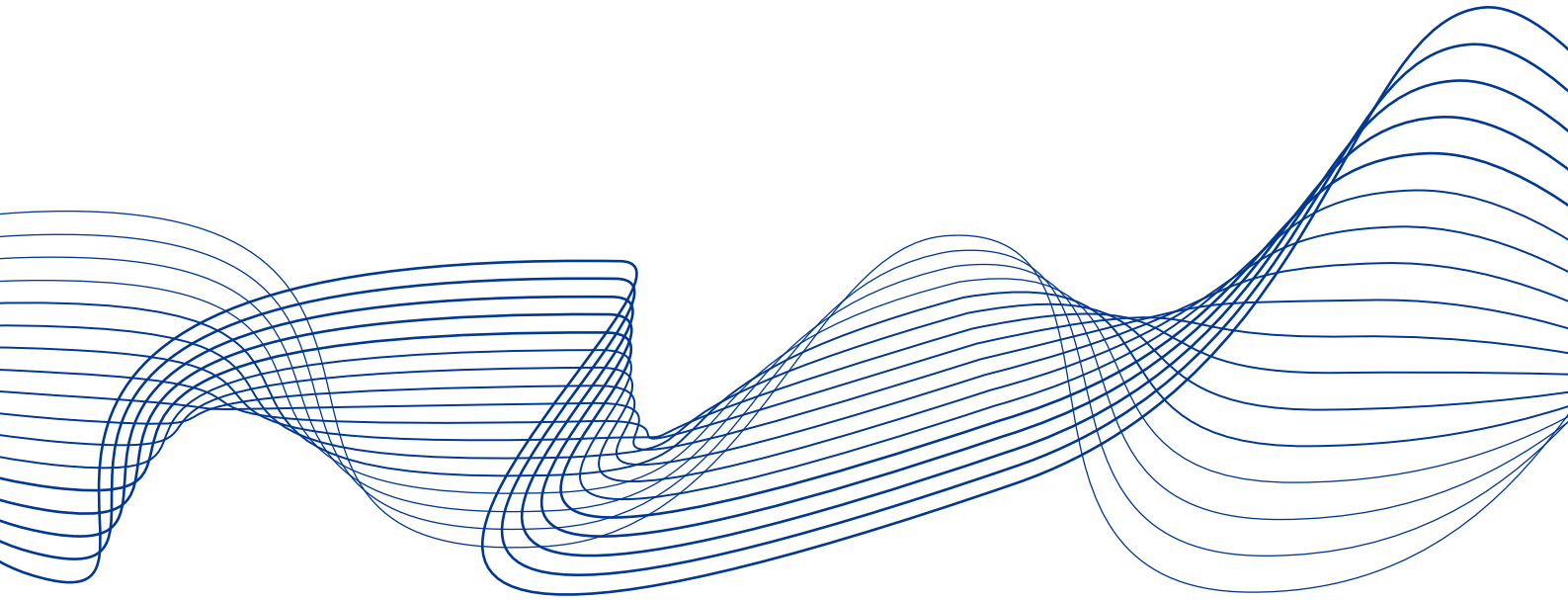
A Review of Macroprudential Policy in the EU in 2016

April 2017



ESRB
European Systemic Risk Board
European System of Financial Supervision

Contents

Abbreviations

ATC	Advisory Technical Committee
BCBS	Basel Committee on Banking Supervision
CCoB	capital conservation buffer
CCP	central counterparty
CCyB	countercyclical capital buffer
CDS	credit default swap
CEE	central and eastern Europe
CESEE	central, eastern and south-eastern Europe
CET1	common equity tier 1
CISS	Composite Indicator of Systemic Stress
CPMI	Committee on Payments and Market Infrastructures
CRD IV	Capital Requirements Directive[1]
CRR	Capital Requirements Regulation[2]
DSCR	debt service coverage ratio
DSTI	debt service-to-income
DTI	debt-to-income
EBA	European Banking Authority
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
EMIR	European Market Infrastructure Regulation
ESRB	European Systemic Risk Board
EU	European Union
FPC	Financial Policy Committee
FSA	Financial Services Authority
FSB	Financial Stability Board
GDP	gross domestic product
G-SII	global systemically important institution
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
IRB	internal ratings-based
IWG	Instruments Working Group
LGD	loss given default
LTI	loan-to-income
LTV	loan-to-value
MFAR	mortgage funding adequacy ratio
MFI	monetary financial institution
MNB	Magyar Nemzti Bank
OFI	other financial intermediary
O-SII	other systemically important institution
PD	probability of default
p.p.	percentage point
PRA	Prudential Regulation Authority
PTI	payment-to-income
RRE	residential real estate
RW	risk weight
RWA	risk-weighted assets
SDW	Statistical Data Warehouse
SIB	systemically important bank
SII	systemically important institution
SRB	systemic risk buffer
SSM	Single Supervisory Mechanism

1 Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms.

2 Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012.

Countries

BE	Belgium
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
DE	Germany
EE	Estonia
IE	Ireland
GR	Greece
ES	Spain
FR	France
HR	Croatia
IT	Italy
CY	Cyprus
LV	Latvia
LT	Lithuania
LU	Luxembourg
HU	Hungary
MT	Malta
NL	Netherlands
AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom
NO	Norway

Executive summary

In 2016 most elements of the macroprudential framework were in place and fully operational in all the Member States. The ESRB Recommendation on intermediate objectives and instruments of macroprudential policy has to a very large extent been implemented by all the Member States. There were the first two applications of the voluntary reciprocity framework developed by the ESRB. The frameworks for the countercyclical capital buffer (CCyB) and systemically important institutions (SIIs) became fully operational in all Member States and the first assessments were made under the framework developed by the ESRB for the CCyB of third (non-EU) countries.

Most macroprudential measures taken in the EU in 2016 were of a tightening nature and related to the residential real estate (RRE) sector and SIIs. The RRE sector continued to be an area of concern for financial stability. This resulted in the issuance of public Warnings by the ESRB to eight Member States about medium-term vulnerabilities resulting from this sector. Several Member States further tightened measures that were already in place. Sometimes, these measures aimed to prevent excessively loose credit standards; often, they were combined with the aim of affecting different risk channels (lender, borrower and collateral) so as to increase overall effectiveness.

All Member States completed the identification process of their SIIs and started imposing capital buffer requirements, often phased in over a period of two to four years. The number and characteristics of such institutions vary strongly across countries. A substantial part of these around 200 institutions are part of 30 larger cross-border groups. Finally, there were relatively minor changes in the frameworks for the systemic risk buffer already in place in several Member States.

The year 2016 was the first year that all Member States had a CCyB framework that was fully operational. Four Member States decided to have a non-zero buffer rate in place for domestic exposures, but only one Member State had a non-zero rate already effective in 2016. The credit-to-GDP gap is the main reference indicator in setting the buffer rate, but Member States use a wide variety of approaches to the number and types of additional indicators used to activate or increase the buffer. This diversity reflects specificities of national economies, heterogeneity of financial systems and differences in data availability.

The framework for CCyB for third (i.e. non-EU) countries developed by the ESRB became operational in 2016 as well, with the identification and monitoring of third countries that are material for the EU as a whole and for individual Member States. The first practical experience with this framework shows that the number of identified third countries varies greatly across Member States and that they take different approaches to monitoring the material countries at EU level identified and monitored by the ESRB.

The past year also saw the first applications of the framework for voluntary reciprocity developed by the ESRB. These applications related to a real estate measure adopted by Belgium under the CRD IV / CRR's national flexibility arrangement and a systemic risk buffer measure by Estonia. These first cases show that the decision to reciprocate or not to reciprocate differs widely across Member States, for example in terms of the cost/benefit assessment or the time perspective taken in such decisions; conceptual and implementation issues play a role as well.

Introduction

This Review gives an overview of the macroprudential measures adopted in the EU over the past year. It is an update and a further development of the reports that the ESRB has been publishing since 2015[3]. These reports draw to a large extent on notifications made by the national authorities to the ESRB and discussions within the ESRB. The latter are in particular supported by the Instruments Working Group (IWG) and the Assessment Team on Macroprudential Measures.

The Assessment Team on Macroprudential Measures continued its work under its expanded mandate[4]. This foresees a role for the Team in implementing the framework for the reciprocation of national macroprudential measures[5] and the framework for setting and recognising countercyclical capital buffer (CCyB) rates for exposures to countries outside the EU.[6] The Team had its first discussions on these two strands of work under its expanded mandate. In addition, it continued reviewing national measures, resulting in information notes that were shared with the Advisory Technical Committee (ATC). Furthermore, the Team was involved in the work regarding the preparation of Warnings to eight Member States on vulnerabilities in the residential real estate (RRE) sector that were adopted by the ESRB on 22 September 2016 (see Annex 2 and Special Feature A).

The Review is structured in three parts. The overview chapter gives a broad overview of the national measures that are of interest to macroprudential authorities and that were adopted, or planned, in 2016. Two special features enter into greater detail on specific topics. The first one discusses the assessment of vulnerabilities and policy stances in the RRE sector drawing on the work done for the ESRB Warnings. The second one examines the cross-border dimension of macroprudential policy and the role of reciprocity.

The ESRB continued to support the implementation of the macroprudential policy framework in the EU. This work is not the primary focus of the Review but since it also affects the implementation of macroprudential policy at the national level, the two main initiatives are highlighted. First, the ESRB response to the European Commission's consultation document on the review of the EU macroprudential policy framework.[7] The response reiterated a number of policy points already made by the ESRB on earlier occasions including in previous editions of this Review. Second, the ESRB published a strategy paper on macroprudential policy beyond banking.[8] Up to now, macroprudential policy has to a very large extent focused on the banking sector. The strategy paper analyses the current legal and institutional framework governing macroprudential policies beyond banking and proposes a holistic policy strategy to address financial stability risks. In the overview chapter, these issues going beyond banking are discussed in more detail.

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3 *A Review of Macroprudential Policy in the EU in 2015*, ESRB, May 2016 and *A review of macro-prudential policy in the EU one year after the introduction of the CRD/CRR*, ESRB, June 2015.

4 Decision of the ESRB of 16 December 2015 on a coordination framework for the notification of national macroprudential measures by relevant authorities, the issuing of opinions and recommendations by the ESRB, and repealing Decision ESRB/2014/2 (ESRB/2015/4).

5 Recommendation of the ESRB of 15 December 2015 on the assessment of cross-border effects of and voluntary reciprocity for macroprudential policy measures (ESRB/2015/2).

6 Recommendation of the ESRB of 11 December 2015 on recognising and setting countercyclical buffer rates for exposures to third countries (ESRB/2015/1).

7 ESRB response to the European Commission's Consultation Document on the "Review of the EU Macro-prudential Policy Framework", 24 October 2016.

8 *Macroprudential policy beyond banking: an ESRB strategy paper*, July 2016.

General overview of the policy framework and measures[9]

1. Introduction

The ESRB Secretariat continues to keep track of measures of macroprudential interest[10] and to enhance their public disclosure. Sources for this information are the notifications to the ESRB required under the CRD IV / CRR and the various ESRB Recommendations as well as input from ESRB substructures. This list is published on the ESRB website and regularly updated. The CRD IV requires designated authorities to notify certain information related to the setting of the CCyB to the ESRB on a quarterly basis, which is also published on the website.

The ESRB has developed in cooperation with the ECB and EBA joint notification templates that were made available in 2016. These templates can be used for notifications to the three institutions and relate to the use of instruments covered and not covered by the CRD IV / CRR as well as the voluntary reciprocation of the measures of other EU Member States. ESRB members do not always notify the ESRB Secretariat in advance of macroprudential measures or use the notification templates, in particular for measures that do not require a compulsory notification under the CRD IV / CRR. Advance information allows the ESRB to discuss potential cross-border policy spillovers so as to ensure a minimum degree of coordination and limit possible negative spillover effects[11]. The use of the published templates for notifications allows the information to be structured and published in a standardised and comparable fashion on the ESRB website.

This section describes the major trends in the macroprudential policy framework and the measures initiated in 2016 of which the ESRB is aware. The section starts by reviewing recent developments in the macroprudential policy framework in Member States[12] against the backdrop of the ESRB recommendations in this area. It then gives a broad overview of the main trends observed in 2016 regarding the use of instruments. Subsequently, certain instruments to address cyclical or structural risks are discussed in greater detail, i.e. the CCyB, measures related to the real estate sector, the use of the systemic risk buffer and the buffers for SIIs. The section concludes with a discussion of macroprudential policy beyond banking.

2. Developments in the macroprudential policy framework

The formulation of the national macroprudential frameworks of the Member States was at a relatively early stage but has shown fast development. Recommendation ESRB/2011/3 on the macroprudential mandate of national authorities promoted the development of the national

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9 Prepared by Frank Dierick with assistance and input from Achim Braunsteffer, Ernest Dautovic, Urszula Kochanska, Katie Rismanchi, Stéphanie Stolz and Faidra Zafeiropoulou (all ESRB Secretariat).

10 Because it remains challenging to define exactly what constitutes a macroprudential measure, in this report the broader concept of measure of macroprudential interest is used, see ESRB, "A review of macroprudential policy in the EU one year after the introduction of the CRD/CRR" (June 2015), p. 6, for further details.

11 Recital 9 of Recommendation ESRB/2011/3 on the macro-prudential mandate of national authorities. Recommendation C.3 of Recommendation ESRB/2013/1 on intermediate objectives and instruments of macro-prudential policy.

12 In most cases, Norway is also included in the discussion about developments in the EU as the Norwegian authorities also participated in some of the ESRB work as observers although Norway is not an EU Member State. As of 2017, representatives of the European Economic Area (Iceland, Liechenstein and Norway) are continuously involved as non-voting members in the meetings of the General Board and the Advisory Technical Committee and the work of the ESRB following Decision No 198/2016 of the Joint Committee of the European Economic Area.

institutional frameworks. It helped establish institutional competence at national level and the effectiveness of the macroprudential function. Although the overall result is positive at the time of the assessment of its implementation, further improvements are still possible and recommended.

Progress has been observed on the establishment of the national institutional framework of macroprudential policy. Among the 11 Member States with no macroprudential authority in place in 2014, eight of them have now developed their institutional framework (Table 1). Italy, Romania and Spain still lack an official macroprudential authority in force for the whole financial system but the legislative process is ongoing[13]. At the same time the effectiveness and efficiency of the new macroprudential policy frameworks in the other countries should be further pursued so that they are fully operational.

The assessment of the implementation of Recommendation ESRB 2013/1 on intermediate objectives and instruments of macroprudential policy was completed by the end of 2016[14]. The latter recommends the establishment of five intermediate objectives of macroprudential policy which are linked to specific instruments in order to facilitate the implementation of the ultimate objective of macroprudential policy, the safety and soundness of the financial system. The results of the assessment show that the level of implementation of this Recommendation has been very high, as intermediate objectives, macroprudential instruments and macroprudential strategies have been largely embedded into the Member States' frameworks (Table 2).

All macroprudential authorities have defined intermediate objectives of macroprudential policy, which are linked to specific macroprudential instruments. The adoption of instruments has in particular been assisted by the European Commission, which fostered the implementation of the CRD IV / CRR legislative framework at the national level within the EU. This has facilitated the implementation of the Recommendation and is an illustration of efficient cooperation and interaction between the national and the supranational authorities.

In many cases the instruments focus on the banking sector. Such focus can be considered to be a result of the bank-centric nature of most Member States' financial systems and of the need to comply with the CRD IV / CRR legislative framework. It also may be due to real estate market developments, which have induced authorities in some countries to introduce non-harmonised instruments (see also Section 5). The ongoing responsibility of Member States to monitor and adjust their macroprudential framework at this early development stage should be stressed.

Although the implementation of national macroprudential frameworks is already at a high level, further improvements are possible. One such area is the monitoring of potential macroprudential risks arising from the non-banking system and all types of financial infrastructures, including (but not limited to) payment systems, deposit guarantee schemes and clearing through central counterparties (CCPs) (see also Section 8). This was not reflected as an objective by all addressees in their macroprudential framework, mainly due to their bank-centric financial systems.

The involvement of the macroprudential authorities in the development and implementation of recovery and resolution plans and deposit guarantee schemes presents some cross-country divergence. This is particularly apparent in cases where the resolution and the deposit guarantee frameworks were created before the establishment of the macroprudential authority. In addition, further steps are considered necessary to ensure the effectiveness and efficiency of the macroprudential frameworks, especially in the context of reassessing the need for additional

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13 In the case of Italy, the law is in force since September 2016 but the implementing decrees still need to be approved.

14 *Summary compliance report regarding the ESRB Recommendation on intermediate objectives and instruments of macroprudential policy (ESRB/2013/1)*, ESRB, February 2016.

intermediate objectives and instruments, which, for the moment, are not considered by most addressees to be needed.

In many cases a comprehensive macroprudential policy strategy has been developed; nevertheless there is room for further improvement. There has been major progress regarding the establishment of effective communication between national macroprudential authorities and the ESRB, but further elaboration should be ensured. Equally important is that a periodic review and possible adjustment of the macroprudential framework continue to take place, especially in the light of the changing risks faced by the financial system and the increasing familiarity with the use of the new instruments.

Table 1

Development of the legislative process for the establishment of an institutional macroprudential framework

Country	Legislation in force as of end June 2013	Legislation in force as of end February 2014	Legislation in force as of end December 2016
Austria		X	X
Belgium			X
Bulgaria	X	X	X
Croatia		X	X
Cyprus			X
Czech Republic		X	X
Denmark	X	X	X
Estonia			X
Finland			X
France		X	X
Germany	X	X	X
Greece	X	X	X
Hungary		X	X
Ireland	X	X	X
Italy			X*
Latvia		X	X
Lithuania			X
Luxembourg			X
Malta	X	X	X
Netherlands	X	X	X
Norway			X
Poland			X
Portugal		X	X
Romania			
Slovakia	X	X	X
Slovenia		X	X
Spain			
Sweden		X	X
United Kingdom	X	X	X

Source: ESRB.
Notes: The table indicates whether (X) or not (blank) the legislation for the establishment of an institutional macroprudential framework was in place on the three dates indicated. Legislative developments may also have taken place between these three dates. In the case of Italy (*), the law is in force since September 2016 but the implementing decrees still need to be approved.

Table 2

Assessment of the implementation of Recommendation ESRB 2013/1 on intermediate objectives and instruments of macroprudential policy

Country	Recommendations			Overall
Austria	A	B	C (1)	FC
Cyprus	A	B	C (1)	FC
Denmark	A	B	C (1)	FC
Estonia	A	B	C (1)	FC
France	A	B	C (1)	FC
Germany	A	B	C (1)	FC
Greece	A	B	C (1)	FC
Hungary	A	B	C (1)	FC
Ireland	A	B	C (1)	FC
Latvia	A	B	C (1)	FC
Lithuania	A	B	C (1)	FC
Luxembourg	A	B	C (1)	FC
Malta	A	B	C (1)	FC
Netherlands	A	B	C (1)	FC
Poland	A	B	C (1)	FC
Romania	A	B	C (1)	FC
Slovakia	A	B	C (1)	FC
Slovenia	A	B	C (1)	FC
United Kingdom	A	B	C (1)	FC
Belgium	A	B	C (1)	FC
Bulgaria	A	B	C (1)	FC
Croatia	A	B	C (1)	FC
Finland	A	B	C (1)	FC
Italy	A	B	C (1)	FC
Sweden	A	B	C (1)	FC
Portugal	B	C	A	LC
Spain	B	A	C (1)	LC
Czech Republic	A	B	C (1)	LC

Source: ESRB (2016), Summary compliance report regarding ESRB Recommendation on intermediate objectives and instruments of macroprudential policy (ESRB/2013/1), February.
Notes: The table shows the level of implementation achieved by the addressees for the different (sub-)recommendations ranked from the highest to the lowest level of compliance. From a policy perspective, the table shows in which countries and for which recommendations there is still room for improvement. It is worth mentioning that there are only a small number of cases where the addressees are expected to enhance their policies concerning individual sub-recommendations. Dark green means fully compliant (FC) – actions taken fully implement the recommendation; light green means largely compliant (LC) – actions taken implement almost all of the recommendation; orange means partially compliant (PC) – actions taken only implement part of the recommendation. See also ESRB Handbook on the assessment of compliance with ESRB recommendations (2016).

3. Developments in the use of measures

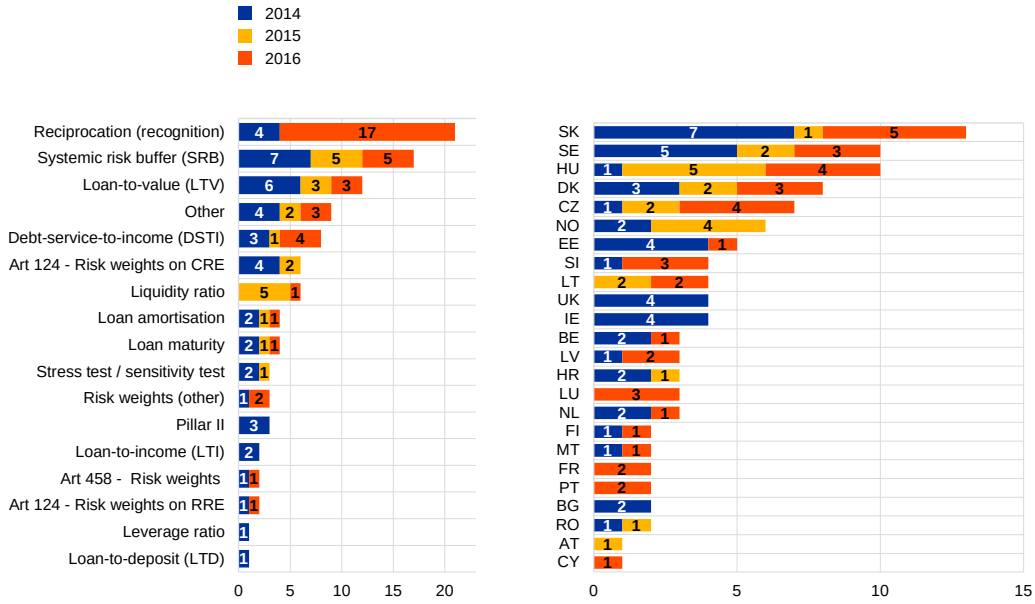
This is the third year that the ESRB has taken stock of the macroprudential measures adopted by Member States, which allows it to take a somewhat longer-term perspective. In such comparisons over time, one should be attentive to regulatory factors that might affect the interpretation of developments. For example, from 2016 onwards all Member States had to take a decision on the setting of the CCyB rate on a quarterly basis, which inflates the total macroprudential decisions and complicates comparisons with earlier years (in which a limited number of Member States opted for an early introduction of the CCyB). A somewhat similar observation relates to the identification of SIIs and the setting of SII buffers, which now also occurs with a regular (annual) frequency. Hence, the use of the CCyB and SII buffer is not covered in this section but discussed in detail in Sections 4 and 7.

In this somewhat longer-term perspective, decisions regarding the reciprocation of other Member States' measures as well as about the use of the systemic risk buffer and real estate instruments are the most frequent (see Figure 1). The year 2016 clearly stands out in terms of reciprocity decisions, a result of the entry into force of the voluntary reciprocity framework developed by the ESRB (see Special Feature B). From a country perspective, most macroprudential decisions in the period 2014-2016 have been recorded for some of the Nordic and central and eastern European (CEE) countries (see Figure 1 and Figure 2).

Figure 1

Number of substantial measures notified to the ESRB (2014-2016)

(Number of measures by measure type (left panel) and by Member State (right panel))

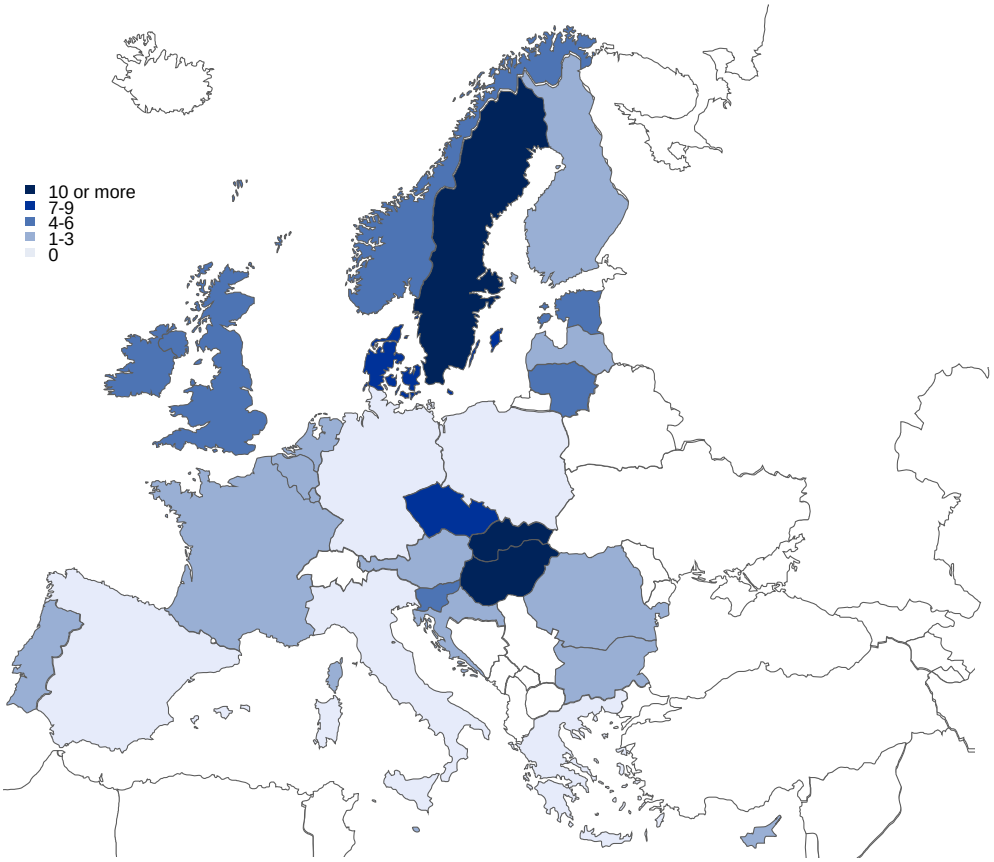


Source: ESRB.

