FI Analysis

Consequences of a stricter amortisation requirement

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Summary

Households with high loan-to-income ratios, i.e. large loans in relation to income, are vulnerable. They are sensitive to rising interest rates since their monthly expenses are affected more than households with lower loan-to-income ratios. They are also somewhat more sensitive to a loss of income, for example if they become unemployed. Households with a high level of debt can also be affected by a fall in asset prices, such as house or share prices, since they are more exposed to such a development. As a result, they may need to reduce their consumption if the economy were to dip, which would amplify an economic downturn.

The percentage of vulnerable households – those with high debt ratios – has increased in the past five years. The amortisation requirement appears to have broken this trend, but there are still a large number of households taking on loans that result in a high loan-to-income ratio. This development is largely due to the fact that house prices have risen much faster than household income for a long period of time.

The mortgage cap and the current amortisation requirement only have a limited effect on households with high loan-to-income ratios since these regulations primarily target households with high loan-to-value ratios, i.e. a high level of debt in relation to the value of the home. One way to reduce the number of vulnerable households is to tighten the amortisation requirement so the loan-to-income ratio also affects the size of the amortisation payments. This FI Analysis studies the consequences of a stricter amortisation requirement under which new mortgagors with a loan-to-income ratio of more than 450 per cent (based on gross income) must amortise 1 percentage point more every year than under the current requirement.

This stricter amortisation requirement will primarily affect new mortgagors in Stockholm and Gothenburg since house prices are highest there, as well as younger households, households with only one adult and households with high income.

FI expects the stricter requirement to result in households borrowing less and buying less expensive homes, much like after the implementation of the current amortisation requirement. For the country as a whole, the stricter amortisation requirement is expected to slow the growth of debt by almost 4 per cent and house prices by approximately 1.5 per cent. In Stockholm, growth in house prices will slow by about 3 per cent. Amortisation payments for households that do not reduce their debt in order to place themselves below a loan-to-income ratio of 450 per cent will increase on average by approximately SEK 1,500 per month. The combination of some households borrowing less and others amortising at a faster rate will reduce the number of vulnerable households. The introduction of a stricter amortisation requirement for households with high loan-to-income ratios will thus help reduce the macroeconomic risks associated with household debt.

Finansinspektionen

+46 8 408 980 00

www.fi.se

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Households have high levels of debt

Over the past ten years, house prices in Sweden increased by more than 80 per cent.[1] The prices of tenant-owned apartments increased by almost 120 per cent and the prices of single-family homes by 70 per cent. House prices increased particularly fast in Stockholm and Gothenburg, and the prices there are also currently the highest. During the same period, total household debt increased from approximately SEK 2,100 billion to almost SEK 3,900 billion, i.e. which equals 80 per cent. This increase is due to several factors, including the fact that more households own their home, that taxes on housing-related services have been reduced and that interest rates declined during the period. In addition, due to the urbanisation trend, a larger percentage of households live in the metropolitan areas, where house prices are higher.

Borrowing allows households to smooth their consumption over time, which means they can buy a home without first needing to save the entire purchase amount. However, international studies and Swedish experiences from the 1990s indicate that households with high levels of debt decrease their consumption sharply following economic shocks. This can be seen, for example, among British households during the period 2007-2012. Households with mortgages that were larger than twice their gross income reduced their consumption by 17 per cent. Households with lower levels of debt reduced their consumption by 11 per cent. Overall, households with high levels of debt amplified the fall in consumption by 2 percentage points in the UK during the financial crisis (Bunn and Rostom, 2014). High levels of debt therefore entail primarily a vulnerability to fluctuations in the economy. Where are these vulnerabilities located?

HIGH LOAN-TO-INCOME RATIOS ARE A VULNERABILITY

A household's cash flow provides an overview of its income and expenses. The larger its loans in relation to its income, the larger the share of the income that is used to make interest and amortisation payments. If interest rates were to rise or a household were to suffer a loss of income, the household's cash flow would be negatively affected. It is primarily households with high loan-to-income (LTI) ratios that experience a deficit if the interest rate goes up (see Table 1). In addition, households with high LTI ratios run a slightly larger risk of experiencing a deficit in their cash flow if unemployment increases (see Table 2). However, the link between the LTI ratio and the households that experience a deficit is not as clear in the scenario where unemployment increases as in the scenario where interest rates rise.

Table 1. Increase in the share of households with a deficit at a 5 (8) per cent interest rate

(Per cent)

	Loan-to-value ratio		
Loan-to income ratio	Below 50%	50-70%	Over 70%
Over 500%	6 (33)	7 (38)	10 (59)
450-500%	4 (13)	3 (15)	2 (24)
400-450%	4 (11)	1 (9)	2 (17)
350-400%	3 (9)	1 (6)	1 (10)
Below 350%	1 (3)	0 (2)	1 (3)

Note: The figures in parentheses specify the increase in the share of households that have a deficit in their discretionary income at an 8 per cent interest rate. The calculations assume amortisation payments in accordance with the existing amortisation requirement.

