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Bank of Finland Financial Stability Report

One of the Bank of Finland's core tasks is to contribute to the reliable, efficient and stable functioning of the financial markets. The Bank conducts regular analyses of the vulnerabilities and risks related to the financial system that could trigger or exacerbate economic disruptions. These are not forecasts, but analyses of potential financial market developments.

The financial stability analysis published on the Bank of Finland website is intended for financial market participants, other authorities and the general public to provide information and promote discussion on financial stability. The objective is to ensure that these parties take the current condition of and future outlook for the financial system into consideration in their operations. In addition to the stability analysis, the publication features articles of topical interest.

The contents of the Bulletin may be freely quoted, but due acknowledgement is requested.

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EDITORIAL

Rising household debt poses risk to the economy

16 MAY 2018 11:00 AM • BANK OF FINLAND BULLETIN 2/2018 • EDITORIAL

The primary purpose of the macroprudential measures that restrict lending for house purchase is to reduce the economy's exposure to risks stemming from high household indebtedness. These risks are realised when indebted households respond to disturbances in the economy by sharply reducing consumption. Macroprudential policies that impose capital buffer requirements for banks, on the other hand, are designed to ensure that the banking system's lending capacity and ability to function remain satisfactory under all economic conditions.



The Bank of Finland as well as many other authorities and international organisations have repeatedly drawn attention to the risks associated with Finland's household debt and its growth. To mitigate these risks, the Board of the Financial Supervisory Authority (FIN-FSA) recently took a macroprudential decision to tighten the maximum loan-to-collateral ratio for housing loans. It had previously issued banks with a minimum level for the average risk weight on housing loans.

Why do authorities warn against household indebtedness and impose restrictions on bank lending for house purchase, even though housing loans did not result in significant loan losses even during Finland's economic and banking crisis in the 1990s? Why is rising household debt seen as a threat to the economy, despite evidence that the majority of households remain diligent in their repayments and are able to repay their loans within a reasonable timeframe?

The issue lies in the detrimental impact that indebtedness can have on households' and, subsequently, the economy's ability to respond to negative economic shocks. Indebted households and businesses typically react to economic disturbances by sharply reducing consumption and postponing investments. Households will increase their savings and continue to service their debts but will readily cut back on all non-compulsory consumption.

Businesses will respond to the resulting shortfall in demand by reducing output, resulting in layoffs and redundancies. If prolonged, recessions especially increase the risk of bankruptcy in industries that are sensitive to the business cycle, such as construction. Bankruptcies lead to loan losses for creditors, weakening the capital adequacy and lending capacity of banks. Reduced lending can diminish economic activity even further, ultimately deepening the recession.

Crises that are exacerbated by household indebtedness do not necessarily result in large housing loan losses for banks. Instead, indebtedness may have second-round effects and increase loan losses in other sectors, should, for example, the effects of weakening aggregate demand reduce the sustainability of corporate debt.

The lion's share of household debt consists of housing loans, so it is well-grounded to address indebtedness by targeting macroprudential policy on lending for house purchase; however, consumer credit and housing company loans have also added to the debt burden of households in recent years. Moreover, while digitisation may provide households with better access to financial products and services, it also risks creating new avenues for debt accumulation.

The Ministry of Justice's investigation into establishing a positive credit register in Finland is a welcome development. The register would provide more comprehensive and up-to-date data on the components and overall distribution of household debt. The macroprudential toolkit should be further supplemented with discretionary measures that could limit the maximum maturity of new housing loans or their maximum size relative to household income.

The existing macroprudential toolkit was complemented last year by a discretionary additional capital requirement, i.e. the systemic risk buffer. This provides authorities with better means to safeguard the lending capacity and solvency of Finland's systemically vulnerable banking system. The expansion of the macroprudential toolkit coincides with the relocation of Nordea's corporate headquarters to Finland, turning the country's banking sector into one of Europe's largest relative to GDP.

Helsinki, 15 May 2018

Marja Nykänen
Member of the Board

Tags

[systemic risks](#), [indebtedness](#), [positive credit register](#), [macroprudential toolkit](#)

Lowering the loan cap will reduce the risks associated with debt

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 2/2018 • FINANCIAL STABILITY

A macroprudential decision taken by the Financial Supervisory Authority's Board in early spring to tighten the maximum loan-to-collateral (LTC) ratio for housing loans will bolster the stability of the Finnish financial system. The policy adjustment will help curtail growing household indebtedness by restricting the provision of large housing loans relative to collateral and by increasing awareness of the risks inherent in such loans. It will not, however, remove the risks associated with outstanding household debt and its protracted growth. New macroprudential tools are still required to contain growing indebtedness.



Currently, the lion's share of household debt is in housing loans; however, housing company loans and consumer credit have also added to the debt burden of households. The indirect nature of housing company loans may encourage households to take on debt beyond their repayment capacity. Consumer credit growth is partly due to credit institutions easing their lending standards.

Households ought to be well aware of how rising interest rates and the expiration of amortisation-free periods might impact debt-servicing costs on housing company loans. Lenders must recognise the risks and responsibilities associated with housing company loans and take these into account when evaluating the repayment capacity of households and housing companies.

The relocation of Nordea's corporate headquarters to Helsinki will add to the Finnish banking system's systemic risk by increasing the banking sector's size and interlinkage within the Nordic countries. Capital adequacy must be particularly strong when a banking system has clear systemic vulnerabilities. The recently introduced systemic risk buffer will allow macroprudential policymakers to boost the banking sector's ability to withstand losses and protect its lending capacity.

A strong capital position protects Finland's banking system against external risks, such as those relating to housing market failure and other systemic vulnerabilities within the Nordics. In particular, a severe downturn on the Swedish housing market might compromise the lending capacity of Nordic banks and hamper their access to funding on the international financial markets.

Completing Banking Union by implementing its third pillar, i.e. the single European Deposit Insurance Scheme, would strengthen financial stability across the entire euro area. Deposit insurance contributions collected from banks should be based on the risks caused to the deposit insurance scheme by the activities of individual banks.

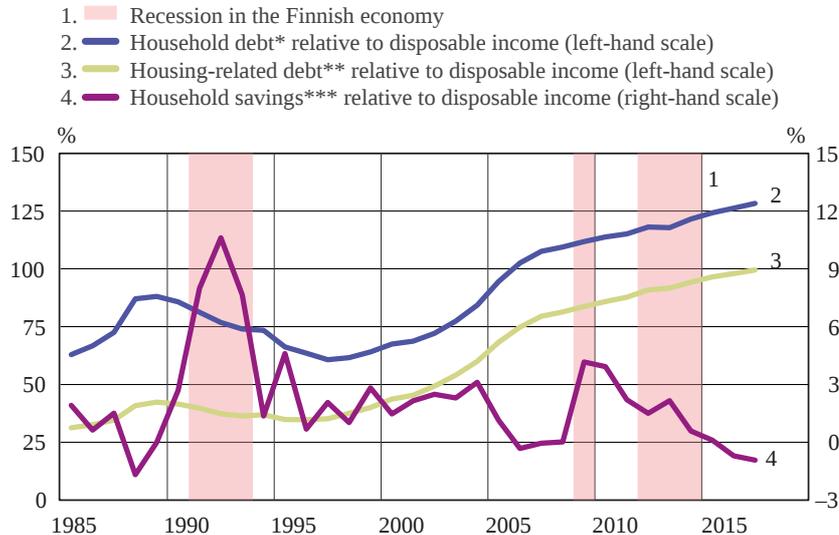
The ongoing digitalisation of the financial services industry will continue to promote competition within the sector and result in new products and services for consumers. This comes at the expense of an increasingly complex operating environment, one that is both fragmented and networked. As such, the importance of cyber security and consumers' good level of financial literacy will become all the more important in the future.

Household indebtedness poses risk to financial stability

In March 2018, the Board of the Financial Supervisory Authority (FIN-FSA) decided to lower the maximum loan-to-collateral (LTC) ratio, i.e. the loan cap, for housing loans other than first-home loans from 90% to 85%. The decision will enter into force in July, and will mitigate household indebtedness and strengthen mortgage borrowers' risk resilience. Household indebtedness is at a record high in Finland (Chart 1). Debt has been accumulating for many years, and is concentrated on a proportion of households. Households that are heavily indebted relative to their income and assets are vulnerable to higher interest rates, income losses and falling house prices.

Chart 1.

Households accumulating debt and spending a lot relative to income



*Incl. estimated housing company loans. ** Housing loans and housing company loans.

***Income minus consumption expenditure.

Sources: Statistics Finland and calculations by the Bank of Finland.

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Household indebtedness is estimated to increase further, fuelled by favourable borrowing conditions. The interest rates on new housing loans have declined to record low levels, loan margins have narrowed and repayment periods have lengthened. The upswing in the Finnish economy strengthened in 2017, and economic growth is expected to continue. Strong consumer confidence in the economy, exceptionally low interest rates and improved employment will boost household consumption, but also household indebtedness. In the immediate years ahead, household consumption expenditure is forecast to remain higher than disposable income, thereby keeping the household sector savings ratio in negative territory.^[1]

Economic recessions that follow debt-driven upswings are typically deeper and longer than other downturns.^[2] Indebted households are prone to cut their spending during an economic downturn, which leads to even weaker economic developments (see [Household indebtedness contributing to corporate loan losses](#)). History has shown that growth in mortgage lending predicts financial crises more strongly than growth in other lending.

1. <https://www.bofbulletin.fi/en/2017/5/forecast-upswing-more-broadly-based-improved-chances-for-balanced-growth-in-finland/>

2. Jordà, Ò. – Schularick, M. – Taylor, A. M. (2016) 'The great mortgaging: housing finance, crises and business cycles', *Economic Policy*, Volume 31, Issue 85, 107–152.

Credit institutions have become more vulnerable to systemic risks from the housing market as mortgage lending and lending for housing construction has taken an increasing proportion of bank lending to the public. Measures have been taken to strengthen credit institutions' resilience against these risks. As of the beginning of 2018, a floor of 15% was set for the average risk weight on housing loans, which is applicable to credit institutions that have adopted the Internal Ratings Based (IRB) approach for calculating regulatory capital requirements. The risk weight floor strengthens banks' capacity to withstand credit losses from mortgage lending even in severe crisis situations.

In addition to reasonable LTC ratios for housing loans and adequate regulatory capital levels of credit institutions, it is also important to ensure that mortgage borrowers' debt-servicing capacity remains sufficient. The Finnish macroprudential toolkit should be supplemented with instruments that have proven effective in other countries in limiting housing loan size or the maximum debt-servicing costs relative to borrower income (see [Instruments designed to mitigate indebtedness](#)). The current loan cap, which is proportionate to the value of all real collateral, should in turn be replaced by a cap set in relation to the value of the property purchased, as is the prevailing practice in many other countries.^[3]

Household indebtedness has many sources

New drawdowns of housing loans were slightly higher in early 2018 than in previous years. However, growth in the stock of housing loans has partly been slowed by the fact that low interest rates have boosted repayment of fixed-installment loans, which in turn has shortened the remaining maturity of these loans. The decline in reference rates has also reduced the service costs of annuity and other fixed period loans.^[4] The effects are opposite when interest rates rise – a fact debtors and creditors should be prepared for.

The structure of housing finance has undergone a change in Finland. The aggregate stock of loans to housing corporations, such as housing companies and rental housing companies, has grown at a rapid pace due to both new construction and renovation work (Chart 2). The vast majority of these loans is taken out by private housing companies owned by residents and investors.

Shareholders of housing companies repay housing company loans in the form of charges for capital costs, which increases their debt-service burden. The indirect nature of housing company loans may tempt households to take out excessively large loans if they do not assess their capacity to service housing companies' high capital charges. Households should be aware of how interest rate hikes and the expiration of possible interest-only periods for housing company loans might impact the costs of servicing these loans and housing company charges. Lenders, in turn, should be able to identify the risks and responsibilities associated with housing company loans and take these into account in estimating households' and housing companies' debt-servicing capacity.

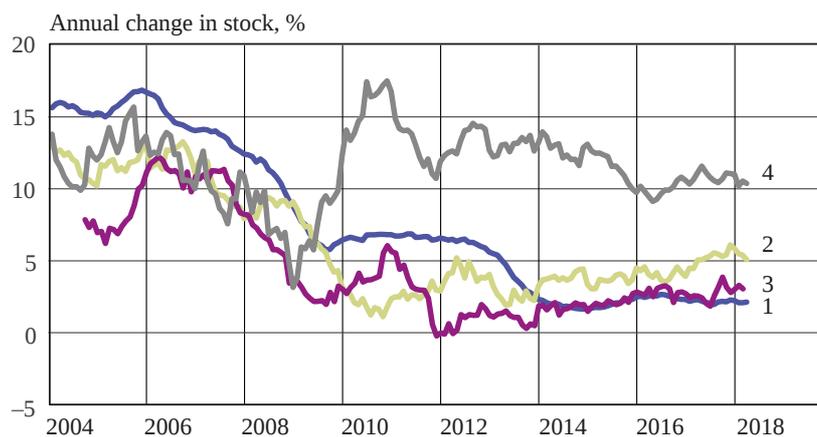
3. It would also be easier to implement the loan cap if credit institutions were allowed to deviate from it for a separately determined proportion of new mortgage lending.

4. According to a Bank of Finland survey on credit institutions, fixed instalment loans accounted for about 40% of the housing loan stock in 2016. According to data collected by the FIN-FSA, fixed instalment loans constituted 27% of the euro volume of new housing loans granted between 1 July 2016 and 31 March 2017.

Chart 2.

Household indebtedness from a variety of sources and purposes

1. Housing loans
2. Consumer credit
3. Other loans to households
4. Loans to housing corporations (incl. housing company loans)



Loans granted by Finnish credit institutions to households and housing corporations.

Source: Bank of Finland.

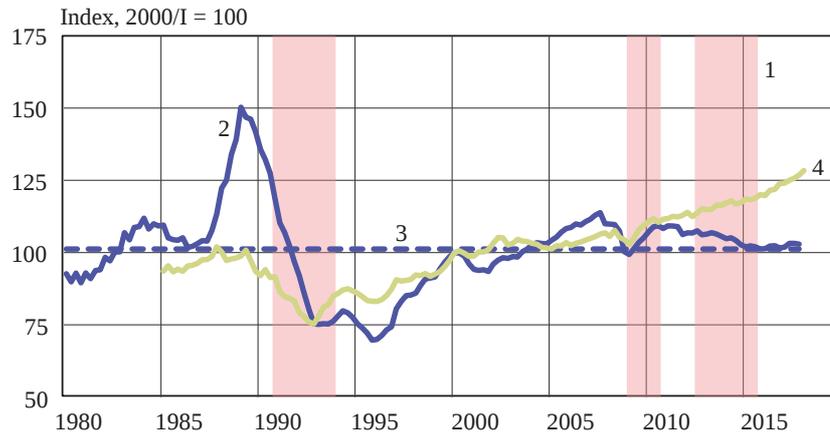
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Housing price developments have been moderate on average over the country as a whole, but price differentials between particularly the Helsinki metropolitan area and the rest of the country have increased throughout the current decade (Chart 3) (see also [Wide regional disparities in Finnish house prices and household indebtedness](#)). Growth in housing construction and accumulation of mortgage debt has concentrated on growth centres. Curbing excessive indebtedness and maintaining healthy lending and debt-servicing practices also support the stability of the housing market. In addition, stable housing market dynamics are important for geographical labour mobility.

Chart 3.

House price developments moderate, but regional differences on the increase

1. Recession in the Finnish economy
2. House prices at overall country level relative to wage and salary earnings
3. Long-term average
4. House prices in Helsinki metropolitan area relative to rest of Finland



Sources: Statistics Finland and calculations by the Bank of Finland.

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The stock of consumer credit has grown at a rapid pace in recent years (Chart 2 above). According to a study^[5] conducted by the FIN-FSA, credit institutions have promoted consumer credit growth in many ways, and in some cases customers' creditworthiness has been assessed based on too little information. Growth has been pursued by, for example, loosening credit criteria, granting larger loans and extending loan repayment periods. While consumer credit has been growing, the number of individuals with payment defaults has simultaneously increased to a new record high.^[6]

In December 2017, the Ministry of Justice launched an assessment of the possibility of establishing a positive credit register in Finland.^[7] Such a register would provide a more comprehensive and up-to-date picture of household debts and their distribution across credit types and households. Utilisation of the register data would help authorities tailor and target measures for mitigating indebtedness and thus promote financial stability and stable economic developments.

5. http://www.finanssivalvonta.fi/en/Publications/supervision_releases/Pages/18_2018.aspx.

6. Suomen Asiakastieto Oy, press release of 6 April 2018.

7. The assessment is scheduled to be finalised by June 2018, see the Ministry of Justice press release of 5 December 2017 (in Finnish): http://oikeusministerio.fi/artikkeli/-/asset_publisher/positiivisia-luottotietoja-koskevasta-jarjestelmasta-selvitys.

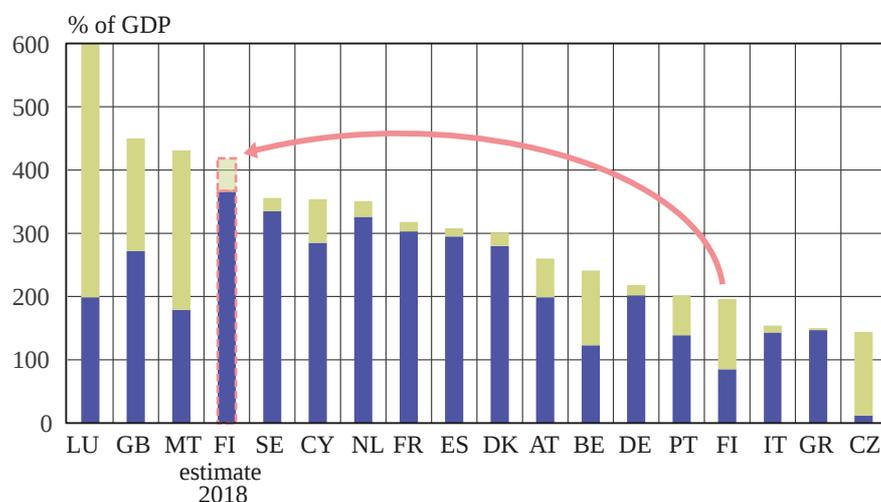
Finnish banks' lending capacity must be ensured with adequate capital requirements

Nordea's Annual General Meeting approved in March 2018 the relocation of the Nordic banking group's parent company to Helsinki. The relocation of the corporate headquarters is scheduled to take place at the beginning of October. As a result, the Finnish banking sector will grow many fold in size and become one of the largest in Europe relative to the size of the economy (Chart 4).

