Analysis

How can we dampen the build-up of housing price bubbles?

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Finland has prepared for risks on residential mortgage loan markets by setting a maximum loan-to-value ratio for housing loans. In addition, preparations are currently underway for imposing minimum risk weights on housing loans granted by banks. On top of these, to curb borrowing it would be advisable to consider the adoption of tools that take household income into account, such as loan-to-income caps. In this article, we use simple examples to illustrate how such instruments could be deployed to restrain dangerous growth in lending for house purchase and household debt, but will not express an opinion on the superiority of one tool over the others. Different instruments supplement each other, and no individual tool can solve all problems.

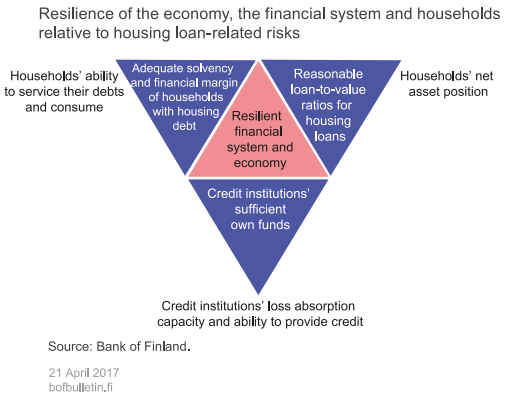


Household indebtedness and structural vulnerabilities on the Finnish housing market have already for some time been causing concern for the relevant authorities. Steps have already been initiated to forestall these risks. A maximum loan-to-value ratio (loan cap) restricting the maximum size of new housing loans relative to the collateral provided for the loans entered into force in July 2016. Meanwhile, the Financial Supervisory Authority (FIN-FSA) is preparing the imposition of minimum risk weights for housing loans in the calculation of banks' capital requirements.[1]

The maximum loan-to-value ratio will reduce, among other things, the likelihood of the value of household housing wealth falling below the value of housing debt if housing prices fall strongly (the right-hand vertex of the 'safety triangle' in the chart). The more certain it is that the value of household housing wealth remains higher than debt, the lower will also be the risk of loan losses for banks. Another aim of the maximum loan-to-value ratio is to help prevent excessive volatility in housing prices.

Minimum risk weights, in turn, maintain banks' loss-absorption and lending capacity in serious housing market disruptions (the lowest vertex of the triangle). Other decisions on tightening capital requirements for banks have a similar effect.

Chart 1.



However, the Finnish authorities lack binding tools to ensure households' debt-servicing ability (the left-hand vertex of the triangle). The following simplified examples illustrate that these instruments could be useful particularly in a strong housing market boom, where the rise in housing collateral values and lending for house purchase begin to reinforce each other. Having reached an unsustainable level, such an upward spiral could unravel at the turning of the business cycle and manifest itself in the form of a strong decline in collateral values, which would aggravate economic problems by increasing banks' loan losses and reducing consumption by indebted households.

A rise in house prices feeds households' borrowing capacity

We shall examine an example, the Korhonen household, who are planning a house purchase. The Korhonens have EUR 20,000 in savings. The home to be purchased is the only asset item they can provide as collateral for their housing loan (Table 1).

Table 1.

Maximum size of the Korhonen family's housing loan and maximum house price at initial stage	
Self-financing share	
LTV	
Maximum size of housing loan	
Maximum price of home to be purchased	
Source: Bank of Finland.	

If the housing loan is subject to a 90% maximum loan-to-value ratio, the Korhonens will be able to purchase a home worth at most EUR 200,000 by using their savings (EUR 20,000) as the self-financing share of the new home and by taking out the maximum loan allowed by the loan cap, EUR 180,000 (0.9 x EUR 200,000 = EUR 180,000). By restricting the size of the housing loan of the Korhonen family and other households in a similar situation, the loan cap can rein in the granting of housing loans and the rise in house prices.

We assume, however, that the Korhonens purchase their home just before a rapid housing price increase of 5%, which boosts the value of the Korhonens' home, bringing it to EUR 210,000. The Korhonens decide to make use of the rise in the (collateral) value of their home and take out a bigger housing loan and purchase a bigger home.

