Report to the Financial Stability Council

DATE:	11 November 2014
DEPARTMENT:	Financial Stability Department/Monetary Policy Department

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Reg. No. [Registration number]

Amortisation requirements – a step towards more sustainable debt development[1]

Executive summary

Household indebtedness in Sweden is high, from both a historical and an international perspective. One measure of this is the aggregate household debt ratio[2]. Over the past ten years, the debt ratio has grown rapidly – by 41 percentage points to some 171 per cent. The Riksbank believes that this growth is associated with risk. If debt and income are assumed to evolve at the same pace as in the past ten years, the aggregate debt ratio will rise to some 230 per cent in ten years' time. One can discern a clear pattern throughout history, whereby financial crises have often been preceded by high indebtedness combined with rapid growth in credit and property prices. High debt and rising property prices could have serious consequences for both the development of the real economy and financial stability. High indebtedness makes households more vulnerable to various disturbances and can lead to weak growth in consumption and employment. This becomes particularly problematical if housing prices are also falling, as, for example, in the case of Denmark.

Consequently, in recent years a number of actions have been taken to dampen household indebtedness. For instance, Finansinspektionen (FI, the Swedish financial supervisory authority) introduced a mortgage cap in 2010. Nevertheless, household indebtedness continues to rise from an already high level. Household mortgages are currently rising by six per cent annually, which is faster than the GDP rate and almost double the pace of household disposable income. Meanwhile, house prices have continued to rise rapidly. Low interest rates also mean that both house prices and the debt ratio can be expected to continue rising in the future.

Since the actions taken have not reduced the risks to a sufficiently large extent, Sweden has fallen behind in managing the growing problem of household indebtedness. Consequently, the Riksbank feels it is necessary to immediately take a number of actions to halt this unsustainable trend in household indebtedness. In

[1] This document was compiled prior to the meeting of the Financial Stability Council on 11 November 2014 before it became clear that the Swedish Competition Authority's assessment was that the Swedish Bankers' Association may contravene the regulations on competition. See also http://www.kkv.se/upload/Filer/Konkurrens/2014/Faktablad%20dnr%2014-0674.pdf.
[2] Total household debt in relation to total household disposable income.

recent years, a number of international observers – including the IMF, OECD and the European Commission – have pointed to the need for measures to reduce household indebtedness in Sweden.

In many countries, it is common for households to repaytheir mortgages. Repayment maturities frequently range from 20 to 40 years.

When the Financial Stability Council (Stabilitetsrådet) met in May 2014, the Riksbank and the Finansinspektionen were tasked with investigating how an amortisation requirement could be structured. In October, the Swedish Bankers' Association presented a proposal aimed at increasing amortisation among households. According to this proposal, households should repay their mortgages down to a loan-to-value (LTV) rate of 50 per cent of the market value of the dwelling.[3] However, the Bankers' Association has not provided any concrete proposals. Given certain assumptions, the Riksbank's assessment is that the proposal will lead to the household debt ratio being 13 percentage points lower in the long term than if no actions were taken. Over a shorter term, the effect will be even less: after 10 years, the debt ratio will be nearly 3 per cent lower. As an illustrative example, this means that if debt and income are assumed to grow at the same pace as in the past decade, the aggregate debt ratio would be about 227 per cent in ten years' time, compared with 230 per cent if no actions are taken. Viewed from this perspective, there is a definite risk that the Bankers' Association initiative is not sufficiently drastic to reverse the trending increase in Swedish household indebtedness. In the case of a household that raises a new mortgage, the Bankers' Association's proposal, as interpreted by the Riksbank, would entail that the repayment amount for an averagely-indebted household would be a little more than SEK 450 higher per month. But since one purpose of the repayment requirement is that households should borrow less, it is probable that the effect on new mortgage borrowers will be less.

Even though a proposal along the lines of the Bankers' Association's initiative is a step in the right direction, it is insufficient to address the problem of household indebtedness. A structure in which household amortisation is linked to disposable income or in which households had to repay the entire loan amount would have been simpler and more robust.[4] But currently it is more important that actions are taken, rather than identifying the most effective solution. To avoid further delays, the Riksbank believes that FI should take over the matter and introduce an amortisation requirement by issuing general instructions. Subsequently, it will be important to frequently evaluate the effects of the amortisation requirement in respect of household indebtedness.

An amortisation requirement in line with the Bankers' Association's initiative needs to be supplemented by a broader spectrum of measures that dampen household demand for credit. Conceivable measures include a tighter mortgage cap, a limitation on the share of mortgages raised at variable interest rates, an adjustment of tax deductions for interest payments, an increase in the minimum levels in the banks' discretionary income calculation and an expansion of the tax on housing. The Financial Stability Council should task its drafting group with reviewing and presenting concrete proposals for such supplementary measures.