Chart 4.

Nordea's relocation will increase size of Finnish banking sector

1. ■ Total assets of foreign branches and subsidiaries
2. ■ Total consolidated assets of domestic banking groups



LU = 1520%, chart cut for presentational reasons.

Sources: European Central Bank and calculations by the Bank of Finland, 2017/III.

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Nordea's relocation signals trust in the Banking Union and will strengthen the future prospects for the Finnish financial sector. The relocation of the head office of a large international bank such as Nordea will also improve the possibilities for new Finnish financial sector companies (FinTech companies) to cooperate with the banking sector, expand their customer base and strengthen their expertise.

However, the expansion of the banking sector will increase the already high structural vulnerabilities of the Finnish banking system: in addition to its large size, the Finnish banking sector will be highly concentrated and exposed to housing market disruptions and disruptions in other Nordic economies and their financial systems. These disruptions may spread rapidly and become intensified especially in structurally

vulnerable banking systems, as is the case in Finland. In the worst case, they can cause significant macroeconomic costs.

Finland's participation in the EU's Banking Union serves to mitigate the systemic risks associated with the change in the banking sector: single supervision and single resolution will reduce the risks to macroeconomic and financial stability stemming from banks' severe problems (see the Bank of Finland's autumn 2017 financial stability assessment: [Finland's banking sector expands – Banking Union mitigates risks](#)). A common deposit insurance scheme, which is yet to be implemented within the framework of Banking Union, would mitigate the risks further (see [Progress in work to complete Banking Union](#)).

At the beginning of 2018, a new macroprudential tool – the systemic risk buffer – became available to the Board of the FIN-FSA. The systemic risk buffer is an additional capital requirement that can be imposed on credit institutions, whenever necessary, to ensure sufficient loss absorption and lending capacity of the systemically vulnerable banking sector under all circumstances (see [Systemic risk buffer protecting the banking sector under difficult conditions](#)). Imposition of the systemic risk buffer would help to maintain the banking sector operational even under severe disruptions to the financial system.

Imbalances on the Swedish housing market also pose a risk for Finland

The relocation of Nordea's corporate headquarters to Helsinki makes the Finnish banking sector increasingly interconnected with the Nordic banking system and more exposed to the risks of the Nordic economies. In terms of the stability of the Finnish financial system, the major external risks are currently related to the imbalances in the Swedish housing market and their possible second-round effects.

International analyses show that the level of house prices in Sweden is high relative to the long-term average trend. The increase in house prices has been bolstered among other things by the country's favourable economic developments, a low level of interest rates, long average loan repayment periods, urbanisation and the scarce supply and regulation of rented housing.

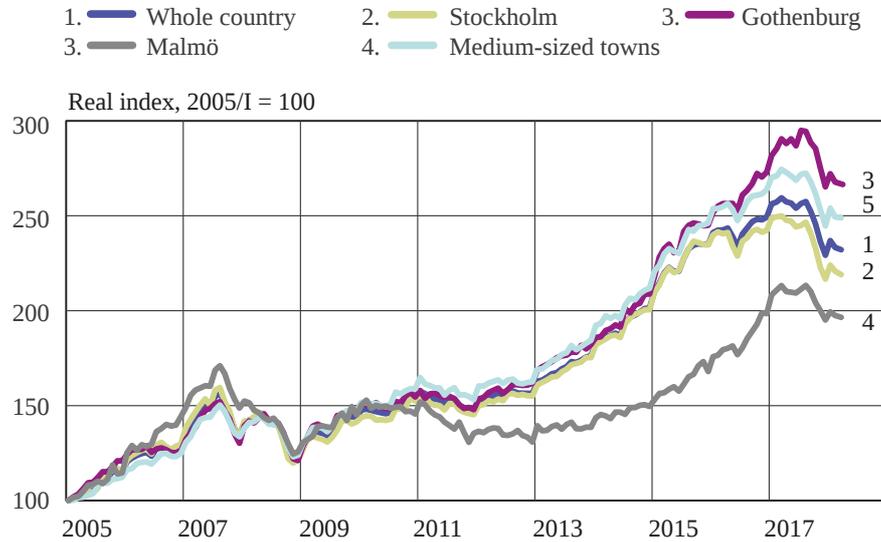
In autumn 2017, house prices declined across the board in Sweden.^[8] For example, prices of flats dropped in real terms by more than 10% over a short period. According to an assessment by the Riksbank, the recent surge in housing construction and, by extension, the supply of housing may have contributed to the drop in prices.^[9] During the first few months of 2018, price developments have become more stabilised (Chart 5).

8. Valueguard HOX price index (<https://valueguard.se/indexes>).

9. Stability Report 2017:2 of the Swedish Riksbank (https://www.riksbank.se/globalassets/media/rapporter/fsr/engelska/2017/fsr-171122/rap_fsr2_171122_eng.pdf).

Chart 5.

Prices of flats in Sweden began to fall in autumn 2017



Sources: Valueguard, European Central Bank, Macrobond and calculations by the Bank of Finland.

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In the worst-case scenario, a plunge in house prices could trigger a negative spiral if a large number of households were to postpone their house purchase in anticipation of further price declines. In such a spiral, a strong contraction in housing demand would bring house sales to a standstill and fuel the price decline further. Dwindling prices could also discourage investment in residential construction and make indebted households cut their consumption. Occurring together, these reactions could have a large negative effect on GDP and employment.

Controlled stabilisation of Swedish house price developments would be welcome for both the country itself and for its neighbours. A steep and abrupt correction in prices in Sweden would also have adverse consequences for the Finnish economy. Slowing economic growth in Sweden would impair Finnish exports, while growing credit risks and loan losses in Sweden could hamper Nordic banks' ability to access funding on the international financial markets, undermining their lending capacity both in Sweden and in other countries.

In addition to the risks on the housing market, many euro area countries have voiced concerns about the increase in commercial real estate prices and the growth in commercial real estate construction. Also in Finland, the professional real estate investment market has expanded in recent years, with a stronger presence of foreign investors (see [The Finnish real estate investment market](#)).

Low risk premia and high valuation levels that expose the securities markets to abrupt corrections in asset prices and risk premia present major threats to the stability of the global financial markets, in addition to the risks related to the real estate market. Share prices dipped worldwide in early 2018, and major fluctuations in share prices have also been witnessed since then. The vulnerabilities of euro area banks, together with concerns about public sector debt sustainability, also pose a risk to financial stability.

Risk resilience of Finnish financial system remains good

The risk resilience of the Finnish credit institutions sector has remained strong overall relative to the credit and other risks addressed in the capital adequacy analysis.^[10]

Common Equity Tier 1 (CET1) ratio^[11] for the credit institutions sector stood at 21.0% at the end of 2017, while the total capital ratio stood at 23.4% (Chart 6). Capital ratios had declined slightly from the year before. By contrast, the leverage ratio for the sector improved to 6.8%. The ratios were higher than in the EU on average, with capital ratios exceeding minimum requirements by a clear margin.^[12]

Capital adequacy ratios declined at the beginning of 2017, in response to the restructuring of the Finnish subsidiary of Nordea into a branch of the Swedish parent company and the decision of the European Central Bank (ECB) to apply a lower risk weight to the retail exposures of OP Group, on a temporary basis. The restructuring of Nordea also contributed to the improvement in the leverage ratio. At the end of 2017, Danske Bank also carried out a restructuring, transferring most of its Finnish business operations to a branch.

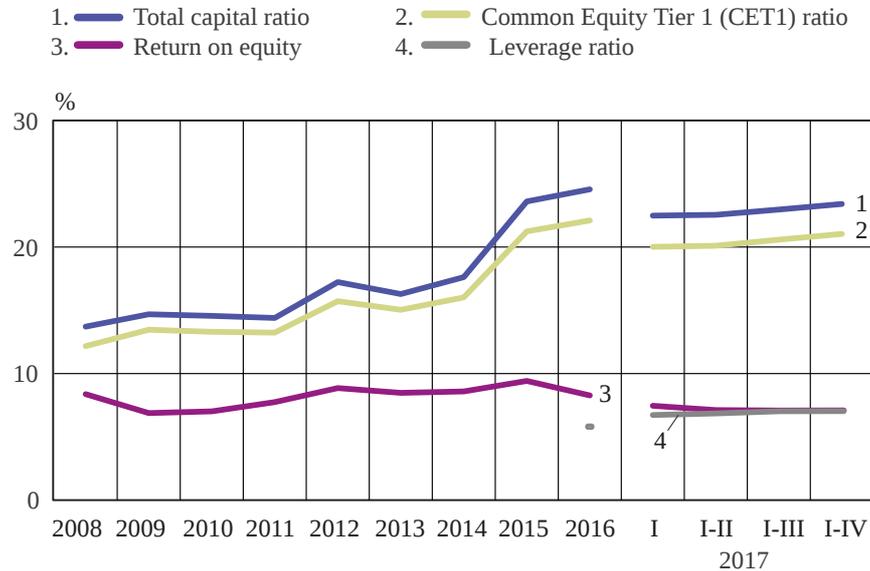
10. This section is largely based on FIN-FSA information; see the report on the financial position and risks of supervised entities released on 19 March 2018 (in Finnish) (<http://www.finanssivalvonta.fi/fi/Tiedotteet/valtari/Pages/Default.aspx>).

11. The CET1 ratio refers to the amount of common equity tier 1 capital, i.e. capital of highest quality, relative to total risk-weighted assets.

12. These requirements include a total minimum capital requirement of 8% (relative to total risk-weighted assets), a capital conservation buffer of 2.5%, and additional capital requirements for systemically important credit institutions (O-SIIs). In addition, the ECB and FIN-FSA have imposed institution-specific discretionary additional capital requirements (Pillar 2 requirements) in connection with the supervisory reviews. The capital adequacy requirements are also dependent on the geographical distribution of exposures and the counter-cyclical capital requirements set in the country of location, although the role played by these at the end of 2017 was negligible.

Chart 6.

Finnish credit institutions sector financially solid and profitable



Source: Financial Supervisory Authority.

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Measured by return on equity and cost-to-income ratios, Finnish credit institutions are more profitable and efficient than EU credit institutions on average. The quality of the loan stock has been good for a long time: nonperforming assets relative to the credit stock have remained low and net impairment losses small.^[13]

Covered bonds have continued to play a major role for credit institutions in terms of both liquidity and funding. Considering the role played by these secured debt instruments in extending funding maturities, the large proportion accounted for by them in the banks' funding is positive in itself. That said, they also increase asset encumbrance, the interconnectedness of credit institutions and their exposure to disruptions on the Nordic housing markets. The short-term liquidity and liquidity buffer composition of credit institutions have remained good, overall. Access to market-based funding continues to be good and the price favourable, but credit institutions' exposure to changes in investor risk sentiment presents one of the permanent structural vulnerabilities of the sector.

The Finnish insurance sector has also remained stable. The solvency of employee pension institutions and life and non-life insurance companies has remained sound, on

13. The proportion of non-performing assets relative to the credit stock is higher for consumer credit (3.5% at the end of 2017) than for housing loans (1.5%) and loans to non-financial corporations (2.2%).

average.^[14] In 2017, most of their investment income was derived from equity investments. In response to the low level of interest rates and the search for yield, real estate investment gained in importance for total yield, especially at the expense of debt securities. However, like the credit institutions sector, the Finnish earnings-related pension sector and life and non-life insurance sectors are highly concentrated in structure.

Euro area financial system must be reinforced with common deposit insurance

Since the financial crisis, the global financial system has been strengthened in a number of ways. Insufficient regulation, supervision and resolution have been improved. In addition, macroprudential policy tools have been introduced to prevent systemic risks to the financial system.

Banking Union, which became operational in 2014, has strengthened the European financial system by supporting financial integration and the cross-border provision of financial services and by harmonising banking supervision and enhancing the effectiveness of the resolution of distressed banks. The third element of Banking Union, the element that completes the Single Supervisory Mechanism and the Single Resolution Mechanism – a single European Deposit Insurance Scheme – is however still lacking (see [Progress in work to complete Banking Union](#)).

The resources of a single European Deposit Insurance Scheme would be stronger than individual national deposit guarantee schemes. It would increase the stability of the euro area banking system significantly compared with the current situation in which national funds are responsible for deposit guarantee. The objective is that depositors throughout the euro area trust that they have uninterrupted access to their covered deposits. The stronger and more credible the deposit insurance scheme, the smaller the likelihood of deposit runs.

As a result of the financial and debt crises, some euro area banks still have on their balance sheets legacy non-performing loans of customers that have repayment difficulties. These loans burden banks' balance sheets, weaken their lending capacity and thereby undermine the transmission of finance to the real economy. Realisation of a European Deposit Insurance Scheme can be promoted and Banking Union reinforced by reducing the amount of non-performing loans and thereby strengthening banks' balance sheets.

Breaking the bank-sovereign nexus was one key reason for creating Banking Union (Chart 7). Banks' considerable exposures to domestic sovereign debt should therefore be decreased with arrangements that encourage banks to reduce their large holdings of individual countries' sovereign debt.

14. The solvency ratio for employee pension institutions (the ratio of pension assets to technical provisions) stood at 130.7% at the end of 2017. The Solvency Capital Requirement (SCR) reflecting the solvency of the non-life insurance sector was 225%, while that for the life insurance sector was 193%.

Chart 7.

Links between banks and their national sovereigns must be weakened



Source: Bank of Finland.

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Risks in the European banking sector should be decreased further, but the conditions for moving to a common deposit insurance should, however, be set realistically. It is justifiable to tackle the problem of non-performing loans created during the financial crisis with national funds and in line with guidelines adopted by the European Commission. To ensure healthy incentives for risk-taking, banks' deposit insurance contributions should be calibrated based on the risks caused to the deposit insurance scheme by the activities of the individual banks as proposed by the European Commission (see [Construction of a risk-based European Deposit Insurance Scheme](#)).

In May 2018, the European Commission will publish the final legislative initiatives related to the framework for a Capital Markets Union. The Council of the European Union and the European Parliament have, however, been unable to keep up with the pace of the Commission in the finalisation and adoption of the legislative proposals, and it is therefore uncertain whether all the initiatives will be adopted before the elections to the European Parliament in 2019. Progress on the Capital Markets Union is, however, important to help the capital markets provide more support for the banking sector in the distribution of risk and funding the real economy.

Post-financial crisis Basel III regulation still being finalised

The global financial crisis showed that the quality and quantity of bank capital were too low relative to the risks. Already during the financial crisis, measures were taken to address the shortcomings in the global regulatory framework for bank capital and liquidity. In 2010, the Basel Committee on Banking Supervision introduced a set of reform measures, the Basel III standards. The new rules were phased in gradually in the European Union, starting on 1 January 2014.

In December 2017, the Basel Committee introduced standards that complement the capital framework for banks. The revised standards aim to constrain the use of internal ratings-based approaches in the calculation of capital requirements. The key objective of the revisions is to improve the credibility and comparability of banks' capital ratios by reducing excessive variability of risk-weighted assets^[15] in capital adequacy calculations. Finalisation of the Basel III framework is an important step, despite the considerable effort already made to improve financial stability.

Estimates by the FIN-FSA show that as a result of the planned reform, the Finnish banking sector's euro-denominated capital requirements will increase and capital ratios will decline more than in the EU on average. The FIN-FSA assessment shows that even after the reform, the Finnish banking sector's capital adequacy would remain strong and clearly higher than the EU average.

During the financial crisis, the stability of the financial system was threatened, but some may have already forgotten the critical moments. The United States is dismantling some of the post-financial crisis lines of defence of financial stability. Economic history shows that deregulation during good times sows the seeds of a new crisis. Deregulation should therefore be treated with caution.

Digitalisation of financial services creates new services and risks

Rapid advances in and increasingly widespread introduction of information and communication technology – digitalisation – are thoroughly reshaping the economy, working life and society. Finland has been a forerunner in financial sector digitalisation (see [Nordic banks go digital](#)). Digitalisation creates not only new products, services, competition and economic growth, but also new risks.

The digitalisation of financial services has become evident to Finnish consumers particularly in retail payments. Banks and new entities have started to provide consumers with, for example, new easy-to-use mobile payment services. Some global technology majors have also joined the competition.

15. Banks' capital requirements are expressed as a percentage of a bank's total risk exposure, i.e. risk-weighted assets. The total amount of risk-weighted assets is calculated by multiplying the exposures, for example loans, by their risk weights before summing up the exposures. The smaller the risk weight of an item, the smaller the amount of capital the bank has to set aside for that asset.

The revised EU Directive on Payment Services (PSD2) will contribute to improving the conditions for competition in payment services (see [Effects of the revised Payment Services Directive: first assessment](#)). For example, the Directive requires that banks provide, with the consent of the customer, third party service providers limited free-of-charge access to the customer's account.

Ease of payment and seamless integration of payments with purchase transactions make spending and debt accumulation increasingly easy. Households' good level of financial literacy and management of personal finances will become increasingly important civic skills.