Notes: All measures are deemed to be substantial apart from measures of a more procedural or administrative nature, such as the early introduction of the capital conservation buffer and exempting small and medium-sized investment firms from the capital conservation buffer. The figure also does not include the CCyB or the buffers of SIIs because of the periodic setting of the buffer rate.

Figure 2

Number of substantial measures notified to the ESRB (2014-2016)



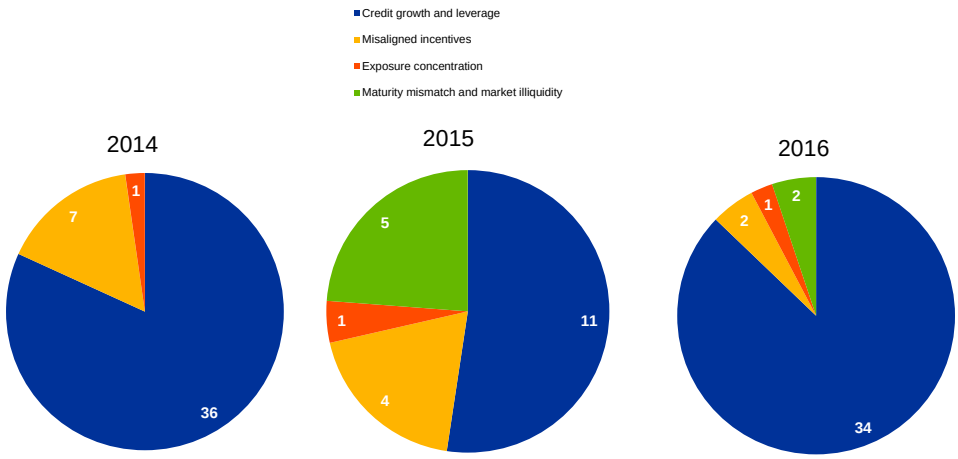
Notes: All measures are deemed to be substantial apart from measures of a more procedural or administrative nature, such as the early introduction of the capital conservation buffer and exempting small and medium-sized investment firms from the capital conservation buffer. The figure also does not include decisions regarding the CCyB or the buffers of SIIs because of the periodic setting of the buffer rates. The latter measures are presented in greater detail in the dedicated sections.

Addressing excessive credit growth and limiting the systemic impact of misaligned incentives are the intermediate objectives of financial stability most frequently aimed at with the measures (see Figure 3). In Recommendation ESRB/2013/1, the ESRB identified five intermediate objectives as the operational specification of macroprudential policy's ultimate objective of achieving financial stability. The popularity of the two aforementioned intermediate objectives is related to the many policy initiatives that concern lending to the RRE sector (Section 5 and Special Feature A) and SIIs (and which may also take forms other than SII capital buffers).

Figure 3

Relative frequency of the use of measures pertaining to various intermediate objectives

(Data labels show number of measures)



Source: ESRB.
Notes: All measures are deemed to be substantial apart from measures of a more procedural or administrative nature, such as the early introduction of the capital conservation buffer and exempting small and medium-sized investment firms from the capital conservation buffer. The figure also does not include the CCyB and the buffers of SIIs because of the periodic setting of the buffer rate.

Around half of the Member States actively took macroprudential policy actions in 2016 and most actions were of a tightening nature. Investigating whether a Member State has tightened or loosened the use of a macroprudential instrument gives a simple (but also incomplete) indication of the macroprudential policy action of that country. Table 3 below shows that most policy actions in 2016 related to real estate instruments and SIIs and were generally of a tightening nature. Further details on these measures will be provided in the respective sections of the Review.

To have a more complete view of a country's effective macroprudential policy stance, this should be complemented with an assessment of the systemic risk conditions in the different Member States. This has been done in the area of RRE in the context of the recent ESRB Warnings (Special Feature A). The absence of policy action in the face of increasing vulnerabilities, or the taking of action but in an insufficient way, may then actually be assessed as an (excessively) loose policy stance instead of a neutral or tightening one. Further below the Review will illustrate that such actions may also include phasing-in or implementation arrangements of instruments (e.g. the phasing-in of capital buffer requirements over time).

Table 3

Tightening or loosening of macroprudential instruments in 2016

Country	Countercyclical capital buffer	Real estate measures	Systemic risk buffer	O-SII/G-SII buffer	Other measures
Austria	→	→	↑	↑	→
Belgium	→	→	→	→	→
Bulgaria	→	→	→	↑	→
Croatia	→	↑	→	→	→
Cyprus	→	→	→	↑↓	→
Czech Republic	→	↑	↑	→	→
Denmark	→	↑	→	→	→
Estonia	→	→	↓	↑	→
Finland	→	↑	→	→	→
France	→	→	→	→	→
Germany	→	→	→	→	→
Greece	→	→	→	→	→
Hungary	→	↑	↓	→	→
Ireland	→	→	→	→	→
Italy	→	→	→	↑	→
Latvia	→	→	→	↑	→
Lithuania	→	→	→	→	→
Luxembourg	→	↑	→	→	→
Malta	→	→	→	→	↑
Netherlands	→	→	→	→	→
(Norway)	→	↑	→	→	→
Poland	→	→	→	↑	→
Portugal	→	→	→	↓	→
Romania	→	→	↑↓	→	→
Slovakia	↑	↑	↑	↓	→
Slovenia	→	↑	→	→	→
Spain	→	→	→	↑	→
Sweden	↑	↑	→	→	↑
United Kingdom	↑↓	→	→	↑	→

Source: ESRB.
Notes: ↑ (red) refers to tightening; ↓ (green) refers to loosening; ↑↓ (orange) refers to tightening and loosening; → (grey) refers to no change. The table refers to actions taken in 2016 but which may sometimes come into effect later.

4. Use of the countercyclical capital buffer

4.1 Setting of domestic buffers

The EU capital rules for banks required Member States to implement the CCyB framework by 1 January 2016. The year 2016 is therefore the first year that all Member States had a CCyB

framework fully in place. A number of countries had decided to adopt it as early as 2014 or 2015. These include Croatia, the Czech Republic, Denmark, Finland, Latvia, Lithuania, Slovakia, Sweden and the United Kingdom (and also Norway).

The EU rules on the CCyB framework are complemented with ESRB guidance. This guidance takes the form of a dedicated chapter in the ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector[15], a Recommendation on setting CCyB rates[16] and an Occasional Paper.[17] The guidance in the ESRB Recommendation covers general principles for setting buffer rates, the calculation of the credit-to-GDP gap (the main reference indicator for setting the CCyB rate) and the so-called buffer guide (the benchmark for the buffer rate based on the credit-to-GDP gap), additional indicators of systemic risk associated with excessive credit growth and indicators for maintaining or releasing the buffer. The ESRB also publishes the applicable buffer rates and supporting information for all Member States on its website.

In the period under review, four EU countries and Norway decided to have a CCyB rate in place different from zero (see Figure 4). These countries are the Czech Republic, Slovakia, Sweden and the United Kingdom (as well as Norway). Of these, only Sweden (and Norway) had a non-zero rate in place that was already effective in 2016. Compared to 2015, three countries increased the level of their CCyB, with one of them fairly shortly afterwards decreasing the rate again to its initial level.

Slovakia actively used the CCyB for the first time, setting the rate at 0.5% in July 2016 with effect one year later.

Sweden increased its rate from 1.5% to 2% in March 2016, becoming effective one year later.

The United Kingdom activated the CCyB for the first time in March 2016 at 0.5%, with effect one year later. In July the rate was brought back to 0% with immediate effect following the outcome of the Brexit referendum. In its policy statement of April 2016, the UK's Financial Policy Committee (FPC) affirmed that it expected to set a CCyB in the region of 1% when risks are judged to be neither subdued nor elevated.[18] In the light of this, the return to a 0% buffer rate should be considered as an accommodating policy stance rather than a return to a neutral stance.

The Czech Republic and Norway, which had already decided on a non-zero buffer rate before 2016, both confirmed these rates in the period under review (at 0.5% and 1.5% respectively).

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15 *The ESRB Handbook on Operationalising Macro-Prudential Policy in the Banking Sector*, ESRB, 2014.

16 Recommendation ESRB/2014/1 on guidance for setting countercyclical buffer rates.

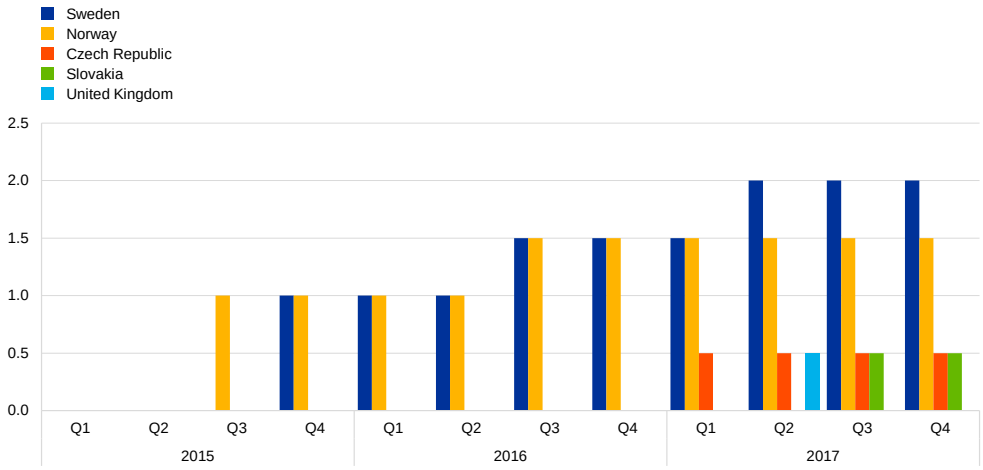
17 "Operationalising the countercyclical capital buffer: indicator selection, threshold identification and calibration options", *Occasional Paper Series,* No. 5, ESRB, June 2014.

18 *The Financial Policy Committee's approach to setting the countercyclical capital buffer*, Bank of England, April 2016.

Figure 4

Countries that applied a non-zero CCyB rate (according to announcement date)

(in percentages)



Source: ESRB and ESRB calculations.
Notes: The decision of March 2016 on a future buffer of 0.5% for the United Kingdom was changed in July 2016 into the buffer rate of 0%.

The credit-to-GDP gap is the main reference indicator in setting the CCyB rate. Analysis by the Basel Committee on Banking Supervision (BCBS) shows that the credit-to-GDP gap is a useful indicator as a starting point to guide decisions on CCyB rates.[19] The BCBS provides guidance on calculating a standardised credit-to-GDP gap. According to this guidance, the long-term trend of the credit-to-GDP ratio is estimated and then subtracted from the current value of this ratio to obtain the current gap. A credit-to-GDP gap of more than two percentage points corresponds to a benchmark CCyB rate starting from 0% and increasing linearly up to 2.5% (reached at a credit-to-GDP gap of ten percentage points). If justified by circumstances, the buffer rate may be set in excess of 2.5%.

National authorities combine this rules-based approach with the exercise of their discretionary powers ("guided discretion"). The authorities are required to publish a buffer guide on a quarterly basis as a reference benchmark, but are also encouraged to exercise judgement when setting the buffer rate. Indeed, given the limitations of the reference indicator, the heterogeneity of financial systems, the specificities of national economies and differences in data availability, more information needs to be taken into account than only the credit-to-GDP gap.

The above-mentioned ESRB Recommendation identifies six categories of indicators that may point to a build-up of system-wide risk. The Recommendation further suggests that national authorities monitor at least one indicator in each of these six categories where appropriate and if the data are available. The six categories are:

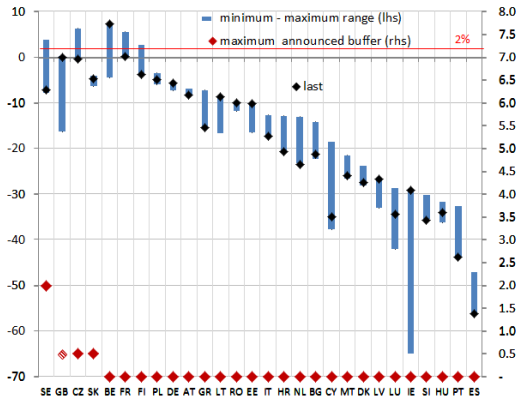
- measures of potential overvaluation of property prices (Category 1);
- measures of credit developments (Category 2);
- measures of external imbalances (Category 3);
- measures of the strength of bank balance sheets (Category 4);
- measures of private sector debt burden (Category 5);
- measures of potential mispricing of risk (Category 6).

[19] Drehmann, M. and Tsatsaronis, K., *The credit-to-GDP gap and countercyclical capital buffers: questions and answers*, March 2014.

The Member States take a wide variety of approaches to the number and types of additional indicators used in their decision to activate or increase the CCyB. While some countries use only a small number of additional indicators, others are monitoring more than 15 additional indicators.[20]

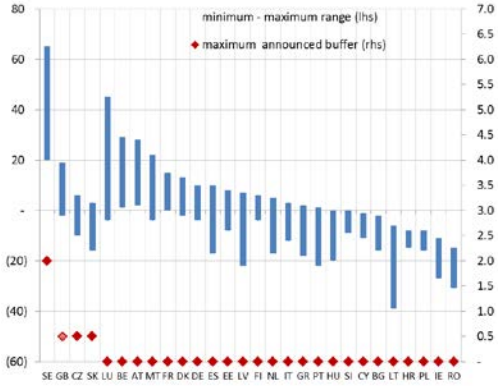
The first experiences with the CCyB confirm that there is no mechanical relationship between the credit-to-GDP gap and the buffer level set by authorities. Figure 5 illustrates that while there is a clear positive relationship between the two, the relationship is not perfect. Indicators of the six above-mentioned categories (Figure 6 to Figure 11), in particular those related to the overvaluation of RRE prices (Figure 6), credit growth (Figure 7) and the strength of bank balance sheets (Figure 9) demonstrate a clear relationship between their levels and buffer levels.

Figure 5. **Reference indicator: domestic credit-to-GDP gap** *(percentage points, percentages, minimum-maximum range within Q1 2015 – Q2 2016 (last))*



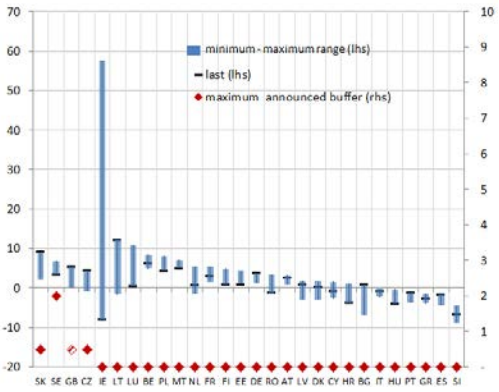
Source: ESRB Risk Dashboard Chart 2.2, ESRB and ESRB calculations.
Notes: Risk Dashboard indicator based on the ECB methodology and data reported by national authorities (on the basis of which the national buffer decisions are made) may differ. Data for Ireland as reported by national authorities and covering Q2 2015 – Q1 2016. The 2% red line indicates the level of credit-to-GDP gap above which the benchmark CCyB rate is positive.

Figure 6. **Category 1 indicator: over/undervaluation of residential property prices** *(minimum-maximum range Q1 2015 – Q2 2016)*



Source: ESRB Risk Dashboard Chart 3.12, ESRB and ESRB calculations.
Notes: Estimates based on four different valuation methods: price-to-rent ratio, price-to-income ratio, asset pricing approach and a Bayesian estimated inverted demand model. For further details see Box 3, Financial Stability Review, ECB, June 2011; and Box 3, Financial Stability Review, ECB, November 2015. For each country, the bars represent the range of estimates across the four valuation methods.

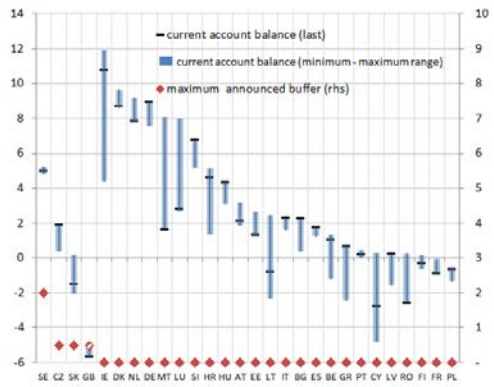
Figure 7. **Category 2 indicator: credit growth** *(annual percentage change, minimum-maximum range Q1 2015 – Q3 2016)*



Source: Macroprudential Database. ECB, ESRB and ESRB calculations.
Notes: Credit defined as loans granted to households plus debt securities and loans of non-financial corporations.

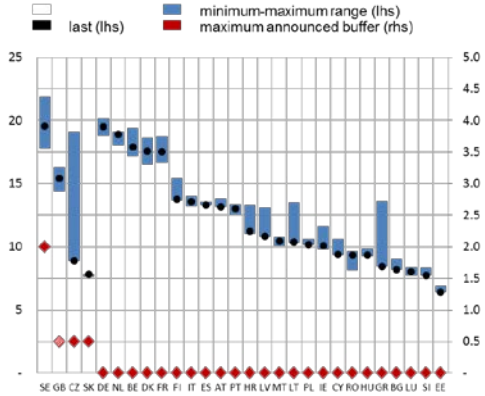
[20] Pekanov, A. and Dierick F., "Implementation of the countercyclical capital buffer regime in the European Union", *ESRB Macroprudential Commentaries*, No. 8, ESRB, December 2016.

Figure 8. **Category 3 indicator: current account imbalances** *(percentage of GDP, minimum-maximum range Q1 2015 – Q2 2016)*



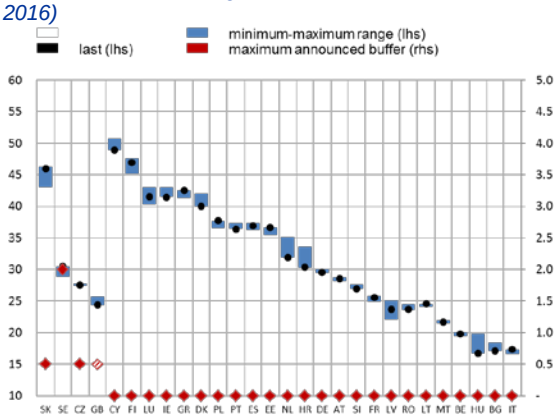
Source: ESRB Risk Dashboard Chart 2.3, ESRB and ESRB calculations.

Figure 9**. Category 4 indicator: banking sector leverage** *(share of total assets in capital, minimum-maximum range since Q1 2015 to latest Q2 2016)*



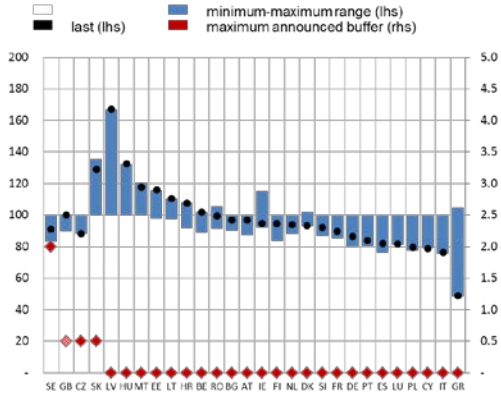
Source: ESRB Risk Dashboard Chart 7.2, ESRB and ESRB calculations.
Notes: Share of total assets for domestic banking groups and stand-alone institutions.

Figure 10. **Category 5 indicator: debt burden of households** *(ratio of loans to total financial assets, minimum-maximum range since Q1 2015 to latest Q2 2016)*



Source: ECB, Eurostat and ESRB calculations.

Figure 11.**Category 6 indicator: equity price developments** *(Q1 2015 = 100, minimum-maximum range since Q1 2015 to latest Q3 2016)*



Source: Thomson Reuters Datastream and ESRB Calculations.
Notes: Datastream Total Market Equity indices where available, other major stock exchange indicators used (EE, LT, LV, SK).

Another set of indicators is used for assessing the need to decrease or fully release the CCyB. This decision has different dynamics compared to the activation decision. The former might be based either on the fact that risks in the system have receded (pointing to a gradual release) or that they have already materialised and that the CCyB needs to be released to help banks to absorb losses (prompt release). Only a small number of countries have already clearly outlined in public the approach they will take when deciding on the decrease or full release of the CCyB. The ESRB Recommendation identifies two groups of additional indicators for the release phase – measures of stress in bank funding markets (such as various spreads and premia) and measures that indicate general systemic stress (such as the ECB's Composite Indicator of Systemic Stress; CISS).

The only experience up to now with a buffer release is the case of the United Kingdom mentioned above. The reduction of the buffer from 0.5% to 0% with immediate effect was motivated by the crystallisation of risks surrounding the referendum on the EU membership of the United Kingdom and the resulting material change in the risk outlook.

4.2 Setting of buffers for third countries

In addition to setting domestic CCyB rates, the EU capital rules for banks also foresee the possibility of setting CCyB rates for exposures to third countries. National legislation implementing Article 139 CRD IV gives the right to national authorities to set a CCyB rate for third (i.e. non-EU) countries that domestic banks must apply when calculating their institution-specific CCyB. This right may be exercised when the third country has not set and published a CCyB or the CCyB set and published is not deemed sufficient to protect their banks from the risk of excessive credit growth in that country. In addition, Article 138 CRD IV explicitly states the possibility of the ESRB recommending the setting of a CCyB rate for third countries.

The ESRB detailed its approach to its rights under the CRR in a recommendation and a decision.[21] The objective was to implement a coherent approach across the Union for setting CCyB rates for exposures to third countries in order to prevent regulatory arbitrage. Given the very large number of third countries, both the ESRB and Member States focus on identifying and monitoring material countries.

To that end, the Member States and the ESRB share the responsibility of identifying and monitoring material third countries.

- **Member States** establish to which third countries the banking system in their jurisdiction has material exposures. This should be based on, but not necessarily limited to, quantitative information on exposures of domestically authorised institutions to third countries. Member States also monitor developments in those third countries for signs of excessive credit growth. If designated authorities discover such signs in one of the countries they monitor and they consider that setting a CCyB rate for exposures to that third country is needed, they inform the ESRB. Member States also notify to the ESRB those material third countries that they will not monitor because they are already being monitored by the ESRB.
- **The ESRB** establishes to which third countries the EU banking system as a whole has material exposures. This identification is based on a pre-agreed methodology that uses quantitative information on exposures of the EU banking sector to third countries[22]. The methodology is based on three COREP metrics: (a) risk-weighted exposure amounts, (b) original exposures, and (c) defaulted exposures. A third country will be identified as material for the EU banking sector and added to the list of material third countries if: (a) the arithmetic mean of exposures to the third country in the eight quarters preceding the reference date was at least 1% for at least one of the three metrics, and (b) the exposures in each of the two quarters preceding the reference date were at least 1% for at least one of the three metrics. The list of material third countries is to be reviewed annually. The ESRB also monitors developments in those countries for signs of excessive credit growth. If the ESRB considers that mitigating actions should be coordinated across the Union, it will issue a recommendation to designated authorities on setting the appropriate CCyB rate for exposures to the third country in question.

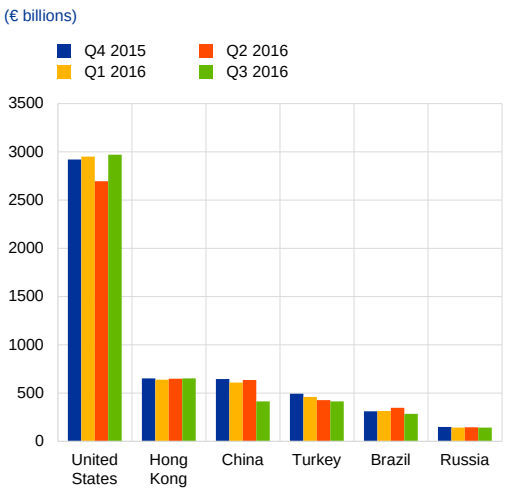
The ESRB established an initial list of six material third countries. The list contains the United States, Hong Kong, China, Turkey, Brazil, and Russia in descending order of exposures by the EU

[21] Recommendation ESRB/2015/1 on recognising and setting countercyclical capital buffer rates for exposures to 3rd countries and Decision ESRB/2015/3 on the assessment of materiality of third countries for the Union's banking system in relation to the recognition and setting of countercyclical buffer rates.

