amortisation in the event of unemployment increases resilience

Unemployment reduces borrowers' incomes. Borrowers that do not have unemployment insurance are especially hard hit if they lose their jobs. FI analyses borrowers' ability to cope with interest payments and other expenses if they lose their jobs and their incomes fall as a result. We test this in two ways. In the first case, we assume that all borrowers have unemployment insurance and income protection insurance, which reduces borrowers' income by 20 per cent. In the other case, we assume that all borrowers have unemployment insurance but not income protection insurance. This reduces borrowers' income by 20 per cent, with maximum compensation of just over SEK 16,000 after tax.[42] In both scenarios, separate calculations are performed for single-person households and cohabitant borrowers. For cohabitants, only one of the borrowers loses their job. We then calculation how many borrowers have a deficit in FI's discretionary income calculation. It is unlikely that all borrowers in the sample will lose their jobs at the same time. However, the stress tests show what proportion of borrowers are able to cope with unforeseen losses of income. Mortgagors can be granted an exemption from amortisation in

[42] In 2020, the Government temporarily increased the maximum level of compensation in the event of unemployment. However, the old compensation levels are used in these calculations as this measure is temporary.

the event of unemployment, which is why we disregard amortisation payments in FI's discretionary income calculations.

18. Proportion with a deficit in the event of unemployment
Per cent



Source: The mortgage survey.
Note: Refers to borrowers' (home buyers, equity withdrawal borrowers and bank switchers) total loans calculated using actual agreed mortgage rates and without amortisation payments.

In the event of unemployment with income protection insurance and exemption from amortisation, 6 per cent of single-person households with new mortgages have a deficit in FI's discretionary income calculation in 2020 (see Graph 18). If the borrowers do not have income protection insurance, approximately 42 per cent of single-person households have a deficit. Cohabitant borrowers – who have two incomes and where only one of the borrowers loses their job – are more resilient to loss of income. In the event of unemployment (with income protection insurance) and exemption from amortisation, only 0.4 per cent of cohabitant borrowers would have a deficit in their monthly calculation. If the borrowers do not have income protection insurance, the proportion that have a deficit remains almost unchanged. The fact that borrowers are being granted temporary exemption from amortisation in the event of unemployment decreases the proportion who have a deficit, which in turn makes them more resilient.

Many cope with falling house prices combined with higher interest rates

A high loan-to-value ratio makes borrowers vulnerable to a situation in which house prices are falling. This is particularly applicable to those who have high loan-to-income ratios. FI tests how new borrowers' loan-to-value ratios change when house prices are falling. If prices fall by 15 per cent, 5 per cent of new borrowers have a loan-to-value ratio of over 100 per cent. This means that these borrowers' loans exceed the value of their home. In this scenario, almost 43 per cent of borrowers have a loan-to-value ratio of over 85 per cent. If prices fall by 30 per cent, half of borrowers have a loan-to-value ratio of over 100 per cent.

If a borrower has a negative discretionary income calculation and does not have other assets to sell, they may need to sell their home to pay off their loans. However, in a scenario in which house prices are falling, the value of the home may be lower than the size of the loan. Borrowers can also adapt in ways other than by selling their home. For example, they could choose to reduce their consumption or savings, if this is possible. Nonetheless, the proportion of borrowers that would have both a deficit in their monthly calculation and a loan-to-value ratio of over 100 per cent is limited. In the event of a fall in house prices of 30 per cent and a mortgage rate of 7 per cent, 4.6 per cent of borrowers would have both a monthly deficit in FI's discretionary income calculation and a loan-to-value ratio of over 100 per cent. This was slightly more than in the previous year. When exempted from amortisation, 0.4 per cent of borrowers would have both a deficit and a loan-to-value ratio of over 100 per cent.

The resilience of new borrowers is generally good

A high loan-to-value ratio and loan-to-income ratio mean that borrowers may be more vulnerable to various shocks. To make a more comprehensive assessment of borrowers' vulnerability, these measures need to be supplemented with information about borrowers' cash flows.[43] Overall, FI's stress tests show that new mortgagors' resilience is roughly the same as last year. At present, the majority of new mortgagors have sufficient margins to cope with their loan payments. In addition, more borrowers are fixing their mortgage rates for longer periods. In the short term, this increases their resilience to rising interest rates. However, new borrowers' resilience to high interest rates has deteriorated somewhat as a result of them having taken out larger loans relative to their income. Cohabitant borrowers cope relatively well with loss of income. Single-person households are more vulnerable to loss of income. The fact that borrowers are able to get a temporary exemption from amortisation when needed makes them generally more resilient.

[43] To make the assessment more comprehensive, information about the household's other assets is also required.

Appendix 1. Discretionary Income Calculation

The banks' assessment of repayment capacity

Before banks grant a mortgage they make a detailed assessment of the borrower's finances and repayment capacity through something called a discretionary income calculation. These calculations are key to the banks' risk management and, by extension, to financial and macroeconomic stability. They are also one aspect of good consumer protection. That is why FI reviews the banks' methods.

