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Assessing real estate risks and vulnerabilities: Hidden cracks in the financial system?

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Assessing real estate risks and vulnerabilities

Hidden cracks in the financial system?



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Abstract

The European financial system faces significant risks from excessive bank lending to the real estate sector. Historical trends show a strong link between real estate credit booms and banking crises. Current data indicate that real estate loans constitute a substantial share of banks' corporate loan portfolios, with varying risk levels across countries. Key drivers include expansionary ECB policies and regulatory incentives favouring mortgage lending. Strengthening oversight, improving data collection, and adjusting regulations are essential for financial stability.

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LIST OF ABBREVIATIONS

APP	Asset Purchase Programme
CRE	Commercial Real Estate
CSPP	Corporate Sector Purchase Programme
DFR	deposit facility rate
EC	European Commission
ECB	European Central Bank
EU	European Union
GFC	Great Financial Crisis
IRB	Internal-Ratings Based
LGD	Loss Given Default
LTRO	Long-Term Refinancing Operations
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne
NPL	Non-Performing Loan
OMT	Outright Monetary Transactions
PEPP	Pandemic Emergency Purchase Programme
PD	Probability of Default
QE	Quantitative Easing
RRE	Residential Real Estate
SMP	Securities Markets Programme
SSM	Single Supervisory Mechanism
SME	Small and Medium-Sized Enterprise
TLTRO	Targeted Longer-Term Refinancing Operations

EXECUTIVE SUMMARY¹

The stability of the European financial system is closely linked to real estate markets, with excessive lending and overvaluation posing risks to banks and financial stability. Historical evidence, particularly from the 2008 global financial crisis, highlights the strong correlation between real estate boom-bust cycles and banking crises. Current data indicate that real estate prices in several euro area countries are overvalued, raising concerns about potential market corrections and financial vulnerabilities.

Banks are exposed to real estate risk via lending to households or lending to firms. While lending to households is almost exclusively for residential real estate, lending to firms can be for commercial real estate (CRE) or residential real estate (RRE) projects, such as multi-family housing. In this paper, we investigate banks' corporate loan exposure to real estate risk using the AnaCredit database. Our analysis does not cover real estate exposure in retail lending. European banks, that are part of SSM, exhibit significant exposure to real estate risks in their corporate loan portfolios, accounting for almost half of their corporate loan portfolios. This exposure varies across countries, with some facing high non-performing loan (NPL) ratios and others holding substantial floating-rate loans, making them susceptible to interest rate fluctuations. The complexity of these risks necessitates tailored supervisory approaches to ensure financial stability.

Our in-depth analysis identifies two key drivers contributing to banks' real estate exposure and market overvaluation: monetary policy and financial regulation. The European Central Bank's (ECB) expansionary policies, including quantitative easing (QE) and long-term refinancing operations (LTROs), have unintentionally fueled real estate price surges by increasing credit availability. Evidence from Germany suggests that ECB-induced credit expansion significantly contributed to real estate overvaluation, as indicated by rising price-to-rent and price-to-income ratios.

Financial regulations, particularly Basel III, have also incentivised real estate lending by assigning relatively lower risk weights to mortgage loans compared to corporate lending. This preferential treatment has contributed to credit booms in real estate markets, increasing systemic financial risks. The historical link between banking crises and excessive mortgage lending calls for a reassessment of these regulatory incentives.

Given these challenges, policy recommendations include strengthening regulatory oversight of real estate lending, enhancing data collection for more accurate risk assessment, and integrating real estate risks into monetary policy decisions. Regulatory frameworks should be adjusted to better reflect the true risks associated with real estate lending, while data consistency and transparency across Europe should be improved to support informed policymaking. Additionally, the ECB should consider real estate market stability when formulating monetary policy to prevent unintended consequences that exacerbate financial vulnerabilities.

By implementing these measures, European policymakers can mitigate real estate-related financial risks, enhance banking sector resilience, and promote long-term financial stability.

¹ We thank Sophia Arlt and Vitus Dodel for excellent research assistance.

1. INTRODUCTION

The stability of the financial system is closely linked to the dynamics of real estate markets. The global financial crisis of 2008 underscored the risks associated with excessive real estate lending, particularly when coupled with overvaluation in housing markets. In several European countries, the real estate sector has remained a focal point for financial stability concerns, with bank lending increasingly concentrated in this domain. Recent studies, such as Frayne et al. (2022), indicate that real estate prices in multiple euro area countries are overvalued, raising concerns about the sustainability of current price levels and the potential for future market corrections.

A wide literature has documented the link between real estate cycles and the occurrence of banking crises (Baron and Dieckelmann, 2022). More than two-thirds of systemic banking crises in recent decades were preceded by housing price boom-bust cycles, often fueled by credit (International Monetary Fund, 2019). Two current policy reports (ECB 2024a; 2024c) have underlined that there are risks for financial stability that originate from financial intermediaries' exposure to the real estate sector. The Financial Stability Review (ECB, 2024c) highlights that real estate loans pose significant risks to the stability of the European banking sector due to vulnerabilities in both commercial real estate (CRE) and residential real estate (RRE) markets. Also, the ECB has highlighted residential real estate (RRE) risk as a critical supervisory focus for 2023–2025 due to its historical role in banking crises and economic recessions.²

In this paper, we provide a descriptive analysis of European banks' exposure to real estate risks using data from the ECB's AnaCredit database. We highlight the challenges of measuring banks' real estate exposure, which can be categorised by counterparty sector, loan purpose, or collateral. The findings show that real estate loans constitute a significant portion of corporate loan portfolios across the euro area. Almost half of the corporate loan portfolios of European banks is exposed to real estate risks, with exposure levels varying significantly by country. Risk assessment is conducted through NPL ratios, expected losses on performing loans, and sensitivity to interest rate changes. The results reveal substantial heterogeneity across countries, with some facing high NPL ratios, while others have large floating-rate loan exposures, making them more vulnerable to interest rate hikes. The analysis underscores the complexity of monitoring real estate risks, as the type of vulnerabilities differ across banking sectors, requiring tailored supervisory approaches.

We further explore additional drivers for banks' high real estate exposure such as the role of the ECB's monetary policies and financial regulatory frameworks, in contributing to real estate price distortions.

The ECB's expansionary monetary policies following the Great Financial Crisis have played a significant role in shaping real estate market dynamics. In response to economic shocks such as the European sovereign debt crisis and the COVID-19 pandemic, the ECB implemented various measures, including quantitative easing (QE), long-term refinancing operations (LTROs, TLTROs), and corporate sector asset purchases. These policies were designed to stimulate lending and economic activity but also had unintended consequences on real estate markets. Evidence from Germany suggests that ECB-induced credit expansion disproportionately affected real estate asset managers, exacerbating price overvaluation.