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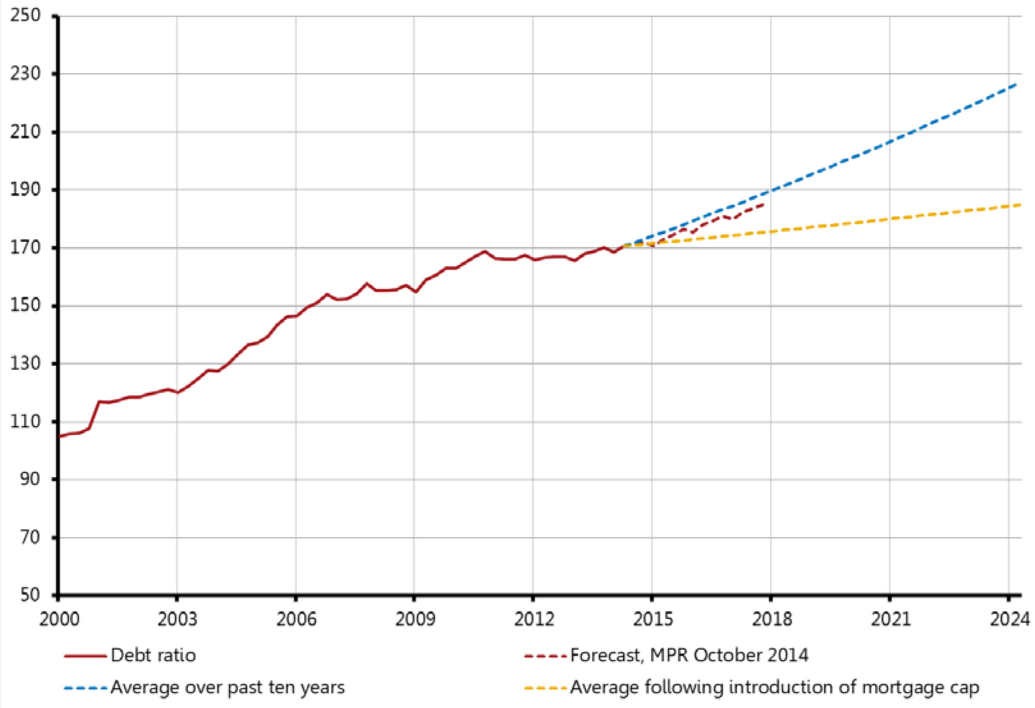
[3] The loan-to-value ratio is the debt as a percentage of the value of the dwelling and is frequently expressed as LTV (loan-to-value).

[4] If the residential price trend noted over the past two decades continues, there is a risk that households will revalue their homes and attain a lower loan-to-value ratio without prepaying their mortgages. Accordingly, an arrangement in which household mortgage repayment is linked to disposable household income would have been more appropriate.

Household indebtedness is high and continues to rise

Swedish house prices have risen sharply in recent years.[5] At the same time, household indebtedness has also climbed to higher levels.[6] Currently, the aggregate debt ratio – total household debt in relation to their total disposable income – has risen to about 171 per cent, which is high from both historical and international perspectives.[7] Over the past ten years, the aggregate debt ratio has increased 41 percentage points. Purely hypothetically, if debt and income move at the same pace as in the past decade, debts will grow by 7.5 per cent and incomes by 4.5 per cent a year. This would lead to an aggregate debt ratio of about 230 per cent in ten years' time (see Chart 1). Within certain borrower groups, both inside and outside the major cities, the debt ratio is also considerably higher than that shown by the aggregate measure. Indebted households with mortgages have, for example, a debt ratio of 313 per cent, while the highest indebted 10 per cent of mortgage borrowers have a debt ratio of 628 per cent or more.[8]

Chart 1. Debt ratio growth if historical trend continues



Note. The blue and yellow broken series should not be interpreted as forecasts. They show the trend in the debt ratio should debt and income move at the historical pace.
Source: The Riksbank

Overall, household mortgages are growing at about 6 per cent annually – which is faster than GDP and almost as fast as disposable household income.[9] Meanwhile, house prices have continued to rise relatively rapidly and, in addition, low interest

[5] See Chart B1 in Appendix 1.
[6] See Chart B2 and B3 in Appendix 1.
[7] See Chart B3 and B4 in Appendix 1.
[8] Winstrand, Jakob and Ölcer, Dilan, (2014), How indebted are Swedish households?, *Economic commentary,* No. 1 2014. The Riksbank.
[9] The high rate of increase in household mortgages means that total household debt is currently growing at nearly 5 per cent annually.