Digitalisation will facilitate the entry onto the market of new entities not only in payments but also in other financial services. It will also facilitate the provision of financial services outside the stringent regulation applied on credit institutions. Authorities must try to ensure that they apply similar regulation on similar financial services, irrespective of which entity is providing the service.

Possibly the largest risks to financial sector digitalisation are systemic cyber risks. Digitalisation increases financial sector fragmentation, complexity and interconnectedness, which makes the complex systems even more vulnerable to cyber risks. In recent years, authorities have significantly enhanced global cooperation in preparing against cyber risks (see [Digitalisation poses new security challenges for payment systems](#)). Preventing cyber risks will, however, require continuous vigilance by both authorities and market participants in a rapidly changing operating environment.

Tags

[financial stability](#), [banking union](#), [banks](#), [debt accumulation](#), [digitalisation](#), [financial regulation](#)

Wide regional disparities in Finnish house prices and household indebtedness

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 2/2018 • FINANCIAL STABILITY



Hanna Putkuri
Senior Economist

Finland's house prices have diverged regionally over the past decade, particularly between the Helsinki metropolitan area and the rest of the country. Regional disparities on the housing market are also reflected in the amount of housing debt held by households. Housing loans are large and have grown in absolute terms as well as relative to income, especially in growth centres, where housing is more expensive and subject to greater pressures from demand. Simultaneous growth in house prices and housing debt, if excessive, can pose a threat to the stability of the financial system.



What does the regional diversity in prices tell us?

Widening regional divergence in house prices and household indebtedness has been a major trend on Finland's housing and credit markets since 2010. Housing market divergence is largely a consequence of urbanisation^[1], a global megatrend which often goes hand-in-hand with economic growth. The housing and credit market cycles can

prove detrimental to financial stability, particularly if the markets begin to strengthen or weaken one another excessively.

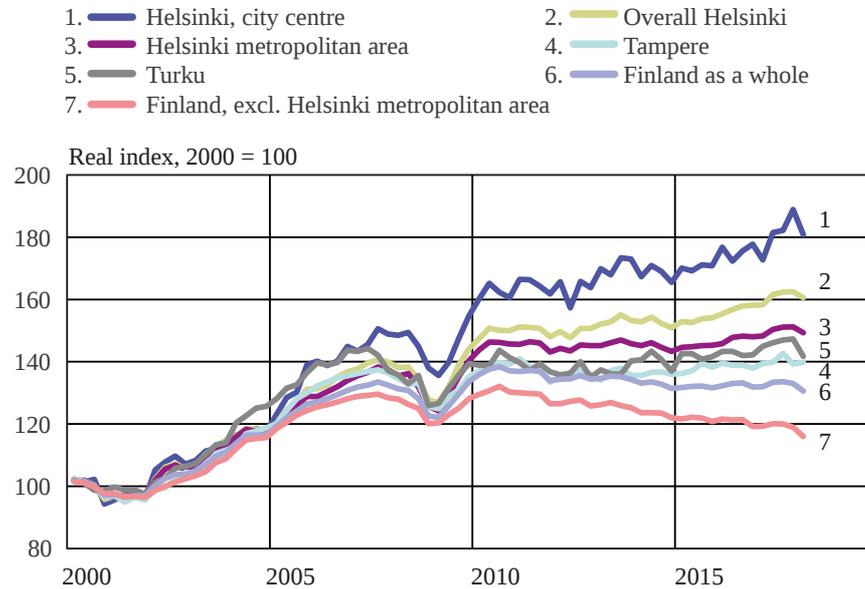
In the article [One country, many housing markets](#) (2015), it was established that households with housing debt who resided in growth centres held, on average, more debt than those living elsewhere in Finland. The strong relationship between house prices and housing indebtedness was also illustrated in that households with housing debt were, on average, found to hold larger loans in municipalities where house prices per square metre were higher. This article continues these themes, making use of the latest data to re-examine the regional divergence on the housing market since the turn of the millennium.

Overall growth in house prices has remained relatively modest in Finland since the severe economic downturn of 2009 and the subsequent period of subdued economic growth. At the same time, however, house prices in urban growth centres have significantly diverged from those in the rest of the country. Real house prices have increased most rapidly in Helsinki and in the surrounding metropolitan area (Chart 1). This is in stark contrast to the decrease in the nationwide average, and especially so when exempting the Helsinki metropolitan area from the index. By early 2018, average real house prices were below their autumn-2010 peak.

1. Urbanisation is the increase in the proportion of people living in towns and cities relative to the entire population. According to Statistics Finland's most recent data (2016), approximately 70% of Finland's population reside within an urban area, whereas the corresponding figures for 2000 and 1990 were approximately 65% and 62%, respectively.

Chart 1.

House prices up in growth centres, lower elsewhere



Source: Statistics Finland.

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House prices are influenced by a variety of cyclical and structural factors whose effects can vary from region to region. For example, the effects of [low interest rates](#) and improved employment conditions are particularly evident in areas where demand for housing outpaces supply. In Finland, growth centres such as the Helsinki metropolitan area have become increasingly attractive compared with the rest of the country, resulting in growing urbanisation and divergence in regional house prices.

Migration among Finland's working-age population has increased. The majority of households (approximately 64%) are home owners, but the availability of rental housing also remains good. The lack of affordable housing in growth centres is, however, widely considered to be a bottleneck for employment and economic growth. Other structural factors, such as the impact of transfer tax on moving costs, might also restrict migration and reduce household mobility within the labour market.^[2] Moreover, the labour market mismatch between vacancies and skills of jobseekers has, for various reasons, worsened particularly in the Helsinki sub-region and the labour markets in other growth centres.^[3]

2. Eerola, E. – Harjunen, O. – Lyytikäinen, T. – Saarimaa, T. (2018) Effects of Real Estate Transfer Taxes: Evidence from a Natural Experiment. Publication series of the Government's analysis, assessment and research activities 17/2018.

3. According to a study, this is partially explained by structural changes within the labour market, both on the supply-side (e.g. age and education) as well as the demand-side (e.g. sectoral composition and fixed-term and

Housing debt increased particularly in growth centres

The growth of housing debt and its regional divergence can be examined by comparing the average amount of housing debt per household with housing debt across Finland's municipalities. The increase in the average size of housing loans and the lengthening of average repayment periods is well-characterised by the fact that, in 2002, the average household with housing debt in a typical municipality held approximately EUR 43,000 of housing debt. In 2009 and 2016, these figures reached EUR 69,000 and EUR 72,000, respectively. In each year, the average household with housing debt held more housing debt than this median amount in half of all municipalities, while corresponding households in the remaining half held an amount below the median. These figures exclude the household share of housing company loans as well as loans related to investment properties.

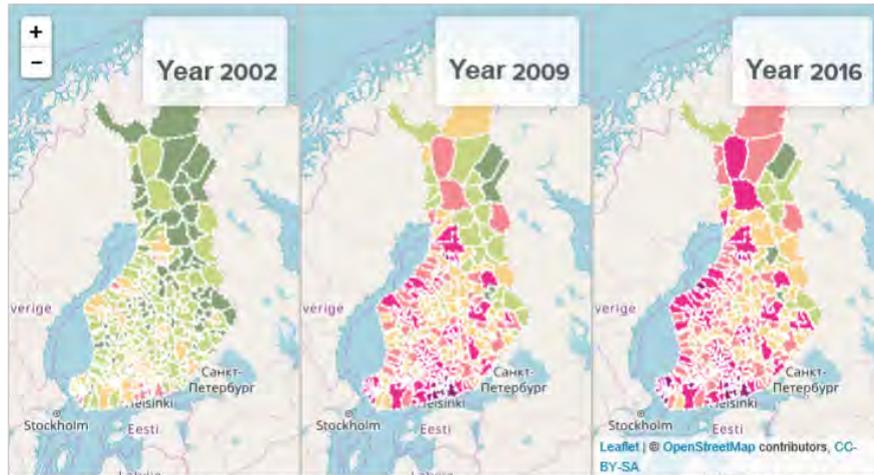
In Chart 2, municipalities have been divided into six categories based on the median amount of housing debt over the years 2002–2016 (approximately EUR 63,900) and other key values (i.e. percentiles) pertaining to the distribution. In 2016, the largest housing loans (averaging over EUR 80,600) were concentrated around Helsinki and Finland's other major urban areas (purple and pink in Chart 2). In 2002, only a few municipalities, generally restricted to the Helsinki sub-region, saw average housing loans this large. The shift from 2009 to 2016 was much smaller.

part-time contracts). See Pehkonen, J. – Huuskonen, J. – Tornberg, K. (2018) Matching efficiency in the labour market – observations and policy suggestions. Publication series of the Government's analysis, assessment and research activities 15/2018.

Chart 2.

Average housing debt (per household with housing debt) greatest in growth centres

- Below EUR 36,200 (5% of observations)
- EUR 36,200–51,200 (20% of observations)
- EUR 51,200–63,900 (25% of observations)
- EUR 63,900–80,600 (25% of observations)
- EUR 80,600–109,000 (20% of observations)
- Over EUR 109,000 (5% of observations)



Housing debt categories are composed on the basis of the 5th percentile (approx. EUR 36,200), lower quartile, median, upper quartile and 95th percentile (approx. EUR 109,000) of all data points. The annual data refer to the amount of housing debt per household with housing debt (in 2016 prices) in each municipality over 2002–2016.

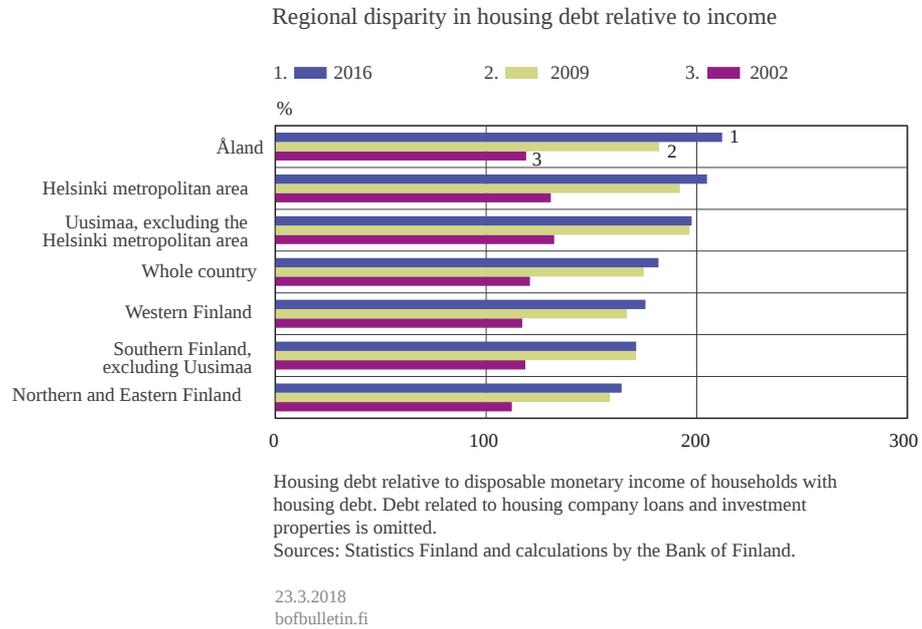
Sources: Statistics Finland and calculations by the Bank of Finland.

The map contains data from the National Land Survey of Finland Topographic Database 03/2018.

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Regional divergence in housing debt remains evident even when regional differences in average household income are taken into account. It would then appear that the regional divergence in house prices is generally stronger than the divergence in incomes. Housing debt relative to income of households with housing debt is largest in Åland (212% in 2016), the Helsinki metropolitan area (205%) and elsewhere in the province of Uusimaa (198%) (Chart 3). In contrast, debt ratios actually remain below the national average (182%) throughout the rest of the country. Growth in housing debt relative to income remained brisk across all regions, particularly in the early 2000s, when both the average loan size as well as the average repayment period increased considerably.

Chart 3.



Housing debt accumulation moderated by macroprudential policy

Housing and credit markets are notoriously prone towards mutually reinforcing cycles during economic upswings. Rapidly growing indebtedness and soaring house prices are consistently found to be key factors in determining the probability and severity of financial crises. Macroprudential policy is conducted with the goal of maintaining financial stability, both by moderating dangerous financial cycles as well as by strengthening the ability of households and credit institutions to withstand the realisation of systemic risk.

One intermediate goal of macroprudential policy is to mitigate and prevent excessive credit growth and leverage, e.g. by setting restrictions on lending for house purchase. It is widely accepted that macroprudential policy should not be conducted with the explicit goal of maintaining price stability on the housing market.^[4] Nevertheless, house prices, e.g. relative to disposable income, are an important economic indicator and often serve to warn of growing vulnerability and systemic risk in the financial system.^[5]

4. For further discussion, see Stefan Ingves' "Avoiding collective amnesia", keynote speech at the conference "Should macroprudential policy target real estate prices?" 11-12 May 2017.

While restrictions on lending tend to vary from one country to another, macroprudential policy is generally applied consistently across all regions. Despite this, regional factors, such as local housing market conditions, can prove to be significant. When the economy is in a period of cyclical expansion, it is possible for [a rise in house prices to feed households' borrowing capacity](#) and accelerate debt accumulation, especially in areas where the housing prices are already above average. Conditions such as low interest rates and long repayment periods only add to this risk.

Some countries have adopted a strategy where macroprudential policy is targeted to address specific regional vulnerabilities on the housing market. In Norway, for example, the maximum LTV ratio on new housing loans is enforced more stringently in Oslo than elsewhere in the country. In addition, loan cap limits on second home purchases remain tighter in Oslo.

In Finland, the maximum LTV ratio is the same for home-buyers everywhere: 95% for first-time buyers and 90% for other buyers (85% from July 2018 onwards). Certain countries have started to adopt loan caps based on loan-to-income (LTI) and debt service-to-income ratios (DSTI). Policies such as these could prove to be effective for containing household indebtedness, especially in the face of rising house prices.

Tags

[financial stability](#), [households](#), [housing loans](#), [housing markets](#), [indebtedness](#)

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5. For research, see e.g. Tölö, E. – Laakkonen, H. – Kalatie, S. (2018) Evaluating indicators for use in setting the countercyclical capital buffer. *International Journal of Central Banking*, 14, 2, p. 51–112.

The Finnish real estate investment market

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 2/2018 • FINANCIAL STABILITY



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The Finnish real estate investment market has been exceptionally active in recent years. Sales volumes and market size have grown fast. By international comparison, the Finnish market is large in proportion to the size of the economy. Foreign investment has reduced required yields. Low required yields indicate the high valuation of real estate, especially in the very centre of Helsinki. This may expose the Finnish market to economic shocks from abroad. Risks in the real estate investment market reflect on banking particularly via lending.



The Finnish real estate investment market has been growing continuously, and in 2017 its value was estimated at EUR 64 billion, which is 28% of Finland's GDP. The Finnish market is in fact one of the largest in Europe relative to the size of the economy.^[1]

1. The estimate about the Finnish real estate investment market has been derived from real estate owned by professional investors. The definition also includes rental housing owned by professional investors, accounting for 29% of the entire market. Without the ownership of residential investors, the market accounts for 20% of GDP. Real estate owned by non-financial corporations and used by the owners are not included in this definition. The

Operating in the commercial property market requires plenty of capital, because it is based on a significant initial investment and gradual profit and value increase through rental income. The income component involves a great deal of uncertainty, depending on the economic cycle. Banks have typically financed real estate investors, and problems have emerged during weak economic conditions in the form of banks' increased volume of non-performing assets. Real estate owned by real estate investors is also generally used as collateral for debt financing. The collateral is often illiquid, which in a stress situation reduces the chances of realising it and getting the full price.

Not only real estate investment, but also construction of business premises may include financial stability vulnerabilities. Business construction, as construction in general, is very much dependent on the economic cycle. Building activity reacts to the prevailing rental and purchase price level and vacancy rates, because the most likely competitors are premises already on the market. Conditions may be very different once a building has been completed, owing to long construction times. Once the decision to build has been made, the market may change unfavourably for the builder. The expenses of a construction project are usually incurred early, with profit only coming into the picture in the later stages. As construction generally requires a lot of capital, the long timetables of construction projects make them more challenging in terms of financing. The risk management of business construction also depends on whether a business engages in new-build construction on its own behalf or as a contractor.^[2]

Fewer new commercial properties to be built in 2018

In 2017, more new business construction projects were started than in 2016. New construction of retail and office properties was up sharply from 2016: shops by about 43% and office premises by 13%. In contrast, new industrial and warehouse construction projects were at about the same level in 2016 and 2017.

The Confederation of Finnish Construction Industries (CFCI) forecasts in spring 2018 that business construction will contract somewhat during 2018 with the exception of industrial and office construction. This is also evident from the smaller number of applications for building permits. CFCI nevertheless forecasts that the economic upswing will increase the number of new industrial construction projects, because owing to the structural change in the economy, industrial construction has already been at a historically low level for a prolonged period. On the other hand, warehouse construction is forecast to decline following active construction in recent years. Construction of shopping premises is expected to contract in 2018 by about 5%. Just like building construction in general, shop construction will also be focused on growth centres. According to the CFCI, 70–80% of all new office buildings will be built in the greater Helsinki area in places that have good public transport connections.

value of real estate used by the owners is about EUR 50 billion. Real estate owned by the public sector has been valued at around EUR 25 billion. Source: KTI.