Financial regulation has also played a crucial role in the expansion of real estate lending. The Basel III framework, which governs bank capital requirements, assigns relatively favourable risk weights to mortgage loans compared to corporate lending. This preferential treatment incentivises banks to allocate capital disproportionately to real estate lending, amplifying credit booms in housing markets.

² SSM SUPERVISION NEWSLETTER: Charting the future: risks and lending standards in residential real estate, 15 May 2024.

Historical evidence suggests that banking crises in recent decades have increasingly been linked to real estate lending rather than corporate defaults, highlighting the systemic risks associated with regulatory biases toward mortgage lending. The historical evidence calls into question the favourable risk weights for mortgage lending.

This paper is organized as follows. Section 2 assesses the risk vulnerabilities of the European banking sector concerning real estate exposures. Section 3 explores the potential drivers behind banks' real estate exposures and real estate price overvaluation. Finally, Section 4 presents policy recommendations aimed at mitigating risks and promoting financial stability.

2. ASSESSING RISKS AND VULNERABILITIES

Following the global financial crisis in 2008, house prices in the euro area experienced a decline until around 2013. Since then, there has been a significant increase, with prices overall approximately 40% higher than their 2013 post-crisis levels and 30% higher than their peak in 2008 (Frayne et al., 2022). However, this trend varies across countries. For instance, in countries like Cyprus, Greece, Ireland, Italy, and Spain, house prices remain below their GFC levels. Conversely, countries such as Austria, Germany, and Luxembourg have seen prices double compared to 2008. The European Commission (EC) compares house prices with fundamental economic drivers, including population, income, interest rates, and housing stock. Their analysis indicates that house prices are at the time their report was written overvalued in over half of the euro area countries (Frayne et al., 2022). In this section, we briefly review the current evidence regarding the potential threat stemming from real estate loans for financial stability as discussed in recent ECB reports. Next, we focus on self-collected data from the AnaCredit database to evaluate the real estate exposures of European banks. By doing so, we especially focus on the heterogeneity across European countries.

2.1. The current situation assessed by ECB reports

The euro area experienced an extended period of low interest rates following the global financial crisis and the euro area debt crisis. From 2008 until 2022, interest rates approached the lower bound, remaining exceptionally low for over a decade. This era was marked by low inflation rates, contributing to a significant rise in real estate prices across most euro area countries.³ In several European countries real estate prices more than doubled since 2008 with substantial evidence for an overvaluation of real estate prices (Frayne et al., 2022; International Monetary Fund, 2019). In response to rising inflation rates starting in 2021, monetary policymakers significantly increased policy rates in 2022. ECB raised its key interest rates by a total of 4.5 percentage points, with the deposit facility rate (DFR) climbing from -0.50% to 4.00% between July 2022 and September 2023.⁴ Such a substantial increase in interest impacts real estate prices significantly.

Such a substantial increase in interest rates affects outstanding loans in the following way: For fixed-rate loans, banks earn significantly less interest income than current funding conditions would suggest, as deposits typically have shorter maturities. Holding large volumes of such loan contracts can impair banks' profitability and resilience. For variable-rate loans, banks benefit from increased interest income in the new interest rate environment. However, borrowers face substantially higher interest payments, elevating the risk of loan defaults. An uptick in credit risk can adversely affect bank stability. Importantly, these factors play a more pronounced role in long-term exposures, which tend to be present particularly in the real estate sector.

The increase in interest rates also has a direct impact on the real estate sector. *Ceteris paribus*, higher financing costs make it more difficult to afford real estate purchases. Consequently, a higher interest rate tends to be associated with lower demand for real estate, which results in lower real estate prices. A decline in real estate prices results in a lower value of the collateral of real estate loans, further increasing the probability of default and loss given default of these projects.

A decline in real estate prices and several bankruptcies among commercial real estate firms in the euro area indicate that these risks have, at least partially, materialised. For instance, Germany's real estate

³ Across the EU, house prices have risen by 55% since 2015, significantly outpacing rental growth, see https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Housing_price_statistics_-_house_price_index, in particular Figure 6 and Figure 7.

⁴ https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html

sector has been in crisis, with major developers facing insolvency due to rising borrowing costs and reduced financing. If real estate prices have been overvalued before the increase in policy rates, collateral values are likely overvalued as well which might amplify the impact of a real estate crisis on financial stability.

The Financial Stability Review (ECB, 2024c) concludes that European banks with exposure to CRE loans have seen early signs of rising NPLs though the overall impact on the banking sector is, according to the Financial Stability Review, mitigated by the relatively modest size of these portfolios at the aggregate level. According to the ECB'S SSM review, RRE loans constitute 26% of euro area banks' loan portfolios (EUR 3.8 trillion). However, banks with disproportionately high exposure to CRE loans could face stress, especially if non-banks, such as real estate investment funds, engage in pro-cyclical selling. This interplay between falling asset valuations and increased refinancing challenges may amplify the risks to financial stability.

In the RRE sector, risks remain largely concentrated in countries with high levels of household debt and overvalued housing markets. While euro area RRE markets have shown signs of stabilisation, the tightening financial conditions have reduced housing affordability, leading to a contraction in RRE prices and investment. This orderly adjustment could further deteriorate if labour market conditions worsen or if financing conditions tighten further. Rising interest rates have also negatively affected debt servicing capacities for households and real estate firms, particularly small and medium-sized enterprises (SMEs) with lower liquidity buffers. The uneven distribution of risks across euro area banks and sectors—combined with elevated uncertainty in the macroeconomic environment—suggests that vulnerabilities in the real estate sector could spill over to the banking system, threatening financial stability, particularly if these risks are compounded by valuation losses in real estate investment funds or broader economic shocks.

CRE firms are particularly at risk as the ongoing downturn in CRE markets—driven by structural shifts such as declining demand for office spaces post-COVID-19 pandemic and rising financing costs—has led to falling rental income, eroding profit margins, and increased default risks. A thematic review of 37 banks with EUR 1.4 trillion in RRE portfolios revealed critical deficiencies in risk management practices, such as reliance on non-standard mortgage products, heterogeneity in interest rate structures, and lack of harmonised collateral valuation processes (see ECB, 2024c). For instance, 40% of RRE loans lacked independent valuations, relying on purchase prices or statistical tools, which heightens the risk of overvaluation. Additionally, many banks did not adequately integrate climate-related risks, such as energy performance, into collateral valuation. The ECB underscores the need for robust practices, including harmonised thresholds for loan origination, mandatory energy performance certifications, and consistent use of independent appraisers to improve collateral assessments. While the sector shows resilience, including stabilisation in house price drops and a strong labour market, the Financial Stability Review stresses that banks must enhance their credit underwriting and risk management practices to mitigate potential shocks and maintain stability in the RRE sector (ECB, 2024c).