rates entail that both house prices and the debt ratio are expected to increase in the future.[10] Moreover, many indications point to the fact that households' propensity to repay their mortgages changes in line with banks offering of interest-only mortgages. Data shows that about four out of ten mortgage borrower do not amortise on their mortgages and that those who repay their mortgages do so at a slow rate.[11]

A typical mortgage borrower who takes a new mortgage, or extends an existing mortgage, borrows an amount corresponding to 162 per cent of its disposable income and amortise about SEK 400 per month on the new mortgage, which means that the new mortgage is amortised at a pace of 56 years.[12] However, the amortisation pace varies sharply among different households; 25 per cent of new mortgage borrowers repay the new mortgages at a rate of 85 years or slower.[13]

It is important to note that these figures are for the new mortgages only. If one also includes their existing mortgages and other loans, the typical new mortgage borrower's total loans correspond to 231 per cent of its disposable income and an amortisation period of 50 years. If one considers the average instead of the median, the debt ratios are higher. On average, new mortgage borrowers had total debts corresponding to 370 per cent of their disposable income and the amortisation paces for these loans are considerably longer.

The fact that many mortgage borrowers choose not to reduce their debt is also evident in FI's mortgage survey of 2014.[14] According to this, 42 per cent of new mortgage borrowers do not set up any amortisation plan and of those households that have a loan-to-value ratio of 75 per cent, about 60 per cent do not amortise. According to the mortgage survey, the most common reason why households had interest-only mortgages was that they choose to repay more costly consumer loans or that they have a low loan-to-value ratio.[15] The fact that households with a low loan-to-value ratio choose not to repay their mortgages could be explained by it probably being more beneficial for households to save by investing in financial assets, such as stock and fixed income funds, than by repaying mortgages. The low volatility on the property market since the mid-1990s could also lead households not seeing any major risk of sharp falls in property values, which probably reduces their incentives to curtail their loan-to-value ratios by means of amortisation.[16]

What are the risks associated with high indebtedness?

Historical experience shows that financial crises, with long-term negative effects on the economy as a whole, are frequently preceded by high indebtedness and rapid growth in credit and residential property prices.

[10] See *Monetary Policy Report*, October 2014, the Riksbank.
[11] See Table B1 in Appendix 1.
[12] A typical new mortgage borrower refers to the medians between the 45th and the 55th percentile sorted on the basis of the magnitude of the ratio between new mortgages and disposable income. Taking into consideration the size of household mortgages, the weighted average mortgage prepayment period is about 47 years.
[13] Refers to the 25 per cent of individuals with the highest indebtedness measured on the basis of the borrowers' mortgages in relation to their disposable income.
[14] The banks included in the survey by Finansinspektionen (FI) are Danske Bank, Handelsbanken, Länsförsäkringar Bank, Nordea, SBAB Bank, SEB, Skandiabanken and Swedbank.
[15] According to the mortgage survey's random sample, households with prepayment-free mortgages have a repayment capacity similar to that of the average household in the sample.
[16] Refer to Thomas Jansson, "Household mortgage prepayment decisions" (2014), *Memorandum*, the Riksbank.

High indebtedness and rising residential property prices have consequences for both growth in the real economy and financial stability.[17] Higher indebtedness makes households more vulnerable to various disturbances that could lead to a sluggish development in consumption and employment. One reason for this could be that households are reluctant to or cannot maintain the same level of consumption when the value of their residence has declined and their indebtedness is high.[18] Lower demand in the economy could, in turn, reduce the profitability of Swedish companies, leading to a greater number of bankruptcies and rising unemployment. In the case of the banks, this would probably lead to an increase in credit losses, primarily on corporate lending.

If this development leads to major losses or to a decline in confidence in the Swedish financial system, banks and other financial companies could risk finding difficulty in funding their operations. This is because the funding operations of the major Swedish banks largely take the form of the issuance of mortgage bonds whose attractiveness greatly depends on the value of the underlying properties.[19] In turn, a worsening of banks funding conditions risks having adverse effects on the real economy in the form of credit tightening, higher mortgage rates and lower growth.

