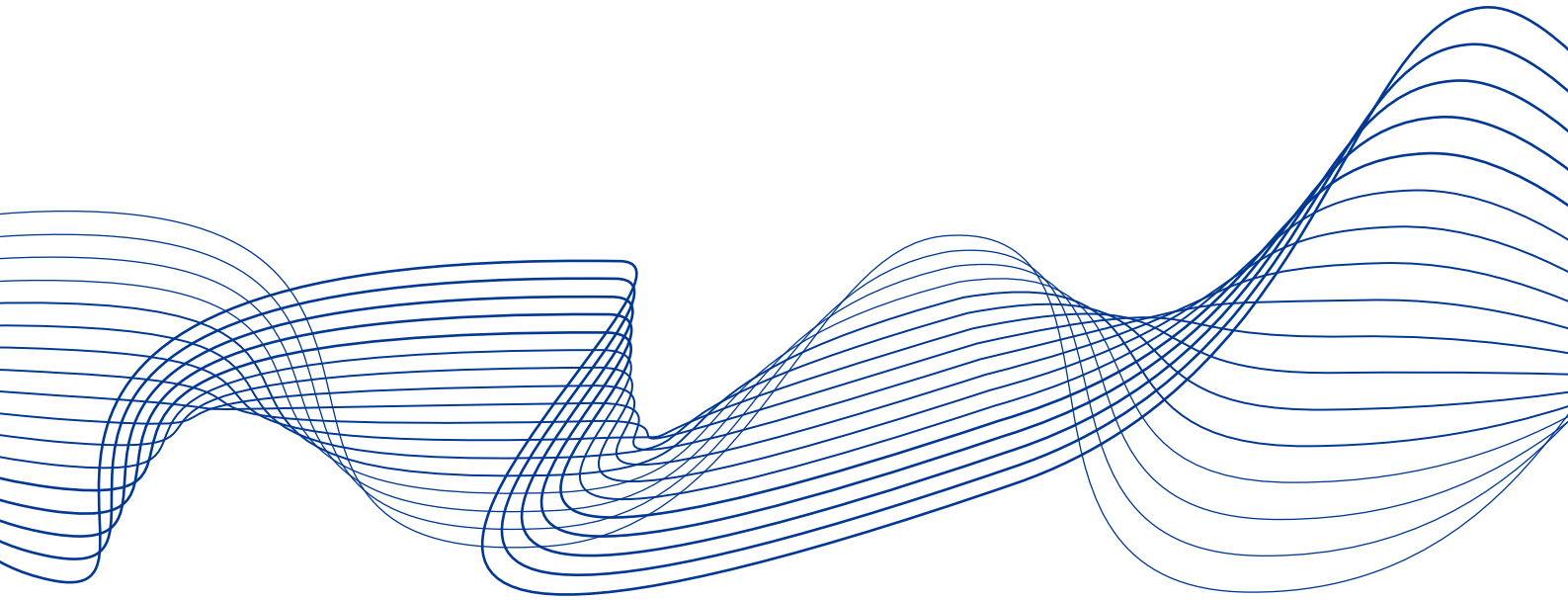
Vulnerabilities in the EEA commercial real estate sector

January 2023



ESRB
European Systemic Risk Board
European System of Financial Supervision

Contents

Introduction

The commercial real estate (CRE) sector is important for financial stability in several European Economic Area (EEA) countries because of the sector's size and because it is closely interconnected with both the financial system and the real economy. CRE exposures represent a significant share of GDP and of banks' and other financial institutions' balance sheets. CRE holds particular appeal for financial investors since it can potentially generate predictable long-term cashflows and capital growth opportunities. At the same time, the construction of new CRE and the use of existing CRE contribute substantially to real economic activity. CRE therefore has strong interconnections with both the real economy and the financial system. In addition, CRE transactions tend to be highly leveraged, which raises financial stability concerns. The sector is important for all financial market actors, such as investment funds, insurance companies and banks.

Adverse developments in the CRE sector can have a systemic impact on the financial system and the real economy. CRE cycles usually have larger amplitudes than the overall economic cycle. In recent years, significant profits have been generated through capital gains on asset revaluations. Therefore, if property values and income decrease, this may prompt investors to sell properties, adding further downward pressure on prices. In a CRE market downturn, financial institutions and investors may incur losses as a result of providing CRE funding either as loans or as a direct investment in the CRE market. Such losses can be amplified by investors if they are subject to redemption risks and have liquidity needs that cause them to sell CRE investments during stressed market conditions, in the absence of appropriate liquidity management. This may cause the value of these assets to deteriorate further and potentially have implications on the prices of other assets as well. CRE market stress can have negative spillover effects on the real economy, for example through its impact on the construction sector, and can thus aggravate downturns.

This report analyses vulnerabilities in the EEA CRE sector that could pose risks to financial stability. Some of these vulnerabilities relate to cyclical developments, such as the increase in inflation and the tightening of monetary policy. A tightening of financial conditions, with higher interest rates and lower availability of loans, will have a direct impact on CRE firms. Most importantly, higher interest rates will reduce the income of CRE firms and the value of their properties. This means that their scope for refinancing existing debt and taking out new loans will be severely limited. In turn this may force some investors to sell properties to cope with debt maturities, adding further downward pressure on prices with additional negative effects on financial stability. Other vulnerabilities relate to structural changes, such as the impact of climate-related policies, a shift towards e-commerce and increasing demand for flexibility in leasable office space on the CRE market. Some of these changes and developments have accelerated as a result of the coronavirus (COVID-19) pandemic and Russia's invasion of Ukraine.

These vulnerabilities can be amplified by spillovers across countries and through interlinkages between financial institutions. Cross-border investment flows and credit exposures to other countries are much stronger in the CRE sector than in the residential real estate (RRE) sector. In a number of countries, a significant share of banks' total CRE exposure consists of

exposure to other European countries' CRE markets, giving rise to spillover risks. These risks are also present in interlinkages between banks, funds and insurers.

The analysis of CRE developments would benefit from better data quality, granularity and coverage across countries. In terms of coverage, a cross-country comparison is difficult as only about half of European Union (EU) countries report CRE prices. The availability of new data, in particular AnaCredit data, is beneficial as it helps analyse vulnerabilities related to banks' CRE lending at a highly granular level.[1] Using other data sources, the analysis of CRE vulnerabilities also covers exposures of investment funds and insurance companies to the European CRE market. However, the analysis could be improved if the collection of additional data was better coordinated and allowed a thorough comparison across countries. In particular, it would be most useful to have access to consistent data on CRE prices, along with data on prime versus non-prime market segments, sectoral developments and cross-border investment by property funds. As consistent data across all countries could not be gathered from a single source, the data used in this report are taken from different sources. This makes it difficult to compare the data, as they differ in terms of scope, perimeter, definition and methodology. Therefore, the conclusions of the report are drawn with these limitations in mind and do not include a detailed comparison of vulnerabilities across individual countries.

To address CRE-related risks in the banking, investment fund and the insurance sectors, capital-based instruments and a range of other macroprudential measures are available to EEA countries either through the Capital Requirements Directive (CRD)[2], the Capital Requirements Regulation (CRR)[3], the Alternative Investment Fund Managers Directive (AIFMD)[4] and the Solvency II Directive[5] or via national regulation. However, only a few of the macroprudential measures currently in place are directly tailored to addressing CRE-related vulnerabilities. Most of them are risk weight measures applied to the banking sector. A few national macroprudential authorities have cited CRE-related vulnerabilities among the reasons for increasing the countercyclical capital buffer (CCyB) or systemic risk buffer (SyRB) rates in their countries. Other macroprudential measures in place to address CRE-related vulnerabilities include large exposure limits for banks and borrower-based measures (BBMs). In many countries, specific national regulations on the liquidity and leverage of real estate funds are in place or available for

---

1 Legal reporting obligations only apply to credit institutions resident in a euro area member country and foreign branches of credit institutions, provided that these branches are resident in a euro area member country. Credit institutions not in the euro area may report to AnaCredit on a voluntary basis if they are members of the EU or participate in the Single Supervisory Mechanism. AnaCredit covers conventional lending products (instruments), excluding derivatives and strict off-balance-sheet items, if the credit risk arising lies with the observed agent and if the debtor's commitment amount for all eligible instruments equals or exceeds €25,000 within the reference period. In addition, AnaCredit only covers lending products granted to legal entities. For more information, see the ECB's "**Explanatory note on the ECB Regulation on the collection of granular credit and credit risk data**".

2 Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (OJ L 176, 27.6.2013, p. 338).

3 Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012 (OJ L 176, 27.6.2013, p. 1).

4 Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (OJ L 174, 1.7.2011, p. 1).

5 Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) (OJ L 335, 17.12.2009, p. 1).

use. Ireland is the first country to use the macroprudential leverage limit for investment funds, in line with the AIFMD.

The report is organised as follows. Chapter 1 outlines the importance of the CRE sector for financial stability and the real economy. Following the approach outlined in the European Systemic Risk Board (ESRB) report on the methodologies for assessing CRE vulnerabilities[6], recent developments are analysed according to four risk categories, or "stretches": the collateral stretch, the income and activity stretch, the financing stretch and the spillover stretch. Chapter 2 provides an analysis of these risk stretches. Chapter 3 describes the availability and use of macroprudential policy measures to address CRE vulnerabilities and provides policy proposals in this respect.

[6] European Systemic Risk Board (2019), "**Methodologies for the assessment of real estate vulnerabilities and macroprudential policies: commercial real estate**", December.

1 Importance of CRE markets for financial stability and the real economy

The ESRB report on vulnerabilities in the EU CRE sector published in November 2018 described in detail the channels through which adverse developments in the real estate sector can have a systemic impact on the financial system and the real economy. Transmission via a direct channel occurs in the event of losses suffered by financial institutions which provide debt funding for the CRE sector, or which directly invest in the CRE market. Transmission via an indirect channel occurs when adverse developments in CRE markets lead to a tightening of credit conditions, thereby reducing new investment in the economy. In both cases, the impact on the financial system can have an (additional) knock-on effect on the real economy. In addition, CRE investments by investment funds can affect financial stability when the funds are subject to redemption risks, and liquidity needs under stressed market conditions lead to fire sales.

The CRE sector covers a varied range of categories. In the ESRB Recommendation on closing real estate data gaps (Recommendation ESRB/2016/14 as amended by Recommendation ESRB/2019/3)[7], CRE is defined as "[…] any income-producing real estate, either existing or under development, including rental housing; or real estate used by the owners of the property for conducting their business, purpose or activity, either existing or under construction; that is not classified as RRE; and includes social housing." While the ESRB definition of CRE is often used for macroprudential purposes, different sources of data (especially private data providers) may use their own definitions. Depending on the definition, for example, property under development and property for own use may or may not be included. In practice, an additional classification distinguishes between various sub-sectors (mainly office, industrial (including logistics) and retail property) and segments (prime and non-prime).

In December 2021, ECB Banking Supervision announced that it would strengthen its focus on banks' exposures to vulnerable sectors, including CRE. To this end, it launched an on-site inspection campaign and an off-site CRE targeted review. The interim outcomes of these activities were published in August 2022[8]. For most of the banks reviewed, the findings raise concerns about lending standards, collateral valuation and monitoring processes. The examinations show that several banks have no underwriting criteria, do not monitor breaches of such criteria, or pay insufficient attention to cash flows, including in bad times. In general, banks have not sufficiently performed sensitivity analyses on CRE exposures, especially to measure the potential impact of an increase in interest rates. As a result of these weaknesses, the affordability of some borrowers may not be as robust as banks had originally assumed. The examinations also identified basic shortcomings in collateral valuation, such as the failure to update appraisal reports in accordance with the CRR or to perform an ad hoc revaluation when market conditions changed. In addition, in many cases the valuation approach and the calibration of parameter values, such as the vacancy

[7] **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)**.

[8] See ECB Banking Supervision (2022), "**Commercial real estate: connecting the dots**", *Supervision Newsletter*, August.

status of the property, the contractual rent or the maintenance cost of the building, were not adequate, leading to significant asset value overstatement.

Despite significant progress in closing CRE data gaps in recent years, such gaps persist in the CRE sector, making an in-depth comparative analysis across countries difficult. Box 1 describes in more detail issues related to gaps in data both on physical CRE markets and on financial exposures to the CRE markets. It also describes the newly available AnaCredit data covering the exposures of the banking sector.

Box 1

Data gaps and the use of AnaCredit data

The ESRB report on the methodologies for assessing CRE vulnerabilities provides a detailed summary of the evolution of a euro area CRE data framework and the related data gaps. As highlighted in the report, CRE statistics suffer from both data quality issues (scarce and incomplete data) and operative issues (lack of comparability across countries and – even where comparable data are available – insufficiently long time series). The unfavourable data situation makes it difficult to assess vulnerabilities related to CRE markets across countries or to evaluate macroprudential policies to address such vulnerabilities in accordance with the ESRB methodology. Despite the current data limitations and problems, a wide range of initiatives are expected to improve the data situation.

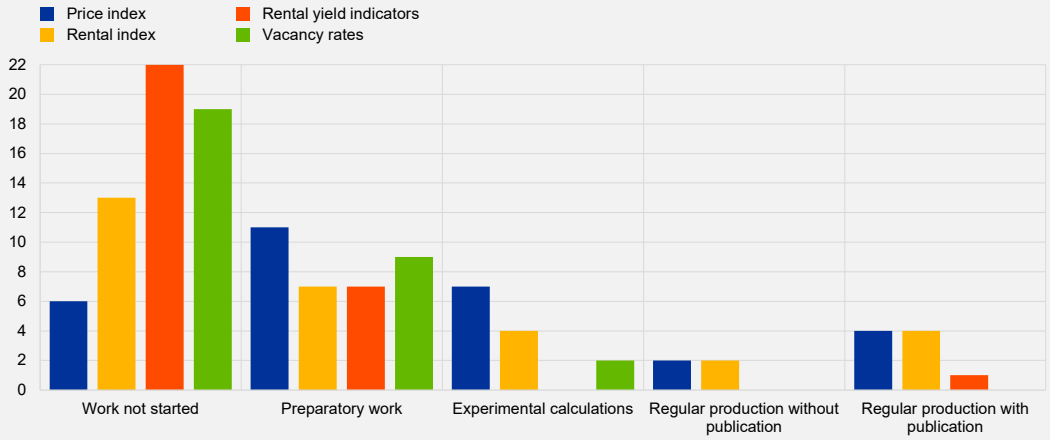
The ESRB Recommendation on closing real estate data gaps (Recommendation ESRB/2016/14 as amended by Recommendation ESRB/2019/3) plays a pivotal role towards designing a harmonised European framework for data collection by 2025. The Recommendation provides a definition of CRE and requires Member States to collect indicators on physical CRE markets, as well as indicators on investment and financial system exposure to the CRE market. It also requires a detailed breakdown of the data collected in order to fully capture the heterogeneity of the CRE market, investor base and sources of financing. It gives Eurostat the responsibility of designing, by 2025 at the latest, a system for the development, production and dissemination of indicators on physical CRE markets (including price index, rental index, rental yield index, vacancy rates and construction starts). The work on implementing the Recommendation is ongoing, as mentioned in the progress report of December 2021[9]. The report shows that the most progress has been made on price indicators, with only six countries having yet to start work on developing such indicators at the time of the report (see Chart A).

[9] European Commission (2021), "**Progress report on commercial real estate statistics**", December.

Chart A

State of development of CRE indicators

(number of countries)



*Source: European Commission (2021), "**Progress report on Commercial Real Estate statistics**", December.*

So far, the monitoring of CRE vulnerabilities has been dependent on alternative data sources, such as private sector data providers and surveys of national authorities. Morgan Stanley Capital International (MSCI), Jones Lang LaSalle (JLL), Cushman & Wakefield, Real Capital Analytics (RCA) and CBRE are examples of private sector data providers. These companies give data on prices, rents and transactions, for example. Nevertheless, the degree of coverage provided by these data differs significantly across countries. In addition, there are differences due to the high heterogeneity of CRE market segments and, for example, the use of the transaction approach rather than the valuation approach.

As of 2021, the CRE analysis can also rely on AnaCredit data, which can be used to monitor the exposures of the EU[10] banking sector to CRE markets.

Using AnaCredit data, the ESRB definition of CRE exposure[11] has been proxied by two elements, namely the purpose and the protection of the instrument. A financial instrument in AnaCredit has been defined as a CRE exposure when either the purpose of the instrument has been identified as CRE in the instrument table (the purpose variable (PRPS) is equal to RRE purchase, CRE purchase or construction investment) or the protection has been identified as CRE in the protection table (the protection variable (TYP_PRTCTN) is equal to RRE collateral[12], CRE collateral or offices

10 See footnote 1 above.

11 See **Recommendation ESRB/2016/14** as amended by **Recommendation ESRB/2019/3**.

12 Anecdotal evidence from Latvia suggests that small companies can use their private housing as collateral for business-related loans. As these properties are not income-producing real estate, the CRE exposure of these specific loans needs to be viewed with caution. However, to match the definition from Recommendation ESRB/2019/3 as closely as possible, residential real estate collateral was included in the AnaCredit analysis and at this stage does not allow for a more differentiated treatment.

and commercial premises).[13] We do not differentiate between types of financial instruments unless indicated otherwise.

AnaCredit data should be interpreted with caution as the dataset is relatively new, and banks might still be in the process of fine-tuning their reporting. Therefore, annual rates of change and cross-country comparisons could be affected by differences in reporting across time and institutions. The ECB regularly performs plausibility and validation checks on AnaCredit data submissions to (i) ensure completeness and consistency and (ii) identify incorrect data and verify the submissions.[14] In this context, ECB Banking Supervision is currently working on two important CRE projects, namely a CRE on-site inspection campaign and a CRE targeted review.[15] In addition, loans falling under the ESRB definition of CRE loans are highly heterogeneous, encompassing different asset classes with different characteristics that are difficult to disentangle at aggregate level.

One example of data gaps within AnaCredit are those concerning amortisation schemes of CRE exposures to legal entities (Chart B). The data reveal highly varied patterns across countries, with most countries displaying a high share of instruments categorised as "other", which may include balloon loans[16]. However, a high share of data are not applicable (i.e. they are categorised as "technical nulls"), which indicates that more in-depth analysis and a more granular categorisation of this instrument characteristic are required.

Regarding the non-banking sectors, in order to improve the EU supervisory reporting system across the whole financial sector, the European Commission has issued a questionnaire to EU and national authorities "to identify legal and technical obstacles to sharing supervisory, statistical and resolution data amongst EU and national authorities".[17] Current data gaps relate to the leverage of insurers' real estate investments and to the interconnectedness among banks, insurers and investment funds. To remedy this situation, more granular information on the real estate asset class in Securities Holdings Statistics by Sector (SHSS) and on leverage in SHSS and Solvency II would help. A solution could be to make the list of insurers' individual real estate positions available in Solvency II, so that it is possible to match these positions with AnaCredit and AIFMD data on the sources of funding provided by banks and investment funds respectively.

---

13 To account for situations where one instrument has several protection items (and the other way around), the protection allocated value is multiplied by the outstanding nominal amount share of the individual creditors and debtors. This allows for more accurate identification of CRE exposures as it accounts for overcollateralisation of instruments and prevents double-counting.

14 For more information, see European Central Bank (2022), "**AnaCredit plausibility Checks**" and European Central Bank (2020), "**AnaCredit Validation Checks**".

15 See ECB Banking Supervision (2022), "**Commercial real estate – connecting the dots**", *Supervision Newsletter*, August and ECB Banking Supervision (2022), "**Keeping a close eye on real estate risk**", *Supervision Newsletter*, February.

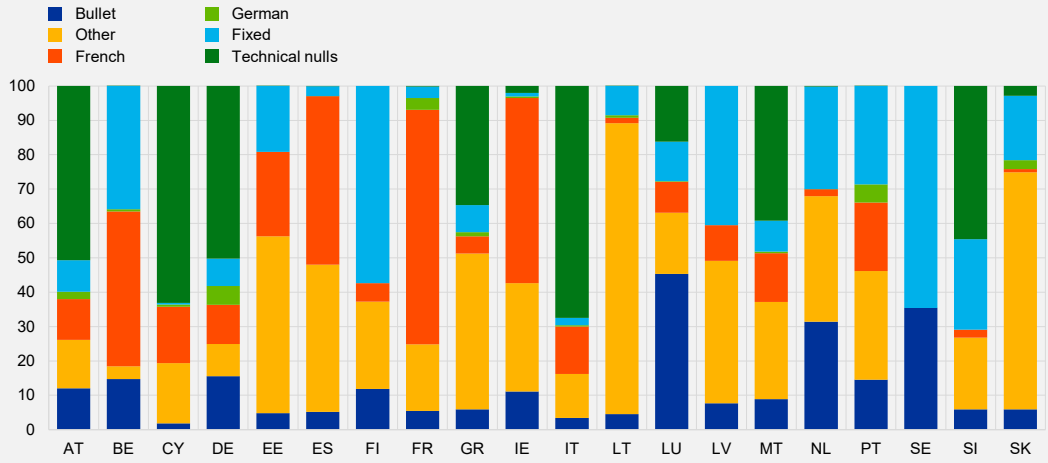
16 A balloon loan is a type of loan that does not fully amortize over its term and, therefore, requires the remaining principal balance of the loan to be repaid at the end of the term. AnaCredit does not allow the explicit designation of loans as balloon loans. However, as such loans may pose additional risks, the category "other" (in which the balloon loans would be reported) should be given greater focus in risk analysis.

17 See European Commission (2022), "**Questionnaire to EU and national authorities in the financial sector**".

Chart B

Share of amortisation schemes for CRE exposures to legal entities by amortisation type

(percentage of total CRE exposures, Q1 2022)



Sources: AnaCredit, ESRB calculations.
Notes: Non-euro area countries were not included because of the heterogeneity of the data. "French" refers to an amortisation scheme in which the total amount (principal plus interest) repaid in each instalment is the same. "German" refers to an amortisation scheme in which the first instalment is interest-only, and the remaining instalments are constant, including capital amortisation and interest. "Fixed" refers to an amortisation scheme in which the principal amount repaid in each instalment is the same. "Bullet" refers to an amortisation scheme in which the full principal amount is repaid in the last instalment. The category "other" includes amortisation types other than French, German, fixed amortisation scheme or bullet.

Overall, while the situation has been improved by the availability of AnaCredit data in particular, it is still unsatisfactory and makes an analysis of vulnerabilities across countries difficult, as there are still a lot of missing data across countries. Therefore, most of the analysis in this report focuses on an analysis for the EU as a whole, looking into developments in different sectors and only occasionally into cross-country developments.

The importance of loans collateralised by CRE[18] in banks' portfolios differs depending on the country. The share of CRE loans as a proportion of total bank loans (including lending to households)[19] is highest in Estonia, Iceland and Bulgaria (around 18% in each case)[20], while it is lowest for Denmark, Spain, France and Luxembourg (less than 5% in each case) (see the x-axis of **Chart 1**). When the share of CRE loans as a proportion of total bank loans to non-financial corporations (NFCs) only is considered (i.e. taking out, for example, loans to households), it is higher than 70% for Cyprus and around or above 50% for Bulgaria, Estonia, Lithuania, and Latvia

[18] Loans collateralised by CRE represent a subset of CRE according to ESRB/2019/3. In addition, according to the ESRB definition, CRE also includes loans not collateralised by CRE but provided for the purpose of CRE funding.

