Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: commercial real estate

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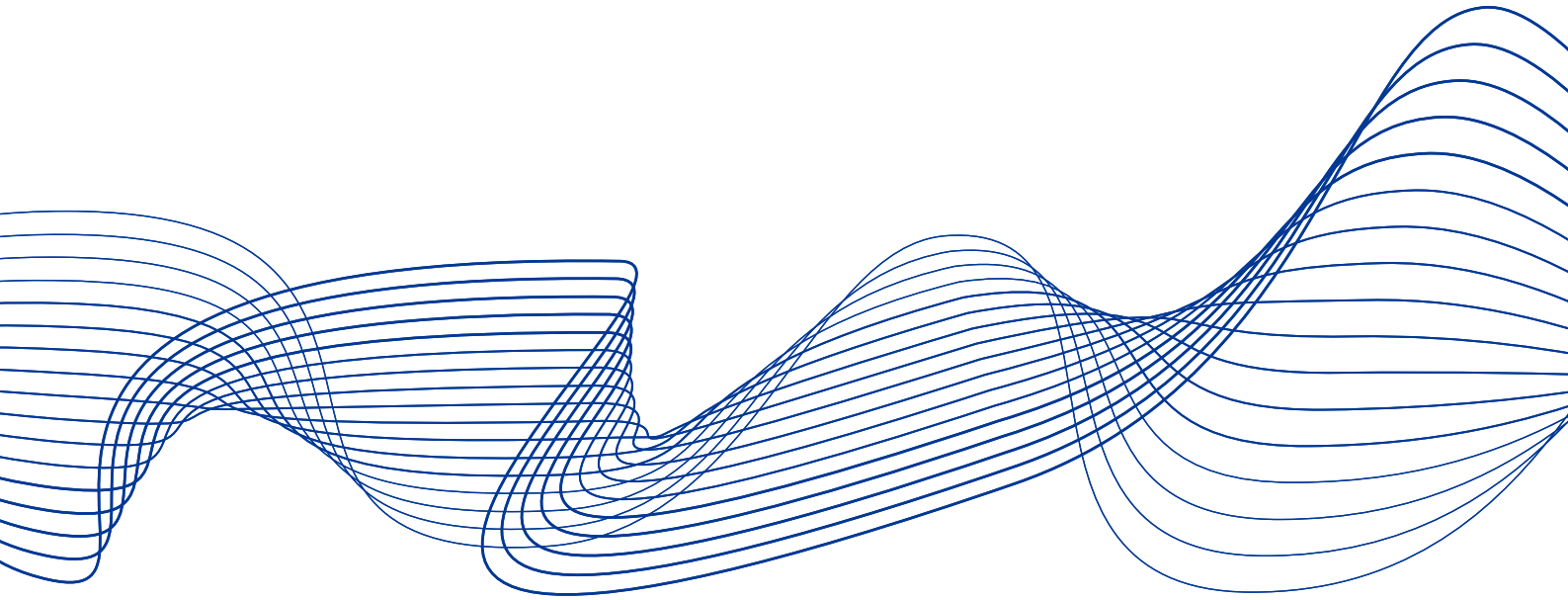
by
Working Group on Real Estate Methodologies



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Contents

1 Executive summary

In May 2018 the Working Group on Real Estate Methodologies (WG-REM), which had been given a medium-term mandate by the ESRB General Board to gradually develop a consistent framework for assessing systemic risk and policy reactions related to real estate, submitted a report documenting the main results its members had achieved since they started working together early in 2017. Although the WG-REM had focused mainly on residential real estate (RRE) in accordance with the priorities set out in its mandate, it had also worked on commercial real estate (CRE), in close cooperation with a dedicated ESRB Task Force. Following the finalisation of the methodologies developed for RRE, the original mandate of the WG-REM was extended, with the objective of exploring the possible application of an equivalent framework to CRE in order to assess systemic risks and the use of macroprudential measures, and **conditional on the availability of data**.

The main pillars of the fully fledged framework developed for RRE (ESRB, 2019) deliver a set of operative guidelines regarding: i) the sources and the intensity of vulnerabilities; ii) the appropriateness of the policy objectives and of the selected tools that could be used by macroprudential authorities; iii) the assessment of the sufficiency of the implemented policies in terms of both mitigating the identified vulnerabilities and entailing over time larger benefits than costs.

This report provides concrete guidance for a consistent assessment of both systemic risks that may stem from developments in the CRE markets and related macroprudential policies. The approach resembles the RRE methodologies conceptually, although it also takes into account the greater heterogeneity and deeper complexities in CRE due to its wider variety of operators, including potentially greater exposure to foreign investors. In this respect, any innovation with respect to the preliminary approach followed in ESRB (2018) is fully documented and discussed.

Importantly, the fully fledged framework for the assessment of CRE risks and policy responses presented in this report takes an ideally medium-term perspective. This is due to the severe data gaps currently affecting the ability of monitoring and explaining CRE market trends and their interactions with the financial system and, to a larger extent, the general macroeconomic outlook. The framework includes some data points that will conceivably become available in the near future, when statistical initiatives already launched at both country and EU level have been completed.

Nevertheless, the WG-REM offers a body of advanced considerations that aim to provide practical guidance until statistical progress has been achieved, especially in countries where data gaps have been particularly severe to date.

This is to avoid any unwarranted further postponement of the regular monitoring of CRE developments in the EU needed for timely risk detection and policy reaction. At the same time, an important policy prescription still applies, i.e. that extra effort should be made to achieve the urgent statistical progress expected, either through official or experimental projects. This outcome is necessary for the assessment framework presented in this report to become fully operative.

Following a review of the CRE definition, according to the new standards recently set by the ESRB (in its 2019 Recommendation on closing real estate data gaps[1]) and the possible discrepancies there have been with underlying statistical sources, this report addresses the issue of limited data availability by providing an updated overview of the current picture in European countries, as well as a description of some of the domestic initiatives currently in place to close statistical gaps. In this context, an operative framework for the assessment of CRE vulnerabilities is presented, generally along the same lines as that for RRE markets, starting with the identification of the cyclical position of each country's CRE market. As for the policy assessment, operative guidance is extensively produced regarding the appropriateness pillar, namely the selection of policy tools that closely match the identified vulnerabilities. With regard to the sufficiency pillar, operative guidance is currently hampered by the severe data gaps. These are even more significant due to the high complexities of CRE markets deriving from the wide variety of market participants, the intense interconnectedness across borders, and the potentially heterogeneous trends in the different market segments. Nevertheless, the WG-REM has proposed establishing common standards for domestic authorities, extensively documenting which data and considerations they have used to calibrate macroprudential instruments and to monitor their impact over time in mitigating identified vulnerabilities, while also taking into account the ensuing costs for the general economy.

1.1 Delineating CRE

In March 2019 the ESRB proposed a new delineation for CRE (ESRB/2019/3). This aligned the previous delineation of CRE (ESRB/2016/14) with the Capital Requirements Regulation (CRR) (Regulation (EU) No 575/2013). Accordingly, CRE is now defined as any income-producing real estate asset, either existing or under development, including social housing, property owned by end-users, and rental housing. Since the CRE market segments may give rise to different types of risk for the financial system, it is even more important to carry out the data breakdown envisaged in the Recommendation on closing real estate data gaps. This will enable sound risk and policy assessments to be conducted.

This report investigates the commonalities and differences between CRE and RRE. As both markets compete for the same endowments of land and building capacity, there are common factors affecting their respective trends. However, important differences exist, especially with regard to the various actors active in the two markets: owners and renters in the RRE market are typically households while corporates (both professional investors and end-users) operate in the CRE market. By their nature, the latter are more reactive to economic fluctuations and have proved to be more exposed to economic downturns in the past.

[1] Recommendation of the European Systemic Risk Board of 21 March 2019 amending Recommendation ESRB/2016/14 on closing real estate data gaps (ESRB/2019/3) (OJ C 271, 13.8.2019, p. 1).

1.2 The challenging data gaps

The assessment of CRE risks and related macroprudential policies in the European Union is currently hampered by the existence of severe data gaps. Statistics on CRE are generally scarce, incomplete and potentially inconsistent across countries, affecting the ability to monitor and explain CRE developments. However, even if such data are available, insights might be limited and comparisons hindered by additional hurdles such as short time series.

This report reviews the current state of play on data availability in EU countries and confirms that, for the time being, there is a lack of official statistics on key variables (e.g. CRE values and rents) for most countries, so that data gaps are filled in to some extent with data from private sources. **At the same time, the WG-REM has collected details on a number of national initiatives already in place, which should enhance data availability for specific issues in some countries (Denmark, Hungary, the Netherlands and Poland). This may be achieved before the fulfilment of Recommendation on closing data gaps (ESRB/2019/3) and the initiatives of the G20 programme.**

Indeed, the commitment set by these initiatives is to achieve a more harmonised framework for monitoring developments in real estate markets in the EU by 2025. While this substantial progress should be acknowledged, the urgent issue of obtaining reliable statistics to assess current CRE developments in the EU remains unresolved.

1.3 The risk assessment framework

The specific features of the CRE market, such as the wider range of investors and funding sources compared with the RRE market, imply that a tailored framework for risk and policy assessment is required. Accordingly, this report develops a framework for detecting CRE vulnerabilities that is conceptually consistent with the assessment of the RRE markets (ESRB, 2019), although the selection of indicators considered as well as the balance between the horizontal and the vertical ratings have been revised to take account of the deeper complexity and greater heterogeneity of CRE compared with RRE. Nevertheless, the data required to undertake such a tailored approach, both for CRE risk assessment and related policies, are currently scarcely available for most European countries.

In this context, **the WG-REM put forward guidance for the assessment of CRE vulnerabilities, starting from the preliminary framework adopted in ESRB (2018). Some innovations have been introduced to improve the soundness and transparency of the final risk assessment, thus enhancing consistency with the fully fledged RRE framework recently developed by the WG-REM (ESRB, 2019).**

Accordingly, **the analysis of CRE-related risks is structured in a sequence of three steps. At a preliminary stage (Step 1), an examination of the cyclical position enhances the reading of a given set of indicators,** which may convey different signals with regard to the intensity and timing of vulnerabilities, depending on the cyclical stage of CRE markets. **The CRE vulnerabilities are then detected based on a common set of indicators (Step 2) across three different conceptual categories:** i) the collateral stretch, which monitors developments in the market values

of CRE properties; ii) the income and activity stretch, which focuses on the income flows generated by CRE assets as well as on the activity of market participants as captured by transaction volumes or the relevance of equity investors; iii) the financing stretch, which deals with the conditions as well as the sources of debt financing for CRE.

Compared with the analysis previously made in the ESRB (2018), the potential for spillovers to the rest of the economy is not considered as an additional source of vulnerabilities per se, since it mostly relates to the intensity and the transmission channels through which, in a given country, the original shock is propagated beyond CRE markets.

In addition to the scoreboard, the WG-REM identified a wide set of country-specific indicators (Step 3), including those covering the potential for spillovers. This provides an understanding of the structural features as well as the legal and institutional set-up potentially affecting developments in the domestic CRE market. The class of country-specific indicators seeks to complement the horizontal (across countries) assessment, and may entail a correction of the initial risk rating made in Step 2.

Importantly, the selection of the adopted indicators is highly dependent on available data. The scoreboard shown in the report is meant to be strictly transitional, since it is conditional on the strong data limitations identified in most European countries: both included indicators and their respective critical thresholds could be affected by the production of new data based on harmonised methods.

It is crucial that the combined output of Step 2 and Step 3 is informed by intensive consultation between the ESRB and national experts, especially in countries where data limitations are particularly severe. This is, however, consistent with the fact that the ESRB is the ultimate authority responsible for final risk ratings and communication strategy.

Based on the three-step framework, an integrated system of risk rating is obtained on four levels:

- **No exposure.** The risk assessment does not provide material evidence of vulnerabilities that are relevant to macroprudential policy.
- **Low exposure.** The risk assessment indicates the need for close monitoring of CRE developments, although the nature/magnitude of the identified vulnerabilities does not call for immediate policy action.
- **Medium exposure.** The risk assessment highlights the existence of vulnerabilities that need to be addressed by macroprudential policies.
- **Pronounced exposure.** The risk assessment indicates widespread vulnerabilities that need to be addressed by macroprudential policies.

Ratings are computed for each stretch in isolation in order to better inform the choice of policy tools that need to be tailored to the most severe vulnerabilities.

1.4 The policy assessment framework

In line with the risk assessment, the WG-REM provided guidance for the assessment of related macroprudential policies by conceptually following the new framework now available for RRE (ESRB, 2019) along two pillars: a) the appropriateness of the selected tool, mostly based on the match between policy measures and identified vulnerabilities; b) the sufficiency of the calibration of the activated tool in terms of both effectiveness in achieving policy objectives and efficiency in producing, over time, greater benefits than costs incurred.

Nevertheless, the constraints deriving from limited data availability as well as scarce expertise and academic literature regarding the calibration and the operation of CRE-related tools are currently far more severe for CRE than for RRE. As a result, the framework for the CRE policy assessment presented in this report is reasonably operative for countries in which the amount of data required to conduct a thorough analysis are sufficient and already available. However, the WG-REM offers some advanced reflections and minimum standards that may support concrete guidance on policy assessment, even in cases where data limitations are currently particularly severe.

1.4.1 Policy appropriateness

Regarding the assessment of CRE policy appropriateness, the WG-REM developed a three-step framework similar to the RRE approach. In comparison with the preliminary analysis in ESRB (2018), this provides a fresh review of available policy measures related to CRE (Step 4), and deepens the analysis of the transmission channels through which they can affect the source and intensity of the identified vulnerabilities (Step 5). By clarifying how measures potentially match a single class of vulnerabilities, this report provides operative guidance on potentially sounder grounds. **A further innovation in respect of the approach outlined in ESRB (2018) is the inclusion of a variety of country-specific considerations (Step 6) which make it possible to take key aspects of the inherent complexity of CRE into account.** These include cross-country differences in the role of foreign investors, the relevance of cross-border transactions, and non-bank lenders. The final assessment of CRE policy appropriateness is, therefore, the combined results of the ex ante-expected match with the identified vulnerabilities and the conditioning factors that actually operate in a single country, as summarised in Table 22. Importantly, the need to coordinate macroprudential activities or activate reciprocity across countries is shown to be greater for CRE than for RRE.

As the combined outcome of information gathered along the three-step framework, the appropriateness of the tools selected in a country can be assessed by means of a three-level rating:

1. **Fully appropriate.** When the following four conditions are jointly met: (a) policy objectives are consistent with the identified vulnerabilities, in accordance with the proposed framework (see Table 18); (b) the policy mix meets the policy objectives, in accordance with the proposed framework; (c) leakages and circumvention are duly considered and, as much as possible, addressed; (d) interactions with other policy areas are taken into account.

2. **Partially appropriate.** When conditions (a) and (b) are met, and either (c) or (d) or both are not; or (a) is met, but (b) is not because country-specific conditioning factors reduce the feasibility of policy instruments.

3. **Not appropriate.** When the conditions for partial appropriateness are not met, or no policy is in place to address the identified vulnerabilities.

1.4.2 Addressing policy sufficiency

The sufficiency pillar assesses whether the activated instruments enhance the resilience of the financial system and/or mitigate the build-up of systemic risks – namely the intermediate objectives of the macroprudential policies – while resulting in limited costs in terms of foregone activities on the financial markets or in the general economy.

In line with the RRE framework developed by the WG-REM, **a CRE-related macroprudential instrument, conditional on proving to be appropriate, is assessed as sufficient if it jointly meets the following requirements: (i) it delivers a substantial contribution to policy objectives (effectiveness); (ii) it delivers, over time, significantly higher benefits than costs (efficiency).**

Accordingly, assessing CRE-related policies as sufficient depends on: (i) identifying the target variables that are expected to affect the conditions underlying the achievement of the intermediate objectives; (ii) to what extent the balance over time between the expected gains and costs of the activated tools can be assessed.

In principle, the assessment framework for CRE vulnerabilities put forward by the WG-REM proceeds in three steps. **First, the standards of quantitative and qualitative methods used to calibrate the selected tools and to monitor their net benefits projected over time are appraised (Step 7). Second, a number of country-specific considerations are reviewed, since these may inform the policy sufficiency assessment (Step 8).** These considerations include interactions with other policy fields (primarily monetary and fiscal policies), the legal and regulatory set-up, and a country's financial structure. The latter refers, in particular, to the size of non-banking and cross-border intermediaries, which may affect the potential for circumvention and leakages, highlighting any need to activate reciprocity. Finally, **Step 9 deals with possible discrepancies between the ex ante and the ex post assessments, as these may convey valuable information regarding uncertainty over the actual effects of the activated instruments**. Such discrepancies may be the result of time lags in the implementation of the selected tools which, in turn, helps understanding how the institutional set-up and the design of the macroprudential governance weigh on the actual timing and the size of the policy impact. In addition, delivery gaps show the operation of factors that are difficult to project ex ante (e.g. the actual reactions of the variety of actors in CRE markets to activation of the tool, and feasible room for coordination across authorities in different countries).

The three steps of the sufficiency assessment entail demanding requirements for available data and (partially related) feasible methods used to calibrate the policy tools as well as to regularly monitor the benefits and costs they exert over time. This is at odds with the severe

data gaps currently affecting most European countries. In addition, only limited experience has so far been accumulated around the world in the implementation of CRE macroprudential policies. Moreover, the complexity inherent to the functioning of CRE, given the intense cross-border interactions and the important role of non-banks, makes the sufficiency analysis even more challenging. In this context, the WG-REM refrained from further elaborating the conceptual framework along the lines fully documented in the companion report on RRE (ESRB, 2019) which, however, also sets out a reference methodology for CRE once the most critical data gaps have been filled to some extent.

However, **in order to provide concrete current guidance, the WG-REM put forward a heavily simplified approach to policy sufficiency. This entails the basic requirement for national authorities to fully document the information (either experimental or qualitative and incomplete) and reference criterion (based either on quantitative methods or on peer reviews and expert judgements) adopted to calibrate the activated macroprudential tools.**

According to this view, in the absence of substantial progress on the availability of CRE market data, the sufficiency assessment for CRE would mostly be built on an intensive consultation with the national authorities aimed at producing a thorough, even narrative, explanation of the rationale behind the calibration of the selected tools, whether these are in place or soon to be introduced. Importantly, the assessment includes reaching an understanding of whether national authorities explicitly considered the expected costs and benefits of the activated tools in the domestic CRE market, the financial system, and the general macroeconomic outlook.

As a first element of practical guidance, an assessment of the policy's effects should focus on the target variables that are expected to drive possible changes to the risk indicators. A second dimension relates to the segmentation of CRE markets – as each segment may be affected differently by cross-border and/or non-bank operators, different policy reactions may be warranted. In this context, the use of sectoral or geographically limited macroprudential instruments could seem useful at first sight, although the intensity at which they could be activated should be very carefully analysed in order to minimise distortions in the level playing field and the possibility of unintended reactions from the different groups of market participants. Third, it is worth appraising whether complementarities with factors such as fiscal treatment, the regulatory framework and key structural features (e.g. the size of individual CRE segments, different groups of active operators, and funding strategies) were considered by the national authorities during the calibration of the selected tools. Finally, it is worth restating that it is important to gather any source of information and documentation which could enhance the transparency in the arguments, data and criteria adopted by the national authorities for the policy calibration as well as for the continuous monitoring of the ensuing benefits (mitigation of vulnerabilities) and costs (intended/unintended foregone momentum in investment or consumption as well as in the general business cycle) that may materialise over time.

Importantly, the development of a suitable kit of analytical methods and statistical inputs remains a key element of a sound assessment of the sufficiency of CRE-related macroprudential policies; the WG-REM clearly states that enhancing efforts to achieve substantial progress in this direction should be an urgent priority for most European countries.

By combining the variety of considerations relating to the calibration of appropriate tools, even in countries currently affected by severe data gaps, policy sufficiency can be assessed by means of a three-level rating:

1. **Fully sufficient**
   Given the declared policy objectives and **conditional on data and methods currently available**, an appropriate policy (enacted and adopted, or publicly announced) has been calibrated so that the following requirements are both met: the identified systemic vulnerabilities related to CRE are likely to be mitigated to a **great extent**; expected benefits **significantly exceed** expected costs in the medium term.

2. **Partially sufficient**
   Given the declared policy objectives and **conditional on data and methods currently available**, an appropriate policy (enacted and adopted, or publicly announced) has been calibrated so that the following requirements are both met: the identified systemic vulnerabilities related to CRE are likely to be **somewhat** mitigated; expected benefits exceed expected costs in the medium term to **some extent.**

3. **Not sufficient**
   The conditions for full or partial sufficiency are not met.

1.5 The communication strategy

In order to enhance the efficient and transparent communication of assessment outcomes, the WG-REM proposed three templates. These provide an in-depth review of the individual building blocks of a country rating in CRE risk detection and in the assessment of the appropriateness and sufficiency of the related macroprudential policies. In addition to the final rating and its interpretation, the templates report – in a non-technical narrative – all the key elements underpinning a country rating. This is especially valuable as severe data limitations require the significant use of soft information and expert judgements. There is therefore an even more pressing need for transparency and documentation to facilitate a complete and across-the-board understanding of the outcomes of the overall assessment process undertaken by the ESRB and the implications for future policy action.

Importantly, the templates only relate to the communication strategy of the ESRB in respect of the outcomes of the CRE risk and policy assessment. They do not necessarily have any implication for the current communication rules followed by the national authorities within their own countries and in respect of the ESRB or the European Central Bank (ECB).

2 What is CRE and how different is it from RRE

2.1 Introducing CRE

In order to assess the financial vulnerabilities and systemic risk of the EU commercial real estate sector, **a definition of CRE should allow the links between CRE and the financial system to be clearly identified**. In this respect, several attempts have been made over the recent years to define commercial real estate in a more harmonised manner, both at the global and the European level.

At the international level, the **G20 Data Gaps Initiative** was launched in 2009 to address the data gaps revealed by the global financial crisis, with the aim of supporting enhanced policy analysis. This initiative included organising annual conferences as a part of the consultation process, with a view to preparing the progress reports delivered to the G20. The 2019 conference was dedicated to real estate statistics – it shed light on the lack of a commonly-agreed definition of CRE, the difficulties involved in computing CRE price indicators, and the rather scarce data sources for CRE statistics.

At the European level, **in October 2016 the ESRB issued a Recommendation on closing real estate data gaps (ESRB/2016/14)**, with a view to improving the availability and comparability of the data available on residential and commercial real estate in the EU. This Recommendation **defines commercial real estate fairly broadly as any income-producing real estate**, whether existing or under development, and excludes social housing, property owned by end-users and buy-to-let housing.

Following the same line, **Eurostat (2017) has devised building blocks for the definition of commercial real estate**. These take into account both the asset type – residential versus non-residential – and the activity involved: selling/renting, own use, construction or non-market. Two definitions of commercial real estate were thus proposed. The broad definition includes all property other than owner-occupied housing and property used in non-market activities (mainly social housing and most types of non-residential property owned by the government). It also includes non-residential properties used and occupied by their owners (e.g. “corporate properties”). At a narrower level, CRE excludes all owner-occupied properties and refers to rental housing and investment properties, whether completed or under construction. At an extremely narrow level, CRE only refers to rental housing and investment properties – generally properties that generate income through rent.

Recent developments at the European level relate to the decision taken by the ESRB General Board on 21 March 2019 to amend the ESRB Recommendation on closing real estate data gaps **(ESRB/2019/3)**. According to the agreed amendments, **CRE refers to any income-producing real estate, whether existing or under development, including rental housing or real estate used by the owners of the property for conducting their business, purpose or activity, whether**

existing or under construction, that is not qualified as RRE property, and including social housing.

On the statistical side, **in the context of the European initiative on collecting granular credit and credit risk data (AnaCredit)**, "commercial immovable property" is considered to be a broader category; it encompasses any immovable property that is not a "residential property" within the meaning of Article 4(1) (75) of the CRR.

Table 1
Overview of CRE definitions

	houses and apartments			multifamily dwellings			corporate real estate (property owned by end users)	office	retail	logistics	other properties (infrastructure, cultural buildings)
		households									
	owned by enterprises	rented out	owner occupied	owned by households	social housing	owned by enterprises					
Capital Requirements Regulation (CRR)	residential							commercial			
ESRB (2016/14)	commercial	residential		other	commercial		other	commercial			other
Eurostat (2017) broadest definition	commercial		residential	commercial	other	commercial					other
ESRB (2019/3)	commercial	residential		commercial							

Source: ESRB WG-REM.