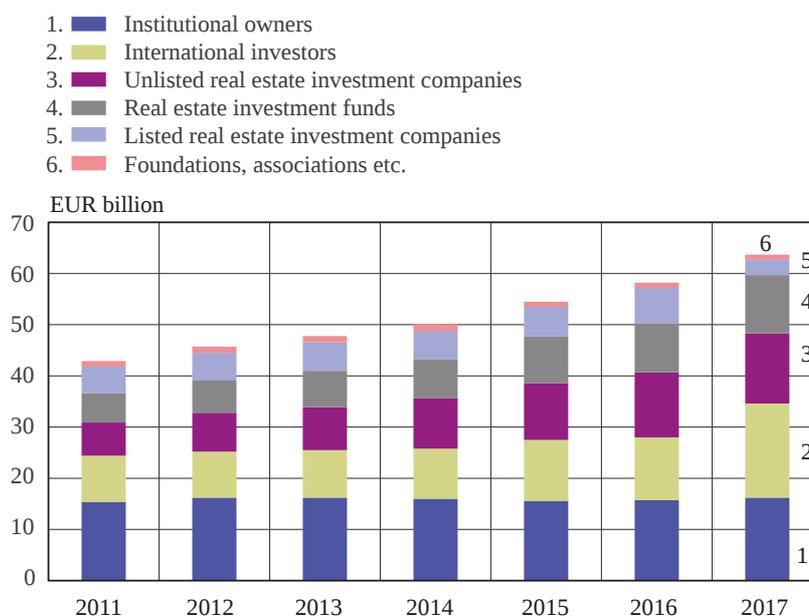
2. This means that the business itself is in charge of project planning, construction and rental/sale. When contracting out, the customer chooses a contractor to carry about the project against a contract price.

Foreign investors the largest owner group in the real estate investment market

Foreign investors became in 2017 the largest owner group on the Finnish real estate investment market, with a 29% share. The high number of foreign investors can be explained by what was for Finland a large individual sale, when Sponda sold its Finnish real estate portfolio to Blackstone for EUR 3.7 billion. As a result, foreign investors bypassed Finnish institutional investors, whose market share has been in an unbroken decline. Foreign investors have brought activity and liquidity onto the Finnish market. This has nevertheless increased the risk that foreign actors will retreat from the Finnish market in a stress situation, leading to lower prices. This could be a problem for those who used debt financing to invest in real estate and those who financed real estate investors, mainly the banks.

Chart 1.

Size of the Finnish real estate investment market



Includes properties owned by professional investors.
Source: KTI Property Information Ltd.

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Of Finnish institutional investors, the employment pension institutions clearly have the largest real estate assets, but insurance companies also own a lot of real estate. In 2017, the employment pension institutions held real estate investments worth EUR 16.5 billion, of which 77% were in Finland.^[3] The target with real estate investment is risk

3. Source: Finnish Pension Alliance TELA, https://www.tela.fi/en/investment_assets_trend.

diversification and protection against inflation, aiming for a steady income to cover long-term liabilities.

Investments by unlisted real estate investment companies have risen sharply in the 2010s, totalling EUR 13.7 billion in 2017. Unlisted companies have invested especially in rental housing. The investment stock of listed real estate investment companies, on the other hand, was more than halved as a result of the deal between Sponda and Blackstone.

The size of real estate funds under the supervision of the Financial Supervisory Authority was EUR 10 billion at the end of 2017. The majority of the assets in these funds are housing and real estate shares. Some 60% of real estate fund investments concern commercial properties, and about 40% homes. Moreover, investments in commercial properties have grown rapidly in recent years.

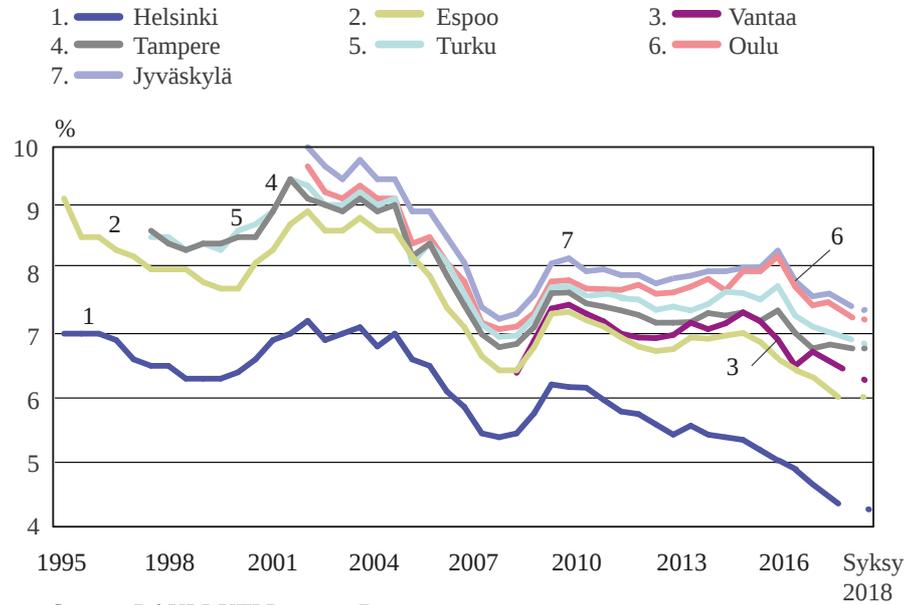
Major regional differences in real estate investment market

The Finnish real estate investment market is polarised, with large regional differences. Office rents are much higher in the Helsinki area and the required net yields lower than elsewhere in Finland. A rule of thumb is the smaller the required yield, the more valuable the real estate is. In Helsinki the required net yield is partly explained by strongly increased investments by foreign actors. Moreover, many domestic and foreign corporations with central functions have located in the Helsinki area, and those corporations need a lot of office space. Furthermore, a growing population adds to the need for retail properties. There are also big differences within the Helsinki area, and location is crucial. Especially within Helsinki itself, the rents and utilisation rates of prime offices are high. The required net yields on prime office premises in large cities have notably decreased in recent years. The required net yields on prime offices in Helsinki city centre, for example, have fallen to a level of just over 4%. Elsewhere in the Helsinki area, too, and in Tampere and Turku, required net yields have decreased, but are still 6–7%. The current historically low risk-free interest rate can partly explain why required yields have decreased.^[4]

4. The investment target's required yield consists of the risk-free interest rate and the investment target's risk premium.

Chart 2.

Prime office yields in major Finnish cities



Source: RAKLI-KTI Property Barometer.

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Retailing changes affect business premises

The rapid growth of online shopping has challenged traditional operating models in the retail trade, which has clearly been reflected in the expectations of traders operating from shopping centres.^[5] According to the Shopping Centre Barometer, web stores and online buying has a negative impact on the operation of shopping centres and department stores. As a result, shops are expected to become smaller, and other premises larger. The question is whether there will be enough customers for the shopping centres.

The efficiency of office premises has already been increased. The current trend is that there are fewer square metres per employee. More and more people work in open-plan offices instead of having their own room, and coworking spaces are increasing in popularity. The adaptability of office premises is also an important consideration, and the location of offices outside the city centre has to be carefully scrutinized. For example, in the State sector, the Government has decided that only the ministry offices will remain in the centre of Helsinki. The vacancy rate of offices in the Helsinki region has risen, standing at 13.4% in 2017. This is a high figure by international comparison. In Helsinki

5. Shopping Centre Barometer.

city centre, however, the vacancy rate is much lower (7.8% at the end of 2017). The high vacancy rate is also explained by the construction of new premises.

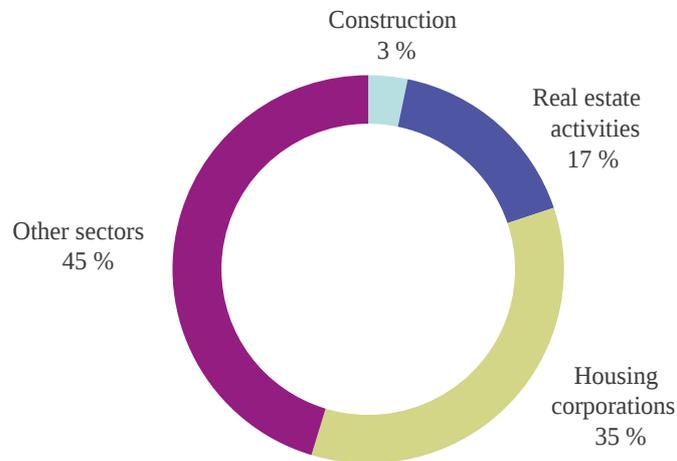
Demand for accommodation has increased, which is shown in hotel occupancy rates and the number of overnight stays. Hotel capacity may also be increased by changes of use for existing real estate. An office block, for example, can be converted into a hotel or homes.

Finnish banking sector exposed to real estate investment market risks, particularly through lending

Real estate market risks feed through to the banking sector via lending. Operation on this market requires plentiful financing, which results in large volumes of loans in proportion to the significance in terms of the national economy. Construction and real estate activities account for a large proportion of banks' corporate loan stock. More than half of non-financial corporations and housing corporation loans are related to these sectors. The majority of the loan stock in these sectors concerns housing corporation loans.

Chart 3.

More than half of the corporate loan stock concerns construction and real estate activities



Source: Bank of Finland.

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Methodology

The classification of industrial sectors does not fully specify the business conducted in any given premises. However, we can identify two sectors that are closely linked to real estate markets.

- 1) The main category of real estate activities includes sale or purchase of real estate, real estate rental and other real estate services, such as real estate assessment. Real estate services may concern one's own or leased real estate and may be carried out under a commission or contract. This main category also contains housing management operations.
- 2) The main category of construction includes housing construction, civil engineering and specialised construction.

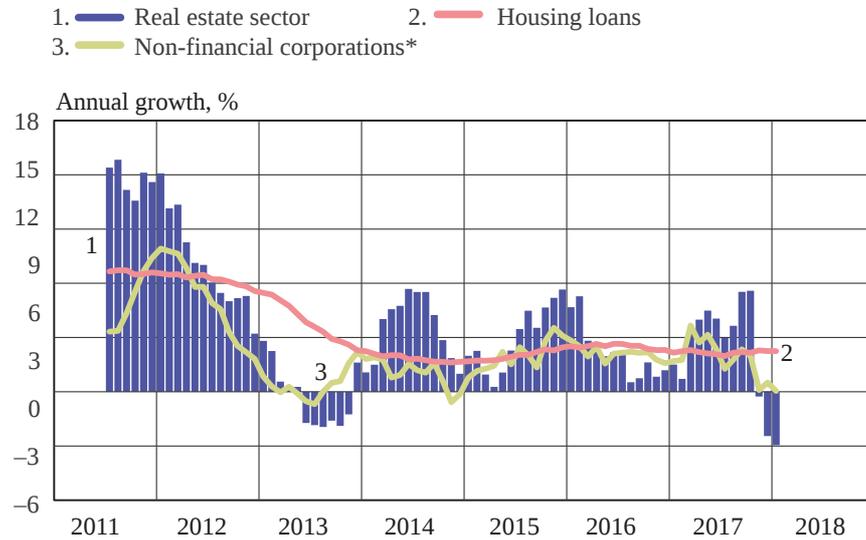
It is also useful to divide real estate activities by means of sectors into non-financial corporations and housing corporations. This allows us to exclude housing corporations from any analyses concentrating on business premises.

From the viewpoint of national accounts data, real estate activities covered 62% of companies' ownership of commercial real estate ownership in 2016. The remaining ownership of business premises by companies is excluded from the scope of an analysis focused on real estate operations and construction.

Even without housing corporation loans, a significant proportion of banks' corporate loan stock falls under the category of real estate activities and construction. The loan stock of these sectors totalled EUR 16.3 billion in January 2018, accounting for 30% of corporate loans. Between July 2010 and January 2018, the average annual loan stock growth of real estate activities was 3.7%, and that of construction was 3.5%. By comparison, the growth rate of households' housing loan stock was 3.4%, and that of corporate loans 3.0%. The annual growth of sectors susceptible to real estate risks has been somewhat higher than the average for corporate loans during the current decade. Real estate activities and all corporate loans have followed similar trends since 2015. Individual observations help to explain the lower volume of loans for real estate in recent months.

Chart 4.

Real estate sector loan stock increased faster than other corporate loans and housing loans in current decade



*Excl. repos.

Source: Bank of Finland.

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Owing to the capital-intensive nature of these sectors, it is particularly important to pay attention to the risks associated with lending to them. Banks evaluate credit risks and factor these into loan interest rates. The cyclical nature of the construction sector is factored into the loan interest rates, while real estate interest rates do not reflect this risk: the construction industry's loan stock interest rate was 2.13%, and that of the real estate industry 1.46% at the end of 2017. Corporate interest falls between the two, at 1.64%.

The higher interest rate for construction is explained by a number of factors. The strongly cyclical nature of construction is reflected in liquidity problems, with the risk of bankruptcy much higher than in many other industries. In the early years of the new millennium, 0.9-1.5% of companies in the construction industry went bankrupt each year, reaching a peak during the recession in 2008–2014. There were considerably fewer bankruptcies in the real estate activities: about 0.2–0.4% of companies.

Loan risks are affected not only by the cyclical nature of the industry, but also by loan collateral and repayment periods. The percentage of covered loans in construction is lower than in the real estate sector but at the same level as corporate loans on average, i.e. slightly more than 40% of loans in 2011–2017. Within real estate, the percentage of covered loans in the loan stock has risen sharply, standing at almost 70% in December 2017.

Loan repayment periods vary considerably, but the average period can be used to assess the trend. However, we cannot compare repayment periods between the industries, because they have such different structures. In real estate activities, the repayment period of new loans lengthened somewhat, by 1.2 years in the current decade, being 9.3 years in December 2017. The repayment periods for construction loans has been 2.8–5.2 years.

Conclusion

The strong interest among especially foreign investors in the Finnish real estate investment market has increased the size of the market and reduced required yields. The size of the Finnish market in proportion to GDP is one of the highest in the EU. No comprehensive price index is available of the business premises market, but historically low required yields indicate high prices. However, the market is polarised, and less attractive properties suffer from underutilisation. The large proportion of foreign ownership of the real estate market may be a channel through which foreign financial shocks can make themselves felt on the Finnish real estate market and perhaps the entire national economy. Risks to the Finnish real estate market are channelled to banking operations particularly through lending. The percentage of corporate loans that were closely linked to the real estate market was also considerable, at about 30%. Building industry companies pay higher interest on their loans owing to, for example, the cyclical nature of the industry and the higher bankruptcy risk than in other industries. Interest paid by real estate businesses are on average lower than corporate loan interest, because they have on average more collateral and the bankruptcy risk is also lower.

Tags

[banks](#), [business premises](#), [commercial property](#), [financing](#), [real estate investment market](#)

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Household indebtedness contributing to corporate loan losses

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 2/2018 • FINANCIAL STABILITY



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Household indebtedness and overheating of the housing market have contributed to financial crises throughout history. However, a considerable proportion of banks' losses during crises have resulted from corporate loans. The situation arises when indebted households cut down their spending during an economic downturn, increasing companies' financial difficulties. The current situation in Finland is twofold: household indebtedness is record-high and has been increasing for a long time, but housing market developments have for the most part remained moderate. The percentage of loans related to housing and real estate is high.



Lending and loan losses form a paradox in terms of financial stability. A sharp increase in housing loans and the high indebtedness of households have throughout history been one of the main early warning indicators of financial crises and their severity. Losses to the financial system and the real economy have nevertheless been largely caused by the problems of non-financial corporations, especially in the real estate and construction industries.^[1] This is exactly what happened in Finland during the 1990s recession and in many European countries, such as Spain and Ireland, as a result of the global financial crisis of 2007–2008 and the subsequent euro area debt crisis. What is the source of this

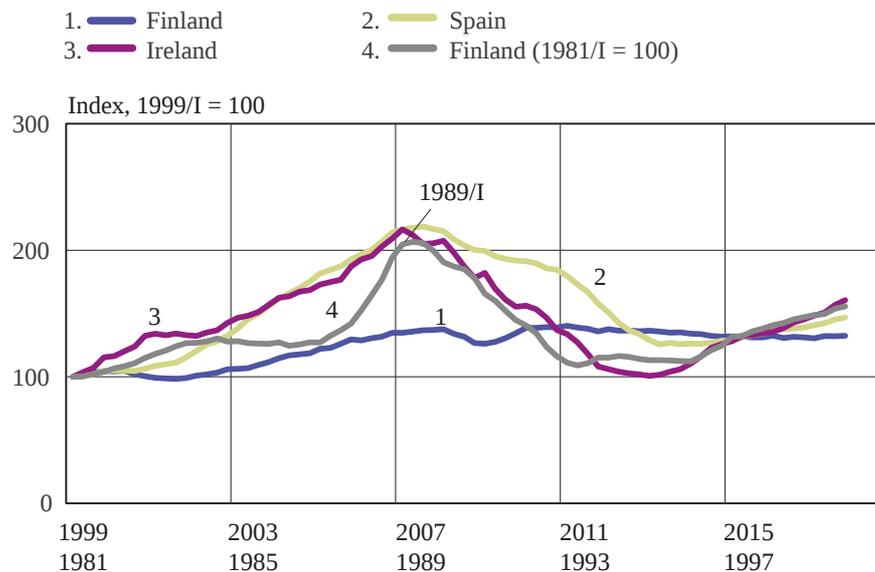
apparently illogical connection between vulnerabilities preceding financial crises and the consequent systemic risk?

Lending and property market vulnerabilities increase in an upswing

Household indebtedness and property market vulnerabilities have a tendency to increase during an upswing. Rising house prices may create an overly optimistic spiral of expectations that feeds itself, as was the case in the early 2000s in Spain and Ireland and the late 1980s in Finland (Chart 1). The rise in the collateral value of property combined with higher confidence on the part of consumers and businesses can encourage excessive risk-taking both in the wider economy and on the financial markets.

Chart 1.

Real house prices during upswings and downswings



Sources: OECD, Macrobond and calculations by the Bank of Finland.