Several measures are required to dampen household indebtedness

In recent years, a number of measures have been implemented to dampen household indebtedness. In autumn 2010, FI introduced a mortgage cap of 85 per cent that limits how much a household may borrow vis-à-vis the value of a residence. The Swedish Bankers' Association also recommends that lenders amortise on their mortgages.[20] Moreover, FI has raised the risk weight floor of mortgages up to 25 per cent. Moreover, FI has taken a number of actions to increase the capital in Swedish banks as part of efforts to make them more robust. These measures are exemplified by the announced requirement of the counter-cyclical capital buffer, as of January 1, 2015, and that the core primary capital requirement within the framework of Pillar 2 is to be raised by an additional 3 per cent.

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[17] International studies have confirmed that a sharp rise in debt accumulation could increase the probability of both financial crises and falling prices for residences, while compounding the effects if a crisis arises. Refer, inter alia, to IMF (2012), "Dealing with Household Debt", Chapter 3 in *World Economic Outlook* and Schularick, Moritz, and Alan M. Taylor. 2012. "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008." *American Economic Review*, 102(2): 1029-61.

[18] Studies have shown that highly indebted households adapt their consumption more in the event of a crisis compared with lowly indebted households. Refer, inter alia, to Andersen, Asger Lau, Duus, Charlotte and Jensen, Thais Lærkholm, (2014), Household debt and consumption during the financial crisis: Evidence from Danish micro data, *Working Paper*, Danmarks Nationalbank, Main, Atif, Rao, Kamelesh and Sufi, Amir, (2013), Household balance sheets, consumption, and the economic slump, *Quarterly Journal of Economics* 128(4), s. 1687-1726 and Dylan, Karen, (2012), Is household debt overhang holding back consumption?, *Brooking Papers on Economic Activity*, spring edition.

[19] Marklund, Lisa, (2014), The consequences of increased mortgages for the financing of mortgages using secured bonds, *Minutes from the Cooperative Council for Macro-Prudential Supervision's analytical task force, PM 7*, the Riksbank.

[20] To promote a healthy mortgage prepayment culture, the Swedish Bankers' Association issued a recommendation for mortgage borrowing in December 2010, entailing that borrowers should prepay the part of the mortgage that exceeds 75 per cent of the market value. In April 2014, this recommendation was sharpened to the effect that mortgage prepayment should be undertaken down to 70 per cent of the market value of the residence over a 10-15 year period. This was further reiterated in October 2014 with the recommendation that all new mortgages with a loan-to-value of more 50 per cent should be prepaid. However, the mortgage prepayment period in this recommendation has yet to be established. Moreover, the banks should, as of July 1, 2014, provide all mortgage customers with an individual mortgage prepayment schedule from their bank, which carries a long-term perspective and includes the customer's overall financial situation. In particular, it must ensure the need for mortgage borrowers to have a comfortable margin to meet changes in their life situation in the event of retirement, for example.

Since the actions taken do not sufficiently reduce the risks, Sweden has lost ground in managing the unsustainable growth of household indebtedness. Thus, the Riksbank believes that a number of actions should be taken immediately to stop the unsustainable development in household indebtedness. In recent years, a number of international analysts have pointed to the necessity of additional measures that are, in part, targeted at rectifying the underlying problem on the Swedish housing market and, in part, at reducing household indebtedness. For example, the IMF in its annual review of the Swedish economy proposes a combination of macroprudential supervision measures targeted at the demand for loans; amortisation requirements, a limitation on the loan amount in relation to income and a sharpening of the mortgage cap from 85 till 75 per cent of the home's value.[21] The EU Commission and investigators at the OECD have pointed to the need for additional measures as well as efforts to improve the tax system and increase residential construction.[22]

It is difficult to determine what measures are required to get the debt ratio to fall back to levels that are sustainable in the long term. In addition to assessing how the measures will strengthen financial stability, the effect of the measures on household consumption and, thus, GDP must be analysed. In other words, there is a need to balance the advantages and disadvantages of various actions. One possible measure, which the Riksbank and FI have been assigned by the Financial Stability Council to study, is how an amortisation requirement could be shaped.

Experience from other countries

As opposed to Sweden, it is common in many other countries for households to make amortisations without the authorities imposing demands or recommendations on lenders. In most countries, there is a clear maturity term for the repayment of the debt, frequently between 20-40 years, at the same time as the proportion of interest-only mortgages is frequently low.[23] For example, according to the French central bank, fewer than 1 per cent of all new lending in the country is interest-only. Denmark instead abolished the amortisation requirement for mortgages in 2003, which led to a sharp but temporary price rise for housing. Currently, Danish banks provide mortgages that are repayment free for up to 10 years.[24]