While the existing definitions differ markedly among themselves, it is important to reach a common understanding across EU countries of what CRE comprises. **Both analytical and empirical work relies heavily on a harmonised definition.** For this reason, in the present report we adopt the CRE definition as set out in Recommendation on closing real estate data gaps (ESRB/2019/3), which is illustrated in Table 1. The main driver of systemic risk is the income-producing nature of CRE and the fact that CRE loan risk depends on the income generated by a property, among other factors, as shown later in this section. In principle, the ESRB definition captures these aspects and is therefore better suited to financial stability analysis than the AnaCredit or CRR definitions. However, **the paucity of indicators available to date that fully comply with this definition continues to pose a problem for macroprudential analysis**. In addition to the incomplete statistical picture, this may further affect the reliability of the assessment of both CRE risk and related macroprudential policies that can be followed at this time.

2.2 Commonalities and differences between CRE and RRE

Given that **agents in the CRE and RRE markets compete for the same endowments of land and building capacities** in a given territory, there are common factors that affect both of these markets. For example, from this perspective **favourable economic conditions that lead to increased demand for CRE are also likely to induce an expansion of RRE** in the surrounding area. This will then restrict the space available for future construction, thereby increasing the value of both CRE and RRE properties[2].

With regard to the business cycle, rising employment leads to an increased demand for office space, while growth in consumption supports higher turnovers in retail and logistics – a potential proxy for e-commerce activities. As a combined result, the prices of office, retail and logistics properties are pushed up. In the same vein, households benefit from economic expansion directly through the salary increases they can expect to receive, or indirectly via the increased probability of them being able to join the labour market. The improved economic conditions enable households to increase the demand for consumption goods – thus supporting retail property prices – and for housing goods – thus supporting residential property prices.

Nevertheless, there are also important differences between the two property markets (see Table 2 for a complete list). **First, there is still no universal definition for CRE properties across EU countries, with the result that data are heterogeneous.** While the ESRB Recommendation on closing data gaps (ESRB/2019/3) suggests a common definition for CRE properties, fully harmonised CRE data sets will not be available for physical CRE until 2025. As a result, physical indicators for the CRE market that are currently obtained mostly from private providers will continue to be widely used, while at the same time EU members are being encouraged to expand their available toolkits to monitor their CRE markets. Moreover, harmonised data on the financial system‘s CRE credit exposures will be operational from the end of 2020. **Second, the property owners are not the same across the two markets.** The CRE market is covered by professionals (e.g. banks, funds, company offices or stores) that acquire and hold CRE for income-generation purposes, while property owners in the RRE markets are households. Professional investors operate in the CRE market by investing in heterogeneous assets and by making use of vastly different individualised or complex financing techniques. By contrast, households are mostly active in the RRE market, seeking a good that could satisfy the same universal need – accommodation. They usually have a standard credit-loan relationship with a limited number of banks or, in rarer instances, with an insurance company. As a result, CRE markets are more complex and heterogeneous, requiring specific risk management. **Although banks’ exposures to CRE are mostly lower than their RRE exposures, the default risk for such loans is higher than for RRE loans due to the higher dependency of the CRE market on the business cycle and financing conditions.** However, the RRE market is more sensitive from a political perspective as it provides access to housing and has an effect on income distribution, despite posing fewer risks to financial stability.

[2] Cf. Gyourko (2009).

Table 2

Features of RRE and CRE markets

	Residential Real Estate	Commercial Real Estate
Definition and data issues	Fewer definition and data issues	Definitions for macroprudential surveillance since 2016 (ESRB 2019/3); little harmonised data and almost no national data which follow the definition
Purpose	Accommodation (own use) or secondary letting activities (buy-to-let)	Income generating purposes
Actors	Private households, retail banks, construction companies/developers	Professional investors (funds, investment banks, insurance companies, family offices, appraisers and brokers, construction companies/developers)
Interconnectedness	Mainly domestic focus; cases of lending in foreign currency	International investors represent a significant share of total market activity; significant share of cross-border lending for CRE
Sources of financing	Usually standardised loans from banks or insurance companies	Usually individualised loans from banks, groups of banks (syndicated loans), insurance companies, also via special-purpose vehicles with no or limited recourse; use of market funding via shares or corporate bonds
Political sensitivity	Politically sensitive (access to housing)	Much less politically sensitive (professional investors)
Complexity and transparency	Simple, more transparent and homogeneous; large scope for standardisation	Complex, opaque and heterogeneous market which poses specific risk management issues
Size of exposures	Exposures are generally more significant in bank portfolio	Exposures are generally less significant in bank portfolio
Concentration risk	Lower due to high granularity	Higher due to low granularity
Cyclicality	Less cyclical	More cyclical
Default risk	Lower (own use, more liquid and less volatile market, recourse financing)	Higher (commercial use, less liquid and more volatile market, higher dependency on the business cycle and financing conditions, non-recourse financing)
Experience of the use of macroprudential instruments	More experience of the use of macroprudential instruments	Little experience of the use of macroprudential instruments

Source: Extended table based on ESCB (2016), "A Review of Macroprudential Policy in the EU in 2015".

As the behaviour of agents varies from one market to another, so does sensitivity and resilience to the economic fluctuations of each of these real estate markets. **A change in the economic environment, such as an interest rate hike, a decline in CRE prices, or the bankruptcy of a tenant could immediately affect the business model of a professional investor.** As a consequence, the investor might be forced to liquidate the property, possibly at a reduced price. **This kind of behaviour is hardly ever seen in the reaction of households.** First, even in an economic downturn, for households there will still be demand for the dwelling services deriving from a residential property. Second, academic research has found that, apart from the tail events associated with a deep financial crisis, in many countries rising unemployment derives mostly from

firms reducing their hiring and not from firms firing those in existing jobs.[3] As employment status is usually an essential precondition for access to credit, households with mortgages are less affected by an economic downturn than CRE operators. **In summary, it may be expected that CRE markets will exhibit more sensitivity to economic fluctuations and less resilience than RRE markets.**

2.3 Segmentation of the CRE market

Supply and demand for CRE are inherently dependent on the type and location of properties and, as a result, CRE markets are highly segmented. The characteristics of CRE markets depend more on local than on country-wide determinants and, at the same time, are categorised on the basis of building types and purposes (Geltner et al., 2007). Moreover, **CRE properties are usually divided into prime and non-prime (or secondary) segments** depending on fundamental features that indicate risk level and potential returns on invested capital. The profitability of CRE assets affects the attractiveness of specific properties for owners and investors. While, for the time being, there is no common definition for both segments, the distinction between prime and non-prime CRE is widespread among real estate market participants and in the academic literature.

In general, the distinction between prime and non-prime CRE is based on the geographic location as well as the technical and economic characteristics of the properties. For the classification of the property (office, retail, industrial assets or mixed use) technical features such as the age of the building or relative profitability are important factors that should be taken into account. **With regard to location, major economic and political centres are usually considered to be primary markets.** These top tier cities disproportionately attract foreign capital, are relatively constrained in their physical supply, and may be more liquid for large investors (Katz and Gupta, 2014). Non-prime markets are usually further distinguished – secondary locations are other major regional centres, while all other locations are categorised as tertiary. Accordingly, prime CRE is considered to be prime buildings located in major economic and political centres while all the remaining properties are treated as non-prime CRE.

The segmentation of CRE on the basis of the investment profile (or strategies) of the properties is another method that is widely used to divide CRE into prime and secondary segments. Real estate market participants differentiate CRE into three categories according to investors' perception of its riskiness and, in turn, potential returns: core, value-added and opportunistic. The core CRE investment strategy reflects the lowest risk, where returns from investments made in CRE mostly derive from rather predictable cash flows from long-term rental contracts (Credit Suisse, 2017). This strategy is conservative in terms of leverage and involves properties in central locations with tenants of the highest quality. The value-added investment strategy seeks to achieve higher returns than the core strategy by acquiring riskier properties that often need refurbishment or are new developments and require more financial leverage. The opportunistic investment strategy includes all the remaining commercial properties that are heterogeneous in terms of fundamentals, are

[3] Shimer, R. (2012), "Reassessing the ins and outs of unemployment", *Review of Economic Dynamics*, Vol.15, No 2, pp. 127-148; Bachmann, R. (2005), Labour Market Dynamics in Germany: Hirings, Separations, and Job-to-Job Transitions over the Business Cycle, *SFB 649 Discussion Papers*, No 2005-045.

located in less-central locations or even in emerging markets, and present the highest level of risk. Given this elevated risk, opportunistic investors seek to earn comparatively higher returns by employing as much leverage as possible. In respect of investment profile, prime CRE includes properties that are attributable to the core strategy.

The third method for segmenting CRE properties is by considering yield prospects. **Yield translates the way the fundamentals of properties are priced into CRE rental incomes and values.** As a result, prime assets are low-yielding, with the smallest risk premium and liquidity surplus. IPD describes prime CRE as properties "with an equivalent yield in the lowest quartile". Consequently, non-prime CRE is classified as all properties which do not belong to the prime CRE segment.

In the EU, the volume of prime property transactions averaged 44% of total CRE transaction volume between 2006 and 2018[4], while secondary CRE transactions accounted for the remaining 56%[5]. **The prime CRE market is highly concentrated in the EU, as just four countries (the United Kingdom, Germany, France and the Netherlands) account for 78% of prime CRE transactions.** The secondary CRE market is also concentrated, although to a slightly lower degree than the prime CRE market, with 68% of secondary CRE transactions taking place in Germany, France, the Netherlands and the United Kingdom during 2006-18. Moreover, for some EU countries, comparable CRE market data are not available.

Furthermore, there is limited information on the size, structure and segmentation of CRE stock. Indeed, a significant proportion of CRE properties are not traded, as around a third of non-residential properties involved in commercial activities in the world is non-investible, with this share potentially varying across CRE segments.[6]

Furthermore, a "ripple effect" of prices can be observed in the real estate market, although the academic evidence to date refers to the residential segment.[7] The ripple effect describes the fact that prices in the largest and most liquid markets which experience the highest demand move first, with price trends in less significant markets with initially lower demand lagging behind, but following the same trend. The development of prices for Germany's prime and secondary CRE markets suggests that these prices share the same trends, with prices for the secondary market lagging behind (see Chart 1). This finding is also consistent with the existence of a ripple effect on CRE.

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4 Defined as the sum of transactions of core and core+ CRE properties using data provided by CBRE.

5 Based on proprietary data from CBRE.

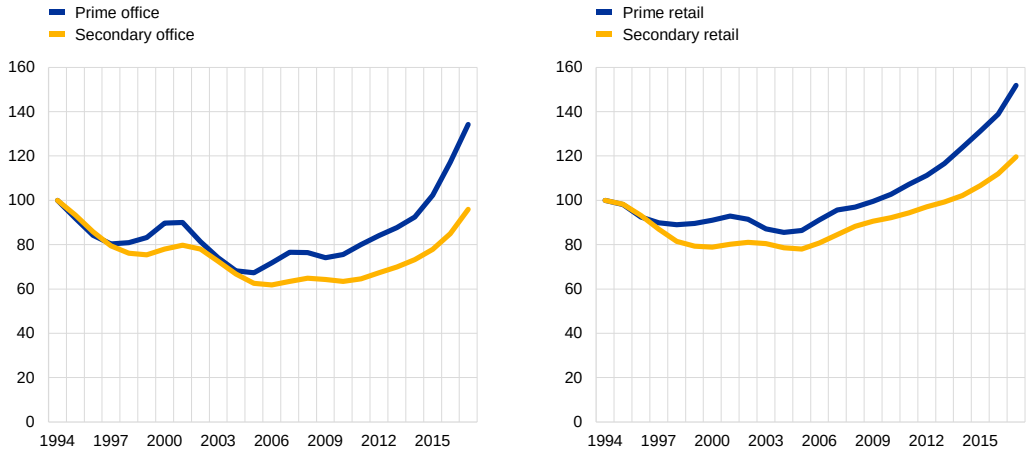
6 See Tostevin, P. (2017), "**How much is the world worth**", *The Savills Blog*, April.

7 Tsai, I-C. (2014), "Ripple effect in house prices and trading volume in the UK housing market: New viewpoint and evidence", *Economic Modelling*, Vol. 40, June, pp. 68-75.; Holly, S., Pesaran, M.H. and Yamagata, T. (2011), "The spatial and temporal diffusion of house prices in the UK", *Journal of Urban Economics*, Vol. 69, No 1, pp. 2-23, Holly, S., Pesaran, M.H. and Yamagata, T. (2010), "A spatio-temporal model of house prices in the US", *Journal of Econometrics*, Vol. 158, No 1, pp. 160-173.; van Dijk B., Franses, P.H., Paap, R. and van Dijk, D. (2011), "Modelling regional house prices", *Applied Economics*, Vol. 43, No 17, pp. 2097-2110.

Chart 1

Prime and secondary CRE price indices in Germany (1994-2017)

(index, 1994 = 100)



Source: bulwiengesa AG.

2.4 Importance for financial stability

Numerous aspects underpin the importance of CRE markets for macroprudential surveillance. **Lenders granting commercial property loans and institutional investors managing large direct and indirect CRE positions are regarded as direct risk transmission channels between CRE markets and the financial system (ESRB, 2015).** Nevertheless, indirect transmission channels also play a significant role. Banks are exposed to CRE markets through the collateral channel, as it is common for most non-financial corporations (NFCs) to pledge CRE assets in order to secure loans. CRE is a significant source of collateral for NFCs, with loans collateralised by immovable properties accounting for around a third of all NFC loan portfolios in the EU (see Chart 4). Declining prices reduce the value of collateral, which then diminishes NFCs' refinancing and investment capabilities and may lead to rising non-performing loans (NPLs) or even losses if the previously overvalued collateral needs to be liquidated. Banks are also exposed to CRE indirectly through the real economy as the dynamics of CRE prices can negatively affect construction and real estate development companies and their ability to repay their respective bank loans. In addition, there are further distinct features of CRE financing which lead to elevated risks. For instance, CRE investors often set up special-purpose vehicles (SPVs). The profitability of such undertakings depends on the cash flow generated by the CRE properties under their control and banks' recourse if a default is limited to an SPV's assets. **Unlike households that use RRE for dwelling purposes and therefore face an immense disincentive to default on a loan, CRE investors might do so if their investments turn out to be unprofitable.** Due to the limited-recourse nature of CRE loans, lenders are exposed to losses from the reduced value of pledged commercial properties, which in some cases may be unfinished structures or have limited usability**.** Banks could also be subordinated creditors and face losses stemming from complicated bankruptcy procedures. Finally, CRE investors use market financing as well, e.g. bonds with limited or non-

recourse structured financing with multiple lenders and subordinate debt and/or equity financing by mezzanine lenders or equity markets.

Due to the higher risk profile of CRE loans, banks generally incur greater losses on NFC loans than household loans. An analysis of major local and global financial crises in various countries suggests that the main cause of bank losses appears to have been property-related corporate lending, particularly commercial property loans (Kragh-Sørensen and Solheim, 2014). According to the research, estimates of CRE lending-related losses range from 25 to 60% of all banks' losses or problem loans. In general, losses from CRE loans exceeded losses from RRE loans on all occasions except in the United States during the 2008 financial crisis, while Antoniades (2015) concludes that during the global financial crisis credit to non-household real estate borrowers was the main toxic exposure, rather than traditional home mortgages.

Ellis and Naughtin (2010) also argue that CRE property developments have historically posed a greater risk to financial institutions' balance sheets than housing and mortgage markets. Friend et al. (2013) add that banks with relatively high levels of CRE concentration either failed or declined significantly in value, while concentrated exposure to construction or land development loans was the dominant risk driver. Shibut and Singer (2015) add evidence for the riskiness of lending for CRE project development, estimating that such CRE loans had higher loss given default (LGD) rates than other types of loans, and longer workout periods. In addition, banks' made inadequate risk provisioning in normal times as interest rate premia for construction and development companies were barely above those for the other CRE loans and, generally, were below those for commercial and industrial loans. Ross and Shibut (2015) suggest that CRE loans at smaller banks tend to have higher LGDs than those at larger banks, while loan size in relation to LGD displays a negative but declining relationship. With regard to impact on the real economy, Chaney et al. (2010) incorporate the fact that firms use CRE as collateral for lending. By using local variations in real estate prices as shocks to the collateral value of firms that own real estate, they conclude that decreasing real estate values can have a significant impact on aggregate investment.

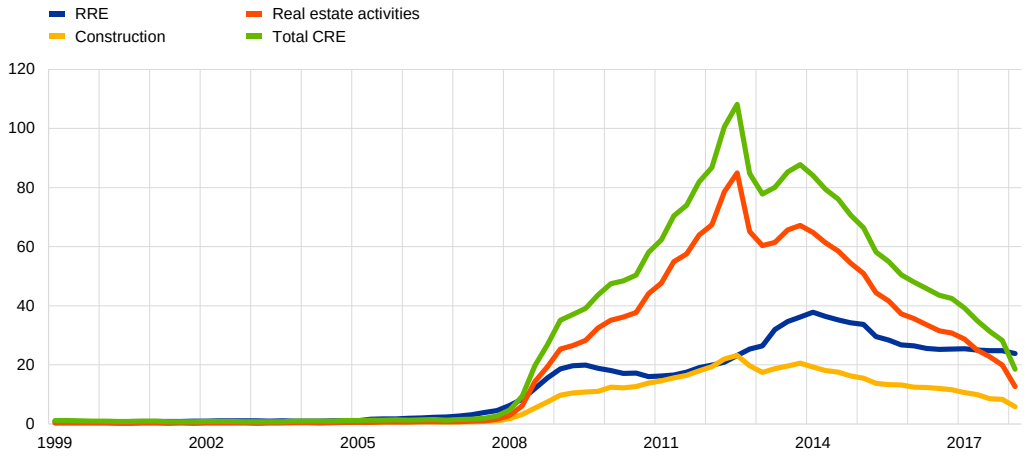
Further evidence can be found from countries in the EU which have experienced a real estate crisis in the past. For instance, in Spain, although total bank credit for CRE was only about two-thirds of total bank lending for RRE, distressed CRE loan volume was almost three times higher than for RRE. This equates to peak non-performing loan ratios of 35% and 6% for CRE and RRE respectively.

At the height of the Irish property boom, one-third of Irish banks' lending was made up of CRE (real estate and construction) lending, up from under 10% in the mid-1990s. **A peak-to-trough decline in Irish CRE capital values of almost 70% between 2007 and 2013 saw a substantial rise in NPLs.** Local authorities established the National Asset Management Agency (NAMA) in order to lower the risks to financial stability stemming from the CRE sector. The agency purchased eligible distressed CRE loan assets from participating financial institutions that, in turn, accepted a haircut of 57% on the nominal amount of such loans. However, Irish banks retained approximately half of their CRE loans, 70% of which were non-performing at the peak (end of 2013) level (see Chart 3). On the contrary, the peak RRE NPL rate stood at 21% in 2014, suggesting that bank losses deriving from their pre-crisis CRE exposures significantly exceeded RRE loan losses.

Chart 2

Banks' non-performing loans in Spain

(EUR billions)

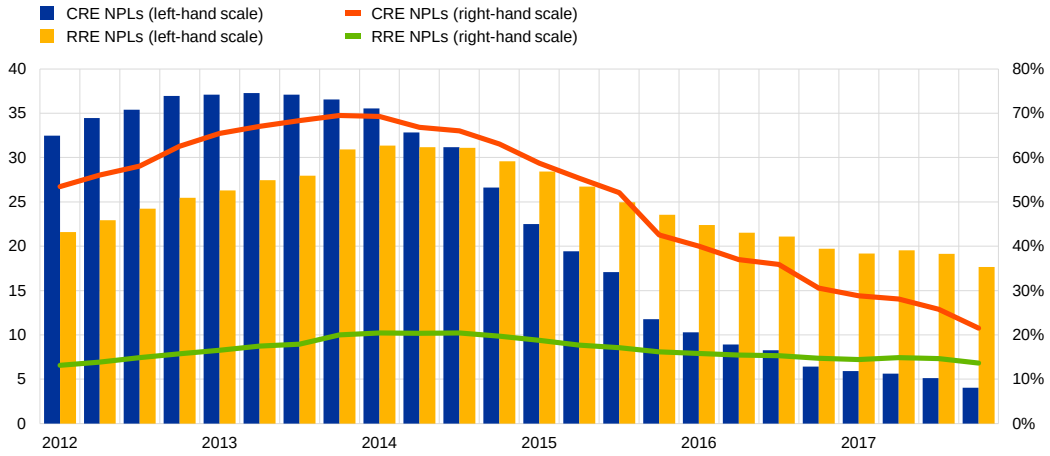


Source: Banco de España.
Note: Total CRE is the sum of real estate activities and construction.

Chart 3

Composition of banks' non-performing loans in Ireland

(left-hand scale: EUR billions; right-hand scale: percentages of all loans)

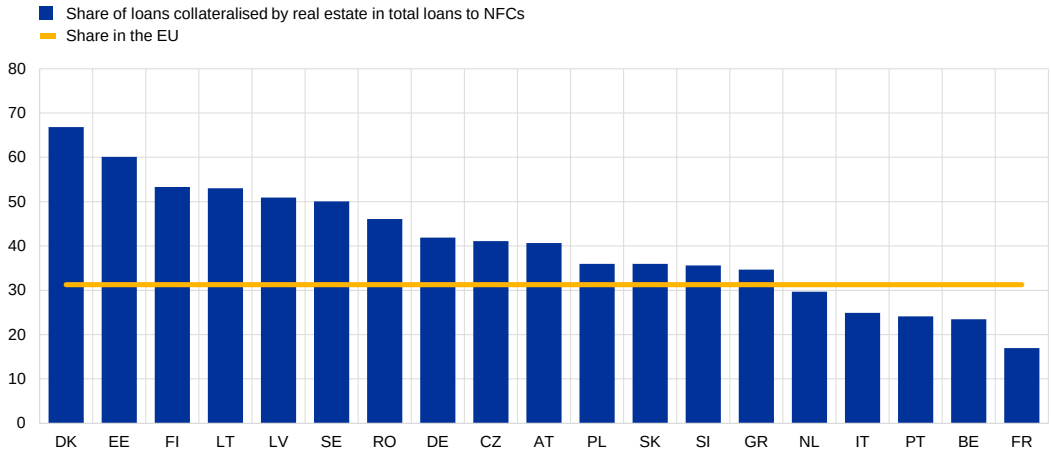


Source: Central Bank of Ireland.

Chart 4

Share of loans to non-financial corporations collateralised by real estate in total lending to non-financial corporations in the EU countries (2018)

(percentages)



Source: ECB – Statistical Data Warehouse (SDW). [8]

[8] SDW Codes:

All NFC loans: CBD2.Q.??.W0.11.S11._Z.A.F.A1100._X.ALL.CA._Z.LE._T.EUR
Collateralised NFC loans by immovable property (domestic):
CBD2.Q.??.W0.11.S11._Z.A.F.A1131._X.ALL.CA._Z.LE._T.EUR
Collateralised NFC loans by immovable property (foreign): CBD2.Q.B0.W0.66.S11._Z.A.F.A1131._X.ALL.CA._Z.LE._T.EUR

3 The challenging data gaps

3.1 Introduction

The assessment of risks related to CRE markets is hampered by the existence of significant data gaps. **Data on CRE are generally scarce, incomplete and/or inconsistent across countries, affecting the feasibility and reliability of analyses of risks and vulnerabilities related to CRE markets.** In its November 2018 report, the ESRB identified only four countries for which all risk assessment data were available at that time and ten countries for which data were missing for at least 11 indicators (ESRB, 2018). However, even if data are available, insights might be limited due to issues such as too-short time series.

This section presents the state of play on data availability in EU countries and gives an overview of the current related issues. It also presents a number of the existing national initiatives for enhancing data availability, as well as recent developments in European official statistics.

3.2 Data availability

There are currently no official data on fundamental variables (such as commercial property values and rents) for most of the ESRB member countries, and data gaps have been filled to some extent from private sources.[9] The main private data sources are Morgan Stanley Capital International (MSCI, which acquired Investment Property Databank Ltd (IPD) in 2012), Jones Lang LaSalle (JLL), Cushman & Wakefield, Real Capital Analytics (RCA) and CBRE. These companies provide indicators on prices, transactions and rents. However, the drawback is that they provide a limited picture, given that data are usually available only for larger cities and might not be fully representative of a country as a whole. In addition, data often take the form of appraisal-based indices (see Box 2 on the reliability of price data at the country level).

Apart from data for CRE prices, data availability is an issue for all the other indicators needed to assess CRE markets. As an example,[10] transaction data are mainly sourced from private data providers and are therefore limited to the transactions they observe or to publicly available information on transactions. These transactions are mainly asset deals, i.e. deals in which the ownership of the respective CRE property is transferred from one legal entity to another. However, this often leaves out share deals, i.e. the transfer of the ownership of a legal entity that owns properties, as these transactions are seldom reported publicly. Transaction volumes, if available, therefore only cover a subset of the transactions involved in asset deals. **Another area where there is limited availability of data is CRE bank lending indicators.** In the ESRB (2018) report, two indicators are used that are based on bank loans collateralised by CRE, from the Financial Reporting (FINREP) dataset. The advantage of FINREP is that it is harmonised across EU Member

[9] The available data regarding the CRE market are detailed in Annex 2 (page 54) of the ESRB's 2015 Report on commercial real estate and financial stability in the EU, December.