2.2. Heterogeneity of banks' loan exposure to real estate risks

In the following section, we discuss descriptive evidence of banks' loan exposure to real estate risks.⁵ We focus on analysing banks' *corporate loan* exposure to real estate risk, without discussing real estate lending to the household sector.⁶ The rationale is twofold. First, firm-level exposure is captured in-depth in the ECB's AnaCredit database, providing a detailed view on the underlying real estate risks.⁷ Second, corporate loan exposure to real estate risks can stem from both commercial real estate (CRE) collateral as well as residential real estate collateral (RRE), e.g. real estate asset managers investing into multi-family housing. The inclusion of commercial real estate (CRE) is important because it has been identified as one of the key areas in the latest ECB's financial stability review (November 2024).

AnaCredit includes outstanding loan volumes and captures the near-universe of banks and bank lending in the Eurozone. Analysis of AnaCredit data comes with some caveats: (1) Data in AnaCredit is only available since 2019, and – particularly at the beginning of the sample period – data quality issues might hamper a proper economic analysis. Note, however, that loans issued prior to 2019 are included in AnaCredit as long as they are still outstanding in or after 2019. (2) A detailed view on the riskiness of exposures (such as the probability of default and loss given default) is consistently only available for the subset of Internal-ratings based (IRB)-banks that need to report their model estimates to AnaCredit. (3) For confidentiality reasons, data for smaller countries can typically not be reported as this would allow to track individual banks.⁸

No unique definition for real estate exposures – a financial stability perspective calls for a broad and comprehensive definition

There is no single clear-cut definition of real estate exposure across different publication by regulators, supervisors, or academic research. Real estate exposure can be categorised from at least three standpoints:

- (1) Counterparty sector: Lending to firms in sectors *real estate activities* (NACE sector L, or NACE code 68) or *construction* (NACE sector F, or NACE code 41, 42, 43).
- (2) Purpose: The loan purpose is real estate, with the main sub-categories “commercial real estate” and “residential real estate”.
- (3) Collateral: The loan is collateralised by real estate.

While these definitions overlap, they can be less or more restrictive. For example, firms' ability to repay loans can depend significantly on the state of real estate markets, even if the purpose or collateral is not real estate (for example, a working capital line to a construction firm). Furthermore, incompleteness in reported data can imply that lending is categorised as real-estate-related under one definition, but not others (for example, for missing values on loan purpose).⁹

It is also important to be aware that regulatory requirements for preferential real estate risk-weights are typically strict, allowing preferential treatment only if several conditions are met (Regulation (EU) No 575/2013 as amended). Therefore, using Article 125 and Article 126 definitions for real estate exposures would significantly underestimate the loan exposure that is subject to real estate related

⁵ This section is based on Arlt et al. (2025) and Berg et al. (2024).

⁶ Although not covered in this paper, household mortgage lending constitutes an additional source of (systematic) risk.

⁷ Note that AnaCredit captures firm-level credit exposure that may stem from exposure to both commercial and residential real estate, the defining factor is the fact that the borrower is a firm, and not a household.

⁸ Statistics from AnaCredit can only be publicly reported for our purposes when the sample consists of at least three banks with the largest two banks making up less than 85% of the exposure.

⁹ We refer the reader to ESRB (2019) for an in-depth discussion of methodologies to define real estate activities.

risks. From a financial stability standpoint, one would ideally use a broad definition in order not to miss relevant exposure.

In the following, we define real estate exposure as those that fulfill criteria (1) or (2). The omission of (3) is due to data availability issues.¹⁰ We cover the 2019-2024 period and include ten of the largest euro area countries in our analysis (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, Portugal, and Spain). Data for smaller countries can typically not be reported as this would allow to track individual bank (see our discussion above).

Descriptive analysis: No country scores poorly on all risk measures, countries are exposed to different kinds of risk scenarios

Our first measure for banks' exposure to real estate risks is the exposure in % of the corporate loan portfolio (see Figure 1). The average bank exposure towards real estate risks is 40% of the corporate loan portfolio. This suggests that real estate exposure is significant, and any changes in the credit quality or collateral values can significantly impair bank balance sheets. Finland, Austria, Germany, and France stand out, with real estate exposure close to or even above 50% of total corporate loan exposure. In all four countries, the exposure – measured as a percent of total corporate loan exposure – has increased over the past 5 years.

The riskiness of the portfolio can be measured in three ways.

- Non-performing loan ratio (Figure 2, depicted for June 2019 and December 2024): The NPL ratio within the corporate real estate portfolio is highest in Italy (10%), followed by Austria, Ireland, and Portugal (around 5%). Both Finland, Germany, and France have NPL ratios below the euro area average.
- Quality of performing loan portfolio (Figure 3, depicted for December 2024): We measure the expected loss of the performing loan portfolio, which is the product of the PD and LGD, and thus reflects both the creditworthiness of the borrower as well as the collateralisation. Belgium (3.0%), Italy (1.6%), Ireland and France (both 1.4%) have the lowest reported credit quality. However, in Italy and Ireland, the ratio has come down significantly since 2019, while Belgium has seen an increase from 2.4% to 3.0% over the past years.¹¹
- Exposure to interest rate changes (Figure 4, depicted for December 2024): The euro area exhibits an astonishing heterogeneity in the share of floating rate loans. In Finland (95%), Portugal (85%), Ireland (79%), and Italy (71%), the majority of corporate loan exposure towards real estate risks are floating rate. This implies that borrowers face an immediate increase in borrowing costs when the key interest rate (by the ECB) increases, and vice versa.¹² On the other hand, in Belgium (12%), Netherlands (15%), France (17%), and Germany (22%), less than a quarter of borrowers have floating rate loans. This implies that borrowers are largely shielded from changes in interest rate in the short- to medium-term in these countries.¹³ This heterogeneity of interest rate exposure also implies that changes in the

¹⁰ For example, we do not cover loans used for general corporate purposes that are collateralized by buildings of a firm if the firm is outside of the real estate industry. A decline in real estate values reduces collateral values, thereby increasing the risks for banks for such loans. We therefore underestimate the exposure towards declines in real estate values. Data on collateral types is also available in AnaCredit in separate files, however, the analysis of this data is beyond of the scope of this paper.

¹¹ The data quality for France is not sufficient in 2019 to allow for a time series comparison.

¹² Two caveats are important to note: (1) Approximately half of floating rate loans have some interest rate caps and floors, limiting the pass-through of very large changes in monetary policy rates. (2) Data on potential hedging strategies via derivatives market is not available.

¹³ Banks face the opposite challenge: when many loans are fixed rate, they do not earn higher rates when monetary policy rates increases. Measuring the interest rate risk of banks is beyond this note, this would require a better understanding of the entire bank asset side, liability side, and derivative position.