[19] Gross carrying amounts, loans and advances at amortised cost (excluding at fair value through other comprehensive income and through profit and loss, excluding trading exposures). Individual country data include subsidiaries, which are excluded from the EU aggregate. See the EBA dashboard.

[20] There are also differences among countries in terms of collateralisation of corporate loans. In Bulgaria, for example, banks tend to overcollateralise corporate loans. The Bulgarian 2021 pilot survey suggests that loan-to-collateral ratios tend to be lower than LTV ratios.

according to the European Banking Authority (EBA) Risk Dashboard (see **Chart A.2** in the annex to this report).

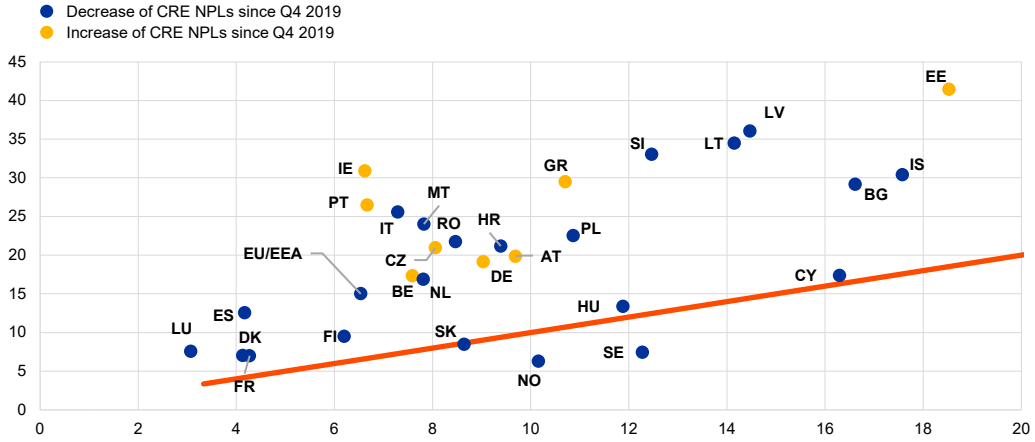
The CRE sector accounts for a higher share of banks' non-performing loans (NPLs) than other sectors. The stock of CRE loans represents a larger share of NPLs than its share in total lending would imply, with the share of CRE NPLs as a proportion of total NPLs standing at around 40% in Estonia and above 30% in Latvia, Lithuania, Slovenia, Ireland and Iceland (**Chart 1**).[21] This suggests that in most countries default rates for CRE loans are higher than those for the stock of loans in other segments of the economy. However, there are quite significant differences between NPLs according to AnaCredit and those according to financial reporting (FINREP) data, suggesting that the results need to be treated with caution. The CRE sector's relatively large share of NPLs is partly a legacy of previous financial turmoil.

The relevance of the CRE sector for financial stability also stems from its cyclicality. Investors generally own CRE to generate a profit and thus tend to sell properties rapidly when they are not generating sufficient income. Therefore, if property values decrease, this may also prompt investors to sell properties. If investors are unable to sell, they are likely to default, thus contributing to higher default rates in the CRE sector than in other sectors.

Chart 1

Share of CRE loans as a proportion of total bank loans: outstanding vs non-performing

(percentage, Q2 2022)



Source: EBA Risk Dashboard.

Notes: The chart shows the ratio of CRE exposures to total exposures (x-axis) and the ratio of CRE non-performing exposures to total non-performing exposures (y-axis). Individual country data include subsidiaries, which are excluded from the EEA aggregate. For example, at country level the subsidiary in country X of a bank domiciled in country Y is included in data for both countries X and Y (for the latter as part of the consolidated entity). Only the consolidated entity domiciled in country Y is included in the EEA aggregate. The sample of banks is unbalanced and reviewed annually. A differentiation between cross-border and domestic exposure is not possible. Some NPLs have been moved to bad banks and similar structures and are no longer on banks' balance sheets.

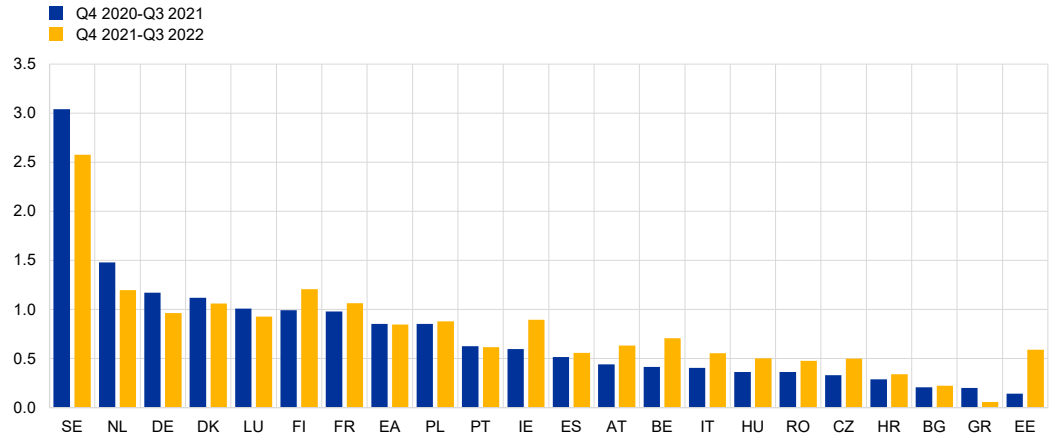
[21] There are also differences among countries in terms of collateralisation of corporate loans as explained in the previous footnote.

The CRE sector is important for financial stability because of its size and because it is closely interconnected with the financial system and the real economy. The sector's importance for the economy differs significantly across countries. In a number of EEA countries (Sweden, the Netherlands, Finland, Denmark, France, Germany, Poland and Luxembourg), the investment volume over the past four quarters equalled or comfortably surpassed 1% of GDP as of mid-2022 (**Chart 2**). In other countries, the investment volume exceeded 0.5% of the GDP. In some countries, non-domestic investment plays an important role in driving CRE dynamics.

Chart 2

CRE investment transaction volumes

(percentage of GDP)



Source: RCA.

Notes: The series displays the sums of the quarterly observations over the period indicated. One driver of the high percentage for Sweden is the limited number of deals with large volumes. For Ireland the percentage differs if CRE investment transactions as a share of gross national income (GNI) are taken into account. Some countries are excluded from the chart because no data were available for them.

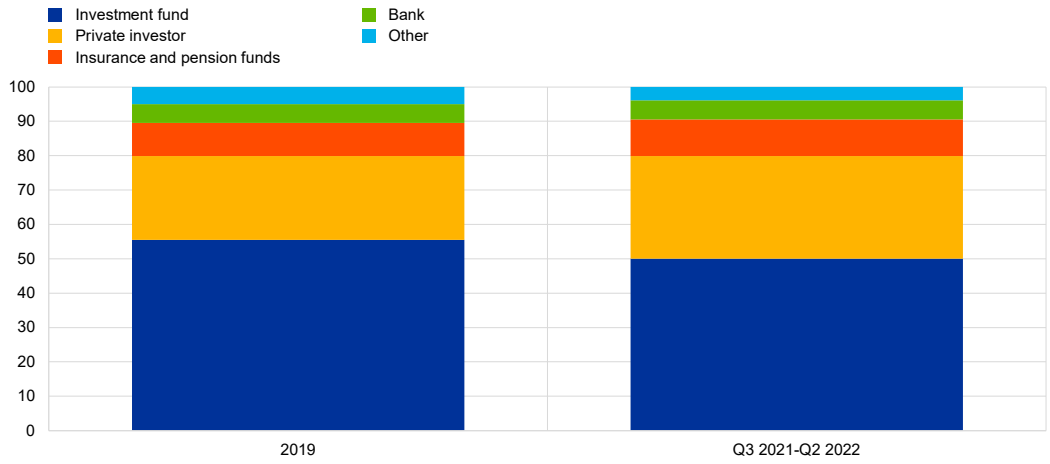
The CRE sector is important not only for the banking sector but also for investment funds and insurance companies. Chart 3 shows the importance of CRE transactions for individual financial market players. Investment funds act as buyers in the bulk of CRE transactions, with a share of around 50% in the period between the second half of 2021 and the first half of 2022. Private investors are the second-largest type of buyer: they account for just over 30% of total transaction value, followed by insurers and pension funds, which account for about 10%.[22] Compared with 2019, i.e. the period before the COVID-19 pandemic, private investors have increased their share at the expense of all the other players. Banks account for a fairly small share of total CRE transaction value. This shows that banks are mainly exposed to CRE markets (i) via credit risk on CRE loans and changes in values of CRE collateral and (ii) as lenders for investment funds. By contrast, many non-banks are also exposed directly to changes in CRE prices in addition to their credit exposures to CRE.

[22] Note that according to EIOPA insurance statistics, as at the fourth quarter of 2021 more than a third of EU insurers' investments in CRE were indirectly via investment funds.

Chart 3

Share of CRE investment transactions in the EU by buyer type

(percentage)



Source: RCA.
Note: The "private investor" category refers to companies that are privately controlled and whose business is operating, developing or investing in CRE.

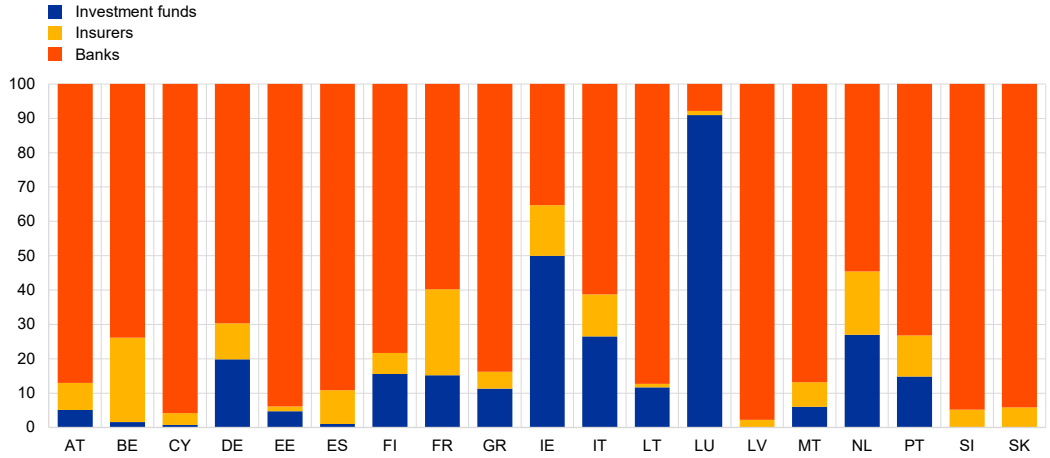
Looking at total exposures (investment in CRE and CRE loans) by investor type, banks have the highest exposure to CRE in most countries, followed by investment funds and insurers (Chart 4). In a number of countries (Latvia, Cyprus, Estonia, Slovenia and Slovakia) the banking sector is particularly prominent, with a share of more than 90% of the financial sector's total exposures to CRE. In a few other countries, the investment fund sector plays an important role, with a share of around 90% in Luxembourg, around 50% in Ireland and almost 30% in the Netherlands and Italy.[23]

[23] **Figure 37** in the annex also shows the exposures as a percentage of GDP.

Chart 4

Share of financial institutions' CRE exposures by investor type

(percentage of countries' total exposures, Q4 2021)



Sources: AnaCredit, IVF – Investment Funds Balance Sheet Statistics (ECB Statistical Data Warehouse), European Insurance and Occupational Pensions Authority (EIOPA) statistics.
*Notes: For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1. For the IVF data, the series considered reflects the investment fund shares/units issued by real estate funds. Regarding the EIOPA data, please refer to the notes to **Chart 21**. Please note also that in some countries cross-border financing plays a significant role, and that the category "banks" also includes non-domestic banks. For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1.*

The importance of real estate funds has increased significantly in recent years. The assets under management of real estate alternative investment funds (AIFs) increased by €597 billion in the first quarter of 2017 to €1.06 trillion in the third quarter of 2021.[24] Even in the first half of 2020, once the COVID-19 shock had hit, EEA-domiciled real estate funds recorded a steady inflow of money in terms of net asset value, at a level comparable to that of the previous year (**Chart 5**). This contrasts with dynamics seen in other parts of the investment fund sector over the first half of 2020. According to data reported under AIFMD reporting requirements, CRE investments, amounting to €673 billion, account for the majority of all investments, followed by RRE, at €168 billion.

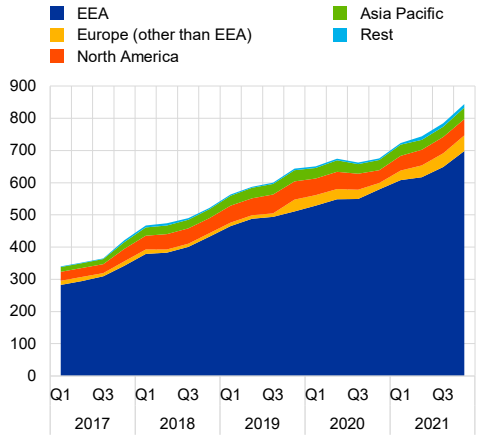
[24] The ESRB definition of CRE includes any income-producing real estate, so all properties held by real estate funds fall under this definition. AIFMD data are reported under Directive 2011/61/EU. The charts and analyses on alternative real estate investment funds are based on data provided to ESMA by national competent authorities under the AIFMD and shared with the ESRB.

Chart 5

Real estate AIFs

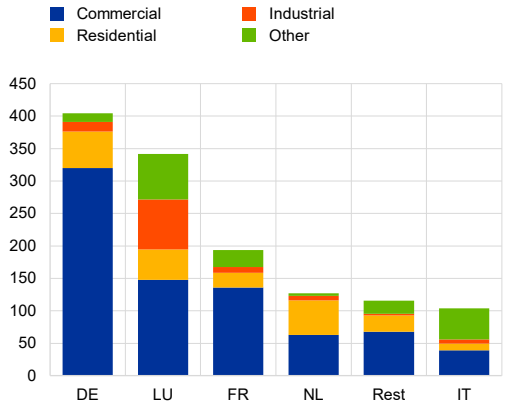
a) Geographical investment focus

(EUR billions)



b) Sectoral asset allocation

(EUR billions)



Sources: AIFMD, ESRB calculations.
Notes: Panel a shows the regional breakdown of the geographical focus of investment of real estate funds as reported under the AIFMD. The sample in the panel a includes Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden and the United Kingdom. Panel b is for Q4 2021. The sample in panel b includes Austria, Belgium, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Slovakia, Slovenia and Sweden.

2 Risk analysis

This chapter analyses vulnerabilities in the EEA CRE sector. As suggested in the ESRB report on the methodologies for assessing CRE vulnerabilities, the assessment is based on four different categories, or "stretches": the collateral stretch, the income and activity stretch, the financing stretch and the spillover stretch.[25] The scoreboard of indicators suggested by the ESRB methodology for the horizontal risk assessment is not included in this report for a number of reasons. First, it is designed for a situation in which the CRE market is overheating, rather than for the cooling-down that was observed for part of the COVID-19 period. Second, the scoreboard would show that substantial data gaps persist. Third, at present the stage of development of these indicators differs substantially across the CRE sub-sectors, which makes aggregate figures in the scoreboard less relevant.

2.1 Collateral stretch

The collateral stretch analyses price developments across CRE sub-sectors and segments. The available data show that before the COVID-19 pandemic, CRE prices were increasing strongly in both the prime and non-prime[26] segments of the CRE market for most property types. The pandemic had temporary and uneven effects to some extent, with prices decreasing for retail property during the initial phase in particular. Price corrections affected both the prime and the non-prime segment, even though it was assumed that a higher level of transaction activity would be maintained in the prime market than in the non-prime market. Despite the subsequent recovery, falling real estate investment trust (REIT) indices suggest that CRE became less attractive for investors during the second half of 2022.

Historically, CRE prices tend to be more volatile than RRE prices. While both CRE and RRE have common drivers such as real economic activity and the costs of financing, the demand for CRE tends to be more cyclical. For example, the COVID-19 pandemic led to a particularly strong decoupling between the two markets. While RRE prices continued growing, supported in part by government support measures to dampen the economic effects of the crisis, CRE prices fell because of lockdowns and social distancing. They only partially recovered after 2020 (see **Chart 6**).

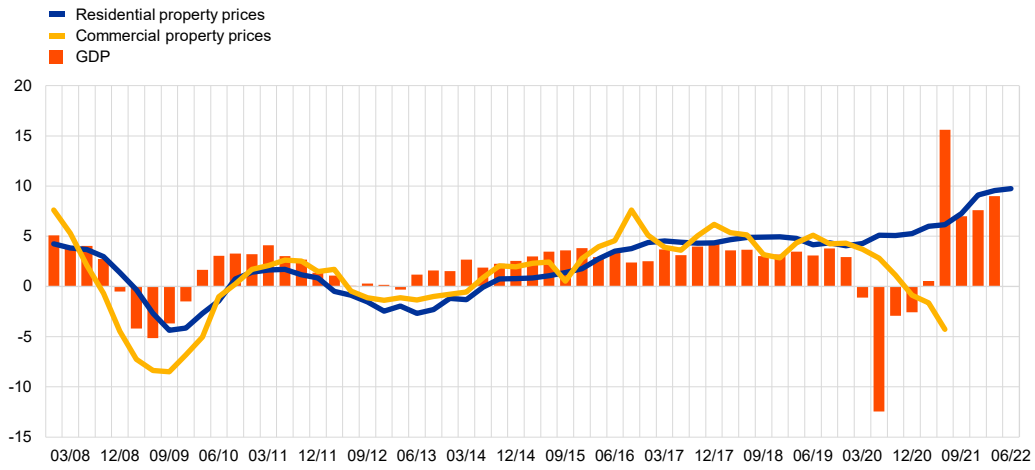
[25] While we follow the CRE methodology in terms of stretches, the indicators used in this report differ from this methodology in other respects owing to data availability constraints.

[26] While there is no clear definition of prime CRE, it can be considered as referring to buildings of the highest quality and in the best location.

Chart 6

Annual growth in euro area nominal commercial and residential property prices and GDP

(percentage)

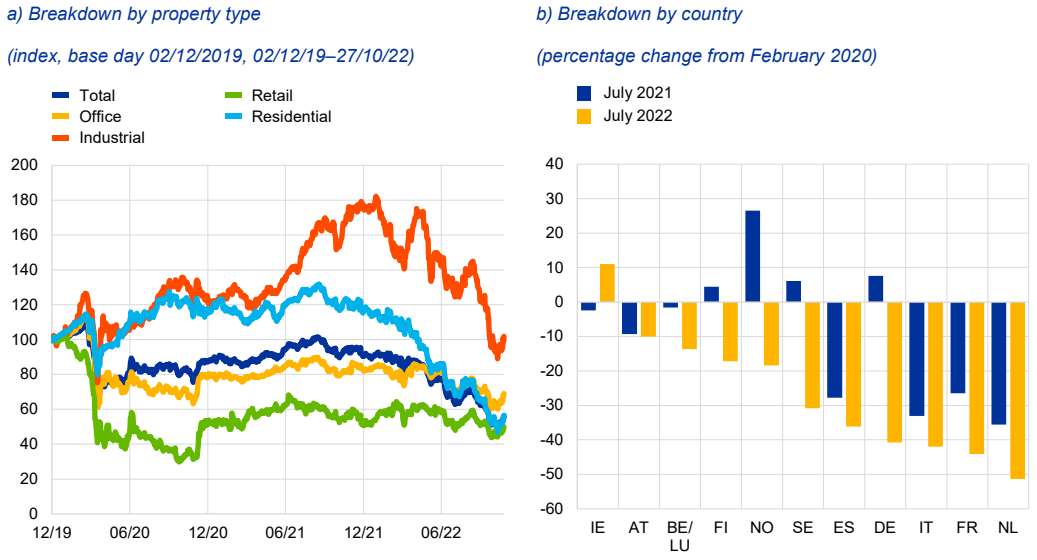


Sources: National accounts, main aggregates (Eurostat ESA2010 TP, table 1), MSCI, RESR – Residential Property Prices data (ECB Statistical Data Warehouse).
Notes: Last observation is Q2 2022 for residential property price growth, Q1 2022 for GDP growth and Q2 2021 for commercial property price growth.

The COVID-19 pandemic had uneven effects across CRE sub-sectors. According to REIT indices (**Chart 7**, panel a), the decline in the second quarter of 2020 was strongest for retail, but there was also a marked fall in the prices of office, industrial and residential properties. However, prices recovered relatively quickly in the industrial and residential sub-sectors, reaching December 2019 levels in mid-2020. Office and retail prices remained well below their December 2019 levels over the whole period from December 2019 to July 2022. However, at the end of 2021, REIT indices started declining for all sectors, with a particularly strong decrease in the prices of industrial and residential property, bringing them to the pre-pandemic level for industrial property and about 50% below that level for residential property. Looking at country differences (**Chart 7**, panel b), as of July 2022, REIT indices were lower relative to pre-pandemic levels in all countries except Ireland. For about half of the countries, the decline occurred mainly after mid-2021. The decline over the period from February 2020 to July 2022 was strongest in the Netherlands (about 50%), followed by France, Italy and Germany (about 40%). Some of this variation among countries may have arisen from differences in the sectoral make-up of each national index, which makes a cross-country comparison difficult.

Chart 7

REIT indices



Source: Bloomberg.

Notes: Panel a shows the trend of the following indices, taken from Bloomberg: EPEU, EPEFE, EPEIE, EPETE and EPERE; panel b shows the trend of EPGR, EPIT, EPFR, EPAS, EPBL, EPSP, EPFI, EPFR, EPIR, EPNL, ELSD and ELNKE indices (for Austria, Belgium and Luxembourg, Finland, France, Germany, Italy, Ireland, Netherlands, Norway, Spain and Sweden). All countries for which data are available are included in the chart. The FTSE EPRA Nareit Real Estate Index Series is designed to represent general trends in eligible listed real estate stocks worldwide. Relevant real estate activities are defined as the ownership, trading and development of income-producing real estate. For more info, see the ***Ground Rules for the FTSE EPRA Nareit Global Real Estate Index Series****.*

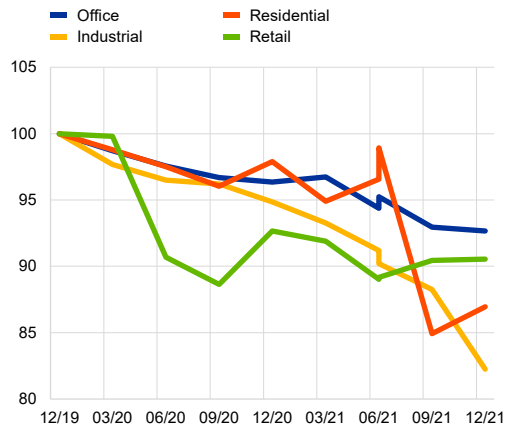
Income returns have trended downwards, with a strong decline in retail income returns in the second quarter of 2020 (Chart 8, panel a). At the beginning of the COVID-19 pandemic, the decline in income returns was most pronounced in the retail sector, suggesting a shift towards online retail which also led to subdued price development in this sector. Nevertheless, income returns were on a downward trend for all property types between the end of 2019 and the end of 2021, with a sharp decline for residential and industrial property in the second half of 2021. Despite the prevalence of homeworking during the COVID-19 pandemic, offices provided the most stable income returns according to the data source. From the second to the third quarter of 2021, income returns in the residential segment of the market plummeted, bringing them to about 13-15% below their pre-pandemic level. Overall, a decline was observed in most countries for which such data are available, except in Belgium, Spain and Portugal where income returns in the second quarter of 2020 and/or the fourth quarter of 2021 were above those in the fourth quarter of 2019. Such developments are also confirmed by an increase in the perceived level of inducement in 2020. Inducement is the typical value of incentive packages offered to new tenants during the previous three months (**Chart 9**). The perceived level of inducement increased strongly for retail and office properties in 2020, which were hit the hardest by the COVID-19 related lockdowns, but less for industrial, where prices continued increasing (**Chart 9**). Overall, the charts show that the ability to pass on inflationary pressures through higher rents might be limited, and that bargaining power has shifted from landlords to occupants.