Source: Finansinspektionen.

Table 2. Increase in the share of households with a deficit at 5 (10) per cent unemployment

(Per cent)

	Loan-to-value ratio		
Debt ratio	Below 50%	50-70%	Over 70%
Over 500%	2 (4)	2 (5)	3 (5)
450-500%	2 (5)	2 (5)	2 (5)
400-450%	2 (4)	2 (4)	2 (4)
350-400%	2 (5)	2 (4)	2 (4)
Below 350%	2 (3)	2 (3)	2 (3)

Note: The figures in parentheses specify the increase in the share of households that have a deficit in their discretionary income at 10 per cent unemployment. The calculations assume today's interest rate and amortisation payments in accordance with the existing amortisation requirement.

Source: Finansinspektionen.

Households that experience a deficit in their cash flow must reduce other expenses, i.e. consumption and savings. If their cash flow deteriorates too much, households may also be forced to move to less expensive homes. They may in this way amplify a negative spiral and contribute to the deepening of a recession.

LARGE BALANCE SHEETS A VULNERABILITY

A balance sheet is an overview of a household's assets, debt and net wealth (see Table 3). The assets include the value of the homes the

Table 3. Household balance sheets

(SEK billion)

	2006	2016
Assets	9,406	17,770
–Real estate	*4,166*	*8,511*
–Unrestricted savings	*3,079*	*4,487*
–Restricted savings	*2,161*	*4,773*
Liabilities	2,119	3,866
–Mortgages	*1,362*	*2,902*
–Other debt	*756*	*964*
Net wealth	7,288	13,905

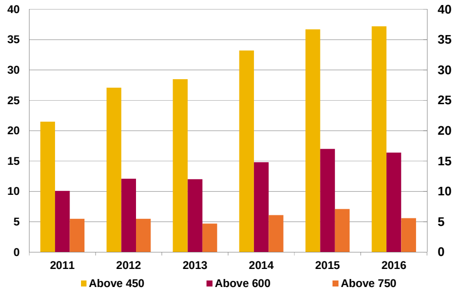
Note: Unrestricted savings refer to cash, bank deposits, bonds, directly owned shares and fund units. Restricted savings refer to private insurance savings, occupational pensions and premium pensions.

Source: Statistics Sweden's Savings Barometer

1 According to Valuegard's price statistics, see www.valueguard.se.

Diagram 1. Share of households with high debt in relation to disposable income

(Per cent)



Note: The figures refer to new lending for each respective year and show the share of new mortgagors with LTI ratios larger than 450, 600, and 750 percent of their disposable income.

Source: Finansinspektionen (2016a).

households have purchased and their aggregate savings in bank deposits, funds, shares and different forms of pension savings. Approximately 80 per cent of household debt consists of mortgages. The difference between households' assets and debt is called net wealth.

The value of households' assets varies as house prices, share prices and fund assets change in value, but debt is not affected by changes in market value. As a result, a household's net wealth will shrink if share prices or house prices fall. Households may reduce their consumption and increase their savings in order to rebuild their net wealth. They may also sell assets and pay back some loans in order to restore the relationship between debt and the value of the home (loan-to-value, LTV, ratio).

Even if savings in the household sector as a whole are high, households have invested in part in financial assets, the value of which is influenced by house prices. If the economy were to weaken and house prices fall, it is likely that the value of the households' financial assets would also fall. Households would thus lose money on both their home and their financial assets. If we compare two households with the same net wealth, the household with the largest balance sheet will be affected the most by the fall in asset prices since this household has a greater exposure to asset prices. Despite its considerable assets, this household may need to sharply reduce its consumption and thus amplify a downturn in the economy.

ELEVATED MACROECONOMIC RISKS

FI has taken several measures to limit the risks posed by the high level of household debt. The first was the mortgage cap, which limited how large a mortgage may be in relation to the value of the home. The mortgage cap reduced the risk that households forced to sell their home after a fall in prices would sell at a loss. FI also introduced higher capital requirements for Swedish banks, both in general and related specifically to mortgages. This has made the banks more resilient to shocks on the mortgage market, enabling them to continue to grant loans to households and firms even if they were to suffer some losses.