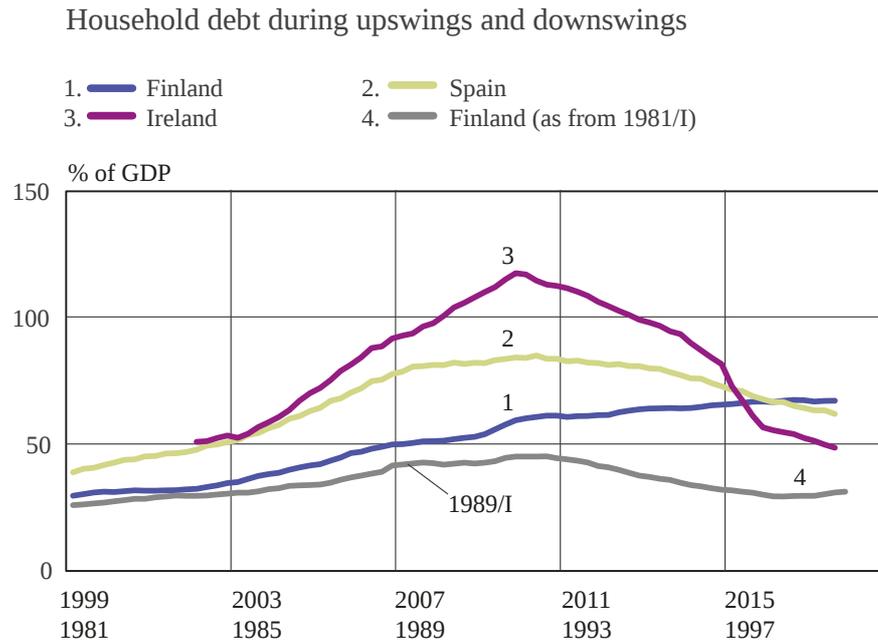
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In the years before the financial crisis and the European debt crisis, many European countries were enjoying a period of strong economic growth. Narrowing risk premia and relaxed financing conditions encouraged the private sector to take on too much debt,

1. An increase in corporate loans does not, however, predict crises as well as does an increase in household indebtedness. Karlo Kauko has written about this paradox in his blog [Asuntolainojen riskipainoille alaraja – mistä on kyse?](#) ('A minimum risk weight for housing loans – what's it all about?'; in Finnish only).

which was reflected especially on the housing market. Demand for housing loans increased sharply in many countries, and annual growth in the housing loan stock in the euro area accelerated in 2005–2006 to an average of more than 10%. The increase in indebtedness was faster in many countries than economic growth and the increase in household income. In Spain and Ireland, for example, household debt increased sharply in proportion to household income and GDP (Chart 2).

Chart 2.



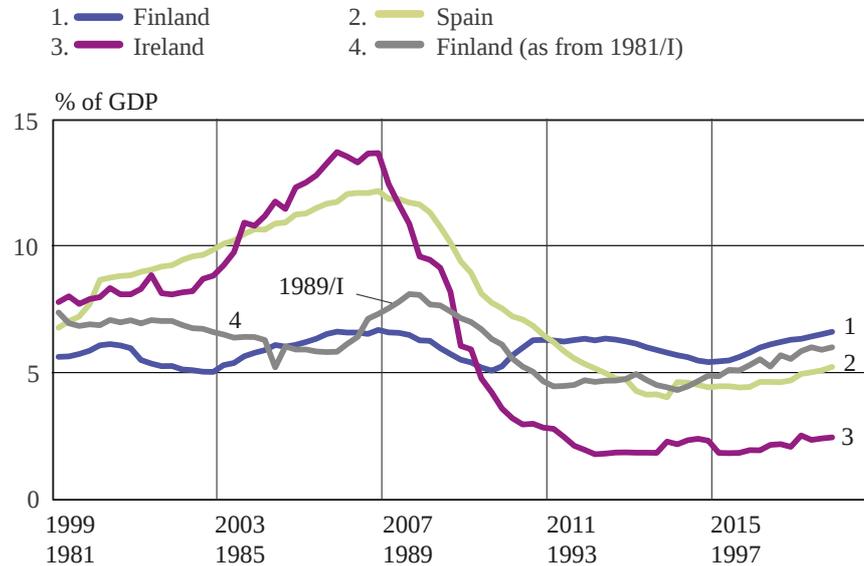
Sources: BIS, Macrobond and calculations by the Bank of Finland.

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A sharp increase in lending and property prices in the early 2000s also led to a significant increase in home and business construction and property investment. Owing to macroeconomic imbalances between the euro area countries, capital and financing for projects were provided not only by domestic banks but also by foreign banks and investors. According to Eurostat, the volume of property construction increased in Europe between 2000 and 2006 by an average of some 13% per annum. Growth was particularly high in Spain and Ireland, where housing investment alone accounted for more than 10% of the countries' GDP (Chart 3).

Chart 3.

Housing construction investment during upswings and downswings



Sources: Eurostat, Macrobond, Statistics Finland and calculations by the Bank of Finland.

17.4.2018
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As a result of heavy lending, many banks were seriously exposed to the risks caused by housing and property market fluctuations. In Spain, for example, the loan stock granted by banks to the construction industry had increased at the end of 2007 to as much as 30% of GDP. Although banks have reduced their lending for real estate activities and construction since the crisis, they still loom large on bank balance sheets. According to the ECB, euro area banks had loans worth some EUR 950 billion for real estate activities, and some EUR 380 billion for construction still outstanding at the end of 2016. Put together, these account for about 30% of banks' corporate loan stock.

In a downswing, vulnerabilities manifest in a range of losses

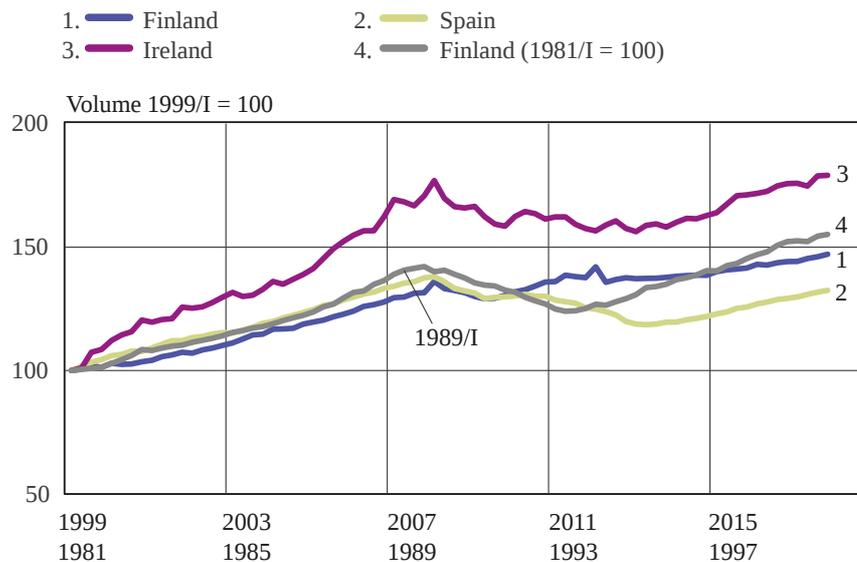
During a downswing, indebted households usually have more financial difficulties, and loans taken during an upswing may turn out to be excessive in proportion to income. Another risk with large housing loans is that the value of the home falls below the loan capital. As a result of customers' payment difficulties, banks' non-performing assets, i.e. loans that were long overdue, began to increase. Compared with corporate loans, however, households' housing loans rarely result in sudden major credit losses, because of the length of a private person's liability for debt.

Credit losses caused directly by housing loans have remained relatively low even after housing price bubbles and bursts. Direct credit risk associated with housing loans is therefore generally estimated to be lower than those of corporate loans. In the light of previous crises, when assessing systemic risk caused by housing loans and household indebtedness, we must nevertheless take into account the indirect risks of lending, and their knock-on effects. Indirect risks are often assessed to be greater than direct credit risks because, if realised, they have extensive and long-lasting effects on the real economy and the financial system as a whole.

Debt-driven crises are typically made worse by the fact that, in a downswing, indebted households typically cut their consumption expenditure (Chart 4) and investments because of higher unemployment, a higher debt-servicing burden or lower net wealth resulting from lower asset values.^[2] Lower spending intensifies an adverse chain reaction that affects the entire economy. It is to some extent paradoxical that this will eventually result in lower corporate investment, liquidity problems, bankruptcies and a considerable increase in banks' credit losses.

Chart 4.

Household consumption during upswings and downswings



Sources: Eurostat, Macrobond, Statistics Finland and calculations by the Bank of Finland.

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2. See, for example, Flodén, M. (2014) Did household debt matter in the Great Recession? Supplement to blog post on ekonomistas.se; and Mian, A. & Sufi, A. (2014) House of Debt, University of Chicago Press.

Construction and the commercial property market are typically quite susceptible to cyclical changes. Price corrections on the commercial property market are often dramatic and sudden, and as foreign investors withdraw if a crisis occurs, the price cycles are even more pronounced. Most European construction companies and real estate actors are also very small and poorly prepared to balance their funding in times of crisis. The number of bankruptcies in these sectors generally increases quickly as both private and public investment shrinks and banks tighten their lending to high-risk sectors. In Spain and Ireland, for example, the total turnover of construction companies shrank in the years after the financial crisis by over 50%.

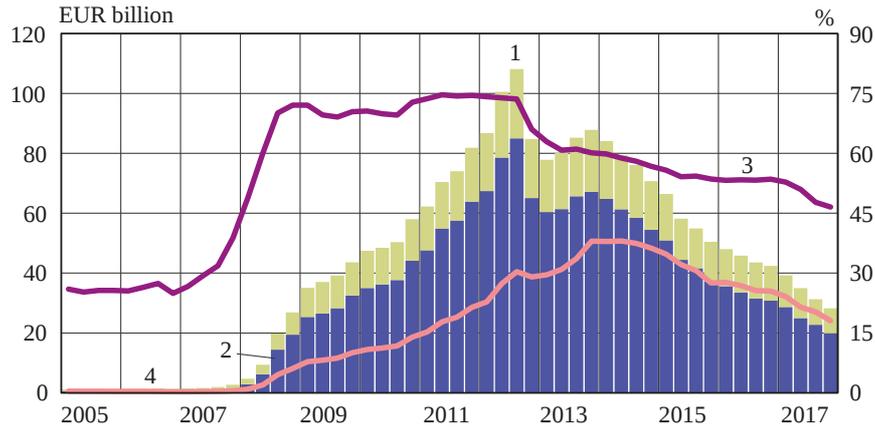
The key role of banks in real estate financing has led to a situation in which, as a result of the financial and sovereign debt crises, many European banks have had significant amounts of non-performing loans granted to real estate activities and construction on their balance sheets. At the height of the sovereign debt crisis, for example, almost 40% of loans granted by Spanish banks to the real estate sector were non-performing (Chart 5). In Ireland, the corresponding figure was a staggering 70%. Various measures have been taken in recent years to solve the problem of European banks' non-performing loans. According to the ECB's latest financial stability review,^[3] commercial property loans are nevertheless still the greatest source of non-performing loans.

3. ECB (2017) Financial stability review, November 2017.

Chart 5.

Volume of non-performing loans granted by banks in Spain for construction and real estate activities

1. Non-performing loans, construction (left-hand scale)
2. Non-performing loans, real estate activities (left-hand scale)
3. Non-performing loans for construction and real estate activities, % of all non-performing loans (right-hand scale)
4. Non-performing loans for real estate activities, % of all real estate loans (right-hand scale)



Source: Bank of Spain.

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Finland's current situation is twofold in historical perspective

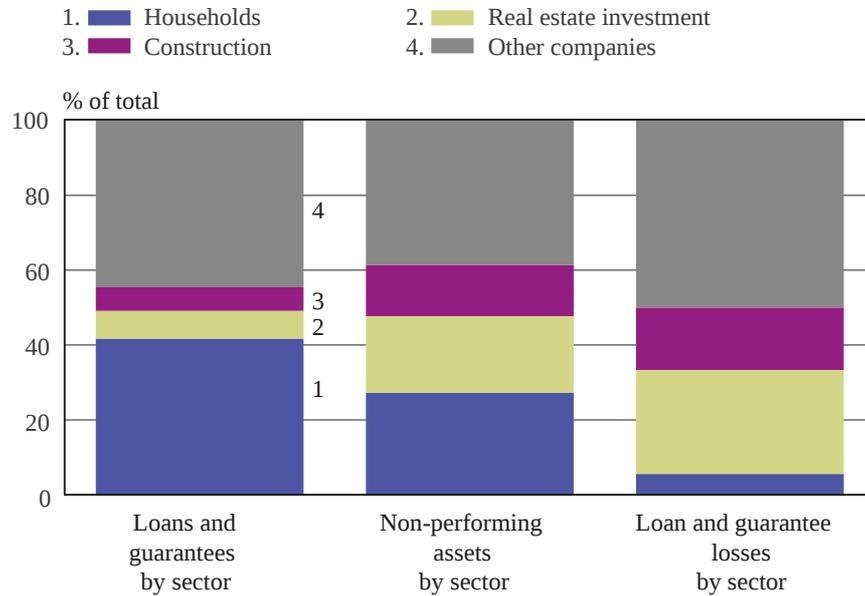
The 1990s recession hit the real estate and construction industries particularly hard. For example, at the end of 1992, a relatively small part of banks' receivables from households and businesses concerned real estate investment and construction companies, but the significance of non-performing assets and credit losses related to these sectors was considerably higher (Chart 6).^[4] A considerable proportion of the credit losses to companies receiving public bank support in 1991–1999 were the result of loans granted to real estate, sanitation, rental service and construction companies.^[5]

4. Pensala, J. & Solttila, H. (1993) Pankkien järjestämättömät saamiset ja luottotappiot vuonna 1992. (Banks' Non-Performing Assets and Loan Losses in 1992.) Bank of Finland Discussion Papers 5/1993.

5. FSA Newslines 3/2000 (in Finnish only).

Chart 6.

Finnish banks' assets and losses from selected sectors in 1992



Sources: Pensala & Solttila (1993) and calculations by the Bank of Finland.

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The economic recession in 2009 and the 2010s after the international financial crisis was deeper and lasted longer in Finland than in many other countries. However, the recession did not threaten the financial system's stability, and the downturn was relatively modest in the housing market. This was helped by lower interest rates and the fact that house price developments in Finland were more moderate than in many other countries both before and after the crisis. The rise in house prices before the crisis was also much slower than in the years before the 1990s recession (see Chart 1 above).

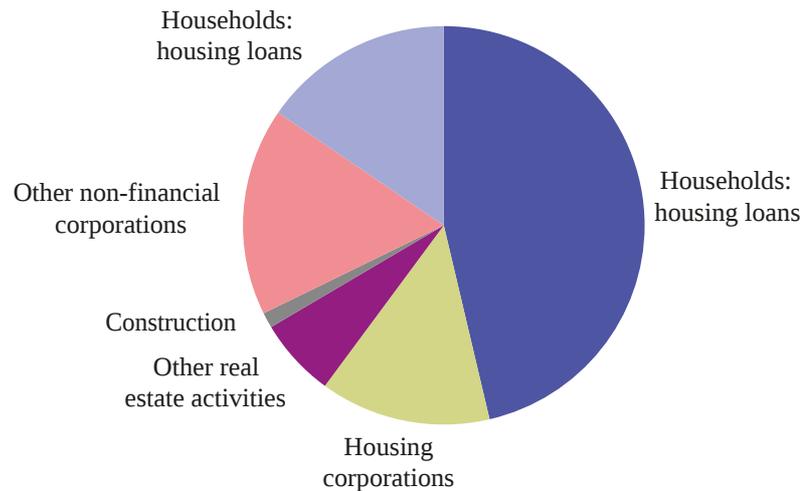
The Finnish housing market has picked up in recent years, and the construction of blocks of flats has been particularly active. Housing construction investment has accounted for a higher percentage of GDP than the long-term pattern and the average in the new millennium. However, Finland is not showing any signs of the kind of major increase in construction (see Chart 3 above) or quick rise in house prices as was the case in the late 1980s and the debt-driven price bubbles in crisis countries in the 2000s. Yet regional differences have increased, with urbanisation causing construction work, indebtedness and house price increases mainly in growth centres (see [Wide regional disparities in Finnish house prices and household indebtedness](#)).

This means that the Finnish financing system is susceptible to risks associated with housing loans and funding secured by housing loans. The proportion of loans related to housing and real estate activities in relation to credit institutions' stock of loans has been

increasing and is high by international standards. At the end of 2017, housing loans, loans granted to housing corporations, and loans for the real estate and construction industries totalled around EUR 140 billion, accounting for two thirds of loans granted to households and non-financial corporations (Chart 7).

Chart 7.

Finnish credit institutions' loans to households and non-financial corporations



The information above relates to the situation at the end of 2017, when the loan stock totalled EUR 207.5 billion.

Source: Bank of Finland.

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The loan stock quality has remained good in the 2010s,^[6] but an increase in vulnerabilities has continued, especially as a result of higher household indebtedness. Household indebtedness has been increasing for a long time – also during the 2010s recession – and indebtedness is record-high in comparison with income and GDP (see Chart 2 above). Most housing loans carry variable interest rates and have long maturities. Households' wealth also tends to be tied up in their housing assets. These factors make households more vulnerable to, for example, higher interest rates, a fall in house prices and cyclical fluctuations in the economy.

6. According to the Financial Supervisory Authority's statistics, the percentage of non-performing assets and other receivables of banks operating in Finland was 2.6% for non-financial corporations, 2.2% for households and 0.1% for housing corporations at the end of 2017. With regard to loans to the construction industry, the percentage was 4.2%, and to the real estate industry (excl. housing corporations) 0.8%.

Tags

construction, households, housing markets, indebtedness, real estate activities

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Instruments designed to mitigate indebtedness

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 2/2018 • FINANCIAL STABILITY



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Borrower-based instruments generally refer to measures aimed at mitigating the indebtedness of individuals or households. These instruments have most commonly been used to impose limits on housing loans. The purpose of borrower-based instruments is to contain household indebtedness and prevent house price bubbles. The most common instrument in Europe is the maximum loan-to-value (LTV) ratio for housing loans, i.e. the loan cap, which is also in use in Finland. Research has proven the effectiveness of borrower-based instruments in preventing both price bubbles and excessive indebtedness.



