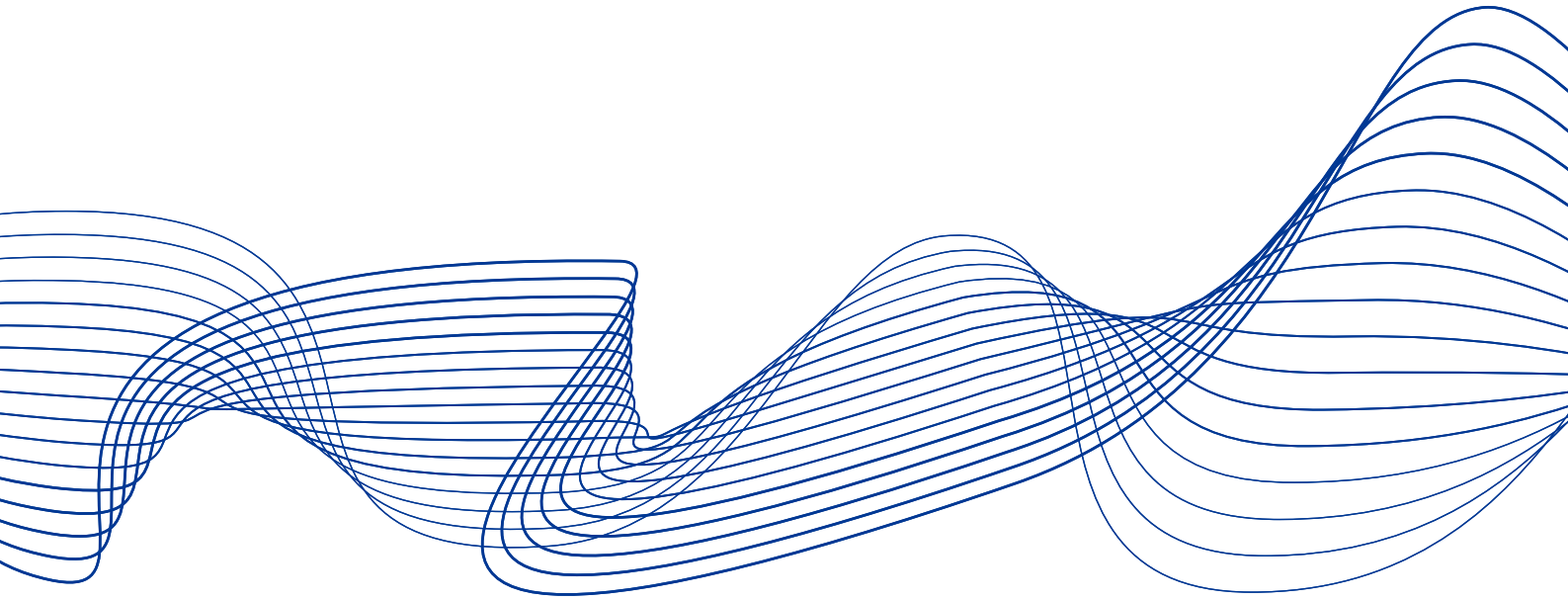
Follow-up report on countries that received ESRB warnings in 2016 on medium-term vulnerabilities in the residential real estate sector

September 2019



ESRB
European Systemic Risk Board
European System of Financial Supervision

Contents

1 Overview

Given the importance of the residential real estate (RRE) sector for financial and macroeconomic stability, the European Systemic Risk Board (ESRB), alongside national macroprudential authorities and the European Central Bank (ECB)[1], has a responsibility to help prevent RRE vulnerabilities from building up across Europe. At the European Union (EU) level, the ESRB has a mandate to "[…] contribute to ensuring financial stability and mitigating the negative impacts on the internal market and the real economy".[2] Similar mandates are given to national macroprudential authorities across EU countries. Housing is a key sector in the real economy and represents a major part of household wealth and bank lending, so RRE risks are regularly analysed as sources of systemic risk.

The ESRB has been active in assessing vulnerabilities related to the EU real estate sector and in 2016 it issued a set of country-specific warnings on medium-term vulnerabilities in the RRE sector.[3] In 2016 Austria, Belgium, Denmark, Finland, Luxembourg, the Netherlands, Sweden and the United Kingdom received ESRB warnings.[4] These warning were issued in the light of a combination of country-specific vulnerabilities, related primarily to the level of household indebtedness or mortgage credit growth, coupled with concerns about lending standards and households' ability to withstand negative economic shocks. Moreover, some countries were exhibiting strong house price growth or overvaluation of RRE.

Further ESRB analysis carried out in 2019 shows that, in most countries, the vulnerabilities accumulated in the past persist, even though in some countries the speed at which these vulnerabilities accumulate has decreased. Household indebtedness remains high or considerably high in most countries and the same applies for signs of overvaluation, particularly in large cities. Mortgage lending and house prices have also continued growing in most of the countries, but these increases have broadly decelerated.

Since 2016 countries have implemented various borrower-based and capital-based measures, while the choice of instruments in individual countries has been determined, to some extent, by the availability of borrower-based measures to the national authorities. Most countries have used a mixture of both borrower-based and capital-based measures since 2016. Others have just focused on capital-based measures, either with the primary aim of increasing the resilience of the financial sector (Belgium and the United Kingdom), or because legally binding borrower-based measures are unavailable (Luxembourg). In Austria national authorities were given powers over borrower-based instruments in 2017. This is a significant improvement with regard to

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1 **Regulation (EU) No 1024/2013 of 15 October 2013** conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions (OJ L 287, 29.10.2013).

2 Recital 10 of **Regulation (EU) No 1092/2010 of the European Parliament and of the Council of 24 November 2010** on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board (OJ L 331, 15.12.2010, p. 1).

3 An ESRB task force was created to carry out this analysis. Task force participants are included in the list of participants. See Annex A for an overview of the teams, including their mandates and main forms of interaction.