In June 2016, FI introduced an amortisation requirement under which new mortgagors with a LTV ratio above 50 per cent must amortise at least 1 per cent of their loan a year. If the LTV ratio is higher than 70 per cent, the household must amortise at least 2 per cent a year. FI's analyses show that, as a result of the amortisation requirement, households are buying less expensive homes, borrowing less and using a larger portion of their savings to finance the purchase of a home (Finansinspektionen, 2017b). As a direct effect, the households' balance sheets have therefore shrunk, and these households are also less sensitive to a fall in share prices and house prices. The amortisation requirement also reduces households' possibilities for financing their future savings in financial assets with mortgages, and therefore in the long run decreases both households' LTV ratios and the size of their balance sheets. It also decreases the risk that many households will simultaneously reduce their consumption if house prices were to fall and the economy entered a recession.

Despite these measures, there are still risks. The percentage of new mortgagors with large loans in relation to their income has risen over the past five years (see Diagram 1). The amortisation requirement appears to have broken this trend, but there are still a large number of households taking on loans that result in a high LTI ratio. This is

Table 4. Design of a stricter amortisation requirement

(Per cent of the size of the loan)

	LTV ratio		
LTI ratio	Below 50%	50–70%	Over 70%
Over 450%	1	2	3
Below 450%	0	1	2

Source: Finansinspektionen.

Table 5. Share of households by LTV ratio and LTI ratio

(Per cent)

	LTV ratio		
LTI ratio	Below 50%	50–70%	Over 70%
Over 450%	3 (5)	5 (8)	7 (15)
Below 450%	25 (23)	21 (17)	39 (32)

Note: The figure in parentheses indicates the shares after five years if house prices and debt increase by 8 per cent a year and income by 4 per cent a year

Source: Finansinspektionen.

Table 6. Share of households that already meet the stricter amortisation requirement

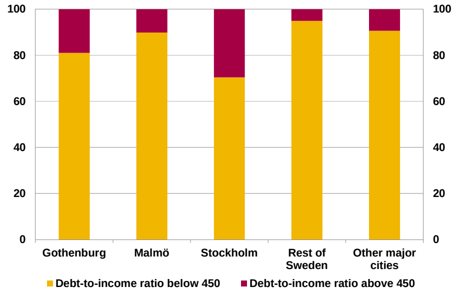
(Per cent)

	LTV ratio		
LTI ratio	Below 50%	50–70%	Over 70%
Over 450%	13	5	2
Below 450%	100	58	62

Source: Finansinspektionen.

Diagram 2. Share of new mortgagors affected, per region

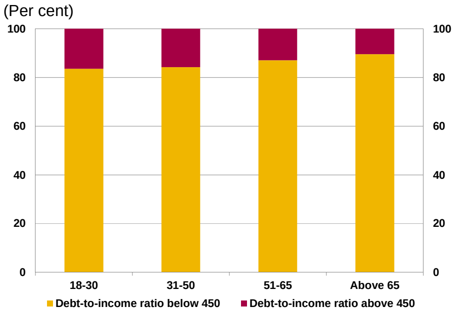
(Per cent)



Source: Finansinspektionen.

Diagram 3. Share of new mortgagors affected, per age group

(Per cent)



Source: Finansinspektionen.

largely due to the fact that house prices have risen much faster than household income over the past few years, which has meant that the LTI ratios in the stock of mortgagors have increased (van Santen and Ölcer, 2016).

Even if LTI ratios among new mortgagors has stabilised at the current high level, the LTI ratio of the mortgage stock as a whole is expected to continue to increase. If house prices continue to rise faster than household income, there is a risk that it will become even more common for households to borrow a lot in relation to their income. This can further enhance the macroeconomic risks.

Stricter amortisation requirement for households with high LTI ratios

FI has previously analysed the effects of a debt-to-income cap – a limit for how large household debt may be in relation to income. This could prevent households from borrowing more in relation to their income. At the same time, a hard debt-to-income cap[2] would limit some households even though their economic circumstances may be sufficient for handling the debt. FI has therefore also analysed different designs of flexible debt-to-income caps, i.e. caps that would allow for a certain percentage of loans to be granted to households with debt-to-income ratios that exceed the cap (Finansinspektionen, 2016b), but these designs had an uneven impact on the Swedish banks. Banks with a large percentage of customers in metropolitan areas, and thus also borrowers with high debt-to-income ratios, were more affected than other banks. A flexible debt-to-income cap therefore could potentially have a negative impact on competition between the Swedish banks.

In this FI Analysis, we analyse the effects of a stricter amortisation requirement for households with high LTI ratios. The LTI ratio is calculated here as the borrowers' mortgages as a share of their pre-tax income.[3] Under the stricter requirement, new mortgagors with LTI ratios higher than 450 per cent[4] of their gross income must amortise 1 percentage point more than under the current amortisation requirement (see Table 4).

