

INTERNATIONAL MONETARY FUND

Financial Stability Risks from Commercial Real Estate

Germany

Mustafa Saiyid

SIP/2024/035

IMF Selected Issues Papers are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on July 1, 2024. This paper is also published separately as IMF Country Report No 24/230.

2024
July



SELECTED ISSUES PAPER

IMF Selected Issues Paper
European Department

Financial Stability Risks from Commercial Real Estate, Germany
Prepared by Mustafa Saiyid*

Authorized for distribution by Kevin Fletcher
July 2024

IMF Selected Issues Papers are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on July 1, 2024. This paper is also published separately as IMF Country Report No 24/230.

ABSTRACT: Following post-pandemic tightening of monetary policy in advanced economies, commercial real estate (CRE) markets have been under pressure globally, including in Germany. This paper explores the channels of CRE impact for the German financial sector, and the potential size of impact for individual German banks based on publicly available data. It finds that German banks, in aggregate, are adequately capitalized and sufficiently liquid to absorb potential losses. However, elevated CRE-related credit risks suggest the need for close monitoring of some individual institutions, conservative capital distributions, adequate loan-loss provisions, retention of macroprudential buffers, and testing of financial safety arrangements.

RECOMMENDED CITATION: Mustafa Saiyid. Financial Stability Risks from Commercial Real Estate. IMF Selected Issues Paper (SIP/2024/035). Washington, D.C.: International Monetary Fund.

JEL Classification Numbers:	E43, E44, G11, G12, G15, G21, G22, G23, G35, G51
Keywords:	German banks' capital and liquidity, stress tests, commercial real estate exposures, German insurers' solvency, Germany financial sector policies, German household and corporate sector vulnerabilities, German financial contagion.
Author's E-Mail Address:	MSaiyid@imf.org

SELECTED ISSUES PAPERS

Financial Stability Risks from Commercial Real Estate

Germany



GERMANY

SELECTED ISSUES

July 1, 2024

Approved By
European Department

Prepared by Mustafa Saiyid

CONTENTS

FINANCIAL STABILITY RISKS FROM COMMERCIAL REAL ESTATE	2
A. Introduction	2
B. Real Estate Developments	2
C. Exposure of German Financial Institutions to CRE	5
D. Solvency Stress Analysis	6
E. Policy Recommendations	9
FIGURES	
1. Real Estate Price Developments	3
2. CRE Exposures and Performance by Type	4
3. Potential CRE Stress Impact	7
References	11

FINANCIAL STABILITY RISKS FROM COMMERCIAL REAL ESTATE¹

This paper estimates the impact on solvency of German financial institutions, including banks and insurers, from recent and projected deterioration in their exposures to commercial real estate markets globally. It also offers the authorities some policy recommendations aimed at reducing financial stability risks.

A. Introduction

1. Structural change in demand and higher interest rates have contributed to weakness in the pricing of commercial real estate (CRE) globally. The global pandemic ushered in a period of accelerated structural decline in demand for certain types of commercial real estate, particularly offices and retail spaces in urban areas globally. It exacerbated an ongoing decline in demand for physical retail spaces brought on by technological change, particularly due to the rise in online shopping. With monetary policy tightening in several advanced economies in the aftermath of the pandemic, borrowers against CRE collateral were faced with higher refinancing costs and lower valuations for their collateral. In Germany, many of these borrowers, particularly those with lower-than-expected earnings in the slow-growth environment, are now facing difficulties in servicing principal and interest payments on CRE loans from banks, and banks' non-performing loans (NPLs) related to CRE have risen substantially during 2023. This has raised some concerns about credit and market risks for banks and insurers.