[10] For a complete list of data gaps in all ESRB countries see the ESRB's 2018 Report on vulnerabilities in the EU commercial real estate sector, November.

States. However, the time series for bank lending for CRE based on FINREP is quite short and has only been a reasonable basis of comparison since Q2 2017. Before that, the changing compositions of reporting institutions made it impossible for some countries to calculate growth rates. In addition, data from FINREP are based on the delineation of CRE in the CRR and the Capital Requirements Directive (CRD) as non-RRE. **Thus, CRE aggregate derived from FINREP does not include rental housing and therefore does not fit the updated ESRB/2019/3 definition.** For this reason, even though FINREP data are available for all countries, the indicator is an approximation and should be interpreted with caution. This will probably be remedied by data from AnaCredit, which could be available from mid-2020 (see Box 1).

Table 3

Example list of indicators, their availability and further information as used in ESRB (2018)

Indicator	Number of countries with data (29 countries in total)	Further information
Prices – general	15	Shortest time series: 13 years, average: 18 years
Prices – prime	18	Private data provider (JLL), data series starts in 1998 for all countries except Finland (1999), Greece (1999), Hungary (2002) and Portugal (2003).
Yields – prime	18	Private data provider (JLL)
Investment transactions	19	Private data provider (C&W)
Vacancy rates (average across cities)	13	Private data provider (Savills), time series starts in Q3 2017
Real estate investment fund growth	19	Monthly data since year-end 2009
Bank lending collateralised by CRE	27	FINREP (EBA), time series starts in Q3 2014, growth rates since Q2 2017
Exposure of insurers	29	Solvency II (EIOPA), useable time series since Q4 2016 (quarterly data)
Total market size	16	Private data provider (MSCI), coverage between 9% and 38%

Source: ESRB WG-REM.

With regard to the analysis performed using CRE data, the ESRB (2018) report on vulnerabilities in the CRE sector in the EU underlined that the scarcity of data at the country level was a leading cause of the serious limitations of the analysis (by way of example, an overview of data availability for indicators and additional information may be found in Table 3). The ESRB recommendation on closing real estate data gaps (ESRB/2016/14 and ESRB/2019/3) aims to improve the availability of harmonised working definitions and a core set of comparable and promptly-available CRE indicators. As a consequence, **Eurostat will be actively involved in this matter, playing a key role in establishing by 2025**, according to the amended Recommendation ESRB/2019/3, **a common framework at the EU level for the development, production and dissemination of physical CRE market indicators: price index, rental index, rental yield index, vacancy rates and construction starts**. Their work will build on the current developments in official statistics deriving from the efforts of three working groups, as described in Section 3.5.

To compensate for the rather limited availability of data, in 2017 the ESRB launched in 2017 a survey of national authorities.[11] This qualitative survey covers all EU Member States and consists of a self-assessment by national authorities of their domestic CRE markets. In the absence of a rich database covering CRE, the survey is a valuable source and allows more complete information to be gathered on the country-specific features of domestic CRE markets.

The two sections of the survey allow national authorities to self-assess their risk rating and the potential impact of CRE-related risks on their financial systems and the real economy. In the first section, national authorities are asked to assign a risk rating ("no risk", "low risk", "medium risk" or "pronounced risk") to several potential sources of CRE-related risks: the overvaluation of CRE, the growth of CRE prices, lending dynamics, bank lending standards for CRE, risks associated with CRE financing from non-banks, risks related to the financial position of CRE investors, and risks related to the income streams of CRE investors. In the second section, national authorities are asked to assign a rating to the potential impact that the materialisation of CRE-related risks could have on their financial systems and the real economy ("no impact", "low impact", "medium impact" or "pronounced impact"). Specifically, the potential impact is assessed through three types of exposures: the exposures of banks to CRE, the exposures of non-banks to CRE, and the potential for systemic spillovers (i.e. the size of CRE relative to GDP and interconnectedness with the rest of the economy and the financial system). The survey also contains some qualitative questions regarding broader trends and other risks in the CRE market (cross-border aspects of CRE and construction activity) that can also be highlighted. Moreover, national authorities can provide country-specific data through the survey (see ESRB (2018) for details of the questionnaire).

Some progress has been made since the ESRB (2018) report, notably through the amended ESRB recommendation on closing real estate data gaps (ESRB/2019/3, see Section 2.1). By 2025, the aim is to develop a more harmonised framework for monitoring developments in real estate markets in the EU. This will include useful additional breakdowns of lending for social housing and properties owned by end-users – these contain different risk characteristics compared with lending for income-generation purposes. Accordingly, full enforcement of the guidelines will take a long time, leaving mostly unsolved the urgent issue of obtaining the reliable statistics needed to assess current CRE developments in the EU.

In the meantime, a helpful contribution may come from AnaCredit data, which could be used for monitoring purposes but will only be available for euro area countries. For macroprudential purposes it is therefore highly advisable for EU countries outside the euro area to close the remaining data gaps and set up data collections that are similar to AnaCredit (see Box 1 on the CRE risk assessment framework and AnaCredit).

[11] The survey was conducted in the first half of 2017 and updated in September 2017.

Box 1
Using AnaCredit in the CRE risk assessment framework

AnaCredit (analytical credit datasets) is a project to set up a dataset containing detailed information on individual bank loans in the euro area, harmonised across all countries[12].The project was launched in 2011 and data collection started in September 2018.

The global financial crisis showed that aggregate statistics on credit flows were not sufficient to achieve an adequate understanding of the underlying developments, given that a number of financial indicators diverged significantly across different segments of the economy and financial institutions.

The AnaCredit project allows this data gap to be filled, and will support the ECB in performing its tasks, including those related to monetary policy analysis and operations, risk management and financial stability surveillance. The dataset could be available for macroprudential surveillance in 2020. At present, only banks report information on loans to corporations and other legal entities, mostly on a monthly basis. The dataset contains a large number of variables, providing a comprehensive list of data attributes regarding the borrower (identification, activity and financial results), the loan (type, date, amortisation, rate, etc.), possible protections and guarantees as well as counterparty risk (amount in default, probability of default (PD), etc.).

Given its advantages, AnaCredit data may significantly improve the risk assessment for CRE, at least with regard to interactions with credit markets.

- Micro data allow the tail of the distribution of risk indicators to be characterised. The evolution of riskier loans can be assessed in a more appropriate way than is possible using aggregate indicators.
- AnaCredit contains important risk indicators such as lending standards at origination (loan-to-value, interest coverage ratio), creditworthiness of borrowers, protection mechanisms, pledged collateral, and non-performing and default status.
- In addition, the aggregate database at the euro area level will allow cross-border financing to be monitored.

However, a major drawback is the fact that coverage is currently limited to euro area countries. Complete EU coverage would be highly desirable in order to assess the risks for all ESRB member countries and avoid biases in the calculation of cross-border exposures and financing.

Finally, there are multiple options for identifying CRE loans. The first (a narrow approach) relies on the variable “purpose of the loan”. Two sub-categories correspond to a restrictive definition, leading to a small number of borrowers belonging with certainty to the CRE sector:

[12] See Regulation (EU) of the European Central Bank of 18 May 2016 on the collection of granular credit and credit risk data (ECB/2016/13).

- "Commercial real estate" – all real estate properties not used for residential purposes as defined in the CRR.
- "Residential real estate" – since AnaCredit only lists loans to corporations and legal entities, this sub-category aggregates residential properties owned by enterprises that belong to the CRE sector, in line with the ESRB definition.

However, such a narrow approach would also raise some additional issues:

1. Loans provided to CRE companies but not specifically dedicated to the purchase of a given property could be omitted, although companies' ability to repay the loan could depend significantly on the state of the CRE market.
2. Additional checks might be necessary with regard to the availability, comparability and quality of the variable “purpose of the loan”, at least for the first waves of data.

The second option (a broad approach) is to consider all borrowers from the following sectors according to the NACE Rev. 2.0 statistical classification, as suggested by Recommendation ESRB/2019/3: real estate activities (sector L) and construction (sector F). In this case, the resulting aggregate may include loans belonging to CRE, as it might not be possible to exclude civil engineering and loans for real estate agents as suggested by Recommendation ESRB/2019/3. Additionally, it may include loans provided to companies that are not specifically used for the purchase of a property. However, due to their classification as belonging to the two NACE sectors, their economic success might depend closely on developments in the CRE market. Finally, both the availability and the quality of data are a priori better for the NACE code than for the purpose variable.

3.3 Lack of data comparability

The lack of a common definition for CRE at the European level before end-2016 is at the heart of many of the statistical challenges that arise when assessing and comparing CRE markets. To date, almost no data collection has been set up fully in line with the ESRB’s definition. As a result, data used in the risk assessment follow different definitions. **In the existing scoreboard (ESRB, 2018), some definitions differ between countries for the same indicator, while others differ between indicators within the same country.** For instance, the challenges involved in comparing the information between indicators are striking when considering price and yield indicators (see Box 2 for a detailed discussion).

In addition, while financial data such as FINREP define CRE according to the CRR (i.e. mortgages on offices and commercial premises), **price data include nationally-diverging compositions of selected CRE segments. As a result, price data represent only a subset of the CRR’s definition of CRE.** For some of the suggested breakdowns of the updated ESRB definition, it is unlikely that price data will ever be made available. For instance, owner-occupied properties can be very heterogeneous (e.g. lime plants, car factory halls, office buildings) and are hardly ever traded, which could make it impossible to compute either a valuation or a transaction-based price index.

Table 4

Dimensions of comparability

Comparability of indicators in a country →

	Indicator 1	Indicator 2	Indicator 3
Country 1			
Country 2			
Country 3			
Country 4			
Country 5			

Comparability of indicators between countries ↓

Source: ESRB WG-REM.

Summing up, in the cross-country dimension both the data collection methodology and data coverage differ in many cases. **As a consequence, the comparability of the risk assessments is diminished.** However, the magnitude of the reduction in comparability is difficult to assess – in some cases it is likely that differences between definitions are negligible. For example, for price data the methods used to calculate price indices usually apply higher weights to more relevant segments, reducing the effect of diverging compositions.

The ESRB's risk assessment methodology applies the same thresholds to all national data. **However, potential problems with comparisons at the cross-country level resulting from this pooling are mitigated by several factors.** First, some indicators are normalised by national data (e.g. the yield or indicators, see Section 4.1.2.). For other indicators, the issue of diverging definitions of CRE is cancelled out as they are subject to the same data collection and coverage (e.g. bank exposures collateralised by CRE relative to Tier 1 capital). For other, more country-specific indicators, the WG-REM suggests including these in the risk assessment, albeit outside the mechanical scoreboard and without applying a threshold (in Step 3, see Section 4.1.3).

Nonetheless, even data exhibiting severe limits with regard to comparability, or data covering only some parts of CRE, may provide valuable insights where authorities are faced with a scarcity of information.

Box 2

Reliability of price data at the country level

From a financial stability perspective, price developments are a key indicator used to identify the cyclical position of the CRE market. Rising prices imply increasing risks for investors and lenders from a potential correction, as higher equity or credit volumes must be employed in order to invest in CRE property. Price drops lower the value of the collateral and could lead to an increase in non-performing loans and losses for banks if previously overvalued collateral has to be liquidated in a CRE market downturn. It is therefore crucial that price data for CRE reliably reflects developments in the respective national market.

To date, there are 14 countries with no available general price data, irrespective of the source (public or private).

An issue that should be considered for financial stability purposes is that of valuation-based versus transaction-based data. In this respect, the 2012 international conference on "Commercial property price indicators", held jointly by the Bank for International Settlements, the ECB, Eurostat, the International Monetary Fund and the Organisation for Economic Co-operation and Development, concluded that, ideally, data would be based on transactions but, considering the generally low liquidity of real estate markets, in particular at times of market stress, as well as practical issues related to data collection and sampling given the considerable heterogeneity of commercial properties, valuation-based data are also likely to be of importance.

MSCI's price data for CRE are mostly valuation-based. The indices are made up of valuations of appraisers, which need not necessarily represent the values investors are willing to pay or are actually paying. Further, valuations tend to smooth actual transaction values and, thereby, mask turning points in the CRE cycle that are relevant for macroprudential surveillance. For MSCI's CRE price indices for France, Ireland, the Netherlands and Sweden, a hybrid of valuation-based and transaction-based calculations is used. The data set of valuations is therefore amended by the CRE transaction prices of contributing funds[13]. By contrast, for Germany, Denmark, Italy, Poland and the United Kingdom, national central banks publish data which could also be derived from other private sources (e.g. data for Germany). Although transaction-based price indices potentially reflect the development of actual market prices of CRE properties better than valuation-based indices, they might still paint an incomplete picture of the CRE market. For example, companies may transfer special-purpose entities which own CRE property, but not the property itself, so that no property transaction is recorded.

The use of different data sources and calculation methods limits the comparability of price developments between countries. However, even if data from national authorities or from private sources are available, comparability between countries might not be easy as definitions, coverage, as well as calculation methods, may differ from one country to another. This also depends on the type of property included in the index and on how much of the market is covered. For instance, MSCI's indices cover properties from the industrial, office, retail and housing sectors and, therefore, fit the ESRB's definition of CRE. By contrast, some price data published by national authorities contain only the office and the retail segment. A priori, it is not clear whether one approach should be preferred to the other as specific market segments may be of differing importance, depending on the underlying structure of the CRE market. Aggregating a higher number of segments could mask heterogeneous developments, while excluding CRE segments from the overall price index would mask their price developments completely. It may therefore be necessary to scrutinise whether the heterogeneous price developments of CRE segments are meaningfully captured by aggregate price indices.

Regarding coverage of the market, MSCI's coverage of a European country's CRE market is the highest for Sweden, with 48.2% of the "professionally managed market", followed by France

[13] See Eurostat (2017), “Commercial property price indicators: sources, methods and issues”, *Statistical Reports*.

(44.5%), Ireland (37.7%), the Netherlands (35.3%), Finland (29.2%), Portugal (28.7%), Italy (22.1%), Austria (20.1%), Belgium (19.4%) and Spain (18.3%).[14] MSCI's coverage is very low for Poland (12.3%), the Czech Republic (12.1%), and Hungary (6.3%). For data provided by national central banks, only sparse information is available on the market shares covered. It is not possible to assess the overlap of MSCI's "professionally managed market" with the "investible" CRE market, which is also only a share of total CRE, as data on all these delineations are missing.

3.4 National initiatives for enhancing data availability

National authorities have been working to ensure they are better able to comprehensively assess the financial stability risks emanating from CRE. These initiatives have generally taken the form of loan-level data collection and drawing on existing official, administrative or supervisory data.

National initiatives can provide useful insights into the closing of data gaps both in terms of effectively performed work and in terms of identifying potential pitfalls and challenges. It will be important from a European perspective to achieve a certain level of harmonisation if a consistent and comprehensive approach to CRE risk assessment is to be utilised at a pan-European level.

The Netherlands is among the countries that have pressed ahead with a national data collection. In the recent crisis, several Dutch banks suffered substantial losses because of major problems in their CRE portfolio, and a systemically important bank was nationalised. De Nederlandsche Bank has highlighted and analysed the risks of the CRE market on various occasions, including the CRE Asset Quality Reviews in 2013 and 2014, and in financial stability reports in 2012, 2015 and 2018. During these analyses, it became apparent that there was a lack of granular data on banks' CRE financing.

To remedy this, De Nederlandsche Bank has set up a commercial real estate loan-level data survey (CRE LLD) which was first conducted at the beginning 2016 and is repeated every six months. The survey covers the three largest Dutch banks, which account for some 95% of all CRE financing provided by Dutch banks. It is partly modelled on AnaCredit, making use of its definitions and data structure, albeit with additional specific real estate variables: the interest rate coverage ratio (ICR), the debt-service coverage ratio (DSCR), the loan-to-value (LTV) ratio, property location, location quality, rental income, square metres, and end date of rental contract. To cope with the large amount of loans and collateral (over 100,000 loans), the survey is split into counterparty, instrument (loan), collateral and rental tables, as well as three cross-reference tables. This avoids reporting the same information multiple times. De Nederlandsche Bank requests this information on the basis of its responsibility for financial stability, and not specifically for banking supervision purposes (this responsibility and the corresponding data collection powers are stipulated in Article 9d of the Bankwet 1998 law and Articles 1 and 2 of the Uitvoeringsbesluit Bankwet 1998 law).

[14] See MSCI (2018), "Real Estate Market Size", *Research Report*. MSCI defines the real estate investment universe in each national market as the aggregation of real estate assets that meet all of the following conditions: i) are held as investments for the purposes of delivering a mix of income and capital returns; ii) are professionally managed, either by the beneficial owners or by third party management businesses; iii) are structured as investment interests within portfolios; iii) these direct real estate portfolios, managed on behalf of institutional or private investors, are financed via a mix of equity and debt.

The data submitted via this survey have enabled De Nederlandsche Bank to better monitor the size and structure of Dutch banks' CRE financing activity. A dashboard has been created showing risk variables including outstanding amounts, risk weighted exposure amount, LTV, PD, LGD, the number of defaulted loans, interest rate profile, maturity, distribution across different types of real estate, and the geographic distribution of loans across the Netherlands. As the survey is currently repeated every six months, the dashboard can be updated with the same frequency. From 2019 onwards, reporting will be quarterly. An important caveat remains: the survey focuses only on Dutch banks, but an increasing amount of CRE lending is provided by non-banks and foreign actors. This activity is not currently monitored, although it will need to be included in future monitoring.

Against a background of, inter alia, increasing rental property prices and CRE exposures forming part of the story of the last two Danish banking crises, Danmarks Nationalbank has begun using transaction-level data as well as micro data on property companies in its CRE market monitoring.

The Real Estate Collateral Registry is used to try to generate an indicator for speculative activity in the CRE market and for constructing approximate LTV distributions for new CRE lending. While the data are, almost, available in real time, there may be lags between the actual purchase and the entry of information in the land registry. In addition, an important caveat is that properties sold in bundles are missing, as companies are not captured by this register source.

Another data source is the Central Business Register, which contains annual reports from property companies that own CRE (both domestic and foreign) in Denmark. The aim is to achieve a better insight into the structure and financing of CRE companies. The registry contains yearly observations, data being available with a six-month time lag. Using this data source, Danmarks Nationalbank has recently conducted an in-depth analysis of property companies, broken down by ownership structure (pension and insurance companies, foreign investors and other domestic investors). The analysis contains detailed information on the distribution of balance sheet growth, solvency ratios and interest coverage ratios, inter alia, for property companies. One important conclusion from the study is that, even though market activity is high, both domestic and foreign property companies appear to be better capitalised now than before the financial crisis. In particular, solvency has improved significantly in the tail of the distribution.

Narodowy Bank Polski began analysing the CRE market in greater detail in 2011. The first general information was collected from the largest real estate brokers, as well as from real estate management and consulting companies. Since 2013, Narodowy Bank Polski has run a mandatory, semi-annual questionnaire on the rents and transaction prices of office, retail and warehouse properties located in the 16 voivodeship capital cities. This questionnaire is part of the national statistical programme run by Statistics Poland, although it is conducted by the 16 regional branches of Narodowy Bank Polski. In addition to data on rents and prices, data are collected on the size, age, location, quality, etc. of buildings. Information related to large investment transactions is obtained from a private company – it is used to calculate transaction volume and to conduct a transaction price analysis. Narodowy Bank Polski data are complemented with data from Statistics Poland and professional companies on the available gross leasable area.

The main results are reported for the average and hedonic transaction price for the Warsaw office market (the biggest) and the whole of Poland, and for retail buildings in the whole of Poland. Average office and retail rents are reported for the largest cities and aggregates, while the hedonic rent index for the office and retail market has so far only been presented for Warsaw, Poznań and Tri-City.

With the help of hedonic rental and transaction price data, the return on equity of an average office investment is calculated for three loan to cost levels.

Data related to the financing of CRE by banks in Poland are collected through FINREP. Until 2017, data were available for mortgages for offices and other commercial property, while since 2018 the data have been broken down into mortgages for office, retail, warehouse and other commercial properties.

In 2017 the Magyar Nemzeti Bank started developing a comprehensive commercial real estate market analysis framework, the first step being wide-ranging market data collection from mostly private companies. The second step was to establish a Commercial Real Estate Market Report – published semi-annually by the Magyar Nemzeti Bank. The data collected from market participants covers all important aspects of domestic and regional CRE markets, including investment volumes, rents, yields and real estate developments.

The Commercial Real Estate Market Report seeks to provide an overview of underlying economic processes and the system of interactions between economic agents. The report therefore represents a unique central bank publication at the international level, given its integrated presentation of the macroeconomic and financial stability aspects of the CRE market. The set of information used by the publication includes the three main areas explained below.

First, the presentation of the macroeconomic environment influencing the CRE market is based on the information in the Magyar Nemzeti Bank's Inflation Report. Key statistical variables relevant to the CRE market include changes in the volume of gross value added, employment trends, changes in retail sales and changes in the yield environment.

Second, the analysis of current CRE market processes relies primarily on information provided by real estate consulting firms. The analysis of developments in the CRE market is presented by market segments (office market, retail market, industrial-logistics market, hotel market), but due to the capital city-focused market structure, the bulk of the data are limited to Budapest. A micro-database is available to monitor construction projects.

Third, the analysis of the CRE financing market relies primarily on balance sheet data from credit institutions and the interest rate statistics collected by the Magyar Nemzeti Bank; information gathered on the qualitative features of lending developments in the Lending Survey is also used. With regard to banks' financing activities, outstanding loan stocks and new disbursements are analysed based on loan purpose (CRE development, investment), loan currency and property type.

3.5 Developments in official statistics

In the past few years, expert groups from the ECB and the ESRB sought to shed light on the availability of data for CRE. **In 2017 the European Commission and the ECB established a joint expert group to ascertain what data sources existed and to further explore the development of commercial property prices and associated indicators.** The main results of the stocktaking exercise were that data sources for some of the indicators are absent, there is no international consensus on appropriate methods, and in general there are scarce resources at the national level or experts on the topic. Overall, collecting data is technically difficult in this domain and falls outside the traditional data collections generally handled by most national statistical institutes. The stocktaking exercise also showed that there are no "quick wins" that would allow comparable and reliable new data to be supplied over a short time horizon.

In order to manage challenging data gaps, **the European Statistical System (ESS) and the European System of Central Banks (ESCB) have set up three work streams focusing on, respectively: supply and demand indicators** (vacancy rates, building permits, construction starts and works completions) – the Short-Term Statistics Working Group (STS) under the umbrella of the ESS; **the physical market (real estate prices, rents and yield)** – the Task Force on Commercial Real Estate Indicators (TF CREI); **and the development of financial variables pertaining to real estate markets** – the ESCB's Real Estate Task Force (RETF).

With regard to supply and demand indicators, as things stand one-third of EU Member States' national statistics institutes produce data on construction starts and work completions. The challenge, therefore, is to initiate data production in the remaining two-thirds of EU Member States, to harmonise the data as well as to amend the data collection by adding further information which would make it possible to distinguish between property types. The STS plans to start methodological work and to set up pilot projects in 2019. Vacancy rate statistics are even more scarce and are currently mostly provided by private data providers. The methodological development and harmonisation of these statistics requires significant resources, and results are not expected in the near future, i.e. not before mid-2020 at the earliest.

With regard to physical indicators, there are only a few Member States where national statistics institutes or national central banks produce commercial property price indicators. The information used is mostly sourced from land registries, tax records or valuation offices. For Member States, the breakdown by property type, as suggested by the ESRB Recommendation on closing real estate data gaps, is sometimes available, although a breakdown by location is usually not available. Data are seldom available for the related indicators needed to assess valuations such as rents and yields. Furthermore, there are ongoing debates on methodological issues, while resources and experiences are scare at the national level. There are very few international best practices. In this respect, the TF CREI is seeking to set up pilot projects with a specific focus on data sources (some of which are supported by Eurostat grants) in the course of 2019 and 2020.

Lastly, with regard to financial variables, the ESCB RETF will provide guidance on data collection and the interpretation of indicators mentioned in Recommendation ESRB/2019/3. This guidance pertains to the scope of the data collection and the definition of indicators, and will provide harmonised solutions to the common issues that will be encountered during the process. In the short term, AnaCredit data will markedly improve the surveillance of banks' exposure to the

CRE market. This can be augmented by data available at the national level, to allow comparable indicators to be compiled based on the guidance provided by the RETF.

Note, however, that AnaCredit currently still lacks certain indicators which might be useful for the identification of risk. These are: property type, property use, information on covenants, and rental income or cash flows (see Box 1 for more information on AnaCredit for macroprudential surveillance). The RETF may suggest including these indicators in the next major revision of AnaCredit. Moreover, to capture the full link between the financial sector and CRE, the banking-related scope of AnaCredit will need to be broadened to encompass all lenders and investors (non-banks such as insurers, pension funds and investment funds).