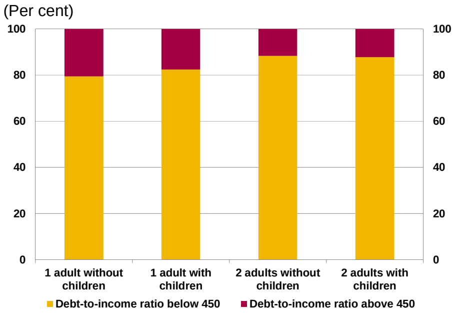
According to data from the most recent mortgage survey, 15 per cent in total of the new mortgagors have LTI ratios larger than 450 per cent. However, if house prices and debt continue to rise at a faster rate than income, the percentage of households with high LTI ratios

2 A flexible debt-to-income cap would allow a certain percentage of loans to exceed the debt-to-income cap. For example, this could mean that a maximum of 15 per cent of the new loans may be issued to households that have a debt-to-income ratio in excess of 600 per cent. The countries that have introduced an LTI cap in recent years, e.g. the UK, Ireland and Norway, have chosen a flexible version.

3 The mortgage survey reports the total debt and total house-related debt of the banks' borrowers. In the analysis, we use households' total debt since house-related debt is underreported in the variable, total house-related debt. The survey is described in Finansinspektionen (2017a).

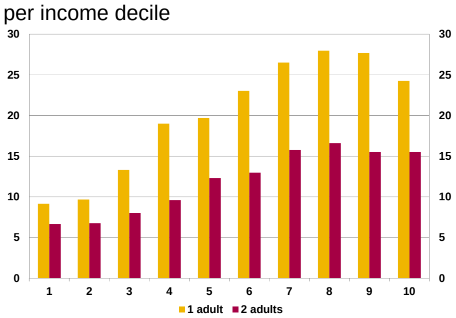
4 an LTI ratio of 450 per cent of gross income corresponds to approximately 600 per cent of disposable income (after tax).

Diagram 4. Share of new mortgagors affected, per family composition



Source: Finansinspektionen.

Diagram 5. Share of new mortgagors affected, per income decile



Note: Deciles are calculated separately for each group. Source: Finansinspektionen.

Table 7. Share of households by LTV ratio and LTI ratio under the stricter amortisation requirement

(Per cent)

	LTV ratio		
LTI ratio	Below 50%	50–70%	Over 70%
Over 450%	2 (3)	2 (5)	3 (7)
Below 450%	27 (25)	24 (21)	42 (39)

Note: The figures in parentheses specify the shares under the existing amortisation requirement.

Source: Finansinspektionen.

will rise. In five years, the percentage of households that have LTI ratios of greater than 450 per cent may reach 28 per cent (see Table 5).

Only a few households with LTI ratios larger than 450 per cent already amortise today in accordance with the stricter amortisation requirement (see Table 6). This is not surprising, but it means that almost all households with high LTI ratios will be affected by the stricter amortisation requirement and thus will need to either borrow less or amortise more. As a result of the stricter amortisation requirement, 14 per cent of the new mortgagors will be affected by the regulation, which can be compared to 56 per cent when the current requirement was introduced.

The stricter amortisation requirement primarily affects households in Stockholm and Gothenburg as well as young households, households with only one adult and households with high income (see Diagrams 2–5).

Immediate effects of a stricter amortisation requirement

As a result of the amortisation requirement that FI implemented in June 2016, households purchased less expensive homes, borrowed less and had a large cash contribution (Finansinspektionen, 2017b). Households on aggregate borrowed 9 per cent less and purchased homes that were 3 per cent less expensive. We have used these estimates together with the information about the increase in household amortisation payments following the implementation of the amortisation requirement to calculate how the change in amortisation payments affects the size of new mortgages and the price of homes the households purchase. In the calculations, we assume that the current interest rate levels persist and household amortisation payments increase in accordance with the requirement.[5 6]

HOUSEHOLDS ARE BORROWING LESS

The stricter amortisation requirement has an immediate impact on debt in a number of ways. Some households choose to borrow less to keep their LTI ratio below 450 per cent. Other households choose to borrow less to limit the increase in their monthly debt service payments. The stricter amortisation requirement also means that the discretionary income calculations[7] limit how big of a loan a household may take. If household behaviour – buying less expensive homes and borrowing less – changes in the same way under the stricter amortisation requirement, 7 per cent of households will borrow more than 450 per cent of their pre-tax income compared to 15 per cent today (see Table 7).

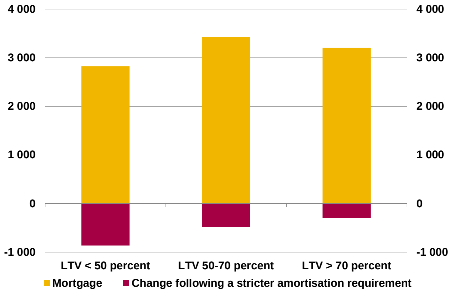
5 Changes in behaviour due to higher amortisation payments become smaller when the interest rate is higher. This is because the increase in per cent of the total debt servicing from a certain increase in amortisation payments becomes smaller as the interest rate rises.