4 Austria (Warning **ESRB/2016/05**), Belgium (Warning **ESRB/2016/06**), Denmark (Warning **ESRB/2016/07**), Finland (Warning **ESRB/2016/08**), Luxembourg (Warning **ESRB/2016/09**), the Netherlands (Warning **ESRB/2016/10**), Sweden (Warning **ESRB/2016/11**) and the United Kingdom (Warning **ESRB/2016/12**).

the medium to long-term perspective, even though the Austrian national authorities then decided to implement borrower-based measures through recommendation, reflecting the slowdown in the dynamics of house prices and housing credit.

While the introduction of borrower-based measures has ensured a minimum level of lending standards, either these measures might have been too loose or they should be recalibrated to take account of recent house price and housing credit dynamics. Improvements in lending standards (in the case of borrower-based measures) and lenders' resilience (in the case of capital-based measures) took place immediately after a number of macroprudential measures were introduced. However, in some countries, the calibration of the measures may not be fully mitigating the identified vulnerabilities persisting in these countries. At the same time, the measures have been becoming looser in some countries over time, owing to continued growth in mortgage credit and house prices. In these cases, the current measures may need to be recalibrated or complemented by other measures to increase their efficiency and effectiveness.

In some countries macroprudential policy actions need to be accompanied by actions in other policy areas. In several countries key drivers of RRE vulnerabilities also lie in different policy areas, such as tax policies or policies that affect housing supply. Macroprudential policies in these countries may not be able to fully and efficiently mitigate these vulnerabilities and do so without causing excessive costs to the real economy. Instead, removing the conditions that contribute to this build-up would help to mitigate the RRE vulnerabilities more efficiently.

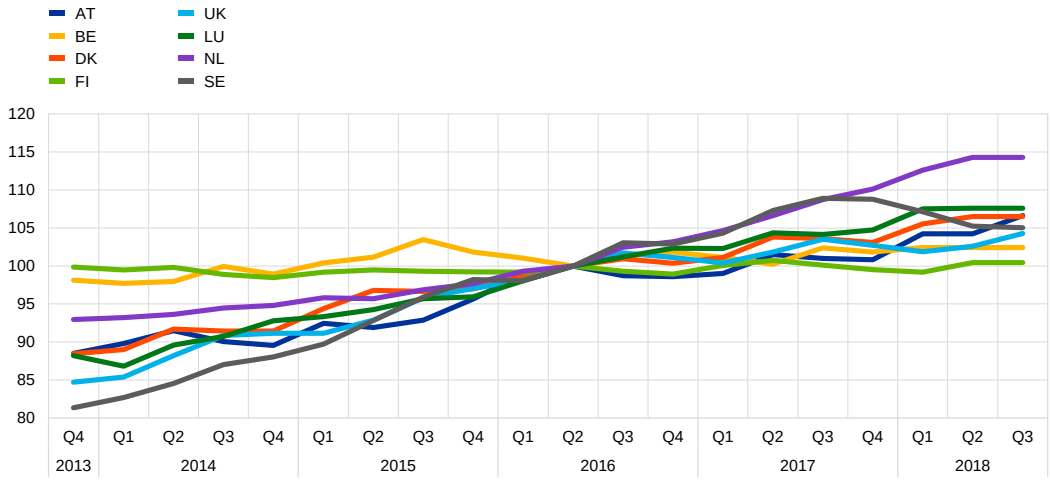
2 Risk analysis

Since 2016 the RRE risks in the eight countries that received ESRB warnings have remained generally high, with some adjustments in dynamics for some countries. Household indebtedness remains high or considerably high in most countries. Denmark and the Netherlands have both registered notable decreases in household debt relative to income (18 percentage points and 10 percentage points respectively between 2016 and 2018), but the household sectors in these countries are still the most highly indebted in Europe. Signs of house price overvaluation remain present in most countries, particularly in large cities, given the persistent growth of RRE prices that has been outpacing the growth in income in some of the countries. Since 2016 house prices have increased considerably in the Netherlands (by 7.2% between Q2 2017 and Q2 2018); increased moderately in Austria, Denmark, Luxembourg and the United Kingdom; flattened in Belgium, Finland and Sweden; and stabilised in Finland and the United Kingdom. Mortgage lending has continued to grow robustly in several economies (Belgium, Luxembourg and Sweden); it has decelerated slightly in Austria and remained flat in all the other countries. In general, the growth in house prices and related credit has been contributing to the build-up of vulnerabilities that had already accumulated before 2016 in most of these countries. However, improvements in lending standards as a result of a number of borrower-based measures, which have been introduced in these countries, have helped to mitigate these vulnerabilities to a certain extent.

Chart 1

RRE prices in real terms, in the countries which received ESRB warnings

(index, Q2 2016 = 100)

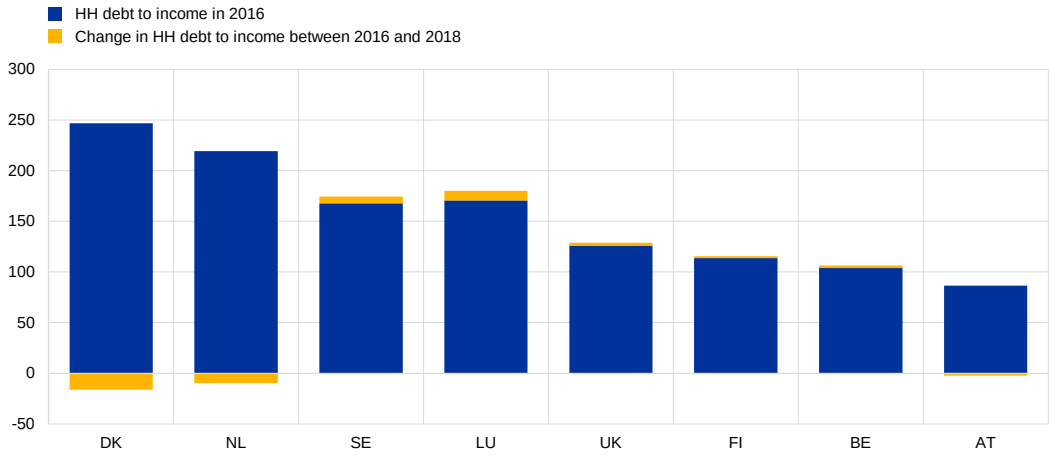


Source: ECB.