Banking crises have often been preceded by house price bubbles and increasing indebtedness. Prevention of house price increases and household indebtedness is therefore a meaningful macroprudential policy objective. According to Alpandra and Zubairy (2017), the feedback loop between indebtedness and house price bubbles fundamentally originates from expectations regarding future house prices. These expectations become self-fulfilling and strengthen household incentives to buy housing on borrowed money. Regulation that mitigates price increases in a credible manner contains expectations and can thus dampen excessive growth in the stock of housing loans merely by its existence.

Use of borrower-based instruments

Housing market vulnerabilities can be addressed by a variety of instruments. Many countries have mitigated excessive mortgage lending by limiting the amount of loan granted to an individual borrower. Instruments based on the borrowers' repayment capacity limit the loan amount or the debt-servicing costs relative to borrower income. In addition, instruments based on the loan collateral, such as the maximum loan-to-value (LTV) ratio^[1], are indirectly aimed at the borrower. Housing market-related risks can also be managed by lender-based instruments, such as additional capital requirements for banks.

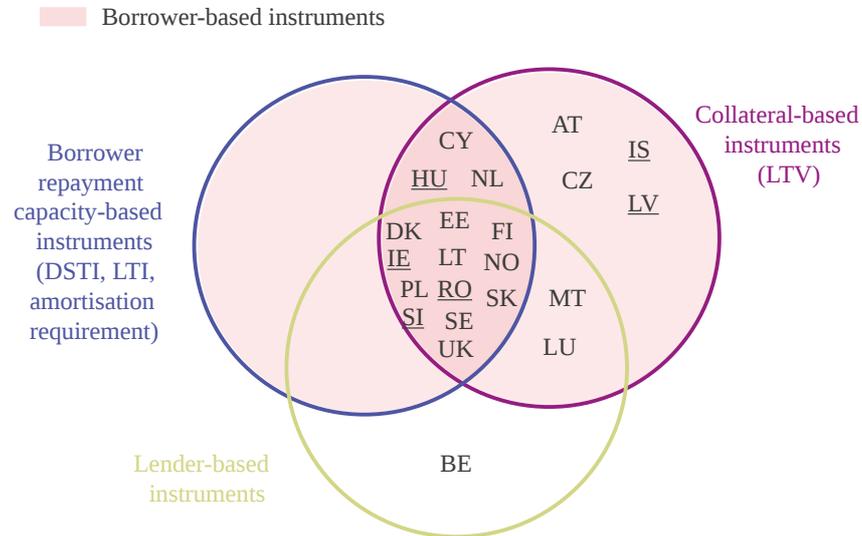
The use of borrower-based macroprudential instruments is common in Europe. At the end of 2017, over half of EU Member States had introduced at least one instrument in this toolkit. The use of borrower-based macroprudential instruments is also becoming more widespread: Portugal and Austria, at least, will introduce certain borrower-based tools in 2018. The most frequently used instrument is the maximum LTV ratio, i.e. the loan cap. The amount of housing loan relative to the value of a purchased property is typically limited to 80–95%. In many countries, regulation takes into account the intended purpose of housing. The loan cap is often higher, i.e. the size of the loan is larger, for first-home purchases, while in some countries the loan cap is significantly lower for investment property than for owner-occupied homes.

Other borrower-based instruments are not quite as common in Europe as the maximum LTV ratio. Nine countries have a limit on the debt-service-to-income (DSTI) ratio, and four countries on the loan-to-income (LTI) ratio. The United Kingdom requires an amortisation plan for new housing loans. Sweden and Norway have introduced an amortisation requirement for new loans with high LTV ratios. In addition, some countries have adopted other measures targeted towards the borrowers' repayment capacity. Besides borrower-based macroprudential instruments, 15 countries have in place lender-based macroprudential instruments, such as higher risk weights for mortgage-backed loans or limits on loan maturities.

1. The loan-to-value (LTV) ratio is a loan cap that limits the size of loan relative to the value of the financed housing. In Finland, real collateral other than the purchased housing can also be taken into account in calculating the loan cap.

Chart 1.

Use of mortgage lending-based instruments in Europe in 2017



Countries that are underlined: regulation also pertains to the non-bank financial sector.

Source: European Systemic Risk Board.

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The LTV ratio is also a widespread instrument internationally. Canada, Hong Kong, Israel, New Zealand and Singapore, among others, have limited loan size relative to the purchased property. Cerrutti et al. (2017) have analysed the use of macroprudential instruments in 119 countries over the period 2000–2013. They document that 21% of these countries use caps on LTV ratios and 15% use caps on DTI ratios. Their analysis shows that LTV limits are used especially in high-income countries.

Comparing the stance of macroprudential policies related to mortgage lending and borrower-based instruments across countries is challenging. The objectives, definitions and regulatory details of the instruments differ significantly, which makes it difficult to compare policy measures internationally.

Research on the effectiveness of the instruments

Academic research has discussed the effectiveness of the above-mentioned instruments. Credit growth can be slowed by regulation targeted at loan terms and conditions. More research in this area has been published very recently.^[2]

2. For literature, see e.g. supplementary article 2 in the Bank of Finland's Macroprudential Report 1/2017.

South Korean data provides an excellent opportunity for impact analyses. South Korea has long experience in implementing tools focusing both on borrower income and collateral values. The limits imposed by the tools have been set depending on the district, and have not always been tightened or loosened simultaneously at the level of the country as a whole. This facilitates the conduct of ex post impact assessments. Jung and Lee (2017) have analysed the impact of limits on LTV and debt-to-income (DTI) ratios on loan amounts and housing prices in 1980–2016. The loosening of both limits seemed to boost house price growth, but paradoxically enough, the tightening of the LTV limit had no impact on house price dynamics. The analysis showed that the LTV suffered from dependence of the highest permitted loan amount on house prices: at the peak of the cycle, high house prices allow even substantial loan amounts, while during the downturn, the fall in house prices also reduces the maximum loan size.

House prices, bank lending and macroeconomic variables are intricately interconnected. In recent years, financial and banking markets have increasingly been incorporated in stochastic general equilibrium models. These models attempt to capture the macroeconomic effects of banking and financial market activities. For instance, real estate prices are an important macroeconomic variable due to the widespread use of real estate as collateral for bank loans.

Gross and Población (2017) have used micro-level data on household assets and a macroeconomic model to test the efficacy of policy-induced constraints on the availability of loans, and especially the related long-term benefits and short-term macroeconomic losses (primarily due to reduced credit demand). Their research shows that caps on the DSTI ratio are more effective in preventing indebtedness than LTV ratio caps. Alpanda and Zubairy (2017) have presented a theoretically more complex macroeconomic model, based on which adjustable LTV ratios and restrictions to the tax deductibility of mortgage interests are more effective in preventing household indebtedness than e.g. monetary policy tightening.

There is also evidence on the effectiveness of borrower-based macroprudential tools in the EU (ESRB, 2018). According to Member States' experiences, growth in lending and indebtedness can be mitigated by combining instruments targeted at housing loans. Borrower-based instruments curb house price increases and higher indebtedness in economic upturns, while collateral-based instruments strengthen the stability of the real estate markets especially in downturns.

Extension of regulation beyond the banking sector

Non-bank lending for house purchase is on the increase in many countries. In the Netherlands, insurance companies and pension funds already finance about one fifth of new housing loans (DNB 2016, p. 11). In the United States, shadow banks surpassed banks in the provision of new housing loans in 2015. These actors are usually outside the scope of banking sector regulation. Since borrower-based macroprudential instruments generally apply to banks only, incentives may arise to shift mortgage lending outside the banking sector and the scope of regulation.

In EU Member States, macroprudential policy powers extend to the non-bank financial system. In most countries, however, mortgage lending-related macroprudential

measures are only targeted at banks. Only six countries have introduced activity-based macroprudential tools that focus on entities engaged in the same service – in these cases the provision of housing loans.^[3]

The non-bank financial system is growing rapidly in terms of both size and significance. If mortgage lending shifts increasingly outside the traditional banking sector, macroprudential instruments should be modified to cover all actors providing housing loans. Otherwise, macroprudential policy measures will be ineffective in addressing excessive growth in housing debt levels.

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Tags

[households](#), [housing loans](#), [indebtedness](#), [macroprudential instruments](#), [macroprudential policy](#)

3. Ireland, Slovenia, Iceland, Hungary, Latvia and Romania have also extended borrower-based instruments to cover non-bank financial institutions providing housing loans. France issued regulatory amendments for the same purpose in 2017.

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Progress in work to complete Banking Union

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The EU's Banking Union is operational but not yet completed. The common European Deposit Insurance Scheme (EDIS) is the key missing component. To reinforce Banking Union and promote the EDIS it is important to decrease risks in the European banking system, the most important of which are the legacy non-performing loans and banks' large holdings of domestic sovereign bonds. The framework for resolution should also be further improved.



Operation of Banking Union is based on two pillars

The objective of Banking Union, which became operational in 2014, is to ensure the stability and reliability of the banking system. Within Banking Union, banks are supervised based on common rules and principles. The resolution of distressed banks is managed without taxpayers' money and by minimising the adverse effects on the real economy. All euro area countries are participants in Banking Union. Other EU countries may join if they so wish.

Of the three key components, i.e. pillars of Banking Union, the first pillar – the [Single Supervisory Mechanism](#), under the auspices of the ECB – has been operational for over three years and has harmonised and improved banking supervision. The Single

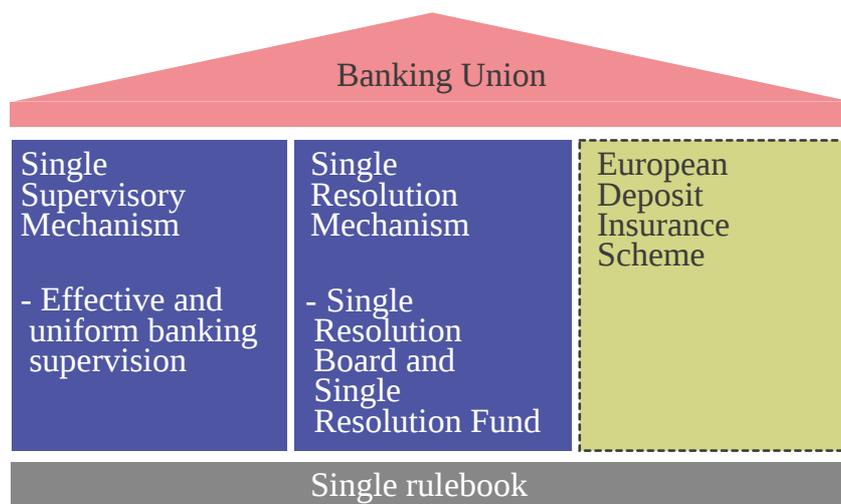
Resolution Board, which is one of the institutions of the Banking Union's second pillar – the [Single Resolution Mechanism](#) – is operational and the Single Resolution Fund is being gradually built up. As a last resort and a backstop for the Single Resolution Fund, the European Commission has proposed the establishment of a [European Monetary Fund](#), based on and succeeding the [European Stability Mechanism](#).

Common deposit insurance scheme an important missing component

Banking Union is still lacking its third pillar, the common European Deposit Insurance Scheme (Chart 1). The European Deposit Insurance Scheme (EDIS) will guarantee deposits that are within the scope of the scheme in the event a bank operating in one or several countries becomes distressed. The objective of the EDIS is to increase confidence in the banking system during financial crises and to prevent deposit runs. The scheme will also mitigate the stability risks related to multinational banks and will be particularly important for countries with a large and concentrated banking sector.

Chart 1.

The third pillar of Banking Union is missing



Source: Bank of Finland.

18.4.2018
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In October 2017, the European Commission adopted a proposal for the implementation of a European Deposit Insurance Scheme.^[1] The most noteworthy amendment in this

two-step proposal, compared with the Commission's previous proposal, is the conditionality of the full implementation of the system.

The Deposit Insurance Scheme would be based on contributions from banks to the common Deposit Insurance Fund. A study published by the European Central Bank shows that deposit insurance contributions calibrated based on individual banks' risk profiles could take into account the specificities of banking systems.^[2] The common European Deposit Insurance Scheme, as a rule, would not involve a situation in which the banks in some countries would contribute to the Deposit Insurance Fund more than they would benefit from it. In addition, a fully fledged common European deposit insurance scheme would be sufficient to cover deposits even in a very severe non-systemic crisis.

Realisation of the European Deposit Insurance Scheme can be promoted and Banking Union reinforced by reducing risks in the banking system and improving the loss-absorbing capacity of banks.

Stock of non-performing loans must be decreased further

The stock of non-performing loans on banks' balance sheets, as a legacy of the financial crisis and the European sovereign debt crisis, has decreased. According to the Single Supervisory Mechanism, the euro area banking sector's non-performing loans at the end of 2017 totalled EUR 721 billion, which is some 18% less than a year earlier (Chart 2).

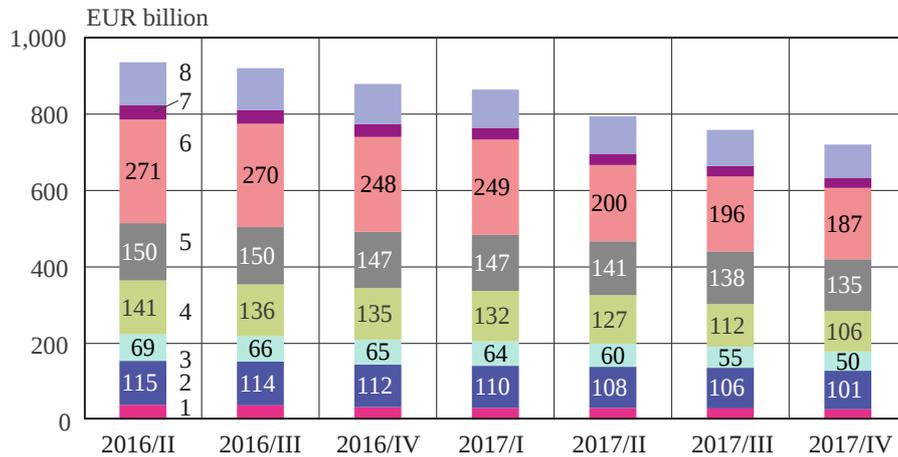
1. See Financial Stability Assessment [Finland's banking sector expands – Banking Union mitigates risks](#), Bank of Finland Bulletin, 13 December 2017.

2. See [Completing the Banking Union with a European Deposit Insurance Scheme: who is afraid of cross-subsidisation?](#) ECB Occasional Paper Series, and [Construction of a risk-based European Deposit Insurance Scheme](#), Bank of Finland Bulletin, 27 March 2018.

Chart 2.

Amount of large banks' non-performing loans in selected countries

1. IE 2. GR 3. DE 4. ES
5. FR 6. IT 7. PT 8. Others



Source: SSM.

3.5.2018
eurojatalous.fi

To mitigate risks in the banking system, it is important to further reduce the amount of legacy non-performing loans. To ensure the most effective reduction of non-performing loans, legacy problems should be tackled with national funds and in line with the guidelines issued by the European Commission. An adequate amount of time should be given for resolving the problem, by issuing transitional provisions. Transitional provisions facilitate the write-down of non-performing exposures to a level that enables market-based solutions (e.g. the selling of non-performing loans to investors). The long-term objective is to abolish the transitional provisions.

Market-based solutions are the primary alternatives for decreasing non-performing loans. It is, however, unlikely that only one solution would be sufficient to resolve the issue. Banking sector structures and the economy, as well as legislation, differ across countries. History has also shown that the best solutions are a combination of several alternatives. Therefore, in addition to measures targeted directly at non-performing loans themselves, progress is also needed in areas that support resolving the problem of these loans, for example the opening of loan-specific data to investors and the establishment of a secondary market for non-performing loans. The European Commission published in March 2018 a proposal for measures to accelerate the reduction of non-performing loans.^[3]

The resolving of legacy problems should be separated from the management of future non-performing loans. The Single Supervisory Mechanism (SSM) has already published a proposal on provisioning methodologies for new non-performing loans, which increase banks' loan loss provisions and resilience. In addition, the accounting standard IFRS 9, which entered into force on 1 January 2018, introduced changes in the recognition of non-performing loans, as a result of which projected loan loss provisions are recognised already at the time of granting credit.

Measures sought to break the bank-sovereign loop

Breaking the undesirable links between national banking sectors and their sovereigns is one of the fundamental reasons for creating Banking Union. Many euro area banks have a relatively large portfolio of their home country's sovereign bonds. One incentive for holding sovereign bonds is the fact that they are treated as risk-free in banks' capital adequacy calculations: euro area banks are not required to allocate capital for risks related to holdings of euro area sovereign bonds.

Sovereign bonds are, however, not risk-free. A deterioration in central government finances is reflected as a weakening of the balance sheet quality of the bank that has in its portfolio the sovereign bonds in question. As a result, the bank's funding costs will probably increase and its ability to act as a financial intermediary to non-financial corporations and households will weaken, which may further dampen the economy of its national sovereign. Particularly during the financial and debt crises, these links caused a negative loop between banks and their sovereigns.

To break this vicious circle, banks' domestic sovereign exposures should be decreased and the quality of capital to cover these risks should be improved. As part of completing Banking Union, it has been proposed that banks be required to increase their capital position if they want to hold large amounts of individual sovereign debt.^[4] This additional capital requirement that would be based on concentration risk would encourage banks to diversify their sovereign bond portfolios and support the distribution of risk on the euro area bond market. The negative market effect of the concentration charge would probably be quite small.