ECB's key interest rates can have very heterogeneous effects on financial stability risks stemming from real estate markets.¹⁴

Overall, the descriptive analysis shows a large heterogeneity of firm-level real estate exposure in the euro area countries:

- There is no consistent group of countries that would score poorly on all measures. While Italy has the highest NPL-ratio, the second-lowest quality of the performing loan portfolio, and the third-largest exposure to floating rate loans, it has the lowest exposure to firm-level real estate among all large euro area countries (20% of the corporate loan portfolio).
- On the other hand, those countries with the largest real estate exposures, measured as % of their corporate loan portfolios (Finland, Austria, Germany, France) do not stand out in terms of the riskiness of these exposures

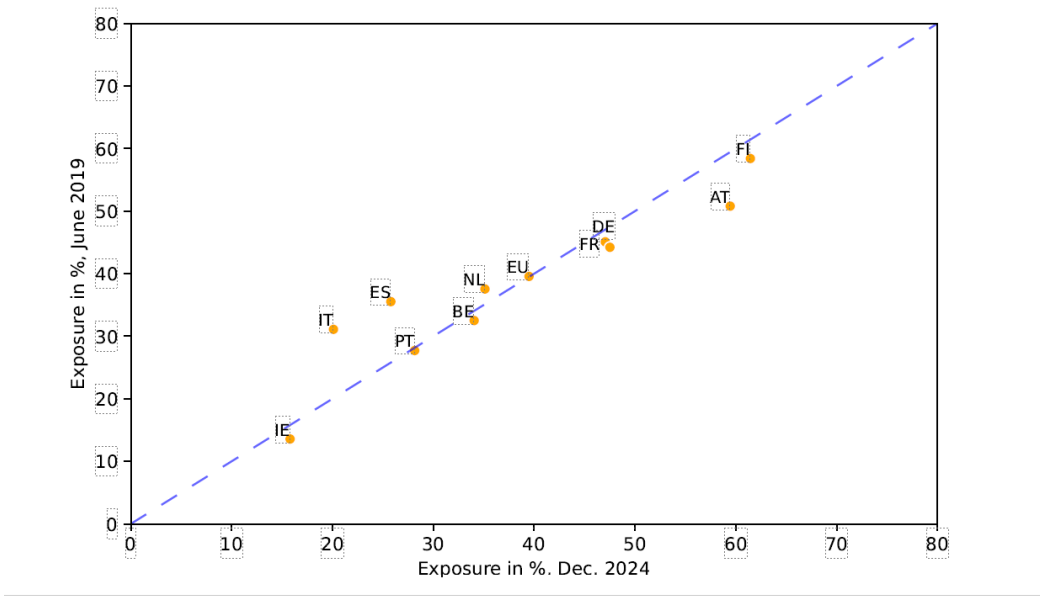
This heterogeneity is both a blessing and a burden for supervisors. It suggests there is not a single weak spot for supervisors to focus on, which seems good news. However, many countries are vulnerable to some type of risk scenario. One group of countries (Finland, Austria, Germany, and France) have high loan exposures to the real estate sector, but the riskiness of these exposures is not particularly high when assessed based on current regulatory parameters. The banking sector in these countries is therefore vulnerable to model misspecifications in the risk measurement, or to regime-shifts where prior relationship between economic fundamentals, creditworthiness and collateral values dismantle. These countries are countries that have not suffered from a real estate crises since the GFC, and did not suffer from particularly severe credit supply disruptions at the time of the ECB's QE programs (see the next sections for more details). In two of these countries (Finland, Austria), more than half of lending is floating rate, implying that borrowers – if not hedged via other means – are particularly exposed to risks of rising interest rates.

Only two countries (Ireland, Italy) have both above-average NPL ratios and below-average quality of the performing-loan portfolio, suggesting these countries are vulnerable to further steady declines in economic activity and real estate valuations. One country, Belgium stands out in terms of the credit quality of the performing loan portfolio.

Taken together, the heterogeneity across countries is important for regulators and supervisors to understand. Each of a perceivable set of risk scenarios (such as a decrease in collateral values, risk of model misspecifications, or risk of rising interest rates) will affect some, but not all countries, and so the choice of risk scenario will highly affect the countries that are deemed vulnerable to real-estate-related risks.

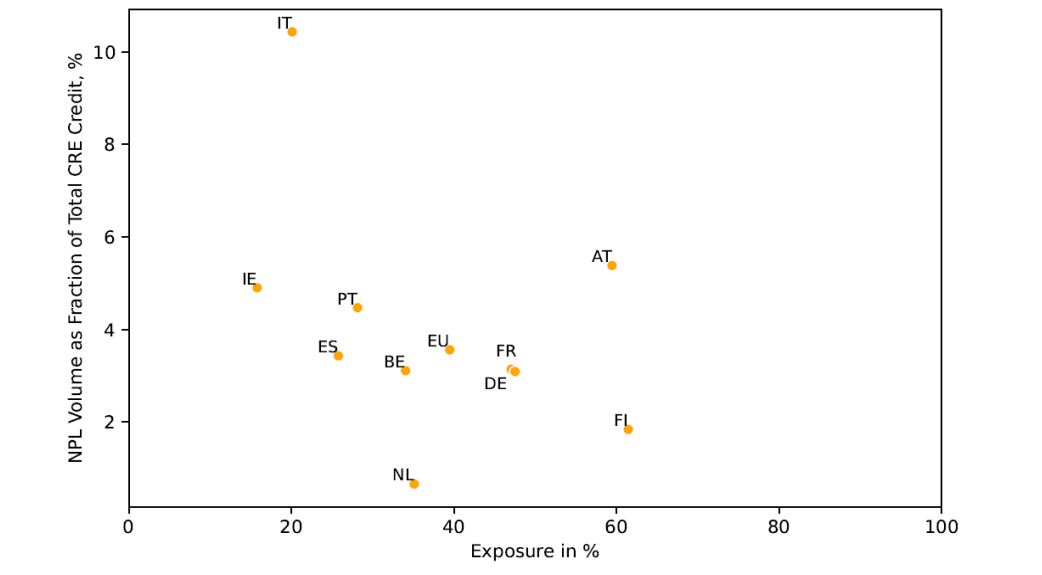
¹⁴ Note that our statistics align well with Core et al. (2024). Core et al. (2024) provide evidence that the heterogeneity in floating rate loans affects monetary policy transmission across European countries. Note that the share of floating rate loans might differ for household borrowing, which is not the focus of this paper.