Chart 8

Income return

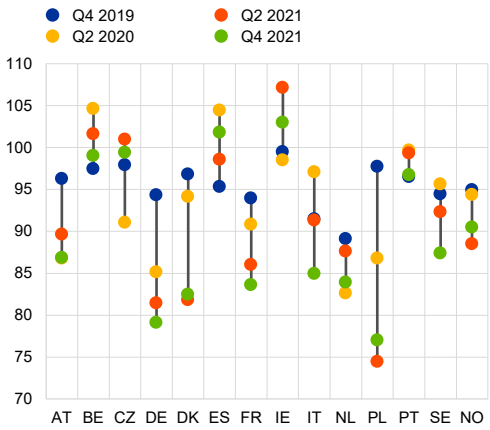
a) Breakdown by property type

(index, base quarter Q4 2019)



b) Breakdown by country

(index: base quarter Q1 2019)



Source: Experimental ECB estimates based on MSCI data.

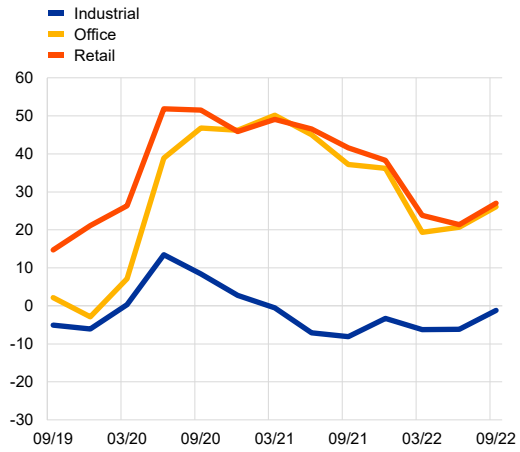
Notes: Income return measures the income receivable in relation to the capital employed over a period (generally the rental income flow). The values for each segment are computed as a simple average of EEA countries. The sample includes Austria, Belgium, Czech Republic, Denmark, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain and Sweden. All countries for which data are available are included in the chart. Last observation is Q4 2021.

Chart 9

Perceived change in the level of inducements

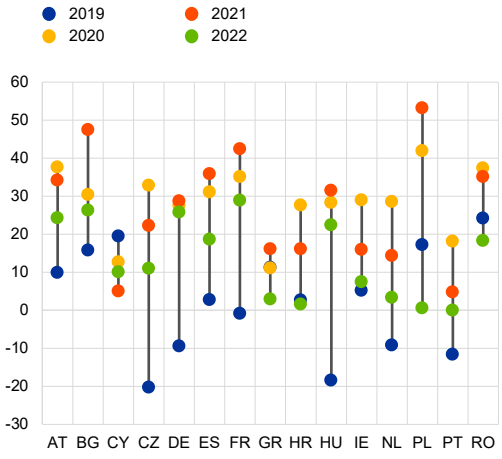
a) Breakdown by property type

(average perceived percentage change during previous three months)



b) Breakdown by country

(average perceived percentage change during previous three months)



Source: Experimental ECB estimates based on MSCI data.

Notes: In panel a, the values are computed as a simple average of a selection of EU countries. The sample includes Belgium, Czech Republic, Germany, Ireland, Greece, Spain, France, Croatia, Cyprus, Hungary, Netherlands, Austria, Poland, Portugal and Romania. All countries for which data are available are included in the chart. Survey data. Last observation is Q3 2022. Panel b shows the average values over 2019, 2020 and 2021 and 2022 and for the office, industrial and retail sub-sectors. For Greece, the values are for 2020 and 2021, which results in the dots overlaying each other. Survey data. Last observation is Q2 2022 for Romania and Q3 2022 for the other countries.

In early 2020, several real estate funds suspended redemptions of their shares, a move prompted by difficulties in valuing their assets rather than difficulties in meeting investor redemptions, according to the European Securities and Markets Authority (ESMA) report on the Recommendation of the ESRB on liquidity risk in investment funds.[27] The report highlights that more than a third of all European real estate funds were faced with valuation uncertainties between February and June 2020.

Low-frequency asset valuations increase valuation uncertainty during periods of market stress. Funds value real estate investments on a regular basis but less frequently than liquid assets. This is because of the absence of mark-to-market prices and the high revaluation costs of CRE. Thus, a common practice is to obtain an independent valuation at least once a year, following country-specific valuation requirements in accordance with the AIFMD. Significant valuation changes seem to take place mainly in the last month of a quarter, and in particular at the end of a year.

Low-frequency valuation cycles can lead funds to report stable prices for their real estate investments, which could undermine trust in real estate funds' valuations. In a downward-trending market, infrequent revaluation could result in funds reporting higher prices than the transaction prices observed in the market. The value corrections would only be reflected in fund portfolios with a delay, leading to a cliff effect. At the same time, sharp drops in transactions can significantly impair the quality of high-frequency valuations. The frequency of real estate valuations is also important for insurers in order to have an appropriate reflection of the underlying risk in the calculation of solvency ratios.

A performance comparison between real estate funds and REITs, whose shares are exchange-traded and provide a more up-to-date reflection of real estate price expectations, gives an indication of the potential overvaluation in real estate fund portfolios. Since the outbreak of the COVID-19 pandemic, European real estate funds significantly outperformed REITs on average in the period to October 2022. While REITs' share prices dropped 20% during the first three quarters of 2020, recovered to pre-pandemic levels around mid-2021 and declined further thereafter (**Chart 7**), real estate funds posted a positive annualised return of at least 2% each quarter on average. However, the number of funds reporting negative returns increased throughout 2020, suggesting that real estate funds only reflect the CRE market environment after a time lag, according to the ESMA report mentioned above. These valuation discrepancies can provide investors with a first-mover advantage. If upcoming price corrections in funds can be anticipated, investors might have an incentive to redeem shares beforehand.[28] Note, however, that REITs and real estate investment funds do not coexist in all countries, so that differences in European aggregates can also result from different country compositions.

Overall, after strong increases in CRE prices up to 2020, the COVID-19 pandemic has halted or dampened the increase, with a large degree of variation across countries and sub-

---

27 **Recommendation of the European Systemic Risk Board of 6 May 2020 on liquidity risks in investment funds (ESRB/2020/4) 2020/C 200/01 (OJ C 200, 15.6.2020, p. 1)** and European Securities and Markets Authority (2020), "**Report: Recommendation of the European Systemic Risk Board (ESRB) on liquidity risk in investment funds**", November.

28 Bannier, C., Fecht, F. and Tyrell, M. (2008), "Open-end real estate funds in Germany – genesis and crisis", *Credit and Capital Markets*, Vol. 41, Issue 1, pp. 9–36; and Weistroffer, C. and Sebastian, S. (2015), "The German Open-End Fund Crisis – A Valuation Problem?", *The Journal of Real Estate Finance and Economics*, Vol. 50, pp. 517–548.

sectors. More recently, a number of indicators point to declining developments or prospects across sectors. Real estate funds were subject to strong valuation uncertainty at the beginning of 2020, reflecting the relatively low number of transactions.

Box 2
Climate change and CRE

The CRE market is an important factor in an efficient, ordered and smooth transition to a carbon-neutral economy. Given the amount of financial resources invested and accumulated in this sector, it has an important role to play in reducing carbon emissions in the production and running of real estate. The carbon emissions produced by buildings are estimated to be significant because of the material used for construction activities, emissions produced by heating activities and waste generated by tenants. Looking ahead, the real estate market is one of the most important asset classes in terms of accumulated wealth and capital invested for future construction. Construction and real estate activities have also been identified in the EBA pilot exercise on climate risk[29] as two of the main sectors affected by climate change. Activities in the CRE sector are determined by a varied group of stakeholders, comprising tenants, financial investors, construction firms, owners and policymakers, who can establish operative criteria for more sustainable buildings and the transition to a new economic regime.

Real estate valuations have already been influenced by climate change-related factors for two reasons. First, natural and physical risks, defined as the loss a property can experience owing to adverse weather conditions, have already been priced into real estate valuations in some portfolios by climate-sensitive investors. The more severe and more frequent impact of adverse weather conditions and rapidly changing living conditions will make these climate-related factors even more relevant for valuations. Although adverse climate conditions are not considered to directly affect residential or commercial properties, they can affect them indirectly because natural disasters can disrupt infrastructure and eventually make the affected area less attractive for investors. Therefore, owing to the changing environment, locations which are currently assessed as prime market regions could lose this privileged status because they are located in high-risk areas from an environmental perspective. Moreover, the transition to a greener economy can also influence demand for CRE. If demand for commercial properties in one area comes mainly from carbon-intensive actors, the likelihood of higher vacancy rates is destined to increase, especially if an ordered economic transition does not take place. Second, regulation to reduce carbon emissions increases demand for modern, more climate-conscious buildings and reduces demand for older, less energy-efficient buildings. This further strengthens the divergence in demand and prices between prime and non-prime CRE.

From an income perspective, greener buildings can ensure higher rents, stronger leasing velocity and higher occupancy rates (see Chart A in Box 3). Owing to demographic changes, which will lead to an investment environment characterised by a higher share of younger tenants who are on average more aware of the implications of climate change, CRE demand will be more strongly driven by climate-related considerations. Energy-efficient buildings produce fewer emissions and

[29] European Banking Authority (2021), "**Mapping climate risk: Main findings from the EU-wide pilot exercise**".

require less adjustment to meet regulation criteria. They can therefore ensure higher returns as long as the additional cost of producing such buildings does not exceed the benefit.

The financing of investment in less energy-efficient projects is likely to become more costly and less frequent. In addition, lagging behind with renovation projects designed to adhere to climate regulations can improve the likelihood of higher vacancy rates and make it more difficult to honour debt-related obligations because of a lack of cash inflows.

Caloia et al. (2022) have quantified the risks related to climate transition for the real estate sector in the Netherlands.[30] They show that in a climate transition scenario, a large part of the real estate exposure is at risk. In addition, they demonstrate that sizeable investments are needed to fit the environmental requirements for buildings, affecting the credit risk of mortgage loans. Further efforts are being made to implement climate change-related scenarios for stress tests at the European level, and the ECB and ESRB have jointly published a report on financial stability risks from climate change.[31]

2.2 Income and activity stretch

The income and activity stretch analyses investment in CRE, as well as income generated by such property. The analysis shows significant activity by property developers and real estate investment trusts in the years preceding the COVID-19 pandemic, despite yields in the sector being stretched. Following the temporary decline related to the pandemic, the volume of CRE investment transactions almost returned to pre-pandemic levels in 2021, with occupation rates recovering more slowly. Despite the uncertainty related to potential structural changes induced by the COVID-19 pandemic, the riskiness of CRE as perceived by investors declined in 2021. Investment funds in real estate markets have expanded their presence across the EEA countries.

The gross value added of construction and real estate activities as a share of GDP ranged from 17.1% in Finland to 7.3% in Ireland in 2021[32] (**Chart 10**), indicating both the relevance of this sector for economic and financial stability, and a substantial risk due to the possibility of spillovers from the real estate sector to the real economy.

[30] Caloia, F., Jansen, D.-J., Koo, H., van der Molen, R. and Zhang, L. (2022), "Real estate and climate transition risk: A financial stability perspective", De Nederlandsche Bank Occasional Studies, Vol. 19, No 4.

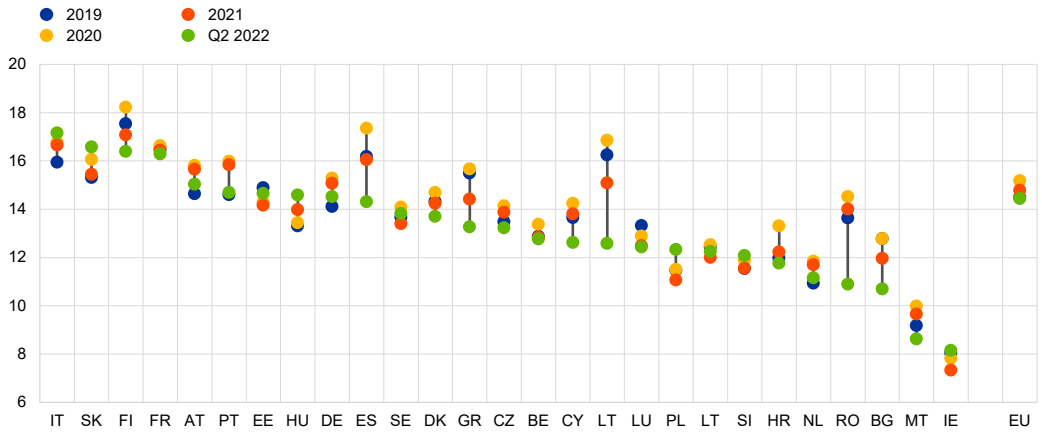
[31] European Central Bank/European Systemic Risk Board (2021), "**Climate-related risk and financial stability**", report by the ECB/ESRB Project Team on climate risk monitoring, July.

[32] For Ireland, the gross value added of construction and real estate activities relative to GNI amounted to 9.7%.

Chart 10

Gross value added of construction and real estate activities

(percentage of GDP)



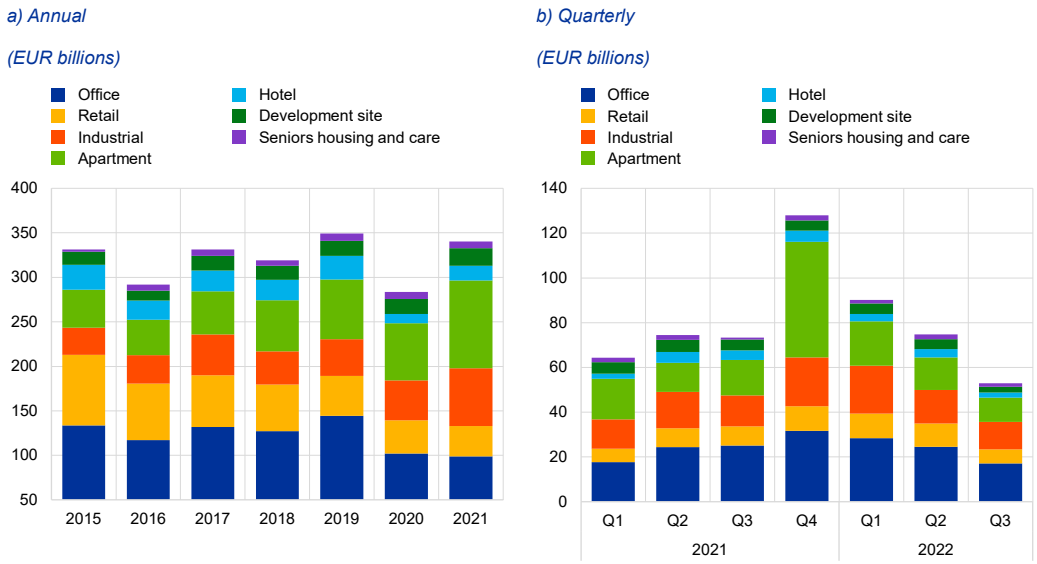
Sources: Eurostat, ESRB calculations.
Notes: For Ireland, the values differ when GNI is taken into account (2019: 10.4%, 2020: 10.3%. 2021: 9.7%). Owing to data limitations, the Irish GNI value for Q3 2021 was carried forward to Q4 2021. The last observation is Q2 2022 for all countries except Spain and France, for which Q3 2022 data are taken. All countries for which data are available are included in the chart.

After decreasing in 2020 owing to the outbreak of the COVID-19 pandemic and the related uncertainty, the volume of investment transactions in CRE almost returned to pre-pandemic levels in 2021, but has decreased more recently. Compared with previous years, the volume of investment in office, retail and hotel property fell after the outbreak of the pandemic (**Chart 11**). The volume of investment in apartments and industrial property increased, possibly because of expanding RRE markets[33] and growth in online shopping. Since the beginning of 2022, investment transactions have been declining, indicating a possible change in the direction of the market. However, the distribution of investment among property types differs across EEA countries according to RCA data (**Chart 12**). In the first three quarters of 2022, several countries (namely Belgium, Bulgaria, the Czech Republic, Luxembourg and Norway) had a share of office investment close to or larger than 50% of the investment volume. Industrial property was the most important sub-sector for investors in Estonia and the Netherlands, while apartments were the most attractive investment in Denmark, Finland and Sweden. Information from market intelligence confirms that the COVID-19 pandemic has had a strong impact on CRE market activity (see Box 3).

[33] European Systemic Risk Board (2022), "**Vulnerabilities in the residential real estate sectors of the EEA countries**", February.

Chart 11

Volume of investment transactions by CRE property type in Europe

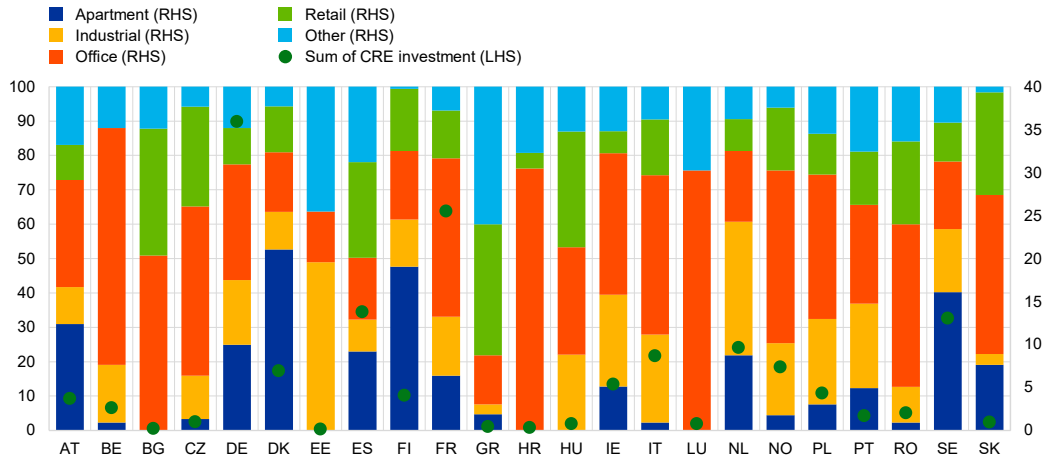


Source: RCA.

Chart 12

Investment transaction volumes by CRE property type and country

(left-hand scale (LHS): percentage of countries' total CRE investment transactions; right-hand scale (RHS): EUR billions, Q1-Q3 2022)



Source: RCA.

Notes: The shares of investment transaction have been computed using the total of the investment volume. Other CRE properties include apartments and senior housing and care. The breakdown may differ from other data sources, partly because RCA data include property or portfolio sales above USD 10 million only. All countries for which data are available are included in the chart.

Box 3

Information from market intelligence

Market intelligence has formed a central part of CRE risk analysis since the start of the COVID-19 pandemic. It is one of the many inputs into the ECB's financial stability risk analysis, complementing the ECB's internal analysis of risks and vulnerabilities. Market intelligence is gained both from meetings with market contacts and from regular analysis of market analyst reports. It can be particularly useful in cases where data availability is limited or not timely, such as during the outbreak of crises and in markets where data are sparse.

Discussion with market contacts largely confirms the assessment presented in this report and recent assessments carried out by the ECB.[34] The COVID-19 pandemic represented a large and negative shock to European CRE markets. Investor and occupier demand dropped sharply with the outbreak of the pandemic, and transactions in CRE markets likewise declined. Market participants also noted the clear differentiation across sectors. The retail and office sectors were hardest hit, owing both to the immediate effects of shop and office closures and to possible medium-term behavioural change away from in-person working and shopping. At the same time industrial (including logistics) properties have benefited from a shift towards e-commerce and a move away from just-in-time supply chains, given border closures and other disruptions.

Discussion with Chief Financial Officers from a number of large retail-focused CRE firms in early 2021 highlighted the particularly severe impact of the pandemic on this sector. Meeting participants said that extensive rent forgiveness had taken place in 2020, estimating that the aggregate reduction in tenants' rent was 25-30%. This was expected to continue throughout 2021. Participants also flagged reduced credit availability from the banking sector, including a lower volume of credit provision and a tightening of credit standards on new loans. Meanwhile, the bond market had acted as a substitute for those larger firms with access to it. Contacts also flagged difficulties in valuing buildings due to the very low number of market transactions and to challenges making it difficult to assess asset profitability during lockdowns. A number of recent market analyst reports have highlighted increased asset sales by large retail CRE firms but have stressed that they have not yet reached the point of engaging in fire sale activity.

Since the summer of 2021, market contacts have also begun to observe a split in the market, with high-quality buildings on one side and low-quality buildings on the other. While investor and occupier demand was beginning to return, it was focused largely on the prime end of the market, which accounts for a small share of the outstanding stock. Demand for lower-quality assets remained very muted. The first explanation for this was behavioural change following lockdowns. Pandemic-related experience with remote working, health concerns and stronger demand for more environmentally friendly buildings may move demand towards modern, high-quality office spaces over the medium term. The shift towards e-commerce may also have an outsized impact on lower-quality retail space.