One of the latest developments at the international level was the G20 thematic workshop organised by the IMF in Luxembourg in February 2019. This workshop refined the G20 data gaps target for commercial property indicators, making it clear that both data and metadata are required, and also clarifying that national acceptable data are sufficient in the absence of any harmonised data.

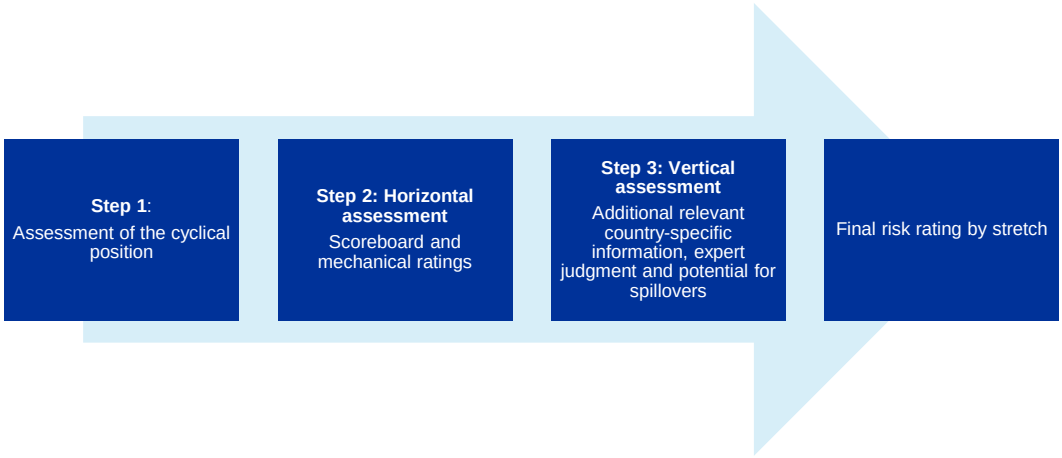
4 The assessment framework for CRE-related systemic risks

From a macroprudential viewpoint, **the specific features of the CRE market** discussed in Section 2, such as the wider array of investors and funding sources compared with RRE, **imply that a tailored framework for risk assessment, as well as for the policy analysis addressed later in the report, is required for that sector.** The development of assessment guidance is necessarily conditional on statistical progress, as the specifics of CRE markets heavily affect the data required to promptly identify the sources of systemic vulnerabilities and then consider the potential policy tools required to mitigate them.

This section puts forward guidance for assessing CRE vulnerabilities, starting with the framework underlying the vulnerability analysis performed in ESRB (2018), which also benefited from the initial reflections made jointly with the WG-REM. A number of innovations are introduced to improve the soundness and transparency of the final risk assessment and facilitate its explanation, thus enhancing conceptual consistency by including the fully fledged RRE framework recently developed by the WG-REM. This is not to neglect the deep differences in the structural features of CRE compared with those of the RRE; these are operatively taken into account through a different selection of indicators and a different balance between common and country-specific considerations.

Accordingly, the analysis of CRE-related risks is structured in three steps, in a sequence that leads to a final risk rating by stretch (Figure 1).

Figure 1
Overview of the steps in the updated CRE risk assessment framework



Source: ESRB WG-REM.

The examination of the cyclical position (Step 1) examines the information content that a given set of indicators may convey on the intensity and timing of vulnerabilities, depending on the cyclical stage of CRE markets and the ensuing interactions with the financial system, and the general

macroeconomic outlook. In line with the framework for RRE, **CRE vulnerabilities are then detected based on a common set of indicators (Step 2)** across three different conceptual categories of risk (collateral, income and activity, and financing stretches). Compared with the analysis made in ESRB (2018), the potential for spillovers to the rest of the economy is not considered to be an additional source of vulnerabilities per se, since it mostly relates to the intensity and the transmission channels through which the original shock is propagated beyond CRE markets to the financial system and the real economy. A further innovation introduced by the WG-REM entails **complementing the horizontal (across-country) reading with a vertical (within-country) reading based on a variety of country-specific indicators, including those related to the intensity of spillovers (Step 3)**. With regard to the selection of the relevant indicators – which might differ on a case-by-case basis as some of these are only available for some countries or, if available, vary in terms of how reliable and informative they are – a consultation process with national authorities is strongly advised to allow the ESRB to make the best use of complementary indicators and to operate a sound interpretation of the conclusions drawn from the scoreboard. **The two levels (Step 2 and Step 3) define an integrated approach that allows risks to be quantified along a four-ladder rating system.**

4.1 Building blocks of the CRE risk assessment

In line with the RRE framework, **the CRE risk assessment starts with an appraisal of the cyclical position of CRE markets (Step 1)**, through which available indicators are used in order to understand the intensity and the duration of expansions and downturns in CRE markets.

A horizontal risk assessment then follows (Step 2) on the basis of the scoreboard, which includes a selected set of common indicators used to "mechanically" deliver an initial risk classification of the national CRE markets, by comparing the current reading of each indicator with the respective thresholds. The latter are derived either from the distribution of an indicator across countries and over time or from expert judgement**.** In this respect, the scoreboard includes a limited set of indicators, mostly cyclical in nature, that are available for all countries and that are computed-based on well-documented and harmonised statistical grounds. Accordingly, indicators referring to single segments of CRE markets, with changing representativeness and statistical reliability across countries, are not included in the scoreboard, and are preferably left for the more in-depth country-level analysis that is performed in Step 3. Importantly, this is the case for the prime market indicators that were considered in the approach that was developed on a preliminary basis in ESRB (2018). Moreover, the scoreboard is set up to work prospectively should data become available in the near future, given the several initiatives currently in place. As an example, the progressive incorporation of new waves of data from AnaCredit (see Box 1 in Section 3) would make it easier to detect risks emanating from banks' lending for CRE and would facilitate a sounder analysis of the transmission channels. Nevertheless, at this point the quality and informative value of data from AnaCredit can only be judged at an experimental level. **Thus, when the time is ripe for a reasonably long time series to be available, the statistical robustness of these indicators will need to be tested thoroughly in order to ensure the risk assessment is reliable.**

At the same time, the WG-REM has envisaged a contingent set-up of the scoreboard, meant to support operative guidance in the interim period prior to the expected production of new statistics. As the planned statistical progress is achieved over time, the new data will be gradually received, and the preferred format of the scoreboard more extensively applied. More generally**, the selection of indicators included in the scoreboard is intended to be flexible, since it may be revised as the production of additional data comparable across countries gradually begins.**

The addition of national specific information in Step 3 (the "vertical" step) serves to complement and adjust the findings of Step 2, given that CRE markets are – notoriously – largely heterogeneous and display a wide range of country peculiarities (Section 2). An important dimension relates to the degree of externalities or spillovers from CRE markets to the rest of the economy. In contrast to the approach initially followed in ESRB (2018), in which this aspect represented an additional source of risk in the scoreboard, the WG-REM argues for spillover indicators to make a better contribution to informing the intensity and the timing by which the identified vulnerabilities may materialise and are propagated to the financial system, both domestically and across borders. In this vein, this class of indicators does not enlarge the list of possible categories of risks, but instead enriches the set of country-specific information (Step 3) that may help to adjust the initial horizontal rating (Step 2).

4.1.1 Step 1 – characterising the cyclical features of CRE

A notable innovation in respect of the preliminary approach adopted in ESRB (2018) is to start the risk assessment with an appraisal of the cyclical position of CRE markets, which was not previously considered. The rationale behind this is that the information content of statistical indicators and the timing of the materialisation of vulnerabilities may differ, depending on the cyclical position of CRE markets, in line with the reflections set out in the WG-REM framework for RRE (ESRB, 2019).

This section sets out some options that would support an assessment of the cyclical stance of CRE markets (Step 1), starting in a first-best world with much fewer data gaps and continuing to the current situation in which severe data issues constrain the selection of a feasible approach.

A cohort of relevant indicators are chosen and their values cross-checked in order to assess the strength (amplitude) and breadth (length) of the cycle. As with RRE, it is also vital to consider the co-movement of variables when analysing CRE cycles from a macroprudential perspective. **An initial list of potentially useful variables could include commercial property capital values, rents, yields, lending and investment flows, transaction volumes and vacancy rates (see Figure 2).** Additional variables that may usefully be taken into account to help assess the amplitude and duration of the cycle include:

- forward-looking construction indicators – stock expected to come on stream, under construction or in the planning pipeline;
- balance sheet data for commercial property developers/investors;
- the structural characteristics of CRE markets – zoning restrictions, fiscal incentives and construction lags.

The first phase in Figure 2 is the "expansion" phase. In this phase CRE prices, lending and non-bank investment flows grow moderately, while a range of indicators co-move, pointing to a pick-up of activity in the sector. The number of CRE transactions increases and vacancy rates decrease across some or all CRE sectors. The construction sector starts to respond, additional CRE space enters the planning process, and the development of new sites begins. CRE yields begin to fall and signs of price overvaluation (as measured by price-income ratios or via more sophisticated econometric models) – and expectations of further capital and rental growth take hold. As competition between lenders becomes more intense, CRE lending standards may also begin to deteriorate, bank balance sheets may become more concentrated in CRE, and developer or investor balance sheets may typically become more leveraged.

The "expansion" phase may be further divided into two different stages, namely "firm expansion" and "mature expansion". Firm expansion is characterised by robust growth in prices, investment and lending activity, while vulnerabilities remain negligible. As the cycle moves to a more mature phase, vulnerabilities (e.g. price overvaluation / oversupply of commercial units, deterioration of lending standards) begin to accumulate. Price growth may moderate and fewer transactions may occur, precipitating a slowdown in investment (and new lending). This distinction is important as it may help to inform risk assessment and the debate over policy options, which may vary according to the maturity of the cycle.

During the "downturn" phase, misalignments begin to correct as CRE prices revert to fundamental values, while CRE lending and investment start to contract. Where construction plays a large role in employment, lower CRE investment will have a negative impact on property development, which will feed into rising unemployment and a fall in household disposable incomes and wider economic activity. In turn, this will hamper consumption and, as a consequence, firms' profitability, impairing their ability to meet rental obligations. CRE capital values, rents and CRE investor cash flows will decline, making it more difficult to repay bank loans and yields, ultimately also potentially reducing future levels of lending and investment.

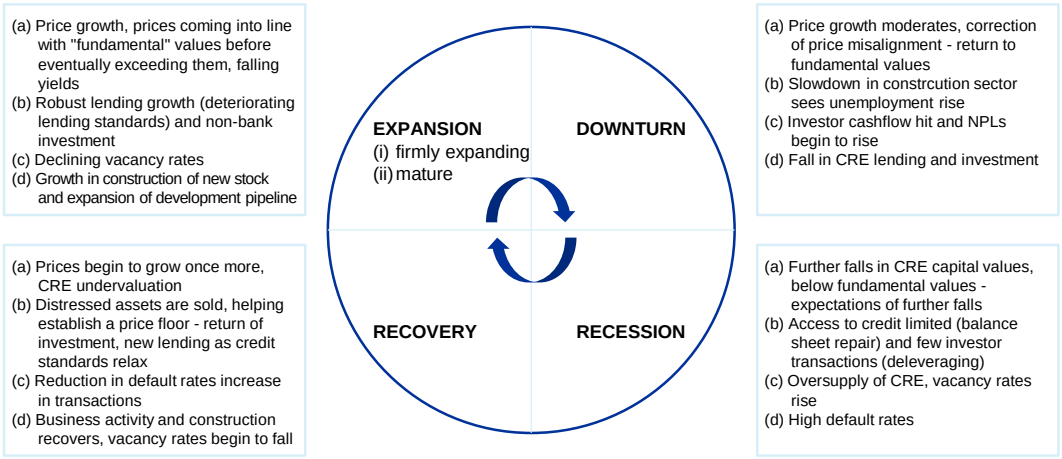
The expectation that commercial property prices will continue to decrease can result in CRE values falling below fundamental levels during the "recession" phase. A downward adjustment in prices may also occur, due to the further contraction of new lending / new non-bank investment flows connected with lower collateral values, a rise in banks' non-performing loans, the lower creditworthiness of property developers/investors due to a large credit overhang, and heightened uncertainty in the forecasts of CRE market developments. Depending on the severity of these factors, it may be desirable to distinguish between a mild recession and a bust.

Soon after CRE values have reached a trough, the market enters its "recovery" phase, which may occur gradually and tends to coincide with a macroeconomic recovery. Early on, credit growth and investment can remain subdued as the supply of and demand for both face persistent headwinds, against a backdrop of depressed collateral values and rents, and unemployment.

There are a number of other important factors, for which data are still limited but improving, that may be usefully considered in the context of a comprehensive cyclical assessment. These include the involvement of overseas and non-bank investors, and the synchronisation of CRE markets.

Figure 2

The cycle of the commercial real estate market



Source: ESRB WG-REM.

4.1.1.1 Determinants of CRE cyclicality – conditional on limited data availability

The current scarcity and incompleteness of commercial property data (see Section 3), in particular in respect of many of the indicators shown above, hampers efforts to carry out a comprehensive analysis of CRE cycles across countries. Efforts to address these data shortcomings are, however, underway (see Section 3.5)[15] and will facilitate a more formal assessment of CRE cyclicality in the years ahead. In the meantime, **the WG-REM has been working with the limited range of CRE data available, for selected EU countries on a relatively comparable basis,** in an effort to develop an indicator capable of providing some degree of insight into the current cyclical phase of CRE markets across Europe. To this end, a dataset comprising cross-country data on CRE capital values, rents and yields (sourced from MSCI or from national data if available) and a series of ratios showing the evolution of commercial property prices relative to a selection of national macroeconomic indicators has been assembled. From this it has been possible to construct two individual indicators.

1. CRE price gap (with one-sided HP filter)

The first suggested approach **for the assessment of CRE cyclicality adopts the HP filter methodology of Hodrick and Prescott (1997)[16] to identify long-run deviations from commercial property price trends, or "CRE price gaps"**. In this regard, it resembles an exercise undertaken by Agnello and Schuknecht (2009)[17] which looked at the residential property market. As

[15] See ESRB Recommendation on closing real estate data gaps (ESRB/2019/3).

[16] See Hodrick, R.J. and Prescott, E.C. (1997), "Postwar U.S. Business Cycles: An Empirical Investigation", *Journal of Money, Credit and Banking*, Vol. 29, No 1, pp. 1-6, in which the authors propose a method to decompose a time series into trend and cycle.

[17] For more see, Agnello, L. and Schuknecht, L. (2009), "Booms and busts in housing markets, determinants and implications", *Working Paper Series*, No 1071, ECB, Frankfurt am Main, July.

the standard HP filter is forward and backward-looking it triggers a well-known endpoint problem. Therefore, the backward-looking one-sided HP filter is implemented, leading to stable endpoints irrespective of the length of the time series. As in Borio and Drehmann (2009), the value of the smoothing parameter, as taken from Agnello and Schuknecht (2009), is quite high in order to "better capture the gradual and cumulative build-up of imbalances, which could be missed if the trend followed the actual data too closely"[18]. This is done despite the known shortcomings of the HP filter, as it serves in this instance as a useful approximate indicator of the cyclical position.[19]

Once these values have been calculated, a simple rule is applied to summarise our assessment of the current cyclical position of the commercial property market. Each phase is distinguished by a combination of the extent and sign of the CRE price gap with the direction of change (i.e. whether it is increasing or decreasing; (see the heat map key in Figure 2).

2. Deviation between ECB CRE value misalignment indicator and its long-run average value

An alternative methodology is based on the ECB's assessment of commercial property price misalignment, as outlined in Box 6 of the ECB's 2011 Financial Stability Review[20], which is also included as an indicator in the Central Bank of Ireland's Systemic Risk Pack.[21].**According to this approach, a series of ratios involving commercial property values and factors that influence property markets, such as macroeconomic variables and aggregate indicators of CRE supply and demand, are calculated[22].**

Two broad categories of indicators are created for each country reviewed. The first group of ratios compares commercial property values with three variables that proxy macroeconomic conditions – GDP, private consumption and employment. Two indicators of property income streams, i.e. the ratio of commercial property values to rents, and CRE yields, make up the second set of ratios. The current deviation of each individual ratio from its respective long-run mean value is calculated, and the average of these five figures is obtained. The resultant estimate of commercial property price misalignment is the value on which this cyclicality assessment is based.

As in the case of the process described in the HP filter-based approach, there is a distinction between the different phases of the cycle based on the level of the indicator (positive or negative) as well as the direction of travel (increasing or decreasing) (see heat map key in Table 5 and Annex 1 and Annex 3 for further information).

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18 See Borio, C. and Drehmann, M. (2009), "Assessing the risk of banking crises – revisited", *BIS Quarterly Review*, March.

19 See Hamilton, J.D. (2018), "Why You Should Never Use the Hodrick-Prescott Filter", *Review of Economics and Statistics,* Vol. 100, No 5, pp. 831-843. Drehmann, M. and Yetman, J. (2018), "Why you should use the Hodrick-Prescott filter – at least to generate credit gaps", *BIS Working Papers*, No 744, September.

20 See European Central Bank (2011) "Indicators for detecting possible value misalignments in commercial property markets", *Financial Stability Review*, December.

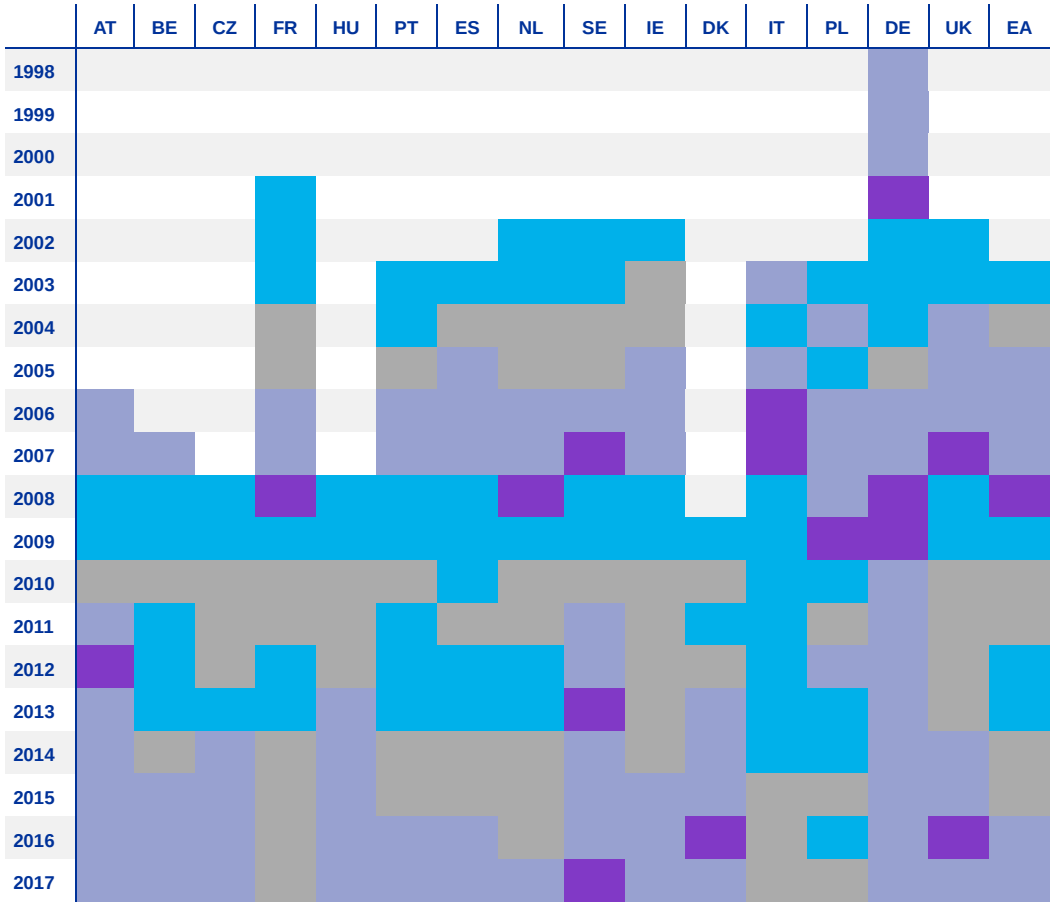
21 See Central Bank of Ireland (2019), "Systemic Risk Pack", March.

22 The underlying data for the misalignment indicator are denominated in EUR for reasons of consistency. This is of particular importance for non-euro-area countries in order to be in line with other euro-area-countries that are analysed in this report. However, it should be noted that for non-euro-area countries exchange rate changes lead to changes of the GDP and consumption which are beyond the factual development of those variables, when calculated in local currency. On the other hand foreign investors play a significant role on several non-euro-area countries' CRE markets, like for instance in Poland, where in many cases prices and rents are quoted in EUR. This generates foreign exchange risk to tenants, who make earnings in local currencies.

Table 5

Commercial property price gaps with one-sided HP filter and λ = 10,000 (annual data)

	increasing	decreasing
positive price gap	"expansion"	"downturn"
negative price gap	"recovery"	"recession"



Source: ESRB WG-REM.

3. Findings of cyclical indicators

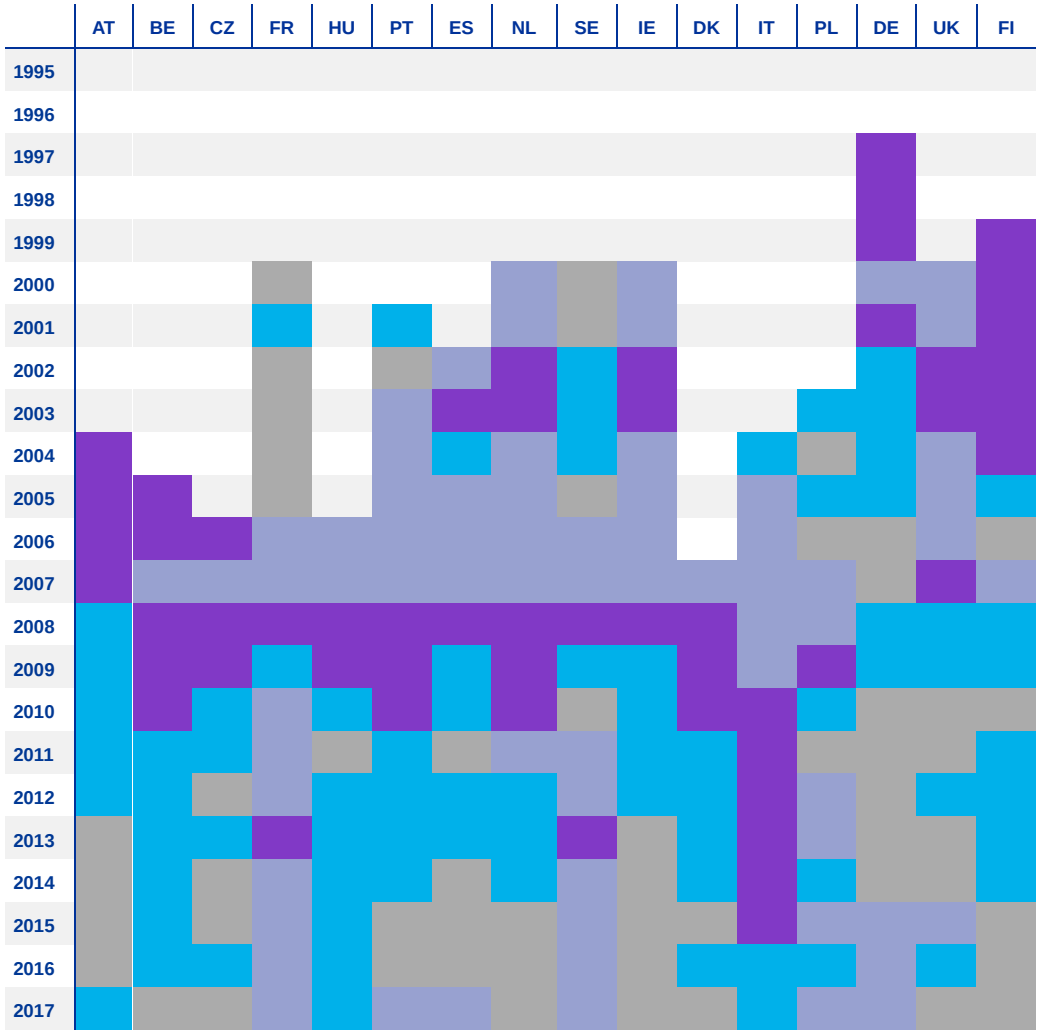
This section examines the outcome of our cross-country cyclical assessments. First, the results of the CRE price gap indicator are presented in Table 5[23]. The graph suggests that in countries for which data are available, the early 2000s coincided with a recession in Europe's CRE markets, followed by a period of recovery and expansion in the years leading up to the financial crisis.