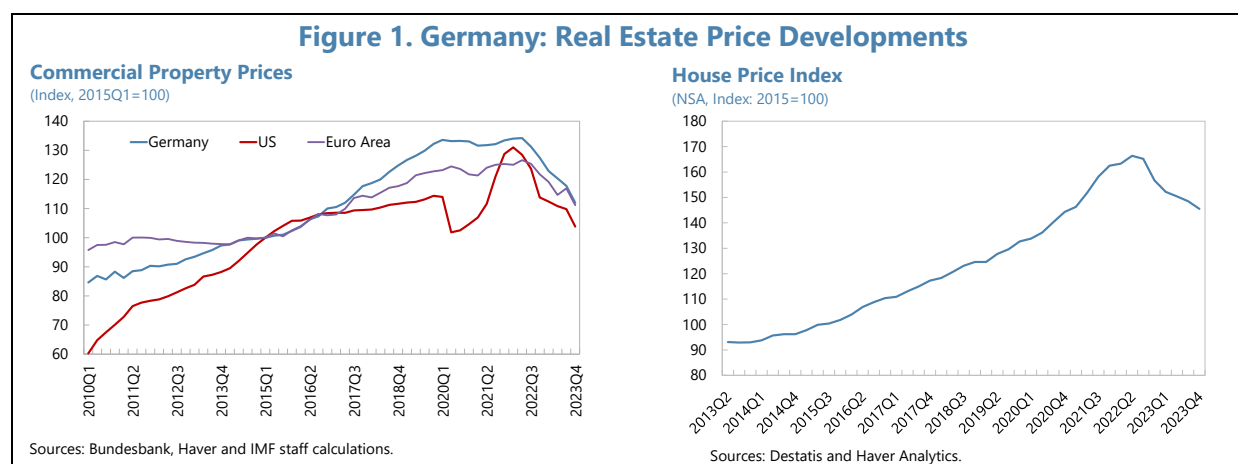
2. This paper attempts to estimate risks from CRE-related exposure of German financial institutions, focused on banks and insurers. It finds that systemic risks are contained but some individual institutions may be at risk of capital loss, which could push them near minimum capital requirements. There are some uncertainties regarding the estimates due to various assumptions used in the analysis. These include, for example, the exclusive focus on real estate as a source of credit and market risks for financial institutions, which could be optimistic if there is wider contagion to corporates and households. Some caution is thus warranted, such that it is important for the authorities to continue to closely supervise financial institutions with CRE exposures, ensure adequate provisions against potential loan deterioration, maintain macroprudential buffers, and take steps to review and test financial safety arrangements. Longer-term, there may be scope to bolster earnings of the banking system, which would help to support capital buffers if reinvested.

B. Real Estate Developments

3. CRE markets are under pressure globally, including in Germany. The CRE index is down about 21 percent from its peak in early 2022 for the US, about 17 percent for Germany, and about 12 percent for the euro area as whole. The US CRE market appears to be weakening more strongly

¹ Prepared by Mustafa Saiyid.

in recent data (Figure 1). These broad indexes for commercial real estate mask some variation in performance across different types of real estate—office and retail properties, for instance, are facing weaker demand, while multi-family residential housing remains in demand. In Germany, the demand for multi-family housing, particularly in urban areas, is being supported by strong immigration in recent years. While the German house price index has declined some 10 percent from its peak, this has come after significant appreciation of more than 60 percent over the past decade.