Chart 2

Household debt to income and its dynamics between 2016 and 2018

(percentage)



Source: ECB.
Note: Last data point is Q3 2018.

Table 1

The development of identified key vulnerabilities since 2016

Country	Key vulnerabilities in 2016	Dynamics of existing vulnerabilities and newly identified vulnerabilities
AT	house price increase	↓
	some signs of house price overvaluation	↑
	housing credit growth	↓
	loose/loosening lending standards	→
BE	high household indebtedness	↑
	housing credit growth	→
	loose/loosening lending standards	→
	house price increase	↓
	some signs of house price overvaluation	→
DK	high household indebtedness	↓
	house price increase	↓
	loose/loosening lending standards	↓
	some signs of house price overvaluation	↓
FI	high household indebtedness	→
	loose/loosening lending standards	→
	potential spillover effects within the Nordic-Baltic region	→
		indirect real estate lending to households (housing companies)
LU	high household indebtedness	→
	house price increase	→
	housing credit growth	→
	loose/loosening lending standards	→
	some signs of house price overvaluation	→
NL	high household indebtedness	→
	loose/loosening lending standards	→
	house price increase	↑
	some signs of house price overvaluation	→
SE	high household indebtedness	→
	house price increase	↓
	housing credit growth	→
	some signs of house price overvaluation	→
UK	high household indebtedness	→
	some signs of house price overvaluation	→

Source: ESRB assessment.

2.1 Austria

The main vulnerabilities identified in 2016 were related to accelerating house prices and mortgage credit growth, coupled with signs of loosening lending standards. Before 2016 house prices had been growing significantly in Vienna, where they were already seen as overvalued. However, just before 2016, house price growth became more widespread and growth in house prices in the capital city was surpassed by that in the rest of the country. At the same time, some preliminary data on lending standards for new loans pointed to an increasing share of households borrowing at high debt service-to-income (DSTI) and loan-to-value (LTV) ratios. Also, a high share of new loans was provided with variable interest rates or denominated in foreign currencies, even though it was acknowledged in 2016 that the share of these loans in new lending had been decreasing significantly. Overall, while household indebtedness was considered to have been contained, there were concerns related to the mutually reinforcing house price and mortgage credit dynamics, which had the potential to lead to deterioration in lending standards.

However, house price and mortgage credit dynamics have slowed down. Real house price growth slowed down shortly after 2016 (from 8.8% in Q2 2016 to 0.1% in Q1 2017), even though it has picked up again recently (to 4% in Q3 2018). House price growth outside the capital city has continued to surpass that in Vienna (a change that was marked in around 2016) and it has been slightly above the growth in income. This has been reflected in an accumulation of house price overvaluation in the rest of the country, which the Oesterreichische Nationalbank now estimates to be around 11%. House price overvaluation in Vienna, on the other hand, is estimated to be at approximately 22%; slightly more than in 2016. Real growth in household credit for house purchases (adjusted for sales and securitisations) has declined slightly, remaining mostly below 2.5% since Q1 2017 (from 4.3% in Q3 2016). There is no indication of deterioration in lending standards, but the share of new loans with very high LTV values remained significant. However, the share of variable rate and foreign exchange mortgage loans have been brought down significantly, which is a continuation of the trend from before 2016.

2.2 Belgium

The key vulnerabilities identified in 2016 were related to rapidly increasing household indebtedness against prolonged house price growth and loosening lending standards. Household indebtedness had been increasing for an extended period of time, supported by the dynamics of mortgage lending. Lending for house purchases had been increasing by 8.1% in June 2016 in annual terms (5.3% when adjusted for securitisations). While lending standards were tighter than in the previous year, microdata evidence raised some concerns regarding DSTI and LTV ratios for new loans. House prices had been growing steadily over the long term, more so than household incomes, and had reached their pre-crisis levels.

Household debt has continued to increase as mortgage lending has remained strong and lending standards have been loosened. Vulnerability related to household indebtedness has increased since 2015 as household debt to income has grown by 4 percentage points and reached a level of 106% in Q3 2018, which is quite high compared with other countries worldwide. Household lending for house purchases has continued to register similarly strong dynamics, with a

real annual growth rate of around 6% in 2018 (and of around 3% for the credit series adjusted for sales and securitisations). Moreover, concerns about loose lending standards persist, as was the case in 2016. In 2018 almost 20% of new loans have a DSTI ratio above 50%, while the share of loans with LTV ratios above 90% (now more than one-third of new loans) has increased further.

House price growth has remained moderate (although it was higher in 2017 and 2018 than in 2016), but some concerns persist regarding overvaluation. House price growth has been relatively flat over the past two years but, as was the case in 2016, there are still some concerns about the accumulated risks related to the overvaluation of residential property prices. The small yet steady increases imply that house prices remain at peak levels. Overvaluation can become problematic if house prices are adjusted for loans with higher LTV ratios.

2.3 Denmark

The key vulnerabilities identified in 2016 were related to the high level of household indebtedness and house price dynamics. House prices were increasing strongly in the capital city and moderately at the aggregate country level. Despite muted credit growth, household debt was at a notably high level and a large share of loans was interest-only.

Household debt has decreased but the absolute level remains a risk and there is still a large share of loans with deferred amortisation. Household debt relative to income has dropped by 16 percentage points in the past two years but its level remains one of the highest in Europe (230% of disposable income in Q3 2018). This vulnerability is amplified by the large share of loans with deferred amortisation, although the share has been declining (currently 45% of the total outstanding). The RRE sector is of systemic importance for the banking sector, as housing loans make up 55% of banks' total assets and there is also a close interconnectedness with the Nordic banking sectors.

House price growth has decelerated but, given the past dynamics, there are concerns about overvaluation in some areas. In the larger urban areas house prices increased more than households' income did and, given the past growth, overvaluation remains a concern (overvaluation has been declining, however, as prices have remained flat for the past year, including in the larger cities).