[22] See Article 4 of Decision ESRB/2015/3.

banking sector (see Figure 12). The exposure to the United States is by far the largest, standing at four times the exposure of the second next countries, Hong Kong and China.

Figure 12
Exposures of Member States vis-à-vis the six material third countries monitored by the ESRB Secretariat



Source: ECB, ESRB calculations.
Notes: Based on Consolidated Banking Data. Sum of original exposures of banks in Member States to the United States, Turkey, Russia, Hong Kong, China and Brazil.

The vast majority of Member States apply voluntarily the same methodology as used by the ESRB when identifying material third countries (Table 4). While the ESRB methodology for identifying material third countries is prescriptive for the ESRB but not for the Member States, most of the latter decided to apply it in its original or some amended version. For instance, some Member States are missing (or decided to use only) part of the COREP metrics and therefore rely on fewer indicators (Belgium, Latvia, Slovenia, Slovakia). While adopting the ESRB methodology, some Member States chose to amend the ESRB methodology by (i) using a higher threshold (Denmark, Spain, Latvia, Slovenia), (ii) requiring two metrics instead to exceed the threshold (Ireland), (iii) complementing COREP data with data taken from other sources (Germany, Greece, Romania), and/or (iv) amending the statistical results with expert judgement (Austria, France, Sweden). Only one Member State chose to adopt an approach entirely different from the ESRB methodology that is based on international claims and accounting for loss-absorbing capacity (United Kingdom).

Table 4

Methodologies used by Member States for identifying material third countries

Member State	ESRB methodology			Latest data	Comments
	Calculation	Threshold	Data		
AT	●	●	●	Q1 2016	Statistical approach overlaid with expert judgement
BE	●	●	●	Q1 2016	Decision not to use defaulted exposures
BG	●	●	●	Q1 2016	Additional inclusion of intragroup exposures
CY	●	●	●	Q2 2016	
CZ	●	●	●	Q4 2015	
DE	●	●	●	Q4 2015	Combination with external position data using a 3% threshold
DK	●	●	●	Q1 2016	Use of 2% threshold
EE	●	●	●	Q1 2016	
ES	●	●	●	Q1 2016	Use of 2% threshold
FI	●	●	●	Q1 2016	
FR	●	●	●	Q1 2016	Statistical approach overlaid with expert judgement
GR	●	●	●	Q1 2016	Combination with own proxies to ESRB metrics
HR	●	●	●	Q1 2016	Missing risk-weighted exposures; combination with analysis of unconsolidated risk-weighted exposures
HU	●	●	●	Q1 2016	Use of COREP template C.09.03 due to larger sample of Hungarian banks
IE	●	●	●	Q1 2016	Materiality if two metrics exceed threshold and based on most recent quarter and average over preceding four quarters
IT	●	●	●	Q4 2015	
LT	●	●	●	Q4 2015	Data beginning in Q1 2015
LU	●	●	●	Q4 2015	
LV	●	●	●	Q1 2016	Use of 2% threshold; decision not to use defaulted exposures
MT	●	●	●	Q4 2015	Materiality if one of the criteria is met; data beginning in Q1 2015
NL	●	●	●	Q1 2016	
PL	●	●	●	Q1 2016	
PT	●	●	●	Q4 2015	
RO	●	●	●	Q4 2015	Additional use of monetary statistics and further indicators
SE	●	●	●	Q1 2016	Statistical approach overlaid with expert judgement
SI	●	●	●	Q4 2015	Use of 5% threshold; decision not to use defaulted exposures
SK	●	●	●	Q4 2015	Decision not to use defaulted exposures
UK	●	●	●	Q4 2015	To account for loss-absorbing capacity, materiality is based on size of UK banks' private real economy foreign exposures relative to size of UK banks' equity (threshold of 10%)

Source: ESRB.
Notes: "ESRB methodology" refers to the methodology laid down in Decision ESRB/2015/3 on the assessment of materiality of third countries for the EU banking system in relation to the recognition and setting of countercyclical buffer rates, and binds the ESRB when identifying material third countries for the EU. Member States are not obliged to apply the ESRB methodology when identifying material third countries for themselves. "Calculation" refers to the use of moving averages and the last two quarters of the three risk metrics as laid down in Articles 4(1) and 3(2) of Decision ESRB/2015/3. "Threshold" refers to the 1% threshold for any of the three metrics as laid down in Article 4(1) of Decision ESRB/2015/3. "Data" refers to the use of the COREP data series as laid down in Article 3(2) of Decision ESRB/2015/3. Green dots indicate that the used methodology is equivalent to the methodology described in Decision ESRB/2015/3. Yellow and grey dots indicate that differing metrics, criteria or thresholds have been used which are explained in the column "Comments".

The number of identified material third countries varies widely by Member State, as does the overlap in the identification of such countries (Table 5). The number of identified material third countries ranges from zero (nine Member States) to 11 (the Netherlands). The overlap in the identification of countries is highest for the six material countries identified and monitored by the ESRB: it varies from 13 for the United States to two for Hong Kong. The overlap is significantly lower for material third countries additionally identified by Member States: six and three Member

States identify Switzerland and the Ukraine, respectively, as material, while all other additional countries are significant for only one Member State.

Member States take different approaches to monitoring the six material countries identified and monitored by the ESRB (Table 5). On the one hand, 13 Member States do not themselves monitor the six material third countries identified and monitored by the ESRB, but leave it to the ESRB to monitor those countries. On the other hand, four Member States do themselves monitor these six countries. Some of these Member States do so because they monitor those countries for broader purposes than only the CCyB.

Table 5

Material third countries as identified by Member States

	Third countries monitored by ESRB Secretariat						Other third countries													
	USA	Hong Kong	China	Turkey	Brazil	Russia	Cayman Islands	Singapore	Switzerland	Mexico	Australia	UAE	Chile	Saudi Arabia	Morocco	Ukraine	Macao	Angola	Montenegro	Mozambique	#
AT	●		●	●		●			●							●					6
BE	●			●					●												3
BG																					0
CY						●															1
CZ				●		●															2
DE	●								●												2
DK[1]																					0
EE																					0
ES	●			●	●					●			●								5
FI	●																				1
FR	●			●					●						●						4
GR				●																	1
HR																					0
HU						●										●			●		3
IE	●																				1
IT	●			●		●															3
LT																					0
LU	●		●		●				●												4
LV	●					●															2
MT												●									1
NL	●	●	●	●	●		●	●	●		●			●		●					11
PL																					0
PT																	●	●		●	3
RO																					0
SE	●					●															2
SI																					0
SK																					0
UK	●	●	●																		3
#	13	2	4	8	3	7	1	1	6	1	1	1	1	1	1	3	1	1	1	1	58

Legend:
● Material 3rd countries not monitored by DA because already monitored by ESRB Sec
● Material 3rd countries monitored by DA

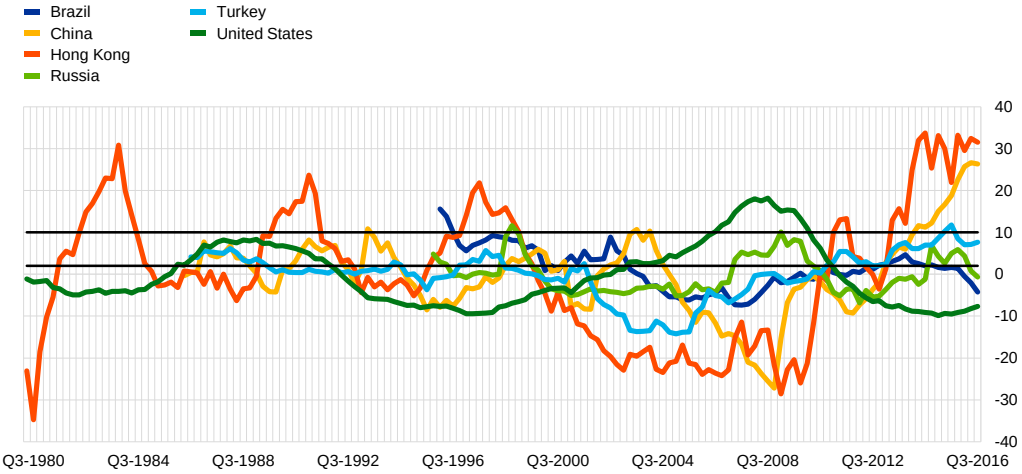
Source: ESRB.
Notes: The dots show the material third countries as identified by the respective Member State. Dots in yellow mean that the respective Member State does not monitor this particular third country because the latter is already monitored by the ESRB Secretariat.

The ESRB has built up a framework to monitor material third countries. In line with the rules laid down by the BCBS, this framework tracks developments in the credit-to-GDP gap of the countries (see Figure 13). The buffer guide is however not intended to give rise to an automatic buffer setting. While the credit-to-GDP gap is a useful starting point in guiding decisions on CCyB rates, its performance can differ across countries and over time. The monitoring framework therefore complements the credit-to-GDP gap with a range of information when assessing the level of system-wide risk and potentially setting the buffer rate accordingly. This information should include additional indicators that signal the build-up of system-wide risk associated with excessive credit growth, proxies for the degree of financial intermediation in the economy such as the level of the ratio of credit-to-GDP and qualitative information. The quantitative and qualitative information used for this assessment, including the buffer guide and the additional indicators, form the basis for explaining and justifying decisions on buffer rates.

Figure 13

Credit-to-GDP gap for material third countries

(in percentage points)



Source: BIS, ESRB calculations.
Notes: The area between the two horizontal lines set at 2% and 10% denotes the zone in which the buffer guide suggests the setting of a CCyB rate in the range of 0% and 2.5%.

5. Measures related to real estate lending[23]

RRE lending continued to be high on the agenda of macroprudential policy-making by the ESRB and its members in 2016.

The ESRB issued Warnings to eight Member States on medium-term vulnerabilities in the RRE sector. Special Feature A discusses in greater detail the process and methodology used by the ESRB in assessing the vulnerabilities and policy stances of Member States and that resulted in these Warnings.

The ESRB further adopted Recommendation ESRB/2016/14 on closing real estate data gaps. The aim of this Recommendation is that national macroprudential authorities implement a framework for monitoring developments in the real estate sector relevant for financial stability and based on the recommended harmonised indicators and definitions. Commonly agreed working definitions across Member States on the real estate sector, along with a higher data availability for a number of relevant indicators, will strengthen the reliability of financial stability analyses, making it easier to assess and compare risks across national markets.

At the national level, several initiatives can be highlighted for the year 2016.

Belgium had earlier applied a five percentage point risk weight add-on for Belgian residential mortgage loans by banks using the internal ratings-based (IRB) approach.[24] This measure was taken under the so-called national flexibility package of the capital rules (Article 458 CRR). On account of financial stability reasons and subject to strict requirements, this package allows national measures that are stricter than the EU capital rules and this for a period of up to two years with a

[23] The measures discussed in this section relate specificailly to real estate lending and therefore take a narrower perspective than some of the broader policies listed in Annex 2.

[24] *A review of macroprudential policy in the EU one year after the introduction of the CRD/CRR*, ESRB, June 2015, pp. 18 and 23.

possible extension of one additional year each time. In early 2016, Belgium asked for an extension of the measure for one additional year starting from end May 2016. Drawing also on an opinion by the ESRB[25] and EBA, the European Commission[26] did not object to this extension. In the process, Belgium asked the ESRB to recommend reciprocating the measure under Recommendation ESRB/2015/2 (Special Feature B).

Croatia increased weights for exposures secured by mortgages on commercial immovable property from 50% to 100%.

Cyprus recalibrated its debt service-to-income (DSTI) limit that is implemented as part of a directive by the Central Bank of Cyprus. This recalibration is more a reflection of a simplification and change in calculation method rather than an actual change in policy. In assessing the repayment ability of a borrower, the total debt servicing amount needs now to be limited to 80% of the borrower's net disposable income (65% in the case of loans denominated in foreign currencies).

In the **Czech Republic,** Česká národní banka tightened its recommended loan-to-value (LTV) ratios that apply to mortgage lending. The recommendation is of a preventive nature and the tightening follows signs of some easing of credit standards. Starting from October 2016, the upper LTV limit of 100% is being progressively reduced to reach 90% in April 2017; from this same date onwards also a limit of 15% for the share of new loans with an LTV above 80% applies[27]. For buy-to-let housing, a new recommended LTV limit of 60% comes into force. Higher LTV ratios are still allowed in justified cases.

In **Denmark,** Finanstilsynet issued guidelines for banks and mortgage credit institutions to ensure caution in new mortgage lending in areas with high price levels and increases compared to the rest of the country. The guidelines cover best practice including an LTI rule (loan-to-gross income):

- if the LTI is between 4 and 5, the borrower should have sufficient wealth so that his net wealth is still positive in the event that the value of the property declines by 10%;
- if the LTI is above 5, the borrower should have sufficient wealth so that his net wealth is still positive in the event that the value of the property declines by 25%.

Finland announced in June 2016 that it would introduce a credit institution-specific floor of 10% for the average risk weight of Finnish housing loans by IRB banks. The measure would come into force on 1 July 2017 at the latest. The means for setting this floor would be the national flexibility package (Article 458 CRR).

In **Hungary,** mortgage loans denominated in foreign currencies had been mandatorily converted into local currency in 2015. Magyar Nemzti Bank (MNB) also introduced a number of risk management requirements for banks[28], including a mortgage funding adequacy ratio (MFAR) effective from April 2017 onwards. This ratio requires Hungarian credit institutions to finance at least 15% of their stock of mortgage loans with long-term, stable mortgage-backed liabilities in local currency.

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25 ESRB (2016), Opinion ESRB/2016/1 regarding Belgian notification of an extension of the period of application of a stricter measure based on Article 458 of Regulation (EU) No 575/2013 of the European Parliament and of the Council on prudential requirements for credit institutions, 18 February.

26 European Commission (2016), Decision not to propose an implementing act to reject the intended extension of the national measure under Article 458 of Regulation (EU) No 575/2013 notified by the Kingdom of Belgium under Article 458(9) in conjunction with Article 458(4) of Regulation (EU) No 575/2013, 15 March.

27 Until October 2016 a limit of 10% for new loans with an LTV greater than 90% was into force.

28 *A Review of Macroprudential Policy in the EU in 2015*, ESRB, May 2016, pp. 13-14.

Following the pick-up of mortgage lending and developments in the mortgage market, MNB decided in 2016 to further tighten the MFAR from 1 October 2018 onwards. This includes raising the minimum level of the ratio from 15% to 20% and increasing the required minimum maturity of eligible liabilities from one to two years. As part of its annual review process MNB also introduced some technical changes to its existing LTV and PTI (payment-to-income) limits.

The Hungarian banking sector faces a high outstanding stock of non-performing exposures to commercial real estate (CRE). Measures to address this problem include the introduction of the systemic risk buffer (see Section 6) and the establishment of a dedicated asset management company – called MARK – by MNB. In 2016 MARK started its operation with the aim of assisting solvent financial institutions to voluntarily sell their distressed CRE portfolio at market prices.

Following an extensive consultation and evaluation process, the Central Bank of **Ireland** announced the results of its review of the mortgage measures. The review identified a number of refinements to improve the sustainability and effectiveness of the original framework announced in January 2015. The refinements were focused on the LTV measure, with the ceiling for first-time buyers to be set at 90% (effective 1 January 2017) for the entire value of the loan (previously 90% for loans up to €220,000 and 80% for higher balances). In addition, the structure of the proportionate LTV allowances was amended: 5% of the value of new lending to first-time buyers will be allowed above the LTV limit of 90% and 20% of the value of new lending to second and subsequent buyers for primary residences will be allowed above the LTV limit of 80%. This replaced the previous requirement which allowed 15% of total lending for primary dwellings (the sum of lending to first-time buyers and second and subsequent buyers) above the LTV limits.

In **Luxembourg,** a regulation specifying an average minimum risk weight of 15% for retail residential mortgage loans came into effect.

In **Norway,** an expiring regulation on requirements for new residential mortgage loans was replaced by a new one which at the same time was in some respects tightened. The regulation includes an interest rate stress test / sensitivity test when assessing the borrower's repayment capacity, an LTI cap, an LTV cap, a loan amortisation requirement and a so-called speed limit allowing part of the new mortgage volume not to meet the requirements. Both the LTV cap and the amortisation requirement were tightened: a new LTV cap for secondary houses in the capital was introduced and the LTV threshold for loans that require amortisation was lowered.

In **Slovakia,** Národná banka Slovenska adopted a binding decree replacing, and in some cases tightened, an earlier non-binding recommendation on limits for housing loans.

- An absolute LTV limit of 100% applies. In addition, the share of new loans with an LTV greater than 90% cannot exceed 10% and the share of new loans with an LTV greater than 80% cannot exceed 40%.
- A DSTI limit caps loan installments at 90% of the borrower's disposable income; in the case of floating-rate loans, an interest rate increase of two percentage points is assumed.
- The maximum maturity of housing loans secured by RRE is 30 years, with a possible exemption of 10% of new loans.

In **Slovenia**, Banka Slovenije issued as a precautionary measure a recommendation with immediate effect combining LTV and DSTI limits for new housing loans:

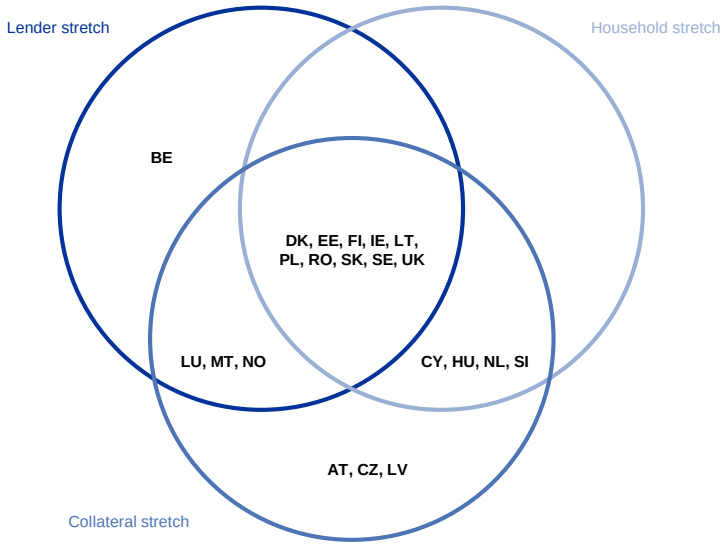
- the recommended LTV limit is 80%;
- the recommended DSTI limit depends on the borrower's monthly income: for an income up to €1,700, the limit is 50%; for an income of more than €1,700, the same limit applies to the part of the income up to € 1,700 and is 67% for the part above.

In **Sweden**, Finansinspektionen introduced amortisation requirements for mortgage loans. New mortgage loans with an LTV above 70% are required to be amortised by at least 2% of the original loan amount each year. Loans with an LTV below 70% must be amortised by a minimum of 1% annually until the LTV has reached 50%. For existing mortgages raised before 1 June 2016, additional loans may be paid either in accordance with the basic rule or over a period of ten years. Exemptions are allowed in certain situations, such as unemployment or sickness. Furthermore, mortgage firms may waive the amortisation requirement for a loan collateralised by a newly produced residential property, although for a maximum of five years and only for first-hand buyers.

A helpful typology for grouping real estate instruments is the classification into household (or income) stretch, collateral stretch and lender stretch instruments.[29] The first covers instruments that target the repayment capacity of the borrower, such as LTI, DTI (debt-to-income), PTI and DSTI limits; the second refers to instruments that focus on the collateral of the loans, such as LTV limits; the third category points to instruments that directly increase the resilience of the lender, such as risk weights, sectoral capital buffers and stress tests with capital add-ons. Some instruments have a hybrid character. Amortisation requirements, for example, affect both the repayment burden (borrower stretch) and also bring down the LTV ratio over time (collateral stretch).

Most Member States addressing vulnerabilities originating from the RRE sector now have a combination of instruments in place (see Figure 14)[30]. Different stretches cover different risk channels and a combination of instruments may increase the overall effectiveness of the measures.

Figure 14
Use of residential real estate instruments according to the stretches typology



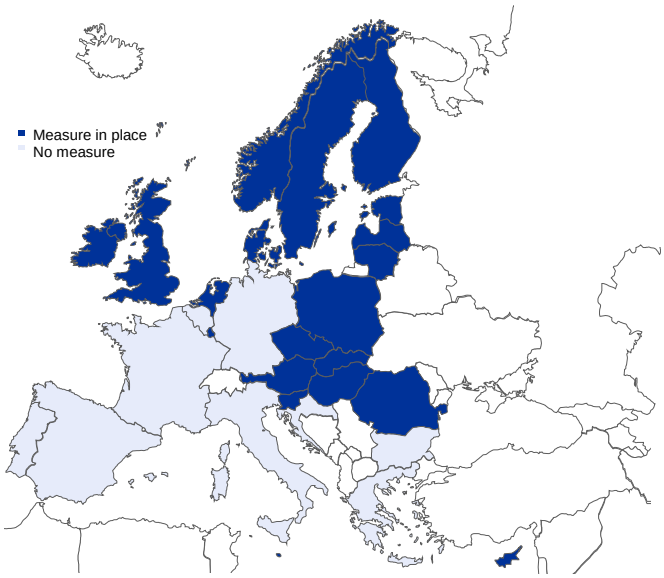
Source: ESRB.
Notes: The figure is based on the information in Tables 1 to 3 of Annex 1. It refers to instruments active in 2016 but that might have been implemented earlier. Amortisation requirements have been included under both the income stretch and the collateral stretch categories.

[29] *Residential real estate and financial stability in the EU*, ESRB, December 2015, p. 86 ff.

[30] For a discussion on commercial real estate, see *A Review of Macroprudential Policy in the EU in 2015*, ESRB, May 2016, pp. 20-23.

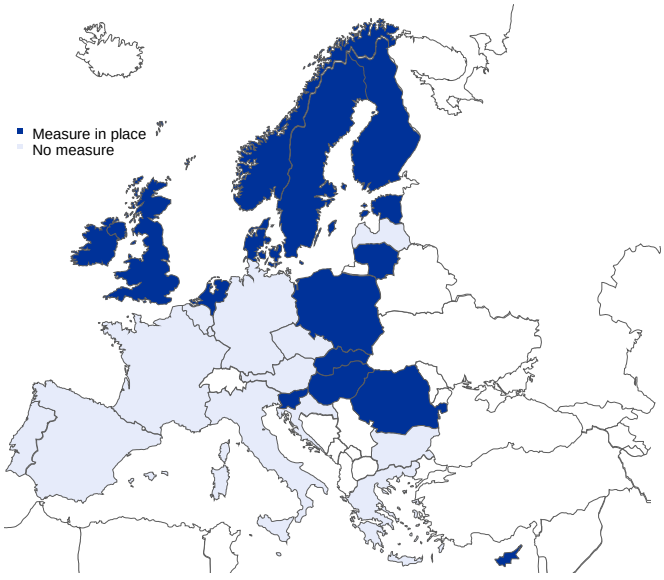
One can detect some clear geographical patterns in the use of real estate instruments (Figure 15 to Figure 17). Most Member States that have activated these instruments are located in northern and central Europe. There is also a clear overlap in the different countries in the use of instruments belonging to different stretches. Annex 1 provides more details on the characteristics of the various real estate instruments in place in the different countries.

Figure 15
Use of collateral stretch instruments



Source: ESRB.

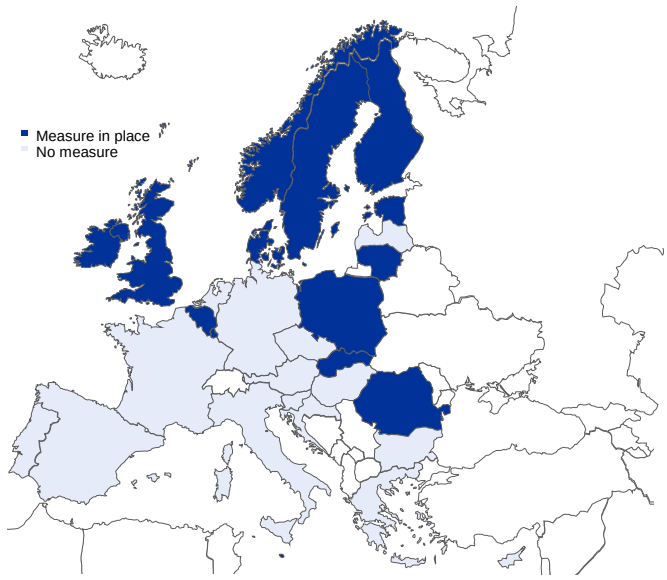
Figure 16
Use of household/income stretch instruments



Source: ESRB.

Figure 17

Use of lender stretch instruments



Source: ESRB.