Market contacts are increasingly stressing that environmental concerns have become a central element in investor decision-making, and while this creates positive incentives it could result in

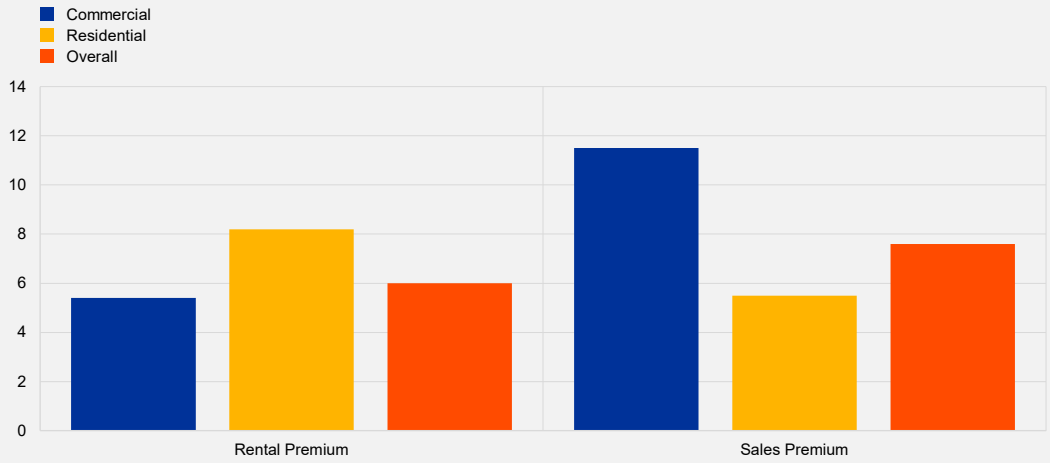
[34] See Section 1.5 of the **May 2020, November 2020, May 2021** and **November 2021** editions of the ECB's *Financial Stability Review.*

substantial stranded assets. Analysts pointed to a meta-study showing that environmental factors affect real estate assets in terms of both prices and rent (Chart A), and they highlighted separately that environmental certifications can even be factored into the costs of debt financing for real estate deals. Analysts identified environmental concerns as the second factor contributing to the underperformance of low-quality assets, with investors primarily interested in buildings with green certificates. While this is a positive development from a sustainability perspective, it could result in a substantial level of stranded assets over the short to medium term.

Chart A

Green certification is associated with substantial rent and price premia across all property types

(percentage)



Source: JLL (2022), "Return on sustainability", January. Original analysis by Dalton and Fuerst (2018), Routledge Handbook of Sustainable Real Estate).

Over the course of 2022, rising interest rates became a key theme of discussions with market contacts, alongside the effects of inflation and supply chain blockages. Discussions in September 2022 highlighted a sharp slowdown in market activity over the course of the year, attributed to rising uncertainty over inflation and the path of the real economy. Some market contacts argued that rising financing costs are likely to drive a correction in the market. Others remained optimistic and argued that supply shortages and robust occupier demand may support the market.

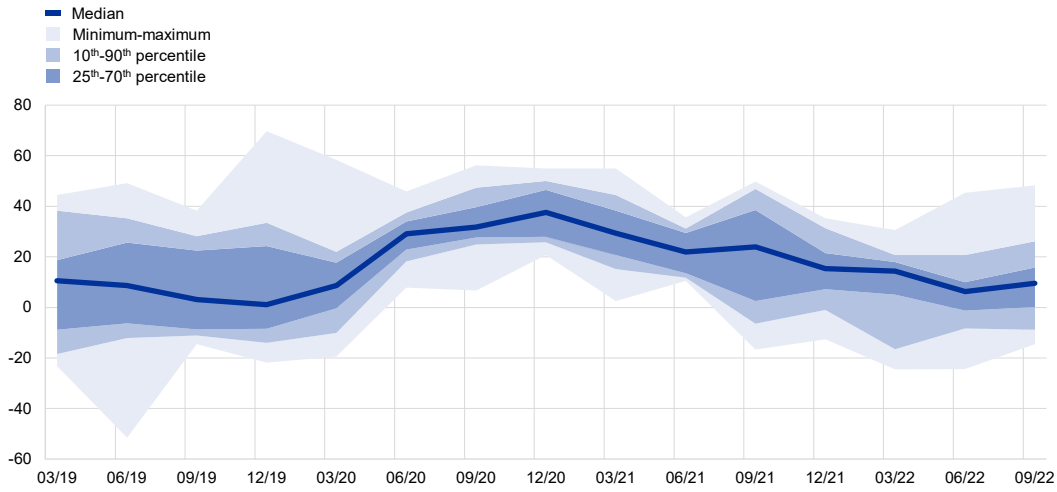
Many market analysts have also argued that real estate assets can outperform during inflationary periods because of landlords' capacity to pass inflationary costs on to tenants, particularly in an environment of supply shortages. However some market contacts said that such outperformance was limited by affordability and regulatory considerations in certain markets and by the impact of supply chain disruptions for projects still under construction (see Box 4).

Three-month growth in perceived vacancy rates increased during the COVID-19 shock and declined thereafter, although it increased again slightly in the third quarter of 2022 (Chart 13).[35] Measured by the proxy variable "lease availability", a market sentiment indicator which captures investors' perception of the amount of leasable space, vacancy rates increased in almost all EU countries during 2020. As a result of the COVID-19 shock, the biggest increase in the perception of available space for lease was recorded in the second and third quarter of 2020. After this large, sudden spike in the indicator, the amount of leasable space fell again so that it was closer to the pre-pandemic level in most countries. Divergence across countries has increased since the third quarter of 2021, with a number of countries reporting negative growth rates and others still reporting strongly positive growth.

Chart 13

Vacancy rate as measured by leasable space

(perceived percentage change during previous three months)



Source: RICS Global Commercial Property Monitor.

Notes: The series refers to the perception of the change in availability of space for occupation during the last three months for all types of commercial properties (office, industrial, retail). As correlations differ significantly across countries the indicator may not yield reliable information for all countries. The countries included are Belgium, Czech Republic, Germany, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Hungary, Netherlands, Austria, Poland, Portugal and Romania. The inclusion of countries depends on data availability. Last observation is Q3 2022.

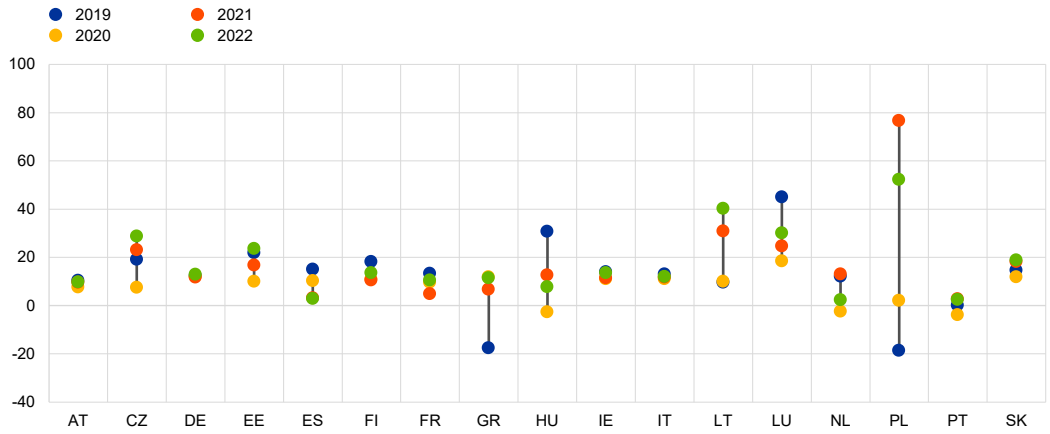
The role of investment funds in real estate markets across the EEA is expanding, as reflected by the positive rates of growth in net equity issuance between 2019 and 2021. In 2019, real estate investment funds in most EU countries covered by IVF data expanded their share capital, with funds growing at rates of 45% in Luxembourg, 31% in Hungary and 22% in Estonia (**Chart 14**). Over the course of 2020, funds in most countries either built up their share capital further – albeit at a slower pace compared with 2019 – or stagnated. In 2021 and the first eight months of 2022, the accumulation of funds' resources remained between the 2019 and 2020 rates in the EU as a whole, with funds growing at diverse rates across the individual countries.

[35] Note that the aggregate view can hide rising vacancy rates for some sectors, especially the office and retail segments.

Chart 14

Average annual growth rate of investment fund share/unit transactions for real estate funds

(percentage)



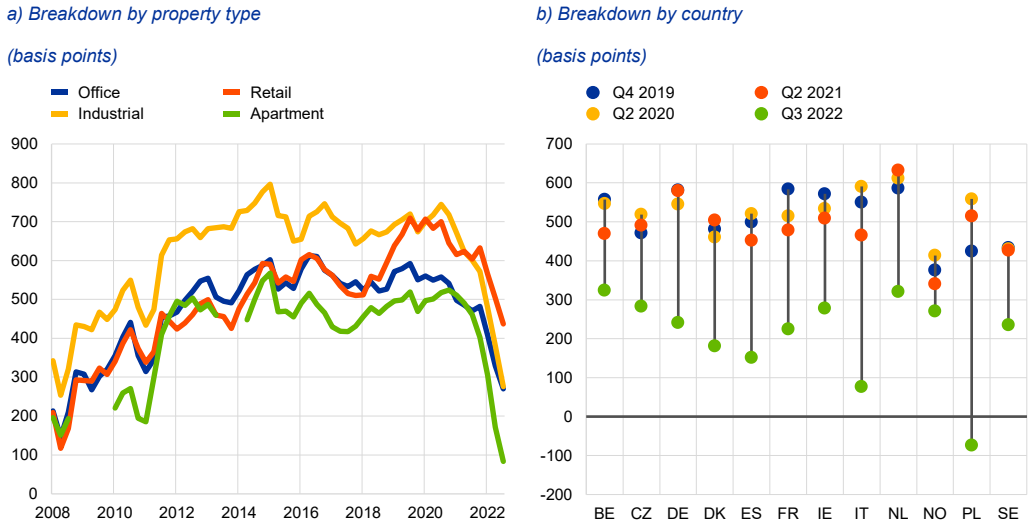
Source: ECB.
Notes: The investment fund shares/units refer to all currencies combined and the total maturity. The series is neither seasonally nor working day adjusted. All countries for which data are available are included in the chart. The figure for 2022 covers the period from January to August.

Spreads between yields on CRE and those on ten-year German Bunds reflect changes in the perceived riskiness of CRE investment, with differences across property types (Chart 15, panel a). These spreads have been relatively heterogeneous across the different types of property, with those for retail and industrial property being the highest and those for apartments and office property being the lowest. The risk perception measured by these spreads started to rise at the end of 2018, possibly reflecting increasing property prices and the risk of overvaluation. This trend continued for all property types after the outbreak of the COVID-19 pandemic at the beginning of 2020, with the most significant increases in the risk perception being for retail property. Spreads declined in 2021 but increased again at the end of that year for retail and office property. Meanwhile, spreads for industrial property and apartments continued to narrow. The difference in yield spreads between CRE and other asset classes can also be explained by differences in asset liquidity. As real estate is usually difficult to resell at short notice, yields on CRE should be higher than yields on highly liquid assets with a similar risk profile, in order to compensate investors for lower liquidity. In situations of elevated uncertainty, the valuation of liquidity may be particularly high.

In 2020, CRE yields increased relative to the ten-year German Bund in most countries (Chart 15, panel b), with the strongest increase between the fourth quarter of 2019 and the second quarter of 2020 in Poland. However, in the third quarter of 2022 yield spreads declined in all countries.

Chart 15

Spreads between yields on CRE investments and ten-year euro area government bonds



Source: RCA.

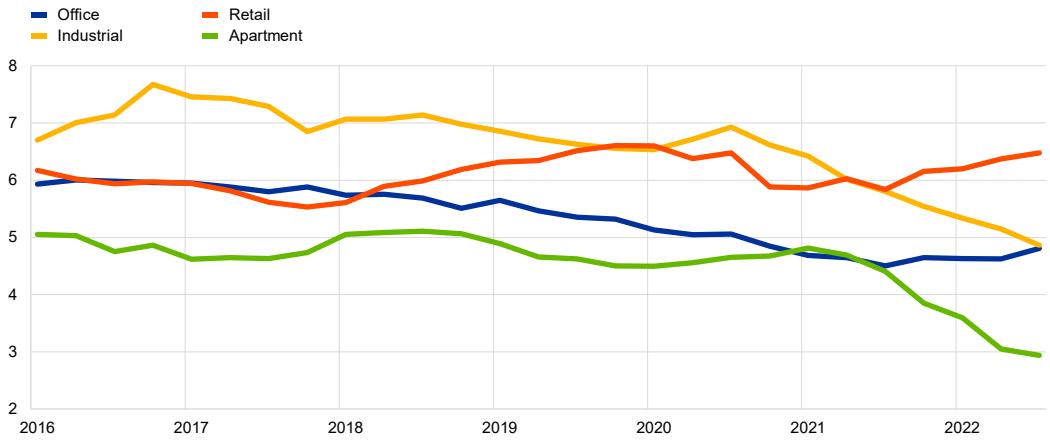
Notes: Ten-year German Bunds were used for the calculation. Panel b: All countries for which data are available are included. Last observation is Q3 2022 for all countries except Belgium (Q2 2022) and the Czech Republic (Q1 2022).

Capitalisation rates (which measure the ratios of income to capital cost for property) were at high levels during the period 2016-22 before declining slightly for most sub-sectors. The highest rate was around 7% recorded for the industrial sector. It stayed at that level until the third quarter of 2021 but then declined to around 5%. The capitalisation rate was lowest for the apartment sector where it stood at around 5% until mid-2021 before declining to around 3% in the third quarter of 2022. In the retail sector, the rate stood at around 6% for most of the period and increased to some extent in the latter part, while for the office sectors it declined from about 6% in the first quarter of 2016 to about 5% in the third quarter of 2022. **(Chart 16)**.

Chart 16

Capitalisation rate of CRE properties in the euro area

(percentage of property asset value)



Source: RCA.

Notes: The capitalisation rate (also known as net initial yield) indicates the initial annual unlevered return on an acquisition. It reflects the ratio between the net operating income produced by a property and its capital cost (the original price paid to buy the asset). For example, a capitalisation rate is 10% if a property is purchased for USD 10 million and produces USD 1 million in net operating income over one year. Last observation is Q3 2022.

Box 4

What drives CRE supply and demand?

The CRE sector is facing both supply and demand-side issues due to the impact of the COVID-19 pandemic. More recently, the issues have been aggravated by increasing inflation and Russia's invasion of Ukraine. Finally, climate-related policies are shaping new construction and investor demand for existing properties. Depending on the strength of the individual factors, CRE prices may be affected in both directions, with an uneven impact across property types and segments.

The pandemic led to an increase in remote working and online commerce, which negatively affected the demand for CRE.[36] Depending on whether such changes turn out to be temporary or permanent, they may be negatively reflected in the vacancy rates and rents of office and retail properties in the medium term, with downside effects on prices. A potential decrease in prices would negatively affect the values of collateral on credit providers' balance sheets, resulting in higher loan-to-value (LTV) ratios. It would also impact direct CRE investment by financial institutions such as open-ended investment funds. The mark-to-market losses of such funds could lead to investor redemptions, forcing the funds to sell the underlying assets and thus adding further to downward price pressures. Eventually, declining demand would also influence the supply side, resulting in fewer new CRE buildings being built.[37]

[36] However, some sub-sectors (such as warehouses) benefited, for instance because of the growth in online commerce.

[37] See European Central Bank (2020), "**Financial Stability Report**", November.

Meanwhile, supply bottlenecks are causing delays in the sourcing of materials, affecting costs and completion times. Costs are also increasing for related services. The global container index, which measures the average shipping cost of one container, grew from USD 1,400 in 2020 to almost USD 10,000 at the beginning of 2022, peaking at over USD 11,000 in September 2021.[38] The costs of containers from China/East Asia bound for northern Europe and the Mediterranean stood at around USD 12,700 and USD 13,700 respectively.[38] According to asset manager abrdn's European Property Market Outlook for the fourth quarter of 2022,[39] future completions of CRE buildings will be restricted materially across sectors, and they are not expected to return to trend until 2023. On the one hand, this poses additional risks for financial institutions with a high level of exposure to properties under development. Ongoing construction projects may have cost overruns if costs were not locked in prior to the increases. This may lead to profit margins being squeezed or make projects unviable, which could lead to defaults and therefore losses for the funding providers. On the other hand, a limited supply of new properties may, to some extent, support CRE prices, reducing financial institutions' risks relating to the value of the existing CRE. This is especially the case for prime property, as refurbishment projects to bring buildings up to the standard required in the market may become unviable at a certain level of costs.

Both the supply of and demand for CRE are also affected by new climate-related regulations. The CRE sector is heavily exposed to climate-related transition risk. Buildings account for approximately 40% of energy consumption and 36% of greenhouse gas emissions in the EU according to the European Commission,[40] and around 35% of the buildings are over 50 years old. This suggests growing competition for the best offices, while the rest of the assets are feeling most of the impact in terms of a drop in demand. This dynamic has been flagged in conversations with market participants (see Box 2). In addition, the sector is also facing potential climate-related physical risks. The European Commission is proposing future minimum standards for Energy Performance Certificates (EPCs), which will require the worst-performing buildings in terms of energy efficiency to be renovated before a certain deadline. Financial institutions need to take this into account when providing credit and assessing collateral values, or when managing investment portfolios that include CRE. In some countries there are already measures in place that require EPCs for new transactions or lending. The situation varies at the moment depending on the country, both in terms of data efforts and availability and in terms of regulation.

Overall, activity in CRE markets was affected to varying degrees during the COVID-19 pandemic, depending on the sector. Investment in CRE is almost back to pre-pandemic levels, with demand increasing mainly in the prime segment. Meanwhile, perceived risk related to retail property has risen, as shown by yield spreads against ten-year German Bunds. Finally, investment funds continue to play an increasing role in CRE markets.

38 See the Freightos Baltic Index (FBX): **Global Container Freight Index**.

39 abrdn (2022), "**European Property Market Outlook**".

40 European Commission (2020), "**In focus: Energy efficiency in buildings**", European Commission (2020).

2.3 Financing stretch

The financing stretch analyses key vulnerabilities related to the CRE exposures of banks, insurers and investment funds. In the banking sector, a significant share of loans have an LTV ratio above 80% in a number of countries, which indicates that the sector is highly exposed to changes in CRE prices. In the event of negative economic and financial developments, declining CRE prices could lead to rising LTV ratios, pushing up capital requirements and undermining the ability of banks to provide credit.[41] In the event of corporate defaults on CRE loans, high LTV ratios might also lead to credit losses. Exposures of investment funds to CRE have grown significantly over recent years, and liquidity mismatches remain a key vulnerability in the open-ended CRE fund sector. Insurance companies' exposures to CRE have been largely stable but concentrated in a few countries.

2.3.1 Banking sector

Most countries registered an increase in the amount of CRE loans in 2021 compared with 2020. In 2021, five countries (Luxembourg, Latvia, Hungary, France and Belgium) registered a significant increase of above 20% in annual growth rates of bank loans collateralised by CRE (**Chart A.3** in the annex).

The availability of data for the banking sector has significantly improved compared with the previous report thanks to the availability of AnaCredit data. For the purpose of analysing AnaCredit data, banks' CRE exposures are defined as (i) financial instruments extended to legal entities collateralised by commercial real estate properties and (ii) financial instruments extended to legal entities[42] for the purpose of acquiring a real estate property or construction investment.[43] Using this definition, which is in line with Recommendation ESRB/2016/14 as amended by Recommendation ESRB/2019/3, the data suggest growth in banks' CRE exposures varies across euro area countries (**Chart A.4** in the annex). AnaCredit data differ from the EBA data referred to above for several reasons. Most importantly, the definition of CRE exposures used for AnaCredit data is wider, as it also includes loans collateralised by CRE with a different purpose than CRE. Another reason is that AnaCredit data cover all banks, while EBA data cover a sample of the largest banks.[44]

The LTV ratio is a useful indicator for assessing vulnerabilities related to CRE loans. During a real estate upswing, an increase in CRE prices can lead some enterprises to borrow more while maintaining the same LTV ratio owing to the higher value of the property used as collateral.

---

41 Note that some banks require their corporate customers to pledge additional CRE collateral against a loan that is already secured by other types of collateral. For countries where the business model of banks is to overcollateralise corporate loans, the loan-to-cost ratio would point to a less risky situation than the LTV ratio.

42 According to **Recommendation of the European Systemic Risk Board of 24 September 2020 on identifying legal entities (ESRB/2020/12) (OJ C 403, 26.11.2020, p. 1)**, "legal entity" means an entity that is eligible for a legal entity identifier (LEI) according to the ISO17442 standard and guidance on the eligibility for LEI published by the Regulatory Oversight Committee for the Global Legal Entity Identifier System.

43 According to **Recommendation ESRB/2016/4 as amended by Recommendation ESRB/2019/3**, CRE loans do not include loans granted to NFCs active in real estate or construction for non-real estate purposes. However, as these entities might be nevertheless exposed to CRE-related risks a wider definition might be warranted for future analysis.

44 As a number of issues related to the quality of the AnaCredit data have not yet been solved, only a few of the charts in this report use AnaCredit data.

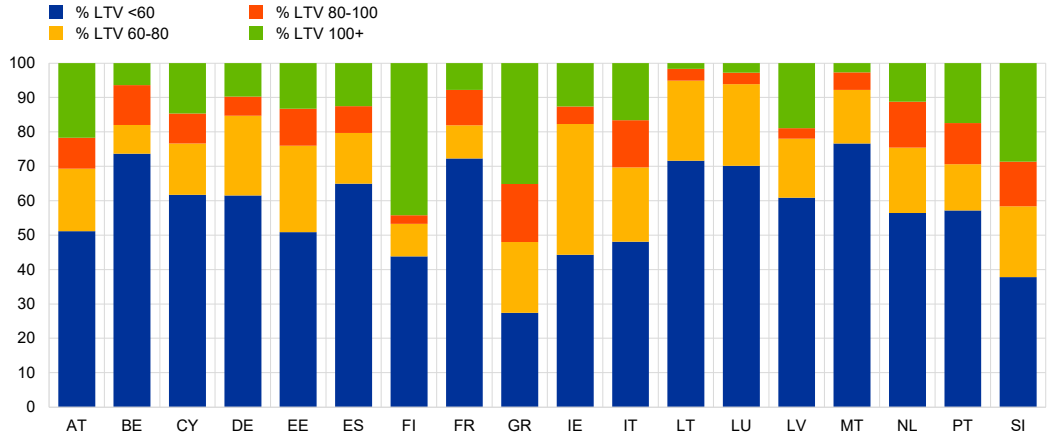
However, during a downturn a sudden decline in collateral value could result in a sharp increase in the LTV ratio. This would raise the loss-given-default of banks and increase their capital buffer requirements. In turn, this could undermine banks' ability to maintain their credit supply, thus affecting the real economy and, hence, the financial system. In the event of borrower defaults on CRE loans, high LTV ratios might also lead to credit losses from these loans. In addition, risks related to CRE loans are multidimensional. Even for loans with LTV ratios that might appear more conservative, the aggregate information might hide other, riskier characteristics, such as a bullet repayment scheme, a non-recourse structure, variable unhedged interest rates or long maturities.[45]

There are marked differences among countries in the distribution of median[46] LTV ratios, possibly owing in part to variations in the quality and definitions of data. According to FINREP data **(Chart 17)**, more than 50% of CRE loans in Greece have an LTV ratio above 80%. In Slovenia, such loans account for around 40% of all CRE loans, while in Austria and Italy they account for just above 30%. Meanwhile, the share of loans with LTV ratios above 100% is around 40% in Greece and 30% in Slovenia, and above 20% in Latvia and Austria according to FINREP. While these figures may indicate that these countries have high exposure to changes in CRE prices, they need to be interpreted with caution owing to the quality of the data.[47]

Chart 17

Distribution of current LTV ratios

(percentage of countries' total loan amount, Q2 2022)



Source: FINREP.
Notes: The chart shows the gross carrying amounts in the different LTV buckets; no averages are computed. Exposures are sorted into LTV buckets at banking group level and then summed up at the country level of the banking group. All countries for which data are available are included in the chart.