[23] Note: Unique colours are assigned to identify the cyclical dynamics in play across countries during the years for which data are available. The market is in its "expansion" phase when the CRE price gap is positive (i.e. actual > trend) and increasing. Typically, the "downturn" phase is characterised by a positive but diminishing CRE price gap, which occurs later in the cycle. Once the price gap has turned negative (i.e. actual < trend) and actual prices are further below trend values, the "recession" phase has been reached. The recovery starts at the point where the CRE cycle turns once again and the negative gap between actual and trend values begins to lessen.

Table 6

Commercial property price misalignment measure – annual data

	increasing	decreasing
positive price gap	“expansion”	“downturn”
negative price gap	“recovery”	“recession”



Source: ESRB WG-REM.

According to this metric, Germany was the only country in which the CRE market did not enter a recessionary phase in the aftermath of the financial crisis – it experienced a brief period of downturn, followed by a prolonged period of expansion. **All other markets, apart from France and Italy, where property prices remained in recovery mode, have clearly entered an expansionary phase** once again in recent years, during which time it is possible that CRE-related risks and vulnerabilities have been building up.

Table 6 illustrates the outcome of our second exercise, which is based on the dynamics of the deviation between the ECB's CRE price misalignment indicator and its long-run average value. Although evident in a few markets, the pattern of a recessionary phase in the early 2000s, as seen in Table 5, is not as apparent in Table 6. It is also notable that unlike in Table 5, where European markets appear to enter a recessionary phase simultaneously at the outset of the financial crisis (2008-09), for a significant cohort of markets (Belgium, the Czech Republic, Denmark, Hungary, Portugal, the Netherlands, Poland), in Table 6 it is not until a few years later that the recessionary phase manifests itself. Italy and the United Kingdom joined this group in 2016, while by that stage Portugal and the Netherlands had moved on to the recovery phase. The latest data indicate that European CRE markets are generally at a much earlier (mostly recovery) phase of the cycle than the HP approach suggests.

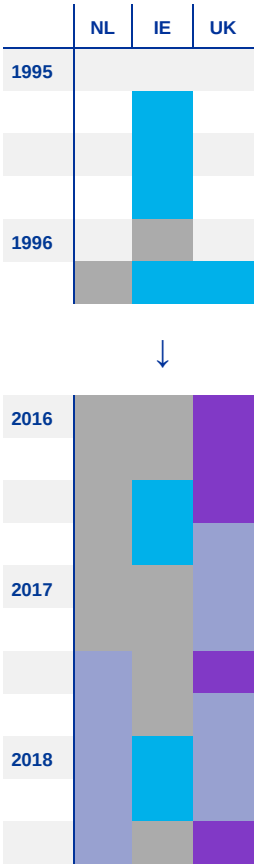
4. Step 1 conclusions – recommended CRE cyclicality indicator

This section reviews the pros and cons of both approaches. Finally, a recommendation is made for one of the previously presented indicators to provide a basis for the assessment of CRE market cyclicality at the current juncture.

Table 7

Commercial property price misalignment measure – annual data

	increasing	decreasing
positive price gap	“expansion”	“downturn”
negative price gap	“recovery”	“recession”



Source: ESRB WG-REM.

The main advantages of the HP filter-based approach relate to its relatively straightforward methodology and its modest data requirements, which result in a logical cyclical pattern across countries that is fairly easy to communicate. A number of drawbacks have also been identified, including issues relating to the HP filter methodology in general, its reliance on a limited set of annual data, which barely cover the past decade for a few of the countries in our sample, and a lag in the availability of data, which hampers a timely diagnosis of the cyclical position.

The main benefits of the approach, based on **the ECB’s CRE price misalignment indicator, include the fact that it takes into account a broad range of market and macroeconomic factors that are likely to impinge on the performance of CRE markets.** It is appropriate to consider these additional data, given the relatively limited coverage of some CRE variables. The indicator is also relatively simple to construct, understand and communicate. Once again, a major drawback of the approach concerns the availability of data across the entire EU, and the fact that it

is restricted to annual data, which has repercussions for the timeliness of macroprudential risk monitoring. While there is little that can be done about the former at this stage, additional work has uncovered quarterly data for a smaller set of countries (see Table 7), which shows what can be achieved if more and better data are available. As supplementary data come on stream, further options could be considered in order to detect additional aspects of the CRE cycles. For instance, the possibility of distinguishing between the "firm" and the "mature" expansion phases would be desirable, as they are connected to flow versus stock categories of risks, entailing different policy implications. An extensive review of models suited to assessing cyclical developments in the property market in an "ideal" world of limited data gaps is discussed in the WG-REM report on RRE (2019).

4.1.2 Step 2 – the horizontal risk assessment (scoreboard)

In line with the WG-REM's RRE Report (2019), **Step 2 involves the horizontal assessment of vulnerabilities in the CRE market across three different conceptual categories**: i) the collateral stretch, which monitors developments in the market values of CRE properties; ii) the income and activity stretch, which focuses on the income flows generated by CRE assets, the related volume of transactions, as well as equity flows into CRE; and iii) the financing stretch, which deals with the conditions as well as the sources of CRE financing. Compared with the preliminary analysis performed in ESRB (2018), which considered a fourth stretch relating to the potential for spillovers to the rest of the economy, in the WG-REM framework possible evidence of **a significant degree of spillovers is not considered to be an additional source of vulnerabilities per se, since it mostly relates to the intensity and the channels through which the original shock propagates beyond CRE markets**. This aspect is, however, not neglected in the risk assessment. Importantly, the spillover analysis is worth including in the country-specific factors that inform the final risk rating, also in view of its implications for the selection of policy tools (e.g. depending on their different delivery gaps in relation to the urgent shock materialisation possibly signalled by intense spillovers).

The horizontal risk assessment is based on a scoreboard comprising indicators in each stretch. It takes the form of a heat map in which each indicator is ideally assessed against risk thresholds derived from early-warning models, the distribution of the indicator across countries and over time, or expert judgement if the more preferable former alternatives are not feasible. As the aim of the scoreboard is to signal a first warning if indicators deviate from the observed regularities as captured by the thresholds, **the selected indicators should therefore be those that are most comparable and relevant for all countries considered**. This has two implications. First (and once again), the selection of indicators is heavily affected by data availability, although the WG-REM has deliberately cast the scoreboard to include new data which will only become available in the near future (e.g. AnaCredit). Second, indicators with diverging relevance for the whole CRE market due to their idiosyncratic features, as may be the case for prime segments, are not included in the scoreboard, although they contribute to country-specific considerations (Step 3).

For each indicator included in the scoreboard, thresholds are used to signal possible risks and vulnerabilities. These thresholds are used to assign one of the four categories of risk (no risk, low risk, medium risk or pronounced risk) to each indicator. Following ESRB (2018), risk thresholds

for the selected indicators are derived from statistical criteria that are conditional on data availability, i.e. where enough long time series are available for a reasonable number of countries (extending at least back to 2007); in the case of missing or severely incomplete data (per indicator and per country), expert judgement and qualitative information are also considered. The key requirement is that critical thresholds should entail robust ratings across countries. **For newly-developed indicators, thresholds are currently computed on an experimental basis, and should be revised and tested for robustness as additional data gradually become available over an increasingly longer time span and in a greater number of countries.** In the case of indicators for which data are not yet available, i.e. those from AnaCredit, temporary substitutes are suggested in order to improve the current monitoring of CRE risks (see Section 4.1.4). If such an alternative is not available, the indicator should be temporarily left out of the risk assessment. **The final method used to derive thresholds for indicators that are potentially available from AnaCredit should then be set up on the basis of the reliability, robustness and distribution of the time series.**

In order to compute the thresholds, the adopted data are pooled across countries and over time to calculate reference moments for the distribution. **Risk thresholds are then generally set at around the 60th, 75th and 90th percentiles of the distribution** (with no risk below the 60th percentile, low risk below the 75th percentile, medium risk below the 90th percentile and pronounced risk above the 90th percentile). Composite indicators summarise risks and vulnerabilities for each individual stretch in the form of a rating ranging from 0 (no risk) to 3 (pronounced risk). First, each individual indicator is transformed into a discrete variable ranging from 0 to 3 on the basis of the number of thresholds breached (0 = no thresholds breached, 1 = one threshold breached, 2 = two thresholds breached and 3 = all thresholds breached). Subsequently, the discrete transformations of all indicators in one stretch are averaged in one composite indicator (or scoreboard average rating) for the stretch (ranging from 0 to 3). Following ESRB (2018), the composite indicators for each stretch are also compared to composite risk thresholds. These thresholds are set on the basis of judgement, given the lack of a reliable statistical approach. Specifically, it is assumed that the indicators flag "no risk" when below 0.8, "low risk" when at least 0.8 but below 1.4; "medium risk" when at least 1.4 but below 2.1; and "pronounced risk" when at least 2.1.

An important factor is the operativeness of the scoreboard at the current time, in the case of data that are completely missing in some countries or very heterogeneous in terms of quality. In order to maintain concrete guidance on risk assessment, even in the case of a poor statistical picture, the WG-REM provides contingent considerations which aim to exploit any source of information, whether qualitative or incomplete, which is currently available across countries. In this respect, for the time being the survey started by the ESRB in 2017 may add valuable input to the horizontal risk analysis in the case of countries for which statistical limitations have been particularly severe to date. However, it is worth recalling that in an ideal world of closed data gaps the survey is only expected to support vertical risk assessment (Step 3), since the collected information is qualitative by nature and is to some extent dependent on the subjectivity of national experts. It is, therefore, of little assistance to sound benchmarking over time and across countries.

4.1.2.1 Collateral stretch

The first indicator included in the collateral stretch is **average real CRE price index growth over the past three years**. A three-year time horizon is preferred to ensure the indicator is not affected by temporary disturbances in the market and to better reflect enduring trends, in accordance with the existing RRE assessment.

Second, we measure the sensitivity of the market to rapid price adjustments by including the **yield deviation from the historical average**. This indicator measures the difference between the series as represented by the average of office and retail yields, and its historical average. Should CRE market yields reach particularly low levels, the market would become much more exposed to rapid price adjustments if more profitable investment alternatives were to appear. Hence, this indicator also seeks to capture the sensitivity of the CRE market to the interest rate environment.

Finally, the **ECB CRE misalignment indicator** presented in Section 4.1.1.1 completes the collateral stretch. As explained in the previous subsection, these measures are included in order to account for the broad range of factors influencing the performance of CRE markets.

Table 8
Proposed scoreboard – collateral stretch

#	Description	T1	T2	T3
1	Average real CRE price index growth over the past 3 years, %	1	3	5
2	Yield deviation from historical average, basis points	-45	-70	-130
3	ECB CRE misalignment indicator	2	7	13

Source: ESRB WG-REM based on ESRB (2018).
Note: Data sources and methods used for computing thresholds are described in Annex 2.

4.1.2.2 Income and activity stretch

The income and activity stretch contains a diverse set of indicators seeking to represent the income-producing features of CRE as well as the activity of market participants as covered by transaction volume, growth in building permits and equity flows into CRE. The first indicator of this stretch presents the **deviation between current and historical CRE and government bond yield spreads**. This indicator serves as a measure of the risk premium associated with CRE markets. When the deviation is low, the risk level associated with CRE assets is not fully reflected in the market and investors may not, therefore, accurately estimate the risk exposures associated with their investment decisions.[24]

Second, to measure CRE market activity and investor demand, the **volume growth in investment transactions over the last three years** is considered. A time horizon of three years is used for this indicator, for the same reasons as it is used in the choice of average real CRE price index growth in the collateral stretch.

[24] Some statistical discussion of this indicator can be found in Coffinet et al. (2018).

Third, to account for the supply side of the market, the income and activity stretch includes the **average growth in non-residential building permits over the past three years**. This indicator reflects the response of the real economy to the level of activity in CRE markets.

Finally, a proxy indicator for financial flows via equity is measured by **real estate investment funds/trusts (REIFs/REITs) asset growth over the past three years**. Figures for this indicator suggest that these institutions are becoming more relevant to the financing of CRE. It is debatable whether this indicator fits better in the income and activity stretch or in the financing stretch. As the financing stretch focuses on the activity of lenders, i.e. the debt side of the market, equity investors such as REIFs/REITs are kept in the income and activity stretch. Nevertheless, in some countries there is significant interconnectedness between banks, insurance companies and REIFs/REITs.

Table 9

Proposed scoreboard – income and activity stretch

#	Description	T1	T2	T3
4	Deviation between current and historical spreads between CRE and government bond yields, bp	25	-10	-60
5	Average investment volume annual growth over the last 3 years, %	TBD*	TBD*	TBD*
6	Non-residential building permits average annual growth over the last 3 years, %	5	10	15
7	Real estate investment funds/trusts average annual growth over the last 3 years, %	10	15	20

Source: ESRB WG-REM based on ESRB (2018).
Note: Data sources and methods used for computing thresholds are described in Annex 2.
** The critical values will shortly be computed, based on data for which production has just started.*

4.1.2.3 Financing stretch

The goal of the financing stretch is to capture non-sustainable lending dynamics and any weakening in lending conditions that could lead to increased risks in CRE markets. As a consequence, the stretch starts with **annual growth in bank lending to CRE**. This indicator captures the development of banks' lending for CRE derived from aggregated bank credit volumes from AnaCredit (see Box 1 in Section 3). To reflect potentially weakening lending conditions, the **annual change in average LTV** (derived from AnaCredit data) complements the indicators for the banking sector.

In a similar vein, the stretch then accounts for the **annual growth in insurance companies' lending for CRE**. The goal of this indicator is to complement the information provided by the previous indicator with data on the relevant intermediaries in the non-banking financing industry, as insurers are known to be an increasing source of lending in the CRE sector.

Table 10

Proposed scoreboard – financing stretch

#	Description	T1	T2	T3
8	Bank lending for CRE, annual growth, %	5	10	15
9	Annual change in average LTV, % (AnaCredit)	TBD*	TBD*	TBD*
10	Insurance companies lending for CRE, annual growth, %	5	10	15

Source: ESRB WG-REM based on ESRB (2018).
Note: Data sources and methods used for computing thresholds are described in Annex 2.
** The critical values will shortly be computed, based on data for which production has just started.*

4.1.3 Step 3 – the inclusion of additional country-specific information and potential for spillovers

The goal of Step 3 (vertical assessment) is to complement the information contained in the horizontal scoreboard with a variety of country-specific data. This may be grounded in expert judgement, especially in countries currently affected by severe data gaps. The information in this step comprises a list of concrete prioritised indicators – it allows any further relevant information to be included (Table 11) and contains a set of indicators describing the potential for spillovers to the rest of the economy (Table 12). Importantly, in view of the large heterogeneity in the domestic features of CRE markets and the complex (financing) structures and activities of many market participants, the consideration of country-specific factors may play a more important role in sound risk detection for CRE markets than for RRE markets. This also relates to the critical lack of harmonised and comparable indicators for crucial aspects of CRE, meaning that any relevant source of information available in a given country should be fully exploited in the final risk assessment.

A two-pillar approach is warranted in order to limit discretion and arbitrariness in the selection of the relevant country-specific information.

As country-specific information is likely to be quite diverse and non-harmonised in terms of methods and sources, consultation with national authorities is crucial to decide which indicators are most relevant in each country, and so that a better understanding of domestic CRE developments can be achieved. **It is expected that input from national experts will substantially inform the direction and size in the adjustment size of the initial risk** rating (obtained from the horizontal assessment) on the basis of the set of country-specific indicators. However the decision on the final risk rating remains under the responsibility of the ESRB (or the assessment institution).

First, use of a prioritised set of indicators (which are available for most countries) is suggested for regular monitoring. This set contains data on prime CRE, such as price growth and possible deviations from trends, as well as changes in transaction volumes. Importantly, the prime segment may be much more informative in terms of monitoring the build-up of CRE vulnerabilities in some countries than in others, given that its representativeness for the domestic CRE market as a whole might vary across countries with factors such as the regulatory framework and interconnectedness with global investors. Accordingly, while data on the CRE prime segment

warrant collection, their use in risk assessment should be subject to scrutiny of the quality and reliability of the information they convey in each country. This is also performed in consultation with national experts.

Additional country-specific information could shed light on structural features such as the share of foreign investors (e.g. measured as their share of transaction volume), or CRE firms' bond issuance as a share of total lending volume.

Table 11
Step 3 – Eligible set of indicators

	Prioritised indicators	Possible additional information (non-exhaustive list)
Collateral	Prime CRE price growth	Model-based assessment of prices
	Deviation of prime CRE prices from trend	Further alternative price data (e.g. for CRE segments, regions)
	Share of prime segment in total CRE (proxy)	Relevance of capital prices in capital cities
		Models for macroeconomic drivers of CRE prices
		Alternative relevant information
Income and activity	Share of foreign investors in transactions	Dominance of specific CRE market players
		Relevance of owner-occupied CRE for financial stability
		Issuance of shares
		Alternative relevant information
Funding stretch	Growth of bond issuance by CRE firms	Stress tests for lenders
	Share of bond issuance by CRE firmsrelative to total lending	Risk weights
		Use of financial innovations
		Cluster risks (e.g. lenders, borrowers, segments, maturity)
		National legislative pecularities (e.g. existance of borrower-based measures)
		Alternative relevant information

Source: ESRB WG-REM.

Second, Step 3 also permits the inclusion of further information (see Table 11, the column "possible additional information") that characterises domestic CRE markets. This could, for instance, be reflected in the dominance of CRE markets by owner occupiers/professional players, the significance of market funding for CRE, or the market share of certain investor groups. Further information could cover the results obtained from national analyses of alternative price data (e.g. for CRE segments or specific regions), early-warning models, stress tests, model-based assessments of overvaluations, cluster risks (e.g. due to concentration among lenders/debtors or due to the maturity of loans), lenders' balance sheet data, risk weights, or the use of financial innovations. In addition, institutional features such as leverage limits for CRE investors or existing legal limits relating to the implementation of macroprudential instruments for CRE could be part of this step. As data on these elements might be scarce for all countries and in any case available on a fairly

comparable basis, this information might come from special analyses or from additional indicators and insights provided by a survey of Member States.

It is worth making a special reference to the externalities and spillover indicators, which play a more important role in CRE markets than in RRE markets. In the WG-REM framework, the high exposures of lenders and investors to CRE or the substantial contribution of the sector to total production and investment does not pose a risk per se to the financial system. However, these factors need to be carefully monitored since they could increase the severity of the risks originating from the three stretches considered in the risk assessment. **The nature of these spillovers is quite complex as all intermediaries are very likely to be interconnected.** As for all indicators considered in Step 3, their impact on the final risk rating is mostly based on a qualitative approach. Importantly, spillover potential also plays a significant role in the later stage of policy assessment, since it informs the need for urgent action required to limit the systemic propagation of identified CRE vulnerabilities.

The proposed table of indicators shows the potential of spillovers for CRE. It consists of ten indicators which capture the exposure of banks, real estate investment funds, insurance companies and also borrowers to CRE, as well as the relevance of cross-border financing and the role of construction for CRE in the real economy.

Table 12
Proposed set of indicators describing the potential for spillovers

#	Description
1	Bank lending relative to banks' balance sheet, %
2	Real estate investment funds/trusts' share within the total investment fund sector, %
3	Exposure of insurers as proportion of total assets, %
4	Gross value added of construction and real estate activities, relative to GDP, %
5	Top quantile of LTVs, % (AnaCredit)
6	Share of variable interest rate loans (AnaCredit), %
7	Share of interest-only loans (AnaCredit), %
8	Share of unsecured loans (AnaCredit), %
9	Share of cross-border financing sources for CRE (AnaCredit), %
10	Share of cross-border exposures to CRE (AnaCredit), %

Source: ESRB WG-REM based on ESRB 2018.
Note: Data sources are described in Annex 2.

Indicator 1 states the top quantile of the ratio of lending volume for CRE relative to banks' balance sheets, based on data from Common Reporting (COREP) (or preferably from AnaCredit at a later stage). This metric describes the relevance of lending for CRE at the bank level. At first sight this could appear to be a rather unconventional approach as just the top quantile of the distribution is considered. However, for macroprudential surveillance it is reasonable to look beyond the average since this can mask developments in the tail of the distribution. More insights can

therefore be obtained by directly analysing the parts of the distribution that are more relevant to the risk analysis.

Indicator 2 measures the size of real estate investment funds or trusts (REIFs and REITs) relative to the total size of the investment fund sector. REIFs/REITs represent an important investor class in CRE markets and are interconnected with banks and insurance companies via loans and shares. As most assets of REIFs/REITs are directly invested in CRE, shocks to the CRE market might immediately affect their activity, with a potential impact on shareholders and market sentiment.

In the same vein, **Indicator 3 covers insurance companies' exposure to CRE (lending, investments, and holdings of bonds and shares of CRE actors/funds) in relation to their total assets**.

Indicator 4 on the gross value added of construction and real estate activities to GDP measures the importance of these two sectors – which serve as an approximation of economic sectors which depend on developments in CRE markets – to the respective total economy. If expert judgement considers the weight of these sectors to be disproportionally high, a downturn in CRE markets could deepen a correction in the real economy, with knock-on effects for financial stability.

To assess lending standards and the credit risk of new loans, AnaCredit data on the **top quantile of LTVs can be added as Indicator 5**, seeking once again to investigate a specific pocket of risks – i.e. the development of loans with high LTVs. In addition, information may be derived from AnaCredit on the **share of CRE variable interest rate loans**, **interest-only loans** and **unsecured loans**. The identification of these loans is of special importance as they represent a significantly higher risk to lenders should unfavourable economic and financial conditions arise. For instance, an increase in the risk-free rate would automatically trigger a direct response for variable loans.

Indicators 9 and 10 shed light on the potential for exporting or importing shocks via cross-border bank lending for CRE as, by contrast with lending for RRE, there is a significant share of cross-border lending in the CRE market. Indicator 9, **share of cross-border financing sources**, describes the relevance of foreign lenders to the domestic market. Lending from foreign banks represents a high share of total lending for CRE, especially in smaller countries. In the case of a shock affecting banks in the home country, those banks could reduce their lending in the foreign market, thereby exporting the original shock. Indicator 10, **share of cross-border exposures to CRE**, represents the opposite perspective. By lending to CRE-related borrowers abroad, the domestic banks and financial system could import shocks from deteriorating foreign CRE markets.

The impact of country-specific factors on the risk assessment of CRE markets is not clear ex ante and also needs to be gauged on the basis of expert judgement. For instance, non-bank funding sources and a large proportion of foreign investors can increase risk sharing, as losses from CRE can be spread across numerous entities and countries – this would, a priori, be beneficial from a financial stability perspective. However, open-ended REIFs face redemption risks that may contribute to CRE price corrections if funds are forced to sell their assets rapidly in a falling market. Foreign investors may also increase the risk of rapid price corrections, since they may decide to leave the market quickly if yield prospects become more favourable elsewhere or if market uncertainty rises. Foreign investors may reduce risk as they may be more diversified than

domestic investors, although they may also contribute to countries' CRE cycles becoming more synchronous, given their diversified CRE investment exposures, with domestic CRE markets thereby becoming more vulnerable to global risk factors. Therefore, while the structural features of CRE markets should be duly documented and taken into account in the risk assessment, their impact on risks should be qualitatively assessed on a case-by-case basis.

Compared with RRE, for CRE the consideration of a large set of country-specific indicators may require greater room for adjusting the initial risk assessment, based on the horizontal reading of the scoreboard.

As a combined outcome of the horizontal (Step 2) and the vertical (Step 3) assessment, an integrated system of risk rating is obtained on four levels:

- **No exposure.** The risk assessment does not provide material evidence of vulnerabilities that are relevant in terms of macroprudential policy action.
- **Low exposure.** The risk assessment indicates a need to closely monitor CRE developments. Nevertheless, the nature and magnitude of the identified vulnerabilities does not call for immediate macroprudential policy action.
- **Medium exposure.** The risk assessment highlights the existence of vulnerabilities that may be addressed by macroprudential policies.
- **Pronounced exposure.** The risk assessment indicates widespread vulnerabilities that may be addressed by macroprudential policies.

Ratings are designed for each stretch and are intended to have the following economic interpretation:

- **Collateral stretch.** "No risk" means markets are undervalued and/or price dynamics are negative or stagnating. "Low risk" indicates that prices are fairly valued and/or prices are growing moderately, potentially indicating balanced cyclical expansion which requires some indicators to be monitored. "Medium risk" indicates that there are tentative signs of price overvaluation and/or prices are growing by more than is justified by data on the macroeconomic environment. "Pronounced risk" indicates significant price overvaluation and/or exuberant pricing dynamics.
- **Income and activity stretch.** "No risk" means that the current outlook for the domestic CRE market appears to be sustainable in the near term. "Low risk" indicates the first signs of marginally increasing market activity, with a sound outlook still in place. "Medium risk" indicates some concerns about high activity in the market while "pronounced risk" indicates signs of the under-pricing of risks as measured by CRE yields and exuberant market activity.
- **Funding stretch.** "No risk" means that financing conditions are tight, as indicated by large spreads and/or negative/stagnating lending dynamics. "Low risk" indicates that financing conditions are appropriate given a backdrop of moderate lending and spreads, potentially indicating a situation of balanced cyclical expansion which requires some indicators to be monitored. "Medium risk" indicates that lending dynamics are relatively robust and LTVs are

rising. “Pronounced risk” indicates excessive lending dynamics and significantly increasing LTVs.