In the future, too, there will still be a demand for low-risk investment objects, such as sovereign bonds, on the financial markets. European sovereign bond-backed securities (SBBS) have been proposed as an alternative for banks' large holdings of national sovereign bonds. In the best case, the issuance of sovereign bond-backed securities would facilitate the diversification of banks' sovereign bond portfolios and provide a low-risk investment object.

3. For more information, see the European Commission website at: http://europa.eu/rapid/press-release_IP-18-1802_en.htm.

4. See Nicolas Véron: *Sovereign Concentration Charges: A New Regime for Banks' Sovereign Exposures*.

Securing the conditions for resolution decreases the need to resort to the deposit insurance scheme

The reduction of banking sector risks can be considered to also include ensuring banks' loss-absorbing capacity. Individual banks must be prepared for facing problems that are so severe that the bank has to be placed under resolution. In resolution, the activities of a distressed bank are restructured so that the bank can continue with the provision of critical services, or alternatively, the bank is wound up in an orderly way. The bank's losses are absorbed, and in resolution the bank is recapitalised.

To ensure successful absorption of losses and recapitalisation, banks must hold a sufficient amount of debt that can be converted to equity or written down, if necessary. Therefore, resolution authorities require that banks hold on their balance sheet a minimum amount of liabilities eligible for such purposes. The minimum requirement for own funds and eligible liabilities (MREL) ensures the implementation of bail-in, as investors in the bank's debt securities have to bear their share of the costs of resolution.

Banks' resolution plans and the MREL to be imposed as part of the resolution plans are still being finalised. The Commission has also proposed some amendments to legislation on resolution and MREL. The finalisation, calibration and harmonised implementation of MREL will decrease banking sector risks, facilitate the achievement of a uniform level of risk and improve the conditions for resolution. Effective and credible resolution, in turn, will safeguard the position of depositors, prevent the lack of confidence from spreading more widely in the banking sector and decrease the likelihood of the funds of the deposit insurance scheme being used.

Tags

[banking union](#), [crisis resolution](#), [deposit insurance](#), [non-performing loans](#)

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Nordic banks go digital

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The Nordic countries are the most digital societies in Europe, which is also reflected in past and future investment within the Nordic banking sector in digital business models. Keeping up with digitalisation helps these banks respond to the competition posed by new FinTech actors. Elsewhere in Europe, the banking sector as a whole is not as digitally advanced. In the longer term, the lack of a digital strategy may weaken individual banks' position in the provision of various financial services. A material shift in this activity from banks and other closely regulated and supervised entities to loosely regulated actors could give rise to new kinds of risks.



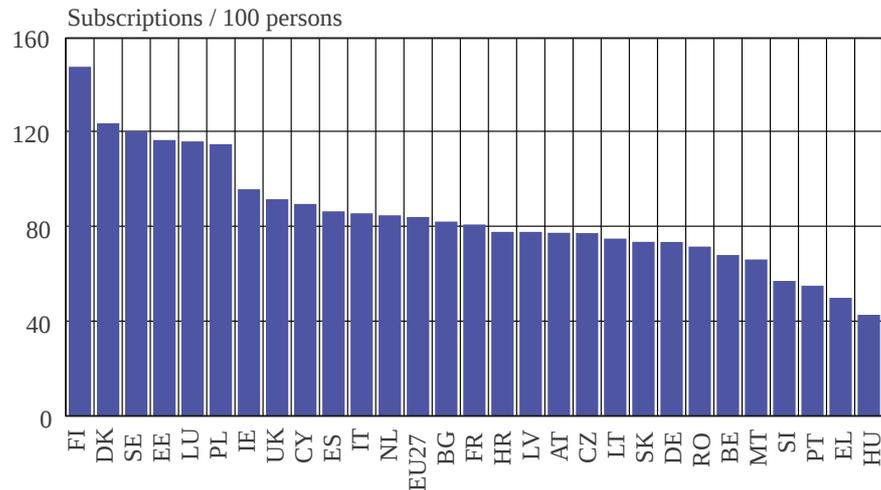
The Nordic countries are digital societies

The Nordic countries lead digitalisation in Europe, measured by a number of indicators: the use of broadband and mobile broadband is widespread (Chart 1), people are already accustomed to handling a variety of matters – such as submitting a tax return form – electronically, and soon nobody will recognise a paper-based share certificate. In many other European countries, digital services are not as self-evident. Instead, matters are handled face-to-face and forms are completed by pen on paper. The more progress countries make with digitalisation, the easier it is to integrate digital financial services as part of other services.

The Digital Economy and Society Index (DESI) published by the European Commission (Chart 2) shows that the gap between the most and least digital countries in Europe is still large, even though it has slightly narrowed in recent years.^[1] For instance, over 85% of the population in the Nordic countries use the Internet daily or almost daily, compared with slightly over 70% in the EU on average. In Bulgaria, Croatia and Greece, almost 30% of the population have never used the Internet, as opposed to less than 5% in the Nordic countries. Country-specific differences are further highlighted by the comparison of the number of mobile broadband subscriptions and the use of the Internet via mobile devices. As a rule, the Nordic countries also rank notably above the EU average in terms of digital skills and infrastructure.^[2]

Chart 1.

Mobile broadband subscriptions surpass the number of inhabitants in the Nordic countries



Source: European Commission.

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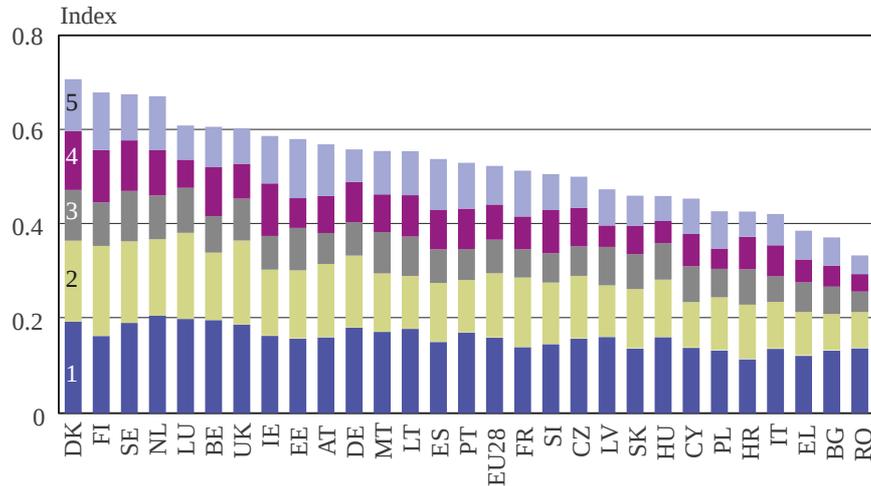
1. For detailed information on the DESI index, the underlying components and country-specific data, see the European Commission's website <https://ec.europa.eu/digital-single-market/en/desi>.

2. For example, the coverage of 4G mobile networks, especially in rural areas.

Chart 2.

Finland ranks second in the EU on the DESI index for digitalisation

- 1. ■ Connectivity
- 2. ■ Human capital
- 3. ■ Use of the Internet
- 4. ■ Integration of digital technology
- 5. ■ Digital public services



Source: European Commission.

9.4.2018
bofbulletin.fi

The more people use digital services, the more the digital customer experience guides their expectations regarding other services too. In the financial sector, even with customer consent, third-party access to customer accounts and information and funds in these accounts has been controlled by the traditional actors, i.e. the banks. Customers have not been able to freely choose e.g. the preferred payment method. Instead, they have only been able to select among the methods supported by their bank. Banks' competitive advantage in this area is about to disappear with the revision of the Payment Services Directive (PSD2), if not earlier. Soon banks will no longer be able to decide which authorised service provider customers must choose to initiate payments on their behalf.^[3]

Nordic banks are forerunners in digitalisation

Financial services are increasingly shifting online and to mobile devices carried by their owners. Consumers are no longer benchmarking their expectations about financial services against their customer experiences with other banks, but instead against user

3. For more detailed information on PSD2, see [Effects of the revised Payment Services Directive: first assessment](#). However, it should be noted that even though PSD2 has already been transposed into national law in Finland, the more specific technical standards will enter into force later. Therefore, the change will not take place in an instant.

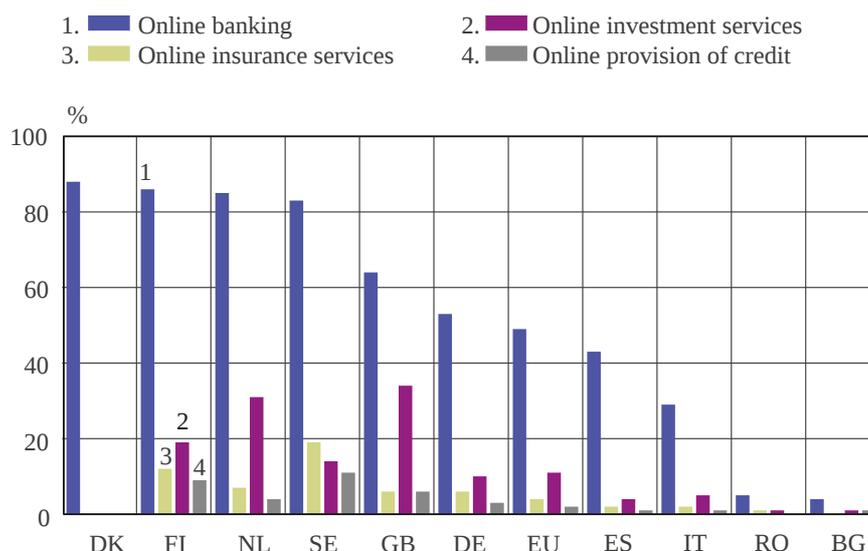
experiences gained from other digital services. The pressure for change facing the banking sector comes partly from outside the sector, when new actors (for example FinTech companies) begin to offer financial services. In future, banks will also need to compete more strongly against each other.

Almost all the largest Nordic banks have commenced their own investment in new IT systems and digital business models. The Nordic banking sector has been in a relatively good financial condition since the financial crisis, which is helping to enable these investments.

Chart 3 shows that people in the Nordic countries are highly accustomed to using various online banking services. The declining use of cash in the Nordic region also demonstrates that consumers in these countries are eager to adopt new payment methods.

Chart 3.

Online banking more common in Finland than in many other euro area countries



Source: Eurostat.

7.5.2018
bofbulletin.fi

Not only have banks in the Nordic countries invested in digitalisation; the position of new FinTech actors is also better in the Nordic region than in many other countries. Since Nordic consumers have already embraced the mobile lifestyle, it is easier for Nordic FinTech actors to attract new customers. Consequently, there are many FinTech actors in the Nordic countries, and compared with other European countries, the Nordic FinTech sector is larger relative to the size of the economy. However, it should be noted that capital investment in FinTech actors is concentrated in euro terms in only a few

advanced companies, and no far-reaching conclusions can therefore be made on the basis of this indicator.^[4]

Banks' digital advancement more heterogeneous elsewhere in Europe

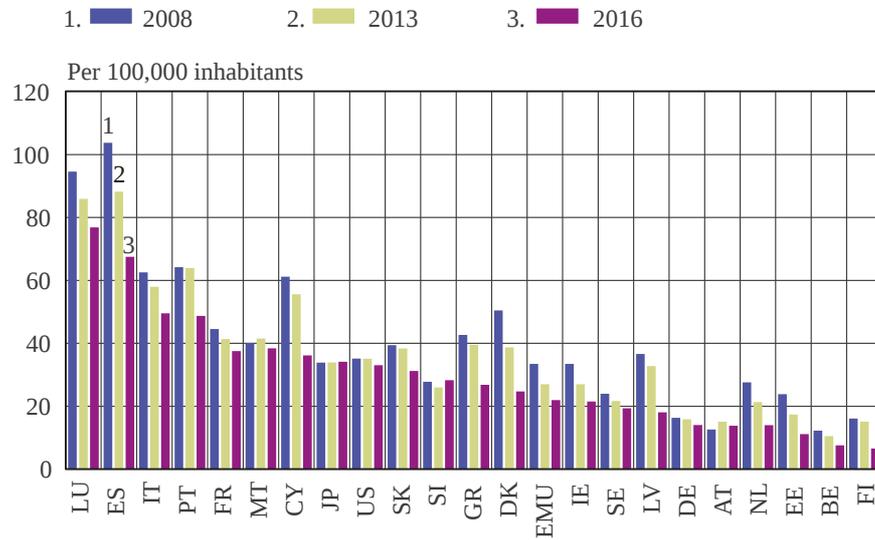
Some of the banks in many countries outside the Nordic region, too, strive to remain at the forefront of digitalisation, but some of them have not yet necessarily initiated the fundamental transformation (see Chart 4 on the number of bank branches in different countries).^[5] In fact, for many banks, even traditional online banking represents modern technology, and going paperless will only come in the future. This hampers the digital transformation, because moving forward will necessitate substantial financial investment. However, it is difficult to assess whether the digitalisation of banks should proceed in small steps or giant leaps.

4. Although there are numerous estimates available on FinTech investment volumes, according to an [estimate by FinTech Global](#), the 10 largest FinTech investments in the Nordic countries accounted for 80% of the total capital invested in the region in 2017.

5. The bank branch network can be used as some sort of indicator of the level of digitalisation of bank business models, since less offices are needed if the majority of banking services can be offered online. However, it should be borne in mind that the indicator does not directly measure digitalisation in the banking sector, because in Finland, for example, banks began to reduce their branches already during the crisis of the early 1990s. The indicator is also misleading for other reasons in respect of small countries and countries favourable to banks (Luxembourg, Malta, etc.).

Chart 4.

In many countries, the number of bank branches relative to population is many times that of Finland



Source: World Bank.

11.4.2018
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Relatively weak profitability and problems with non-performing loans, for example, are factors that notably impede digitalisation in many banks outside the Nordic region. If a bank must struggle every day to survive, developing and also implementing a long-term digital strategy is difficult. IT investments and changes in the number of staff and their skills necessitated by digital business models may turn out to be too costly for many banks in the short term, even when these measures could generate substantial cost savings in the longer term. In addition, it is not realistic to assume that the financial sector could become fully digitalised in a country where, for example, the infrastructure is not sufficiently digitalised and users are not accustomed to using digital services. It is also not very likely that an increasingly digital financial sector could force other parts of society to go digital; the causal relationship is more in the opposite direction.^[6]

On the other hand, if banks do not make the necessary digitalisation investments, they will not be able to keep up with developments. There are already at least a few examples of digital actors who have succeeded in rapidly winning market share from banks

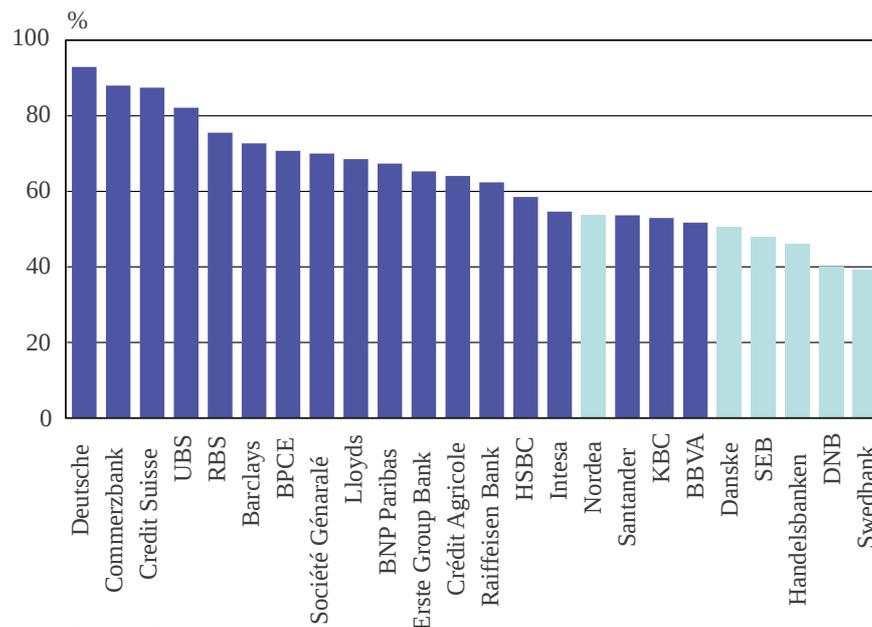
6. The European Commission's Digital Single Market strategy aims to enhance the conditions for digital development across Europe. For further information, see https://ec.europa.eu/commission/priorities/digital-single-market_en.

because these have not been able to produce the services preferred by digital consumers.^[7]

If Nordic banks succeed in transforming themselves into banks of the digital age and developing service concepts that are cost-efficient to implement and pleasant to use for the customers, they will also have a chance to gain a foothold outside the Nordic region (see Chart 5 on selected banks' cost-to-income ratios). Naturally, expanding outside one's home market is sensible only if it is financially profitable. Banks need to see that future provision of digital financial services will create economies of scale, and the Nordic market alone does not necessarily provide a sufficient customer base against global competitors. Of course, other reasons may speak in favour of not expanding outside the home market, but one must bear in mind that digital services are often cross-border business, which requires a large customer base. Therefore, drawing up a longer-term banking strategy is difficult at present, which is undoubtedly an unwelcome situation for a conservative industry like the banking sector, which does not value change highly.

Chart 5.

Many Nordic banks much more cost-efficient than banks in other countries (cost-to-income ratio)



Source: SNL.

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7. One of the most frequently used example is ING-DiBa, a branchless German subsidiary of the Dutch bank ING that only provides digital services in Germany. ING-DiBa is the third largest retail bank in Germany and it is highly profitable, unlike many other banks in Germany. For more information, see e.g. article by [The Economist](#).