6 The calculations are described in the appendix.

7 Banks make discretionary income calculations to determine how much of its disposable income the household has left after paying for necessities. These calculations are used in the credit assessment.

Diagram 6: Average mortgages, given the current and the stricter amortisation requirement

(SEK thousand)

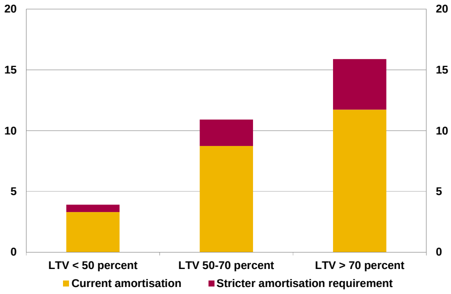


Note: The diagram shows how the average mortgages change for households with LTI ratios above 450 per cent and different LTV ratios as a result of the stricter amortisation requirement.

Source: Finansinspektionen.

Diagram 7. Amortisation in relation to income

(Per cent)

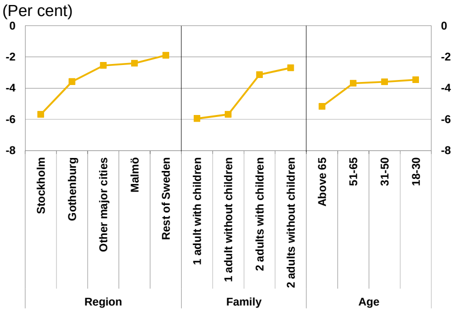


Note: The diagram shows how amortisation in relation to income changes for households with LTI ratios above 450 per cent and different LTV ratios as a result of the stricter amortisation requirement.

Source: Finansinspektionen.

Diagram 8. Changes in mortgages

(Per cent)



Note: The diagram shows how debt is affected for different households as a result of the stricter amortisation requirement.

Source: Finansinspektionen.

The average new mortgage in the 2016 Mortgage Survey is almost SEK 1.8 million (Finansinspektionen, 2017a). Under the stricter amortisation requirement, the average mortgage is expected to fall by SEK 70,000. This is a reduction of 4 per cent, which can be compared to a reduction of 9 per cent when the current requirement was implemented. There is less of an impact under the stricter requirement because it affects a smaller number of households. The households that are affected by the requirement lower their debt on average by about SEK 500,000, which corresponds to 17 per cent of the original loan. Primarily households with LTV ratios below 50 per cent reduce their loans (see Diagram 6).

HOUSEHOLDS BUY LESS EXPENSIVE HOMES

Just like with debt, we are able to calculate how a change in debt service payments affects the price of the home that households buy.[8] We can then use this calculation to estimate the effects of the stricter amortisation requirement on house prices. Since many Stockholm households fall under the stricter regulation, we also do the calculation for house prices in Stockholm. According to the calculations, prices will fall in Sweden as a whole by 1.5 per cent as a result of the stricter amortisation requirement. In Stockholm, prices are expected to fall by 3 per cent.

HOUSEHOLDS AMORTISE MORE

Households that do not reduce their debt so they fall below an LTI ratio of 450 per cent must amortise 1 percentage point more than under the current amortisation requirement. This means that they on average will amortise almost SEK 1,500 more every month. These high amortisation payments correspond to 1–4 per cent of their disposable income depending on the household's LTV ratio (see Diagram 7).

DIFFERENT HOUSEHOLD GROUPS REACT DIFFERENTLY

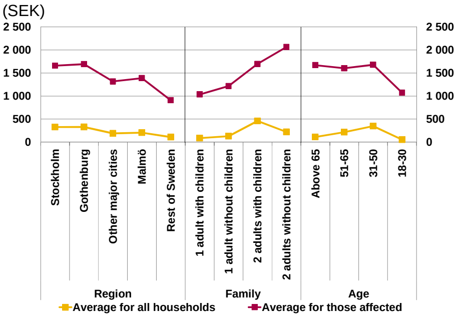
The stricter amortisation requirement is expected to result in a reduction in households' borrowings since they would otherwise have higher debt service payments. Debt falls the most in Stockholm and Gothenburg, and it is primarily households with one adult and the oldest age group that reduce their debt (see Diagram 8).

Average amortisation payments rise for all household groups (see Diagram 9). Households in Stockholm and Gothenburg amortise the most today, on average more than SEK 2,000 a month, and it is these households that are expected to increase their amortisation payments the most, on average by approximately SEK 300 a month. Households with LTI ratios above 450 per cent in Stockholm and Gothenburg, which are affected by the stricter requirement, are expected on average to raise their amortisation payments by SEK 1,700 a month to almost SEK 5,000 a month.