2.4 Finland

The main vulnerability identified in 2016 related to high and increasing household indebtedness, with highly indebted households potentially vulnerable to economic and financial shocks. Even though the mortgage credit dynamics were decelerating slightly at that time, household debt was already high and concentrated in a relatively small group of highly indebted households. The high share of variable rate loans in new lending and the negative outlook for the Finnish economy were raising concerns about households' ability to service their debt in the event of an increase in interest rates or unemployment. While there were no clear signs of house

price overvaluation, a potential decrease in economic activity could still have been accompanied by decline in house prices.

Household indebtedness is higher than in 2016 and has also been channelled through loans to housing companies. Moreover, a new survey of lending standards supports previous concerns about the vulnerability of borrowers. Household indebtedness has increased slightly in terms of income: from 113% in Q2 2016 to 115% in Q3 2018. While household loans for house purchases have been growing at a moderate pace of 2% annually in nominal terms, lending to households has recently started to be channelled through loans to housing companies[5]. When accounting for these loans, total housing-related lending grew at a pace of around 4% annually. Also, preliminary results from the new mortgage survey confirm some of the previous concerns about lending standards for new loans. In the meantime, real house prices in Finland have remained broadly unchanged since 2016.

2.5 Luxembourg

The key vulnerabilities identified in 2016 were related to high and increasing household indebtedness and to strong growth in house prices. Household debt for house purchases was increasing rapidly and there were some concerns with regard to the tail distributions of lending standards. Household indebtedness was very high relative to income compared with other European countries. House prices were increasing very strongly, reaching unprecedented levels and surpassing income growth.

Household indebtedness has continued to increase rapidly, supported by mortgage lending, with some concerns regarding lending standards. Household debt stood at 171% of disposable income in Q4 2017 and it was up by 12 percentage points compared to three years before. Lending for house purchases continued to grow strongly, by between 6% and 7% annually between 2016 and 2018 (adjusted for sales and securitisations). The most recent data, based on new reporting for 2018, imply that pockets of vulnerabilities related to lending standards may exist.

House prices have continued to grow, but at a slower pace (with dynamics at around 3% in 2018, compared with 6% in 2016), amid existing concerns about overvaluation. However, the long period of RRE price increases is indicative of a build-up of overvaluation. Beyond the low level of interest rates, demand and supply factors such as high net migration and land availability constraints have continued to put pressure on house prices.

2.6 The Netherlands

The main vulnerabilities identified in 2016 were related to high household indebtedness and a high share of mortgage loans of amounts exceeding the values of their collateral. In 2016 household indebtedness was among the highest in the EU, although it had been decreasing

[5] Loans taken by housing companies, which are – in practice – paid back by households holding the shares of these companies.

slightly. About one-third of existing mortgage loans were exceeding the value of their collateral and new loans continued to be provided with LTV ratios of over 100%. This vulnerability was seen to be aggravated by the low amortisation rate of mortgage loans, although for new mortgages the amortisation rates were increasing. Also, persistent house price growth has led to pockets of overvaluation, particularly in the capital and other large cities. For all these reasons, there were concerns about the effects of a negative shock, which might have an adverse impact on household consumption, or result in credit losses from mortgage loans in a situation of households defaulting on their loans.

Since then household indebtedness has declined slightly, while vulnerabilities related to collateral values have kept accumulating. Household indebtedness decreased slightly (from 219% in Q3 2016 to 209% in Q4 2018 in terms of income) and the stock of loans for house purchases (adjusted for securitisation) has remained flat. However, real house price growth remained elevated and further accelerated (from 4.5% year-on-year in Q2 2016 to 7.3% in Q3 2018). At the same time, LTV ratios of new loans remained high due to the calibration of the LTV limit in place (at 100%), which does not require mortgage loans to have additional collateral in the event of a decrease in house prices. On the other hand, the amortisation of loans improved slightly, as two-thirds of new loans are currently amortising (compared to 50% of the stock of existing loans).

2.7 Sweden

The key vulnerabilities identified in 2016 were related to rapidly increasing housing prices and mortgage lending and a high level of household indebtedness. House prices had been increasing substantially (by 12% in 2015) and there were signs of overvaluation. Moreover, loans for house purchases had increased by 8.7% year-on-year in June 2016 and the average debt-to-income (DTI) ratio for new loans was high and growing (406% in 2015, up from 387% in 2014).

Household debt has increased substantially since 2016 and remains one of the highest compared with other European countries, as mortgage lending in particular has continued to grow strongly. The level of household indebtedness has remained one of the highest in Europe, at 174% of disposable income (Q3 2018), but it has increased by 14 percentage points between 2016 and 2018. Although the share of non-amortising loans has decreased, it still remains a source of vulnerability for a significant number of households (accounting for 21% of outstanding loans in Q2 2017). Approximately 15% of new borrowers with mortgages had a DTI ratio higher than 4.5 times their gross income in 2017, around the same as in 2016.

House price growth has decelerated but residential property continues to be highly overvalued and to erode households' ability to afford housing. Given a pickup in construction, excessive demand pressures have weakened slightly and prices have come down recently. Nevertheless, the growth of RRE prices over an extended period of time has led to overvaluation, which can make owners and lenders more sensitive to adverse developments on the RRE market. Moreover, regulatory constraints which affect the supply of rental housing and tax incentives for home ownership remain important factors affecting the Swedish housing markets and the RRE vulnerabilities.

2.8 The United Kingdom

The main vulnerabilities identified in 2016 were related to high household indebtedness and prolonged house price growth, reinforced by uncertainties about the economic outlook following the United Kingdom's decision to leave the EU. The level of household indebtedness was considered to be significant, even though it had declined between 2008 and 2013. There were also concerns about the vulnerabilities associated with groups of highly indebted households, even though the share of households with very high debt relative to income had somewhat declined prior to the assessment in 2016. At the same time, house prices were around the pre-crises peak. While house prices declined slightly just after the United Kingdom's decision to leave the EU, they continued growing at a moderate rate after two months. For this reason, the economic outlook was subject to considerable uncertainty when the ESRB warning was issued: either the economy would slow down and the vulnerabilities might start materialising, or house prices would continue growing and the vulnerabilities would keep increasing. Both options presented risks for financial stability.