6. Use of the systemic risk buffer

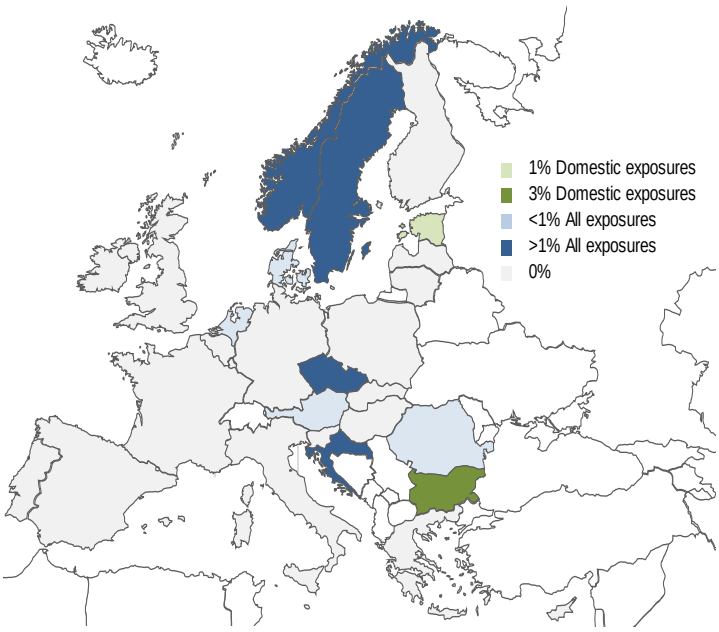
The systemic risk buffer continues to be one of the most frequently used instruments. Figure 18 and Figure 19, as well as Table 6 at the end of this section, illustrate that the implementation of this instrument varies significantly across countries, e.g. in terms of scope, phasing-in arrangements of the buffer and the type of risk being addressed.

In its response to the Commission's consultation on the "Review of the EU Macro-prudential Policy Framework", the ESRB pointed out that Member States have different needs and uses when applying structural buffers. The ESRB underlined that the main attractiveness of the systemic risk buffer is its great flexibility in terms of use. At the same time, this flexibility creates the risk of negatively affecting the use of other instruments designated for a specific risk. This is especially the case with the O-SII buffer, which is presently capped at 2%[31]. One can indeed observe that in several Member States national authorities have used the systemic risk buffer to go beyond this legal cap. The ESRB noted that it would be more appropriate if the dedicated tool were used to address the specific risk it was created for. The ESRB also argued that the present cap on the O-SII buffer should at least be substantially increased so that the risk resulting from individual O-SIIs can be adequately addressed. All in all, there would be merit in further clarifying and improving the rules regarding the use of the systemic risk buffer and the ESRB made some proposals on how this could be done.

[31] In case an O-SII is a subsidiary of a G-SII or O-SII which is an EU parent institution and subject to an O-SII buffer on a consolidated basis, the buffer that applies at individual or sub-consolidated level for the O-SII is the maximum of 1% of the total risk exposure and the G-SII or O-SII buffer applicable to the group at consolidated level,

Figure 18

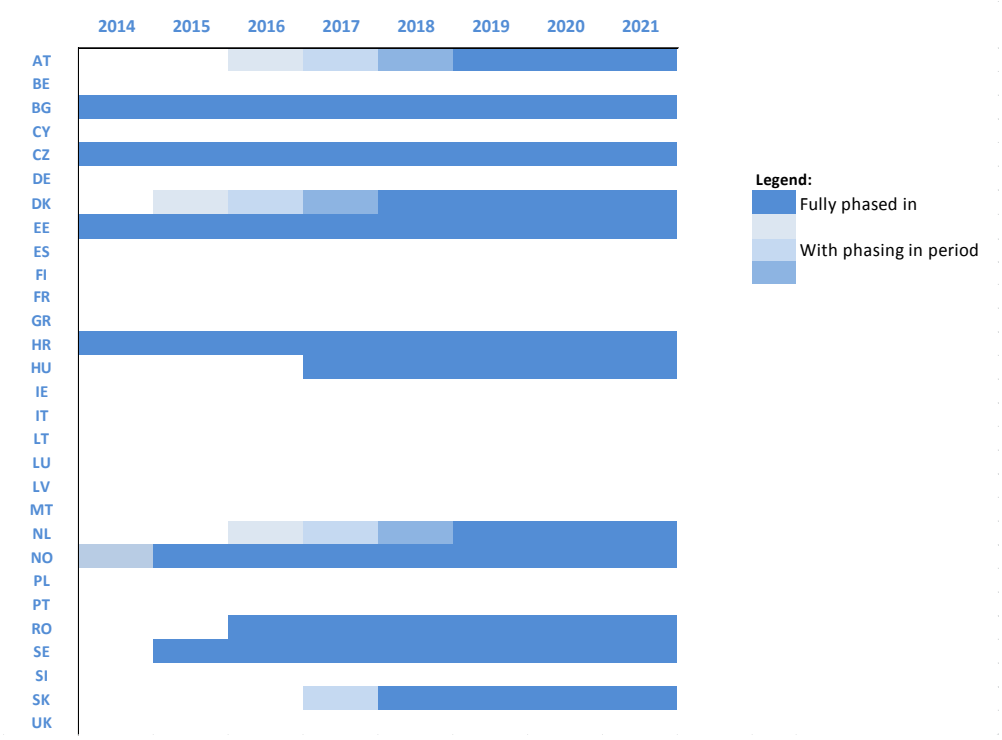
Use of the systemic risk buffer in the EU



Source: ESRB.
Notes: Buffer levels refer to average 2016 figures across credit institutions (unweighted). The buffer requirement can apply to all credit institutions or a group of institutions in the country. If a group of institutions is covered, the average buffer level for the institutions is shown. Finland, Italy and the United Kingdom have not (yet) introduced the systemic risk buffer into national law and are shown as 0%.

Figure 19

Phasing in of the systemic risk buffer in the EU



Source: ESRB.

Notes: Hungary postponed the introduction of the systemic buffer from 1 January 2017 to 1 July 2017. Romania decided to deactivate the systemic risk buffer from 1 March 2017 onwards. The United Kingdom held a public consultation on its planned systemic risk buffer framework, which is scheduled to come into force in 2019.

In the course of 2016 a few changes took place in already existing frameworks for the systemic risk buffer. The changes relate mainly to the level, scope or phasing-in of the buffer. Under EU law, the systemic risk buffer requirement needs to be reviewed at least every second year. No Member State introduced a new systemic risk buffer, but the United Kingdom published its framework for a future systemic risk buffer to become operational from 2019 onwards. Romania announced the deactivation of the buffer in 2017.

The Czech Republic uses the systemic risk buffer rather than the O-SII buffer to mitigate the systemic risk originating from systemically important banks. In 2016 both the identification of banks subject to the buffer changed (the number of banks increased from four to five) as well as some of the applicable buffer rates. The buffer level of two institutions was increased and one institution became subject to the buffer for the first time. These new arrangements came into force in 2017.

Denmark, just like the Czech Republic, uses only the systemic risk buffer to mitigate the risk resulting from systemically important banks. One of the institutions subject to the systemic risk buffer changed from 2017 onwards following the transformation of a Danish subsidiary of the Nordea Group into a branch.

Estonia reduced the systemic buffer from 2% on total exposures to 1% on domestic exposures from Q3 2016 onwards. The introduction of the buffer in 2014 was motivated by several reasons, including the high concentration of the banking sector. From Q3 2016 onwards an O-SII buffer was introduced for two institutions that together hold more than 60% of the total banking sector assets. The systemic risk buffer therefore needed to be recalibrated to avoid a double-counting of this concentration risk. The ESRB was asked to recommend reciprocation of the measure (Special Feature B).

Hungary decided to postpone the introduction of the systemic risk buffer until 1 July 2017, six months later than originally scheduled. This delay was motived by the aim of supporting lending to the economy. It is an illustration of how the phasing-in arrangement of an instrument aimed at addressing non-cyclical risks is relevant for assessing macroprudential policy action against the backdrop of cyclical developments. The buffer's objective is to address the systemic risk resulting from problem exposures to the CRE sector and to provide an incentive to banks to clean up their balance sheet. The level of the buffer for a specific bank is determined as a function of these problem exposures as a proportion of the bank's domestic Pillar I capital requirement. The identification of the banks subject to the buffer and their buffer rate is carried out every year.

Romania announced deactivation of its systemic risk buffer from 1 March 2017 onwards. The buffer was introduced in 2016 to address the external contagion risk resulting from certain bank ownership structures. The deactivation is related to the perceived reduction in this contagion risk, the activation of the O-SII buffer and legislative developments at the national level that may lower the capital adequacy of banks (changes in debtor rights and the conversion of foreign currency loans into local currency against a discount).

Slovakia uses the systemic risk buffer in combination with the O-SII buffer to achieve a target aggregate buffer for five O-SIIs. Following the identification of the parent banks of four of these institutions as O-SIIs in their home countries (Austria, Belgium and Italy), a recalibration of the buffers for these institutions took place, basically lowering the O-SII buffers and increasing the systemic risk buffer, while the target aggregate buffer of each institution remained unchanged.

In the **United Kingdom**, the FPC published its framework for the systemic risk buffer.[32] As part of the legislative package implementing the recommendations of the Independent Commission on Banking, the FPC is required to produce a framework for a systemic risk buffer for ring-fenced banks and large building societies. The systemic risk buffer will be applied to individual institutions by the Prudential Regulation Authority (PRA) and is scheduled to be introduced at the same time ring-fencing comes into force in 2019.

[32] *The Financial Policy Committee's framework for the systemic risk buffer*, Bank of England, May 2016.

Table 6

Main features of the systemic risk buffer in Member States

(situation on the basis of decisions approved until end 2016, level refers to fully phased-in buffers)

Member State	Level	Calculation basis	Main motivation	(First) Implementation
Austria	2 rates: 1% and 2%	Twelve banks[33] All exposures (sub-)consolidated	Systemic vulnerability Systemic cluster risk	2016-2019
Bulgaria	3%	All banks Domestic exposures Solo and (sub-)consolidated	Presence of currency board and impact for monetary and fiscal policy Weak economic environment	2015
Croatia	2 rates: 1.5% and 3%	All banks All exposures Solo and (sub-)consolidated	Systemic risk resulting from O-SIIs Macroeconomic imbalances Features of real estate markets and role of real estate as collateral High concentration in the banking sector	2014
Czech Republic	3 rates: 1%, 2% and 3%	Five banks identified as SIIs[34] All exposures Solo level	Systemic risk resulting from highly concentrated banking sector and common sectoral exposure	2015
Denmark	5 rates: 1%, 1.5%, 2%, 2.5% and 3%	Six banks identified as O-SIIs[35] All exposures Solo and (sub-)consolidated	Systemic risk resulting from O-SIIs	2015-2019
Estonia	1%	All banks Domestic exposures Solo and (sub-)consolidated	Structural vulnerabilities of the economy: a small and open economy, high proportion and concentration of exports and investments, large indebtedness of the non-financial sector, modest financial buffers of households, bank-centred financial sector	2014
Hungary	4 rates: 0%, 1%, 1.5% and 2%	All banks, but buffer rate depends on the ratio of the bank's problem CRE exposures to its capital Domestic exposures (Sub-)consolidated	Systemic risk resulting from problem exposures to the CRE sector	2017
Netherlands	3%	Three largest banks[36] All exposures Consolidated	Systemic risk resulting from SIIs	2019
Norway	3%	All banks All exposures Solo and (sub-)consolidated	Exposure concentration	2013-2014
Romania	1%	All banks with a parent bank based in a non-investment-grade country All exposures Solo and (sub-)consolidated	Contagion risk resulting from ownership structure (parent bank based in a non-investment-grade country)	2016 (deactivation starting 1/3/17)
Slovakia	Up to 2%	Four banks identified as O-SIIs[37] Domestic exposures Solo and (sub-)consolidated	Importance of the banking sector High concentration in the banking sector Small and open economy	2017-2018
Sweden	3%	Four largest banks[38] All exposures Consolidated	Systemic risk resulting from SIIs Features of the banking sector: similarity of business models, high common exposures, high interconnectedness, high concentration	2015

Source: ESRB

Notes: Romania decided to deactivate its systemic risk buffer from 1 March 2017 onwards. The United Kingdom intends to use the systemic risk buffer from 2019 onwards to address systemic risk resulting from SIIs.

33 Erste Group Bank, Raiffeisen Zentralbank, Raiffeisen Bank International, Unicredit Bank Austria, Raiffeisenlandesbank Oberösterreich, Raiffeisen-Holding Niederösterreich-Wien, BAWAG P.S.K., HYPO NOE Gruppe Bank, Vorarlberger Landes- und Hypothenbank, Hypo Tirol Bank, Oberösterreichische Landesbank, Sberbank Europe.

34 Česká spořitelna, Československá obchodní banka (ČSOB), Komerční banka, Unicredit Bank Czech Republic and Slovakia, and Raiffeisenbank.

35 Danske Bank, DLR Kredit, Jyske Bank, Nordea Kredit (replacing Nordea Bank Danmark from 2017 onwards following the merger between Nordea Bank Danmark and Nordea Bank AB), Nykredit Realkredit, Sydbank.

36 ABN Amro Bank, ING Bank, Rabobank.

37 Všeobecná úverová banka, Slovenská sporitelňa,Tatra banka , Československá obchodní banka.

38 Handelsbanken, Nordea, SEB, Swedbank.

7. Capital buffers for systemically important institutions

In 2016 all Member States completed the identification process of their SIIs. Last year's Review already reported on the progress of this process, but at the end of 2015 not all Member States had completed it yet.[39] In total, 202 SIIs have now been identified in the EU (including Norway), ranging from 16 in countries such as Germany and the United Kingdom to two in Estonia (see Figure 20). The very large majority of these institutions are credit institutions but there are also six investment firms that have been qualified as a SII in Cyprus. Very few changes took place in the list of O-SIIs that were already identified by countries last year or in buffer levels (see Table 7). These changes often resulted from corporate restructurings, changes in the systemic risk score of institutions or changes in the methodology for setting O-SII buffers[40].

[39] Austria, Bulgaria, Poland and the United Kingdom were still finalising the process in 2015.

[40] The ECB has adopted a methodology for assessing OSII buffers set by national authorities, in line with its responsibilities under Article 5 of Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the ECB concerning policies relating to the prudential supervision of credit institutions

Table 7

Changes in the list of SIIs or SII buffer levels in 2016 compared to 2015

Member State	Changes
Austria	• Identification of seven O-SIIs and setting of buffer rates for the first time
Bulgaria	• Identification of ten O-SIIs and setting of buffer rates for the first time
Cyprus	• The fully phased-in buffer rate was increased for two O-SIIs and reduced for one O-SII
Estonia	• A 2% O-SII buffer was implemented from 1 August 2016 onwards for two institutions that were already identified as O-SIIs in 2015
Hungary	• FHB Jelzálogbank Nyrt was removed as an O-SII
Ireland	• Five additional O-SIIs were identified: permanent tsb Group Holdings plc, Ulster Bank Ireland DAC, Citibank Holdings Ireland Ltd, UniCredit Bank Ireland plc and DePfa Bank plc. The associated buffers are to be applied on a phased-in basis.
Italy	• The O-SII buffer rate of three institutions set for the first time, phasing in starting from 1 January 2018
Latvia	• Buffer rates and phasing-in arrangements for six O-SIIs already identified in 2015 were implemented
Poland	• Identification of 12 O-SIIs and setting of buffer rates for the first time
Portugal	• The implementation date for the O-SII buffer was moved from 1 January 2017 to 1 January 2018 • In the aftermath of the resolution measure applied to Banco Internacional do Funchal, the bank was removed from the list of O-SIIs • The fully phased-in O-SII buffer rate for Novo Banco was reduced from 0.75% to 0.5%
Slovenia	• The fully phased-in O-SII buffer rate for Unicredit was reduced from 0.5% to 0.25%
Slovakia	• The O-SII buffer rate of four institutions was reduced starting from 1 January 2018
Spain	• Banco Bilbao Vizcaya Argentaria, S.A. (BBVA) was removed as a G-SII but maintained as an O-SII • The fully phased-in O-SII buffer rate for BBVA was increased from 0.5% to 0.75% • The fully phased-in O-SII buffer rates for Banco Sabadell and Banco Popular were increased from 0% to 0.25%
United Kingdom	• Identification of 16 O-SIIs for the first time but without setting buffers yet • The G-SII buffer rates for Barclays, HSBC and Morgan Stanley were reduced

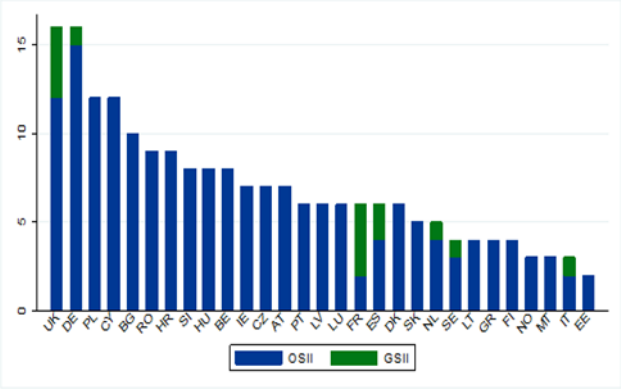
Source: ESRB.
Notes: Changes in buffer levels resulting from phasing-in arrangements are not included.

In the largest Member States, some of the SIIs have the status of a global systemically important institution (G-SII). In the EU there are in total 14 G-SIIs (which also qualify as O-SIIs) located in France, Germany, Italy, Spain and the United Kingdom as well as the Netherlands and Sweden as smaller countries. Reflecting the different structure of the banking systems of the two countries, only one of the 16 SIIs in Germany is qualified as a G-SII while in France four out of a total of six SIIs have this global status.

Figure 20

Number of systemically important institutions by Member State

(as notified to the ESRB for 2016)

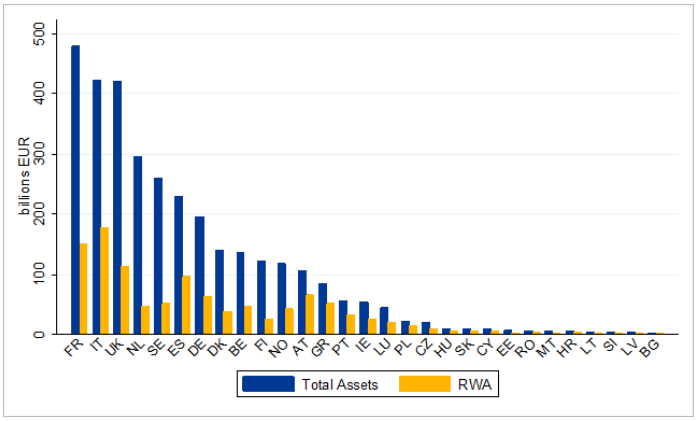


Source: ESRB.
Notes: If an institution is subject to multiple qualifications / buffer requirements, it has been allocated to the most specific category. i.e. in the case of qualification as both a G-SII and an O-SII, the institution has been allocated to the G-SII category.

The characteristics of SIIs vary considerably across countries, reflecting the domestic character of many of them. A simple way to get a first impression of these differences consists in comparing the average total assets and average total risk-weighted assets of O-SIIs and G-SIIs across Member States (see Figure 21 and Figure 22). As a general rule, the larger the country, the larger the average size of the O-SII, although some smaller countries, such as the Netherlands and Sweden, are the exception to this rule. As G-SIIs are identified at the global level following a methodology laid down by the FSB, cross-country differences are not as striking as for the O-SIIs, which have a much more domestic character.

Figure 21

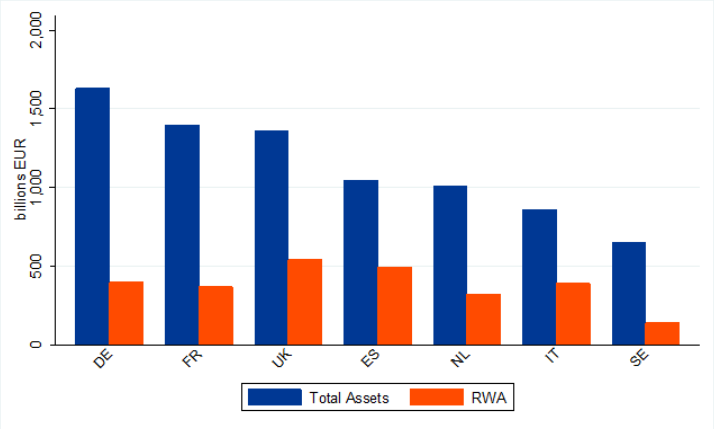
Average total assets and average risk-weighted assets of an O-SII by Member State



Source: ESRB calculations on the basis of SNL data for end 2015.

Figure 22

Average total assets and average risk-weighted assets of a G-SII by Member State



Source: ESRB calculation on the basis of SNL data for end 2015. Assets and risk-weighted assets are on a consolidated basis.

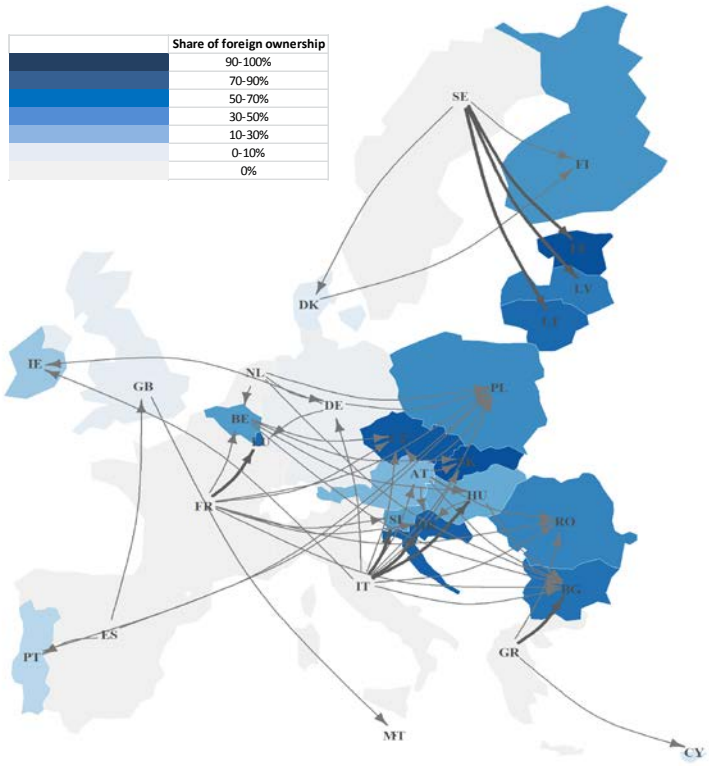
While O-SIIs are identified at the domestic level, they may be part of bigger cross-border banking groups in which the controlling entity is an O-SII or a G-SII located in another Member State. Figure 23 and Annex 3 illustrate that this is actually often the case. Around 30 such cross-border groups can be identified and some groups control SIIs in up to ten different Member States. Groups with a particularly strong cross-border presence through many SIIs are the Erste, Raiffeisen, Société Générale and Unicredit groups. From a financial stability perspective cross-border ownership links might be a potential transmission channel for risks.

Some clear geographical patterns can be identified on the basis of such cross-border interlinkages. Controlling SIIs are mainly based in Austria, Belgium, France, Greece, Italy, the Netherlands and Sweden, while controlled SIIs are predominately located in the Baltics and central, eastern and south-eastern Europe (CESEE); Swedish SIIs have a preference for the Scandinavian and Baltic markets. Domestic market shares controlled through such foreign SIIs are often above 50%, in particular in the Baltics and CESEE. It is also noticeable that large countries such as Germany, Spain and the United Kingdom in which many O-SIIs and G-SIIs are based show relatively few cross-border links as defined above[41].

[41] Such cross-border links might still be present in jurisdictions outside the EU.

Figure 23

Cross-border links between Member States through the presence of SIIs



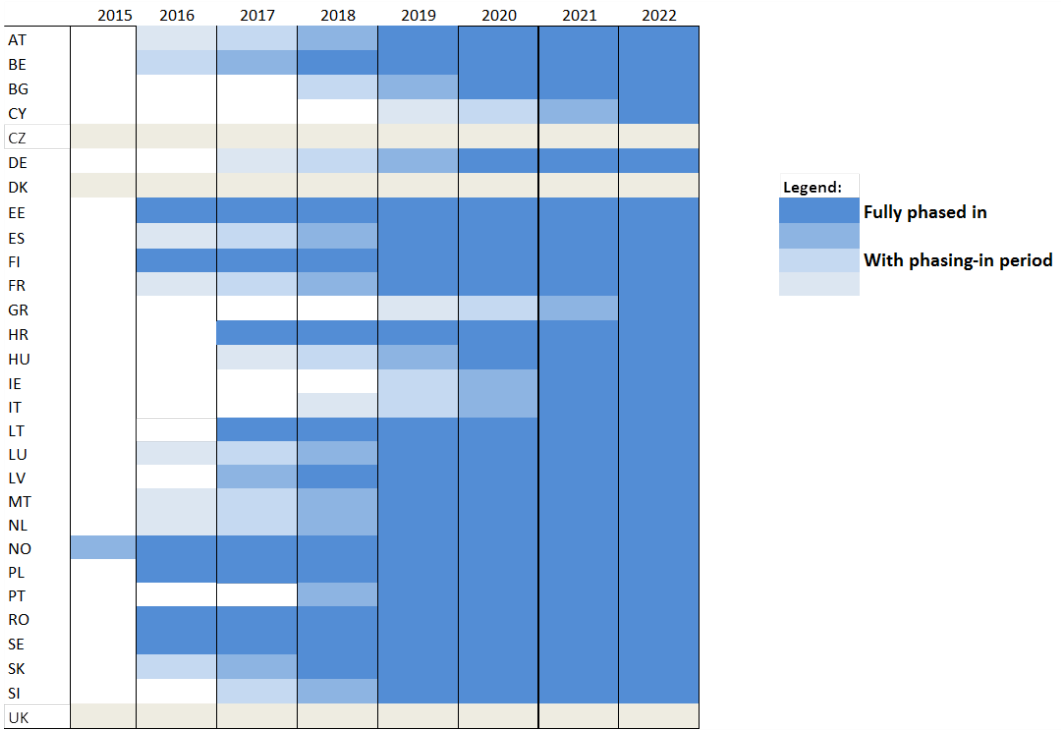
Source: ESRB and SNL (ownership and total assets).
Notes: The arrow between countries indicates the link between the home country of SIIs and another country in which they control SIIs (host country). The thickness of the arrow is proportional to the number of such links. The colour of a country reflects the share of its banking market being controlled by foreign-owned SIIs (the darker the colour, the larger the share based on total assets).