4.1.4 An operative example of the risk assessment framework

As data from AnaCredit are expected to become available for macroprudential analyses over the course of 2020 (see Box 1 on AnaCredit), one indicator in Step 2 and six indicators in the potential for spillovers of Step 3 cannot be filled in for the moment. In addition, Indicator 5, which covers the growth in transaction volumes in CRE markets, could not be computed as private data access rights had not been granted to the WG-REM. **As a consequence, and in order to continuously monitor developments in CRE markets, the WG-REM suggests that the composition of these sets of indicators should be slightly reduced and altered, while keeping the overall structure as outlined in previous sections.** In addition, on a transitional basis, the survey and the consultation process with national macroprudential authorities will continue to play an important role in sourcing further information, especially if no data are available.

In Step 2, the financing stretch is mostly affected by missing data, and the WG-REM suggests using AnaCredit to monitor growth in bank lending for CRE as well as the change in LTVs for those bank loans. While the former can be substituted on a transitional basis with data from consolidated banking data, as in the existing risk assessment framework (ESRB, 2018), there is no alternative to the latter which, therefore, must be left out in an operative application of the framework. **As a result, the financing stretch in its reduced form contains only two indicators, one on bank lending and the other on lending by insurance companies for CRE.** The indicator on lending by insurance companies currently produces a wide range of values, as lending to CRE actors is not widespread among EU insurers and data quality may still be too low to produce a reliable indicator. In the operative scoreboard this indicator has therefore been broadened to growth in CRE financing (instead of lending) by insurance companies, and therefore also includes CRE actors/funds’ holdings of bonds and shares.

In the light of these suggestions, **the operative scoreboard for Step 2 is set up as shown in Table 14**. Although it seeks to be operative, there are many data gaps in the collateral and income and activity stretches, as data availability has hardly changed since the ESRB (2018) report. As previously mentioned, for these countries both the survey and the consultation process will play a more important role in Step 2 than in the case of countries for which data are available.

Despite its current shortcomings, **the transitional scoreboard already shows improvements to the approach outlined in ESRB (2018).** For instance, in the collateral stretch, the price and yield developments (Indicator 1 and Indicator 2) are amplified or mitigated by information from the misalignment indicator. For example, while prices and yields signal elevated risks in Ireland and France, the misalignment indicator shows that CRE in Ireland is still recovering while CRE in France is in an expansionary phase (see Annex 3).

Regarding the potential for spillovers in Step 3 of the risk assessment framework, once again not all the indicators describing the structural risks deriving from bank lending can be substituted in a harmonised manner for all countries. Thus, the number of indicators describing the potential for spillovers will be reduced to four, with data sources as outlined in ESRB (2018) (see Table 13).

Table 13

Transitional set of indicators describing the potential for spillovers

#	Description
1	Bank lending relative to banks' balance sheet, %
2	Real estate investment funds/trusts' share within the total investment fund sector, %
3	Exposure of insurers as proportion of total assets, %
4	Gross value added of construction and real estate activities, relative to GDP, %

Source: ESRB WG-REM based on ESRB 2018.

Table 14

Transitional scoreboard for Step 2

Stretch	Collateral stretch				Income and activity stretch					Financing stretch			
Indicator #	1	2	3	Average rating	4	5	6	7	Average rating	8	9	10	Average rating
Country	Average real CRE price index annual growth over the last 3 years, %	Yield deviation from historical average, bp	ECB misalign-ment indicator	Average rating	Deviation between current and historical CRE yield and government bond spread, bp	Average investment volume annual growth over the last 3 years, %	Non-residential building permits average annual growth over the last 3 years, %	Real estate investment funds/trusts average annual growth over the last 3 years, %	Average rating	Bank lending to CRE, annual growth, %	Annual change in average LTV, % (AnaCredit)	Insurance companies lending to CRE, annual growth, %	Average rating
AT	0.18	-59.47	-3.65	0.33	131.73		-2.99	11.40	0.33	4.84		17.43	1.50
BE	-2.35	-19.25	-9.76	0.00	158.60		11.44	9.26	0.67	11.29		12.61	2.00
BG							10.36			12.43			
CY	-0.67						24.32			-43.56		6.66	0.50
CZ	3.01	-143.10	-5.42	1.67	-74.72		9.81	12.97	1.67			10.99	
DE	6.61	-117.57	31.10	2.67	162.18		6.22	8.33	0.33	9.80		18.96	2.00
DK	-0.40	-129.79	-6.38	0.67	119.58		1.34		0.00	4.26		10.84	1.00
EE							-5.34	31.27	1.50	3.17		28.84	1.50
ES	6.49	-95.05	3.74	2.00	122.63		15.45	0.37	1.00	-4.02		15.95	1.50
FI	0.20	-103.75	-8.31	0.67	133.27		5.04	16.90	1.00	96.20		1.78	1.50
FR	2.03	-148.99	23.36	2.33	90.08		3.35	11.57	0.33	6.40		8.04	1.00
GR							9.84	0.00	0.50	-13.86		3.83	0.00
HR							-12.33			-5.02		15.76	1.50
HU	2.88	-91.47	-17.62	1.00	201.42		14.25	35.20	1.67	10.94		12.62	2.00
IE	5.64	-184.92	-2.84	2.00	324.01		8.23	18.00	1.00	2.18		-0.90	0.00
IT	-2.90	-61.01	-3.01	0.33	29.91		17.93	11.20	1.33	-9.08		11.15	1.00
LT							2.13	21.67	1.50	0.66		82.62	1.50

Stretch	Collateral	stretch			Income and	activity	stretch			Financin	stretch		
Indicator #	1	2	3	Average rating	4	5	6	7	Average rating	8	9	10	Average rating
Country	Average real CRE price index annual growth over the last 3 years, %	Yield deviation from historical average, bp	ECB misalign -ment indicator	Average rating	Deviation between current and historical CRE yield and government bond spread, bp	Average investment volume annual growth over the last 3 years, %	Non-residential building permits average annual growth over the last 3 years, %	Real estate investment funds/trusts average annual growth over the last 3 years, %	Average rating	Bank lending to CRE, annual growth, %	Annual change in average LTV, % (AnaCredit)	Insurance companies lending to CRE, annual growth, %	Average rating
LU							-13.05	10.90	0.50	19.54		11.26	2.50
LV							0.34			-14.60		68.30	1.50
MT							14.41			7.40			
NL	7.84	-182.21	-0.25	2.00	109.24		15.15	3.33	1.00	-5.74		6.29	0.50
NO	4.11	-172.34		2.50	0.53		3.49		0.50			-8.62	
PL	-1.91	-66.81	1.65	0.33	92.47		6.67	-7.53	0.33	0.87		-43.14	0.00
PT	3.37	-94.60	0.03	1.33	198.42		13.95	-1.87	0.67	-12.15		-1.31	0.00
RO							9.70			5.68			
SE	2.31	-232.75	21.22	2.33	327.32		8.80		0.50	-22.63		7.25	0.50
SI							18.45					21.08	
SK							10.47	11.33	1.50	11.29		21.23	2.50
UK	-4.94	-152.78	-3.56	1.00	246.01		-4.14		0.00			8.38	
Thresholds													
Low	1	-45	2	0.8	25		5	10	0.8	5		5	0.8
Medium	3	-70	7	1.4	-10		10	15	1.4	10		10	1.4
High	5	-130	13	2.1	-60		15	20	2.1	15		15	2.1

Source: ESRB WG-REM. Note: Data sources and methods used for computing thresholds are described in Annex 2.
Note: Values for Indicator 5 and Indicator 9 may soon be filled based on data for which production has recently started. In general, the scoreboard is intended to be transitional as both the selection of indicators and the respective critical values rely on data currently available, and may therefore be reassessed as new data become available.

Deriving the final risk rating by stretch implies including indicators and information from Step 3 at the country level, accompanied by a process of consultation with national macroprudential authorities. For illustrative purposes, Table 15 shows the complete risk assessment process for a fictional case. **In comparison with RRE, the adjustment factor may range more widely, by up to +/- 1.5, given the potentially greater importance of information in Step 3 for CRE** (see Section 4.1.3 for further reasons). It is important to emphasise, once again, that the derivation of the adjustment factor in Step 3 must follow a discretionary process as the information is country-specific and is not comparable across countries. However, any arbitrariness in setting the adjustment factor should be avoided at all costs. **For this reason, aspects affecting the adjustment factor should be transparently communicated for each country**.

In the example in Table 15, a situation is shown in which the Step 2 scoreboard reports slightly elevated price growth and market activity classified as “low risk” accompanied by high bank lending growth (“high risk”). The information in Step 3 provides insights for all stretches. While no information can be added to market activity, a national authority’s econometric model confirms that prices are overvalued, leading to an amplifying adjustment factor of 1.2 for the collateral stretch. As a consequence, the final risk rating for the collateral stretch is classified as “medium risk”. For the adjustment of the financing stretch, first the information from the potential for spillovers is received, and describes a relatively highly exposed banking sector as well as elevated lending for CRE to non-domestic borrowers. Second, a country-specific stress test for the banking system emphasises the interconnectedness of banks, while risk weights are relatively low. As these aspects increase risk for the banking system, the adjustment factor is also set to 1.2., which, at this point, does not change the previous risk rating for the collateral stretch.

Table 15

An operative example of the risk assessment framework

Step 2 Scoreboard		Step 3		Adjustment factor Range: 0.5 – 1.5	Final risk rating
Stretch	Average risk rating	Country specific-information	Examples of potential for spillovers	Example	Average of Step 2 x adjustment factor (Step 3)
Collateral	1.30	Prime CRE growth rates, model-based results, surveys, any additional information	Banks' exposure is relatively high Low level of non-bank activity High relevance of construction and real estate activities Elevated lending for CRE abroad	Country-specific model-based results point to overvaluation: 1.2	1.56
Income and activity	1.10	Further information on market activity		No further country-specific information on market activity: 1.0	1.10
Financing	2.10	Stress tests, model results, survey results, any further information on financing conditions		Stress test results point to significant interconnectedness of intermediaries, risk weights are extraordinarily low: 1.2	2.52

Source: ESRB WG-REM.

Importantly, in countries where data gaps are currently particularly severe, Step 3 is expected to temporarily play a pivotal role until potential efforts by national authorities have led to substantial statistical progress, since the horizontal rating through the scoreboard could be impaired by unavailable or “noisy” statistics. In this respect, an update of the survey carried out by the ESRB in 2017 could cover many dimensions of the risk analysis considered in this report, and could help to convey useful signals for those countries with deeper hard data limitations. The remaining important caveat relates to the self-reporting nature of the answers given in the survey of national experts. This hinders sound risk rating in the country in question, even more so when compared with countries with more advanced statistical overviews. Accordingly, where data gaps are very severe the qualitative and, necessarily, imperfect grounds of the risk assessment should be clearly acknowledged and communicated as a strictly temporarily device to clarify domestic CRE developments. At the same time, the urgent need to undertake all possible efforts to improve in terms of statistics should be part of policy prescriptions that will be addressed where required.

Finally, the communication of a country’s final risk ratings could be additionally enhanced by means of an in-depth overview of the key underlying determinants (see Table 16). The goal of this table is to effectively communicate the risk assessment of a country and the key elements motivating it. The table summarises the findings of all steps in the risk assessment, the key vulnerabilities underpinning the rating, as well as the final ratings by stretch. It therefore first covers the cyclical position. Next, the vulnerabilities deriving from the horizontal Step 2 risk assessment are included. Finally, the selection and relevance of indicators in Step 3, as well as the resulting final risk rating by stretch, are presented.

Table 16

CRE risks – assessment template

Section A: Risk assessment	
Information from the three steps	**Final risk rating (e.g. medium exposure)**
A1. Cyclical phase	
Brief description of the cyclical phase and the results of the misalignment indicator (Step 1)	Expansionary phase of the misalignment indicator; information from the consultation process could possibly add information on the cyclical phase.
A2. Summary rating for each stretch and key vulnerabilities in the stretches of the horizontal risk assessment (Step 2)	
Collateral stretch	Medium: continued strong price increases, elevated misalignment indicator
Income and activity stretch	Medium: increased growth in transaction volumes, rising number of building permits, continued inflows into REIFs/REITs
Financing stretch	Medium: robust lending growth by banks and insurers, rising LTVs
A3. Summary of the information from the vertical risk assessment (Step 3) regarding the stretches	
Collateral stretch	Medium: e.g. country-specific model results confirm overvaluation of prices
Income and activity stretch	Medium: e.g. country-specific information shows elevated non-bank activities
Financing stretch	Medium: e.g. country-specific information shows substantial interconnectedness of banks and non-banks
A4. Potential transmission channels to financial stability – summary of the potential for spillovers (Step 3)	E.g. the potential for spillovers (see Tables 12-13) entails overall limited risks, apart from more substantial concerns about high bank and non-bank exposure
A5. Adjustment factor and adjusted ratings (Step 2 * Adjustment factor (Step 3))	
Collateral stretch	E.g. adjustment factor confirms findings: 1.0. -> no change of the medium risk rating
Income and activity stretch	E.g. elevated activities of non-banks: 1.3. -> increase of the risk rating
Financing stretch	E.g. substantial interconnectedness of banks and non-banks: 1.2 -> increase of the risk rating
A6. Potential triggers and timing for risk materialisation	E.g. exogenous shock reducing demand for CRE, unexpected interest rate hike

5 Assessment of CRE-related macroprudential policies

This section provides concrete guidance for the assessment of macroprudential instruments, consistent with the analysis of CRE vulnerabilities presented in Section 4. In this respect, a variety of new aspects have been added to the approach outlined in the policy section of the CRE vulnerability analysis that was preliminarily conducted in ESRB (2018). Nevertheless, both data availability for CRE (as discussed in Section 3 of this report) and institutional and analytical expertise regarding the operationalisation and effectiveness of macroprudential instruments related to CRE, are still limited or even non-existent for many European countries. This compares with the challenges deriving from CRE's inherent complexity due to largely heterogeneous investors, lenders and funding possibilities. Cross-border externalities additionally limit the effect of action taken by domestic authorities – this further complicates an assessment of the policy tools at the country level and emphasises the need to enhance macroprudential coordination across countries.

In this context, and in line with its mandate, the WG-REM has explored all possible options for extending the fully fledged framework already developed for RRE (ESRB 2019) to CRE, while taking into account the significant constraints still deriving from the limited statistical picture. **As for the CRE risk assessment, guidelines for the related policy analysis are ideally cast from a medium-term perspective, when the finalisation of the initiatives currently in place at the national and international level will presumably fill most of the current data gaps. In addition, as new expertise on the selection, calibration and monitoring of CRE-related macroprudential tools progressively improves across the world, the ideal framework will become operative, as explained in the following sections.**

In the same vein as for RRE markets, the ideal framework proceeds along a sequence of steps which consistently facilitate an assessment of the selection of tools against the identified vulnerabilities, followed by its calibration and monitoring in order to actually pursue the general policy objectives. The CRE-related policy assessment is accordingly structured in two pillars:

1. appropriateness, which relates to the selection of tools activated in a given country in relation to identified vulnerabilities;

2. sufficiency, which relates to the calibration of tools, conditional on their being assessed as appropriate, with a view to jointly enhancing their contribution to general macroprudential objectives (effectiveness) and maintaining higher expected benefits than costs (efficiency) over time.

For most countries, at the current time the ideal approach may be viewed as a blueprint for the future, especially with regard to the policy sufficiency pillar.

Nevertheless, the WG-REM has set up an interim framework that provides useful guidance for policy assessment, even in the current situation of limited statistical progress and policy expertise, by helping to select and exploit all the information currently available, even if it is often incomplete and fragmentary, based on experimental data or expert judgement.

5.1 Assessment of the appropriateness of CRE-related macroprudential policies

In order to mitigate identified vulnerability in CRE markets, the macroprudential authority can make use of a variety of regulatory macroprudential instruments. Nonetheless, the instruments available are not equally appropriate for tackling these vulnerabilities promptly.

As is the case for the RRE framework developed by the WG-REM, assessing the appropriateness of CRE-related macroprudential instruments follows a three-step procedure (see Figure 3). Following a review of macroprudential instruments available for CRE (Step 4), the tools selected in a country, given an identified vulnerability, are compared with the general indications deriving from an analysis of the transmission channels of the different tools (Step 5). The final assessment of policy appropriateness takes into account a set of country-specific considerations (Step 6).

Figure 3
Steps in the assessment of a policy's appropriateness for CRE

Source: ESRB WG-REM.

5.1.1 Step 4 – toolkit for addressing CRE risks

Most existing instruments focus on the banking sector as they restrain the build-up of risk, either by limiting borrowers' access to bank lending or by increasing the resilience of banks through higher risk weights or additional capital buffers. Vulnerabilities can arise when lenders' loss-absorbing capacity is not sufficient to bear potential losses in CRE markets or when intermediaries' exposures are excessively concentrated in the CRE sector.

In addition to targeted capital-based measures, broader measures that are not sector-specific, such as the countercyclical capital buffer (CCyB) and the systemic risk buffer (SyRB) can be used to enhance the resilience of banks to CRE risks. As long as the potential build-up of risks emanating from the CRE market is considered to be from cyclical risks, the CCyB can reduce risks associated with CRE exposures. However, when developments in the CRE sector are decoupled from developments in other sectors and from aggregate credit growth, the broad-

based CCyB may not be an appropriate tool for addressing such sector-specific risks. Finally, when exposure to the CRE sector has been identified as a non-cyclical systemic risk that cannot be addressed using other CRR/CRD IV instruments, a designated authority may use the SyRB (Article 133 of CRD IV). The lack of a sectoral breakdown may, however, make this instrument less appropriate for addressing CRE-specific risks. Importantly, with the changes to Directive 2013/36/EU[25] that will be applicable as of 29 December 2020, a sectoral SyRB can be applied to exposures that are secured by commercial property.

Table 17

Overview of currently available macroprudential measures for CRE

Intermediate objective	Target	Measure
Excessive credit growth and leverage	Borrowers	Limits on loan to value (LTV) (national legislation)
		Limits on debt service coverage ratio (DSCR) or interest coverage ratio (ICR) (national legislation)
		Mortgage lending value requirement (national legislation)
	Banks	Increase risk weights for banks using the standardised approach (Article 124(2) of the CRR)
		Increase loss given default (LGD) of retail exposures for banks using the internal ratings-based (IRB) approach (Article 164(5) of the CRR)
		Higher own funds requirements or risk weights (Article 458 of the CRR)
		Pillar 2 requirements for CRE exposures (Article 103 of CRD IV)*
	Alternative investment funds	Leverage limits (Article 25 of the AIFMD)
Direct and indirect exposure concentration	Banks	Tightened large exposure limits (Article 458 of the CRR)
Excessive maturity and liquidity mismatch	Alternative investment funds	Suspension of redemptions (Article 46 of the AIFMD)

Source: ESRB (2018).
*Note: *Directive (EU) 2019/878 of the European Parliament and of the Council, which will become applicable as of 29 December 2020, will no longer permit the use of measures under Articles 103, 104 and 105 of Directive 2013/36/EU to address macroprudential risks.*

Borrower-based measures may include LTV caps and DSCR or ICR floors. LTV caps lower the LGD, while restrictions on the DSCR/ICR may complement LTV caps, as they can ensure that the property generates sufficient cash flow to cover loan repayment which, in turn, reduces the PD for the loan. Both measures would probably decrease access to credit, leading to lower growth in credit volumes for CRE. Borrower-based measures can be implemented for banks as well as for non-banks, depending on the national legislation framework, with a more comprehensive framework being useful for avoiding leakages. Applying borrower-based measures on entity-based

[25] Directive (EU) 2019/878 of the European Parliament and of the Council of 20 May 2019 amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers and capital conservation measures (OJ L 150, 7.6.2019, p 253).

principles rather than on activity-based principles makes the CRE developments prone to leakages should borrower-based measures only apply to the banking sector. Importantly, the borrower-based instruments are not available in all countries and, where available, are not harmonized.

In the current EU legal framework, very few macroprudential measures are available to address CRE-related risks in the non-banking sector. For investment funds, leverage limits can be applied (Article 25 of the Alternative Investment Fund Managers Directive). To stop fire sales in a crisis, it is also possible to suspend redemptions (Article 46 of the Alternative Investment Fund Managers Directive). With regard to the insurance sector, the Solvency II Directive imposes capital charges for property and concentration risks.

Table18

Overview of implemented macroprudential instruments for CRE in ESRB member countries

Measure	Date	Number of countries	List of countries
A. Broad capital-based measures			
Countercyclical capital buffer (Article 136 CRD) *positive non-zero rates*	2017	2	Norway, Sweden
	2018	2	Lithuania, Slovakia
	2019	6	Bulgaria, Czech Republic, Denmark, France, Iceland, United Kingdom
Systemic risk buffer (Article 133 CRD)	2014	2	Croatia, Norway
	2016	1	Iceland
	2017	2	Bulgaria, Poland
	2018	11	Austria, Czech Republic, Denmark, Estonia, Finland, Hungary, Liechtenstein, Netherlands, Romania, Slovakia, Sweden
B. CRE specific measures			
B1) Capital-based measures			
Higher risk weights on CRE exposures (Article 124 CRR)	2014	4	Ireland, Norway, Romania, United Kingdom
	2015	2	Croatia, Sweden
Risk weight floor for CRE exposures (Article 103 CRR)	2014	1	Sweden
Higher risk weights on CRE exposures (national law)	2018	1	Poland
B2) Borrower-based measures			
Loan-to-value limits (national law)	2013	2	Cyprus, Poland
B3) Other measures			
Limits on CRE exposures (national law)	2014	1	Denmark

*Source: ESRB WG-REM based on the ESRB's "**Overview of national macroprudential measures**", which is regularly updated.*

The current overview of macroprudential instruments, implemented in European countries, that can mitigate risks from CRE shows a prevalence of capital-based instruments for banks (see Table 18). In detail, more general buffers like the CCyB and the SyRB can be found in 10 and 16 countries respectively. By contrast, borrower-based measures such as LTV limits for bank lending have only been activated in Cyprus and Poland. The limited use of these measures could be due to legal hurdles, given that there is no harmonised framework, as well as the higher complexity of CRE markets, as described in previous and subsequent sections.

5.1.2 Step 5 – the selection of macroprudential instruments

The appropriate choice of macroprudential tools is highly dependent on the source and the intensity of the identified vulnerabilities in a country. **Also, the identification of the cyclical position of the respective CRE market plays a crucial role,** since macroprudential actions could address the build-up of vulnerabilities, e.g. by fostering prudent lending standards in an expansionary phase, or by enhancing the resilience of the financial system in the event of a negative shock, which may be more urgent at a mature stage of the cycle. In general, macroprudential tools should have already been activated during the initial phase of the upswing, as they are most efficient at this early stage. When the market has already entered a downswing, a pro-cyclical instrument that is implemented too late may exacerbate price drops.

In this context, **in order to assess whether the macroprudential tools contemplated in a given country reasonably match the source and intensity of the identified vulnerabilities, it is important to explore the transmission channels through which a tool may conceptually affect CRE developments as well as the financial system and the general macroeconomic outlook.** Noticeably, instruments originally designed to achieve a specific policy objective may, however, affect other key variables throughout the domestic economy, e.g. due to interactions between the effects on CRE prices and banks' and borrowers' balance sheets.

By adapting the arguments already made for RRE,[26] the WG-REM considered the basic distinction between the two classes of borrower-based and capital-based instruments. The former directly impact lending conditions, thus affecting the flow of credit. Accordingly, by tightening the requirements for collateral (LTVs) or indebtedness (DSCR/ICR), borrower-based instruments may increase the LGD for lenders or the PD for borrowers. For example, tighter LTV limits decrease the exposure of a lender to a potential default of the borrower. Restrictive action on loan maturity, amortisation at origination and amortisation floors lower the probability of negative shocks materialising before full loan repayment.

Capital-based measures typically increase lenders' loss absorbency, possibly resulting in more costly lending terms which may lower credit growth. For example, higher risk weights for CRE loans increase the capital posted by banks against their CRE exposures, thus enhancing their resilience to loan defaults in CRE, and possibly limiting the externalities relating to lending to other sectors of the economy. In addition, aggregate PDs could decrease as higher credit costs potentially restrict access to credit to insufficiently profitable CRE firms.

[26] See ESRB (2019).