House price growth and mortgage credit growth have slowed down since 2016, but household indebtedness remains high and is increasing, while uncertainty about the economic outlook persists and now relates to the Brexit scenario. After reaching its peak in mid-2016, the real growth rates of house prices and lending for house purchases lost their momentum, dropping below 1% annually in 2018. Despite this slowdown, however, household indebtedness in terms of income has increased slightly, from 124% in Q2 2016 to 129% in Q3 2018. Also, given the previous house price developments, potential house price overvaluation in certain parts of the UK housing market cannot be fully disregarded. Overall, while the vulnerabilities are no longer increasing significantly, the accumulated vulnerabilities remain significant. For this reason, there are concerns about the existing vulnerabilities materialising, depending on the economic outlook for the United Kingdom in both the short and medium term.

3 Macroprudential policy actions

Some type of macroprudential policy action in the meantime, but this does not necessarily imply that systemic risks have been entirely mitigated. In 2016 the policy assessment indicated that the macroprudential measures that the countries had taken so far did not sufficiently mitigate the systemic risks related to RRE. The assessment also revealed that some of the national authorities did not have legal powers to implement borrower-based measures. Since 2016, as RRE vulnerabilities in these countries have remained elevated or even increased, national authorities have been active with regard to policy. While most countries have used a mix of borrower-based and capital-based measures, others have focused primarily on increasing bank resilience either owing to a lack of sufficient powers to implement borrower-based measures (Luxembourg) or for economic reasons (Belgium and the United Kingdom). Austria is the only country that has not implemented capital-based measures, but it has made significant progress by implementing the legal framework for borrower-based measures. It has also adopted a series of recommendations on prudent lending standards. Moreover, in the United Kingdom, stress testing has been used on an annual basis to evaluate the resilience of the banking sector to an extreme stress scenario, and to calibrate the appropriate capital buffers for the banking system.

Table 2

Macroprudenital policy measures related to RRE

Country	Macroprudential policy measures taken before 2016	Macroprudential policy measures taken since 2016
AT	NA	2017: • Implementation of the legal basis to adopt binding instruments (LTV, DSTI, DTI, amortisation criteria) in December 2017 2018: • Communication on prudent lending standards from the Oesterreichische Nationalbank, the Financial Market Authority and lately also the Financial Market Stability Board, including: • Maximum LTV values (20% downpayment) • Amortisation and affordability requirements (in fact DSTI limit at 30-40%) • Maximum maturities
BE	• Risk weight add-ons (fixed) for mortgage exposures of IRB banks • Monitoring framework regarding credit standards	2018: • Risk weight add-ons (both fixed and risk-adjusted) for mortgage exposures of IRB banks
DK	• LTV: 95% • Supervisory diamond for mortgage banks	2016: • Wealth requirement at loan origination linked to DTI in larger cities 2018: • Mortgage product restriction linked to DTI and LTV. • CCyB at 1.0%
FI	• LTC: 90% (95% for first-time buyer)	2018: • Decrease in LTC limit • RRE risk weight floor • SyRB between 1% and 3% • Several FIN-FSA Board recommendations, including on housing companies loans
LU	• Stricter RW (75%) for the part of the mortgage loan exceeding 80% of the value of the real estate property	2016: • RW floor of 15% for IRB banks mortgage exposures 2018 • CCyB at 0.25% • Monitoring framework for lending standards
NL	• LTV: 102% • DSTI limits (from 10.5% to 35%) in a matrix by income and interest rate levels • Maturity limit of 30 years for eligibility for tax deductibility of mortgage interest payments	2018: • LTV decreased to 100%
SE	• LTV: 85%; • Risk weight floor of 25% for mortgage loans • Affordability tests – microprudential measure with certain macroprudential effects • CCyB at 1.5%	2016: • Amortisation requirement linked to LTV: households are required to amortise 2% of the mortgage, if LTV>70%, 1% if LTV>50% 2018: • Amortisation requirement linked to LTI: Households are required to amortize an additional 1% of the mortgage, if LTI>450% • Increase of the CCyB to 2.5%
UK	• LTI>4.5 for 15% of new loans • Affordability tests • Stress-testing	2017: • CCyB at 0.5% • Stress testing 2018: • Increase in CCyB to 1% • Stress testing

Source: ESRB assessment.

3.1 Austria

At the time of the ESRB warning the Austrian authorities were already discussing potential communication concerning sustainable lending standards as no macroprudential measures were in place. The Financial Market Stability Board discussed the communication on sustainable lending standards in September 2016. The Board also advised the Ministry of Finance to expand the macroprudential toolkit for borrower-based instruments to include the field of real estate financing. While the ESRB fully acknowledged this, given the intensity of the emerging vulnerabilities related to house prices and mortgage credit growth, there were concerns that communication on lending standards might not sufficiently mitigate potential vulnerabilities which could accelerate further.

Since 2018 the national authorities have used communication tools to ensure prudent lending standards, supported by reinforced macroprudential supervisory activities. In early 2018 the Oesterreichische Nationalbank and the Finanzmarktaufsicht (the Financial Market Authority – FMA) announced the requirements for prudent lending standards for new mortgage loans. In September 2018 this was largely supported by a communication made by the Financial Market Stability Board, a joint body of the Oesterreichische Nationalbank, the FMA and the Ministry of Finance in Austria. Together, these recommendations included maximum LTV values (a requirement for a 20% down payment), requirements for amortisation of loans and affordability (DSTI limit of between 30% and 40%), and maximum maturities. While the communication tools and supervisory activities may efficiently address the predominantly emerging vulnerabilities, national authorities were also given powers over legally binding instruments in 2017. These powers cover a wide range of tools (LTV, DSTI and DTI limits, and amortisation criteria) and may be exercised should the emerging vulnerabilities accelerate.

3.2 Belgium

In 2016 Belgium had a risk weight measure[6] in place that aimed to increase banks' resilience. This measure was considered appropriate, but not sufficient to address vulnerabilities related to household indebtedness. The risk weight measure stipulated that banks that use the internal ratings-based (IRB) approach should have applied a 5 percentage point add-on to the risk weights of mortgage loans granted to Belgian residents and covered by RRE in Belgium. The policy measure was calibrated to ensure bank resilience in the event of an adverse development in the RRE market and not to curb credit growth. As such, the continued increases in household indebtedness and RRE prices were not addressed by any measures. IRB banks' lending spreads have been somewhat higher than those of banks using the standardised approach. However, the overall economic effect was limited as the impact on the pricing of mortgage loans was small, and its main purpose was still to build up buffers.[7]

[6] The Article 458 risk weight measure was adopted in 2013 (effective since 2014), prolonged in 2015 (effective in 2016) and expired in May 2017.