It is primarily middle-aged households that are expected to increase their amortisation payments as a result of the stricter amortisation requirement. The stricter requirement also means that households with two adults are expected to increase their amortisation payments more than households with one adult. Those affected by the requirement are

8 See the appendix for details.

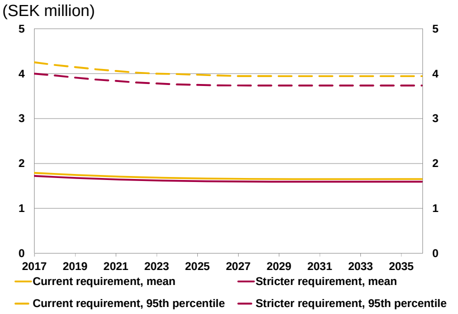
Diagram 9. Change in amortisation



Note: The diagram shows how amortisation is affected for different households as a result of the stricter amortisation requirement.

Source: Finansinspektionen

Diagram 10. New mortgages in 2016, average and 95th percentile



Note: The diagram shows the change over time for new mortgagors in 2016. The stricter requirement is calculated using an estimated change in behaviour and a limitation on discretionary income.

Source: Finansinspektionen.

expected to increase their amortisation payments by approximately SEK 2,000 a month.

THE EFFECTS CAN BE LARGER

Some factors imply that the effects of a stricter amortisation requirement could be larger than FI's calculations. The current amortisation requirement resulted in households borrowing 9 per cent less at the same time as they bought homes that were only 3 per cent less expensive. Since debt fell more than house prices, households have in part financed the purchase of a home in some other way than through a mortgage from the bank. They were therefore able to reduce their LTV ratio and reduce their rate of amortisation. Our calculation is based on households behaving in the same manner even under a stricter amortisation requirement. It is not certain that households with high LTI ratios that are subject to the stricter amortisation requirement have the same possibility of financing parts of the purchase of a home in some other way than through a mortgage from their bank.

Firstly, it is not certain that households with high LTI ratios have savings that can be used for the cash payment. The alternative for these households is then to reduce their debt by choosing homes that are even less expensive. The effects on debt, amortisation payments and house prices are then larger than predicted by our calculations.

Secondly, the current amortisation requirement may have meant that younger home buyers leveraged their parents' homes in order to reduce their LTV ratios and reduce their rate of amortisation. Parents often have low LTV ratios that make this possible. However, there is no guarantee that the parents' LTI ratios are also so low that the parents can take on more loans without falling under the stricter amortisation requirement themselves. This also implies that the effects on debt, amortisation payments and house prices may be larger.

Amortisation payments lower LTI and LTV ratios in the long run

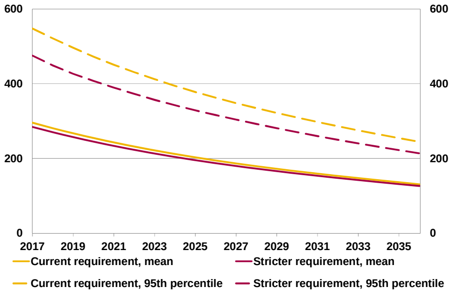
When households amortise their loans, their debt is reduced. A household that has taken a loan will therefore over time experience falling LTI and LTV ratios. Households become more resilient, both to falling asset prices and to shocks to their cash flow.

In the 2016 Mortgage Survey, the average new mortgage is almost SEK 1.8 million (Finansinspektionen, 2017a). Under the current amortisation requirement, the average mortgage for these households will be SEK 1.7 million in 2020 and will then continue to fall to SEK 1.65 million when their LTV ratios has fallen below 50 per cent and they are no longer subject to the amortisation requirement (see Diagram 10). Under the stricter amortisation requirement, the average mortgage will be around SEK 50,000–70,000 lower depending on when the comparison is made. For households with large loans, the slow-down is more distinct. The stricter amortisation requirement reduces the average mortgage by SEK 250,000 or more for households with the largest debt (95th percentile[9]).

9 The 95th percentile specifies a debt level that 5 per cent of households exceed.

Diagram 11. LTI ratios, average and 95th percentile

(Per cent)

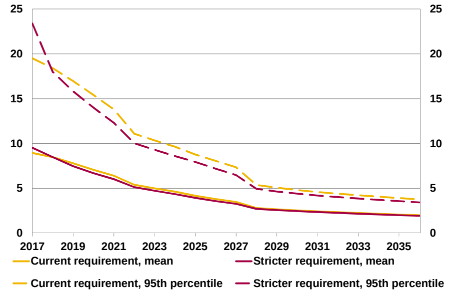


Note: The diagram shows the change over time for new mortgagors in 2016. The stricter requirement is calculated using an estimated behaviour effect and a limitation on discretionary income.

Source: Finansinspektionen.