However, a number of countries have introduced amortisation requirements in an effort to halt rising household indebtedness. In the Netherlands, the Dutch Bankers' Association has issued recommendations aimed at limiting the size of mortgages that may be interest-only loans, at the same time as the authorities have linked the right to interest deductions to a mandatory amortisation cap of a maximum 30 years. In Canada, the housing market is regulated through a state agency's insurance terms, which compel all new mortgage borrowers with a loan-to-value ratio exceeding 85 per cent to take out mortgage insurance with a requirement that the mortgage be paid within a period of 25 years. In South Korea, the authorities have limited how large a share of bank mortgages that may be interest-only by means of a recommendation entailing that a maximum 60 per cent of the Korean banks' lending

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[21] See "Sweden-2014 Article IV Consultation Concluding Statement of the Mission", June 2014, IMF.
[22] See "Macroeconomic imbalances Sweden", Occasional papers 186, March 2014, the European Commission and Adalet McGowan, M. (2013), "Housing, Financial and Capital Taxation Policies to Ensure Robust Growth in Sweden", *OECD Economics Department Working Papers*, No. 1024.
[23]Se Lea, Michael, International Comparison of Mortgage Product Offerings, *Special Report*, Research Institute for Housing America, September 2010.
[24] In September 2014, the Danish financial supervisory authority (Finanstilsysnet) issued a number of benchmarks for healthy credit granting, which, inter alia, stipulate that only 55 per cent of all mortgages with a LTV rate exceeding 75 per cent should be free of mortgage prepayments by the year 2020. See "More robust property financing", *The Danish FSA*, September 2014.

may be free of amortisation by the year 2017.[25] Finland has no statutory amortisation requirement either but the country's financial supervisory authority has issued a recommendation to banks regarding the issue. The recommendation entails that the banks, in their credit granting process, should assess new mortgage borrowers' ability-to-pay by assuming a 25-year amortisation period for new mortgages along with an interest rate of 6 per cent in an effort to study new mortgage borrowers' ability-to-pay.[26] In recent years, Slovakia, Singapore and Hong Kong have also introduced measures aimed at promoting a healthy amortisation culture.[27]

What will happens if an amortisation requirement is introduced?

When the Financial Stability Council met in May 2014, the Riksbank and FI were assigned to see how an amortisation requirement could be designed. FI believes that a requirement regarding the entire mortgage stock, including existing loans, is difficult to implement as a matter of principle and from a judicial perspective, but that it has the legal potential to introduce general advice and binding provisions for new mortgages.[28] Thus, the examples and calculations reported in this memorandum proceed on the basis that the amortisation requirement applies to new lending. From a long-term perspective, one advantage of a requirement that affects only new mortgage borrowers is that it would not prove a surprise for existing borrowers. However, it could result in households refusing to relocate in order to avoid amortisation, which would not occur if the requirement applied to all mortgage borrowers. If the requirement applies to all mortgage borrowers, it would have a more rapid effect on aggregate indebtedness than if it only affects new mortgage borrowers, but it would also have greater real economic effects. In the calculations, it is assumed that new loans in the debt stock will increase by 5 per cent annually, which means that it would take 20 years for all loans to be classified as new.

As regards the formulation of the amortisation requirement, the Riksbank has calculated a number of amortisation periods and designs. In this memorandum, the results are shown primarily for two examples. In the first example, it is assumed that all new mortgage borrowers make equally large amortisations each month until the entire loan is repaid after 35 years. The reason for selecting this amortisation period is that it matches the amortisation periods of other countries. The other example is an interpretation of the proposal that the Swedish Bankers' Association presented on October 7, 2014. The implication of the proposal is that households will have to pay down the mortgage to a loan-to-value (LTV) rate of 50 per cent of the residence's market value. However, the Swedish Bankers' Association has not made any concrete

[25] Bank of Korea (South Korea's central bank).

[26] Finland's Financial Supervisory Authority (Finanssivalvonta).

[27] During 2014, Slovakia's central bank issued a recommendation limiting the maturity of new mortgages to 30 years. In 2012, Hong Kong introduced a mortgage prepayment period of 30 years. However, since the average mortgage prepayment period in Hong Kong is about 25 years, the requirement is not binding for many households. Correspondingly, Singapore introduced a mortgage prepayment period of 35 years in 2012. In addition, the mortgage cap for loans subject to a longer prepayment period was reduced for loans with a prepayment period exceeding 30 years as well as for loans planned to be paid off completely by the retirement age (65 years).