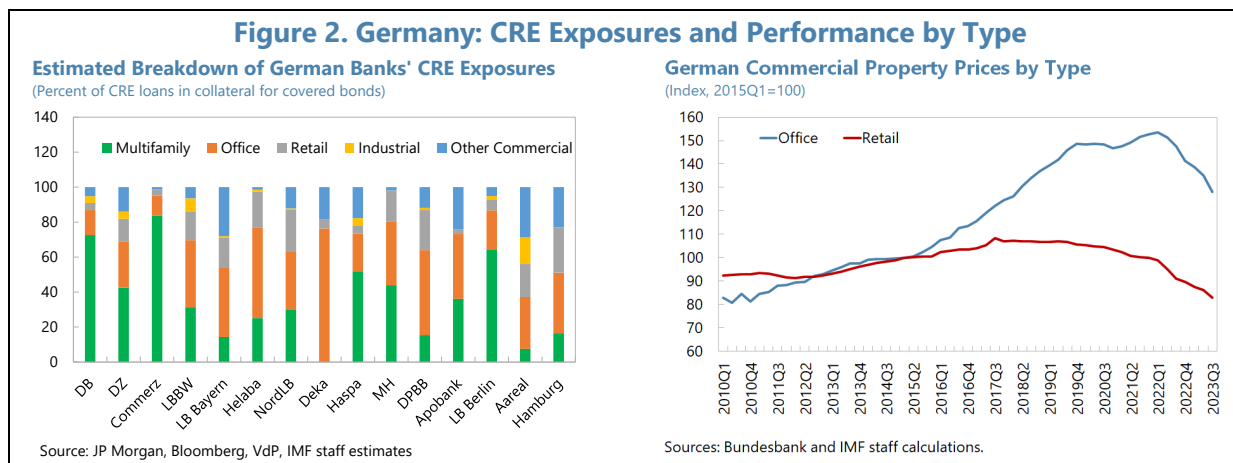
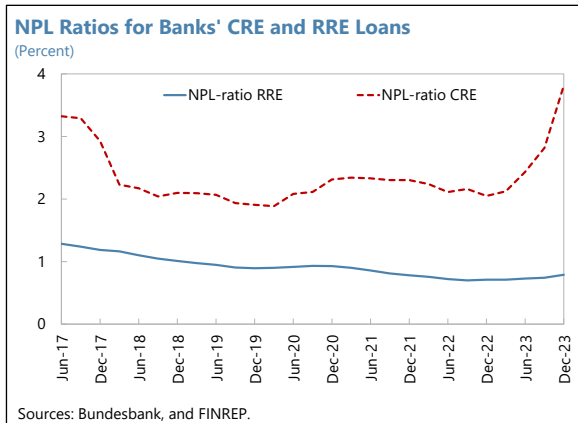


4. Nevertheless, cross-country comparisons of CRE performance are complicated by several factors:

- **Index composition.** While CRE, in general, encompasses a variety of different types of properties, including offices, retail shops, shopping malls, warehouses, factories, and multi-family apartment buildings, there are differences in the mix of these properties in the indexes for US, German, and other CRE—US CRE loans, for instance, tend to have a higher mix of loans for offices, which have experienced higher vacancy rates than in Germany.
- **Index construction methodology.** Some indices are based on actual transactions. In a slowing market, this means that CRE valuations are based on fewer transactions that may or may not represent the wide variety of properties that are encompassed. Other indices are based on rental yields from properties, which will adjust upward in response to rising rents, regardless of whether there has been an actual change in the pricing of CRE properties based on actual transactions.
- **Nature of CRE loans.** The duration of CRE loans and the pace of their principal amortization in one market may be different versus another, which may affect the pace of refinancing, the payment burden, and corresponding exposure to higher interest rates.

5. Delinquencies are rising on CRE loans of German banks while those on residential real estate (RRE) loans are stable.

With refinancing costs rising, there has been a pickup in delinquencies of borrowers on CRE loans from banks, with NPL ratios rising sharply to 3.8 percent by end-2023 from about 2 percent at the start of the year. Meanwhile, NPL ratios on German banks' CRE loans in the US have risen to 10 percent by end-2023. German banks' CRE loans in the US also have smaller collateral cushions than German banks' CRE loans in Germany, as evidenced by higher average loan-to-value (LTV) ratios, of about 80 percent, on US CRE loans, versus 65 percent on German CRE loans, as reported by banks in their filings. However, there is significant variation in individual banks' NPLs from CRE. While delinquencies on CRE loans have risen, defaults have not yet increased correspondingly as banks have worked with borrowers to keep loans current by extending loan maturities or adjusting loan terms and conditions.



6. Rising CRE NPLs have raised some concern about financial stability implications in Germany as elsewhere. This has prompted a review of the exposures of financial institutions to CRE both in Germany and abroad. Data gaps and inconsistencies in the definition of CRE make it difficult to assess exposures consistently. Following a pickup in market concerns about banks' CRE exposure in the latter half of 2023, many German banks took steps to identify such exposure in their year-end filings. The table below shows data reported by the top 15 German banks with CRE exposure, which represent about half of the banking system's CRE loans.²

² Note that the sample excludes German subsidiaries of foreign banks.