Diagram 12. Debt service payments as a share of disposable income, average and 95th percentile

(Per cent)



Note: The diagram shows the change over time for new mortgagors in 2016. The expanded requirement is calculated using an estimated behaviour effect and a limitation on discretionary income.

Source: Finansinspektionen.

These households' LTI ratios also fall over time. The reduction is due to both amortisation of the debt and an increase in household income over time. The average LTI ratio is approximately three times as large as income before tax in 2016 (see Diagram 11). The average amortisation requirement together with the increase in income, which here is assumed to be 4 per cent a year, lowers the average LTI ratio a multiple of 2.5 in 2020. Under the stricter amortisation requirement, the LTI ratio is initially estimated to be 11 percentage points lower. The impact of the requirement is larger for households that have large loans and high LTI ratios. The latter lies, naturally, in the regulation's construction. The LTI ratio on average is 70 percentage points lower under the stricter requirement compared to the current requirement in 2035 for the 95th percentile (see Diagram 11).

Stricter amortisation payments affect households' monthly payments

Amortisation is a monthly expense that households need to pay. This can limit some households' possibilities for other savings. For other households, a stricter amortisation requirement can primarily result in a redistribution of their existing savings. Regardless of whether savings are reduced or redistributed, a stricter amortisation requirement means that households face fewer possibilities for building up a savings buffer that they can use during economic downturns, which could mean they will be less equipped for a future recession. It could also mean that households in the future will to a greater extent be forced to take unsecured loans to finance unexpected expenses.

DEBT SERVICE PAYMENTS FALL IN THE LONG RUN

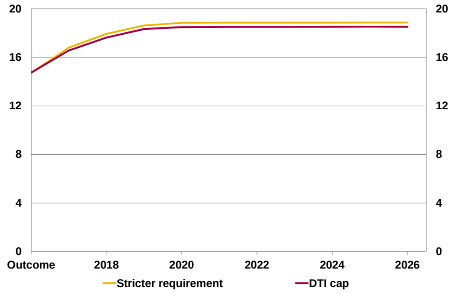
A household's debt service payments consist of interest rate expenses and amortisation. Given the current amortisation requirement and today's interest rate level, households' debt service payments on average amount to 9 per cent of the disposable income for the households that took a new mortgage in 2016 (see Diagram 12). Debt service payments fall over time due to amortisation and higher income (growth of 4 per cent a year). Under the stricter requirement, the average debt service payments initially increase to almost 10 per cent of disposable income.

The higher amortisation rates resulting from the stricter requirement is counteracted in part by households borrowing less. This is why households' debt service payments only rise marginally. The stricter requirement thereafter entails that 7 per cent of households amortise at a faster rate than under the current requirement. These households, which also through a change in behaviour have taken smaller loans than without the stricter requirement, will quickly come down to an LTI ratio below 450 per cent and thereafter amortise in accordance with the current requirement. Households with high debt are affected more, both by the initial increase in debt service payments and by the reduction in the long run.

A stricter amortisation requirement compared to the debt-to-income cap

Diagram 13: Percentage of households covered by a stricter amortisation requirement and a debt-to-income cap

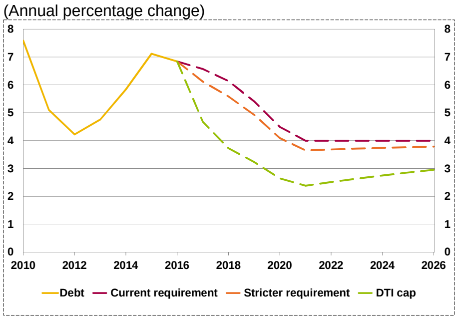
(Per cent)



Source: Finansinspektionen.

Diagram 14: Aggregate debt, with and without regulation

(Annual percentage change)



Source: Finansinspektionen.

There are alternative regulations based on households' debt ratios. One such alternative is to limit households' total debt as a percentage of disposable income (DTI). FI has studied the consequences of such a regulation (Finansinspektionen, 2016b). This regulation directly limits the size of the loan that a household may take.

This section compares how a stricter amortisation requirement and a DTI cap affect aggregate debt. In a regulation designed as a DTI cap, we assume that half of the households that are above the cap choose to borrow up to the cap and half choose not to borrow.

To improve the comparability, we analyse regulations that initially include the same share of households. The limit for the stricter amortisation requirement, 450 per cent, would mean that almost 15 per cent of the households are covered by the regulation at the time of the 2016 Mortgage Survey. A DTI cap of 616 per cent also covers 15 per cent of the households (see Diagram 13).