Compared with RRE, analysing the impact of macroprudential tools is more complex for CRE. In the first place, lending in the CRE market is not limited to banks and, to date, very few macroprudential tools have proved suitable for addressing the risks stemming from the non-bank sector. Accordingly, if a borrower-based measure is activated or there are higher risk weight requirements only for bank lending, lenders are incentivised to shift their funding needs to an alternative source. These organisational and financial structures in the CRE market increase the risks of leakage and circumvention which might limit the impact of the activated measures or, unintendedly, render other market participants more vulnerable. In addition, as described in Section 3, CRE data availability hinders the thorough analysis of market developments as well as the assessment of the risk profiles of financial intermediaries in respect of the CRE market.[27]

A further complication is CRE's global interconnectedness. Foreign banks' lending can only be curbed if there is reciprocity of domestic macroprudential measures from other countries, which might only be feasible between ESRB member countries. The regulation of foreign non-banks might be even more challenging as there may not be an established framework for doing this. In addition, no macroprudential measure is available for CRE actors who use market funding as a financing source.

The operative guidance stems from a variety of considerations relating to the conceptual match between vulnerabilities and policy tools, and is summarised in Table 19. Accordingly, an assessment of appropriateness should take into account the five dimensions considered therein. First, the source of more substantial CRE concerns regarding systemic financial stability should be taken into account. Second, for any stretch there should be an appropriate focus on the cyclical stance, mainly by consistently exploiting information that has already been gathered in the risk analysis. Third, within a stretch the specific vulnerabilities that need to be targeted may differ, these being either flow or stock in nature. Fourth, policy priorities in the loss function of domestic authorities largely inform the choice of activated tools. Fifth, the potential for spillovers contributes to the assessment of appropriateness, since it conveys signals regarding the intensity and timing of the propagation of a shock and, therefore, the urgency of action, given that policies may differ in terms of delivery gaps and institutional delays in their actual enforcement.

[27] While AnaCredit will fill some crucial gaps in assessing credit conditions for bank lending, information on the risks of non-financial intermediaries is still difficult to assess (see Box 1).

Table19

Framework for policy appropriateness: linking CRE risks, policy objectives and instruments

Stretch	Phase of the cycle	Identified risks and vulnerabilities	Policy priorities and objectives	Potential for spillovers	Policy actions and policy instruments
Collateral	Solid expansion of the CRE market	Exuberant CRE price growth Loose credit market	Ensuring that credit standards and funding conditions remain appropriate Target: flows of credit	Identification of the exposures of national/foreign financial intermediaries supporting the expansion of the CRE market	Close monitoring of credit standards Borrower-based measures: - LTV, DSCR/ICR limits and mortgage lending value (national legislation).
	Mature expansion of the CRE market	CRE overvaluation High indebtedness	Strengthening the resilience of the relevant intermediaries (see potential for spillovers) to the potential materialisation of risks related to CRE price reversals Target: outstanding stock of credit	Excessive exposure of banks to CRE (when used as collateral) and potential for CRE vulnerabilities to damage banks' balance sheets Dependence of insurers on CRE market dynamics; size of insurers' and other non-banks' CRE positions Potential for significant cross-border spillovers due to decreased CRE values	Capital-based measures: - Article 124(2) of the CRR to increase SA RWs; - Article 164(5) of the CRR to raise IRB-model LGDs. - call for reciprocity. Measures for non-banks
Income and activity	Solid expansion of the CRE market	Exuberant growth in the construction sector CRE demand mainly driven by speculative motives Excessive supply or demand imbalances stemming from cyclical dynamics and structural/technological changes in the economy	Limiting the risk of credit and CRE price spirals by containing excessive credit growth. Containing speculative demand Target: flows of credit	Increasing share of banks' lending to construction companies/REITs/RE developers Increasing share of foreign investors Expanding portfolios of insurers/REITs	Borrower-based measures: - LTV, DSCR/ICR limits and mortgage lending value (national legislation). Measures for non-banks Potential non-macroprudential measures affecting market activity: - adjusting tax policies (e.g. to discourage short-term CRE investments); - adjusting land and urban planning policies to enable the market to ensure adequacy between supply and demand.
	Mature expansion of the CRE market	Contraction of CRE yields (compared with alternative investments) and reduction of the perceived risk premium, which could lead to key market players (investors / construction firms / developers / REIF/REIT) feeling overconfident. Deterioration of the financial positions of the various actors in the market (investors, constructions firms, developers)	Ensuring that credit standards and funding conditions remain appropriate Ensuring that the financial position of key market players is sound (limiting the build-up of excessive leverage by bank and non-bank investors) Target: outstanding stock of credit	NFCs/REITs/Insurers highly dependent on cash flows from CRE properties Banks hold excessive loan portfolios for construction companies, REITs Potential for significant cross-border spillovers due to decreased cash flows from CRE	

Stretch	Phase of the cycle	Identified risks and vulnerabilities	Policy priorities and objectives	Potential for spillovers	Policy actions and policy instruments
Financing	Solid expansion of the CRE market Mature expansion of the CRE market	Exuberant lending for CRE Loosening of bank lending standards to CRE/RE companies (increased LTV, increased maturities, etc.). Exuberant lending for CRE and RE activities by non-bank market players (insurance and pension funds). Increasing role of open-ended real estate investments funds	Ensuring that credit standards and funding conditions remain appropriate Strengthening the resilience of banks and non-banks to excessive CRE exposures Preventing excessive risk-taking by banks and non-banks by reinforcing their monitoring Limiting the risk of high liquidity needs for open-ended REIFs in stressed market conditions. Target: outstanding stock of credit, flows of credit	CRE market becomes increasingly dependent on bank financing REITs expand investor base; construction companies Potential bank losses are significant, which may reduce lending for all economic activities Potential for significant cross-border spillovers due to losses on CRE positions	Borrower-based measures: - LTV, DSCR/ICR limits and mortgage lending value (national legislation). Capital-based measures: - Article 124(2) of the CRR to increase SA RWs; - Article 164(5) of the CRR to raise IRB-model LGDs; - call for reciprocity. Measures for non-banks Suspension of redemption and leverage limits on AIMFD and REITs (national legislation).

*Source: ESRB WG-REM based on the ESRB's "**Overview of national macroprudential measures**", which is regularly updated.*

5.1.3 Step 6 – additional considerations at the country level

In addition to the varying relevance of international investors and cross-border capital flows there are significant differences between EU countries in important aspects affecting the choice and feasibility of policy measures. These include the legal and regulatory framework (including the issuance of building permits, land and urban planning policies, registration of property and debt and foreclosure procedures), interactions with other policy fields and room for leakage and circumvention.

Table 20 summarises the main country-specific dimensions that are worth considering in an appropriateness assessment of the CRE policy tools activated in a given country. They are mostly the same as the domestic factors that are also relevant to RRE policies. Notably, some of these may play a more important role in CRE policies. For example, in some countries non-bank actors might be important players in the CRE market while in other countries the vast majority of CRE exposures could be held by banks. Depending on the respective participation rate of market participants, macroprudential authorities should apply more or less caution to investors' previously described evasive behaviour. Moreover, whereas cross-border investors are key operators in domestic CRE markets, an appropriate choice of policy tools may depend on their source of funding (either foreign or domestic) as well as on the degree of the implied international interconnectedness of the domestic markets.

Table 20

Additional considerations at the country level

Institutional framework: EU and national legal basis, mandates of micro and macroprudential authorities, political considerations	If the most appropriate policy is not available or feasible, authorities may have good reason to choose second-best policies.
Structural real estate characteristics: elasticity of supply	Policy responses outside the scope of macroprudential policies might affect the market and the behaviour of market participants. Macroprudential policies need to take this into account while focusing on financial stability.
Fiscal, tax and monetary policies: fiscal incentives for mortgage lending, real estate taxation, interest rate	Policy responses outside the scope of macroprudential policies might affect the market and the behaviour of market participants. Macroprudential policies need to take this into account while focusing on financial stability.
Cross-border and cross-sectional spillovers: role of foreign financial institutions in domestic market, role of domestic financial institutions in foreign markets	Spillovers may affect the instrument choice: is the policy tool still effective, can it be easily reciprocated, does it have a substantial impact on foreign markets?
Arbitrage/leakage: role of non-bank financial institutions	Leakage may affect the instrument choice: is the policy tool still effective, can leakage be addressed by a combination of (macro)prudential measures?

Source: ESRB WG-REM.

5.1.4 The policy appropriateness framework at work: an operative example

The final assessment of the choice of policy instruments in a country should derive from the information gathered in Steps 4 to 6. This means that, given country-specific circumstances, the availability of instruments and the legislative hurdles to implementing them, as well as any additional (country-specific) information, one instrument (or a combination of instruments) may be more appropriate than another. It is, however, not easy to develop more concrete guidelines, as the limited experience of macroprudential instruments for CRE restricts the assessment sample.

Table 21 shows some examples of the possible combination of three factors, depending on the identification of vulnerabilities, which could affect instrument choice. In the first example, the position in the cycle (Step 1) provides information on whether potential risks are building up, i.e. whether the market is expanding, as is the case in the recovery or expansion period, whereas risks from the stock that have already built up are prevalent in the mature or downturn stage of the cycle. In the former situation, flow risks for banks can be contained by fostering prudent lending. Appropriate tools to do this could include borrower-based measures that affect new lending by requesting more equity (LTV limits) or higher profitability (DSCR/ICR limits) from creditors. Capital-based measures, i.e. higher risk weights, although pertaining to the whole lending stock, could also lead to more prudent lending, as a rise in credit costs would impede unprofitable CRE investors from accessing bank lending.

Second, where non-banks represent a significant share of total financing for CRE (Step 3), there are elevated risks restricting bank lending – this may incentivise market players to shift their funding needs to the non-banking sector. Put differently, the implementation of macroprudential instruments

for banks could increase risks for non-banks. Therefore, the use of a combination of instruments for banks as well as for non-banks may be deemed necessary to avoid circumvention of the implemented measure(s). In the opposite situation, where almost all funding for CRE is provided by banks, the initial risk of circumvention is low. Nevertheless, it is advisable to monitor whether non-banks are seeking to fill the gap left by a restricted banking sector.

Third, in some countries, both foreign investors as well as banks play a significant role in the domestic CRE market. If only domestic banks are restricted by macroprudential instruments, borrowers might shift their lending demand to these foreign banks. Therefore, to limit leakages, reciprocal implementation of domestic macroprudential instruments should be considered for foreign intermediaries.

Importantly, all three factors, as well as many others, could be relevant at the same time in a respective country and could, therefore, affect the selection process for macroprudential tools. **Macroprudential authorities therefore face challenges when attempting to mitigate the potential risks emerging from the CRE market.** As more experience is accumulated by the countries who have already implemented such tools, the goal should be to share more insights. From this standpoint, the selection process may be further fine-tuned in the future.

Table 21

An operative example of the assessment of policy appropriateness

Step 4	Steps 5 and 6: examples of factors affecting instrument choice		Potential vulnerabilities	Target variables	Implications for the instrument selection
		In case of:			
Toolkit	Position in the cycle	• Recovery/ expansion	• Potential build-up of risks (flow)	• Fostering prudent lending	• Borrower-based measures • Capital-based measures
	Relevance of non-banks	• High relevance	• Risk of circumvention	• Investment fund growth; lending growth by insurance companies	• Combination of instruments
	Relevance of foreign players	• High relevance	• Depdendence on foreign players • Higher chance of importing exogenous shocks	• Increasing resilience of domestic players • Reciprocity of macroprudential instruments	• Capital-based measures • Concentration measures • Reciprocity

Source: ESRB WG-REM.

5.1.5 Final rating and the communication of the assessment of policy appropriateness

1. **Fully appropriate** – when the following four conditions are jointly met:

   (a) policy objectives are consistent with the identified vulnerabilities according to the proposed framework (see Table 19);

(b) the policy mix meets the policy objectives according to the proposed framework;

(c) leakages and circumvention are duly considered and, to the extent possible, addressed;

(d) interactions with other policy areas are taken into account.

2. **Partially appropriate** – when conditions (a) and (b) are met, either (c) or (d) or both are not; or (a) is met, but (b) is not because country-specific conditioning factors reduce the feasibility of policy instruments.

3. **Not appropriate** – when the conditions for partial appropriateness are not met, or no policy is in place to address the identified vulnerabilities.

As duly mentioned in the report, the higher complexity of CRE markets involves more severe data gaps, making it more challenging both to correctly identify risks and to make an informed and appropriate selection of macroprudential instruments. Therefore, until further progress has been made on data availability, the appropriateness rating will continue to be mostly informed by intensive consultation with national authorities.

Consistent with the outcome of the risk assessment, a template is provided summarising the results and adding information regarding an instrument's appropriateness (see Table 22). Importantly, the information in this template only serves to improve the ESRB's communication strategy, there being no additional implications for national authorities.

Table 22

Commercial real estate policy – policy appropriateness of macroprudential measures – assessment update

General guidance for completing this template

The assessment of the appropriateness of the policy measures enacted by the national authorities under review is based on the framework outlined in Section 5 of the WG-REM CRE report.

- Please keep answers to the point, while providing all necessary detail to support your assessment.
- Please do not insert any charts or tables.
- Where indicated, please use the assessment scale (choose one of the options in the drop-down list).

Key concepts and definitions valid throughout the template

The first step of the assessment judges whether policies are conceptually suitable given the nature and timing of the identified vulnerabilities, i.e. they can be expected to address the risk at hand via their transmission channels. In a second step, additional considerations that could condition a policymaker's choice of instruments are taken into account.

As a result of the assessment, the overall rating of policy appropriateness follows a three-level ranking:

1. **Fully appropriate**, when all the following four conditions are jointly met:

   (a) the policy objectives of the national authority are consistent with the identified vulnerabilities according to the framework proposed by the WG-REM (see Table 19 in Section 5 of the WG-REM CRE report);

   (b) the policy mix meets the policy objectives according to the framework proposed by the WG-REM;

   (c) leakages and circumvention are duly considered and, to the extent possible, addressed;

   (d) interactions with other policy areas are duly taken into account.

2. **Partially appropriate** when:
   - (a) and (b) are met, either (c) or (d) or both are not met;
   - (a) is met, but (b) is not met, because country-specific conditioning factors reduce the feasibility of policy instruments.

3. **Not appropriate** when:
   - the conditions for partial appropriateness are not met, or no policy is in place to address the identified vulnerabilities.

Section B: Policy appropriateness	
Assessing the appropriateness (Steps 4 to 6)	Considerations (to be filled out by national authorities)
Brief motivation for the final assessment **(e.g. the selection of instruments is in line with the WG-REM framework. There is no mismatch between policy objectives as suggested by the framework and the objectives of national authorities.)**	
B1. What are the policy objectives as stated by the national authorities? **(e.g. to mitigate and prevent excessive credit growth; to ensure prudent lending standards.)**	
B2. Are these policy objectives consistent with the identified vulnerabilities, with reference to the WG-REM framework (see WG-REM CRE report, Section 5, Table 19)?	
B3. What are the appropriate policy instruments based on the identified vulnerabilities (see WG-REM RRE report, Section 5, Table 19)?	
B4. Activated macroprudential policy instruments. **(Please use one line per instrument)** **1.** **2.** **…**	(With reference to each instrument in place, please expand on the following: • the calibration of the instrument (amplitude/phasing-in); • dates of the introduction and recalibration of the measure (if applicable); • information on the temporary/cyclically adjustable/permanent nature of the instrument).
B5. If multiple instruments are in place, please discuss the considerations that led to the choice of a specific combination of instruments according to the national authorities.	
B6. Please describe the transmission mechanism through which the policy package is expected to contribute to the ultimate policy objective(s) (stated in question B1) according to the national authorities.	
B7. Which considerations related to other policy areas (e.g. monetary, fiscal, microprudential) were taken into account when choosing the policy mix? How does the policy mix address them?	

Section B: Policy appropriateness	
B8. Were considerations related to potential policy circumvention (e.g. arbitrage, leakage) taken into account when introducing the policy mix? If so, please explain whether they were addressed and, if so, how.	
B9. Were considerations related to cross-sectional/cross-border effects and related to the policy's impact on the Internal Market taken into account when choosing the policy mix?	
B10. Alternative policy options. **(Please give any alternative macroprudential instruments considered by the national authorities as equally or better suited than the enacted policies to achieving the stated policy objective(s), given the identified vulnerabilities. Which considerations led to their dismissal? Did the legal framework and institutional competences affect instrument choice?)**	

5.2 Addressing policy sufficiency

Once a policy tool has been rated as being at least partially appropriate, in isolation or in combination with other complementary tools, the final step in the CRE assessment framework developed by the WG-REM regards the effectiveness of the activated measures in achieving the intermediate objectives of the macroprudential policies, namely increasing the resilience of the financial system and decreasing the build-up of systemic risks, according to the ESRB.[28]

In line with the RRE framework, a CRE-related macroprudential instrument, assuming it proves appropriate, is assessed as sufficient if it jointly meets the following requirements: **(i) it delivers a significant contribution to policy objectives (effectiveness); (ii) it delivers, over time, reasonably higher benefits than costs (efficiency).**

Accordingly, an assessment of the sufficiency of CRE-related policies is subject to: (i) the identification of the target variables that are expected to affect the conditions for achieving the intermediate objectives; (ii) the possibility of assessing the balance over time between the expected gains and costs of the activated tools. **In principle, the assessment would also proceed in three stages (Figure 4) for CRE, thus providing a final rating which is consistent with both policy appropriateness and identified vulnerabilities.**

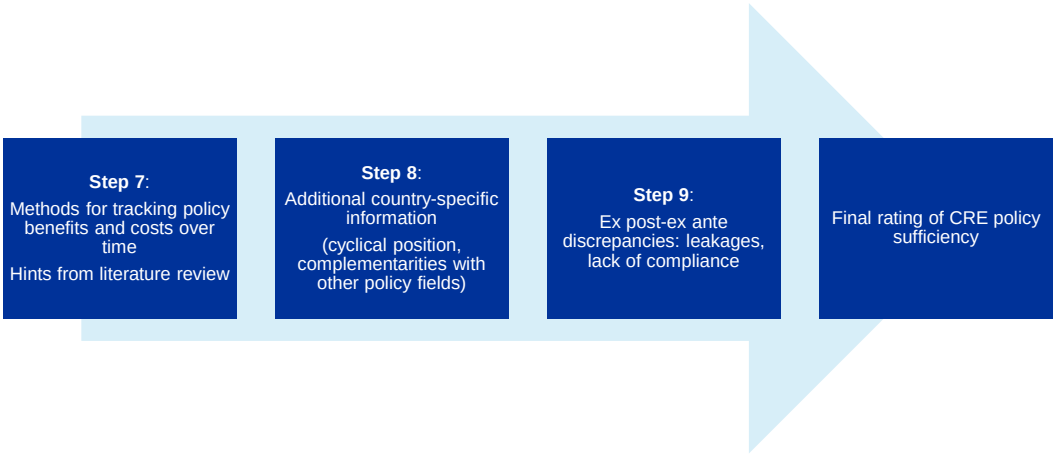
Step 7 reviews quantitative and qualitative methods that are generally useful for calibrating the tools against the intensity of the identified risks and for monitoring their net benefits projected over time. Since measuring the costs and benefits of macroprudential tools from a short, medium and long-term perspective depends on data sufficiency, important insights could be gained from empirical literature, where available.

Step 8 takes a number of additional considerations into account in order to address policy sufficiency in the country-specific situation. These considerations include the cyclical position of the country's CRE market; e.g. a very restrictive policy calibration could interact with a prolonged expansion in CRE activities and could, unintendedly, prompt the materialisation of vulnerabilities, in contrast to the original objective. **Other country-specific characteristics relevant for the sufficiency assessment include the institutional set-up, as well as the economic and financial structure.** The latter refers in particular to the size of non-banking and cross-border intermediaries, which may affect the potential for circumvention and leakages in respect of the activated tools in a country, highlighting the potential need to include reciprocity in policy considerations**. The calibration of individual instruments should also consider the impact of other macroprudential measures that have been activated over time, as well as interactions with other policy fields – primarily monetary policy and taxation of CRE.** Most of these factors are relevant inputs for the risk and policy appropriateness analysis performed in previous sections and contribute to enhancing overall consistency across the framework. At the same time, these factors inform the assessment of policy sufficiency by potentially affecting the timing and the size of expected policy costs and benefits over time.

[28] See Recommendation of the European Systemic Risk Board of 4 April 2013 on intermediate objectives and instruments of macroprudential policy (ESRB/2013/1) (OJ C 170, 15.6.2013, p. 1).

Figure 4

Overview of the steps in the assessment of CRE policy sufficiency



Source: ESRB WG-REM.

Step 9 deals with possible discrepancies between ex ante and ex post assessments, which may convey valuable information on factors of uncertainty regarding the actual effects of the activated instruments. Such discrepancies may be the result of time lags between ex ante considerations and the actual implementation of the macroprudential tool which, in turn, help to clarify how the institutional set-up and the design of the macroprudential governance weigh on the actual timing and size of the policy impact. In addition, delivery gaps indicate the operation of factors that are difficult to project ex ante, such as the actual reactions of the variety of actors in CRE markets to the macroprudential tools activated in a given country, the intensity of cross-border effects, and any feasible room for coordination across authorities in different countries. Moreover, performing an ex post assessment of the sufficiency of enacted measures may support the timely recalibration of measures already in place, or required to take complementary action.

The three steps of the sufficiency assessment make demanding requirements of available data and (which is partially related) feasible methods in order to calibrate policy tools and regularly monitor the benefits and costs they entail over time. For the time being, however, the data gaps are very severe in most European countries**.** In addition, experience accumulated around the world regarding the implementation of macroprudential policies related to CRE is, to date, generally more limited, also compared with the analyses available for RRE. Moreover, the high complexity of CRE markets due to the presence of international investors or funds from abroad, as well as the more important role played by non-banks, makes the sufficiency analysis even more challenging. These factors weigh heavily on the comprehensiveness of the practical guidance to CRE policy sufficiency that can currently be derived from the ideal framework. In this context, the WG-REM has refrained from further elaborating the latter along the lines fully documented in the companion report on RRE (ESRB, 2019) which, however, set a reference guidance that will also be relevant for CRE as soon as the most critical data gaps can be reasonably filled.

In order to be operative and to prevent any unwarranted lack of macroprudential action to mitigate detected CRE vulnerabilities, the WG-REM has suggested a heavily simplified approach to the policy sufficiency assessment. **This includes the basic requirement that**

national authorities should fully document all items of information (whether experimental or qualitative and incomplete) and any reference criterion (whether based on quantitative methods or on peer review and expert judgement) adopted to calibrate the activated measures and, if possible, keep monitoring the ensuing developments over time in the domestic CRE market, the financial system and the general macroeconomic outlook.

According to this view, **in the interim period before the statistical picture has significantly improved, the sufficiency assessment for CRE would mostly be based on intensive consultation with the national authorities,** with the aim of producing a thorough explanation of the rationale underpinning the selection and calibration of macroprudential tools, whether these are already in place or soon to be introduced. In addition, information should be reported on the respective policy priorities.

Importantly, the assessment of a policy's effects should focus on the target variables that are expected to drive the changes observed in the risk indicators. For example, the macroprudential authorities are advised to check whether risk weights have affected risk provisioning, with a possible further impact on interest rates, credit growth and price growth.[29] Alternatively, in the case of LTV limits the impact on the distribution of LTV's, lending growth or whether investors shift their funding to alternative lenders should be investigated. It is also advisable to monitor the possible impact of activated measures over time, as players might adjust their behaviour.

A second dimension relates to heterogeneous developments across CRE segments and/or regions in a country. For instance, it could be challenging to activate macroprudential measures (in a pre-emptive strategy) if some CRE segments are still in recession while others are already enjoying a sustained recovery. This also holds for spatial differences. As discussed in Section 2, in CRE markets there are primary and secondary locations which might show different trends over time. Macroprudential authorities might find themselves in a position where instruments for prime locations are deemed necessary while developments in secondary locations do not signal risks. In this context, sectoral or spatially limited macroprudential instruments might appear useful at first sight. However, the intensity at which they could be activated should be very carefully analysed, given that distinct regulatory approaches to sectors or regions distort the level playing field, and the ensuing intricate regulations could prompt unintended reactions from different groups of market participants.

Moreover, since benefits and costs may be expected to arise over time, depending not only on the activated macroprudential measures, but also on possible actions in other policy fields, it is worth appraising whether complementarities with factors such as fiscal treatment, the regulatory framework and key structural features (e.g. the size of individual CRE segments, different groups of active operators, and funding strategies) have been taken into account by the national authorities during the calibration of the selected tools.

Finally, it is worth restating that it is important to gather any discussion information and documentation which could enhance the transparency the arguments, data and criteria adopted by the national authorities for the policy calibration as well as for the continuous monitoring of the

[29] A first step in this kind of analysis could follow the work of Ferrari, Pirovano and Rovira Kaltwasser (2017) who investigated the effect of risk weights on mortgage rates and mortgage loan growth for Belgian banks.

ensuing benefits (mitigation of vulnerabilities) and costs (intended/unintended foregone recovery in investment or consumption as well as in the general business cycle) that may materialise over time.