[28] The definition of a new mortgage varies among the banks. One alternative is to comply with FI's definition in conjunction with the introduction of the mortgage cap, since the mortgage cap applies only to new lending. According to FI's definition, new lending refers to the granting of new credit or an increase in credit already received by the customer from the company. If the underlying collateral for a loan is altered, such as in conjunction with relocation, the loan is regarded as being new. However, if customers switch their loan to another bank without increasing their credit, this is not regarded as a new loan. For more information, please see *Allmänna råd om begränsning av lån mot säkerhet i bostad*, (*General guidance on the limitation of loans secured by a dwelling*), FI 2010.

proposals, which means that a calculation of the potential effects of amortisation must by necessity be based on assumptions.

One interpretation of the Swedish Bankers' Association's recommendation is that mortgage borrowers with a debt exceeding 70 per cent of the residence's value (LTV>70 per cent) pay down at a faster rate than mortgage borrowers with a lesser amount of debt. Thus, it is assumed in the calculations that mortgage borrowers with a loan-to-value ratio exceeding 70 per cent should amortise 2 per cent of the mortgage annually, while mortgage borrowers with an LTV of between 50 and 70 per cent should only pay down one per cent of the mortgage annually. In the calculations, it is also assumed that the amortisation period is determined on the basis of the acquisition value of the residence. For both examples, effects are presented for typical household as well as for the aggregate debt ratio, consumption, GDP and real house prices.

Example 1: New mortgages repaid over 35 years

This example is designed so that all new mortgage borrowers in Sweden are subject to a requirement that the entire new mortgage will have to be repaid over 35 years.

For a household with low indebtedness in relation to its income (with new mortgages totalling SEK 257,750) this results in a requirement that repayments of the new mortgages would initially account for 1.8 per cent of the household's disposable incomes (SEK 767 per month). For a household with average mortgage indebtedness and new mortgages of SEK 637,500, the requirement would meant that mortgages accounted for 4.8 per cent of disposable income.[29] For a household with high mortgage indebtedness and new mortgages of SEK 1,530,000, the comparable figure would be 10.1 per cent of disposable income. This can be compared with the amortisation payments the three household groups have today of 0.9 per cent, 1.3 per cent and 2.7 per cent, respectively, of their disposable incomes (see Table 1 below and Table B2 in Appendix 2).

Over a long time and compared with a base scenario, where no measures are taken, the requirement is expected to reduce the debt ratio of the Swedish household sector by 31 percentage points (see Chart 2 below). At the same time, the long-term impact on GDP is expected to be small. During a transitional phase, however, the amortisation requirement will dampen growth. If house prices fall with 12 per cent compared to a starting position, GDP and consumption is estimated to be at most nearly 2 per cent and about 2.5 per cent, respectively, lower than in a base scenario (see Table B4 in Appendix 3).

Example 2: Interpretation of Swedish Bankers' Association's proposal

This example is designed so that all new Swedish mortgage borrowers with a loan-to-value ratio (LTV) exceeding 50 per cent will have to repay their mortgages. The calculations are based on the Riksbank's interpretation of the Swedish Bankers' Association's proposal and entail that all new borrowers with a loan-to-value ratio exceeding 70 per cent will repay 2 per cent of their mortgages per year and that all

[29] The mortgage borrowers are sorted in accordance with the size of the ratio between new mortgages and disposable income. The household with average mortgage indebtedness is represented by the median for new borrowers between the 45th and the 55th percentile.

- new mortgage borrowers with a loan-to-value ratio of more than 50 per cent will repay 1 per cent of the mortgage per year.[30]

For a household with low indebtedness in relation to income, this results in a requirement that repayments of the new mortgages would initially account for 1.1 per cent of disposable incomes, for a household with average mortgage indebtedness it would account for 3.0 per cent of disposable incomes and for a household with high mortgage indebtedness, it would account for 6.9 per cent of disposable incomes (see Table 1 below and Table B2 in Appendix 2).

Over a long time and compared with a base scenario, where no measures are taken, the requirement is expected to lead to a decline in the debt ratio of 13 percentage points (see Chart 2 below). With this requirement, the annual growth in debt would be at most approximately 0.5 per cent higher than in the calculation in Example 1. The long-term impact on GDP is again estimated to be small in this example. During a transitional phase, the effect on the GDP and consumption level is expected to be slightly less than in Example 1. At most, the levels are estimated to decline by approximately 1 per cent in relation to a base scenario. This is in the event of an estimated decline in housing prices of at most 5 per cent (see Table B5 in Appendix 3).

Alternative calculations

An amortisation requirement can be designed in many different ways. For example, the amortisation period could be both shorter and longer than in the calculations in Example 1. Chart 2 below provides an illustration of the impact on the aggregated debt ratio if the repayment period in Example 1 is extended to 40 and 50 years. The estimated impact on the debt ratio is then less than in Example 1 but exceeds the estimated effect based on the Riksbank's interpretation of Swedish Bankers' Association's proposal.