Figure 1: Real estate exposure in June 2019 and December 2024 as % of total corporate lending



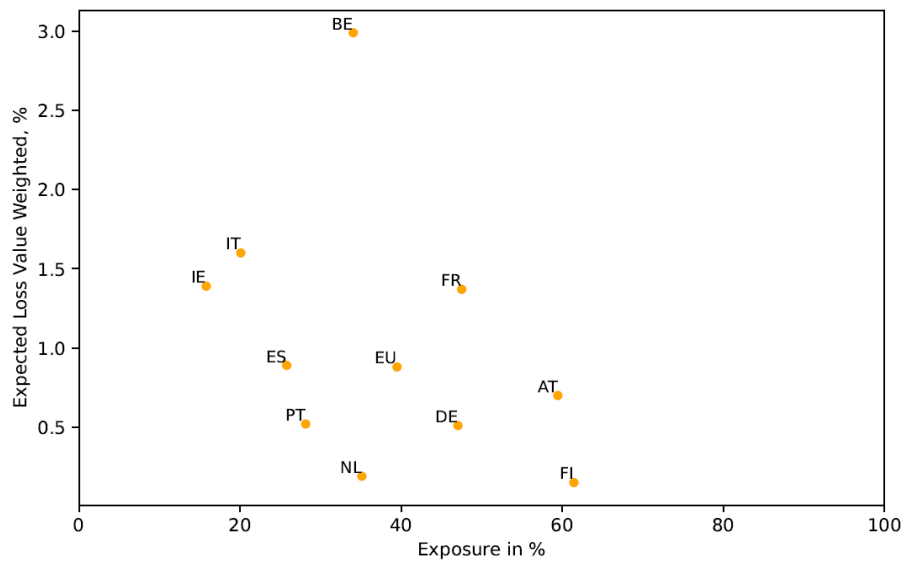
Source: Arlt et al. (2025) and Berg et al. (2024), AnaCredit, own calculations.

Figure 2: Non-performing loans ratio (y-axis) versus real estate exposure as % of total corporate lending (x-axis), both measured in December 2024



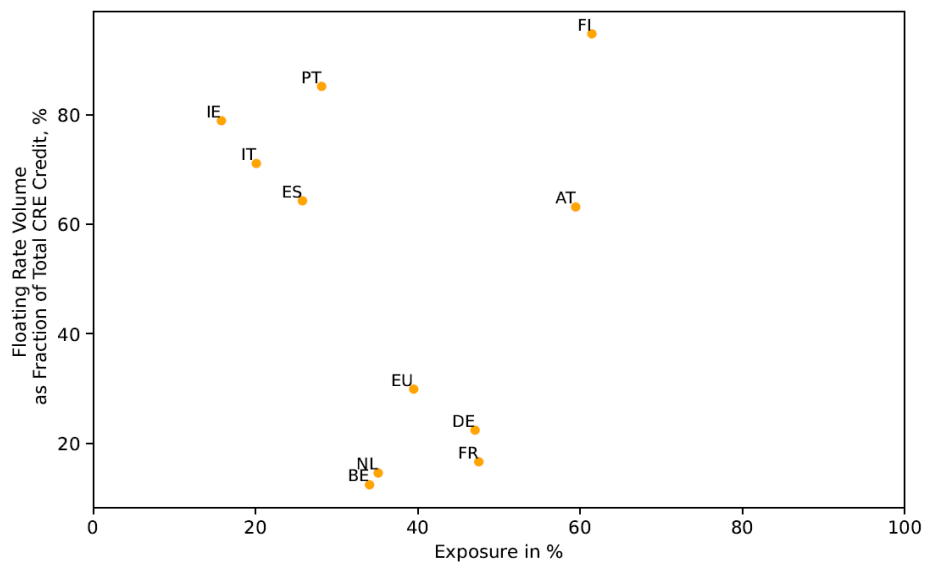
Source: Arlt et al. (2025) and Berg et al. (2024), AnaCredit, own calculations.

Figure 3: Expected loss of performing real estate lending portfolio (y-axis) versus real estate exposure as % of total corporate lending (x-axis), both measured in December 2024



Source: Arlt et al. (2025) and Berg et al. (2024), AnaCredit, own calculations.

Figure 4: Floating rate share of the performing real estate lending portfolio (y-axis) versus real estate exposure as % of total corporate lending (x-axis), both measured in December 2024



Source: Arlt et al. (2025) and Berg et al. (2024), AnaCredit, own calculations.

3. WHAT ARE POTENTIAL DRIVES FOR THE BANKS' REAL ESTATE EXPOSURES AND OVERVALUATION OF REAL ESTATE PRICES?

The previous discussion highlights significant heterogeneity in banks' real estate exposures across different euro area countries. In this section, we examine the key drivers behind banks' lending to the real estate sector and its implications for real estate price overvaluation. Specifically, we analyse the roles of the financial sector, regulatory framework and monetary policy in shaping these dynamics and contributing to the current market conditions.

3.1. The role of the ECB's monetary policies

In the aftermath of the GFC, the ECB's monetary policy has been largely defined by expansionary unconventional policy measures aimed at mitigating various economic shocks. These included financial sector disruptions, such as the GFC and the sovereign debt crisis, as well as real-sector shocks, notably the COVID-19 pandemic. In this section, we discuss in how far these policies contributed to the overvaluation of real estate prices in certain regions.

Before 2022 the ECB's monetary policy was characterised by quantitative easing programs to stimulate lending

Following the 2008 global financial crisis, the ECB cut its key interest rates and launched long-term refinancing operations (LTROs) to enhance liquidity in the banking system (ECB, 2011). With interest rates having hit the lower bound, the ECB further stimulated lending markets using unconventional monetary policy tools. Clearly the consequences of these tools are poorly understood and therefore their impact on asset prices, especially on real estate prices, remains an open issue. During the euro area sovereign debt crisis (2010–2012), the ECB introduced the Securities Markets Programme (SMP) and later the Outright Monetary Transactions (OMT) framework to stabilise bond markets and prevent financial contagion (ECB, 2012). From 2015 to 2018, the ECB implemented a large-scale quantitative easing (QE) program under the Asset Purchase Programme (APP) to counter low inflation and weak economic growth (ECB, 2015). Additionally, the Corporate Sector Purchase Programme (CSPP) was introduced to support credit conditions in the real economy by directly purchasing corporate bonds (ECB, 2016). In response to the COVID-19 pandemic, the ECB introduced the €1.85 trillion Pandemic Emergency Purchase Programme (PEPP) to maintain financial stability and support the economy (ECB, 2020). Only once inflation rates increased in 2021 and 2022 due to supply chain disruptions and rising energy costs, the ECB began phasing out asset purchases and signaled the start of an interest rate hiking cycle to curb inflationary pressures (ECB, 2022).

One of the primary objectives of both ECB's conventional and unconventional monetary policies has been to encourage bank lending to the real economy. By reducing funding costs for banks, these measures improved loan conditions and lowered the opportunity cost of new investments. In doing so, the ECB sought to stimulate credit supply, foster corporate investment, and ultimately support GDP growth.

There is a direct link between loan supply to the real estate sector and real estate prices

Monetary policies stimulating corporate lending also stimulate real estate lending. The link between central bank-driven increases in loan supply and real estate prices highlight how credit availability plays a crucial role in housing market dynamics and has been studied in several academic research papers.¹⁵

¹⁵ There is also a body of literature generally examining the impact of ultra-low interest rates on bank lending. Heider et al. (2019) find that banks are reluctant to pass negative interest rates on to depositors, which compresses their net interest margins. As a result, banks are incentivized to take on greater risks on the asset side to maintain profitability.