Text Table 1. Germany: Real Estate Exposures of Selected German Banks^{1, 2}

	Assets (bn eur)	ROE (percent)	CET1 Ratio (percent of RWA)	RWA (bn eur)	Gross Loans (bn eur)	Loan Loss Allowance (percent of loans)	RRE (bn eur)	CRE (bn eur)	CRE share (percent of loans)	Germany (percent of CRE exposure)	US	Other
Landesbank Bayern	273	8.3	19.3	65	171	0.7	N/A	66	20	85	4	11
Landesbank Hessen-Thuringen	202	4.8	14.7	61	230	0.5	7	44	19	70	8	22
Landesbank Baden-Wuerttemberg	333	6.7	14.9	92	358	0.5	22	43	12	68	8	24
Deutsche Bank	1312	7.5	13.7	350	479	1.1	166	38	8	32	43	25
Aareal Bank	47	1.6	19.4	14	33	1.3	N/A	33	99	8	31	61
Deutsche Pfandbriefbank	51	3.0	15.7	18	49	1.2	6	27	54	43	16	41
DZ Bank	645	8.8	15.5	152	205	1.1	65	26	13	63	10	27
Norddeutsche Landesbank	112	3.4	15.2	41	72	1.0	N/A	17	24	61	5	35
Deutsche Apotheke Aertzte Bank	51	3.1	16.7	16	34	1.4	9	17	50	58	2	40
Deka Bank	85	11.8	19.2	30	73	0.5	N/A	12	16	51	N/A	49
Muenchner Hypotheken Bank	54	5.5	16.5	11	47	0.5	36	10	21	80	2	18
Commerzbank	517	7.7	14.7	175	124	2.7	101	9	7	100	N/A	N/A
Hamburg Commercial	32	6.3	19.5	17	19	2.0	1	7	42	76	4	20
Hamburger Sparkasse	60	3.2	13.4	28	37	4.3	18	5	14	92	N/A	8
Landesbank Berlin	49	4.9	19.0	14	15	2.8	12	2	12	100	-	-
Aggregate	3821	7.2	15.1	1082	1,944	1.0	443	355	18	66	11	23

Sources: Banks' filings as of Q4 2023, FitchConnect, and IMF staff estimates.

1/ Top 15 German Banks by CRE exposure, excluding foreign subsidiaries.

2/ Abbreviations are as follows: Return on Equity (ROE), Risk Weighted Assets (RWA), Residential Real Estate (RRE), and Commercial Real Estate (CRE)

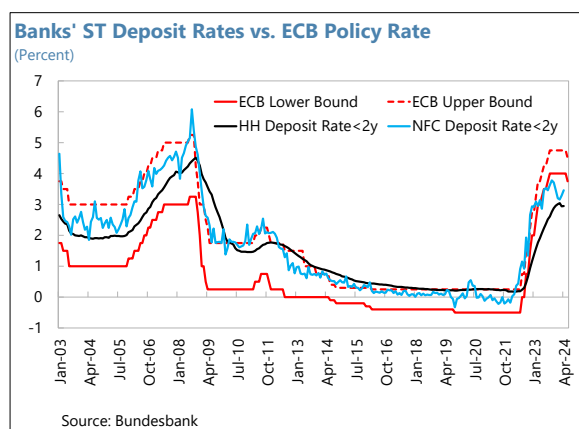
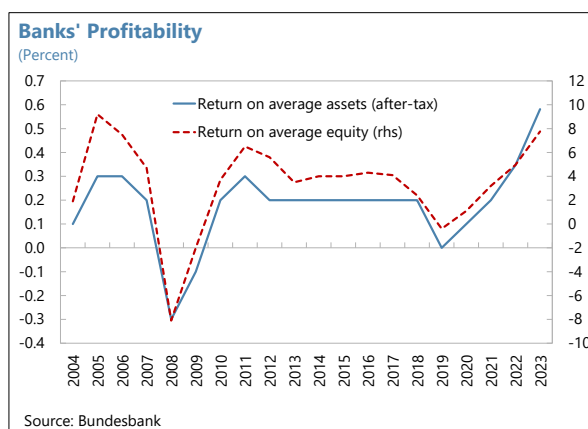
C. Exposure of German Financial Institutions to CRE