We then forecast future debt, house prices and income using the National Institute of Economic Research's forecast from March 2017 and Finansinspektionen's Bayesian VAR model (Konjunkturinstitutet, 2017 and Finansinspektionen, 2015, respectively). The forecast predicts that debt and house prices grow faster than income until 2020. Subsequently, during this period LTI ratios increase as well, and in 2020 approximately 19 per cent of households have an LTI ratio of more than 450 per cent of pre-tax income. The LTI ratios do not increase after that since debt and income grow at the same rate in the forecast.[10] Both of the regulations cover approximately the same percentage of households at all times.

As expected, the debt-to-income cap slows new lending more than the stricter amortisation requirement since the cap directly limits new lending. Approximately 4–5 per cent of the households will have a debt-to-income ratio of more than 450 per cent under the debt-to-income cap[11] and new lending is more than 20 per cent lower. The stricter amortisation requirement is a milder regulation and lowers new lending by approximately 5 per cent. Seven per cent have an LTI ratio of more than 450 per cent under the stricter amortisation requirement, and in 2026 this figure increases to 12 per cent.

To calculate the change in total debt, we use the same debt equation as in Finansinspektionen (2016b),

$$S_t = (1-\alpha)S_{t-1} + L_t, \quad (1)$$

where S is total debt and L is total new lending. The annual rate of amortisation in the mortgage stock α is 1.5 per cent according to FI's assessment. Total new lending, L, is calculated using new lending collateralised by the home in question.[12]

10 The forecasts (and outcomes) differ from those presented in Finansinspektionen (2016b). Consequently, the results are not directly comparable.

11 The percentage is not reduced all the way to zero because several households already have an LTI ratio of more than 450 per cent in the existing loans and a regulation based on disposable income does not affect the exact same households as the regulations based on gross income (however, the regulations affect to a large extent, 91 per cent, the same households).

12 We assume that the new loans in the mortgage survey represent a constant share of total new lending. See also Konjunkturinstitutet (2016).

The stricter amortisation requirement slows the annual percentage change in aggregate debt by on average 0.5 percentage points up through 2020 (see Diagram 14). After 2020, this rate slows. The debt-to-income cap slows aggregate debt on average by 2 percentage points. At the end of 2026, the debt level is 3.5 per cent lower with the stricter amortisation requirement. Under the debt-to-income cap, the aggregate debt is 15 per cent lower.

Conclusion

This FI Analysis presents the consequences of a stricter amortisation requirement for households with loans that are 450 per cent larger than their pre-tax income. The stricter regulation affects fewer households than the current amortisation requirement did when it was implemented. The calculations show that loans would be approximately 4 per cent lower under the stricter requirement than if the requirement were not implemented. In addition, house prices in the entire country are expected to be almost 1.5 lower under the stricter requirement. These direct changes in behaviour affect new mortgagors since the amortisation payments mean that the size of their loan will gradually fall. The LTI ratios of mortgagors will thus become lower over time compared to a scenario without a stricter amortisation requirement.

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Appendix: Calculations

Immediate effects of a stricter amortisation requirement

Finansinspektionen (2017b) analyses the effects of the current amortisation requirement. Households which must amortise under the current regulation are buying less expensive homes than what they would have done if the regulation had not been implemented. They have also chosen to take smaller loans. The amortisation requirement has also led to higher monthly payments for some households subject to the requirement. We calculated the elasticities between debt service payments and debt, and debt service payments and house prices,

$$e_{new\ loan} = \frac{\Delta Mortgage}{\frac{(\alpha_1 + r - \alpha_0 - r)}{(\alpha_0 + (1-\delta)r)}}$$

respectively,

$$e_{house\ price} = \frac{\Delta HP}{\frac{(\alpha_1 + r - \alpha_0 - r)}{(\alpha_0 + (1-\delta)r)}},$$

where $\Delta Mortgage$ is the slow-down in debt due to the current amortisation requirement and ΔHP the corresponding slow-down for house prices. These are estimated to be 9 and 3 per cent, respectively, in Finansinspektionen (2017b). Average amortisation (as a percentage of the size of the loan) for households in the 2015 Mortgage Survey that would have had to amortise more if the requirement existed in 2015 are denoted α_0. The corresponding amortisation with the requirement is denoted α_1. For households that would have had to amortise more under the requirement in 2015, the increase, i.e. the difference α_1 and α_0, is 0.6 percentage points. The average interest rate was 1.65 per cent in the 2015 Mortgage Survey.

Based on the estimates, a new mortgage is *0.3 per cent* lower if the stricter amortisation requirement entails that the household must amortise *1 per cent* more, i.e. the elasticity is -0.3. The corresponding elasticity for house prices is -0.1. In the calculations of regions, family composition and age, we have used specific elasticities for each group.

When we calculate the fall in debt, we only let households fall to an LTI ratio of 450 per cent, i.e. down to just under the limit for the stricter amortisation requirement. Finally, we investigate whether their discretionary income using a calculation interest rate of 7 per cent is negative. If it is, we reduce the debt until the discretionary income calculation is in balance.