SIIs are subject to different types of capital buffers. Foremost, there are the specific O-SII and G-SII buffers. In addition, SIIs can also be subject to more general capital requirements, in particular the capital conservation buffer and, if activated, the CCyB and the systemic risk buffer. Although a Member State may have identified O-SIIs, it does not necessarily need to impose non-zero O-SII buffers on these institutions. The United Kingdom, for example, identified O-SIIs but did not yet assign any buffer levels. Moreover, while Denmark and the Czech Republic identified O-SIIs, they are using exclusively the systemic risk buffer, rather than the O-SII buffer, to mitigate the systemic risk resulting from these institutions. Recently, the ESRB and European Central Bank (ECB) have started to publish on their websites overviews of the different capital buffers in the EU and the euro area.

While the phasing-in of G-SII buffer requirements is fixed by EU law, for O-SII buffers there is more flexibility. Most countries opt for a phasing-in over a period of two to four years but there are also a few countries, such as Estonia, Poland and Romania, that opted for an immediate introduction of the full buffer requirements (see Figure 24). In the course of 2016, 13 Member States started phasing in the O-SII buffer for the first time.

Figure 24

Phasing-in of O-SII buffer requirements



Source: ESRB.

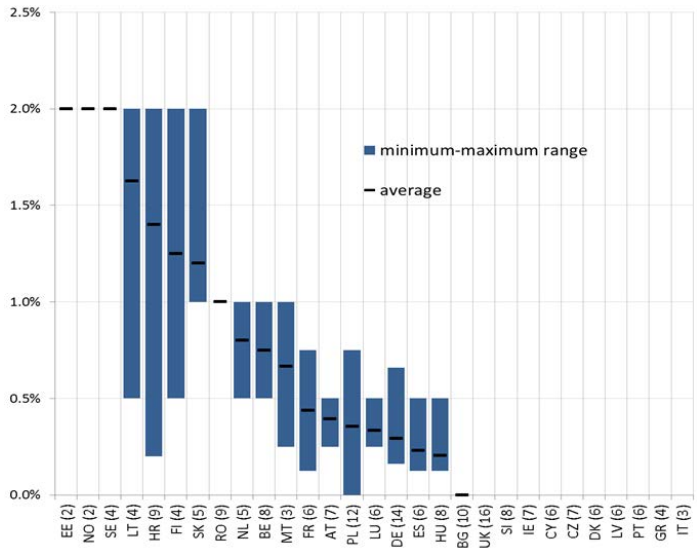
Notes: The Czech Republic and Denmark apply a systemic risk buffer to their O-SIIs rather than an O-SII buffer. Norway is a similar case although the country has not yet formally implemented the CRD IV / CRR into national legislation; for the purposes of this figure, this systemic risk buffer has been considered as an O-SII buffer. The United Kingdom has not yet set a buffer for O-SIIs.

There are marked differences across Member States as to the level and dispersion of O-SII buffer rates (see Figure 25). The highest buffer requirements in 2017 are accounted for by Estonia and Sweden (and Norway). Many Member States have not yet put O-SII buffers in place for 2017 or set them at 0%. While the three aforementioned countries have adopted a uniform rate of 2% for their institutions, which is the maximum permitted under the CRD IV, most other countries allow for some degree of dispersion within the 0% to 2% bracket. The O-SII buffer level also depends on the score attributed to the O-SII to reflect the systemic importance of the institution[42].

[42] The EBA has developed guidelines specifying the criteria for the assessment of O-SIIs.

Figure 25

O-SII buffer requirements as of January 2017



Source: ESRB.
Notes: Figures between brackets refer to the number of O-SIIs in the country. Average refers to the arithmetic average of the buffers for the O-SIIs in the country concerned.

8. Macroprudential policy beyond banking

Financial sector growth in the EU has in recent years primarily occurred in the non-banking segment. The non-banking segment considered by the ESRB includes insurance corporations, pension funds, investment funds (including money market funds), other financial institutions and financial market infrastructures such as central counterparties. Non-banks can be a source of shocks on their own or may transmit shocks that originated elsewhere across the financial system through their interconnectedness. They can also contribute to credit booms and busts. Against this backdrop the ESRB published a strategy paper on macroprudential policy beyond banking.[43] The paper provides an overview of the legal and institutional framework governing macroprudential policies beyond banking. It further presents short-term policy options and a long-term policy agenda to reflect new opportunities outside the banking sector and mitigate corresponding financial stability risks.

Macroprudential policy beyond banking is still in its formative stage but the risk monitoring framework is already taking shape. Developing a framework to monitor risks is part of a broader macroprudential strategy. The ESRB's EU Shadow Banking Monitor[44] is a key element of this monitoring framework. This new publication – the first edition of which was accompanied by an ESRB Occasional Paper[45] – complements initiatives at the global level by providing a European perspective. Recent developments and financial stability risks are monitored by applying both an entity-based and activity-based approach. While the former uses aggregate balance sheet data, the latter employs higher-frequency transaction-based information to capture risks that cut across

43 *Macroprudential policy beyond banking: a strategy paper*, ESRB, July 2016.

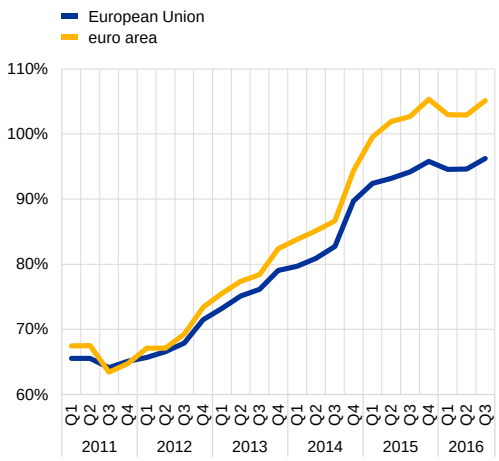
44 *EU Shadow Banking Monitor*, No. 1, ESRB, July 2016.

45 Grillet-Aubert, L. et al, "Assessing shadow banking – non-bank financial intermediation in Europe", *Occasional Paper Series*, No. 10, ESRB, July 2016.

different types of entities. The Monitor presents metrics for monitoring risks and informs discussions at the European level with a view to identifying and closing statistical data gaps.

Figure 26
Total assets of investment funds and other financial institutions

(% of credit institutions' total assets)



Source: ECB.

The monitoring framework shows that the broadly defined shadow banking system in the EU amounted to €37 trillion in the fourth quarter of 2015. This amount, which is based on total assets of investment funds (including MMFs) and other financial institutions, represents 36% of total financial sector assets in the EU and is equivalent to over 90% of EU credit institution assets (see Figure 26). This measure therefore includes all entities of the financial sector except banks and insurance corporations and pension funds.[46] The shadow banking system in the EU grew by 22% between the end of 2012 and the end of 2015. At the same time, shadow banking-related wholesale funding of banks by non-banks contracted from 2012 to €2.5 trillion in the euro area in the fourth quarter of 2015. In addition to maturity and liquidity transformation, risks and vulnerabilities for the financial system may arise through leverage, which is particularly present in hedge funds, and through cross-sectoral and cross-border interconnectedness. Building on these findings, the ESRB's 2016 Shadow Banking Workshop discussed further possible refinements to the monitoring framework which will inform the forthcoming second issue of the EU Shadow Banking Monitor in 2017.

The ESRB's monitoring framework is being developed to shed light on previously opaque derivatives markets. The ESRB conducted a first analysis of the EU derivatives markets with a unique dataset from trade repositories that has become available under the European Market Infrastructure Regulation (EMIR). An ESRB Occasional Paper[47] sheds light on the network structure in interest rate, credit and foreign exchange derivatives. It showed that the gross notional amount in interest rate, foreign exchange and credit derivatives markets in the EU stood at €250 trillion, €40 trillion and €8 trillion respectively. Interest rate swaps (IRS) are widely used as hedging instruments by banks and other intermediaries, but may leave individual entities sensitive to interest rate changes. Credit derivatives markets, particularly the market for credit default swaps (CDS), often transfer counterparty and fundamental credit risk. Moreover, in contrast to IRS and index CDS, most single-name CDS are not centrally cleared. The market for foreign exchange derivatives allows non-financial counterparties to hedge unwanted foreign exchange risk and arguably constitutes a closer link between the financial system and the real economy than other forms of derivatives.

Capacity to monitor risks in CCPs and the insurance sector is also being developed. CCPs have become key nodes of the post-crisis financial system, as their importance has increased as more instruments become centrally cleared. This development calls for increased attention from a macroprudential perspective. The availability of new data allows for closer monitoring of the risk-bearing capacity of CCPs. In particular, the ESRB is developing CCP risk indicators based on data from the CPMI-IOSCO public quantitative disclosure framework. In the insurance sector, the

46 Although insurance corporations and pension funds are not considered at the entity level, risks arising from their activities – e.g. in secured funding markets – are covered by the activity-based monitoring framework.

47 Abad, J. et al., "Shedding light on dark markets: first insights from the new EU-wide OTC derivatives dataset", *Occasional Paper Series*, No. 11, ESRB, September 2016.

Solvency II regulatory framework that entered into force in 2016 also includes an enhanced disclosure and data reporting framework. This framework offers a new opportunity to monitor macroprudential risks in the insurance sector. Drawing on these data, a new set of indicators have been included in the Q1 2017 ESRB Risk Dashboard.

The ESRB is further investigating risks arising from the diverse investment funds sector. Total assets held by investment funds in the euro area grew to almost €11 trillion in the fourth quarter of 2016, representing a significant share of the financial system. From a financial stability perspective, the most relevant category of investment fund among a diverse sector is open-ended investment funds that offer frequent redemption opportunities for investors. These funds can be subject to redemption (liquidity) risk, especially those that offer daily liquidity to their investors while investing in assets which cannot be liquidated as quickly without a material price impact. Leverage in the investment fund sector can be another source of systemic risk, especially through its pro-cyclical nature, including the risk of an abrupt deleveraging causing spillovers to the wider financial system. For example, hedge funds should be closely monitored since they are not subject to regulatory limits on leverage[48] and can potentially contribute to the build-up of system-wide leverage and the risk of disorderly unwinding. The ESRB will therefore assess risks related to investment fund liquidity and leverage in more detail in 2017. This work will include a monitoring exercise and also focus on analysing possible adverse impacts on financial stability for various types of funds including bond, equity, mixed, real estate and hedge funds.

The ESRB has undertaken first steps towards investigating innovative macroprudential instruments that might prevent or mitigate risks originating outside the banking system. The use of collateral is playing an increasingly important role in the financial system with risk management practices in place that comprise margin and haircut requirements. These risk management practices can amplify the inherent procyclicality in collateral requirements and exacerbate leverage cycles. Against this background, the ESRB published a comprehensive report, setting out how margins and haircuts could in principle be used as macroprudential tools.[49] Primarily applied to securities financing transactions and derivatives, new macroprudential instruments would have the potential to mitigate systemic risk from excessive leverage and procyclicality in collateral requirements in bilateral and centrally cleared transactions. The report, which was informed by a conference the ESRB held on this topic in June 2016, also highlights practical challenges in the implementation of such tools and proposes further work to help address these challenges.

Although the development of instruments is in its early stages, the ESRB contributes to the broader macroprudential toolkit through inputs into stress tests. Sector-wide stress tests are part of the broader macroprudential toolkit. The regulations of the European Supervisory Authorities mandate them to carry out stress tests in collaboration with the ESRB. Based on the key risks identified by its General Board, the ESRB transmitted scenarios of adverse developments to the insurance stress test and the occupational pensions stress test of EIOPA and to the CCP stress tests of the European Securities Markets Authority (ESMA). The scenarios had been designed in cooperation with the ECB. Stressing undertakings based on a common scenario provides a macroprudential dimension to these stress tests. Additionally, and in line with FSB recommendations, the ESRB is considering the issues around entity-level and system-wide stress tests of the largest asset managers and investment funds.

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[48] Leverage for alternative investment funds can be capped by competent authorities under Article 25 of the AIFMD.

[49] *The macroprudential use of margins and haircuts*, ESRB, February 2017.

Some measures taken by supervisory authorities – while microprudential in nature – can also be seen in a macroprudential context.

As an illustration in the **securities and financial markets sector,** the Italian regulator (*Commissione Nazionale per le Società e la Borsa* – CONSOB) notified ESMA on 5 July 2016 of its intention to introduce a ban on net short positions on Banca Monte dei Paschi di Siena spa ("BMPS") shares under the Short Selling Regulation, either directly or through related instruments and irrespective of the venue or market in which the transactions were conducted. The triggering event was a request from the ECB to reduce the amount of non-performing loans by close to €15 billion by 2018. The BMPS price fell by 14% in a single day (4 July 2016) and the fall continued the following day (-19% on 5 July 2016). ESMA considered that such circumstances were adverse events or developments which constitute a serious threat to market confidence in Italy and that the measure was adequate to address the expected substantial selling pressures and the unusual volatility causing significant downward spirals in BMPS shares. In that sense, to the extent that the measure restricted the ability to adopt short positions, it might also indirectly have reduced the risk of a contagion effect to other shares of the Italian banking sector.

In the **insurance sector,** the Solvency II framework gives supervisory authorities the option to defer its full implementation for up to 16 years by approving the use of certain so-called transitional measures.[50] The transitional measure on the risk-free interest rate, for example, is used by five insurance undertakings in four Member States[51], while the transitional measure on technical provisions is being applied by 154 undertakings from 12 Member States[52]. The phasing-out of the use of the transitional measures is expected to be gradual.

Solvency II also contains provisions in the form of the so-called volatility and matching adjustments, which aim to reduce pro-cyclical investment behaviour in periods of financial stress. This objective is achieved by reducing incentives to sell more risky assets to preserve capital and thus addresses a key macroprudential concern. The matching adjustment aims to smooth the impact of spread movements on the valuation of specific portfolios, which are matched with liabilities and held to maturity and thus not exposed to this short-term market volatility, by allowing adjustment of the risk-free interest rate term structure in line with the asset portfolio's return. The volatility adjustment also seeks to mitigate the impact of spread movements in times of high volatility, by allowing the risk-free interest rate term structure to be adjusted on the basis of a reference portfolio. The design of the regulatory risk-free interest rate curve that is used by insurers to estimate the value of their liabilities – although of microprudential concern in nature – also has macroprudential consequences.

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50 For further details, see EIOPA (2016), Report on long-term guarantees measures, p. 68 ff. and measures on equity risk available at **https://eiopa.europa.eu/Publications/Responses/EIOPA-BoS-16-279_LTG_REPORT_2016.pdf**.

51 France, Germany, Greece and Ireland.

52 Austria, Belgium, Bulgaria, Finland, France, Germany, Greece, Lithuania, (Norway), Portugal, Spain and the United Kingdom.

Special feature A: Assessing vulnerabilities and policy stances in the residential real estate sector[53]

In 2016 the ESRB exercised its mandate to warn of the presence of significant systemic risks with Warnings to eight Member States about medium-term vulnerabilities relating to residential real estate (RRE). This was a result of a forward-looking, EU-wide assessment which took account of developments in RRE markets up to mid-September 2016.

In the process of assessing the RRE vulnerabilities and policies across the Union a number of lessons were learned.

First, the ESRB assessed all Member States and concluded that RRE vulnerabilities prevail in eight Member States. These vulnerabilities may be a source of systemic risk to financial stability in the medium term and could potentially spill over to other Member States.

Second, the specific nature of the vulnerabilities varies across the eight Member States. Generally, they are generated by a combination of household indebtedness and price dynamics. That is, they are due to the capacity of borrowers to repay their mortgage debt – in particular to the level of indebtedness or the growth of mortgage credit – combined with the valuation or price dynamics in RRE markets.

Third, in the Member States that were not issued with a Warning, a build-up of any material RRE vulnerabilities has either not been identified, or such vulnerabilities have been identified but the current policy stance is sufficient to address them.

Fourth, across the EU Member States have introduced several measures to ensure the resilience of their banking sectors, for example through increasing bank capital requirements. Partly due to this, the ESRB has not identified direct near-term risks arising from RRE exposures in the banking systems of the countries that received Warnings, although second-round effects cannot be ruled out in the medium term.

Finally, the macroprudential toolkit is still not completely developed in all Member States, as a number of them still do not have a clear mandate with respect to borrower-based measures. Finland, Austria and Sweden are examples of Member States that are still working on ensuring a legal base or clear mandate for the use of such borrower-based measures. As a result, a number of Member States have a lack of borrower-based measures in place even though vulnerabilities prevail.

The remainder of this special feature summarises the identification of RRE vulnerabilities, the assessment of RRE policies and the response of the ESRB to the identified vulnerabilities . The special feature builds on the work published in the ESRB report on vulnerabilities in the EU's RRE sector.[54]

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[53] Prepared by Morten Niels Haastrup and Katie Rismanchi (both ESRB Secretariat).

[54] For the complete set of documentation, see ESRB (2016), Vulnerabilities in the EU residential real estate sector, November.

A.1 Vulnerability identification and assessment

Starting in late 2015, the ESRB performed a forward-looking, EU-wide assessment of vulnerabilities relating to RRE. The ESRB – in collaboration with the ECB – performed a cross-country analysis of risk indicators for all Member States in the Union. This was used to identify a set of "focus" countries. Subsequently these focus countries were subject to an in-depth analysis of vulnerabilities, taking account of country-specific factors relating to structural and institutional features and policy measures.

Building on previous work by the ESRB[55], RRE vulnerabilities were identified according to three "stretches" – collateral, household/income and banking. Overall, the developed framework considers the levels and dynamics of RRE prices, as well as vulnerabilities related to lenders and borrowers. Each of the stretches focuses on RRE vulnerabilities from a different perspective, and each stretch is analysed to see if any vulnerabilities are present or building up. The collateral stretch captures the price levels and dynamics in RRE markets; the household stretch captures the implications of household borrowers' debt for their consumption and behaviour; and the banking stretch captures the potential impact on lenders of developments in RRE. For each of these stretches, a number of key indicators are identified based on their frequent association with (the build-up of) vulnerabilities and subsequent RRE crises.

The three stretches serves as a bridge between the vulnerability assessment and the policy assessment. For each stretch the relevant policy measures taken by the countries were identified. The appropriateness and sufficiency of these policy measures were considered, taking into account the measures' suitability, timing and calibration. The assessment of policies is described in more detail below.

The vulnerability assessment highlighted a number of vulnerabilities. The vulnerabilities are of a medium-term nature and relate to rising indebtedness and to the ability of households to repay their mortgage debt or to the valuation or price dynamics of RRE. Regarding households, in many of the countries receiving Warnings, vulnerabilities are related to the level of indebtedness or the growth of mortgage credit. Regarding valuation, some countries have vulnerabilities related to the rate of price growth or overvaluation of RRE. The method behind the assessment of vulnerabilities is described in Box 1.

A set of key indicators suggests that vulnerabilities in the collateral and household stretches are elevated and in some cases increasing in 11 Member States. These are the so-called focus countries: Austria, Belgium, Denmark, Estonia, Finland, Luxembourg, Malta, the Netherlands, Sweden, Slovakia and the United Kingdom. These countries were subject to an in-depth analysis. This analysis identified unaddressed vulnerabilities in eight of the 11 countries and the ESRB decided to issue a Warning to these countries. The key message in the Warnings for each country can be seen in Table A. 1.

Several of the eight countries have high household indebtedness; this is particularly pronounced in Denmark and the Netherlands with household debt reaching 123% and 111% of GDP, respectively. Household debt dynamics also suggest increasing vulnerabilities in many countries. In Slovakia, Belgium, Malta and Sweden, household debt as a share of GDP rose rapidly between 2015 Q1 and 2016 Q1. For all countries with high household debt levels, debt service ratios also appear elevated, despite the low interest rate environment. Low loan spreads could indicate underpricing of risks and exuberant lending policies, but the low spreads could also be due to a competitive lending market. It is difficult to measure overvaluation and undervaluation in RRE markets, since the results

[55] *Residential real estate and financial stability in the EU*, ESRB, December 2015, p. 86 ff.

depend on the underlying assumptions. Nevertheless prices in Austria, Belgium, Sweden and the United Kingdom are high in comparison to income and at historic peak levels. Growth in RRE prices between 2015 Q1 and 2016 Q1 characterises all the countries mentioned above, with the exception of Finland where RRE prices have remained stable. In a number of countries, RRE price growth has been particularly strong in recent years. In addition, the growth rates in loans for house purchase are high in Slovakia (13.8%), Sweden (8.7%), Belgium (8.1%), Malta (7.9%), Luxembourg (7.0%) and the Netherlands (6.2%). Trends in lending for house purchases are strongly interlinked with RRE price dynamics, particularly in some countries.

Table A. 1
Overview of Warnings issued to countries

Member State	Key messages in Warnings
Austria	The main vulnerabilities are the **robust growth**, particularly recently, **in RRE prices and mortgage credit** and the risk of a **further loosening in lending standards**.
Belgium	The main vulnerabilities are the **fast increase in overall household indebtedness** combined with significant groups of already highly indebted households, against the background of **a significant increase in RRE prices** over the past few years.
Denmark	The main vulnerabilities are the **robustly increasing RRE prices** – in particular in the major cities – in combination with **highly indebted households**. In addition, if risks were to materialise, there could be potential **spillover effects to other countries** in the Nordic-Baltic region.
Finland	The main vulnerabilities are the **high and increasing household indebtedness**, especially among some groups of households. In addition, if risks were to materialise, there could be potential **spillover effects to other countries** in the Nordic-Baltic region.
Luxembourg	The main vulnerabilities are the combination of **high RRE prices** and **increasing household indebtedness**.
Netherlands	The main vulnerabilities are the **persistently high household debt levels** combined with **low mortgage collateralisation**. In particular, there is a large group of households, especially younger mortgagors, that have **debt levels that exceed the value of their home**.
Sweden	The main vulnerabilities are **the rapidly growing RRE prices that appear to be overvalued**, and **high and increasing indebtedness,** especially among some groups of households. In addition, if risks were to materialise, there could be **potential spillover effects to other countries** in the Nordic-Baltic region.
United Kingdom	There are **risks under different housing market scenarios** – either through the **crystallisation of accumulated vulnerabilities**, particularly related to household indebtedness and the interaction with elevated RRE prices, **or through the further build-up of vulnerabilities**. The appropriate policy response is likely to differ between these two scenarios. Therefore, it will be important for authorities to monitor developments closely and adjust macroprudential policy as necessary in the light of them.

Source: ESRB Warning 2016/05 to ESRB Warning 2016/12

At this time, the ESRB has not identified direct, near-term vulnerabilities to the banking systems arising from RRE exposures in the focus countries, although second-round effects are not excluded in the medium term. Past experience in many countries shows that the manifestation of RRE vulnerabilities – such as exuberant developments in lending conditions or markets – can lead to significant risks to domestic financial stability and serious negative consequences for the real economy, as well as to negative spillovers to other countries. However, some of the focus countries have some weakness in the banking stretch related to RRE, for example due to high exposures or low risk weights on RRE lending. This is partly related to the fact that Member States across the EU have taken measures to ensure the resilience of their banks. These measures include additional capital buffers, risk weight add-ons and leverage ratio requirements. An overview of the measures taken is available in Annex 2.

Structural and institutional features and developments can be important amplifiers or mitigants of RRE-related vulnerabilities; these vary considerably across Member States. RRE markets in the EU display considerable diversity in terms of structural and institutional features. It is difficult to provide a clear view of how these features affect probabilities and potential impacts of RRE-related crises, especially since such features interact and often have both amplifying and mitigating effects that vary over the financial cycle. In some of the focus countries important drivers behind the identified vulnerabilities appear to be structural and institutional factors. Examples include regulatory supply constraints, tax advantages to owning RRE instead of renting, lack of a developed rental market, and demographic factors that lead to high demand for city living despite the limited supply of property.

Understanding the drivers of vulnerabilities is important for designing the policy response. The ESRB's analysis suggests that the optimal policy response is not necessarily restricted to the macroprudential toolbox. In particular in some cases, where vulnerabilities are amplified by structural and institutional issues, the best policy response could be structural reforms, e.g. changes to the regulation of the rental market or the tax system.