When a borrower applies for a mortgage, the bank collects information about the borrower's income and debt. In the discretionary income calculation, the bank deducts estimated expenses from the borrower's income. These expenses include taxes, home-related expenses, running costs, interest expenses (using a stressed mortgage rate that is higher than the actual rate) and amortisation payments. Banks also deduct a standardised amount for subsistence costs. In order for the banks to grant a mortgage, borrowers are normally not allowed to have a deficit in this calculation. Banks may make an exception if the borrower has a substantial amount of other assets or additional income that has not been included in the calculation. Other reasons to make an exception can be a low loan-to-value ratio or if a portion of the loan is temporary (known as a bridging loan).[44]

The average standardised cost of living for an adult person was just over SEK 8,600 per month in the 2020 mortgage survey. Standardised costs vary by bank, primarily in terms of the individual components. For example, the basic standardised cost of living for a single-person household in this year's mortgage survey varies between SEK 6,000 and 10,200. The variation between the banks is reduced when all costs considered by the banks are taken into account. All banks in the survey have been including the amortisation requirement in their discretionary income calculations since 2016. This was also the case in 2020 when the banks were able to grant temporary exemption from amortisation to all mortgagors as a result of the sharp economic downturn during the coronavirus pandemic.

The banks' average stressed interest rate for mortgages was 6.8 per cent in 2020. This was a lower level than in recent years, which is the result of three banks lowering their stressed mortgage rate in 2020. The stressed mortgage rate is not a comprehensive measure of the strictness of the banks' credit assessments. For example, standardised costs also affect borrowers' discretionary income calculations. The fact that the banks are applying a mortgage rate that is higher than the current level

[44] A bridging loan is a temporary loan granted for the period between when a household has paid for its new home but has not yet been paid for the old home it has sold or intends to sell.

of interest rates is not necessarily only to ensure that new borrowers are able to cope with rising interest rates. The higher mortgage rate can also compensate for a situation in which borrowers have larger expenses than the bank has taken into account, or has the potential to take into account, in its standardised figures. The stressed mortgage rate is thus able to create an additional buffer for loss of income in the credit assessment. A high mortgage rate in the banks discretionary income calculations also limits the size of the loan relative to the borrower's income.

FI's assessment of repayment capacity

FI performs its own discretionary income calculations of borrowers' monthly surpluses. FI calculates a borrower's disposable income by deducting tax from gross income and adding other income such as any child allowance and large family supplement.[45] As FI does not have complete information about the borrower's situation, we use standardised figures for running costs and subsistence costs. This is done in order to treat all borrowers equally. The standardised costs are dependent on the number of borrowers, any children and the type of home.[46] They do not relate to the household's actual expenses at the time the loan is issued and are instead an estimate of the household's essential expenses.[47] Consequently, FI's discretionary income calculations do not capture the fact that borrowers may be forced to reduce their consumption in order to continue paying off their loans.

FI's standardised figures are based on the average standardised costs that the banks use when there is no information about the individual borrower. The standardised costs used by the banks have increased over time but fell between 2015 and 2016. They have also decreased slightly since 2018. In its assessment of household resilience, FI has chosen to use the subsistence costs for 2015. Costs for previous and

[45] The tax is calculated on the basis of the average municipal and county council tax rate in the whole country. It then takes into account state income tax, austerity tax (before 2020), basic deduction and job tax deduction.

[46] The standardised costs only take into account the type of home and not its size. Because the size of the home may be of major significance to the costs of, for example, heating, FI's calculations are not as precise for individual borrowers as those used by the banks.

[47] The banks have access to more detailed information about borrowers and are thus able to use borrower-specific information concerning running costs for single-family homes. Banks may also take into account any car costs or other transportation costs. Because FI does not have access to sufficiently detailed information about borrowers' situations, standardised costs are used instead. This means that FI's calculations are not as precise for individual borrowers as those used by banks. In addition, the banks are also able to take borrowers' financial assets into account in their assessments of their repayment capacity. It is not possible to do so in this analysis because FI does not have such data. The methods banks use to calculate borrowers' repayment capacity vary. FI's use of a standardised calculation that is the same for all banks allows consistent comparisons between banks and over time. When FI's discretionary income calculation shows a deficit, this do not necessary mean that borrowers will have a deficit in the banks' calculations. Nor does a surplus in the calculation mean that borrowers have a surplus when their actual subsistence costs are taken into account.

later years have been calculated using the Consumer Price Index with a fixed interest rate (CPIF). The reason why FI has chosen CPIF is to avoid calculating interest expenses twice. For 2020, FI is using the standardised costs shown in Table B1.

We also use the interest rate that applied at the time the loan was issued. The borrower's resilience to rising interest rates is analysed at various interest rates, after tax deductions for interest payments. As in previous years, two scenarios are used where the mortgage rates are 3 and 7 per cent, respectively. The interest rates for other loans (loans with other collateral and unsecured loans) are assumed to be 7 and 10 per cent, respectively, in the two scenarios. The actual level of the tenant-owner's fee has also been used since 2018.

Table B1. FI's standardised costs in the monthly calculation

SEK

	2019	2020
Cost of living		
Single-person household	9,900	9,900
Cohabitants	17,000	17,200
Per child	3,700	3,700
Running costs		
Single-family home	4,000	4,000
Tenant-owned apartment	3,100	3,100