Adelino et al. (2018) demonstrate that expanded mortgage credit fueled rising house prices before the financial crisis, with demand-side factors playing a significant role. Their forthcoming 2024 study further shows that credit supply growth has a stronger impact on housing prices in regions with greater borrower demand elasticity. Similarly, Favara and Imbs (2015) provide evidence that credit supply expansions drive up house prices, independent of fundamentals, suggesting a direct link between mortgage availability and housing market fluctuations.

Di Maggio and Kermani (2017) show that credit booms, often induced by monetary easing, contribute to housing price surges, but also amplify financial instability when credit conditions tighten. Drechsler et al. (2022) further highlight how monetary policy influences real estate booms by affecting bank lending incentives, demonstrating that lower interest rates encourage risk-taking in mortgage markets. Chakraborty et al. (2018, 2020) explore the crowding-out effects of housing credit expansion, finding that when banks allocate more resources to real estate lending, other forms of corporate lending can decline, leading to sectoral imbalances.

Overall, these studies collectively highlight that central bank policies expanding credit supply can significantly impact real estate prices, often contributing to price booms and, in some cases, increasing financial vulnerabilities.

Business cycle heterogeneity in euro area results in heterogeneous effects of ECB's QE policies

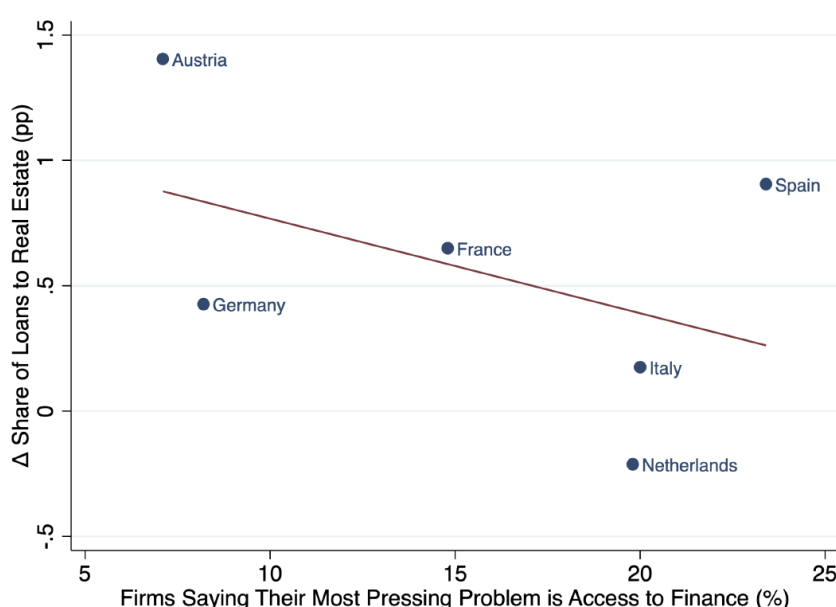
Do the findings from these predominantly United States (US) based studies also apply to Europe? The answer is likely yes, but understanding the specific dynamics within Europe requires considering the heterogeneity across euro area countries. The sovereign debt crisis had widely varying effects on the business cycles of different countries. This divergence is evident when comparing unemployment rates: while Spain experienced extremely high unemployment (25%), and Italy and France hovered around or above 10%, Germany maintained a significantly lower rate of just 5% (see in the Appendix, Figure 6). A similar pattern emerges in loan demand. According to the ECB's SAFE survey,¹⁶ a substantial share of firms in Spain and Italy reported difficulties in accessing funding, whereas in Germany, fewer than 10% of firms identified financing constraints as their most pressing issue, even among SMEs (see in the Appendix, Figure 7).

Expansionary monetary policies were primarily designed to stimulate lending in countries where loan demand remained weak. In contrast, Germany appeared to be operating at full capacity, as suggested by its low unemployment rate and limited loan demand. This raises an important question: what happens when a lending market is already saturated, yet monetary policy remains expansionary? A recent study by Berg et al. (2024) investigates this scenario using the case of Germany during the ECB's Corporate Sector Purchase Programme (CSPP). The ECB-induced expansion in loan supply causally led to increased lending to real estate asset managers. This finding can be explained by a combination of demand and supply-side factors. As large, investment-grade firms reduce their loan demand in favor of bond financing due to the CSPP, banks seeking to maintain stable regulatory capital shift lending toward borrowers with high collateral capacity—such as real estate firms—whose pledged assets appreciate during real estate booms, making them an attractive alternative (Chakraborty et al., 2018). Banks can only expand lending if there is sufficient demand, yet in Germany in 2015—before the CSPP—unmet credit demand was low, and the labor market was tight. While real estate asset managers could immediately deploy cheap funding to acquire properties, real estate developers faced constraints due to the construction sector operating at full capacity, limiting their ability to scale up projects in response to improved financing conditions.

¹⁶ https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/index.en.html

In Figure 5, we examine whether there is a relationship between a country's loan demand before the CSPP program and its subsequent loan growth. We measure loan growth using syndicated loan data from LSEG DealScan for six selected euro area countries, while loan demand is based on ECB SAFE survey responses discussed earlier. The graph reveals a striking pattern: countries with lower pre-CSPP loan demand experienced a greater increase in lending to the real estate sector, suggesting that the ECB's policy primarily fueled real estate lending. Conversely, in countries where loan demand was higher before the implementation of unconventional monetary policy, real estate lending grew less, indicating that banks directed more credit toward the broader real economy. Note that we focus our analysis on the CSPP program since it allows for a quite clear identification of the impact of QE policies on real estate lending. Importantly, other QE measures that were described above plausibly had a similar impact on real estate lending.

Figure 5: Lending market conditions during QE and lending to the real estate sector



Source: LSEG DealScan, own calculations.¹⁷

QE-induced increases in QE lending resulted in overvaluation of real estate prices

How does this increase in real estate loans due to ECB' QE policies affect real estate prices? Berg et al. (2024) focuses on the experience in Germany around the CSPP.¹⁸ This program led to a significant increase in the price-to-rent ratio, a key indicator of real estate overvaluation (see e.g. Case and Shiller, 2003), causing rents of residential apartments to take about six months longer to offset purchase prices in affected areas. Additionally, the price-to-income ratio rose by approximately 3%. The CSPP-induced increase in real estate debt (6.05%) contributed to a 5.1% rise in real estate prices, with an estimated elasticity of 0.84, indicating that a 1% rise in debt led to a 0.84% increase in real estate price growth.

In our setting, residential house prices appear to be significantly more sensitive to changes in funding conditions compared to previous papers investigating the link between loan supply and real estate prices (see e.g. Adelino et al., 2024, and Favara and Imbs, 2015). This can be explained by the limited

¹⁷ We thank Julia Selgrad for her discussion at the 2024 European Finance Association (EFA) Conference and for the provision of code to create the graph from DealScan data.