45 At the same time, there are differences among countries in terms of collateralisation of corporate loans. In Bulgaria, for example, banks tend to overcollateralise corporate loans. The Bulgarian 2021 pilot survey suggests that loan-to-collateral ratios tend to be lower than LTV ratios.

46 The median value is here preferred to the simple average value as it corrects for the effect of outliers, which can remarkably impact the distribution of the variable that is computed from the AnaCredit database.

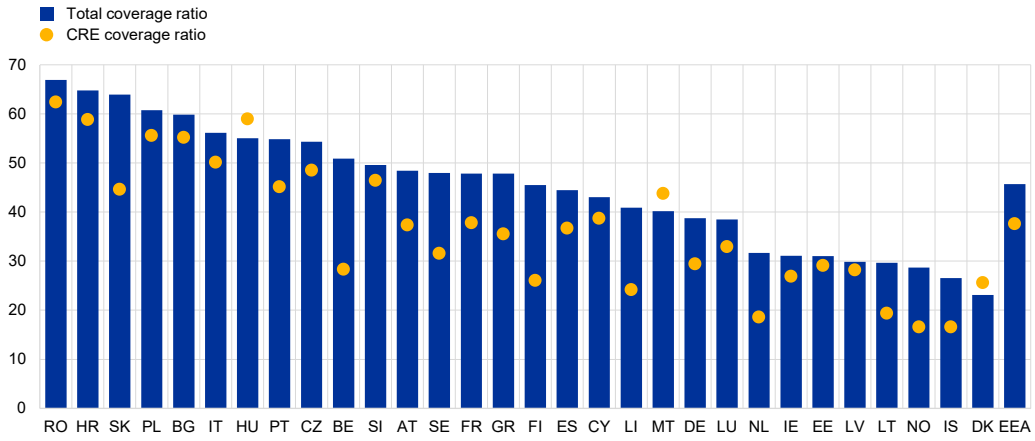
47 The FINREP data on LTV ratios may differ in terms of scope, perimeter, definition and methodology applied, not only across jurisdictions but also among banks within a single jurisdiction. Using AnaCredit data instead would lead to a different sample of countries with risky loans.

In several countries, the NPL coverage ratio for CRE loans is much lower than that for total loans to NFCs. Coverage ratios are another useful indicator of the risks to which banks are exposed, as they give a measure of their ability to absorb future losses. The NPL coverage ratio for CRE loans is close to or higher than that for total loans provided to NFCs in several EEA countries, with the highest levels recorded in Romania, Hungary and Croatia (about 60% in all three countries) (**Chart 18**). However, in several countries (Belgium, Finland and Slovakia with a difference of about 20 percentage points, Lichtenstein, Sweden and the Netherlands with a difference of about 15 percentage points) the coverage ratio is significantly lower for CRE loans than for total loans to NFCs.

Chart 18

Coverage ratio of non-performing bank loans to NFCs: total vs CRE lending

(percentage of total NPLs and advances, Q2 2022)



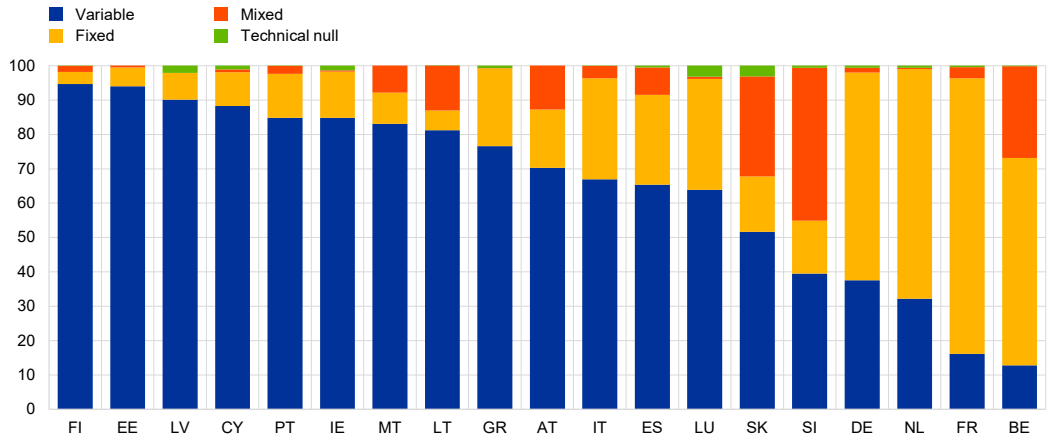
Source: EBA Risk Dashboard.
Notes: The figure indicates the coverage ratio of NPLs granted to NFCs comparing total exposures and CRE exposures. The coverage ratio is calculated as the sum of accumulated impairment, accumulated negative changes in fair value due to credit risk for non-performing loans and advances divided by a sum of total gross NPLs and advances. Individual country data include subsidiaries, which are excluded from EEA aggregate. For example, at country level the subsidiary in country X of a bank domiciled in country Y is included both in data for countries X and Y (for the latter as part of the consolidated entity). In the EEA aggregate, only the consolidated entity domiciled in country Y is included. The sample of banks is unbalanced and reviewed annually.

CRE loan characteristics suggest varied levels of risk across countries. In 14 euro area countries, variable interest loans make up more than 50% of CRE loans (**Chart 19**). Although less common, mixed interest rate schemes are prominent in Slovenia, Slovakia and Belgium, where they account for more than 25% of all CRE exposures. The normalisation of interest rates may thus have implications not only in terms of the arbitrage across asset classes, but also because it will drive up discount rates, negatively affecting valuations. From the perspective of affordability, lending at variable interest rates will result in higher interest charges, which are usually not hedged by borrowers, negatively affecting the ability to service debt.

Chart 19

Share of interest rate schemes for CRE loans by interest type

(percentage of countries' total CRE exposure, Q1 2022)



Sources: AnaCredit, ESRB calculations.
Notes: Non-euro area countries are not included in the chart. For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1.

2.3.2 Non-banking sector

The leverage of open-ended[48] real estate funds, measured as their assets under management (AuM) over their net asset value (NAV), increased from 2018 onwards and then remained stable at almost 140% from the end of 2020 (Chart 20, panel a). By contrast, closed-end funds have continuously reduced their leverage over time, although there have been significant fluctuations. While closed-end funds still apply leverage to a larger extent than their open-ended counterparts, the difference between the levels has narrowed, thus exposing open-ended and closed-end funds to property price fluctuations to a comparable extent.

Liquidity mismatch remains a key vulnerability in the open-ended CRE fund sector.[49] At the end of the third quarter of 2021, open-ended funds accounting for 31% of the market in terms of NAV showed a misaligned asset-liability maturity structure. This liquidity mismatch arises when investors have been offered shorter redemption periods than the liquidation period of portfolio assets (**Chart 20**, panel b). The liquidity mismatch is most pronounced for funds that allow daily share redemptions by investors; such funds account for one-third of CRE funds with any liquidity mismatch. Given the economic significance of funds with daily redemption frequencies, the maturity mismatch of these funds remains a key vulnerability.[50]

48 Note that the aggregate of open-ended alternative investment funds also includes funds where no specification was given as to whether they are closed- or open-end.

49 In some jurisdictions closed-end funds can also have dealing days, making liquidity mismatch possible for this type of fund as well.

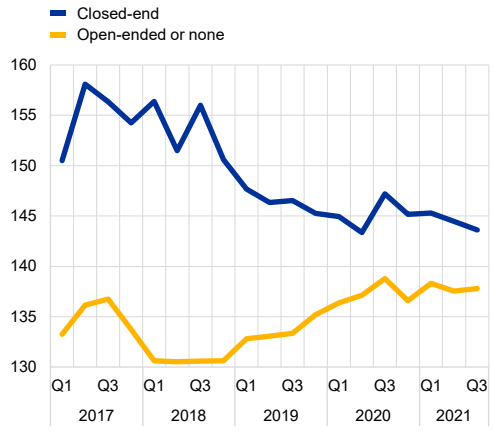
50 See European Securities and Markets Authority (2020), "**Report: Recommendation of the European Systemic Risk Board (ESRB) on liquidity risk in investment funds**", November. According to the report, these funds account for 50% of all commercial real estate funds in Europe.

Chart 20

Leverage of open-ended and closed-end funds and liquidity transformation profile

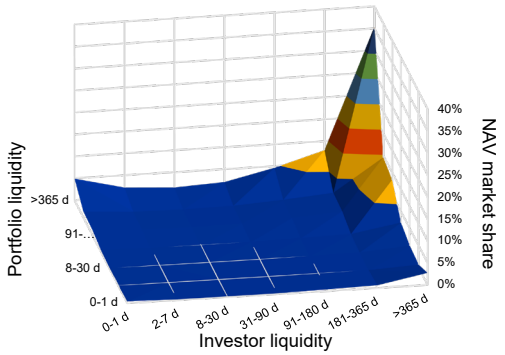
a) Leverage of open-ended and closed-end funds

(percentage of net asset value)



b) Liquidity transformation profile

(days and percentages)



Sources: AIFMD, ESRB calculations.
Notes: Leverage defined as AuM/NAV, portfolio liquidity as the liquidation period of portfolio assets in days, investor liquidity as the redemption period of portfolio assets in days. In panel b, the last observation is Q3 2021. The different colors in panel b represent a value of 5% in the Z-axis. The aggregate of open-ended alternative investment funds also includes funds where no specification was given as to whether they are closed- or open-end.

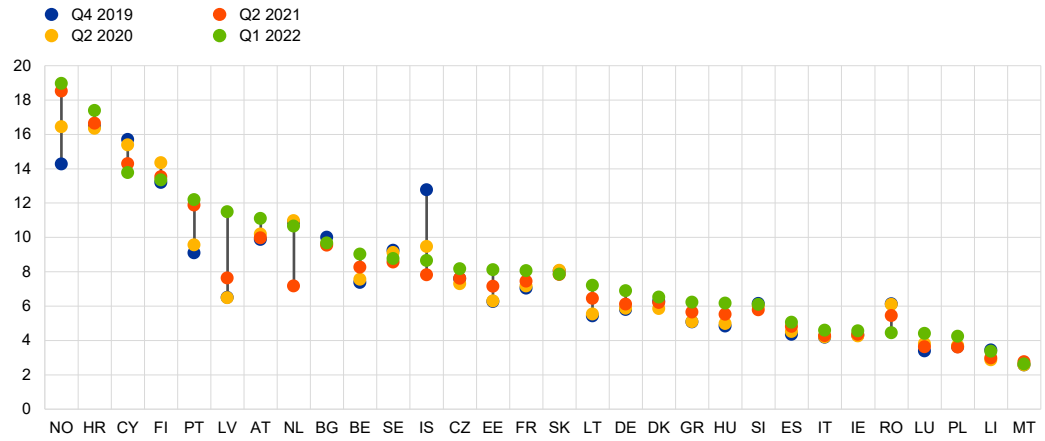
In the insurance sector, exposures to CRE as a share of total asset exposures range from around 20% in Norway to around 3% in Malta, with strong growth in a few countries. In the first quarter of 2022, insurance companies' exposures to CRE represented more than 10% of their total asset exposures in Norway, Croatia, Cyprus, Finland, Portugal, Latvia and Austria (**Chart 21**). Between the end of 2019 and the first quarter of 2022, exposures to CRE remained largely stable for most countries except for Norway and Latvia, where they increased strongly. Since the end of 2017, insurers' exposures to CRE as a share of total exposures have roughly tripled or more than tripled in Latvia, Estonia and Lithuania (**Chart 22**).[51]

[51] Note that in these countries the increases occurred from very low initial levels.

Chart 21

Insurance companies' CRE exposures as a share of total asset exposures

(percentage of countries' total asset exposures)

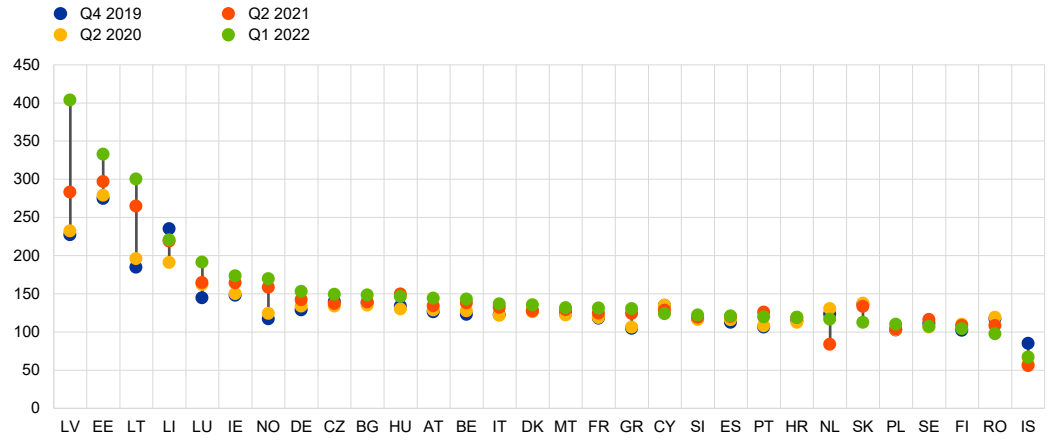


Sources: EIOPA insurance statistics - exposure data, ESRB calculations.
*Notes: Insurers' CRE exposures were calculated according to the methodology used by EIOPA (see EIOPA (2020), **Financial Stability Report**). According to this methodology, exposures include property (CIC 91 + CIC 93 + CIC 94 + CIC 95 + CIC 96 + CIC 99), equity of real estate-related corporations (CIC 32), real estate funds (CIC 45), mortgages (CIC 84) where the issuer is not a natural person, corporate bonds (CIC 2), which are issued by real estate firms and "other" (CIC 65 and CIC 55). The definition of real estate assets follows the definition given in response to question 22 of **EIOPA Insurance Statistics - Frequently Asked Questions**. Assets that belong to unit and index-linked insurance are excluded. In the Netherlands, some mortgages were reclassified from commercial to residential resulting in a decrease in the exposure for 2021.*

Chart 22

Insurance companies' exposures to CRE

(index, Q4 2017 = 100)



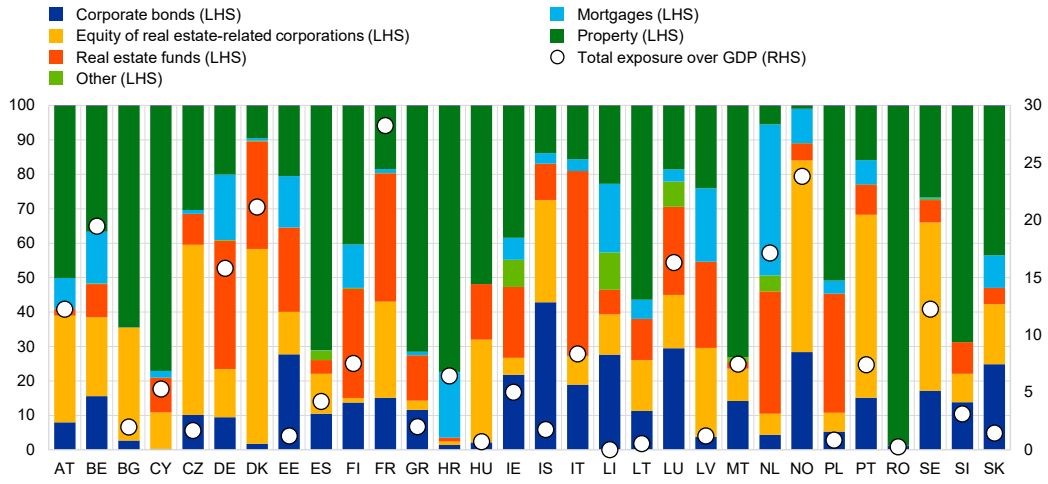
Sources: EIOPA insurance statistics – exposure data, ESRB calculations.
Note: See notes to Chart 21 above.

Insurers' exposures to CRE can be either direct exposures through property holdings or indirect exposures through mortgages, through equity in real estate-related corporations or through investment funds. The most significant direct exposures to CRE can be found in Romania, Croatia, Cyprus, Greece, Malta and Spain (between 70% and almost 100% of total exposures in the first quarter of 2022) (**Chart 23**). Real estate-related corporations' exposures through equity are relatively high in Denmark, Norway, Portugal, the Czech Republic and Sweden (around 50%)[52], while exposures to real estate funds are at significant levels in Italy (around 50%) and in France, Germany, and the Netherlands (around 35%). Exposures through mortgages (both RRE and CRE) are relatively high in the Netherlands (around 45%) and in Germany, Croatia and Latvia (around 20%).

Chart 23

Types of CRE instruments in the insurance sector by country

(left-hand scale (LHS): percentage of countries' total exposures; right-hand scale (RHS): percentage of GDP, Q1 2022)



Sources: EIOPA insurance statistics – exposure data, ESRB calculations.
Note: See notes to Chart 21 above.

According to EIOPA, the insurance sector's CRE exposures are too small to have a significant adverse effect on balance sheets.[53] To assess the size of CRE exposures, they are compared with the excess of assets over liabilities. This metric also shows that exposures differ among countries, with relatively large exposures in relation to the excess of assets over liabilities in Portugal, Belgium and the Netherlands (total size of the bars in **Chart 24**).[54] Some insurers may, however, have more significant exposures on an individual basis.

52 In some countries potential losses are borne indirectly by pension savers instead.

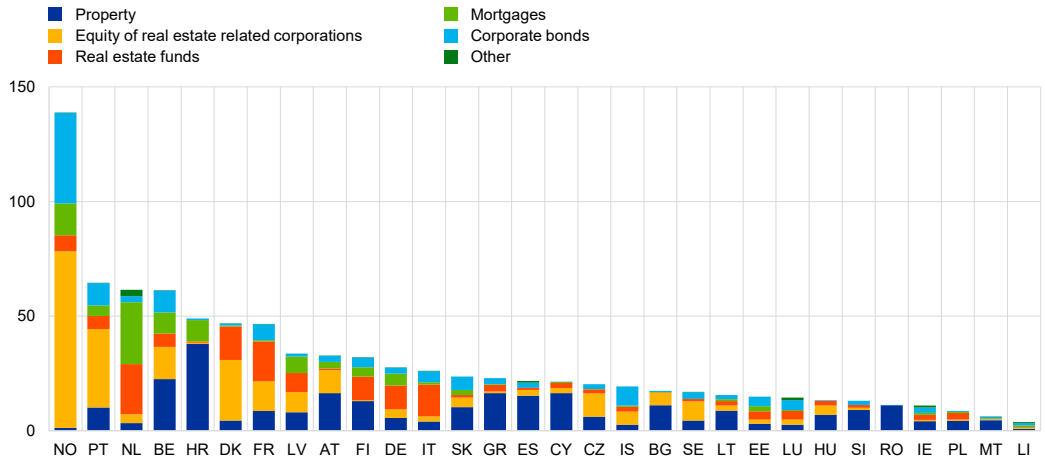
53 European Insurance and Occupational Pensions Authority (2020), "**Financial Stability Report**", December.

54 However, note that the category 'Mortgages' also includes RRE mortgages.

Chart 24

Insurance companies' CRE exposures by country and instrument

(percentage of total excess assets over liabilities, Q1 2022)



Sources: EIOPA insurance statistics – exposure data, ESRB calculations.
Notes: See notes to Chart 21 above. Denominator is from balance sheet by item [S.02.01/Quarterly/Solo], row R1000.

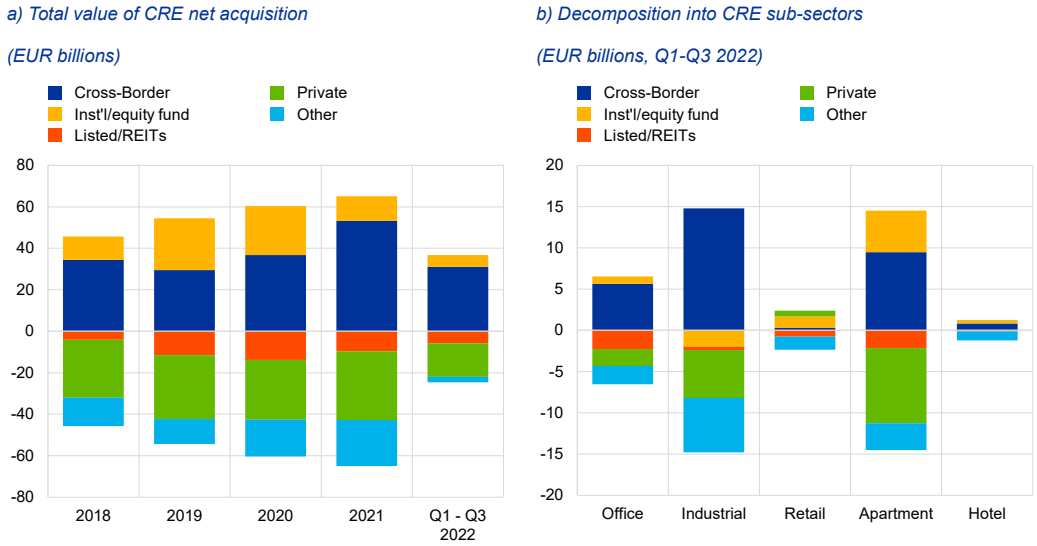
Overall, the funding stretch analysis suggests that a few countries have a relatively large share of risky bank loans as indicated by LTV ratios above 80%, although the results need to be treated with caution owing to data quality considerations and definitions. The availability of data on lending standards for the CRE sector needs to be improved, while lending standards need to be closely monitored as far as possible. Regarding the non-banking sector, the key vulnerabilities for CRE funds are a liquidity mismatch in open-ended real estate funds and leverage. For the insurance sector, exposures differ across countries but are rather small and unlikely to have a significant adverse effect on insurers' balance sheets, according to EIOPA.

2.4 Spillover stretch

Spillover risks can arise from the involvement of different types of investor in the CRE market (**Chart 25**). Between 2018 and 2021, equity funds and cross-border investors increased their activity in the market, while private investors, real estate investment funds and other investors exited the market. This was also the case in all the main CRE sub-sectors in the first three quarters of 2022, with the exception of the industrial sector, which saw equity funds withdrawing from the CRE market. The individual types of investor may be sensitive to different kinds of negative shock. When some investors decide to redeem their shares and exit the CRE market, and CRE prices decrease as a consequence of the sell-offs, this may affect the other investor types because of changes in the value of their CRE holdings.