[7] Ferrari et al. (2016), "The impact of sectoral macroprudential capital requirements on mortgage loan pricing: Evidence from them Belgian risk weight add-on", No. 306, Nationale Bank van België/Banque Nationale de Belgique.

Capital measures have been improved to better address bank resilience and to avoid the accumulation of credit risk. Following the ESRB's warning, Belgian authorities designed a similar measure, which kept the linear 5 percentage point risk weight add-on, and also included a risk sensitive add-on of 33% of the microprudential risk weight of a mortgage exposure. This new policy action is supposed to increase bank resilience, on the one hand, and restrict lending to riskier borrowers in a non-linear manner, on the other. The average risk weight of Belgian mortgage loans increased from the average of 10%, as estimated by internal models, to nearly 18% (5 percentage points owing to the first component and 3 percentage points owing to the second).

3.3 Denmark

Before 2016 Denmark only had an LTV limit for new loans and the "supervisory diamond" in place, which targeted the credit quality of outstanding loans. The supervisory diamond was decided upon in 2015, and will have legal effect from 2018-20. This set of measures is microprudential in nature and imposes requirements on the characteristics of the stock of outstanding loans. Therefore, the measures should have affected the credit standards of new loans given that, in order to comply with these requirements, banks need to adjust their portfolios through issuing new loans. National authorities had also implemented a minimum down payment requirement of 5% in 2015, but subsequent empirical evidence suggests that it has only had a small effect on lending.

Some further borrower-based measures and a non-zero countercyclical capital buffer (CCyB) rate have been added to the policy mix since 2016. The authorities introduced a rule in 2016 to address risks related to mortgage lending for the most vulnerable households with high DTI and LTV ratios. The rule stipulates that new borrowers in "growth areas" (effectively, Copenhagen and Aarhus) with a DTI ratio above 4 or 5 should have sufficient wealth so that their net wealth remains positive if house prices drop by 10% or 25%, respectively. The authorities introduced additional requirements in 2018 that should further ensure that vulnerable households choose a less risky financing profile. These rules require new borrowers with a DTI ratio above 4 and a LTV ratio above 60% to have an interest rate fixation period of at least five years and to obtain deferred amortisation only if the interest rate fixation period is 30 years. The CCyB was also raised from 0% in 2018, initially to 0.5% and subsequently to 1%, in order to improve bank resilience in the event of materialisation of the high stock risks.

3.4 Finland

While the national authorities had introduced a number of appropriate macroprudential measures, they lacked legal powers over instruments that would curb the growth in household indebtedness directly. By 2016 legally binding loan-to-collateral (LTC) limits had been introduced, tax deductibility on mortgage interest payments was gradually being removed, and there were plans to strengthen capital adequacy requirements for mortgage exposures, as well as for an early introduction of other capital-based measures. However, apart from powers over the LTV/LTC ratio, national authorities were lacking legally binding powers over other income-based borrower-based ratios (like the loan-to-income (LTI), DTI and DSTI ratios), which would curb the

increase in households' indebtedness more efficiently. For this reason, there were doubts about the efficiency of the policy mix should the growth in household indebtedness continue.

Since 2016 the national authorities have tightened or introduced several borrower-based and capital-based measures. In 2017 national authorities introduced a risk weight floor for housing loans for credit institutions that use the IRB approach. This floor was set at 15% to ensure banks' resilience and to help address the flow vulnerabilities related to housing loans. In 2018 a systemic risk buffer (SyRB) of between 1% and 3% was imposed for several institutions. To mitigate the vulnerabilities related to household indebtedness, the LTC limit for housing loans other than first-home loans was tightened to 85% in July 2018. The Board of Finanssivalvonta (the Financial Supervisory Authority – FIN-FSA) has also recently issued recommendations concerning lending standards of new loans, which also aimed to address housing loans provided by housing companies. Finally, the tax deductibility of mortgages has been reduced (from 100% in 2011 to 25% by 2019).

3.5 Luxembourg

The policy actions taken by the national authorities before 2016 to address RRE vulnerabilities focused on increasing the resilience of the banking sector. Before 2016 Luxembourg had a stricter risk weight requirement in place for credit institutions applying the standardised approach consisting of a minimum risk weight of 75% for mortgage loans exceeding 80% of the value of the real estate property (Commission de Surveillance du Secteur Financier (the Financial Sector Supervisory Commission – CSSF) Circular 12/552). On 1 July 2016 a recommendation was issued by the Systemic Risk Committee of Luxembourg to introduce a risk weight floor of 15% on RRE exposures for IRB banks. National authorities have also taken steps to adopt a legal framework in order to implement borrower-based measures. In particular, a draft law was introduced in the Parliament in December 2017, however, at this stage, the process is still ongoing. More recently national authorities also activated the CCyB at a rate of 0.25%, which will be effective from January 2020. Activating the CCyB can help to address cyclical systemic risks and contribute to strengthening the broader resilience of lenders in the event of negative shocks.