The Korhonens sell their home and pay off their housing debt, whereupon they will be left with EUR 30,000 as a self-financing share for the purchase of a new home. This higher self-financing share, which is required to account for at least 10% of the total house price, now enables the Korhonens to take out a loan of EUR 270,000 and purchase a home worth EUR 300,000 (Table 2).[2, 3]

Table 2.

Higher house prices boost the borrowing capacity of households that own their home		
	Initial situation	**House prices rise by 5%**
Self-financing share, EUR	20,000	30,000
Maximum size of housing loan, EUR	180,000	270,000
Maximum price of home to be purchased, EUR	200,000	300,000
Source: Bank of Finland.		

In the example, the 5% rise in housing prices 'leverages' the Korhonens' borrowing capacity by as much as 50%, from EUR 180,000 to EUR 270,000. The example shows how the rise in housing prices and, simultaneously, collateral values may lead to the taking out of still bigger housing loans. Growth in loan size, in turn, feeds the demand for housing, which further raises house prices and collateral values, thereby encouraging even faster borrowing. Admittedly, the maximum loan-to-

value ratio could be lowered to, for example, 85% in order to rein in borrowing by the Korhonens and other households. On the other hand, such tightening could increasingly spur circumvention of the restriction and lead to supplementing housing loans with consumer credit.

Application of income-linked loan cap hinders a dangerous spiral

Many countries restrict the maximum size of new housing loans relative to household income. Regulation can, for example, limit the maximum size of 1) a housing loan to be taken out or 2) a household's total loans relative to its annual (regular) disposable income (loan-to-income [LTI] cap and debt-to-income [DTI] cap).

We assume that in Finland, in addition to the maximum loan-to-value ratio currently in place, there would be a loan-to-income (LTI) cap of 500% for the ratio of a housing loan to disposable annual income. We further assume that the Korhonen family's disposable annual income is EUR 40,000.

The loan-to-income cap would restrict the maximum size of the Korhonen family's housing loan to EUR 200,000.[4] Accordingly, the loan-to-income cap would not initially have any impact on the Korhonens' house purchase, as the 90% maximum loan-to-value ratio would already otherwise restrict the maximum size of their loan to EUR 180,000. (According to economic terminology, the maximum loan-to-value ratio would initially impose a 'binding constraint' on the Korhonens.)

By contrast, the application of provisions concerning the loan-to-income cap would dampen the mutually reinforcing dynamics of house prices and borrowing more effectively than the maximum loan-to-value ratio (Table 3). In accordance with the above example, we assume that the value of the Korhonens' home would grow to EUR 210,000 and that, inspired by this, the family would embark on the purchase of a new home. The rise in house prices has no effect on the loan-to-income cap, on the basis of which the Korhonens could still not borrow more than EUR 200,000. This would make it possible for them to purchase a home of EUR 230,000 at most (a housing loan plus EUR 30,000 in self-financing share).

Table 3.

Use of the loan-to-income (LTI) cap curbs the mutually reinforcing spiral of house prices and lending for house purchase		
	LTV 90%	**LTI 500%**

Use of the loan-to-income (LTI) cap curbs the mutually reinforcing spiral of house prices and lending for house purchase		
Maximum size of housing loan, at initial stage, EUR	180,000	200,000
Maximum price of home to be purchased, at initial stage, EUR	**200,000**	220,000
Maximum size of housing loan, when prices rise by 5%, EUR	270,000	200,000
Maximum price of home to be purchased, when housing prices rise by 5%, EUR	300,000	**230,000**
Source: Bank of Finland.		

Although the loan-to-income cap resembles the maximum loan-to-value ratio, it is better suited, in terms of its structure, for curbing lending in a situation where house prices are already rising rapidly. The loan-to-income cap binds the amount of lending to the development of disposable income, which is typically more stable than the development of house prices.