Box 1

Methodology for identifying RRE vulnerabilities in Member States[56]

The cross-country analysis started with a preliminary screening of indicators covering RRE prices, lending conditions and household balance sheets, with a view to detecting "exuberant" developments. An overview of the indicators used in the analytical framework is given by the scoreboard in Table A. 2. These indicators focus on the household and collateral stretch. Thresholds are used to determine whether the value of an indicator might signal some degree of exuberance: in the scoreboard, the shaded cells denote indicators that are signalling exuberance, from the strongest signal of exuberance (red cells) to the least strong signal of exuberance (yellow cells). As illustrated in Table A. 2, there is wide diversity in terms of the indicators that drive the composite vulnerability measures at the country level.

In addition to the indicators for the household and collateral stretch, indicators for the banking stretch are also taken into account. Key indicators are the average risk weights on banks' RRE exposures (see Figure A. 1, left-hand side), the total exposure from banks' to RRE and the capitalisation of banks (see Figure A. 1, right-hand side). There are also indicators for mortgage exposures to GDP, the share of short-term market funding, the share of market funding and the leverage ratio. These indicators signal where weaknesses in the banking system related to direct RRE exposures might exists.

Taken together these indicators suggest that vulnerabilities in the collateral and household stretches are elevated and in some cases increasing in 11 Member States. Vulnerabilities for the banking stretch only indicate vulnerabilities in two of the 11 Member States (when the policies taken in these Member States are taken into account the banking vulnerabilities are found not to be prevailing). An overview of the vulnerabilities identified is available in Table A. 2**.**

The 11 Member States are then subject to an in-depth analysis of vulnerabilities. In this analysis country-specific factors relating to structural and institutional features as well as policy measures were also taken into account. Some of these factors have an amplifying or mitigating

[56] This methodology was developed by a joint ECB-ESRB Methodology Team. For further details regarding this methodology see ESRB report on vulnerabilities in the EU residential real estate sector (2016).

effect on the identified vulnerabilities. The relevant prudential policies were also taken into account; the method for the assessment of the policies adopted is described in Box 2.

Table A. 2

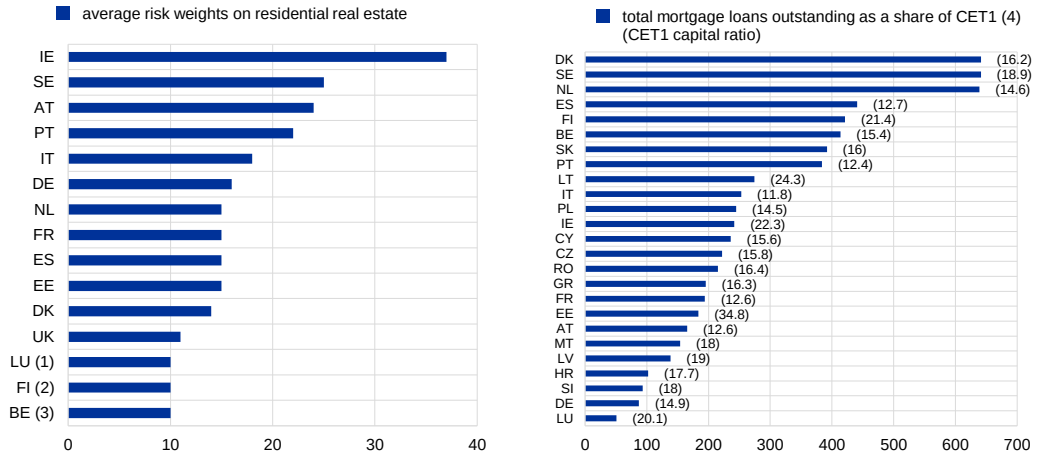
Vulnerabilities in RRE across the EU: results from the indicator-based horizontal analysis

	Indicators										Summary measures	
	Collateral stretch				Lending indicators			Household stretch				
Country	Residential real estate price index, 12m growth, %	Residential price index relative to peak before 2014	RRE valuation measure, house price to income	RRE valuation measure, econometric model	Loans to HH for house purchases, 12m growth, %	Loans to HH for HP relative to peak before 2014	HH loan spread	HH debt, % of GDP	HH financial assets to debt, %	Debt service-to-income ratio for HH, %	Average rating across indicators	Composite indicator
AT	8.1	1.1	26.0	14.0	4.9	1.1	2.1	51.2	350.8	10.2	1.4	0.3
BE	2.3	1.0	26.0	4.0	8.1	1.2	1.8	59.6	500.2	10.7	1.5	0.2
BG		0.8	-9.0	-11.0	0.6	1.0	5.6	23.8	552.6	8.1	0.0	-0.9
CY	-1.6	0.7	-16.0	-3.0	-1.4	0.9	3.2	127.3	206.0	28.8	0.9	0.3
CZ		1.0	8.0	2.0	8.7	1.1		30.3	360.4	8.2	0.8	-0.1
DE	4.7	1.1	4.7	-2.0	3.7	1.1	1.9	53.4	338.1	9.4	0.8	0.1
DK	3.5	0.9	19.0	4.0	1.2	1.0	1.4	122.8	248.5	20.4	1.5	0.6
EE	0.8	0.9	8.0	-7.0	4.6	1.0	2.3	40.6	270.4	7.6	0.4	-0.2
ES	6.3	0.7	-6.0	5.0	-3.5	0.8	1.9	66.4	275.8	12.9	0.5	-0.1
FI	-0.1	1.0	10.0	3.0	2.6	1.0	1.4	66.7	210.9	11.4	1.4	0.2
FR	0.3	0.9	14.0	4.0	3.2	1.0	1.7	56.5	394.1	10.0	1.0	0.0
GR	-5.0	0.6	-25.0	-5.0	-3.6	0.8	2.7	61.8	218.3	21.8	0.7	-0.2
HR	-2.1	0.8	-11.0	-16.0	-4.8	0.8	4.4	36.9	302.7	8.8	0.0	-0.6
HU	4.3	0.9	-7.0	-15.0	-3.3	0.6	4.6	21.2	563.5	7.6	0.1	-0.9
IE	7.4	0.7	-3.0	-23.0	-4.2	0.6	3.4	57.8	237.3	19.9	0.7	-0.4
IT	-1.2	0.8		-5.0	0.9	1.0	1.6	42.1	581.5	11.8	0.3	-0.3
LT	10.5	0.7	-3.0	-8.0	6.6	1.0	1.9	22.3	414.2	5.1	0.6	-0.4
LU	4.5	1.1	18.0	9.0	7.0	1.2	1.7	57.4	242.1	10.8	1.8	0.4
LV	7.4	0.7	-6.0	-19.0	-2.2	0.7	3.3	24.3	430.8	5.7	0.2	-0.8
MT	10.0	1.1	10.0	-9.0	7.9	1.2	2.3	57.8	462.8	12.8	1.6	0.1
NL	4.4	0.9	-4.0	2.0	6.2	1.1	2.8	111.4	296.7	21.5	0.9	0.3
PL	1.8	0.9	-9.0	-17.0	0.7	1.1	1.4	36.2	268.6	13.4	0.5	-0.2
PT	5.0	0.9	-9.0	-3.0	-3.5	0.8	2.0	76.3	269.5	16.4	0.6	0.0
RO	3.6	0.7	-20.0	-29.0	16.5	1.3	2.8	17.2	414.6	6.5	0.6	-0.6
SE	12.9	1.3	69.0	47.0	8.7	1.1		84.7	333.4	16.0	2.2	1.2
SI	0.8	0.8	-10.0	-8.0	3.2	1.0	2.0	27.5	367.4	5.8	0.1	-0.4
SK	1.0	0.8	-6.0	-15.0	13.8	1.3	2.3	35.8	213.9	10.0	1.0	-0.1
UK	8.7	1.0	30.0	11.0	4.6	1.1		87.0	372.9	18.4	1.7	0.6
EAA	2.4	1.0	4.7	-1.0	2.1	1.0		59.3	356.1		0.5	0.0
EAM	4.5	0.9	-3.0	-3.0	3.2	1.0	2.0	57.4	296.7	10.8	0.8	0.0
EUA		1.0									1.0	0.4
EUM	4.4	0.9	-3.0	-3.0	3.2	1.0	2.1	54.9	335.8	10.8	0.7	-0.1
T1	4.0	0.9	2.5	2.5	5.0	1.0	1.5	50.0	220.0	10.0	1.0	0.0
T2	6.5	1.0	5.0	5.0	7.5	1.1	1.8	70.0	240.0	15.0	1.2	0.2
T3	9.0	1.1	7.5	7.5	10.0	1.2	2.0	90.0	260.0	20.0	1.7	0.5
TR	4.0	0.9	2.5	2.5	5.0	1.0	2.0	50.0	260.0	10.0		

Sources: ESRB and ECB (see Annex B in ESRB, Vulnerabilities in the EU residential real estate sector, November 2016, for specific sources and detailed definitions of the indicators).
Notes: EAA is the euro area average; EAM is the euro area median; EUA is the EU average; EUM is the EU median; T1, T2, T3 and TR are risk thresholds. See Box 1 for a description of the methodology underlying these results. In Finland, the household financial assets-to-debt indicator excludes earnings-related pension assets. Including assets held by the Finnish employment pension schemes, the ratio would be around 337%.

Figure A. 1
Market price contagion

(percentages)



Notes: Average risk weights on RRE are only for IRB banks. The calculation of the average risk weights is based on the EBA transparency exercise from 2015; Estonian authorities provided their own figures for Estonia. In the right-hand chart the CET1 capital ratio is in parentheses.
(1) Risk weights in Luxembourg are reported for all banking sectors for consistency purposes. Note that the (seven) banks active in real estate lending have higher risk weights (16%).
(2) The risk weight in Finland is <10 %.
(3) Belgium has added a 5 p.p. add-on to the risk weights, this is not included in the presented figure.
(4)The total mortgage loans series uses consolidated banking data and therefore captures cross-border lending. However, it is necessary to use this data for consistency with the denominator, CET1 capital.

Source: National authorities and Consolidated Banking Data (ECB).

A.2 Measures taken to address vulnerabilities in the 11 focus countries

The in-depth analysis of the 11 focus countries included an assessment of whether the identified vulnerabilities were appropriately and sufficiently addressed by the countries' policy stance.[57] In addition to prudential policies, non-prudential policy measures were also investigated if they were deemed to be potentially important for RRE markets.

The focus countries' implementation of measures differs along most dimensions. An overview of the measures taken in the 11 focus countries is presented in Annex 2. As the measures taken by the focus countries have in most cases only recently been introduced, the evidence for determining "best practice" is still relatively scarce. In practice, a combination of instruments, even if not applied simultaneously, is the general rule, in particular for collateral and income stretch instruments.

A range of policy tools can been used to address the risks of high indebtedness. The focus countries have taken a range of measures, some of which help in mitigating the identified vulnerabilities. The ability of the policies to mitigate the vulnerabilities has been assessed in each of the focus countries (see Box 2 for the methodology used in the assessment). The assessment identifies the measures taken for each stretch and evaluates whether they are appropriate and sufficient. The assessment takes into account the suitability, timing and calibration of the measures.

[57] For the United Kingdom, the ESRB did not assess whether policies in place are appropriate and sufficient given the uncertain impact of the vote to leave the EU on the medium-term outlook for the UK housing market.

Indeed, macroprudential tools are best used to prevent the build-up of vulnerabilities and should in this regard be forward-looking. The result of this assessment can be seen in Table A. 3.

Table A. 3
Assessment of policies adopted in each of the 11 focus countries

	Assessment
AT	Policy stance is **appropriate but not expected to be sufficient** for collateral and household stretches
BE	Policy stance is **appropriate but not expected to be sufficient** for collateral and household stretches
DK	Policy stance is **appropriate but not expected to be sufficient** for collateral and household stretches
EE	The policy stance is **appropriate and expected to be sufficient**
FI	Policy stance is **not expected to be sufficient** for the household stretch
LU	Policy stance is **not appropriate and not sufficient** for the collateral stretch, and appropriate but not expected to be sufficient for the household stretch
MT	Policy stance is **appropriate and expected to be sufficient**
NL	Policy stance is **appropriate but not expected to be sufficient** for collateral and household stretches
SE	Policy stance is **appropriate but not expected to be sufficient** for collateral and household stretches
SK	The policy stance is **appropriate and expected to be sufficient**
UK	**Not directly assessed** given the uncertain impact of the vote to leave the EU on the medium-term outlook for the UK housing market

Source: ESRB report on vulnerabilities in the EU residential real estate sector (2016)

Several macroprudential tools can be used to lower household indebtedness. These can be categorised into measures that are directed towards the loan contract between a lender and borrower (borrower-based measures) and measures targeted at the lender itself (lender-based measures). Measures that set limits on certain characteristics of mortgage loans (such as LTI or LTV caps) have a direct impact on the flow of credit. Several of the focus countries have introduced LTV caps in some form: Austria, Denmark, Finland, the Netherlands, Sweden and the United Kingdom. LTI/DSTI measures have not been as widely used as only the Netherlands and the United Kingdom have introduced these.[58] A number of the focus countries do not have a clear legal basis or mandate for introducing borrower-based measures, which is restraining their ability to react. The lack of a legal basis is also reflected in the assessment of the focus countries.

All focus countries have introduced additional capital requirements in order to improve the resilience of their banking sectors. Instruments targeting bank capital, such as sectoral capital requirements for RRE exposures, aim at strengthening bank rather than household balance sheets. Higher (sectoral) capital requirements may be less effective than borrower-based tools in curbing the flow of new loans as they do not set a strict limit. Although there is some empirical evidence that borrower-based tools are most effective in reining in credit growth, most studies find that both borrower-based and lender-based instruments can impact credit growth. However, as macroprudential capital requirements apply only to banks, these measures may be circumvented by non-bank lending, which is significant in countries such as the Netherlands.

Where high debt levels are caused by institutional and structural factors, policy measures can be directed at changing these factors. Such options should not be excluded even if they are not always in the toolkit of macroprudential authorities. These measures can directly affect household indebtedness, for example by increasing the cost of borrowing or the supply of housing.

[58] The Danish "7 best practices" (published in 2015) on mortgage lending recommend some restrictions on lending with respect to income, for example borrowers with high LTIs should remain solvent even if house prices decrease and the borrowers' ability to repay should be assessed individually. These recommendations apply to borrowers in the greater Copenhagen or Aarhus area. There are also a number of exceptions, e.g. for students.

They can also lower the riskiness of a given level of indebtedness by reducing the volatility of RRE prices. For example, countries with high stocks of debt are generally characterised by a preferential tax treatment of mortgage debt, such as mortgage interest deductibility. Reducing the tax deductibility can then be an effective and efficient way of reducing the level of household debt and can affect both the stock of existing debt and the flow of new loans. Belgium, Denmark, Finland and the Netherlands have all taken steps in this area. Another way to reduce debt levels is by encouraging borrowers to amortise more, either through binding requirements or incentive measures. Ensuring an adequate supply of housing and a well-functioning rental market may also reduce indebtedness and RRE price volatility.

Box 2

ESRB methodology for assessing the policy stance of Member States[59]

The ESRB developed a methodology for assessing whether policy measures in a Member State were mitigating the identified vulnerabilities in the collateral, household or banking stretch. This box explains the developed methodology. Before this methodology was developed, there were no established approaches to assessing RRE policies in the literature or among practitioners, partly because there is still limited experience in using RRE-focused (macroprudential) policies in the EU. Although a number of countries have been applying measures in recent years there has been a large diversity of measures used across countries, including the type of instrument, calibration, scope of application, etc. Furthermore, it is difficult to assess the adequacy of recently enacted or planned policy measures as – depending on the policy measure – it can take time to influence RRE developments. In addition, national policy strategies might comprise several measures which may interact, which makes it difficult to isolate the effect of an individual measure.

A largely qualitative, expert judgement-based approach was taken, where two main criteria were used to assess the policy stance. The criteria were:

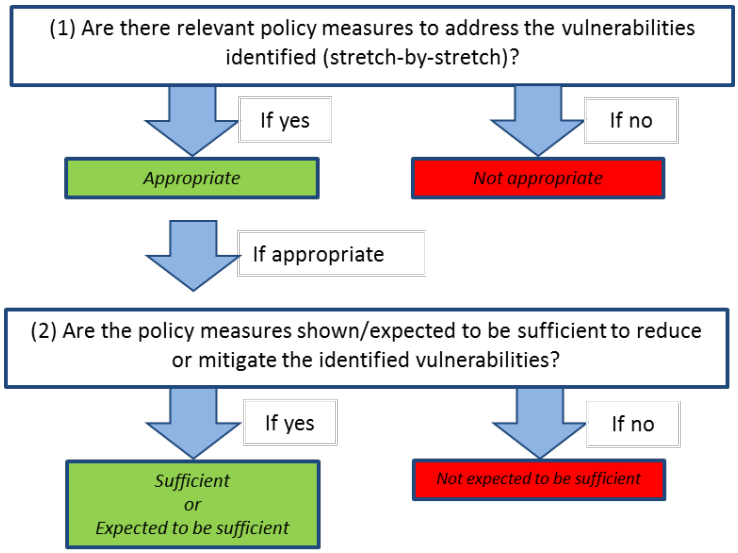
- **Appropriateness**: whether or not policies are conceptually suitable given the nature and timing of the vulnerabilities. Appropriate measures are those which suitably address the vulnerabilities in that country, e.g. if there are vulnerabilities related to a country having a high debt-to-income ratio, an appropriate measure could be a DTI or LTI limit.
- **Sufficiency**: whether or not policies are expected to or could be shown to significantly mitigate, or reduce, the build-up of vulnerabilities over an appropriate time horizon with a limited unintended impact on the general economy. Factors to be considered when assessing policy sufficiency relate to the calibration of the measure, its timeliness and its scope of application. If there was evidence that the measure was having the intended effects and was mitigating or reducing the identified vulnerabilities, and/or if it was causing any unintended negative effects, this has been taken into account.

The policy stances of the focus countries were assessed individually for each of the three stretches and then an overall assessment was made. The grading procedure is outlined in Figure A. 2.

[59] This methodology was developed by a joint ECB-ESRB Methodology Team. For further details regarding this methodology see ESRB report on vulnerabilities in the EU residential real estate sector (2016).

Figure A. 2

Illustration of process for assessing appropriateness and sufficiency of the policy stance



Source: ESRB

This leads to four possible assessment grades at the level of each stretch (household, collateral, and banking):

1. appropriate and sufficient, where policies are conceptually suitable given the nature and timing of risks and where the level and build-up of risks can be shown to be fully addressed by the policy packages;

2. appropriate and expected to be sufficient, where policies are conceptually suitable given the nature and timing of risks and where the level and build-up of risks cannot be shown, but are expected, to be addressed by the policy packages;

3. appropriate but not expected to be sufficient, where policies are conceptually suitable given the nature and timing of risks, but where the level and build-up of risks are not expected to be addressed by the policy packages;

4. not appropriate, for cases where no conceptually suitable measures, given the nature and timing of risks, have been taken.

When an assessment had been arrived at for each of the three stretches, an overall assessment of the country's policy strategy was made. If the policy stance was assessed to be not appropriate for any individual stretch, the overall policy stance was assessed as not appropriate. If the policy stance was assessed to be appropriate for all three stretches, the sufficiency of the overall policy stance was determined by the lowest sufficiency grading of the individual stretches. In cases where the overall policy stance was assessed as either not appropriate, not sufficient or not expected to be sufficient the ESRB decided to issue a Warning to that country.

A.3 Response of the ESRB to the identified vulnerabilities

The ESRB has a legal mandate to issue warnings or recommendations when significant systemic risks are identified. A Warning is issued in order to raise awareness or draw attention to a systemic risk. A Recommendation is more far-reaching as it also specifies recommended remedial action. The ESRB decides, on a case-by-case basis, whether a Warning or a Recommendation should be made public, bearing in mind that disclosure can help to foster compliance. It then monitors if, and to what extent, the systemic risk is addressed.

Following the assessment of medium-term RRE vulnerabilities, the ESRB decided that it was necessary from a macroprudential perspective to issue Warnings to the eight Member States. The specific vulnerabilities vary in the individual Member States; they are summarised in Table A. 1. At the time of its assessment, the ESRB did not identify direct near-term risks arising from RRE exposures in the banking systems of the warned countries, although second-round effects were not excluded in the medium term.

The ESRB decided not to issue a Warning to three of the 11 focus countries. Following the in-depth country-specific analysis of Malta, it was concluded that there are no significant sources of medium-term risks to financial stability from RRE in that Member State. While vulnerabilities were identified for Estonia and Slovakia, these are expected to be mitigated by policy measures or institutional factors in the medium term and so warnings were not issued to those Member States. For the United Kingdom, the ESRB did not assess whether policies in place are appropriate and sufficient given the uncertain impact of the vote to leave the EU on the medium-term outlook for the UK housing market.

The eight Warnings were addressed to the relevant ministers in each Member State; the head of the national macroprudential authority also received a copy of the Warning. The addressees were chosen with consideration that the potential policy response may extend beyond the mandate of macroprudential authorities. It is for the individual Member States to decide how to respond to the Warning, and what actions to take in response to the identified vulnerabilities. Addressees had the opportunity to respond to the Warning – the addressees from seven of the Member States chose to provide a public response, which was made available on the ESRB website.

Going forward, the ESRB will continue exercising its mandate of macroprudential oversight of the financial system in the EU, including identifying financial stability vulnerabilities related to real estate. The ESRB will continue to issue warnings if a significant systemic risk to financial stability is identified and, where appropriate, issue recommendations for remedial action. The ESRB will monitor the development in the RRE markets in the warned counties as well as in the entire Union. Furthermore, the ERSB will continue to work on improving the assessment methodologies of vulnerabilities and policies in the real estate sector.

Special feature B: The ESRB's reciprocity framework – its first year of implementation[60]

This special feature provides a detailed discussion of the reciprocity actions taken in 2016, the year in which the ESRB's reciprocity framework came into operation, and draws first policy lessons. To that end, it starts by describing the ESRB's new reciprocity framework against the backdrop of cross-border banking in the EU. It then details the measures recommended for reciprocation by the ESRB in 2016 and the Member States' actions in response to the ESRB's Recommendations. The special feature finishes by identifying policy lessons from this first experience with the ESRB's reciprocity framework.

B.1 Cross-border lending in Europe and the ESRB's reciprocity framework

Bank lending in the EU is often provided by banks from other Member States. Loans from one Member State to another Member State are extended by credit institutions operating either directly across borders or via subsidiaries and branches. In fact, the passporting system in the EU allows banks authorised in one Member State to provide their services in any other Member State without having to be separately authorised in that Member State.

As in previous ESRB publications, in this special feature loans are classified as cross-border loans if they are extended by branches or subsidiaries of foreign banks or if they are extended directly across borders.[61] This definition goes hand in hand with the analysis presented below, which is based on the concept of the consolidated banking data. This definition does not, however, take into account where the funding that backs these loans is raised, i.e. from across borders or locally. Financial stability implications can therefore not be drawn without further information, as they will depend on whether the exposure is funded locally or not. While the cross-border loans extended by subsidiaries of foreign banks are subject to macroprudential measures in the host country, the remaining part of cross-border loans is generally not covered (see below).

Such cross-border loans are substantial for many Member States. For many borrowers (including Belgium and the CESEE as well as the Baltic region), cross-border loans originating from within the EU account for a significant share of overall loans (see Figure B. 1). Likewise, for some lenders (including larger Member States such as Germany and Italy), these loans amount to a sizeable share of their loan portfolios (see Figure B. 2). In a few cases, the bilateral lending relationship is significant for both the lender and the borrower (e.g. Italy's extension of loans to Germany). In even fewer cases, the bilateral lending relationship is bidirectional and significant in both directions as is the lending relationship between Sweden and Denmark. In most cases, however, the bilateral lending relationship is significant for only one of the two Member States and only in one direction. For instance, while for Cyprus lending from Greece is significant, it is not so for Greece.

Some regional clustering of lending relationships prevails. Figure B. 1 and Figure B. 2 show that the lending network between Member States is not uniformly distributed across Member States. The extension of cross-border loans rather tends to occur within regional clusters. For

[60] Prepared by Stéphanie Stolz (ESRB Secretariat) with research assistance from Achim Braunsteffer and Ernest Dautovic (both ESRB Secretariat).

[61] See Chapter 11 of the ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector and Section 3.2.4 in the 2014 Annual Report.

instance, the Nordic countries maintain strong lending relationships, with lending flowing from Sweden to Finland and the Baltic countries. Likewise, Austria acts as a substantial lender for many Member States in the CESEE region.

Cross-border services are mostly provided through subsidiaries, but also branches are significant in many Member States (see Figure B. 3). The market share of subsidiaries is substantial in most Member States. In many Member States, subsidiaries of foreign banks even dominate the market. Branches account for a substantial market share in particular in the Baltic countries, Luxembourg, Malta, and Slovakia.

In fact, the conversion of subsidiaries into branches is further increasing the share of branches. The most prominent example is Nordea, which reorganised and converted its subsidiaries in the Nordic countries into branches at the beginning of 2017. This conversion increased the market share of branches in Finland, Denmark, and Norway substantially. Another example is Danske Bank, which announced the conversion of its Finnish subsidiary into a branch.