¹⁸ There is also literature discussing other factors responsible for the increase in real estate prices in Germany during this period (see e.g. Kindermann et al., 2021; Bednarek et al., 2021).

housing supply and the fact that, in a saturated credit market, excess loan supply is primarily absorbed by real estate asset managers. Additionally, when interest rates are already low, a given rate change tends to have a stronger effect on price elasticity than the same change would at higher interest rate levels, as valuation formulas place greater weight on lower rates. As a result, unconventional monetary policy measures, typically implemented when rates are near the lower bound, are likely to produce greater elasticities than policies that expand loan supply under higher interest rate conditions.

Other Factors Driving Real Estate Price Booms

Monetary policy alone is unlikely to fully explain the rise in real estate prices observed across several European countries. Several studies have identified supply and demand factors contributing to the increase in real estate prices in several regions. One of the leading factors for the price boom cited are supply shortages and increased demand for housing. Post-2010, particularly in large cities, housing demand has surged while supply has not kept pace. This imbalance has been a significant driver of price increases (Dahl and Góralczyk, 2017).

Kindermann et al. (2024) study the role of household expectations during the house boom in Germany. They indicate that households' expectations about future housing costs have influenced price dynamics. Renters, for instance, often anticipate higher future prices, which can drive current price increases.

Population aging has had a nuanced impact. While an aging population can depress real estate prices due to decreased demand, in certain regions, especially urban areas, the influx of younger populations has driven up demand and prices (Breidenbach et al., 2022). Importantly, there have been drastic heterogeneities in the housing boom concentrated in metropolitan areas and larger counties.

3.2. The role of financial regulation in explaining the expansion in real estate lending

In this subsection, we briefly examine the role of financial regulation as a potential driver of real estate lending to levels that may pose risks to financial stability. The prevailing regulatory framework for banks' capital requirements, Basel III, follows a risk-based system. Under this approach, specific exposures on banks' balance sheets are assigned risk weights, which determine the amount of regulatory capital a bank must hold.

This system presents two key challenges in terms of its impact on lending to specific sectors. First, it relies on judgments about the appropriate capital levels for a given estimated risk. If these judgments are flawed, banks may hold insufficient capital, even if risk models perform as expected. Second, the system can influence market participants' behaviour in ways that contribute to systemic risk. In other words, regulation itself may have unintended consequences that exacerbate financial instability.

Basel III grants preferential treatment to real estate lending, contradicting empirical evidence on its associated risks

Regarding the first issue, the so-called Basel function translates specific asset risk parameters into risk weights. This function varies by asset class and the precise functional form is based on assumptions that lack a solid scientific foundation and do not account for shifts in the nature of credit risk over time (Admati and Hellwig, 2024). Moreover, the Basel functions vary across asset classes, so the same probability of default leads to different risk weights depending on whether the borrower is a large corporate entity, a small or medium-sized enterprise (SME), a mortgage holder, or another financial institution. The precise functional forms for different asset classes likely reflect political negotiations rather than scientific evidence (Admati and Hellwig, 2024). For example, in the current Basel framework, corporate loans are assigned higher risk weights compared to mortgages or interbank loans, implying that corporate loan defaults require more regulatory capital backing than mortgage debt.

Below, we present findings from the current literature to assess whether the relatively lenient regulatory treatment of mortgages and interbank loans, compared to corporate loans, is supported by empirical evidence. We focus on research that has analysed patterns leading to banking crises over recent decades. While it can be problematic to assess the relative importance of underlying banking risks based on historical evidence—since the nature of banking risk evolves over time—several consistent patterns have been documented. Schularick and Taylor (2012) highlighted the crucial role of credit booms, finding them highly correlated with financial crises. Jordà et al. (2016) examined disaggregated bank credit in 17 advanced economies since 1870, showing that while corporate lending remained relatively stable, the share of mortgages on banks' balance sheets doubled throughout the 20th century, driven by a surge in mortgage lending to households. Household debt-to-asset ratios have also risen significantly in many countries. Increasingly, financial stability risks have been tied to real estate lending booms, which are often followed by deeper recessions and slower recoveries.

In related research, Baron and Dieckelmann (2022) explored the economic history of banking crises across 46 countries over the past 150 years. Their findings indicate two key trends. First, the financial sector has been identified as being now a major source of banking crises. Second, real factors—such as global commodity prices, domestic GDP, and exports—were strongly linked to declines in bank equity and subsequent distress before the 1970s, but not afterwards. Instead, financial factors—such as past credit expansion and housing price growth—have become increasingly negative predictors of bank equity returns, emerging as key precursors to modern banking crises. Confirming Jordà et al.'s (2016) findings, they also showed that the principal asset involved in credit-fuelled asset booms has shifted

towards real estate and land since World War II, with the share of real estate booms as crisis triggers doubling over the last century.

Financial systems have become more resilient to shocks originating in the manufacturing sector. While recessions have become less frequent post-WWII (Schularick and Taylor, 2012), Baron and Dieckelmann (2022) noted a decline in the proportion of banking crises caused by real economy contractions, from 13% to 8%. Instead, banking crises have increasingly originated within the financial sector rather than from external economic shocks.

What are the implications of these insights for the current regulatory framework? Ironically, under the Basel III framework, interbank loans and mortgage loans receive favourable risk weightings. Even if model-based regulation is perfectly calibrated and accurately reflects borrower risk, banks may still be systematically undercapitalized due to these misaligned risk weights. The disproportionate focus of the regulatory framework on corporate default risk, compared to other asset classes, seems unjustified by recent historical evidence. The risk-weight discount for mortgage loans may also be exacerbated by banks' heavy reliance on real estate collateral (Müller and Verner, 2023) document a high share of loans secured on real estate (36 % in the non-tradable sector). Consequently, a decline in house prices could simultaneously reduce the value of multiple mortgage loans and other loans secured by real estate, amplifying systemic risk.

The preferential treatment of certain asset classes may inherently fuel lending booms within these sectors

The second issue highlighted suggests that model-based regulation may itself alter the behaviour of financial agents, potentially contributing to systemic risk. Admati and Hellwig (2024, p. 183) note that a key consequence of risk-weighting assets is that banks are incentivized to concentrate their investments in assets deemed "safe" by the regulatory framework. When certain asset classes require less regulatory capital, banks are encouraged to hold disproportionately large amounts of these assets. This behaviour can become problematic if banks overinvest in these specific assets.

One example of this is the zero-risk weights assigned to sovereign debt of certain European countries, which offered slightly higher spreads. This regulatory treatment likely encouraged banks to hold excessive amounts of these bonds.¹⁹ Similarly, in the US, banks were able to bypass regulatory capital requirements by securitizing mortgages, which likely contributed to a higher supply of mortgage loans. This, in turn, impacted the mortgage issuance process: banks, aware that the mortgages would be removed from their balance sheets through securitization, became less rigorous in screening these loans (Keys et al., 2010) and the supply of real estate loans increased.