3.6 The Netherlands

While several macroprudential measures had been implemented before 2016, they were not considered fully sufficient to address the identified vulnerabilities. In 2012 an LTV limit was introduced with an initial calibration of 106% and a gradual phasing-in by 1 percentage point every year until 2018. Since then also a DSTI limit has been established in law, its calibration being specified every year by the Ministry of Finance in the Netherlands. The DSTI limit has shown important risk mitigating characteristics, but it has a computation method which appears to be pro-cyclical, as changes in disposable income influence the cap. As a consequence, this has reduced the effectiveness of the DSTI limit in ensuring sustainable lending to households. The average DSTI for households with a mortgage was 15.7% at 2017Q4, down from 18.4% at end of 2016. In fact, 12% of these households have a DSTI>30%. Moreover, there were concerns that the LTV limits were not tight enough as they were allowing loans to be granted with amounts exceeding the

value of the collateral. On the other hand, the above measures were applied to mortgage credit provided by all types of lenders, making the measures more comprehensive in scope. This was warranted in the Netherlands, where around a third of new mortgage lending is provided by non-banks. Moreover, as a way of lowering tax deductibility and incentivising loan amortisation, from 2013 new mortgages were only tax deductible if they would amortise within 30 years. In 2018 the Dutch Government also announced that it would increase the reduction of the maximum rate at which interest paid on mortgage loans can be deducted. Instead of the initially planned 0.5%-point per year, the rate would be reduced from 49.5% in 2018 to around 37% in 2023. However, this is still very generous compared with other countries.

Since 2016 the gradual lowering of the LTV limit has been phased in and the measure remains too loose. The LTV limit was lowered to 100% in 2018, which is considered too high. In 2015 the Financial Stability Committee issued a recommendation to the Ministry of Finance to further reduce this limit to 90%. However, the Ministry of Finance has not implemented this tightening and there is no legal requirement for it to comply with or explain the Committee's recommendation.

3.7 Sweden

In 2016 Sweden had several capital-based and borrower-based measures in place, which, at the time, appeared insufficient to mitigate the existing risks. The LTV limit was implemented as a structural measure in Sweden, given that house price overvaluation had built up owing to structural factors such as the regulation of the rental market and interest rate deductibility. The risk weight floor and the non-zero CCyB were two important capital-based measures in place that should have ensured bank resilience. Stress tests indicated in 2016 that banks would have been able to withstand the shock of severe macroeconomic deterioration. The affordability tests, although microprudential in nature should have had an impact on ensuring a certain level of credit quality of new loans.

The set of active borrower-based measures has been extended and the CCyB has been increased since 2016 in order to better address both flow and stock vulnerabilities. The LTV limit was complemented in 2016 by an amortisation requirement linked to the LTV ratios and, in early 2018, by an additional amortisation requirement linked to LTI ratios. These measures are primarily intended to reduce the share of non-amortising loans and prevent an excessive accumulation of debt, with the latter measure also acting as an LTI limit. The risk weight measure, as a Pillar 2 measure introduced before 2016, was newly transformed into a Pillar 1 measure. Moreover, the increase in the CCyB rate up to 2.5% was aimed at improving bank resilience against abrupt reversals in the real estate and financial cycles.

3.8 The United Kingdom

In 2016 borrower-based measures had been in place for several years, and since then national authorities have focused on stress testing the financial sector and increasing its resilience. In 2014 the national authorities implemented limits to the LTI ratio, which showed

evidence of improving mortgagor resilience. After the United Kingdom's decision to leave the EU in 2016, the Bank of England introduced a set of measures designed to support the economy. These measures included a reduction in interest rates, as well as measures to ensure that lower interest rates would pass through to the real economy to support mortgagors and the housing market, and which might mitigate the risks in a downturn scenario. Since then the Bank of England has continued to carry out annual stress tests on a microprudential and macroprudential basis in order to assess banks' resilience to an extreme stress scenario and to calibrate the appropriate level of capital across the banking system. The levels of bank capital currently appear to be sufficient in the recent adverse scenario, which also includes a severe UK housing market downturn (a 33% fall in UK residential property prices). The Bank of England's Financial Policy Committee judged that the stress test scenario was severe enough to encompass the outcomes based on "worst case" assumptions about the challenges the UK economy could face in the event of a cliff-edge Brexit. Following a decision to lower the CCyB rate in June 2016, it was raised again in June and November 2017. It is currently calibrated at 1% with regard to a standard risk environment. Annual stress tests were also carried out in 2017 and 2018.

4 Assessment of risks and macroprudential policies

Vulnerabilities related to RRE markets remain high in most countries that received the ESRB warnings in 2016, in spite of the macroprudential actions that have been taken since then. While in some countries, like Austria, Denmark and Sweden, house price growth has decelerated, overvaluation or signs of overvaluation persist. Most countries still register high (Denmark, Luxembourg, the Netherlands, Sweden) or medium (Belgium, Finland, the United Kingdom) levels of indebtedness, which make households vulnerable to potential financial shocks. While housing credit is mostly flat in certain economies, many countries still report lending standards that would raise concerns about the credit quality of these loans over the medium term. This is also due to the fact that house prices have grown significantly since 2016 in some of these countries. Therefore, the need for borrower-based measures to be implemented and recalibrated has remained relevant. While most countries have taken steps in this direction, most of them still need to tighten or extend their macroprudential measures. Moreover, countries like Belgium and Luxembourg still need to implement borrower-based measures. In Luxembourg, national authorities should continue their efforts to obtain powers over borrower-based measures and to activate them as soon as they become available, as these instruments are not yet available in the national macroprudential toolkit. Finland is an example of another country where legally binding borrower-based measures should be made available to the national authorities; only the LTC limit is currently at the national authorities' disposal. Austria has made substantial progress in this direction; it adopted a legal framework for borrower-based measures in 2017. Moreover, in the United Kingdom the resilience of the banking sector appears to be sufficient given the results of the stress tests which included a severe stress scenario, taking into account both first-round and second-round effects of macro-financial shocks.

All of the countries that received the ESRB warnings in 2016, except Austria and the United Kingdom, still have some unaddressed systemic risks, either as a result of insufficient macroprudential policy action (e.g. owing to a lack of borrower-based instruments or their calibration) or as a result of remaining risks which can be more efficiently and effectively addressed by policies other than macroprudential policy without excessive costs to the real economy (Sweden).

4.1 Austria

Although house prices and mortgage lending continued to grow, their dynamics have decreased and the current macroprudential policies seem sufficient. Following the recommendation on lending standards made by the Financial Stability Board in 2018, supervisory activities have been initiated in order to check and ensure compliance with these recommendations. Should the flow risks accelerate and the national authorities realise that the recommendations have not been complied with, the Austrian authorities can make use of their powers to implement borrower-based measures through legally binding acts.