Chart 25

Net acquisition of CRE in the EU by investor type



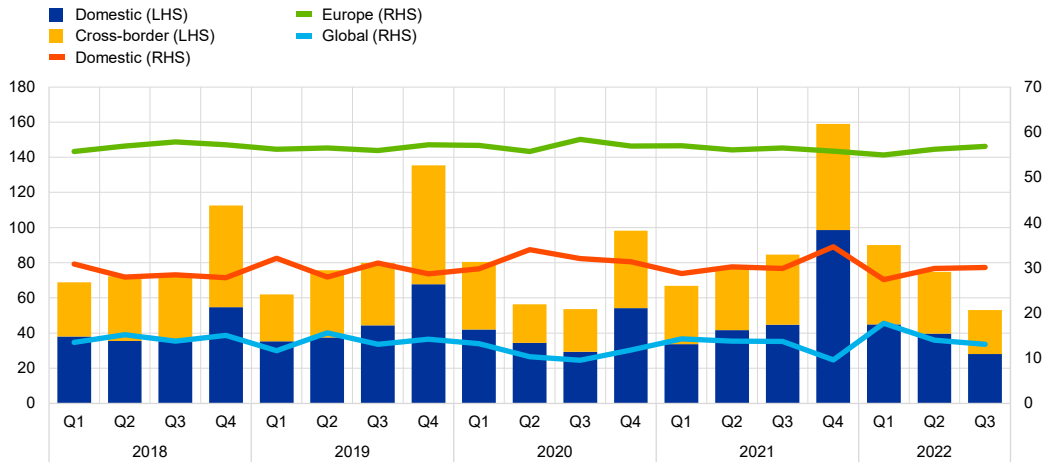
Source: RCA.
Notes: "Cross-border" refers to all buyers or major capital partners in a transaction that are not headquartered in the same country where the property is located. If the country of origin is not known, the buyer is assumed to be domestic.

Spillover risks can also arise from cross-border investment. Between the first quarter of 2018 and the third quarter of 2022, an average of 30% of investment in EU CRE came from domestic sources, 57% from European sources other than domestic and 13% from outside Europe (**Chart 26**). In the same period, cross-border capital flows averaged €39 billion, with the lowest volume being recorded in the second quarter of 2020 and the highest in the fourth quarter of 2019. In the first three quarters of 2022, volumes declined quite strongly, in particular for cross-border investment, which in the third quarter of 2022 was close to its level in the second quarter of 2020. When investors from one domicile decide to redeem their shares and exit the CRE market, CRE prices may decrease in countries in which those investors had significant holdings. This may in turn affect other investors with CRE holdings in those countries.

Chart 26

CRE transaction volumes in Europe by investor origin

(left-hand scale (LHS): EUR billions; right-hand scale (RHS): percentage)



Source: RCA.

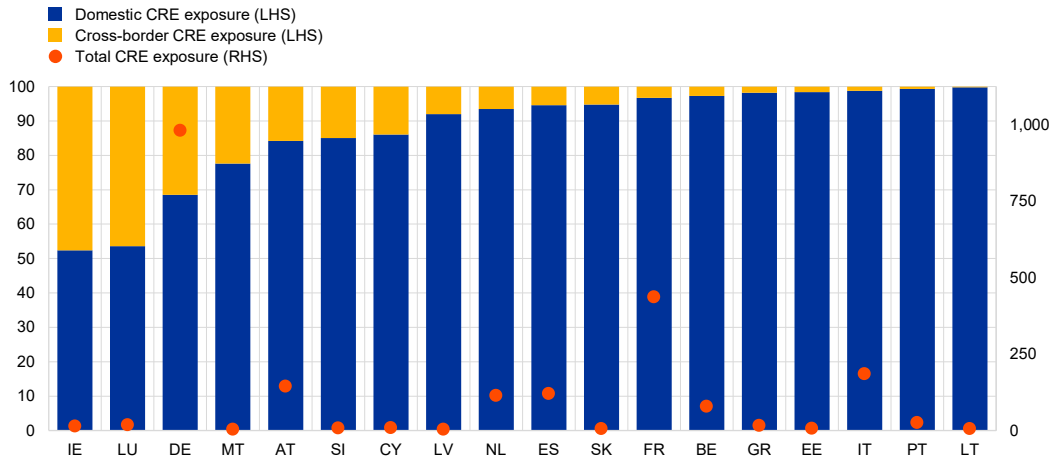
Note: Values are based on independent properties and portfolios worth USD 5 million or more in Europe. "Cross-border" refers to all buyers or major capital partners in a transaction that are not headquartered in the same country where the property is located (continental and global). If the country of origin is not known, the buyer is assumed to be domestic.

In contrast to investment flows, euro area banking sector exposures to CRE are mostly domestic, with only a few countries being significantly exposed to CRE markets in other euro area countries (Chart 27). In particular, domestic banks' aggregate cross-border CRE exposures make up more than 20% of the total CRE exposure in Ireland, Luxembourg, Germany and Malta, and between 20% and 10% in Austria, Slovenia and Cyprus. A breakdown of the cross-border exposures to euro area destinations shows that the national banking sectors are mostly exposed to Luxembourg (which appears as debtor for more than 10% of the cross-border exposures in eleven countries), the Netherlands (six countries), and Germany and Greece (both acting as debtors for more than 10% of the cross-border exposures in three countries) (**Table 1**). Some debtor countries account for more than 50% of the cross-border exposures in the creditor countries. This means that negative developments in some euro area countries' CRE markets may directly affect banks in other euro area member countries where the size of these exposures is significant.

Chart 27

Banks' domestic and cross-border CRE exposures as a share of total CRE exposure

(left-hand scale (LHS): domestic and cross-border CRE exposures as a percentage of countries' total CRE exposure; right-hand scale (RHS): total CRE exposures in EUR billions, Q1 2022)



Sources: AnaCredit, ESRB calculations.
Notes: Non-euro area countries are not included in the chart. In the case of Luxembourg, the share of cross-border CRE exposures of domestically-oriented banks is considerably lower and amounted to 8% in Q1 2022. For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1.

Table 1

Euro area banks' cross-border CRE exposures to other euro area member countries

(percentage of creditor countries' cross-border CRE exposures to the individual debtor countries, Q1 2022)

Creditors \ Debtors	AT	BE	CY	DE	EE	ES	FI	FR	GR	IE	IT	LT	LU	LV	MT	NL	PT	SI	SK
AT		0.4	0.8	55.2	0.0	2.9	1.6	2.0	0.1	0.3	5.9	0.0	12.2	0.3	0.3	4.2	0.2	4.5	9.0
BE	4.2			2.3	0.0	0.2		51.3			0.8		22.6		0.5	18.1	0.0		0.0
CY				0.1				5.1	66.6	8.5	13.6		4.4	0.3	1.5	0.0			
DE	2.5	4.1	0.2		0.0	4.8	1.4	16.3	0.0	1.7	5.8		42.4	0.1	0.0	19.9	0.4	0.0	0.2
EE							3.6	2.9				0.2	41.9	51.3					
ES	0.0	1.8	0.0	5.6			0.0	7.5	0.1	6.0	3.8	0.0	31.7		1.2	23.9	18.3		
FI					10.3					6.5		83.2							
FR	10.8	17.8		8.6		6.5				9.2	2.3		36.0			8.1	0.6		
GR	9.0		85.7										3.2		2.1				
IE			0.2	3.3		3.4	5.2	4.6	50.9		1.0		26.1		0.0	5.1			0.1
IT	0.4	3.9	5.2	6.5		3.2		14.5	0.3	2.5			22.4		1.2	21.5	16.7	0.0	1.8
LT					9.7									90.3					
LU	0.5	2.7	0.3	9.7		11.5	2.1	68.1		0.7	0.2				0.2	3.7	0.2		
LV	4.0	1.1	17.7		19.6	2.7		1.9		14.2		19.8	16.2			3.0			
MT									100.										
NL		25.3	1.1	19.3		1.5	1.8	8.1		4.1	9.5		26.1		2.7		0.4		
PT				5.6		19.3		5.8							30.7	38.6			
SI	1.7	0.2		24.4		9.7		8.1			5.5		24.3			26.0			
SK	18.8		61.6	0.2														19.4	

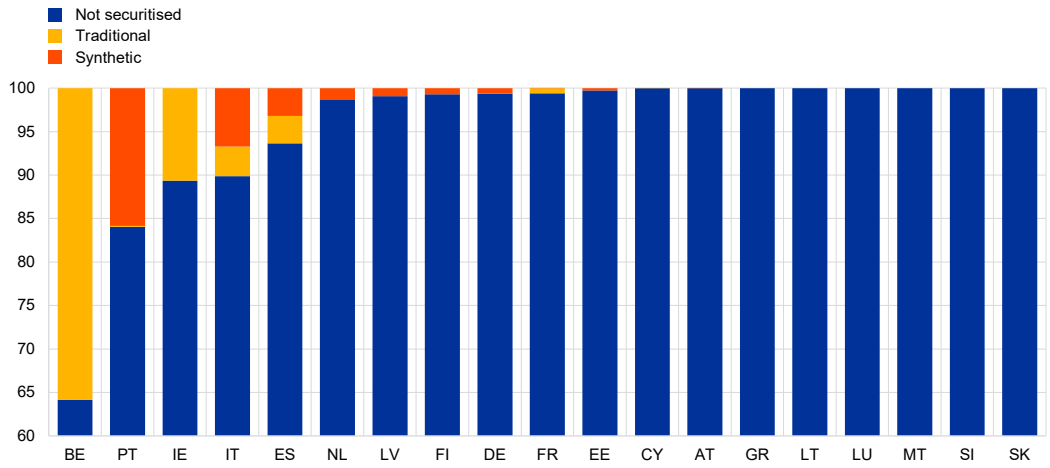
Sources: AnaCredit, ESRB calculations.
Notes: The chart shows the debtor countries with cross-border CRE exposures for each country as a share of their cumulative CRE exposure. For Malta, only one debtor country was recorded in AnaCredit. The high debtor-creditor relationship between Cyprus and Slovakia is driven by two large deals by one Slovakian bank in Cyprus. For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1.

Most CRE loans provided by banks are currently not securitised. Securitisation can bring significant financial and economic benefits. These include the transfer of risks from banks, which enables them to provide further lending to the economy, and greater portfolio diversification. Nevertheless, securitisation requires careful monitoring and supervision. Currently, more than 60% of CRE loans in the euro area are not securitised (**Chart 28**). For some countries, such as Belgium, Portugal, Ireland and Italy, at least 10% of CRE loans to NFCs are securitised either traditionally or synthetically.

Chart 28

Securitisation of banks' CRE loans

(percentage of countries' total CRE exposures, Q1 2022)



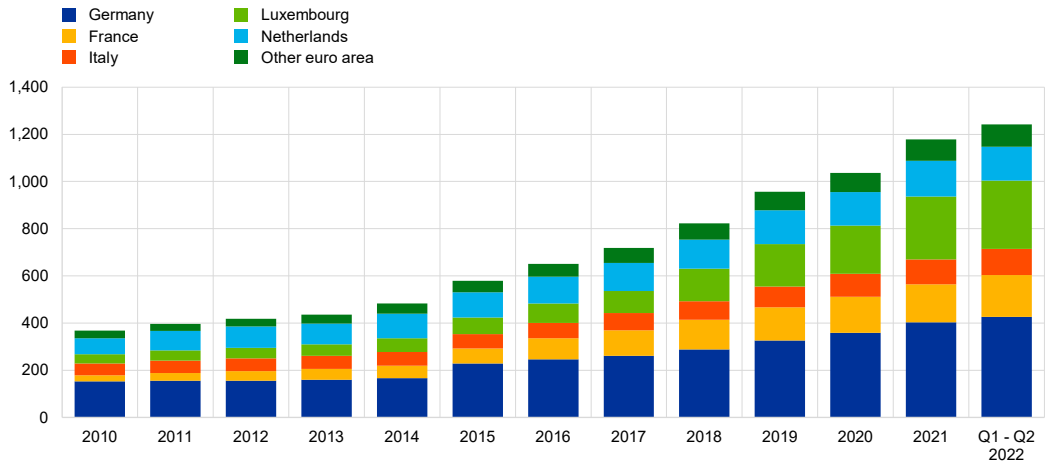
Sources: AnaCredit, ESRB calculations.
Notes: Non-euro area countries are not included in the chart. Traditional securitisations are securitisations involving the economic transfer of the exposures being securitised. This is accomplished by the transfer of ownership of the securitised exposures from the originator institution to a securitisation vehicle or through sub-participation by a securitisation vehicle. Synthetic securitisations are securitisations where the transfer of risk is achieved by the use of credit derivatives or guarantees, and the exposures being securitised remain exposures of the originator institution. For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1.

Non-banks are also an important source of CRE financing. Real estate investment funds' CRE AuM increased by 11% (to almost USD 1.2 trillion) between the end of 2020 and the end of 2021, with the strongest growth recorded in Germany and Luxembourg. The increase in funds' AuM continued in the first half of 2022. The variation in the distribution of growth has reinforced the geographical concentration of real estate funds, which are mainly registered in a small number of countries in the EU (**Chart 29**). Funds in the five largest domiciles (France, Germany, Italy, Luxembourg and the Netherlands) account for approximately 92% of the sector's assets in the euro area. Although the increased importance of non-bank intermediaries has reinforced risk-sharing in the financial sector, it opens up further transmission channels should risks materialise. Insurance companies, together with pension funds, are the largest investors in real estate funds (40% in total), followed by households (15%).

Chart 29

Euro area real estate investment funds: total assets by country of domicile

(EUR billions)



Source: ECB.
Notes: Data for German closed-end funds have been included in the calculation of total assets since 2015. The latest observation is for Q2 2022.

Long-term investors can help ensure that investment funds have stable funding structures and thus reduce the risk of large-scale fund redemptions. Insurers and pension funds in particular are perceived as long-term investors, while households are considered less responsive to adverse market conditions than institutional investors.[55] These three investor groups provide more than half of all the equity funding provided to European real estate funds (**Chart 30**, left-hand scale). However, investment behaviour can change rapidly during market turmoil. Real estate fund managers and national legislators can implement redemption policies that reflect the illiquid nature of funds' assets, including notice periods for investors wishing to redeem shares.

Leverage increases funds' interconnectedness with the rest of the financial system as it provides an indirect contagion channel between funds and their counterparties. At the end of 2020, real estate AIFs employing substantial leverage[56] reported borrowed cash and securities amounting to €12.4 billion. Credit institutions were by far the largest providers of borrowing (80% of the drawn credit amount), followed by financial auxiliaries (18%). In most countries, borrowing is provided by locally domiciled intermediaries (**Chart 30**, panel b). This implies that in the event of a CRE market downturn, spillover effects could arise among funds, banks, and financial auxiliaries

[55] See Ben-David, I. et al. (2022), "What do mutual fund investors really care about?", *The Review of Financial Studies*, Vol. 35, Issue 4, pp. 1723-1774; Fecht, F. and Wedow, M. (2014), "The dark and the bright side of liquidity risks: Evidence from open-end real estate funds in Germany", *Journal of financial intermediation*, Vol. 23, Issue 3, pp. 376-399; and Timmer, Y. (2018), "Cyclical investment behaviour across financial institutions", *Journal of Financial Economics*, Vol. 129, Issue 2, pp. 268-286.

[56] According to Article 111 of **Commission Delegated Regulation (EU) No 231/2013 of 19 December 2012 supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to exemptions, general operating conditions, depositaries, leverage, transparency and supervision (OJ L 83, 22.3.2013, p. 1)**, leverage is considered to be employed on a substantial basis when the exposure of an AIF as calculated according to the commitment method under Article 8 of this Regulation exceeds three times its net asset value.

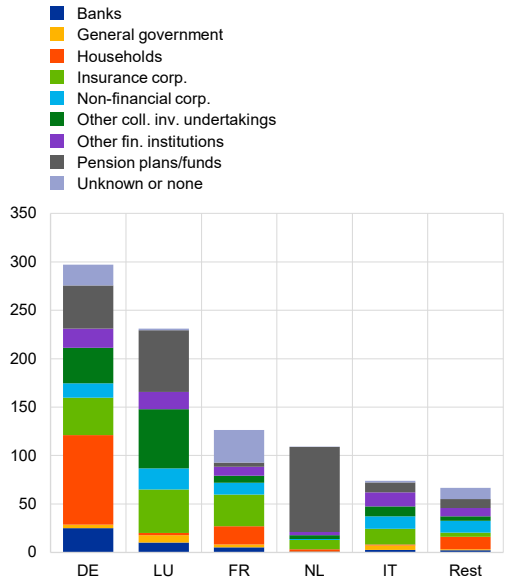
within the same jurisdiction. However, there are significant cross-border linkages among a few countries.[57]

Chart 30

Sectoral investor base and credit provision

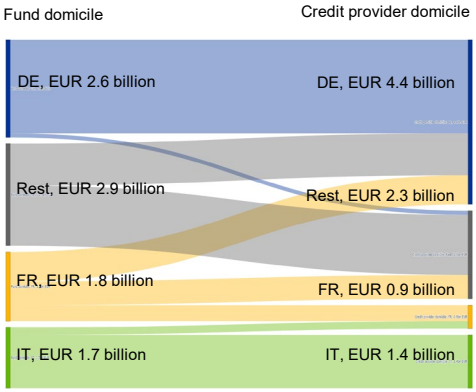
a) Sectoral investor base in different fund domiciles

(EUR billion)



b) Credit provision by jurisdiction

(EUR billion)



Sources: AIFMD, ESRB calculations.
Notes: Last observation is Q4 2021 for panel a and Q3 2021 for panel b. The sample in panel a includes Austria, Belgium, Cyprus, Czech Republic, Estonia, Germany, Finland, France, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden and the United Kingdom. Panel b is based on AIFMD data reported by AIFs using leverage on a substantial basis in accordance with Article 111 of Commission Delegated Regulation (EU) No 231/2013.

Overall, the analysis of the spillover stretch shows that investment funds and insurers have mainly direct exposures to CRE transactions, while banks exposures result mainly from CRE loans. For a few countries, the share of banks' CRE exposures to other European countries' CRE markets is significant, posing a risk of spillovers. Significant cross-border linkages exist for funds in a few countries. Spillover risks also arise from interlinkages among banks, investment funds and insurers.

[57] This pattern also remains unchanged if the parent company jurisdiction of the direct providers of credit to funds is taken into account.

3 Policy analysis

This chapter provides a policy analysis in the context of the vulnerabilities identified in Chapter 2. It discusses the macroprudential policy measures which are in place or available and how they could be further developed. The chapter concludes that amid the uncertainty related to the economic outlook, national authorities should monitor the CRE market very closely and stay vigilant in case CRE-related risks materialise or vulnerabilities build up further. Appropriate policy action in the future will depend on economic developments and may need to take into account different dynamics across CRE sectors and segments. The chapter also concludes that macroprudential policy instruments to mitigate CRE vulnerabilities are not yet well developed for all types of entities providing CRE finance. Therefore, it is important to investigate whether new instruments could be made available beyond banking and whether borrower-based measures (BBMs) could be applied to CRE loans.

3.1 Macroprudential measures available for CRE loans

Capital-based and borrower-based macroprudential measures can be used to address CRE-related vulnerabilities. There is a range of macroprudential measures available to Member States either via national regulation or through the CRD, the CRR, the AIFMD and the Solvency II Directive. In general, the available instruments can be divided into (i) capital-based measures for banks, (ii) liquidity and leverage measures for AIFs, and (iii) BBMs, which may be applied to all credit providers.

Several macroprudential measures are available to tackle CRE-related risks in the banking sector, including risk weight measures and capital buffers. In particular, these measures include:

- higher risk weights or stricter criteria on risk weights applied to exposures secured by mortgages on commercial immovable property for institutions applying the standardised approach to the calculation of own funds requirements (Article 124 CRR);
- increased minimum values for loss-given-default applied to retail exposures secured by commercial immovable property or to a subset of exposures for institutions applying the internal ratings-based approach to the calculation of own funds requirements (Article 164 CRR);
- a sectoral systemic risk buffer (Article 133 CRD, available since 2022);
- other measures, including risk weight measures or large exposure limits, provided that different macroprudential measures cannot be used to achieve the same target (Article 458 CRR).

Other macroprudential measures for banks, such as the countercyclical capital buffer (CCyB) and the systemic risk buffer (SyRB), could be implemented to help address CRE vulnerabilities, as well as other vulnerabilities.

Only a few macroprudential measures are available to address CRE-related risks in the investment fund sector. Article 25 of the AIFMD provides for a macroprudential tool to limit leverage in AIFs. This is currently the only macroprudential instrument for this sector which is available and harmonised at EU level. The ESRB Recommendation on liquidity and leverage risks in investment funds (ESRB/2017/6)[58] suggests complementary tools for managing liquidity mismatch, which is inherent to the fund sector for any type of investment. These tools include redemption fees, redemption gates and the ability to temporarily suspend redemptions. The Recommendation also envisages that open-ended investment funds which hold inherently less liquid assets (e.g. real estate) should be able to demonstrate the capacity to maintain their investment strategy under stressed market conditions. However, implementation of the Recommendation in the EU is still proving slow. At the same time, most EU jurisdictions have supplemented EU law with national regulations covering types of real estate funds, leverage and liquidity risks. While in many cases regulations were put in place to protect investors, they can also reduce some of the risks to financial stability.

Macroprudential measures to address CRE-related risks in the insurance sector are also scarce. The Solvency II Directive imposes capital charges for property and concentration risks. However, the capital charges for concentration risks only prevent the concentration of investment in individual name-based exposures, and not the concentration of exposures in specific sectors and geographical regions. Article 132 of the Solvency II Directive states that assets "shall be properly diversified in such a way as to avoid excessive reliance on any […] geographical area". To enhance the Solvency II Directive with macroprudential tools, the European Commission suggests that when insurers decide on their investment strategy, they should consider macroeconomic and financial market developments, which include developments in the CRE market, and should also, at the request of the supervisory authority, consider macroprudential concerns.[59] In its letter to the European Commission regarding the consultation on the review of Solvency II, the ESRB suggests explicitly that risks related to real estate should be properly captured.[60]

The availability of legally binding BBMs (e.g. LTV limits and debt service coverage ratio (DSCR)/interest coverage ratio (ICR) floors), which have the potential to become activity-based tools, depends on national legislation and therefore varies by country. Currently, the use of legally binding BBMs for CRE loans is permitted by the legal frameworks of 19 countries (Belgium, Bulgaria, Denmark, Germany, Estonia, Ireland, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Malta, Austria, Portugal, Romania, Slovenia and Sweden). An advantage of BBMs is that they can be applied to all domestic lenders, including banks, branches of foreign banks, investment funds and insurance companies. Currently, such a set of activity-based BBMs

---

58 **Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds (ESRB/2017/6) (OJ C 151, 30.4.2018, p. 1).**

59 **Proposal for a directive of the European Parliament and of the Council amending Directive 2009/138/EC as regards proportionality, quality of supervision, reporting, long-term guarantee measures, macro-prudential tools, sustainability risks, group and cross-border supervision**, 22.9.2021, COM(2021) 581 final 2021/0295(COD).