Application of the loan-to-income cap alone would allow borrowing by those households which have only little in the way of own funds but high income for loan-servicing. However, the loan-to-income cap would not prevent a situation from occurring where a household's housing wealth would fall below its housing debts. Thus, in the presence of the loan-to-income cap but in the absence of the maximum loan-to-value ratio, households would remain highly exposed to disruptions affecting their own finances or the macro economy and banks would be exposed to relatively large credit risks. Consequently, it would be warranted to simultaneously apply both a loan-to-income cap and a maximum loan-to-value ratio.

Financial margin requirements and debt service-to-income ratios are income-linked loan caps

In 2010, the FIN-FSA issued to Finnish banks a still valid recommendation for making a financial margin calculation in respect of applicants of new housing loans. According to the recommendation, banks should check customers' financial margin in a situation where the loan

interest rate is 6% and the loan is repayable (by regular instalments) in no more than 25 years. The FIN-FSA recommends that banks take such financial margin calculations into account when making loan decisions.

Several countries have set the financial margin requirement as a binding obligation (a binding financial margin requirement is also referred to as the debt service-to-income [DSTI] ratio) and is used as a macroprudential tool. The DSTI ratio also indirectly restricts the maximum size of a new housing loan by aligning it relative to the applicant household's income (Table 4).

We can assume, for example, that the FIN-FSA's financial margin recommendation is actually binding, so that monthly expenditures for the service of a new housing loan (amortisations and interest expenses) would not be allowed to exceed 40% of the household's monthly income in a situation according to the financial margin calculation. Under this constraint, the Korhonens could take out a housing loan of about EUR 207,000 at most.[5]

Table 4.

How will an increase in disposable annual income affect the maximum size of a housing loan according to a binding financial margin requirement?*

Disposable annual income, EUR	Maximum size of housing loan, EUR
30,000	155,000
40,000	207,000
50,000	259,000

*The assumption in the calculation is for the loan to be an annuity loan, with an interest rate of 6% and a loan period of 25 years.

Source: Bank of Finland.

A binding financial margin requirement, like loan-to-income caps, would dampen the mutually reinforcing harmful dynamics of house prices and borrowing, as higher house prices do not increase households' disposable income. In order to prevent a binding financial margin requirement from leading to a detrimental lengthening of housing loan periods, it might be necessary in that connection to also restrict the maximum maturity of housing loans.

Loan amortisation requirements and maximum maturities rein in debt levels

In some countries, household indebtedness and housing loan size are reined in by maximum loan maturities or amortisation requirements. Amortisation requirements for housing loans influence households' risk resilience in a manner similar to that of the maximum loan-to-value ratio currently in place in Finland.

The maximum loan-to-value ratio ensures that LTV ratios for new housing loans are reasonable relative to the value of housing (and other collateral) at the time of loan approval (the right-hand vertex of the triangle in the chart). Meanwhile, regular and rapid loan repayment reduces loan-to-value ratios for loans during the loan repayment period, thereby boosting the household sector's risk buffers.

The lengthening of average housing loan repayment periods would appear to have previously been strongly linked with the household sector's higher indebtedness (for more information on risks related to housing loans with long maturities, see the article 'Risks in long-term and large housing loans – Sweden's worry is also ours' [LINK]. Restricting the maximum maturity of loans (supplemented with a requirement for regular loan amortisation) would thus provide the authorities with one of the potential means of curbing growth in average housing loan size and related household indebtedness.

In what follows we will examine how longer housing loan maturities may increase the size of new housing loans (Table 5). In accordance with the previous example, the Korhonens are assumed to be ready to use up to EUR 1,333 per month for the monthly servicing of their housing loan. Moreover, they are prepared to take out a loan with the longest maturity legally permitted.

The longer the permitted housing loans are, the bigger is the loan taken out by the Korhonens. If most households are to behave as the Korhonens, the lengthening of loan maturities will increase household debt levels. Conversely, restricting maximum loan maturities will reduce or slow down the accumulation of debt.

Table 5.

Longer loan periods increase housing loan size*	
Maximum housing loan maturity (years)	**Size of the Korhonens' housing loan, EUR**
20	186,000

Longer loan periods increase housing loan size*	
25	207,000
30	222,000
*Using a loan calculator, we can obtain the size of a housing loan by setting the maximum housing loan maturities in the table as loan periods in the calculator and the (stressed) interest rate on the loan at 6% and by testing which loan size produces the monthly loan-servicing expenditure of EUR 1,333.	
Source: Bank of Finland.	