In summary, the Basel III regulatory framework appears to favour real estate lending, despite empirical evidence suggesting that such loans pose significant risks to financial stability.

¹⁹ The collateral framework adopted by the ECB since 2005 (with a temporary suspension between March 2020 and March 2022) relies – albeit not mechanically – on external assessments of the creditworthiness of EU Member States, such as credit ratings, to determine the eligibility of such debt instruments.

4. RECOMMENDATIONS

To address the risks posed by excessive bank exposures regarding real estate loans and its potential consequences for real estate prices, we propose the following policy recommendations:²⁰

- 1. Strengthening Regulatory Oversight of Real Estate Lending** The current regulatory framework grants preferential treatment to real estate exposures, despite their historical role in financial crises. To mitigate systemic risks, real estate markets should be a primary focus in both institutional supervisory reviews and broader financial stability assessments. Regulators should reassess risk-weighting frameworks to better capture the actual risks associated with real estate lending.
- 2. Enhancing Data Collection and Consistency** A comprehensive understanding of real estate exposures requires a broad definition that captures all relevant risks, rather than the narrower definition used for preferential regulatory treatment. Regulators should ensure that data on real estate exposures and market conditions are complete, consistent across Europe, and available in a timely manner to improve risk monitoring and policy responses.
- 3. Considering Real Estate Risks in Monetary Policy Decisions** The ECB's monetary policy can have unintended effects on real estate markets, particularly through low interest rates that drive overvaluation and increase banks' exposure. To safeguard financial stability, the ECB should carefully evaluate these side effects when designing monetary policy tools, ensuring that price stability objectives are met without exacerbating vulnerabilities in real estate markets.

By implementing these measures, policymakers can reduce the financial sector's exposure to real estate risks and enhance the resilience of the European banking system. Strengthening regulatory oversight, improving data transparency, and integrating real estate considerations into monetary policy will help mitigate the risks associated with real estate market imbalances and support long-term financial stability.

²⁰ Please note that this study focuses on discussion on the role of monetary policy and microprudential regulation (particularly Basel III) on real estate lending and prices. We do not directly access the role of macroprudential regulation in this study.

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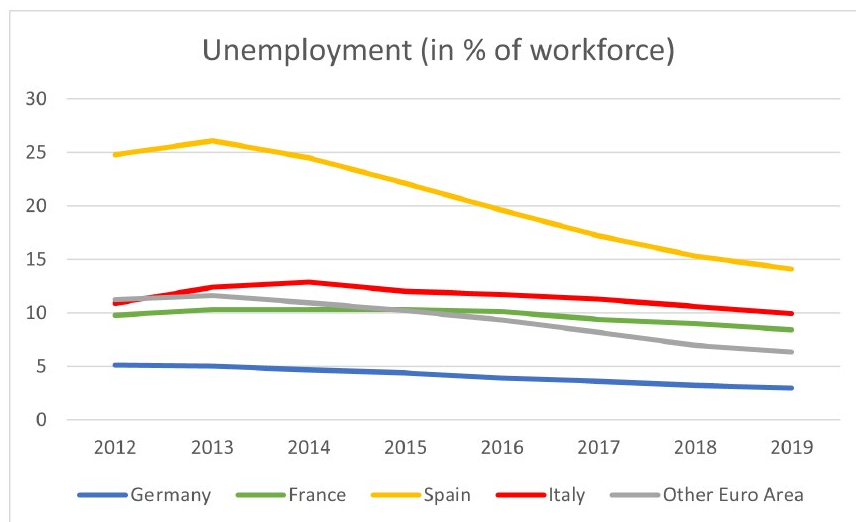
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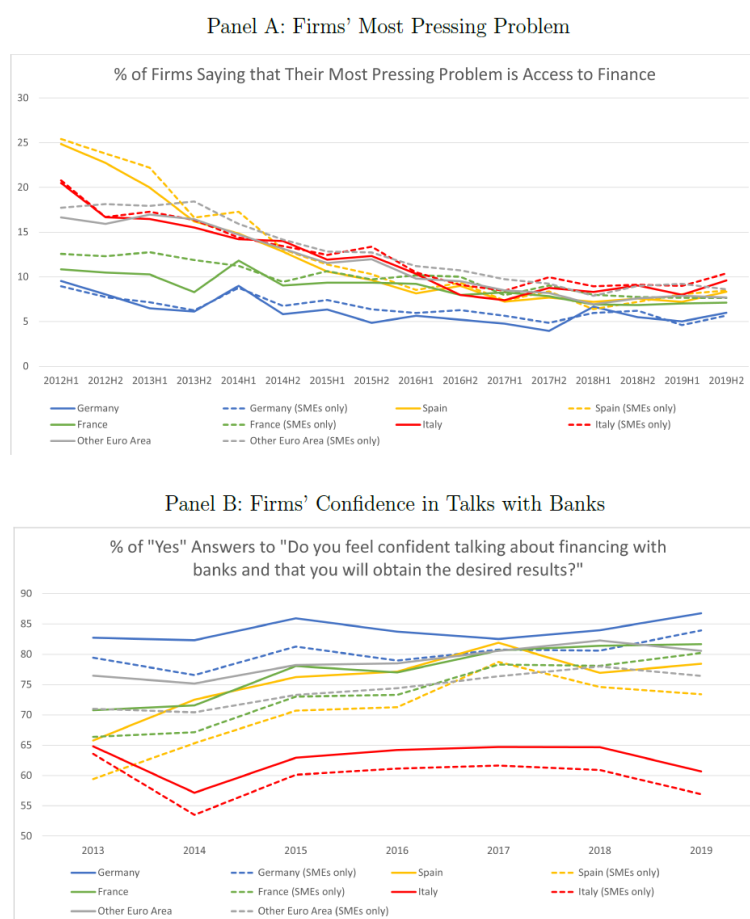
ANNEX

Figure 6: Unemployment in the euro area, in %



Note: The figure plots the unemployment ratio, measured as unemployed divided by workforce, for selected countries
Source: Eurostat.

Figure 7: Firm Credit Constrainedness, in %



Note: The upper figure plots the percentage of firms whose most pressing problem is access to finance (Question #0 in the Survey on the Access to Finance of Enterprises). The lower figure plots the percentage of firms that feels confident talking about financing with banks and to obtain the desired result (Question #19 in the SAFE; only available from 2013 on).

Source: ECB Survey on the Access to Finance of Enterprises.

The European financial system faces significant risks from excessive bank lending to the real estate sector. Historical trends show a strong link between real estate credit booms and banking crises. Current data indicate that real estate loans constitute a substantial share of banks' corporate loan portfolios, with varying risk levels across countries. Key drivers include expansionary ECB policies and regulatory incentives favouring mortgage lending. Strengthening oversight, improving data collection, and adjusting regulations are essential for financial stability.

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