60 **Letter by the chair of the ESRB to the Vice-President of the European Commission on the Solvency II review**, October 2020.

for CRE loans is available in only a few countries (Belgium, Ireland, France, Lithuania, Malta, Slovenia and Sweden).[61] This feature makes these measures particularly attractive in the light of current developments in the European CRE markets, where the importance of foreign funding sources and the role of non-banks is increasingly significant. However, there has been very little experience so far of applying BBMs to NFCs, particularly for CRE loans. This is mainly because of challenges related to the complexity and heterogeneity of the CRE sector and its financing, as well as data quality issues related to current lending standards for CRE loans.

3.2 Macroprudential measures in place

Only a few macroprudential measures in the banking sector are directly tailored towards CRE-related vulnerabilities, most of them being risk weight measures (Table 2). Currently, a total of 11 EEA countries have activated at least one policy measure to address risks in the CRE market. The most commonly used measures are risk weight measures introduced via Article 124 of the CRR, which are currently in place in five countries (Croatia, Latvia, Norway, Poland and Romania). During the COVID-19 pandemic, a measure under Article 124 of the CRR was relaxed in Poland and discontinued in Ireland.[62] Article 124 of the CRR allows higher risk weights to be set for banks that use the standardised approach for calculating capital requirements. For banks using internal models, Article 164 of the CRR allows risk weights to be increased by raising the regulatory floor of the loss-given-default parameter of the internal models. However, in some countries the low risk weights of institutions that use the internal ratings-based approach may be driven by a fall in probability of default estimates observed in the past rather than low loss-given-default estimates. The use of Article 164 of the CRR may therefore not be suitable in such countries. In addition, Article 164 of the CRR only applies to banks' retail customer portfolios which are secured by CRE property, despite the fact that the majority of banks' CRE exposures are in their corporate portfolios. Instead of using Article 164 of the CRR, Norway opted to introduce a risk weight measure via Article 458 of the CRR in 2022.

CRE-related credit dynamics have led to adjustments in the CCyB rate in a small subset of countries in previous years. A high level of activity, buoyant lending dynamics targeted at CRE segments and rising CRE prices have been included over time among the factors considered to increase CCyB rates in Iceland, Norway and Sweden. In particular, in May 2018 the Central Bank of Iceland Financial Stability Committee mentioned risk in CRE development as the main reason to increase the CCyB rate from 1.25% to 1.75% (with effect from May 2019). At the end of 2018, the Norwegian Ministry of Finance decided to raise the CCyB rate from 2% to 2.5% (with effect from the end of 2019), mainly because of rising commercial property prices. None of the most recent CCyB decisions in other countries has specifically mentioned CRE dynamics as the main source of

[61] In France, BBMs for CRE loans are available for banks and insurance companies. In Slovenia, such measures are available for banks, branches of foreign banks and investment funds. In Germany, they can be applied to banks, as well as to insurers and investment funds.

[62] The assessment conducted by the Central Bank of Ireland in line with Article 124(2) concluded that there was not an inadequacy in standardised risks weights which would adversely affect financial stability. See Central Bank of Ireland (2021), **Financial Stability Review 2021:II**.

concern. Nevertheless, macroprudential authorities continue to monitor the CRE sector carefully in view of its relevance for financial stability.[63]

Exposures to CRE markets have also been the driver for changes in the SyRB rate in a number of countries. The Czech Republic, Finland, Hungary and Norway have justified the introduction or resetting of an SyRB with CRE-related arguments in recent years. In the Czech Republic, banks had significant exposures to both the RRE and CRE sectors; following the introduction of the CRD V (the 2019 legal act which amended the CRD), the Czech National Bank decided to deactivate the SyRB in 2021 (after its introduction in 2016). Hungary introduced an SyRB in 2015 because of its banks' significant exposure to the CRE market and the significant accumulation of NPL loans in this segment. It was later amended to also cover potential systemic risk stemming from foreign exchange CRE loans due to a significant share of borrowers having no natural currency hedging. The SyRB in Hungary was deactivated in 2020. The Norwegian and Finnish macroprudential authorities specifically mentioned the high exposure of the banking sector to the CRE segment among several reasons for introducing an SyRB in 2014 and 2018 respectively. Starting from 2023, a sectoral SyRB will be applied to all exposures secured by RRE in Germany, including rental housing. German authorities estimate that the buffer will cover roughly a fifth of the German CRE sector.

Having concluded that banks do not set aside enough capital to cover potential losses from lending to CRE investors, Sweden decided to act using microprudential powers at the end of 2019. Finansinspektionen's 2019 stress test indicated that credit losses following economic stress could exceed the capital that banks hold to cover risks in their CRE lending, even though the banks' total capital buffer requirements are substantial.[64] In response to this, Finansinspektionen introduced an additional capital requirement for banks' exposures when lending to the CRE sector, which corresponded to the difference between a 35% risk weight determined by Finansinspektionen and a bank's actual average risk weight for exposures to the CRE sector.[65] The evaluation of this measure in 2021 indicated that the measure might have a limited impact on banks' credit supply to CRE firms or these firms' demand for loans.[66] At the end of 2021, Finansinspektionen concluded that vulnerabilities in CRE firms continued to build up after the recovery from the outbreak of the pandemic and identified the financial system's concentration in CRE as one of the vulnerabilities.[67]

Other macroprudential and microprudential measures in place to address CRE-related vulnerabilities include large exposure limits for banks and BBMs. Denmark has addressed CRE risks through restrictions on credit institutions' aggregate exposures to CRE. There is also guidance for credit institutions in Denmark according to which CRE loans should not be extended to borrowers with negative cash flows.[68] The robustness of cash flows should be judged based on

---

63 See, for example, Haut Conseil de Stabilité Financière (2021), **Rapport annuel, Septembre 2021**, or Deutsche Bundesbank (2022), **System of indicators for the German commercial real estate market**.

64 See Finansinspektionen (2019), "**The Commercial Real Estate Market and Financial Stability**".

65 See Finansinspektionen **press release** of 18 January 2020.

66 See Finansinspektionen (2019), "**Has FI's risk weight floor had an impact on banks' CRE lending?**".

67 See Finansinspektionen (2021), "**Stability in the Financial System**", November.

68 The guidelines also define exceptions to the rules: for instance, when the customer has good liquidity and solvency, has experience in CRE, comes with sufficient equity financing, and it is sufficiently likely that the estate will generate positive cash flows or be sold for minimum the remainder of the loan within three years.

tenant-specific considerations (e.g. the terms of the rental agreement and tenants' payment history), the possibility of re-leasing and the need for upkeep and renovations. Similarly, a Magyar Nemzeti Bank recommendation[69] requires institutions to assess (i) the income-generating capabilities of the real estate to be financed, (ii) the quality of tenants, (iii) expected cash flows and costs, and (iv) refinancing risks. In Poland, there is a recommendation for a maximum LTV limit of 75% (or 80% if the part of the loans with an LTV limit above 75% is secured by liquid assets or insured). Currently, the recommendation applies to loans for income-generating CRE property provided by banks. Cyprus has in place an LTV limit of 70% and a debt service to income (DSTI) limit of 80% (where income is defined as the net disposable income of the borrower). These limits apply to loans provided by any credit institution for property (including income-generating property) that is not the primary residence of the borrower. These measures are complemented by an LTV limit of 50% applicable to loans to real estate development companies for financing the acquisition or construction of luxurious properties (defined as properties with a price of over €5,000 per square metre). In Malta, BBMs (LTV, DSTI and maturity limits) apply for loans secured by property for housing purposes taken up by both natural and legal persons. According to the ESRB definition of CRE, these BBMs therefore also capture a CRE element.

Currently, applying BBMs for CRE loans is challenging because of the complexity and heterogeneity of the CRE sector and its financing, as well as data quality issues related to current lending standards for CRE loans. The CRE sector is split into several sub-sectors and segments with different characteristics and links to the rest of the economy. Income from the underlying property of a business can be volatile and its history may be unavailable when the loan is provided. Collateral value may be difficult to determine given the limited transaction activity in some segments, and own resources may be hard to verify given the complex ownership structure of some borrowers and the possibility of additional market financing. These are only some of the reasons why it may be difficult to calculate the income-related and LTV ratios of CRE loans and to apply limits to these ratios. In addition, the calibration of the instruments would need to take into account the riskiness of the different types of investment projects and collateral, as well as different cycles depending on the particular CRE segment. Despite the ongoing work on improving data availability, an in-depth assessment of the riskiness of CRE bank loans is still hindered by data quality issues.

Looking ahead, BBMs could contribute to mitigating the build-up of risks related to CRE loans as they can be applied in a very targeted way and can ensure a level playing field. BBMs are deemed an effective instrument for mitigating RRE-related risks. The measures are considered very targeted, as they directly restrict the provision of new loans with characteristics that are deemed risky. They have the potential to be applied to all providers of CRE credit, which is important for the effectiveness of the measures. Evidence for RRE loans also shows that BBMs can slow down credit growth and in turn the credit-driven boom and bust cycle. Therefore, it is worth assessing whether BBMs could be applied to CRE loans effectively and efficiently and to propose how such measures could be made operational. A discussion to this effect is currently ongoing at the ESRB.

[69] See **Recommendation No 14/2021 (IX. 16.) on the undertaking, measuring, managing and controlling of credit risk** (In Hungarian Language).

Table 2

CRE-related macroprudential measures for banks in EEA countries

- Abolished
- Introduction
- In place
- Relaxation

Status	Measure	Country: CY	CZ	DE	DK	FI	HR	HU	IE	IS	LV	NO	PL	RO	SE
Before ESRB 2019 assessment	CCyB														
	SyRB														
	Art. 124 - CRE RW														
	Exposure Limit														
	LTV														
After ESRB 2019 assessment	CCyB														
	SyRB														
	Art. 124 - CRE RW														
	Art. 458 - CRE RW														
	CRE RW (micro)														
	Exposure Limit														
	LTV														

Source: ESRB Macroprudential Measures Database.
Notes: In Sweden, the measure under Article 124 of the CRR had a relatively limited impact on total banking sector capital requirements, since most of the CRE lending in Sweden has been through banks that apply the internal ratings-based approach. By contrast, the additional microprudential capital requirement for banks has increased banks' overall capital requirements considerably. This microprudential measure was activated by Finansinspektionen in 2019 and corresponds to the difference between a 35% risk weight and a bank's actual average risk weight for exposures to CRE. RW stands for risk weight.

In many countries, specific national regulations on the liquidity and leverage of real estate funds are in place or are available to be triggered (Table 3).[70] According to a survey among ESRB members, several EU countries have defined limits on balance sheet leverage for real estate funds (namely the Czech Republic, Spain, Lithuania, Hungary, Malta, Austria, Poland, Slovakia and Finland). Ex ante tools such as notice periods or liquidity buffers are available in Germany, France, Luxembourg, Hungary, Portugal and Slovakia. Ex post liquidity tools such as the suspension of redemptions, fees or the possibility for funds to resort to short-term borrowing to pay redemptions are available in Germany, Ireland, Spain, France, Lithuania, Luxembourg, Austria, Portugal and Slovakia. In Germany, for example, existing regulation on lock-up and notice periods for investors in real estate funds showed beneficial macroprudential effects after the outbreak of COVID-19 in March 2020. In some jurisdictions, certain types of real estate funds have to comply with on-balance sheet leverage limits corresponding to LTV limits at aggregate CRE portfolio level.

70 ESRB (2021), **EU Non-bank Financial Intermediation Risk Monitor 2021**.

Table 3

National regulations for real estate funds in ESRB member countries

	Limits on leverage	Regulations on liquidity (including requirements for a closed-end fund structure)
AT	x	x
BE	x	x
BG	No specific regulation for real estate funds	
CZ	x	
DE	x	x
DK	No specific regulation for real estate funds	
ES	x	x
FI	x	
FR		x
HR	No specific regulation for real estate funds	
HU	x	x
IE	x	
IT		x
LT	x	x
LU	x	x
LV	No specific regulation for real estate funds	
MT	No specific regulation for real estate funds[71]	
NL	No specific regulation for real estate funds	
NO	No specific regulation for real estate funds	
PL	No specific regulation for real estate funds	
SE	No specific regulation for real estate funds	
SK	x	x

Source: ESRB 2021 survey.
Note: The ESRB received responses to the survey from Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Slovakia, Spain and Sweden.

The Central Bank of Ireland is the first authority to use the macroprudential leverage limit for investment funds in line with the AIFMD. Drawing on an extensive collection of data on Irish property funds in 2019, the Central Bank of Ireland identified vulnerabilities related to leverage and liquidity mismatch in the sector.[72] In 2021, the Central Bank of Ireland launched a consultation in which two new macroprudential policy measures were proposed: the introduction of leverage limits (through the Irish transposition of Article 25 of the AIFMD) and guidance around notification periods for property funds investing over 50% directly or indirectly in Irish property (in line with Article 16 of the AIFMD). Following the consultation, the Central Bank of Ireland decided to introduce these

[71] However, the Malta Financial Services Authority has in place a policy that restricts leverage for property funds under Profession Investment Funds (home grown regime) and AIFs domiciled in Malta.

[72] For further details, see Central Bank of Ireland (2021), "**Property Funds and the Irish Commercial Real Estate Market**".

measures on 24 November 2022. The measures are expected to reduce leverage levels so as to align Irish property funds more closely with those in other European jurisdictions and to reduce the degree of variation observed in property funds' redemption terms, thereby reducing instances of liquidity mismatch in the sector.

3.3 Policy conclusions

Appropriate policy action to address risk in the CRE sector needs to balance several considerations, including overall economic developments and potentially diverging dynamics across CRE sub-sectors and segments. Adequate policy design is based first and foremost on continuous monitoring of vulnerabilities and evaluating what stage in the cycle CRE markets are mostly likely to be at. As there are a number of both cyclical and structural factors that might determine CRE demand and supply, sub-sectors (mainly office, industrial, retail and residential) and segments (prime and non-prime) may evolve differently. This means that the data need to be carefully analysed, while macroprudential and microprudential authorities need to work together closely at both national and EU level. In addition, continuous work on closing the remaining data gaps is needed.

The credit quality of existing CRE portfolios and the adequacy of provisioning should be monitored, with the focus on categories of loans that could be negatively affected by changes in the CRE market or by adverse economic and financial developments. In particular, it is crucial that credit providers regularly reassess CRE collateral values and the debt-servicing capacity of their borrowers. This requires prudent assumptions to be made about developments in various economic sectors, as well as the evolution of rents, vacancy rates and construction costs.

At the same time, it is important to ensure that lending and investment practices remain sound, and that financial institutions remain resilient. At the current juncture, sound underwriting practices are crucial to prevent risks from increasing further. This could be achieved by means of credit providers imposing financial covenants in terms of LTV, DSCR and other indicators. It is also important to ensure that financial institutions are resilient against risks that might have already accumulated, while aiming to avoid procyclical effects on the real economy and other segments of the financial sector. In this respect, appropriate policy action differs across financial sectors.

The COVID-19 pandemic showed that more releasable capital is needed for stress situations in the banking sector. However, mandatory capital buffers are generally low across the EU, especially as they were partially or fully released in many countries during the pandemic. Nevertheless, many banks hold capital in excess of current capital requirements. Therefore, increasing capital requirements would also transform some of this "voluntary" excess capital into "mandatory" macroprudential buffers and conserve that capital for potential future loss absorption. Risk weight measures would be suitable in a scenario of varying or continuously declining risk weights for CRE loans. Otherwise, a sectoral SyRB would be suitable for addressing risks which are specifically related to CRE lending. In a situation of varying dynamics in the CRE market, it may be appropriate to design either a sectoral SyRB or risk weight measures for particular subsets of

CRE exposures. A higher CCyB or general SyRB rate would be suitable if broader cyclical or structural risks prevailed.

A number of measures to address liquidity and leverage risks are worth considering in the investment fund sector. In particular, it is important to ensure alignment between fund redemption terms and the liquidity of underlying CRE assets, to monitor risks arising from liquidity mismatch and leverage and to use liquidity management tools and leverage limits where necessary. In this respect, the first implementation of the macroprudential leverage limit to reduce leverage in the property fund sector, recently seen in Ireland, can serve as an example that could be followed by other EEA countries.

With respect to the insurance sector, the level of solvency capital requirements should be monitored. In particular, it is important to assess how collateral for CRE loans and investment is considered, and how CRE risks are accounted for by insurers when investing in CRE through investment funds, especially in terms of capital requirements, investment rules and risk management.

Further exploratory and conceptual work on BBMs for CRE loans is warranted given the size of the potential risks related to these types of loans. Income from the underlying property or business is often the only source of income for repaying the loan, which increases the risk of a borrower defaulting. CRE property is also characterised by high price volatility, which increases the probability that collateral values would be insufficient to cover the outstanding value of the debt. The income from the underlying property and its value tend to be correlated, and borrowers' liability for the loan may also be limited: taken together, these factors make it more likely that credit providers will incur credit loss. While BBMs have proved to be widely used instruments for RRE loans, for CRE lending the benefits of using them still needs to be analysed further. BBMs are considered very targeted, as they directly restrict the provision of new loans with characteristics that are deemed risky. Evidence for RRE loans shows that they can slow down credit growth and therefore the credit-driven boom and bust cycle.

Well-designed BBMs for CRE loans should take into account the heterogeneity of the CRE sector and its financing. To ensure effectiveness, BBMs for CRE loans should be applicable to all providers of CRE credit and cross-border lending. In practice, the complexity of CRE funding poses practical challenges to the implementation of and compliance with BBMs for CRE loans. Investors may, for example, use bond or equity financing as a substitute or complement to credit funding, which further increases the risk of liquidity mismatch, or take additional debt through a special purpose vehicle. CRE funding may also involve multiple creditors (for instance in the case of loan syndication) and/or relate to multiple property. Equity, which is used by investors to pay for CRE, may also be financed by debt in some cases.

Currently, only a few countries use BBMs for CRE, so setting out a minimum toolkit and definitions would provide useful common ground for EEA countries. As with RRE loans, national provisions for CRE loans may be needed to ensure the effectiveness of BBMs. However, common features and a cross-border dimension are important characteristics of CRE lending, which may make the need for effective reciprocation more important. Recommendation ESRB/2016/14 as amended by Recommendation ESRB/2019/3 puts forward definitions of BBMs for CRE loans which can be further developed to suit the needs of practical implementation.

Exploratory and conceptual work on BBMs for CRE loans should be done in parallel with work on improving the availability and analysis of CRE data. Looking ahead, decisions on whether to activate BBMs will be subject to the availability and quality of data on lending standards for CRE loans. Close cooperation among authorities and the sharing of data collection practices is warranted to improve the analysis of existing and new sources of information. In addition, the quality of AnaCredit data may also need to be improved. For example, LTV ratios for CRE loans are not always comparable between countries and institutions when AnaCredit data is used, and they can differ substantially from other data sources. ECB Banking Supervision has pointed out in a newsletter[73] that several banks lack or have inadequate levels of key CRE-related metrics. An update of AnaCredit should require banks to report allocated protection values according to a strict unified standard and should require banks to report rental income to allow regulators to monitor ICR and DSCR.

Given the rising importance of non-bank financing in CRE markets, it is important to investigate whether other instruments could be made available for the non-banking sector. A survey among ESRB members has highlighted that many jurisdictions have tools in place to limit leverage and deal with liquidity mismatches in real estate funds. However the availability of liquidity management tools varies widely across EU jurisdictions and should be harmonised.[74] It is therefore important to strengthen funds' resilience by implementing the ESRB Recommendation on liquidity and leverage in investment funds (ESRB 2020/4)[75] and to reflect on additional macroprudential tools for real estate funds. In addition, properly designing fund redemption policies (so as to reflect the illiquid nature of real estate assets) could be a way of reducing liquidity mismatches and the risk of abrupt large-scale redemptions.

In view of the CRE vulnerabilities identified, the ESRB has decided to issue a dedicated EEA-wide recommendation. The recommendation sets out policy measures for banks, investment funds and insurance companies to be adopted in the short to medium run. Overall, the measures are aimed at (i) monitoring risks stemming from CRE markets, (ii) ensuring sound lending practices, (iii) increasing the resilience of financial institutions against the potential materialisation of the risks, and (iv) enlarging the macroprudential toolkit available.

Box 5

ESRB initiatives to increase the availability of macroprudential instruments for addressing CRE-related vulnerabilities

In March 2022, the ESRB sent a response to the Commission's call for advice with respect to the 2022 review of the macroprudential framework.[76] In parallel, the ESRB published a Concept Note,

---

73 See ECB Banking Supervision (2022), "**Commercial real estate: connecting the dots**", *Supervision Newsletter*, August.

74 **Proposal for a Directive of the European Parliament and of the Council amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, provision of depositary and custody services and loan origination by alternative investment funds**, 25 November 2021, COM/2021/721 final, 2021/0376 (COD), aiming to increase the availability of liquidity management tools for open-ended investment funds in the EU.

75 **Recommendation of the European Systemic Risk Board of 6 May 2020 on liquidity risks in investment funds (ESRB/2020/4) 2020/C 200/01 (OJ C 200, 15.6.2020, p. 1).**

76 "**ESRB response letter to the European Commission consultation on the review of the mortgage credit directive**".

designed as a blueprint for the macroprudential policy for the next decade.[77] In both documents, several proposals were made with respect to macroprudential instruments for CRE loans. These inputs complement the ESRB's work with respect to the revisions of Solvency II[78] and the AIFMD.[79]

In its response to the 2022 review of the macroprudential framework, the ESRB suggests creating a new article on risk weights for RRE and CRE exposures. In particular, this new harmonised macroprudential article would replace the specific provisions currently set out in Articles 124, 164 and 458 of the CRR. The new article would reduce the complexity of the current Articles 124 and 164 and the frequent use of Article 458, which is intended as a last-resort article. Mandatory reciprocity should apply, subject to materiality thresholds.

The ESRB also suggests that there should be a common minimum basis for BBMs relating to RRE loans, complemented by work on developing BBMs for CRE loans. Given the lack of experience with BBMs for CRE loans, the ESRB had not suggested a minimum set of BBMs to be available for CRE loans. However, given the potential risks related to CRE loans, the ESRB stands ready to work on facilitating the use of BBMs for CRE loans and other loans to NFCs, which would make the use of the macroprudential framework more effective and efficient. The results of such an investigation could be discussed in the context of the next review of the macroprudential framework, which is due by 2027.

The ESRB has also emphasised the need to approach new macroprudential tools from an activity-based perspective. One example for macroprudential tools beyond banking are those that the ESRB has proposed for insurers in view of the 2020 review of Solvency II. These include BBMs when insurers engage in mortgage lending. In its Opinion on the 2020 review of Solvency II[80], EIOPA supports bringing (re-)insurers within the scope of borrower-based tools. EIOPA also proposes granting supervisory authorities the power to require that a capital surcharge be applied in cases where insurers are involved in certain types of activities that are more prone to creating systemic risk. This reflects the need to ensure consistency in macroprudential policy across the financial sector. In some but not all EEA countries, the legal scope of BBMs already includes insurers.

With respect to the AIFMD review, the ESRB advocates further measures that would help reduce liquidity mismatches in the AIF sector. In particular, managers of open-ended AIFs investing in CRE property (as well as other assets considered as inherently less liquid) should be required to demonstrate that they can follow their investment strategy in all foreseeable market conditions. This could help to ensure that redemption policies are structurally aligned with the liquidity profile of assets, while avoiding over-reliance on liquidity management tools and reducing the likelihood of redemptions being suspended.