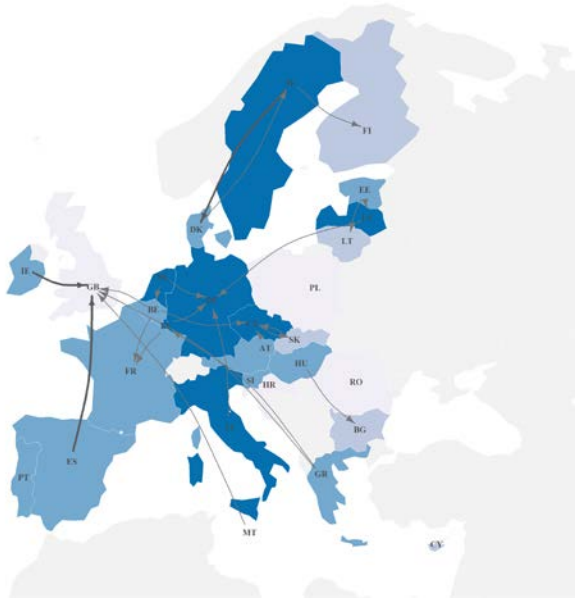
Member States also maintain strong lending relationships with third (i.e. non-EU) countries. This is true for both EU banks' lending to third countries and third-country banks' lending to the EU. With regard to the former, the overall exposure of EU banks is concentrated in a few third countries (see Figure 12). However, banks in individual Member States are exposed to a multitude of third countries (see Table 5). With regard to the latter, banks from third countries are active throughout the EU. In fact, in some Member States (Ireland, Lithuania, Luxembourg, Malta, United Kingdom) they hold a significant market share (see Figure B. 3 and Chart 25 on page 49 of the ESRB's 2014 Annual Report). As is the case for banks from other Member States, banks from third countries are mostly active through subsidiaries. But in some cases (most notably in Malta and the United Kingdom) they also take a significant market share through branches.

Figure B. 1
Cross-border loans to the real economy: largest borrowers in the EU, 2016 Q3

Source: ECB, ESRB calculations.
Notes: The data are reported at the highest level of consolidation in the EU. The colour coding of the Member States corresponds to the loans extended by banks from other EU countries (either directly across borders or through subsidiaries and branches) as a share of total EU loans (domestic and other EU). For a given country, the darker the colour, the more it borrows from the rest of the EU. Light grey refers to below 10%, dark grey to between 10% and 25%, light blue to between 25% and 50%. and dark blue to above 50%. The arrows point from the lender to the borrower. The arrows indicate the largest cross-border lending activities from a borrower perspective. Arrows are shown when the loans from other EU countries as a share of total EU loans (domestic and other EU) are greater than 5%. Thin arrows indicate between 5% and 10% and thick arrows above 10%. The figure does not take into account the origin of the funding backing these loans. Data for the United Kingdom are missing.

Figure B. 2

Cross-border loans to the real economy: largest lenders in the EU, 2016 Q3

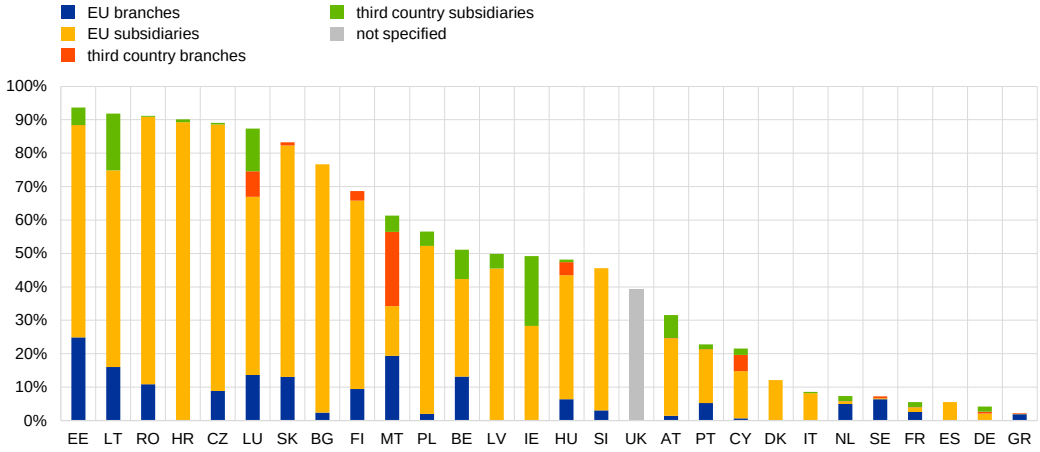


Source: ECB, ESRB calculations.

Notes: The data are reported at the highest level of consolidation in the EU. The colour coding corresponds to the loans extended by banks to other EU countries (either directly across borders or through subsidiaries and branches) as a share of total EU loans (domestic and other EU). For a given country, the darker the colour, the more it lends to the rest of the EU. Light grey refers to below 10%, dark grey to between 10% and 25%, light blue to between 25% and 50%. and dark blue to above 50%. The arrows indicate the largest cross-border lending activities from a lender perspective. The arrows point from the lender to the borrower. Arrows are shown when the loans to other EU countries as a share of total EU loans (domestic and other EU) are greater than 5%. Thin arrows indicate between 5% and 10% and thick arrows above 10%. The figure does not take into account the origin of the funding backing these loans. Data for Poland, Romania, and the United Kingdom are missing.

Figure B. 3

Market share of foreign banks in EU Member States, 2016 Q3



Source: ECB, ESRB calculations.

Notes: The percentages refer to the share of assets held by branches and subsidiaries in the total banking assets of a Member State. For the United Kingdom, breakdowns on branches and subsidiaries are not available. Data are missing for non-EU branches and non-EU subsidiaries in Bulgaria, Denmark, France, Lithuania, and Slovenia. Furthermore, data are missing for EU branches in Belgium, Croatia, Denmark, France, Ireland, and Italy

The high prevalence of cross-border lending in the EU means that some of the exposures held and thereby risks taken by foreign banks may fall outside the scope of national macroprudential measures. Measures taken by Member States generally apply to domestic banks and subsidiaries of foreign banks, but not to the branches of foreign banks or to services that

are provided directly across borders. As a result, depending on the domicile of the financial services provider, a different set of (macro)prudential requirements may be applicable to the same risk exposure in one country. This regulatory loophole may lead to unintended consequences, i.e. leakages and regulatory arbitrage with the potential to undermine the effectiveness of the national macroprudential measure as well as external effects on other Member States.

To mitigate these unintended consequences, reciprocity is required for exposure-based measures. Reciprocity means that a Member State applies the same or an equivalent macroprudential measure that is set by another Member State to its own institutions. Reciprocity thereby extends the application of measures in one Member State to branches of foreign banks and banks providing services directly across borders. Reciprocity is important for exposure-based measures, i.e. measures that target specific exposures rather than specific institutions, thereby ensuring that risks are treated the same way irrespective of which bank in which country holds the risk.

At present, the EU legal framework relies mostly on voluntary reciprocity. With a few exceptions, the CRD IV / CRR framework does not foresee mandatory reciprocity. The most notable exception is the CCyB, for which the CRD requires reciprocity up to a buffer rate of 2.5%, in line with Basel III.[62] This requirement applies to CCyB rates of both Member States and third countries. Furthermore, the CRR mandates automatic reciprocity for higher real estate risk weights and stricter lending criteria as well as higher minimum exposure-weighted average loss given defaults.[63] Reciprocity of other instruments available under CRD IV / CRR and instruments that are not harmonised under EU legislation, such as LTV or LTI caps, is voluntary.

With respect to the reciprocation of CCyB rates, the ESRB has gone beyond CRD IV / CRR provisions. To that end, the ESRB recommends also the reciprocation of buffer rates applicable in Member States that are higher than 2.5%.[64] In addition, the ESRB recommends the coordination among Member States of the reciprocation of higher buffer rates applicable in third countries.[65]

To promote even greater use of reciprocation, in December 2015 the ESRB adopted its new reciprocity framework.[66] The framework foresees the reciprocation of exposure-based measures taken by Member States. It covers both banking and non-banking measures within the EU. At the request of the Member State that activates a measure, the ESRB recommends the measure for reciprocation to all other 27 Member States, if deemed justified. The reciprocating Member States reciprocate optimally with the same measure or if necessary with an equivalent measure. Member States have the option to exempt an individual financial service provider only if it has no material exposures to the Member State requesting reciprocation (*de minimis* principle).

B.2 Measures recommended for reciprocation by the ESRB in 2016

National flexibility measure in Belgium

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62 From the end of the transition phase, i.e. as of 2019, reciprocity of the CCyB will be mandatory up to a buffer rate of 2.5% and voluntary above (Articles 130, 135-140 and 160 of the CRD).

63 Higher real estate risk weights and stricter lending criteria (Article 124 CRR) as well as higher minimum exposure-weighted average loss given defaults (Article 164 CRR) are directly applicable to all exposures targeted by the national measure, irrespective of the domicile of the service provider.

64 Recommendation ESRB/2014/1 on guidance for setting countercyclical buffer rates.

65 Recommendation ESRB/2015/1 on recognising and setting countercyclical buffer rates for exposures to third countries.

66 Recommendation ESRB/2015/2 on the assessment of cross-border effects of and voluntary reciprocity for macroprudential policy measures.

In 2016, the ESRB received two requests for reciprocation. The first request was submitted by Belgium for the reciprocation of a national flexibility measure. More precisely, the Belgian measure constitutes a five percentage point risk weight add-on applied under Article 458(2)(d)(vi) CRR to Belgian mortgage loan exposures of credit institutions using the IRB approach. A measure taken under Article 458 CRR is of a temporary nature and is authorised annually by the Council after an initial authorisation period of two years.[67] The request by Belgium to the ESRB to recommend its measure for reciprocation was received at the time when the measure was authorised by the Council for the second time, i.e. for a period of a further year. To substantiate its request, Belgium argued that, while the market share of branches and direct cross-border lending was currently small, the market share of subsidiaries of banks in particular from France and the Netherlands was significant. To ensure that these exposures continue to be covered by the Belgian measure even in the hypothetical case of conversion into branches, Belgium wanted to pre-emptively close the potential regulatory loophole.

When deciding on recommending reciprocation of the Belgian measure, the ESRB was faced with issues that are specific to Article 458 CRR. The Belgian measure is clearly an exposure-based measure, and the discussion within the ESRB focused on how the measure would be reciprocated. Article 458(5) CRR already foresees reciprocation and, as part of an EU regulation, is already directly applicable in all Member States. However, Article 458(5) CRR foresees reciprocation by other Member States only for exposures taken by branches but not for exposures held directly across borders. Hence, covering exposures held directly across borders requires reciprocating with equivalent measures, which may take some time. In addition, given the temporary nature of the measure, the reciprocating measures may come into force at a time when the measure to be reciprocated may be revoked.

Given these issues, the ESRB opted for a pragmatic approach. In its Recommendation ESRB/2016/3 adopted in March 2016, the ESRB recommended that Member States reciprocate for exposures of branches in accordance with Article 458(5) CRR; where there are no IRB credit institutions located in other Member States with branches established in Belgium that have material exposures to the Belgian mortgage market, such Member States were given the option not to apply Article 458(5) CRR. In addition, the ESRB recommended that Member States reciprocate for exposures held directly across borders; where there are no IRB credit institutions located in other Member States with material direct cross-border exposures to the Belgian mortgage market, such Member States were given the option not to reciprocate. In the event of non-reciprocation, Member States were recommended to monitor the situation and reciprocate if exposures were to become material.

Systemic risk buffer in Estonia

The second request was submitted by Estonia for the reciprocation of a systemic risk buffer rate. More precisely, the Estonian measure constitutes a 1% systemic risk buffer rate for the domestic exposures of all credit institutions authorised in Estonia in line with the national transposition of Article 133 CRD. Estonia's request for reciprocation was clearly motivated by the significant share of branches of foreign banks in the domestic market (see Figure B. 3). Informally, Estonia also provided an institution-specific materiality threshold of €200 million to guide the application of the *de minimis* principle by reciprocating Member States.

[67] Taking into account the opinions by the ESRB and the EBA, the European Commission may propose to the Council to reject a draft national measure, based on which the Council will decide whether or not to reject the draft national measure.

When deciding on recommending reciprocation of the Estonian measure, the ESRB was faced with issues that are specific to Article 134 CRD. The Estonian measure is an exposure-based measure, as it covers domestic exposures of all credit institutions authorised in Estonia. The discussion within the ESRB therefore focused again on how the measure would be reciprocated. Like Article 458(5) CRR, Article 134 CRD already foresees reciprocation, and in contrast to the former, the latter covers reciprocation of an SRB rate for exposures both taken by branches and provided directly across borders. However, as part of an EU directive, Article 134 CRD is not directly applicable, but needs to be transposed into national law. Some Member States have not (yet) transposed it into national law and/or cannot activate the measure at this point (Finland, Italy and the United Kingdom).

Given these issues, the ESRB in its Recommendation ESRB/2016/4 adopted in June 2016 recommended the following. Member States that have implemented Article 134 CRD in national law should reciprocate the Estonian measure in accordance with Article 134 CRD. Member States that have not (yet) implemented Article 134 CRD in national law should reciprocate the Estonian measure with equivalent measures. Given that reciprocation with equivalent measures is likely to take longer, those Member States were given somewhat more time to reciprocate.

B.3 Reciprocating actions taken by Member States

In response to the ESRB's Recommendations for reciprocation, many Member States took reciprocating actions (see Figure B. 4 and Figure B. 5). The Member States with the largest exposures to the risk to be covered generally reciprocated. In the case of the Belgian measure, France and the Netherlands provide a large share of loans to Belgium (see Figure B. 1). In fact, both Member States hold a significant share in the loan market for real estate in Belgium. Both Member States indeed reciprocated the Belgian measure although their banks are mostly active through subsidiaries. In the case of the Estonian measure, Sweden is the largest home country and indeed reciprocated. In addition, some Member States reciprocated even without large exposures and therefore seem to reciprocate as a matter of principle (Denmark, Lithuania, Latvia, Portugal).

Some Member States reciprocated only for branches or exempted individual institutions from reciprocation (see Figure B. 4 and Figure B. 5). Regarding the Belgian measure, Luxembourg reciprocated only for branches. In addition, Latvia exempted banks with loan exposures of less than €1 million to the Belgian real estate market. Regarding the Estonian measure, five out of the 12 reciprocating Member States applied the materiality threshold provided by Estonia (i.e. €200 million). Latvia again decided to exempt banks with loan exposures of less than €1 million to Estonia. The six other reciprocating Member States did not exempt any banks.

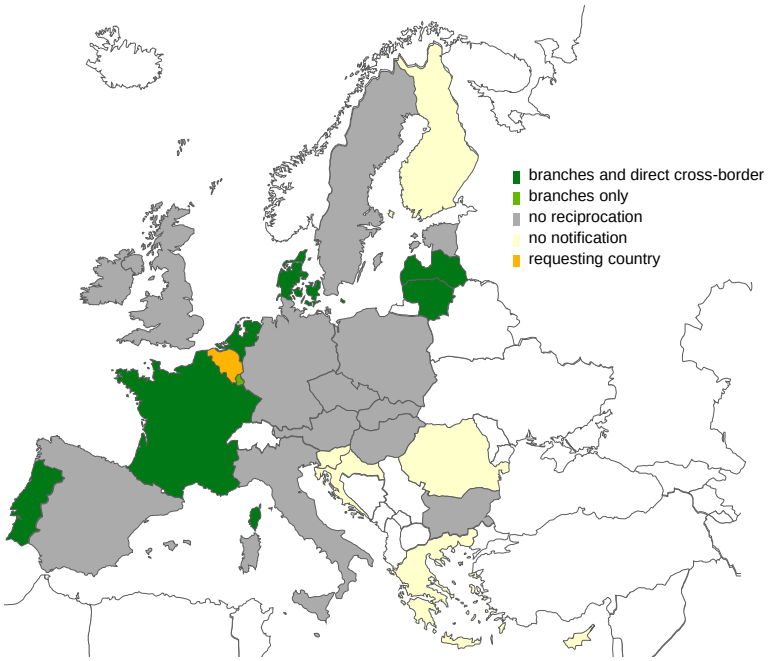
Many other Member States did not reciprocate. 14 and 11 Member States decided not to reciprocate the Belgian and Estonian measures, respectively. They cited the lack of material exposures as an explanation for deciding against reciprocation[68], but stated their readiness to reciprocate were the exposures to become material in the future. Hence, while being in favour of reciprocity in general, they seem to weigh the costs of reciprocation more highly than its potential benefits in the current absence of material exposures. Furthermore, Finland cited the fact that Article 134 CRD had not been transposed into national law. Finally, at present and until 2019, the

[68] Except for banks in Finland, none of the banks in the other ten Member States that decided not to reciprocate the Estonian measure have exposures to Estonia above €200 million. Hence, while legally different, the case of reciprocation with a *de minimis* threshold of €200 million and the case of non-reciprocation are economically similar.

UK's PRA does not have the legal powers to reciprocate the Estonian measure with a systemic risk buffer or equivalent measure.

Figure B. 4

Reciprocation of the Belgian national flexibility measure by the other Member States



Source: ESRB.

Notes: "Requesting country" refers to the Member State that requested reciprocation for one of its measures. Here, this refers to Belgium, which requested reciprocation of its national flexibility measure (five-percentage-point risk weight add-on applied under Article 458(2)(d)(vi) CRR to Belgian mortgage loan exposures of credit institutions using the IRB approach). "No reciprocation" means that the respective Member State did not reciprocate, i.e. did not put in place the necessary legal provisions. "Branches" and "Direct cross-border loans" indicate that exposures held by branches and loans extended directly across borders are covered by reciprocation, respectively.

Table B. 1

Reciprocation of the Belgian national flexibility measure by the other Member States

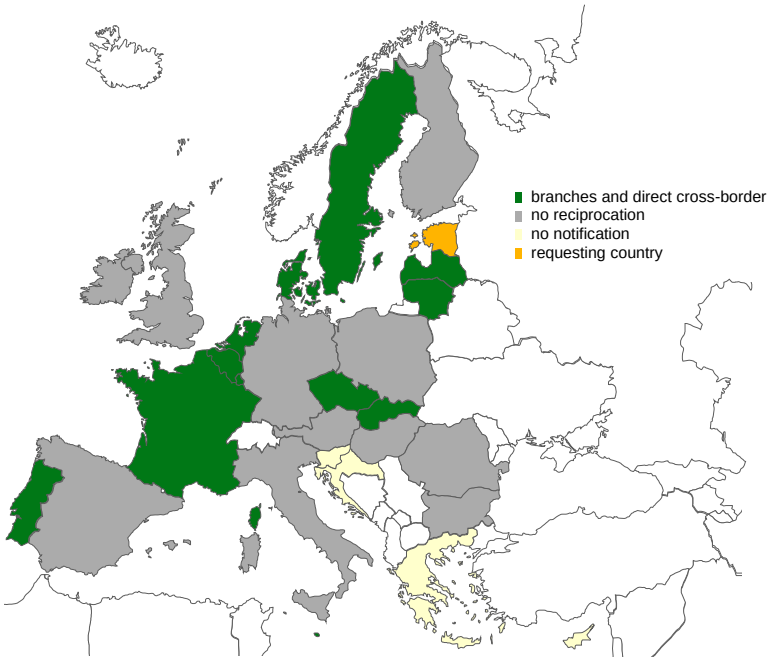
Member State	Reciprocation		*De minimis* exemption	No reciprocation	No notification
	Branches	Direct cross-border loans	Institution-specific threshold		
AT				●	
BG				●	
CY					●
CZ				●	
DE				●	
DK	●	●			
EE				●	
ES				●	
FI					●
FR	●	●			
GR					●
HR					●
HU				●	
IE				●	
IT				●	
LT	●	●			
LU	●				
LV	●	●	€1 million		
MT				●	
NL	●	●			
PL				●	
PT	●	●			
RO					●
SE				●	
SI					●
SK				●	
UK				●	
Total	**7**	**6**		**14**	**6**

Source: ESRB.

Notes: "Reciprocation" means that the respective Member State reciprocated by putting in place the necessary legal provisions. "Branches" and "Direct cross-border loans" indicate that exposures held by branches and loans extended directly across borders are covered by reciprocation, respectively. "*De minimis* exemption" means that, when reciprocating, the respective Member State exempted individual banks below the indicated threshold from applying the measure. "Non-reciprocation" means that the respective Member State did not put in place the necessary legal provisions. The decision not to reciprocate in the light of currently non-material exposures may be revised depending on the future developments of exposures.

Figure B. 5

Reciprocation of the Estonian systemic risk buffer rate by the other Member States



Source: ESRB.

Notes: "Requesting country" refers to the Member State that requested reciprocation for one of its measures. Here, this refers to Estonia, which requested reciprocation of its systemic risk buffer rate of 1%. "No reciprocation" means that the respective Member State did not reciprocate, i.e. did not put in place the necessary legal provisions. "Branches" and "Direct cross-border loans" indicate that exposures held by branches and loans extended directly across borders are covered by reciprocation, respectively. In the Czech Republic, the exposures to Estonia are covered by the systemic risk buffer that is in place in the Czech Republic and is levied on the five largest banks (see Table 6).

Table B. 2

Reciprocation of the Estonian systemic risk buffer rate by the other Member States

Member State	Reciprocation	*De minimis* exemption Institution-specific threshold	No reciprocation	No notification
AT			● 3/	
BE	●			
BG			● 3/	
CY				●
CZ	● 1/			
DE			● 3/	
DK	●	€200 million		
ES			● 3/	
FI			● 4/	
FR	●			
GR				●
HR				●
HU			● 3/	
IE			● 3/	
IT			● 3/	
LT	●			
LU	●	€200 million		
LV	●	€1 million		
MT	●	€200 million		
NL	●	€200 million		
PL			● 3/	
PT	●			
RO			● 3/	
SE	● 2/	€200 million		
SI				●
SK	●			
UK			● 3/ 5/	
Total	**12**		**11**	**4**

Source: ESRB.
Notes: "Reciprocation" means that the respective Member State reciprocated by putting in place the necessary legal provisions. "*De minimis* exemption" means that, when reciprocating, the respective Member State exempted individual banks below the indicated threshold from applying the measure. "Non-reciprocation" means that the respective Member State did not put in place the necessary legal provisions. The decision not to reciprocate in the light of currently non-material exposures may be revised depending on the future developments of exposures. 1/ The exposures to Estonia are covered by the Czech systemic risk buffer that is levied on the five largest banks (see Table 6). Hence, although there is no official exemption of Czech institutions, a *de facto* exemption is granted to smaller banks. None of the *de facto* exempted smaller banks has exposures above the *de minimis* threshold of €200 million used by other Member States. 2/ The exposures to Estonia are covered by the Swedish systemic risk buffer that is levied on the four largest banks. None of the other Swedish banks has exposures above the *de minimis* threshold of €200 million. 3/ None of the banks in these Member States have exposures to Estonia above €200 million. Hence, while legally different, the case of reciprocation with a *de minimis* threshold of €200 million and the case of non-reciprocation are economically similar. 4/ Despite exposure above €200 million, Finland did not reciprocate the Estonian measure because Article 134 CRD has not been transposed into national law. 5/ At present and until 2019, the Prudential Regulation Authority in the United Kingdom does not have the legal powers to reciprocate the Estonian measure with a systemic risk buffer or equivalent measure.

B.4 First lessons

The ESRB's new reciprocity framework has led to a substantial increase in reciprocating actions. In the period 2014-2016, i.e. between the coming into force of the CRD IV and the CRR and the inception of the framework, only three Member States bilaterally reciprocated macroprudential measures taken by other Member States.[69] As a result of the closer coordination foreseen by the reciprocity framework, the number of Member States taking reciprocating actions has increased significantly since then.

The first year of experience with the new framework also shows that the approach to reciprocation differs widely across Member States. First, Member States weigh costs and benefits of reciprocation differently. Some Member States seem to believe in the value added of reciprocation and as a result reciprocate as a matter of principle even in the absence of material exposures. Other Member States seem to weigh the costs of reciprocation more highly than the benefit of reciprocation and therefore either did not reciprocate or reciprocated but exempting individual banks by applying the *de minimis* principle.

Second, some Member States take a forward-looking approach when deciding on requesting or implementing reciprocation while others rely on a static assessment. The latter analyse the current cross-border exposures. If the regulatory loophole is small, for instance because banks lend mostly through subsidiaries, they do not request or implement reciprocation. In contrast, other Member States take into account that subsidiaries could convert into branches or that the regulatory loophole may be actively used.

Third, the application of the *de minimis* principle differs across Member States. The ESRB's reciprocity framework allows the use of exemptions of non-material exposures, but does not prescribe the threshold Member States should use to determine whether an exposure is material or not. Hence, if Member States decide to exempt individual banks with non-material exposures, they are free to choose the threshold they deem appropriate. However, this leads to diverging applications of the *de minimis* principle.

Fourth, there is no consensus among Member States as to whether reciprocating actions should be additive to domestic measures. In the case of the reciprocation of the Estonian SRB rate, some Member States deemed their domestic SRB on total exposure with a rate of at least 1% as covering the reciprocation of the Estonian SRB rate. So they took no further reciprocating actions. Other Member States, however, deemed the two rates as additive, as the domestic SRB is calibrated to cover risks other than those stemming from Estonia. Hence, they implemented an additional reciprocating action.