Behavioural changes could impact the outcomes

However, the estimated effects in the examples above should be interpreted cautiously. If households change their behaviour patterns in a way that is not captured by the models, this could affect housing prices. The calculations show that the effect of an amortisation requirement on GDP and consumption would be greater in the event of a significant decline in the price of housing. If an amortisation requirement were to lead to a more severe price fall than estimated, the high household indebtedness could reinforce the adverse impact on the economy. However, there are arguments suggesting that the real economic effects of an amortisation requirement could be less. If, in a situation of low interest rates, measures are implemented to affect the scope for household consumption, the effect of the measures would probably be less than if the measures were implemented in a situation of normal interest rates.[31]

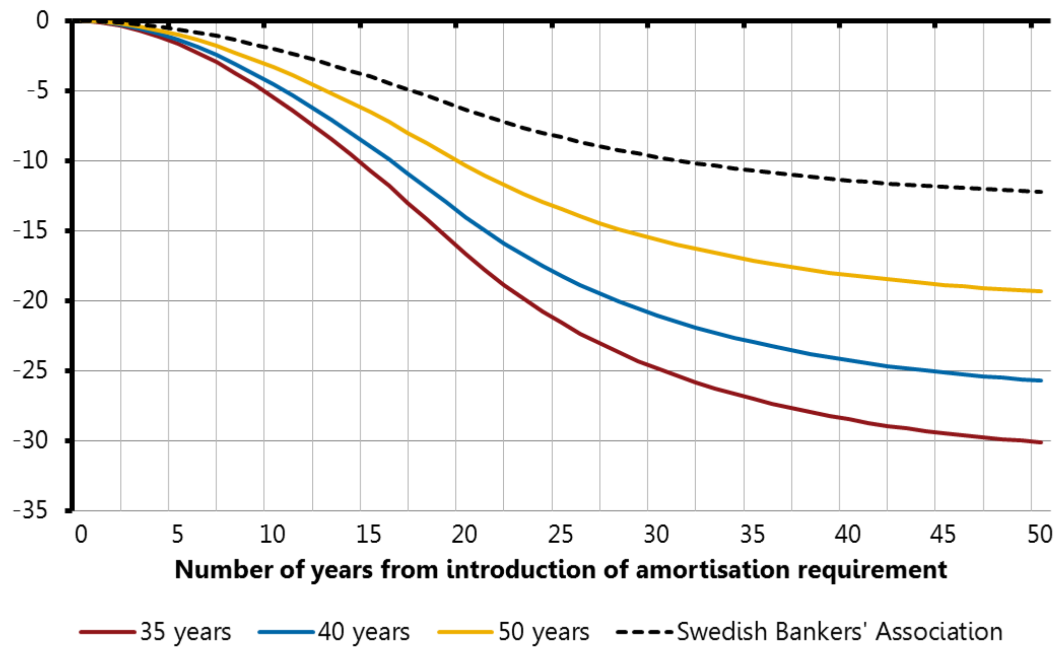
[30] The calculations exclude potential revaluations of homes.
[31] "Monetary policy and macroeconomic supervision in a globalised world", Stefan Ingves, address at the National Economic Association, Stockholm, May 2014.

Table 1. Typical borrower (new mortgages)

	Lowly indebted	Average indebted	Highly indebted
	Amortisation amount (SEK/month)		
Debt ratio (LTI)	59	162	352
Amortisation at present	281	395	948
All new mortgages over 35 years (difference compared with today within parentheses)	767 (486)	1,642 (1,247)	3,685 (2,737)
Interpretation of Swedish Bankers' Association’s proposal (difference compared with today within parentheses)	385 (104)	850 (455)	2,160 (1,212)
	Amortisation as a percentage of disposable income (%)		
Amortisation at present	0.9	1.3	2.7
All new mortgages over 35 years	1.8	4.8	10.1
Interpretation of Swedish Bankers' Association’s proposal	1.1	3.0	6.9