We must learn from international experiences

The examples outlined here indicate that housing market risks and vulnerabilities can increase in different ways and that several diverse tools may be needed to prevent such risks. The phenomenon is not limited to Finland alone, but has been recognised in several other countries, too. Some of these countries have already introduced a number of constraints on lending for house purchase. It is worthwhile to closely assess experiences elsewhere when considering additions to the toolkit in Finland.

Several countries have first addressed the development of residential mortgage loan markets by recommendations or other guidance, but it has later been deemed better to replace recommendations with binding measures. A recent example of this is Slovakia, where a recommendation for broad-based curbing of lending for house purchase was issued in 2014. This recommendation was supplemented at the beginning of 2017 and transformed into a binding restriction based in law. The procedure was similar in Finland, where the maximum loan-to-value ratio was first preceded by a corresponding recommendation. By contrast, Finland still has in place the recommendation issued by the FIN-FSA for a financial margin calculation.

Despite more widespread use of binding instruments, it is worthy of note that banks have typically been allowed to deviate from the restrictions in certain areas of their lending for house purchase. Such deviations provide banks with flexibility in their business, while the tool enables prevention of excesses in overall lending.

One pioneer country in the application and analysis of instruments warding off risks on residential mortgage loan markets is Ireland, which introduced both a maximum loan-to-value ratio and a loan-to-income cap in 2015. The effectiveness of these instruments was reviewed in an assessment published in late 2016. The review led to changes in some of the criteria of the tools,

but the general estimate was that the tools are appropriate and effective for the purpose of reducing the likelihood and implications of future crises. In addition to Ireland and other countries, the Netherlands, Lithuania, Estonia and several Central European countries have currently in place both a maximum loan-to-value ratio and a loan-to-income cap.

Notes

1. See a press release on the decision by the Board of the Financial Supervisory Authority http://www.finanssivalvonta.fi/en/Publications/Press_releases/Pages/05_2017.aspx. ↑
2. The maximum euro amount of a housing loan according to the maximum loan-to-value (LTV) ratio for household i, LiLTV, is obtained from the formula LiLTV= ORi X {[100%/(100% – LTV)] – 1}, where ORi means the self-financing share (in euro) of the household under review (i) and LTV the size (in %) of the maximum loan-to-value ratio. The formula shows that a rise in the collateral values of housing units and, by extension, higher self-financing shares increase in a linear fashion the maximum size of a loan based on the maximum loan-to-value ratio. ↑
3. In reality, the Korhonens will not automatically be granted a loan as large as this if banks, for example, deem the loan too big relative to the loan-servicing capacity of the Korhonens. ↑
4. The maximum size of a housing loan according to the loan-to-income (LTI) cap for a household i, LiLTI, is obtained from the formula LiLTI= (LTI/100%) X Ii, where LTI means the maximum ratio (in %) of a housing loan to disposable annual household income and Ii the annual disposable income of the household i. ↑
5. According to the debt service-to-income ratio, DSi(Li)/Iikk ≤ DSTI/100%, where DSi means the applicant household's (i) monthly 'stressed' housing loan servicing expenditures, which are a growing function of the size of the housing loan. The variable Iikk means the household's monthly disposable income, and DSTI the size of the debt service-to-income ratio in % set by the authorities. In our example, DSTI = 40% and the Korhonens' monthly disposable income is EUR 40,000/12 = EUR 3,333 per month. Consequently, the Korhonen family's monthly stressed housing loan servicing expenditures may not exceed about EUR 1,333 per month. The simplest way of finding out the size of a loan corresponding to these servicing expenditures is, for example, to use loan calculators on banks' websites and to set the loan period in the calculator at 25 years, the loan interest rate at 6% and the repayment method as a fixed annuity loan and to test which loan size produces the monthly repayment amount of EUR 1,333. ↑

Keywords

households, housing loans, indebtedness, macroprudential instruments