Importantly, **the perspective of developing a suitable kit of analytical methods and statistical inputs remains one of the key aspects of a sound sufficiency assessment of CRE-related macroprudential policies, and the WG-REM clearly suggests that it should be an urgent priority for most European countries to increase their efforts to achieve significant progress in this direction.**

5.2.1 Final rating and communication of the assessment of policy sufficiency

By combining the variety of considerations relating to the calibration of appropriate tools, even in countries currently affected by severe data gaps, policy sufficiency can be assessed by means of a three-level rating, with the following interpretation:

1. **Fully sufficient.** Given the declared policy objectives and **depending on data and methods currently available**, an appropriate policy (enacted and adopted, or publicly announced) has been calibrated so that the following requirements are both met: the identified systemic vulnerabilities related to CRE are likely to be mitigated to a **great extent**; expected benefits **significantly exceed** expected costs in the medium term.

2. **Partially sufficient.** Given the declared policy objectives and **depending on the data and methods currently available**, an appropriate policy (enacted and adopted, or publicly announced) has been calibrated so that the following requirements are both met: the identified systemic vulnerabilities related to CRE are likely to be **somewhat** mitigated; expected benefits exceed expected costs in the medium term **to some extent**.

3. **Not sufficient.** The conditions for full or partial sufficiency are not met.

In order to support the collection and interpretation of the required information, as well as to provide guidance for enhancing the communication strategy of the ESRB (or any other institution tasked with the assessment), a template is provided reviewing the main elements of the policy sufficiency rating (Table 23).

Table 23

Commercial Real Estate – policy sufficiency assessment template

Section C: Assessing the sufficiency of policies related to commercial real estate (CRE)	
ASSESSMENT OF POLICY SUFFICIENCY	Choose an item.
Brief motivation for the final assessment of the sufficiency of CRE policies, assuming they are at least partially appropriate	
C1. What is the priority policy objective according to the national authorities? What are the target variables of the macroprudential instrument?	
C2. For which macroprudential measures already in place or publicly announced did the national authorities perform a calibration analysis consistent with the WG-REM framework (see Section 5.2 of the WG-REM report on CRE)?	/
1.	Choose an item.
2.	Choose an item.
…	
C3. Discuss the size and the timing of the expected benefits of the activated macroprudential policy measure, according to the priority policy objective.	
C4. Discuss the size and the timing of the expected costs of the activated macroprudential policy measure, given the current and prospective conditions of the general economy in a country.	
C5. Discuss arguments that the expected benefits will exceed the expected costs for the activated macroprudential measures.	
C5. Extensively comment on the class of information and methods or criteria used to assess the sufficiency of the policy measures. Are they mostly based on a qualitative approach and on judgement-based considerations, or on any quantitative method potentially feasible in the country? Please provide a narrative explanation of the main elements that justify the expectations of positive net benefits deriving from the activated policies (see also point C9).	
C6. If multiple instruments are in place as part of an effort to mitigate room for circumvention and leakage, please give a narrative assessment of the extent to which the policy mix helps to increase the sufficiency of the total macroprudential action.	
C7. Did the national authorities consider how other policies adopted in the country (e.g. monetary, fiscal, microprudential) and/or the legal environment affect the sufficiency of the activated macroprudential measures? If yes, what are the main channels?	
C8. Do the national authorities regularly replicate the analysis of the policy effects to identify delivery gaps or unexpected events that require recalibration of the activated tools and/or additional complementary action?	
C9. Annex – additional information on data, models, and other more detailed information that supports the sufficiency analysis. You can refer to any documentation on methodology or policy discussions.	

6 Concluding remarks

Following the finalisation of the methodological framework developed for RRE (ESRB, 2019) and in line with its mandate, the WG-REM explored any scope for using an equivalent approach to assess CRE systemic risks and macroprudential measures activated to mitigate them. To this end, **in view of the severe data gaps that continue to hinder effective analysis of CRE developments in European countries (Section 2 of this report), the WG-REM adopted a pragmatic two-step strategy.**

First, it developed a range of operative guidance for assessing CRE vulnerabilities and related policies. This conceptually resembles the fully fledged RRE framework, although it takes into account the greater heterogeneity and deeper complexities in CRE due to related wider variety of operators, greater exposure to foreign investors and larger set of financing options. In vein of the RRE methodology, the new framework is structured in a sequence of three modules, which facilitates the consistent assessment of the sources and intensity of CRE systemic vulnerabilities and the related macroprudential policies implemented in a country (Table 24). Every module starts by processing information on the general environment affecting CRE risks and related policy issues, and produces a final assessment outcome by combining general (or horizontal) and country-specific (or vertical) considerations along detailed operative lines, whose transparency is ensured by a set of communication templates.

A significant difference from the RRE framework, connected to the greater heterogeneity of the structural features of the domestic CRE markets documented in Section 2 of this report, is the guidance that country-specific considerations should play a more substantial role in the final ratings in both risk and policy assessments. Given the current poor statistical picture, an additional factor which temporarily increases the relevance of country information is the need to compensate for the limited availability of common and harmonised indicators, which restricts the possibility of a comprehensive cross-country (or horizontal) analysis.

Importantly, since the current high data requirement for the guidance to be fully operative is barely satisfied in most European countries, the fully fledged framework for CRE has been developed with a medium-term perspective. This represents a blueprint for the sound assessment that may be possible in the near future, as the variety of statistical initiatives currently in place may progressively increase data availability. In addition, it will help to identify the main direction the statistical efforts themselves should take and, possibly, where more needs to be done.

Second, the WG-REM has provided a body of advanced considerations that are intended to give practical guidance for assessing CRE vulnerabilities and related macroprudential policies until the forthcoming statistical progress has been achieved. This contingent guidance is expected to be especially relevant in countries where data gaps have been particularly severe. Due to the current weak statistical picture, the guidelines should be viewed as transitional and potentially incomplete, as they may not fully cover the channels through which CRE and related macroprudential policies affect the conditions for systemic stability.

Table 24

Overview of the overall CRE assessment framework

	Steps	Outcomes
Assessment of source and intensity of CRE systemic risks		
Step 1	(Forward-looking) appraisal of the cyclical position	Final CRE risk rating by stretch (risk template): no exposure; low exposure; medium exposure; high exposure.
Step 2	Horizontal assessment: scoreboard and mechanical ratings	
Step 3	Vertical assessment: additional country-specific information, expert judgement and potential for spillovers	
Assessment of appropriateness of CRE-related policies		
Step 4	Review of the policy toolkit available to address CRE risks	Final rating of CRE policy appropriateness (appropriateness template): fully appropriate; partially appropriate; not appropriate.
Step 5	Factors affecting the choice of instruments and their interactions, given identified vulnerabilities	
Step 6	Additional country-specific considerations: legal environment, structural features of domestic CRE, room for policy circumvention	
Assessment of sufficiency of CRE-related policies		
Step 7	Methods for tracking policy benefits and costs over time given policy objectives Hints from literature review	Final rating of sufficiency of CRE appropriate policies (sufficiency template): fully sufficient; partially sufficient; not sufficient.
Step 8	Additional country-specific information: cyclical position, complementarities with other policy fields, data and method limitations	
Step 9	Ex post ex ante discrepancies, leakages, lack of compliance	

This is **to enhance the regular monitoring of CRE developments in the EU, which is needed for prompt risk detection and policy reaction**. At the same time, the important policy prescription remains that greater effort needs to be made to achieve the expected urgent statistical progress, either through official or experimental projects, so that the assessment framework presented in this report can become fully operative.

The current limited data availability combined with the complex operation of CRE – due to intensive cross-border interactions and the important role played by non-banks – makes the risk and policy assessment particularly challenging. In this context it is vital to initiate highly intensive consultation between the ESRB and the national authorities, with the aim of sharing all data sources (whether experimental, or qualitative and potentially incomplete) and reference analysis (whether based on quantitative methods, or on peer review and expert judgement) available in a country. This will help to understand CRE development and the reasons behind the policy measures activated (and calibrated) in a country.

Once again, this is a pivotal requirement, especially where data limitations are particularly severe. However, this does not affect the general claim the assessment process remains under the sole responsibility of the ESRB.

A further implication of the currently limited data availability is that **the inputs of indicators used in the different steps of the transitional CRE framework presented in this report are meant to be flexible and worth being periodically reviewed as new data, methods and empirical evidence become available in the near future.** This is particularly important for the assessment of policies, especially with regard to the sufficiency pillar, which is currently simplified around basic documentation requirements of data and criteria followed by national authorities in the policy calibration. As for the risk assessment, the selection of indicators included in the scoreboard (Step 2) and the computation of the respective critical thresholds are also highly dependent on data availability. In this respect, the dashboard presented in Section 4 is intended to be a transitional application of the conceptual framework to CRE vulnerabilities and, in addition, to be combined with a large variety of country-specific information. It should be updated as statistical progress is progressively achieved.

Finally, **it is worth stressing that, in addition to all the effort made by the WG-REM to provide concrete guidance for CRE assessment despite huge data constraints, the policy priority is still to enhance efforts at both the national and the international level to urgently fill the large data gap that remains in most European countries.** In this respect, promising signals are coming from a number of national initiatives reviewed in the report which should enhance data availability for specific issues in some countries (Denmark, Hungary, the Netherlands and Poland), possibly before the fulfilment of Recommendation ESRB/2019/3 and the G20 programmes.

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Annex 1: Cyclical indicators

Indicator	Source	Countries for which data are available
(1) **Deviation of CRE capital values-to-rent ratio from historical average (%)**	CRE capital value and rent indices available from MSCI	Austria, Belgium, Czech Republic, France, Hungary, Portugal, Spain, the Netherlands, Sweden, Ireland, Denmark, Italy, Poland, Germany and the United Kingdom.
(2) **Deviation of CRE yields from historical average (%)**	Yield data are available from MSCI	Belgium, Czech Republic, Denmark, Germany, Ireland, Spain, France, Italy, Hungary, the Netherlands, Austria, Poland, Portugal, Finland, Sweden and the United Kingdom. Gross rent passing yield is available for all countries except; the Czech Republic, Hungary, Sweden, Denmark, the United Kingdom and Finland, for which the net operating income yield is used.
(3) **Deviation of CRE capital values-to-GDP ratio from historical average (%)**	Gross domestic product at current prices available from Eurostat Gross National Income series for Ireland is obtained from the Central Statistics Office	Belgium, Czech Republic, Denmark, Germany, Ireland, Spain, France, Italy, Hungary, the Netherlands, Austria, Poland, Portugal, Finland, Sweden, and the United Kingdom. Data for Ireland are based on the ratio of CRE capital values-to-GNI*
(4) **Deviation of CRE capital values-to-consumption ratio from historical average (%)**	Consumption data available from Eurostat	Belgium, Czech Republic, Denmark, Germany, Ireland, Spain, France, Italy, Hungary, the Netherlands, Austria, Poland, Portugal, Finland, Sweden and the United Kingdom.
(5) **Deviation of CRE capital values-to-employment ratio from historical average (%)**	Employment data available from Eurostat	Belgium, Czech Republic, Denmark, Germany, Ireland, Spain, France, Italy, Hungary, the Netherlands, Austria, Poland, Portugal, Finland, Sweden and the United Kingdom.

Annex 2: List of indicators

Step 2 indicators

Latest data period always corresponds to end-2018 unless otherwise stated.

Indicator	Source	Threshold[30]
(1) **Average real CRE price index annual growth over the last 3 years, %**	Series for CRE prices were selected consistently with countries preferences, as in ESRB (2018). Codes in SDW for CRE: Based on MSCI data: RESC.A.??._T.N._TC.CVAL.7.VB.N.IX for AT, BE, CY (end-2017 data), CZ, FR, HU, PT and ES (where "??" is a country code). FI data not available on SDW, directly obtained from MSCI. Based on national or hybrid data: DE: CPP.Q.DE.N.TH.TVAL.TP.3.INX DK: RESC.A.DK._T.N._TC.TVAL.DK2.TB.N.IX IE: RESC.A.IE._T.N._TC.TVAL.7.TH.N.IX IT: RESC.A.IT._T.N._TC.TVAL.IT2.TB.N.IX NL: RESC.A.NL._T.N._TC.TVAL.7.TH.N.IX NO: RESC.A.NO._T.N._TC.TVAL.7.TH.N.IX PL: Average of RESC.A.PL._T.N.COT.TVAL.PL2.TB.N.IX and RESC.A.PL._T.N.CRT.TVAL.PL2.TB.N.IX SE: RESC.A.SE._T.N._TC.TVAL.7.TH.N.IX UK: RESC.A.GB._T.N._TC.TVAL.7.TH.N.IX CRE price index: MSCI (available in SDW) Codes in SDW for inflation rate: ICP.M.??.N.000000.4.ANR (where "??" is a country code)	Thresholds were revised slightly downwards compared with ESRB 2018 to account for the longer time span and are defined as percentiles based on the historic and cross-country distribution of the real price changes: T1: ≥ 1 T2: ≥ 3 T3: ≥ 5
(2) **Yield deviation from historical average, basis points**	MSCI	Thresholds from ESRB 2018: T1: ≤ -45 T2: ≤ -70 T3: ≤ -130
(3) **ECB misalignment indicator**	Various – See Annex 1 for more information	Thresholds computed as percentiles (60, 75, 90) based on the historic and cross-country distribution: T1: ≥ 2 T2: ≥ 7 T3: ≥ 13
(4) **Deviation between current and historical CRE yield and government bond spread, basis points**	CRE yields: MSCI Government bond spreads: Datastream complemented by SDW (PL, HU)	Thresholds from ESRB 2018: T1: ≤ 25 T2: ≤ -10 T3: ≤ -60

[30] When thresholds are calculated on the basis of statistical distributions, they are generally associated with values close to the 60th, 75th and 90th percentiles of the pooled distribution across countries.

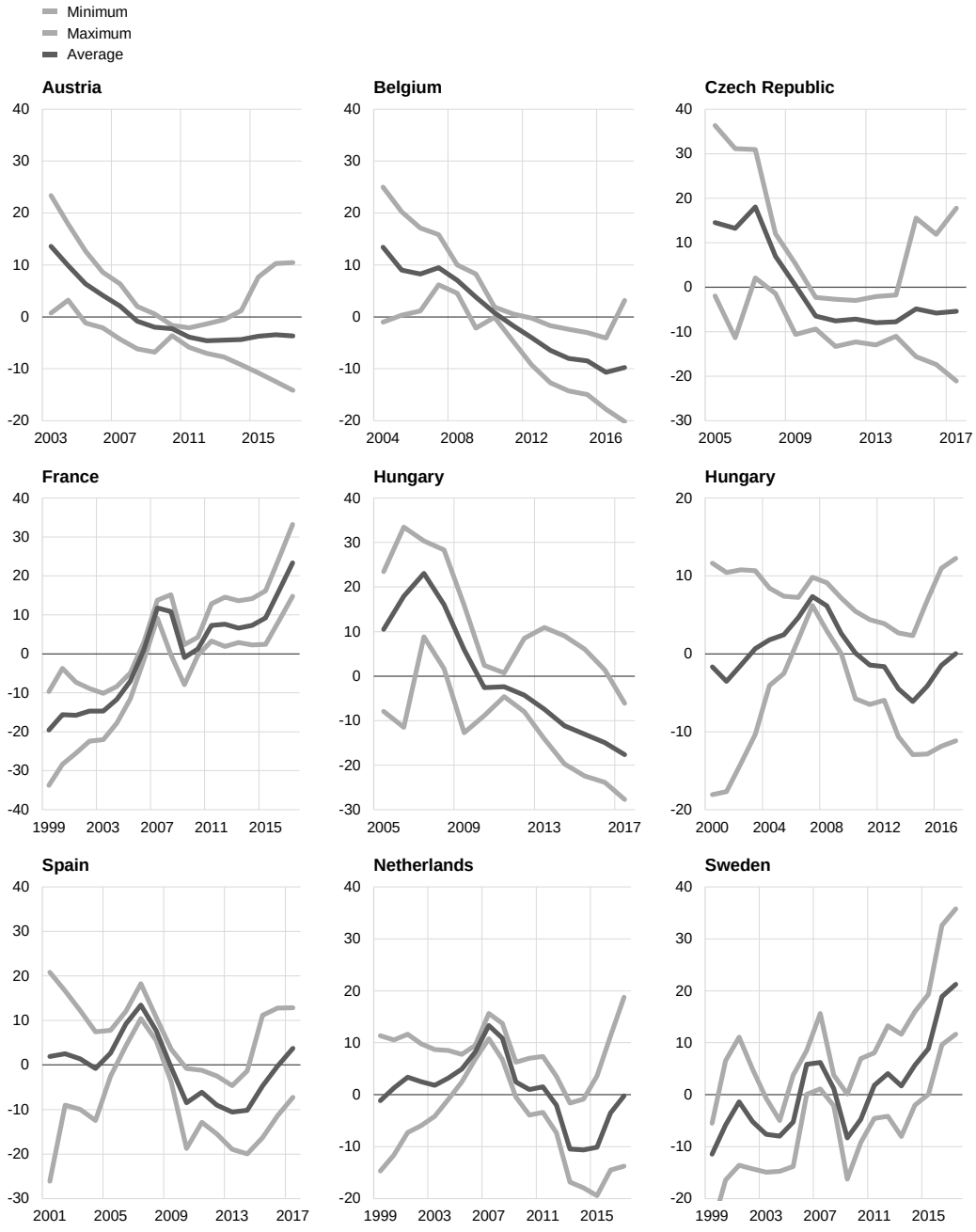
Indicator	Source	Threshold
(5) **Average investment volume annual growth over the last 3 years, %**	Cushman & Wakefield	Former ESRB 2018 thresholds (listed below) could be revised due to the longer time span considered (1 to 3 years). Data were, however, not available to the WG-REM to compute them: T1: ≥ 25 T2: ≥ 50 T3: ≥ 80
(6) **Non-residential building permits average annual growth over the last 3 years, %**	Eurostat (table sts_cons_per)	Thresholds computed as percentiles (60, 75, 90) based on the historic and cross-country distribution: T1: ≥ 5 T2: ≥ 10 T3: ≥ 15
(7) **Real estate investment funds/trusts average annual growth over the last 3 years, %**	Codes in SDW: IVF.M.??.N.40.L30.A.I.Z5.0000.Z01.A (where "??" is a country code) Can be complemented by national data due to lack of harmonised REIT definition	Thresholds from ESRB 2018: T1: ≥ 10 T2: ≥ 15 T3: ≥ 20
(8) **Bank lending for CRE, annual growth, %**	Lending for CRE defined as lending to the construction (F) and real estate (L) sectors Codes in SDW: Exposure to construction sector: CBD2.Q.??.W2.67.S11.F.A.F.A1100._X.ALL.GC._Z.LE._T.EUR Exposure to real estate sector: CBD2.Q.??.W2.67.S11.L.A.F.A1100._X.ALL.GC._Z.LE._T.EUR (where "??" is a country code)	Thresholds from ESRB 2018: T1: ≥ 5 T2: ≥ 10 T3: ≥ 15
(9) **Annual change in average LTV, %**	AnaCredit	Thresholds to be computed once AnaCredit data of sufficient quality are available
(10) **Insurance companies lending for CRE, annual growth, %**	EIOPA statistics based on list of assets (all portfolio types, all undertaking types, CIC 8 (loans and mortgages), type of real estate exposure = commercial real estate)	The thresholds are the same as those for the banking sector: T1: ≥ 5 T2: ≥ 10 T3: ≥ 15

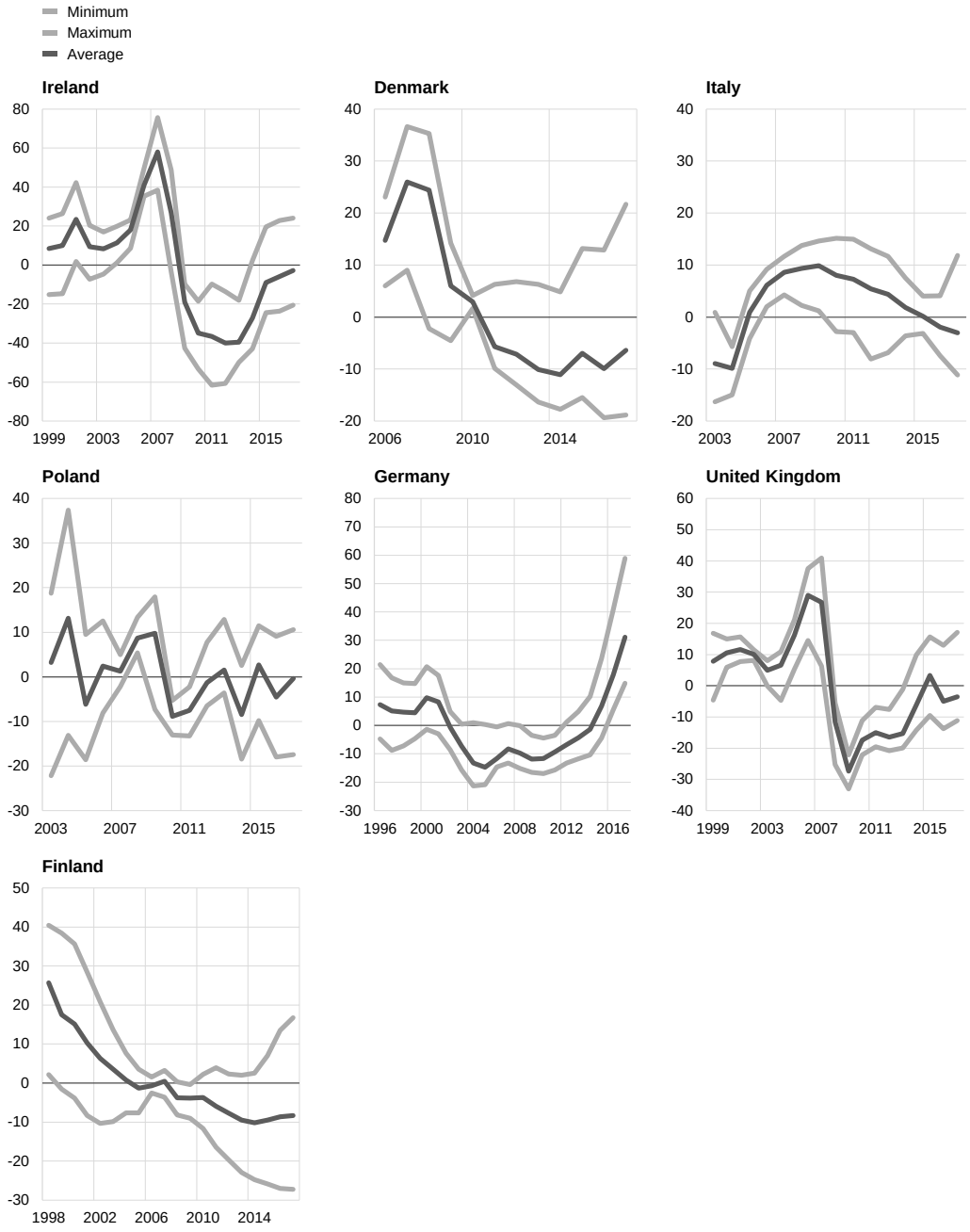
Step 3 indicators: potential for spillovers

Indicator	Source
(1) **Top quantile of CRE loans, relative to Tier 1 capital**	COREP/AnaCredit
(2) **Real estate investment funds/trusts size relative to total size of the investment fund sector**	Codes in SDW: Real estate: IVF.M.??.N.40.L30.A.1.Z5.0000.Z01.E (where "??" is a country code) All invest. funds: IVF.Q.??.N.T0.T00.A.1.Z5.0000.Z01.E (where "??" is a country code) REIFs/REITs size proxied by shares issued by the sector (total assets not available on Eurostat). Can be complemented by national data due to lack of harmonised REIT definition
(3) **Exposure of insurers as proportion of total assets**	EIOPA statistics based on list of assets (all CRE and unassigned exposures excluding own use, as a % of total assets excluding unit-linked)
(4) **Gross value added of construction and real estate activities, relative to GDP**	Eurostat (Gross value added and income by A*10 industry breakdowns [nama_10_a10] for NACE codes F and L)
(5) **Top quantile of LTVs**	AnaCredit
(6) **Share of variable interest rate loans**	AnaCredit
(7) **Share of interest-only loans**	AnaCredit
(8) **Share of unsecured loans**	AnaCredit
(9) **Share of cross-border financing sources for CRE**	AnaCredit
(10) **Share of cross-border exposures to CRE (AnaCredit)**	AnaCredit

Annex 3: Misalignment of commercial property prices, following an ECB approach

Percentage deviation of indicators from their respective long-term averages





*For details on methodology see European Central Bank (2011) "**Indicators for detecting possible value misalignments in commercial property markets**", Financial Stability Review, December.*

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