Authorities and legislators must constantly juggle between diverging interests: competition, innovation and better customer experience are positive elements but cannot be promoted at the cost of financial stability or consumer protection. If digitalisation leads to financial services provision shifting increasingly from banks to actors that are less regulated and supervised, this could give rise to new risks. On the other hand, when bank's future business models are increasingly based on e.g. algorithms and data analytics, this will also require entirely new skills from banking supervisors. Someone needs to be able to say whether a data set formed by millions of lines of code in different systems is adequately secured against cyber threats.^[8]

Tags

[banks](#), [business models](#), [digitalisation](#), [FinTech](#)

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8. For more information on cyber security, see [Digitalisation poses new security challenges for payment systems](#).

Systemic risk buffer protecting the banking sector under difficult conditions

TODAY 1:00 PM • BANK OF FINLAND BULLETIN 2/2018 • FINANCIAL STABILITY



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The systemic risk buffer became available in Finland from the beginning of 2018. The systemic risk buffer is an additional capital requirement that may be imposed on credit institutions on the basis of the financial system's structural risks. The buffer may be up to 5% of the total risk exposure. Its purpose is to strengthen the credit institution sector's capital adequacy in case of structural risks and vulnerabilities affecting the financial system. Sufficient capitalisation improves credit institutions' ability to operate and to intermediate finance under difficult conditions. According to a preliminary estimate, Finland's financial system has greater structural risks than other EU countries, which is the statutory requirement for imposing a systemic risk buffer.



As of the beginning of 2018, Finland began to apply a new macroprudential tool called a systemic risk buffer. The systemic risk buffer is an additional capital requirement imposed on credit institutions on the basis of the financial system's structural risks.

The purpose of the systemic risk buffer is to ensure that credit institutions' capital is in sufficient proportion to the structural risks and vulnerabilities present in the financial system. Sufficient capital enables credit institutions to operate even under difficult

circumstances. A low capital ratio would intensify banking crises and other serious problems affecting financial stability.

A systemic risk buffer is justified if the structure of the financial system increases the risk of disruptions in the operations of the credit institution sector and hence the economy as a whole. Structural risk may exist if, for example, banks grant credit disproportionately to a single economic sector, such as construction or real estate. If the sector gets into difficulty, such a concentration of risks may burden the normal operation of banks and thereby the entire system.

The importance of the credit institution sector in intermediating financing is another reason why credit institutions' capital adequacy should be ensured by means of a systemic risk buffer. Serious problems in banks and other credit institutions could seriously disturb financial intermediation, as other forms of finance by alternative providers are relatively few. Alternative sources of finance would be even scarcer if the credit institution sector was very concentrated. This could mean that finding alternative sources of finance even for an individual credit institution could be difficult. A credit institution sector providing a significant amount of concentrated financing for the private sector should be properly capitalised in order to continue to operate without disturbance even if individual banks encounter problems.

How is the systemic risk buffer set up?

The conditions for setting a systemic risk buffer are laid out in the EU's Capital Requirements Directive.^[1] It was decided in late 2017 that the provisions in the Directive concerning the buffer would be included in the Finnish Act on Credit Institutions.^[2] The Directive does not specify a maximum size for the buffer, but in Finland it may not be more than 5% of the credit institutions' total risk exposure. The revised Act contains transitional provisions according to which credit institutions will have to reach a buffer requirement of 1% by the beginning of 2019 at the earliest, and any higher requirement no earlier than 1 July 2019.

The buffer may be set for all credit institutions or just for selected institutions. The buffer may not necessarily be the same for all credit institutions. If a credit institution has been set both a systemic risk buffer and a buffer requirement for global or other systemically important institutions (G-SII/O-SII buffer), only the higher requirement is applied. An exception to this is a situation in which the countercyclical capital buffer only applies to the credit institutions' domestic exposures (or exposures in third countries). In such a case, the credit institution must fulfil both the systemic risk buffer requirement and any other applicable additional capital requirement.

Whether a systemic risk buffer will be set is decided in Finland by the Board of the Financial Supervisory Authority (FIN-FSA). Any such decisions are made annually by the end of June. The FIN-FSA must, together with the Bank of Finland and the Ministry of

1. Directive 2013/36/EU of the European Parliament and of the Council on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC.

2. Act on Credit Institutions (Act 610/2014).

Finance, assess the need for setting a buffer. The FIN-FSA must also request a statement not only from the Bank of Finland and the Ministry of Finance, but also from the Ministry of Social Affairs and Health. The buffer requirement generally takes effect 12 months after a decision has been made to set it.

Under the Act on Credit Institutions, the systemic risk buffer may be set if a risk consisting long-term non-cyclical factors threatening the financial system or the total economy calls for a higher capital requirement. The prerequisite is that this risk may threaten the normal operation and stability of the financial system on a national level. The buffer may only be set if other macroprudential tools are insufficient or unsuitable for covering the credit institutions' capital needs. For example, a countercyclical capital buffer is more appropriate to address a risk caused by a significant increase in cyclical lending.

In Finland, the discretion of Finnish macroprudential authorities is limited by law. The Act on Credit Institutions specifies risk factors to be taken into account when deciding on the systemic risk buffer. These factors include credit institutions' risk concentrations and interconnectedness; size, concentration and significance of the credit institution sector in terms of financial intermediation; and the indebtedness of the credit institutions' largest customers.

Discretion in setting up the buffer is also limited by the Ministry of Finance Decree^[3] supplementing the Act on Credit Institutions and defining the indicators to assess the risk factors. The Decree also lists conditions which, when fulfilled, permit the setting of the systemic risk buffer.

A systemic risk buffer of up to 3% may be set if the systemic risk for Finnish credit institutions is higher than in other EU or euro-area countries. The same may be done if it can be assessed on the basis of at least three indicators that the systemic risk in Finland is higher than the long-term average.

A systemic risk buffer of between 3% and 5% may be set if the systemic risk is found to be clearly higher in Finland than in other EU or euro-area countries, or clearly higher than the long-term Finnish average.

The FIN-FSA must inform the European Commission and specific other authorities in advance if it plans to set a systemic risk buffer. Setting the buffer at more than 3% also requires authorisation from the Commission. The European Central Bank must also be informed in advance of any intention to impose a systemic risk buffer, and the ECB's view must be taken into account when making the final decision. The European Central Bank may also, if necessary, set the systemic risk buffer at a higher level than decided by the FIN-FSA.

The structure of the Finnish financial system has several characteristics that point at significant structural systemic risks. The housing market in particular forms a major risk concentration for Finnish credit institutions, made worse by the high indebtedness of Finnish households. The Finnish credit institution sector is significant in terms of

3. Ministry of Finance Decree 65/2018.

intermediating financing; large in size and also concentrated; and dependent on international market financing.

Tags

macroprudential policy, structural risks, systemic risk buffer

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Effects of the revised Payment Services Directive: first assessment

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In retail banking, the two key services are the provision of credit and management of payment transfers. The revised Payment Services Directive (PSD2), which regulates payment transfers, entered into force in Finland for the most part in January 2018. The purpose of PSD2 is to increase competition, and it has been prepared with the consumer's interests in mind. In addition to benefits, the revised Directive involves also risks and uncertainties.



Payment transfers are an important source of income for banks. Finnish banks' aggregate income from payment transfers in 2016 was some EUR 0.5 billion, i.e. nearly one-fifth of their profits.^[1] In addition to banks, other types of entities also participate in the payment transfer process. For the regulation of this complex industry, the EU adopted the Payment Services Directive, the purpose of which is to promote competition and ensure a level playing field for all actors. The Directive is also based on the understanding that retail trade is increasingly moving onto online and mobile applications.

1. <https://www.suomenpankki.fi/fi/media-ja-julkaisut/puheet-ja-haastattelut/2017/olli-rehn-digital-transformation-in-the-financial-industry-whats-good-for-the-society/>

The revision of the Payment Services Directive is a significant step for the entire banking sector. It will introduce to the sector two new types of service provider that will require licensing: account information service providers and payment initiation service providers. The account information service provider may collect into one service a customer's payment account information located in different banks. The payment initiation service provider may initiate a payment transaction from any of the customer's payment accounts. To enable the services, the Directive requires that banks grant new service providers indirect access to the payer's account. Banks may not charge a fee for the access. However, access can be granted only with the consent of the customer, i.e. the account holder.

PSD2 enables new types of payment applications

In retail trade, electronic payment has thus far and in practice involved only payment by card, and debit payment has been the only form of payment in which the customer's account is charged directly. PSD2 enables new types of payment applications in which payment takes place in the form of a direct credit transfer between customer and merchant. Under the revised Directive, neither the consumer nor the payment initiation service provider may be charged for initiation of a payment transaction. It makes the new forms of payment services very cost-competitive compared with card payments. This competitive advantage will be more pronounced as credit transfers gradually become real-time in the new payment systems. The popularity of traditional card payments may be threatened because in the new environment customers will have at their disposal payment solutions by several service providers, and money transfers between accounts will take place immediately.

The entry onto the market of payment initiation service providers will increase competition significantly in the field of retail payments. It is, however, still unclear which types of company will assume the role of payment initiation service provider. They may be small start-ups that develop mobile services, international technology majors, retail merchants, telecommunications operators, current payment institutions or banks, naturally.

Stiffer competition in retail payments will benefit consumers, but it may be a challenge for the banks. In Finland, banks have traditionally been significant actors on the payments market. The Directive causes direct costs to banks because they have to modify their systems to enable use by the new actors. Under the new regulation, banks must make these investments without any additional costs to third party service providers that use the systems. In addition to direct investment costs, banks' income from the management of payment transfers may decrease, due to heightened competition in the sector. Competition does not necessarily mean loss of market share, because price erosion, too, may result in loss of income. Competition would thus decrease profitability for all the actors in the sector. In addition to banks, tighter competition will affect also international card companies because, in future, it will be possible to execute retail payments outside the card schemes.

Payments shaped not only by regulation but also by digitalisation

The revision of the Directive is part of a wider phenomenon in which not only payment transfers but also the entire business of banking will be increasingly opened to competition. The change will be furthered not only by regulation but also by digitalisation, as this enables new types of services and business models. The role of banks as providers of financial services may change. We can roughly foresee at least two possible scenarios. Banks may remain in the role of account-servicing bank, whereas value added services would be provided by other actors. In such a trend, the task of banks would be mainly the safekeeping of funds as well as customer identification. Another possible scenario is that of banks acting as innovative ecosystems where they would provide versatile financial services in cooperation with other companies. The task of banks would be to produce technical platforms for the ecosystem and support the provision of services.

The above examples of possible future scenarios show that the revision of the Payment Services Directive is a significant force for change in the financial sector and compels banks to rethink their role in the provision of financial services. Banks may adopt a variety of strategies, and the regulatory reform can be taken both as a threat and as a possibility.

Consumers, too, will be faced with challenges brought about by the regulatory changes. With the large number of applications and alternatives available for payments, the situation may be confusing for consumers. It is important that users of payment services can rely on the services and the companies that provide them.

Risks must be addressed as the operating environment changes

PSD2 also introduces new risks. Of these, particularly important are cyber risks, and close attention should therefore be paid to technical systems and the security of services. Cyber risks will be an even more important factor when the sector operates as networks and entities are increasingly interconnected.

Another risk is the increasing speed and seamless integration of payments with the purchase transaction, which may make the management of personal finances more difficult. Spending and excess debt accumulation are increasingly easy and inconspicuous. Even though PSD2 encourages the launching of financial management applications, thus far we have only limited experience of these applications. Nobody knows how easy it will be for consumers to adopt them.

The revised Payment Services Directive will affect the financial sector extensively. The roles of the actors may change, and at least in the medium term their number may grow significantly. The fundamental objective of the new regulation is to increase competition, which will nevertheless ultimately be to the advantage of the consumer.

Tags

digitalisation, payments, regulation

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Digitalisation poses new security challenges for payment systems

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Reliable payment and settlement systems are basic requirements for maintaining financial stability and fostering economic activity. The smooth functioning of society would quickly become disrupted if businesses and households were to lose trust in payment services or the accuracy of bank account balances, for example.



Sound payment systems and securities clearing and settlement systems (i.e. financial market infrastructures) lie at the foundation of any stable financial system. Cyber risks are increasingly cited as a major source among the overall risks to the financial system. Consequently, developing effective strategies to address emerging cyber threats is a key component of managing financial stability.^[1] 'Cyber risk' generally refers to any risk of disruption or damage caused by the misappropriation or exploitation of an organisation's IT systems.^[2] In practice, this could mean, for example, bank account information becoming compromised, impairing the use of any and all services that rely on such data. As financial markets become increasingly confined to the digital operating environment,

1. Bank of Finland Bulletin 2/2015: Could a cyberattack lead to financial crisis? (<https://www.bofbulletin.fi/en/2015/2/could-a-cyber-attack-lead-to-financial-crisis/>).

2. Aleksi Grym's blog post (Finnish only): Kyberriskit huomioitava, jotta rahoitusvakaus säilyy (<https://www.eurojatalous.fi/fi/blogit/2017/kyberriskit-huomioitava-jotta-rahoitusvakaus-sailyy/>).

the volume of data held by service providers will increase and along with it so will challenges relating to the maintenance, storage, and, in the event of disruptions, restoration of these data. Improving resilience against cyber threats would do much to alleviate these risks.

The Bank for International Settlements' (BIS) Committee on Payments and Market Infrastructures^[3] and the International Organization of Securities Commissions^[4] have published a strategy for improving the resilience of financial market infrastructures against cyber attacks.^[5] This framework covers a broad array of topics related to risk management, including governance, identification, protection, detection, and response and recovery. Key principles include governance clearly committing sufficient resources towards cyber security and collaborative efforts to identify and manage shared risks between market infrastructures. Cyber risks need to be exhaustively addressed on all levels of infrastructure, beginning from end-user-specific risks and working all the way up to system-wide vulnerabilities across multiple infrastructures.

Cyber security should be approached with the different roles of market participants in mind. Individual service providers must ensure that they are able to withstand commonplace security threats such as denial-of-service attacks, computer viruses and other forms of malicious software, and ensure that critical data, such as account balances, are backed up daily. In the event of security breaches, data corruption or system failure, backup data ought to be restored as quickly as possible or secondary systems brought online to minimise service disruption. Measures should also be taken against the risk of backup data corruption, as system restoration may otherwise prove to be extremely challenging.

Together, individual market entities comprise a network of products and services that ultimately constitute the financial system. However, even individual entities may operate in several countries and are often involved in the functioning of multiple payment and settlement systems. As such, the disruption of a single market entity may carry risks across multiple countries and financial infrastructures. For the sake of the financial system as a whole, then, it is critical that all market entities reach a sufficient level of resilience against cyber threats and observe best practices, regardless of size or sovereign. This strategy would provide a form of herd immunity against system-wide disruptions caused by cyber attacks. Similarly, market entities should work together to identify and address vulnerabilities where needed.

In Europe, a number of initiatives have been undertaken to shore up the region's protection against cyber threats. In the Netherlands, the national central bank (DNB) has developed a framework for simulating sophisticated cyber attacks and testing resilience against these attacks (Threat Intelligence Based Ethical Red Teaming – TIBER).^[6] The ECB recently announced the new Euro Cyber Resilience Board (ECRB)^[7], a non-binding

3. CPMI, Committee on Payments and Market Infrastructures (<https://www.bis.org/cpmi/>).

4. IOSCO, International Organization of Securities Commissions (<https://www.iosco.org/>).

5. Report 'Guidance on cyber resilience for financial market infrastructure.' (<https://www.iosco.org/library/pubdocs/pdf/IOSCOPD535.pdf>).

6. DNB financial stability report 2017 (https://www.dnb.nl/en/binaries/OFS_Autumn%202017_tcm47-363954.pdf).

forum chaired by the ECB whose purpose is to promote the cyber resilience of financial market infrastructures as well as that of the wider EU financial sector. Furthermore, a cyber resilience survey was conducted across more than 75 payment systems, central securities depositories and central counterparties throughout Europe. Based on the survey, areas that require the most development include governance, training and awareness, and incident response. Finally, the Eurosystem is currently finalising the main elements of the European Threat Intelligence-Based Ethical Red Teaming (TIBER-EU) Framework, which will raise the level of cross-border cyber resilience in Europe.^[8]

Security of payment services critical for end-users

Cyber security can also be approached from the specific needs and requirements of the end-user. Applications that provide their users with financial services are likely to become all the more ubiquitous on personal computing devices such as laptops and mobile phones in the coming years. The Revised Payment Services Directive (PSD2)[1] provides Third Party Providers (i.e. payment initiation service providers and account information service providers) with the ability to initiate payments and analyse account transactions on the explicit consent of the customer. This allows for the construction of new interfaces between traditional banks and other service providers. As such, the chain of trust linking banks with their customers will become increasingly shared by other market entities. The digital operating environment may provide end-users with lower costs and improved accessibility, but it is vital to make sure that customers may place their trust in new service providers and their respective cyber security protocols. Users must be educated on the terms and conditions associated with digital financial services. More specifically, users must understand the implications of accepting any given set of terms and conditions and also have a clear picture of who has access to their data.

Authorities responsible for maintaining a secure operating environment

Hybrid threats are another type of risk closely linked to cyber security. These refer to the methods and tools used by individual state or non-state actors to disrupt or weaken competitors, adversaries or, indeed, any perceived threat. In the financial sector, hybrid threats may include spreading false market information or other disinformation through trusted news media or harnessing cyber criminals to leak sensitive market data.

It is the duty of authorities to implement regulation and promote initiatives such that cyber security is addressed on all levels of financial infrastructure, encompassing individual market entities all the way up to the system level. Participants on financial markets must ensure that they all commit to protecting the infrastructures that underlie the financial system. One should never be lulled into a false sense of cyber security, as the threat of cyber crime is real and increasing.

7. Member of the ECB's Governing Council, Benoît Cœuré, speech, 9.3.2018 (http://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp180309_1.en.html).

8. ECB press release, 2 May 2018 (<http://www.ecb.europa.eu/press/pr/date/2018/html/ecb.pr180502.en.html>).

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cyber security, digitalisation, financial stability

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