77 ESRB (2022), "**Review of the EU Macroprudential Framework for the Banking Sector: A Concept Note**".

78 "**ESRB Response letter to a consultation of the European Commission on the review of Solvency II**" and "**ESRB letter to the Members of the European Parliament on the Solvency II Review**".

79 "**ESRB letter to the European Commission on shortcomings of the AIFMD framework**" and "**ESRB letter to the Members of the European Parliament on the AIFMD Review**".

80 EIOPA (2020), "**Opinion on the 2020 review of Solvency II**".

4 Conclusion

CRE markets are important for financial stability in many countries because of their importance for the financial system as a whole and for the real economy. This report analyses vulnerabilities in the EEA CRE market and the macroprudential measures in place to address these vulnerabilities. The analysis of vulnerabilities was based on four different categories, or "stretches", as outlined in the CRE methodology report: the collateral stretch, the activity and income stretch, the financing stretch and the spillover stretch.

The report identifies a number of vulnerabilities that can lead to a materialisation of financial stability risks: notwithstanding the effects of the pandemic, CRE prices continued increasing for some segments of the market, in particular industrial and residential properties and properties that are considered prime, adding to the potential overvaluation of such properties. However, some indicators point to a decline in prices in these market segments since the second half of 2021. At the same time, the prices of retail and office properties declined during the COVID-19 pandemic and have remained subdued recently. In addition, construction and funding costs have been increasing, which may reduce returns on CRE. Evidence suggests that the LTV ratios of bank loans are relatively high for CRE loans, and data point to an investment fund liquidity mismatch relating to CRE. While a large share of CRE exposures consist of banking sector credit exposures, the importance of investment funds has been increasing.

The vulnerabilities are partly due to cyclical developments. Heightened inflation and supply bottlenecks have increased construction costs and delayed completions. Monetary policy, which is being tightened, has increased financing and refinancing costs. Given that income returns in the CRE sector are already relatively low in the EU, increases in funding costs would reduce the profitability of such investments, which could lead to sales of CRE property by investors and to ongoing projects defaulting. Together, rising construction and funding costs would reduce estimated profits from new property construction, which could also lead to increasing defaults on ongoing projects. A tightening of financial conditions, with higher interest rates and lower availability of loans, will have a direct impact on CRE firms. Most importantly, higher interest rates will reduce the income of CRE firms and the value of their properties. This means that their scope to refinance existing debt and take on new loans will be severely limited. In turn, this may force some investors to sell properties to cope with debt maturities, adding further downward pressure on prices with additional negative effects on financial stability.

Other vulnerabilities are due in part to structural changes affecting the CRE market. Some structural changes, such as the growth of e-commerce, demand for flexibility in leasable office space and climate-related policies, emerged before the COVID-19 pandemic and have accelerated through it. These changes could increase demand for logistics properties (including warehouses), while they could also reduce the demand for retail properties, offices and, more generally, non-prime CRE (where the definition of prime versus non-prime is increasingly affected by environmental considerations).

Spillovers across countries and financial market actors can amplify the vulnerabilities. While investment funds and insurers mainly take on direct exposures to CRE, credit institutions'

exposures consist mainly of CRE loans. In some countries, banks have relatively significant exposures to CRE markets in other European countries, which poses spillover risks. In addition, spillover risks are also present because of interlinkages between banks, funds and insurers. Finally, a more general decline in CRE can spill over into the construction sector and, in turn, the real economy.

All of the above-mentioned vulnerabilities and exposures vary significantly depending on the country. While data availability and quality have improved significantly in recent years, further efforts are needed to increase the availability of risk indicators across countries. Looking ahead, further progress in implementing Recommendation ESRB/2016/14 as amended by ESRB/2019/3 is necessary to ensure that granular, consistent and comparable data are available so that the underlying risks can be monitored and the relevant analysis can be carried out. To this end, competent and designated authorities should work closely together to ensure that the appropriate framework is in place.

Appropriate policy action to address risks in the CRE sector needs to balance several considerations, including the overall economic developments and potentially diverging dynamics across CRE sub-sectors and segments. The credit quality of CRE portfolios needs to be monitored, while adequate provisioning is necessary for categories of loans that could be negatively affected by changes in the CRE market, or by adverse economic and financial developments. It is also important to ensure that lending and investment practices remain sound, and that financial institutions remain resilient. National and EU macroprudential and microprudential authorities need to work closely together, both on risk monitoring and on policy action. At the same time, policy action should aim to avoid procyclical effects on the real economy and other segments of the financial sector.

In view of the CRE vulnerabilities identified, in parallel to this report the ESRB is issuing a dedicated EEA-wide recommendation with a number of concrete policy measures that may need to be adopted in the short to medium term. In particular, it is crucial that credit providers (i) monitor their existing CRE portfolios, (ii) regularly reassess CRE collateral values and the debt-servicing capacity of borrowers and (iii) set aside adequate provisions. It is also important to ensure that lending and investment practices remain sound, which could be achieved by credit providers imposing financial covenants. To increase the resilience of the banking sector, authorities may use risk weight measures or capital buffers: these measures can be used either to address broad cyclical or structural risks, or to target CRE-specific risks. As regards the investment fund sector, it is important to (i) ensure alignment between fund redemption terms and the liquidity of underlying CRE assets, (ii) assess risks arising from liquidity mismatch and leverage and (iii) use liquidity management tools and leverage limits where necessary. Meanwhile, insurers need to monitor the level of solvency capital requirements. This is particularly important when it comes to the treatment of collateral for CRE debt and CRE investment, and the way in which insurers account for CRE risks when investing in CRE through investment funds. Looking ahead, activity-based regulation is needed to help address CRE vulnerabilities effectively. Therefore, work on developing borrower-based macroprudential instruments for CRE loans should be carried out and further progress in closing CRE data gaps should be made.

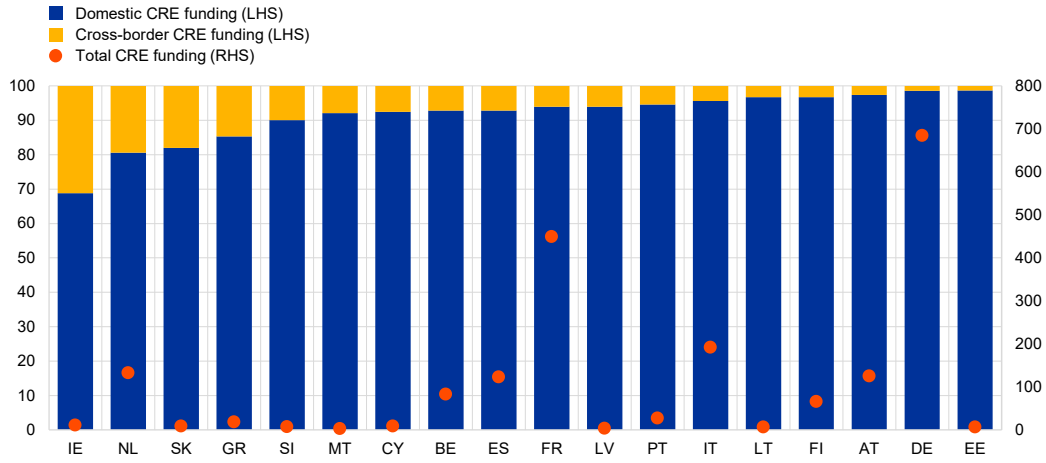
Annex

A Additional charts

Chart A.1

Share of domestic and cross-border CRE funding

(left-hand scale (LHS): percentage of total funding; right-hand scale (RHS): total CRE funding in EUR billions, Q1 2022)

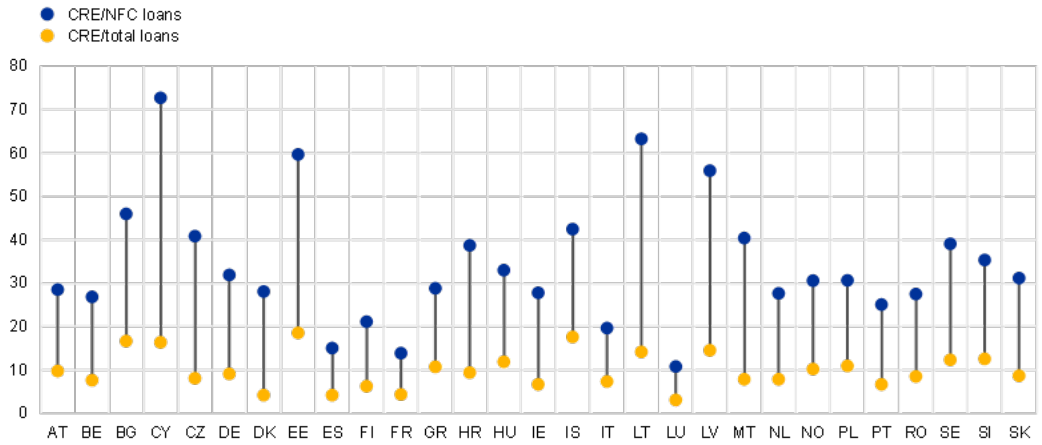


Sources: AnaCredit, ESRB calculations.
Notes: Countries are included based on data availability. Non-euro area countries are not included. For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1.

Chart A.2

Share of CRE loans as a proportion of bank loans to NFCs and share of CRE loans as a proportion of total bank loans

(percentage of total bank loans, Q2 2022)

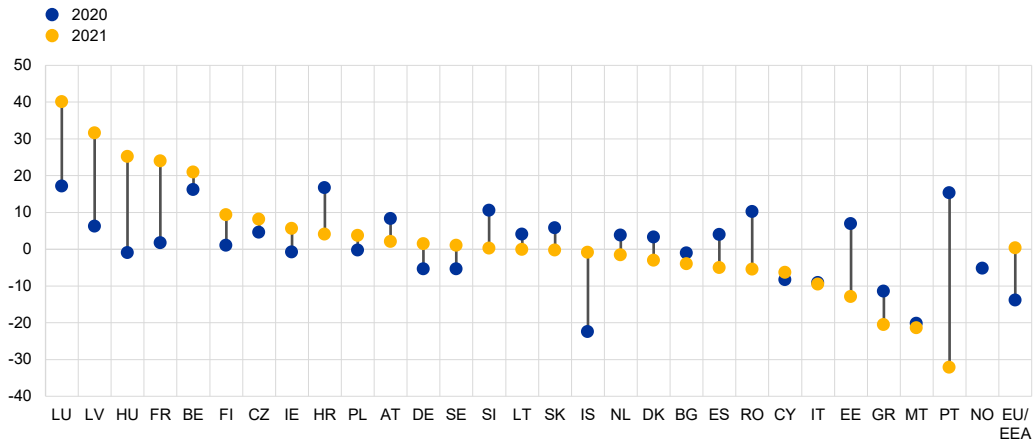


Source: EBA Risk Dashboard.

Chart A.3

Annual growth rate of CRE-collateralised bank loans

(average year-on-year percentage change)

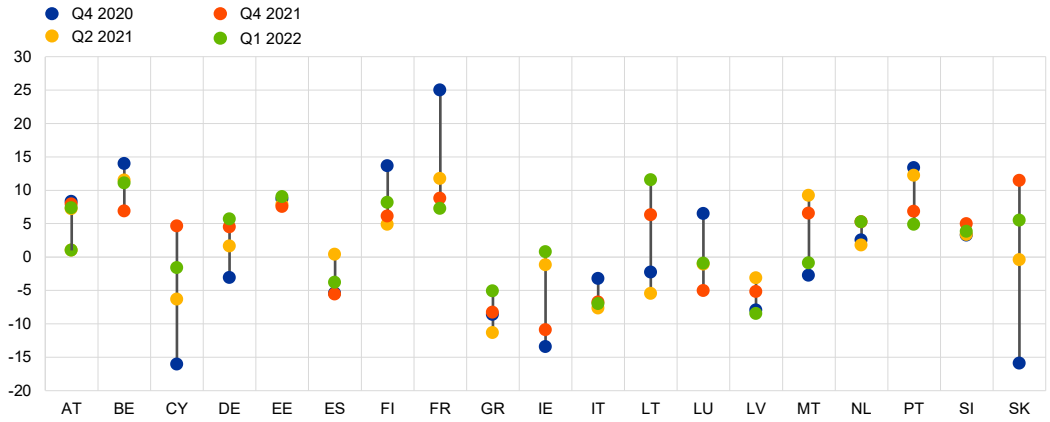


Source: EBA Risk Dashboard.
Notes: Last observation Q4 2021. For Latvia, the 2021 figure is affected by a structural change in the EBA Risk Dashboard from Q4 2021 onwards. CRE lending data for Swedbank reflect group-level data, so that the growth rate is overestimated.

Chart A.4

Annual growth rate of banks' CRE exposure

(year-on-year percentage change)

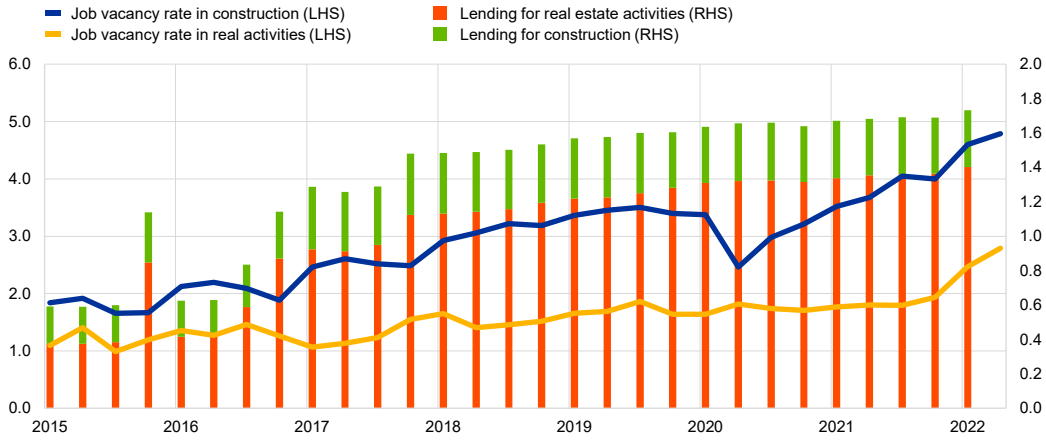


Sources, AnaCredit, ESRB calculations.
Notes: Non-euro area countries were not included in the chart. For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1.

Chart A.5

Real estate and construction sector in the euro area: job vacancy rate (left-hand scale) and (growth in) lending to NFCs (right-hand scale)

(left-hand scale: percentage over total job vacancies; right-hand scale: EUR trillions)



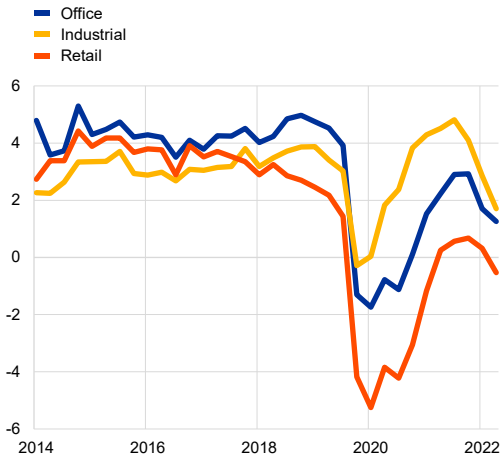
Source: CBD2 – Consolidated Banking data (ECB Statistical Data Warehouse).
Notes: Last observation is Q1 2022.

Chart A.6

Expectations of capital values and rents in the EU prime segment

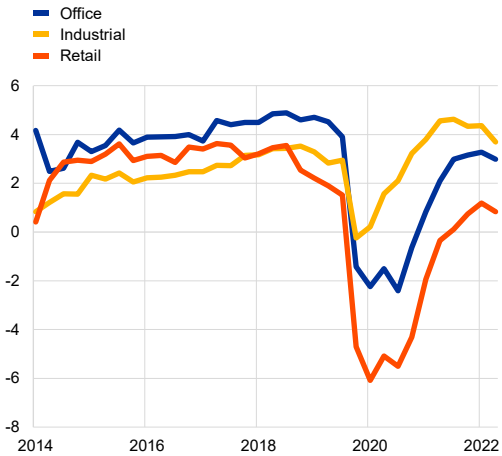
a) Capital values

(expected percentage change during next 12 months)



b) Rents

(expected percentage change during next 12 months)

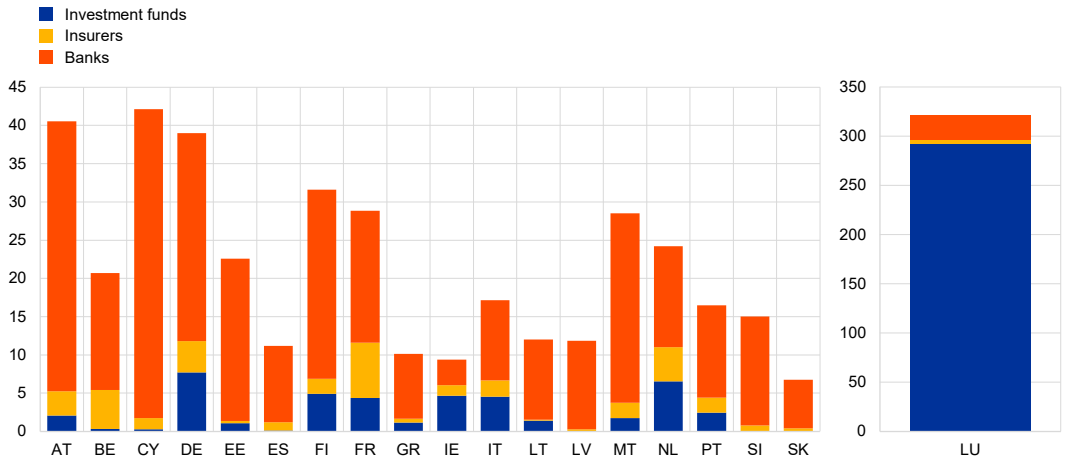


Source: RICS Global Commercial Property Monitor.
Notes: The value for the EU is computed as simple average of a selection of EU countries. Last observation is Q3 2022.

Chart A.7

CRE exposure by investor type as a share of GDP

(percentage of GDP, Q4 2021)



Sources: AnaCredit, IVF – Investment Funds Balance Sheet Statistics (ECB Statistical Data Warehouse), EIOPA statistics.
*Notes: For the AnaCredit data, both purpose and protection variables have been taken into account, as explained in Box 1. For the IVF data, the series considered reflects the investment fund shares/units issued by real estate funds. Regarding the EIOPA data, please refer to the notes to **Chart 21**. Luxembourg is captured in a separate chart (panel b) to improve the readability of panel a, because the total CRE exposure as a share of GDP in Luxembourg is much higher than the share of GDP in other countries. This is because Luxembourg has a high share of EU funds that have Luxembourg as their domicile, even though the fund manager may be incorporated in another country.*

B Data sources used in the analysis

	AnaCredit	EBA Risk Dashboard	FINREP templates	EIOPA statistics
Sample of legal entities included	The following entities ("reporting agents") are subject to the reporting requirements: (1) credit institutions resident in a euro area member country; (2) foreign branches of credit institutions, provided that these branches are resident in a euro area member country. The credit instruments that are subject to AnaCredit reporting are conventional lending products with a committed amount of over €25,000. They include in particular deposits other than reverse purchase agreements, overdrafts, credit card debt, revolving credit other than overdrafts and credit card debt, credit lines other than revolving credit, reverse repurchase agreements, trade receivables, financial leases and other loans.	The sample consists of banks selected by the relevant national competent authorities in accordance with Articles 4 and 8 of the EBA Decision on the mandatory Basel III monitoring exercise (EBA/DC/2021/373)[81]. The last available monitoring exercise (the EBA Risk Dashboard for the fourth quarter of 2021[82]) was carried out at the highest level of EU/EEA consolidation on a sample of 157 banks, of which 114 are either global systemically important institutions or other systemically important institutions. The sample covers approximately 80% of the banking sector in the EEA, including Iceland, Liechtenstein and Norway. "Universal" banks, i.e. banks that provide the entirety of banking services, make up around 64% of the sample, while "retail-oriented" banks account for around 17%, and "corporate-oriented and other specialised" banks make up just under 19%. The final sample may still be subject to adjustments due to various corporate actions, such as mergers, divestments, restructuring, etc. For more information on the exact sample of banks, please see the EBA Risk Dashboard for the fourth quarter of 2021[83].	Institutions applying IAS/IFRS principles as defined in Article 4 CRR.	Insurance undertakings and groups in the EU and EEA.

81 **EBA/DC/2021/373**.

82 **EBA Risk Dashboard, Q4 2021**.

83 **Consolidated sample of banks** used in the EBA Risk Exercise, Q4 2021.

	AnaCredit	EBA Risk Dashboard	FINREP templates	EIOPA statistics
Definition of CRE loan	Purpose of the instrument is commercial real estate, RRE, construction; or protection of the instrument is commercial real estate collateral, RRE collateral, offices and premises[84].	Loans collateralised by commercial immovable property[85].	Template F18.2a: ESRB definition for NPL values (rows 0010-0020), loans collateralised by commercial immovable property for LTV values (rows 0030-0060).	Exposures include property (CIC 91 + CIC 93 + CIC 94 + CIC 95 + CIC 96 + CIC 99), equity of real estate-related corporations (CIC 32), real estate funds (CIC 45), mortgages (CIC 84) where the issuer is not a natural person, corporate bonds (CIC 2) issued by real estate firms and “other” (CIC 65 and CIC 55). The definition of real estate assets follows the definition in response to question 22 of EIOPA Insurance Statistics - Frequently Asked Questions. Assets that belong to unit and index-linked insurance are excluded.

[84] Following definition of "commercial real estate loan" as outlined in Recommendation of the ESRB of 21 March 2019 amending Recommendation ESRB/2016/14 on closing real estate data gaps (**ESRB/2019/3**).

[85] See **EBA Risk Dashboard, data as of Q4 2021, Risk Indicators in the Statistical Annex**.

Imprint and acknowledgments

The report was written by Christoph Fricke, Lucia Fullin, Bernadette Galster, Hana Hejlová, Aurelio Nocera, Ida Peltonen and Frauke Skudelny (coordinator) from the ESRB Secretariat, with contributions from Ellen Ryan (ECB).

Valuable analytical and technical contributions from Emil Bandoni, Sara Batres Fernández, Louis Brune, Francesco D'Ignazio, Alessandro di Spirito, Constanze Fay, Vera Frijters and Dorota Okseniuk from the ESRB Secretariat, and Dominic Kellner, Philipp Marquardt, and Mário Roldão from the ECB are gratefully acknowledged.

The report has benefited from comments by Emily Beau and Tuomas Peltonen from the ESRB Secretariat and Marie-Therese McDonald from the ECB.

Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website **www.esrb.europa.eu**

For specific terminology please refer to the **ESRB glossary** (available in English only).

PDF ISBN 978-92-9472-299-7, doi:10.2849/92721, DT-08-23-018-EN-N