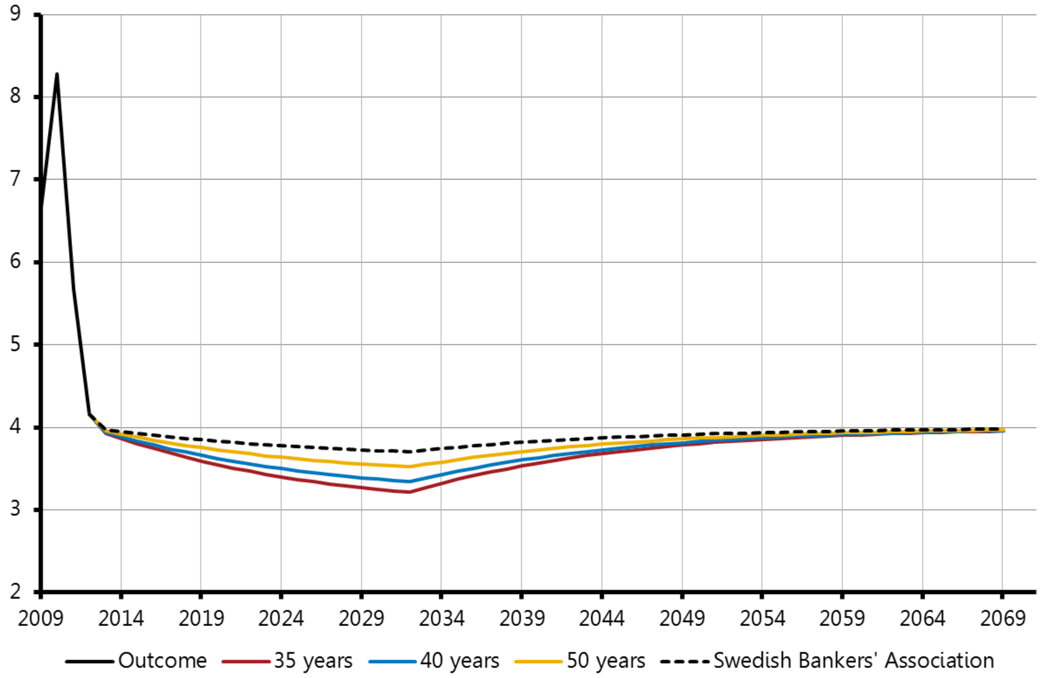
Note. The mortgage borrowers are sorted in accordance with the size of the ratio between new mortgages and disposable income. Borrowers with low mortgage indebtedness are represented by the median for borrowers between the 20th and 25th percentile, borrowers with average mortgage indebtedness by the median for borrowers between the 45th and 55th percentile and those with high mortgage indebtedness by the median for borrowers between the 75th and the 80th percentile.
Source: The Riksbank

Chart 2. Trend in the aggregated debt ratio compared with a base scenario assuming various amortisation requirements



Note. The interpretation of the Swedish Bankers' Association recommendation is that mortgage borrower with an LTV exceeding 70 per cent will amortise two per cent of the mortgage per year and mortgage borrowers with an LTV of between 50 and 70 per cent will only have to amortise one per cent of the mortgage per year.
Source: The Riksbank

Chart 3. Annual change in debt stock assuming various amortisation requirements
Per cent



Note. The interpretation of the Swedish Bankers' Association recommendation is that mortgage borrowers with an LTV exceeding 70 per cent will amortise two per cent of the mortgage per year and mortgage borrower with an LTV of between 50 and 70 per cent will only have to amortise 1 per cent of the mortgage per year.
Source: The Riksbank

Other measures aimed at household indebtedness

There are also other measures that can be used to dampen household indebtedness, measures that are often mentioned by international observers, such as the various restrictions that can be made on how much households are to be permitted to borrow. This could be done by imposing a lower mortgage cap that limits the maximum permissible size of a mortgage in relation to collateral. Another alternative would be to limit the mortgage in relation to income, meaning an LTI (loan-to-income) requirement or to reintroduce a property tax. On top of this, it is important to create a better and more robust system for granting credit for the financing of homes. The Riksbank in, inter alia, its Stability Report, has pointed to how the banks' discretionary income calculations should be improved.[32]

Measures that directly impact household incentives to borrow could also be used to dampen their indebtedness. An example of such a measure would be a reduction in the tax deduction for interest payments. At present, when interest rates are historically low, such an adjustment would not affect household consumption as severely as in a situation of normalised level of interest rates. Another example would be restrictions on how much of the total mortgage would be permitted to carry a variable interest rate, which would normally have an impact on the households' interest expense and thus lead to reduced demand for mortgages.

32 See The Riksbank, Financial stability 2014:1, June 2014.

- As discussed above, the accumulation of debt in recent years tracks the trend in housing prices in Sweden. To some extent, the fact that house prices have risen, particularly in major cities, can be explained by a poorly functioning housing market, which in turn is due to a low supply of housing. Accordingly, measures designed to restrict the amount that the households will be permitted to or want to borrow must be combined with measures aimed at increasing the supply of housing units.