4.2 Belgium

Current macroprudential measures do not sufficiently address vulnerabilities related to increasing household debt and loose lending standards. The intensity of the flow vulnerabilities has increased owing to the persistence of house price and mortgage credit growth, as lending standards have eased further. Policies have been recalibrated to better address these vulnerabilities but their design may not be entirely appropriate or sufficient. Borrower-based measures would address the vulnerabilities related to loose lending standards and might also curb credit growth and ensure that households' debt levels remain sustainable. Moreover, borrower-based measures would effectively complement measures targeting stock vulnerabilities and reinforce the overall effectiveness of the policy mix.

4.3 Denmark

Borrower-based measures could be recalibrated to better contain vulnerabilities related to new housing loans, while capital buffers may not address high stock vulnerabilities sufficiently. Stock vulnerabilities remain high owing to household indebtedness and potential overvaluation of house prices in large urban areas. Given the high level of indebtedness, with potentially large direct and indirect implications for the banking sector, tightening of capital-based measures should be considered. If vulnerabilities related to household indebtedness and overvaluation of house prices and lending standards do not continue to adjust, authorities may also consider tightening the existing borrower-based measures or activating further borrower-based measures. Finally, changes made in other policy areas with the aim of reducing incentives for households to take on excessive mortgage debt and causing excessive growth in house prices would support macroprudential policy efforts to address RRE vulnerabilities in Denmark. Nevertheless, given the position in the cycle, the fact that house prices have stabilised over the past year and indebtedness has decreased, national authorities may opt to increase the resilience of the banking sector using capital-based measures, or not to take macroprudential action for the moment.

4.4 Finland

The recent macroprudential measures are expected to increase the resilience of the banking sector and prevent vulnerabilities from accumulating further, even though more actions might be needed, depending on medium-term developments. National authorities should complement the current LTC limit with income-related borrower-based measures. However, national authorities' powers to set legally binding borrower-based measures are currently limited to LTC limits and lack any income-related measures. National authorities should therefore be provided with powers over these instruments and, to avoid circumvention, these measures should take into account all types of household loans granted by any type of lender, including loans via housing companies. Furthermore, the power of the macroprudential authority to set a legally binding LTC limit should be changed to a power over the LTV limit.

4.5 Luxembourg

Capital measures may not fully address high and increasing household indebtedness and risks stemming from house price growth. Stock vulnerabilities remain high owing to high household indebtedness and potential overvaluation of house prices. To address these vulnerabilities, existing capital measures should ensure greater bank resilience in the event of financial distress. However, the national authorities should also activate borrower-based measures to address vulnerabilities related to lending standards of new loans. To this end, the national authorities should be provided with powers over borrower-based measures. In connection to this, the newly established monitoring framework should improve the assessment of lending standards. Finally, changes made in other policy areas with the aim of reducing incentives for households to take on excessive mortgage debt and causing excessive growth in house prices would support macroprudential policy efforts to address RRE vulnerabilities in Luxembourg.

4.6 The Netherlands

Given both the flow and stock vulnerabilities in the Netherlands, macroprudential policies, particularly the LTV limit, are not calibrated to sufficiently address related systemic risks. The LTV limit of 100% is not in line with best practices and does not reflect the prolonged house price dynamics that might have generated some overvaluation in the Netherlands. Moreover, bank resilience could be further increased to reflect stock vulnerabilities, which might have emerged owing to the provision of potentially risky new loans with loose lending standards. As the average risk weight of the IRB banks' mortgage portfolios is rather low compared with other European countries, more targeted capital measures, like a risk weight add-on, could be considered. As for the DSTI limit currently in place ranging from 10.5% to 35%, if on the one hand it shows important risk mitigating characteristics, on the other hand it has a computation method which appears to be pro-cyclical, as changes in disposable income influence the cap. As a consequence, this has reduced the effectiveness of the DSTI limit in ensuring sustainable lending to households. Furthermore, changes made in other policy areas with the aim of reducing incentives for households to take on excessive mortgage debt and reducing factors contributing to excessive growth in house prices would support macroprudential policy efforts to address RRE vulnerabilities in the Netherlands. Finally, the macroprudential authority should be given more direct powers with regard to implementing borrower-based measures through legally binding acts, so that the authority is able to react flexibly to any sources of systemic risk that may emerge. The Dutch Government is currently the authority with the power to activate borrower-based measures and has no duty to act on or explain non-compliance with recommendations made by the Financial Stability Committee.

4.7 Sweden

The comprehensive set of macroprudential measures has not fully addressed financial stability risks related to very high and increasing household indebtedness. Stock vulnerabilities remain particularly high as household indebtedness and overvaluation of house prices remain at elevated levels. Overall, macroprudential policy has actively mitigated

vulnerabilities related to the Swedish housing market. In order to address the remaining systemic risks, there is a need to consider a broader set of policies to address the underlying factors, which have generated the vulnerabilities identified in the Swedish housing market. Examples of such policies could include reviewing tax policies with the aim of reducing incentives for households to take on excessive mortgage debt and causing excessive growth in house prices, resulting in increased systemic risks.

4.8 The United Kingdom

Vulnerabilities related to house price increases have moderated, and banks appear to be resilient to potential second-round effects stemming from the identified risks related to high household indebtedness. House price growth has decelerated but household indebtedness has increased in recent years. The capital adequacy of the banking sectors has improved. According to the Bank of England, the outlook for the United Kingdom's economic growth remains highly sensitive to the effects of geopolitical events, including Brexit, in the United Kingdom and in the EU. However, the Bank of England has performed an annual stress-testing exercise which showed that banks would be resilient to the impact of an adverse scenario on the financial sector. The Bank of England's Financial Policy Committee considered the stress test scenario to be severe enough to encompass the outcomes based on "worst case" assumptions about the challenges the UK economy could face in the event of a cliff-edge Brexit. It included severe downturn in house prices and accounted for second-round effects stemming from high household indebtedness. The CCyB is currently calibrated at 1%, reflecting the judgement that domestic risks, apart from those related to Brexit, remain at a standard level overall. Credit growth has been modest and major UK banks have sufficient levels of capital and liquidity to withstand even a severe economic shock that could be associated with a disorderly Brexit.

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