Against the backdrop of these lessons, the ESRB supports making reciprocity of exposure-based macroprudential measures mandatory as a general rule.[70] Article 134 of the CRD and Article 458(5) of the CRR should therefore foresee mandatory reciprocation in the event of measures that cover domestic exposures in the activating Member State. For that purpose, measures of the activating Member State should be made publicly available in all official EU languages, for example through publication in the Official Journal of the European Union. In addition, the scope of Article 458 of the CRR should cover EU banks' exposures to the activating

[69] In 2014, Denmark reciprocated the risk weight floor of 25% for Swedish mortgage loans by IRB banks and tighter model requirements by Norway for mortgage lending by IRB banks. In 2014, Sweden also reciprocated the tighter model requirements by Norway for mortgage lending by IRB banks. Also in 2014, the Netherlands reciprocated the Belgian national flexibility measure when it was first put in place.

[70] The ESRB also made these points in its response to the European Commission's Consultation Document on the "Review of the EU Macro-prudential Policy Framework".

Member State both through branches in that Member State and direct cross-border exposures to that Member State.

In certain cases, however, mandatory reciprocity may be unduly burdensome, and a more consistent application of the *de minimis* principle may be considered. In particular, in the absence of automatic reciprocity and of any material exposures at the country level, mandatory reciprocity may outweigh any potential benefits. Hence, preserving institution-level exceptions in *de minimis* cases is important. To foster their consistent application, such exemptions could be identified *ex ante* through jointly defined and harmonised thresholds that take into account the perspectives of both an exposed institution and the country which applies the measure. In addition, Member States should be allowed to opt out of such mandatory reciprocity by means of a notification process, replacing the current requirement to notify if choosing to reciprocate, whereby they explain to the ESRB the rationale for not reciprocating.

In addition, reciprocity would benefit from more harmonisation in the macroprudential toolkit. The two measures that the ESRB recommended for reciprocation in 2016 were covered by EU law and were therefore harmonised within the Union. The harmonisation of these measures and the possibility of reciprocation already foreseen by EU law reduced the costs of their reciprocation significantly. Despite these facts, many Member States did not reciprocate, citing too high implementation costs. Many instruments frequently used are not harmonised at EU level (see Figure 1), complicating their reciprocation. Harmonising them under EU law would therefore help to facilitate their reciprocation.

Last but not least, the scarce use of reciprocity leads to regulatory loopholes that need to be monitored. The fact that many Member States did not reciprocate means that the same exposures held by banks from different Member States are subject to different regulatory treatments. This could lead to leakage and regulatory arbitrage of the respective macroprudential measures. Hence, the situation needs to be monitored, and Member States that have not reciprocated need to stand ready to reciprocate if the need arises in the future.[71]

[71] Likewise, potential leakage to the non-banking sector needs to be monitored.

Annex 1
Active residential real estate instruments in the EU

Table 1
Collateral stretch instruments

Member State	Limit	Scope	Basis for measure
Austria	LTV: 60% for bonds covered by mortgages; 80% for mortgage loans granted by building societies; 60% for mortgages included in the coverage funds in the insurance sector	All credit institutions subject to those special laws and insurers	Binding regulation
Cyprus	LTV: 70%; 80% in cases where the credit facility is granted for financing the primary permanent residence of the borrower	Credit institutions authorised and operating in Cyprus	Binding regulation
Czech Republic	LTV: From 100% (2015) to 90% (2017); the share of loans with an LTV of 80%-90% is limited to 15% (2017)	N/A	Recommendation
Denmark	LTV: 95%	Banks and mortgage credit institutions	Recommendation
Estonia	LTV: 85%; 90% in the case of a KredEx guarantee; up to 15% of the amount of new housing loans in a quarter is allowed to breach the limit	All credit institutions operating in Estonia, including the branches of foreign credit institutions	Binding regulation
Finland	LTV: 90%; 95% for first-time-buyers	N/A	Binding regulation
Hungary	LTV: between 35% and 80% (depending on the currency denomination of the loan)	N/A	Binding regulation
Ireland	LTV: 80% for second and subsequent buyers; 90% for first-time buyers; 70% for “buy-to-let” housing; 75% for preferential risk weighting	All regulated financial services providers in Ireland	Binding regulation
Latvia	LTV: 90%; 95% for loans covered by a state guarantee under the Law on Assistance in Resolution of Dwelling Issues (since July 2014)	All lenders (both bank and non-bank, including branches)	Binding regulation
Lithuania	LTV: 85%	N/A	Binding regulation
Luxembourg	LTV: if >80%, risk weight of 75% has to be applied to the exceeding part of the mortgage loan	Institutions using the standardised approach for credit risk	Binding regulation
Malta	LTV: 70% when applying a risk weight of 35%	Credit institutions licensed in Malta	Binding regulation
Netherlands	LTV: from 106% (2012) to 100% (2018)[72]	N/A	Binding regulation
Norway	LTV: 85%; amortisation requirements if LTV>70%	Mortgage lenders	Binding regulation
Poland	LTV: 90% as of 2015, 85% as of 2016 (with a further tightening over time, until 80% in 2017)	N/A	Recommendation
Romania	LTV: between 60% and 85% (depending on the currency denomination of the loan)	N/A	Binding regulation
Slovakia	The share of new loans with an LTV>90% cannot exceed 10% and the share of new loans with an LTV>80% cannot exceed 40%	All regulated financial services providers in Slovakia	Binding regulation
Slovenia	LTV: 80%	Banks and savings banks, including branches of foreign banks	Recommendation
Sweden	LTV: 85%; amortisation requirements if LTV>50%	All credit institutions operating in Sweden, including the branches of foreign credit institutions	Binding regulation
United Kingdom	Requirement for a credible repayment strategy for borrowers receiving an interest-only mortage loan	All new mortgages	Binding regulation

Notes: Table refers to instruments active in 2016 but that might have been implemented earlier. Amortisation requirements have been included both under the income stretch and the collateral stretch categories.

[72] The Dutch Financial Stability Committee has recommended continuing the gradual reduction beyond 2018 to an LTV limit of 90%.

Table 2

Household/income stretch instruments

Member State	Limit	Scope	Basis for measure
Cyprus	DSTI: difference between the total monthly income and the total monthly expenditure; capped at 35% of the borrower's total monthly income and limited to 80% of net disposable income (65% for foreign currency loans)	Credit institutions authorised and operating in Cyprus	Binding regulation
Denmark	LTI: if LTI>4, households should have positive net wealth in the event of a 10% decline in the value of the property (25% decline if LTI>5)	Banks and mortgage credit institutions	Recommendation
Estonia	DSTI: 50%; up to 15% of the amount of new housing loans in a quarter is allowed to breach the limit	All credit institutions operating in Estonia, including the branches of foreign credit institutions	Binding regulation
Finland	Borrower stress test to test his/her ability to service the debt if the mortgage rate were 6% and the maximum maturity of the loan 25 years	N/A	Recommendation
Hungary	PTI: 10%-60%; depending on currency denomination and net income of the borrower; *de minimis* of HUF300,000	N/A	Binding regulation
Ireland	LTI: new housing loans with LTI >3.5 should be $\leq$ 20% of aggregate value of new loans	All regulated financial services providers in Ireland	Recommendation
Lithuania	DSTI: 40% of net income; stressed DSTI of 50% under the scenario of an interest rate of 5%; up to 5% of the total value of new housing loans during a calendar year is allowed to breach the DSTI limit of 40% (but capped at 60% limit)	All credit institutions operating in Lithuania, including the branches of foreign credit institutions	Binding regulation
Netherlands	DSTI: limit depending on income and interest rates	N/A	Binding regulation
Netherlands	LTI: limit depending on income and interest rates	N/A	Binding regulation
Norway	Amortisation: repayments for residential mortgage loans with LTV>70%; an interest rate stress test / sensitivity test is conducted when assessing the borrower's repayment capacity	Mortgage lenders	Binding regulation
Poland	DSTI: internal limits for all loans to households; banks should pay particular attention to loans with DSTI>50%	N/A	Recommendation
Romania	DSTI: maximum level for consumer loans depending on foreign currency, interest rate and income risk; debt includes mortgage loans	Bank and non-bank financial institutions	Binding regulation
Slovakia	DSTI: limit of 90% for the borrower's disposable income; in the case of floating-rate loans, an interest rate increase of two percentage points is assumed	All regulated financial services providers in Slovakia	Binding regulation
Slovenia	DSTI limit of 50% for monthly income up to €1,700 and 67% for the part above	Banks and savings banks, including branches of foreign banks	Recommendation
Sweden	Amortisation: annual repayments of at least 1% on loans with 50%<LTV≤70% and 2% if LTV>70%	All credit institutions operating in Sweden, including the branches of foreign credit institutions	Binding regulation
United Kingdom	LTI: new residential mortgage loans with LTI>4.5 should be <15% of aggregate value of new loans; *de minimis* exception; recommendation by the FPC on interest rate stress in affordability assessment and measures by the PRA on underwriting standards for buy-to-let housing	Mortgage lenders	Binding regulation

Notes: Table refers to instruments active in 2016 but that might have been implemented earlier. Amortisation requirements have been included both under the income stretch and the collateral stretch categories.

Table 3

Lender stretch instruments

Member State	Limit	Scope	Basis for measure
Belgium	Risk weights: 5 percentage points add-on to the risk weights on mortgage loans to Belgian residents	Banks using the IRB approach	Binding regulation
Denmark	Maturity: maximum of 30 years	Banks and mortgage credit institutions	Binding regulation
Estonia	Maturity: maximum of 30 years for housing loans; up to 15% of the amount of new housing loans in a quarter is allowed to breach the limit	All credit institutions operating in Estonia, including the branches of foreign credit institutions	Binding regulation
Finland	Risk weights: minimum level of 10% for the average risk weight on housing loans	Credit institutions using the internal ratings-based approach	Planned binding regulation
Ireland	Stress test: lenders must assess whether borrowers can still afford their mortgage loans on the basis of a minimum 2% interest rate increase above the offered rate	Financial services providers authorised in Ireland or another EU or EEA Member State	Binding regulation
Ireland	Risk weights: LTV<75% for preferential risk weighting	All banks in Ireland	Binding regulation
Lithuania	Maturity: maximum of 30 years for new housing loans	All credit institutions operating in Lithuania, including the branches of foreign credit institutions	Binding regulation
Luxembourg	Risk weights: 75% for the part of the mortgage loan exceeding 80% of the value of the real estate object	Institutions using the standardised approach for credit risk	Binding regulation
Luxembourg	Risk weights: average minimum risk weight of 15% for retail residential mortgage loans	Institutions using the IRB approach for credit risk	Recommendation
Luxembourg	Stress test: stricter stress test for mortgage books and requiring banks to have appropriate internal governance and policies	N/A	Binding regulation
Malta	Risk weights: LTV<70% for exposures secured by mortgages on residential property when applying the 35% risk weight	Credit institutions licensed in Malta	Binding regulation
Norway	Risk weights: tighter requirements for residential mortgage lending models	Banks	Binding regulation
Poland	Maturity: maximum of 35 years; banks should assess creditworthiness assuming maturity of up to 25 years	Banks	Recommendation
Romania	Stress test: accounting for foreign currency depreciation and interest rate shocks defined for consumer loans	Bank and non-bank financial institutions	Binding regulation
Slovakia	Maturity maximum of 30 years; specific exemptions allowed	All regulated financial services providers in Slovakia	Binding regulation
Sweden	Risk weights: minimum level of 25%	All credit institutions operating in Sweden, including the branches of foreign credit institutions	Binding regulation (Pillar 2)
United Kingdom	Stress testing including annual housing market downturn scenario; possibly followed-up by management actions and Pillar 2 measures	Seven major UK banks and building societies	Binding regulation

Notes: Table refers to instruments active in 2016 but that might have been implemented earlier.

Annex 2
Residential real estate vulnerabilities identified and policies adopted in each of the 11 focus countries

Table 1

	Vulnerabilities identified in	Measures[73] taken in		
		Collateral stretch	Household stretch	Banking stretch
AT	- collateral - household	- LTV limits in certain market segments (e.g. 80% for loans granted by building societies) - Expectations on sustainable lending standards have been communicated to banks	- Publication of information folder on risks of lending in foreign currencies published (in 2006 and 2011) - Recommendations of minimum standards for banks' lending addressing excessive risk concentration, maturity transformation and growth in credit in foreign currencies (2003, 2010 and 2013) - Expectations on sustainable lending standards have been communicated to banks	- Systemic risk buffer of up to 2% for 12 banks (from 2016, fully phased in in 2018) - O-SII buffer, 1-2% (phased in 2016-2018) - The capital conservation being gradually introduced between 2016 and 2019. When fully phased in it is at 2.5%
BE	- banking - collateral - household	- Public communications about RRE risks e.g. in 2012 FSR - Self-assessment of compliance with EBA opinion on good practice by banks	- Public communications about RRE risks e.g. in 2012 FSR - Self-assessment of compliance with EBA opinion on good practice by banks - A tightening of tax deductibility	- Public communications about RRE risks e.g. in 2012 FSR - 5 percentage point RW add-on for IRB banks' RRE exposures since 2014 - O-SII buffer of 0.75-1.5% phased in from 2016 - CCyB at 0 % from January 2016
DK	- collateral - household	- LTV limit of 95% (2015) - Supervisory diamond for mortgage credit institutions (2018-2020)	- 7 best practices for lending published (2015) - Supervisory diamond for mortgage credit institutions (2018-2020) - Gradual reduction in tax deductibility (2012) - 30-year maturity restriction on mortgages (since 1990)	- Supervisory diamond for mortgage credit institutions (2018-2020) - Systemic risk buffer at 1-3% by 2019 (0.4-1.2% in 2016) - CCyB at 0% from January 2016 - Capital conservation buffer being phased in between 2016 and 2019 (0.625% in 2016 and 2.5% in 2019)
EE	- collateral	- Finantsinspektsioon issued guidelines on responsible lending (December 2010) - Requirements for new housing loans (as of 1 March 2015): at least 85% of new housing loans issued per quarter must have an	- Finantsinspektsioon issued guidelines on responsible lending (December 2010) - Requirements for new housing loans (as of 1 March 2015): at least 85% of new housing loans issued per quarter must have a DSTI limit of 50% and a	- Finantsinspektsioon issued guidelines on responsible lending (December 2010) - Systemic risk buffer requirement of 1% from 1 August 2016 - O-SII buffer of 2% from 1 August 2016 for the two largest banks

[73] Some of the measures listed here have not been specifically, or only, taken because of residential real estate vulnerabilities but they may nevertheless also affect these vulnerabilities. Hence, the perspective taken in this Annex is broader than in Section 5 of the Review that deals with measures specifically targetting real estate lending.

		LTV limit of 85% (90% if guaranteed by KredEx)	maturity limit of 30 years - From 2016 the limit on deductions from taxable income was lowered from €1,920 to €1,200 per taxpayer	- CCyB requirement to be maintained at 0%
FI	- banking - collateral - household	- LTV limit of 90% (95% for first-time buyers) in effect since July 2016	- Tax deductibility gradually reduced to 25% by 2019 - FIN-FSA recommendation on lending standards (interest rates, maturity, LTV), 2010	- Capital conservation buffer 2.5% since January 2015 - O-SII buffers of 0.5% - 2.0% since January 2016 - Initiated process to introduce an average RW floor of 10% for IRB banks' mortgage exposures (via Article 458 CRR)
LU	- collateral - household		- Microprudential measure: CSSF circular of 2012 requiring banks to have appropriate internal governance and policies, incl. with respect to mortgagors	- Banks under the standardised approach have RW of 75% for part of loan with LTV > 80% - IRB banks' capital adequacy is subject to a stress test (severe but plausible recession scenarios) - Capital conservation buffer at 2.5% since 2014 - O-SII requirements 0.5-1.0% for six credit institutions, including three operating in the RRE market - Pillar 2 measures applied to four banks operating in the RRE market - In July 2016, the Systemic Risk Committee recommended introduction of a RW floor of 15% on IRB banks' RRE exposures
MT	- collateral - household			- Risk weights depend on the LTV: 35% RW if the LTV <70% and 100% RW for the remaining part of the loan with the LTV >70% (slightly more stringent than the CRR standardised approach rules) - Pillar 2: reserves for general risks due to heightened level of NPLs - Capital conservation buffer at: 0.625% (rising to 2.5% by 2019) - O-SII buffer: 0.125-0.5% (rising to 0.5-2.0% by 2019) - CCyB: 0%
NL	- collateral - household	- LTV limit for new mortgages lowered from 106% in 2012 to 100% in 2018 (currently 102%) - Recommendation of Financial Stability Committee to continue the gradual reduction of LTVs beyond 2018 to a 90% limit	- DSTI/LTI limits in place since 2012, being gradually tightened (limits depend on income and interest rates) - New mortgages must be fully amortising in order for the interest to be tax-deductible (from 2013) - Maximum tax deduction rate will be gradually reduced over 28 years (from 2014)	- 3% systemic risk buffer and O-SII buffer between 1-2% being phased in 2016-2019; the higher of two applies to an individual bank - The CCyB has been 0% since 2016 - Macroprudential tools for loans (LTV limits, etc.) apply to banks and non-banks

SE	- collateral - household	- LTV cap at 85% since 2010	- Amortisation requirement for all new mortgages, depending on the LTV (June 2016) Under consideration: - LTI cap is being considered (but is not currently within the Swedish FSA's mandate)	- 25% risk weight floor on mortgages since 2013/2014 - 5 percentage point additional capital requirement for systemic banks - Liquidity coverage ratio of 100% in aggregate and separately in USD and EUR (since 2013) - CCyB at 2% (effective March 2017)
SK	- collateral - household	- Recommendation in October 2014: LTV ratio should not exceed 100%, with a given share of loans above 90% Planned: - Transposition of recommendations into decrees with a tightening of the limits - Internal assessment of real estate appraisals should be mandatory and should meet certain minimum qualitative requirements	- Recommendation in October 2014: DSTI limit at 100% - Recommendation in October 2014: 30-year maturity restriction for mortgages Planned: Transposition of recommendations into decrees with a tightening of the limits	- Capital conservation buffer was set to 2.5% as of 1 October 2014 - Systemic risk buffer and O-SII buffer were activated with a combined value of up to 3% from 1 January 2018 after phase-in - CCyB is currently at 0% and will be increased to 0.5% as of August 2017
UK	- collateral - household	- FCA Mortgage Market Review prescribing affordability assessment (2014) - FCA review of interest-only mortgages in the stock of lending (from 2013) - FPC's Stress Testing Framework (incl. annual housing market downturn scenario) - PRA measures on "buy-to-let" underwriting standards (September 2016)[74]	- LTI flow limit at 4.5 for 85% of new owner-occupied mortgages (June 2014) - FPC Recommendation on interest rate stress tests for assessing mortgage affordability (June 2014) - PRA measures on buy-to-let underwriting standards (September 2016)	- FPC's Stress Testing Framework (incl. annual housing market downturn scenario) - Leverage ratio requirement for major UK banks and building societies - PRA measures on buy-to-let underwriting standards (September 2016) Under consultation: - Measures to reduce the procyclicality of RWs

Source: ESRB report on vulnerabilities in the EU residential real estate sector (2016)

[74] This is already the basis for discussions between PRA supervisors and mortgage lenders.

Annex 3
Systemically important cross-border institutions in the EU

Table 1

Parent group (fully phased-in buffer at home)	Parent country	Subsidiaries	Country subsidiary
Addiko Bank AG	Austria	**Addiko Bank d.d.**	**HR**
Erste Group Bank AG	Austria	**Česká spořitelna, a.s.**	**CZ**
	Austria	**Erste&Steiermärkische Bank d.d.**	**HR**
	Austria	**Erste Bank Hungary Zrt.**	**HU**
	Austria	**Banca Comercială Română SA**	**RO**
	Austria	**Slovenska Spořiteľňa, a.s.**	**SK**
Raiffeisen Zentralbank AG	Austria	**Raiffeisen Bank Polska SA**	**PL**
	Austria	**Raiffeisenbank (Bulgaria) EAD**	**BG**
	Austria	**Raiffeisenbank a.s.**	**CZ**
	Austria	**Raiffeisenbank Austria d.d.**	**HR**
	Austria	**Raiffeisen Bank SA**	**RO**
	Austria	**Tatra banka, a.s.**	**SK**
	Austria	**Raiffeisen Bank Zrt.**	**HU**
Sberbank Europe AG	Austria	**Sberbank d.d.**	**HR**
	Austria	**Sberbank banka d. d.**	**SI**
KBC Group	Belgium	**CIBANK AD**	**BG**
	Belgium	**Československá obchodní banka, a.s.**	**CZ**
	Belgium	**K&H Bank Zrt.**	**HU**
	Belgium	**Československá obchodná banka, a.s.**	**SK**
J&T Finance Group SE	Czech Republic	**Poštová banka, a.s.**	**SK**
Danske Bank A/S	Denmark	**Danske Bank Oyj**	**FI**
AXA	France	**AXA Bank Europe SA**	**BE**
BNP Paribas SA	France	**BNP Paribas Fortis SA**	**BE**
	France	**BGL BNP Paribas SA**	**LU**
	France	**Bank BGŻ BNP Paribas SA**	**PL**
CACEIS SA	France	**CACEIS Bank Luxembourg SA**	**LU**
Société Générale SA	France	**Societe Generale Expressbank AD**	**BG**
	France	**Komercní banka, a.s.**	**CZ**
	France	**Société Générale - Splitska banka d.d.**	**HR**

	France	**BRD - Groupe Société Générale SA**	**RO**
	France	**SKB banka d.d., Ljubljana**	**SI**
	France	**Société Générale Bank & Trust SA**	**LU**
Commerzbank AG	Germany	**mBank SA**	**PL**
Deutsche Bank AG	Germany	**Deutsche Bank Luxembourg SA**	**LU**
Alpha Bank AE	Greece	**Alpha Bank Cyprus Ltd**	**CY**
	Greece	**Alpha Bank Romania SA**	**RO**
Eurobank Ergasias SA	Greece	**SC Bancpost SA**	**RO**
	Greece	**Eurobank Bulgaria AD**	**BG**
	Greece	**Eurobank Cyprus Ltd**	**CY**
National Bank of Greece SA	Greece	**United Bulgarian Bank AD**	**BG**
Piraeus Bank SA	Greece	**Piraeus Bank Bulgaria AD**	**BG**
	Greece	**Piraeus Bank Romania SA**	**RO**
OTP Bank Nyrt	Hungary	**DSK Bank EAD**	**BG**
	Hungary	**OTP banka Hrvatska d.d.**	**HR**
	Hungary	**OTP Bank România SA**	**RO**
Intesa Sanpaolo SpA	Italy	**Banka Koper d.d.**	**SI**
	Italy	**Privredna banka Zagreb d.d.**	**HR**
	Italy	**CIB Bank Zrt.**	**HU**
	Italy	**Všeobecná úverová banka, a.s.**	**SK**
UniCredit SpA	Italy	**UniCredit Bank Austria AG**	**AT**
	Italy	**UniCredit Bulbank AD**	**BG**
	Italy	**UniCredit Bank Czech Republic and Slovakia, a.s.**	**CZ**
	Italy	**UniCredit Bank AG**	**DE**
	Italy	**Zagrebačka banka d.d.**	**HR**
	Italy	**UniCredit Bank Hungary Zrt.**	**HU**
	Italy	**UniCredit Bank Ireland Plc**	**IE**
	Italy	**Bank Polska Kasa Opieki SA**	**PL**
	Italy	**UniCredit Bank SA**	**RO**
	Italy	**UniCredit Banka Slovenija d.d.**	**SI**
BBVA	Spain	**Garanti Bank SA**	**RO**
ING Bank NV	Netherlands	**ING België NV**	**BE**
	Netherlands	**ING-DiBa AG**	**DE**
	Netherlands	**ING Bank Śląski SA**	**PL**
DNB Bank ASA	Norway	**AB DNB Bankas**	**LT**
	Norway	**AS DNB banka**	**LV**
Banco Comercial Português, SA	Portugal	**Bank Millennium SA**	**PL**

Banco Santander, SA	Spain	**Bank Zachodni WBK SA**	**PL**
	Spain	**Santander UK Plc**	**UK**
	Spain	**Santander Totta, SGPS, SA**	**PT**
Nordea Bank AB (publ)	Sweden	**Nordea Bank Danmark A/S**	**DK**
	Sweden	**Nordea Pankki Suomi Oyj**	**FI**
	Sweden	**Nordea Bank Norge ASA**	**NO**
Skandinaviska Enskilda Banken AB (publ)	Sweden	**SEB Pank AS**	**EE**
	Sweden	**AB SEB bankas**	**LT**
	Sweden	**AS SEB banka**	**LV**
Swedbank AB (publ)	Sweden	**Swedbank AS**	**EE**
	Sweden	**Swedbank, AB**	**LT**
	Sweden	**Swedbank AS**	**LV**
HSBC Holdings plc	United Kingdom	**HSBC Bank Malta plc**	**MT**