7. German banks carry significant loan exposure to CRE in Germany as well as abroad, principally in the US. For the 15 German banks in the sample above, exposure to CRE amounts to 18 percent of their loan books on average, and nearly $\frac{2}{3}$ of this exposure is in Germany (Text Table). These banks also carry significant exposure to US CRE amounting to nearly 11 percent of their CRE loan books on average; however, this exposure is concentrated in a few large banks. On the other hand, the CRE loan books of the large universal German banks seem to have higher exposure to safer multi-family housing loans compared with offices based on available data (Figure 2). The regional Landesbanks and some of mid-range banks and specialized lenders tend to have more exposure to office properties compared with multi-family loans. The banks' choices of locations for CRE loans also matter—for example, the performance of CRE in Germany's largest cities has been somewhat different from that in the rest of the country.

8. Insurers have less CRE exposure, and it is mainly to physical assets, held long-term. Insurers carry less exposure to CRE, which amounts to 8 percent on average of their asset portfolios. In addition, insurers typically have physical holdings of CRE rather than loan exposures. As such and depending on how long they have held these physical assets, insurers may still be sitting on long-term capital gains, despite recent price declines. Applying a stressed impact of some 25 percent decline in CRE prices to insurers' holdings, suggests a 2 percent decline in asset valuations, other factors being constant, which has a modest impact on the high solvency ratio of insurers, both life and non-life, of 330 percent. Insurers may also hold equity assets or corporate bonds issued by CRE-related firms, and this exposure and the extent of its price deterioration is harder to judge given available information on exposure.

D. Solvency Stress Analysis

9. A simplified stress analysis of CRE credit risk carried out by IMF staff shows that it has limited systemic impact on German banks, although some individual banks could face a small capital hit. For an adverse scenario *over a 1-year horizon*, in which the NPL ratio for all German banks rises to 10 percent on German and other European Union CRE and 15 percent on US CRE, with all NPLs going into default, and a 30 percent reduction in banks' 2023 earnings (Text Figures), three banks out of 15 face a capital hit, but still remain reasonably capitalized (Figure 3).³ This result is net of banks' provisions and earnings are assumed to be fully reinvested. This scenario also assumes that recovery on defaulted loans occurs swiftly. Legal and operational costs associated with the foreclosure process are assumed somewhat conservatively to be 30 percent of the foreclosure price largely to reflect interest payments missed on the original loan during the foreclosure process. LTV buffers on CRE loans are assumed to be 80 percent on German CRE loans and 85 percent on US CRE loans—both higher than figures reported by banks to account for the possibility of valuations, the “V” in LTV, not having been updated or marked appropriately or for the possibility for further near-term CRE price declines. This scenario is just intended to be illustrative of possible risks and should not be interpreted as either a baseline or a worst-case scenario.

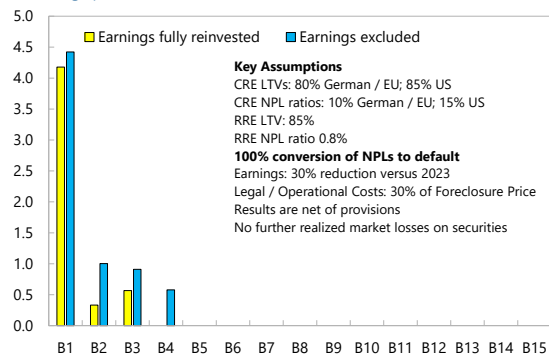


³ The assumption on banks' earnings is partly to adjust for the record profits generated by banks during 2023, which was mainly due to the policy rate tightening environment—banks increased lending rates swiftly but were slower to adjust deposit rates. There has been some increase in deposit rates during 2024, including as households switch from sight to time deposits, but the full-year effect of these higher funding costs will not be realized until 2024—and there is still some scope for deposit rates to catch up with policy rate tightening (Text Figure).

Figure 3. Germany: Potential CRE Stress Impact

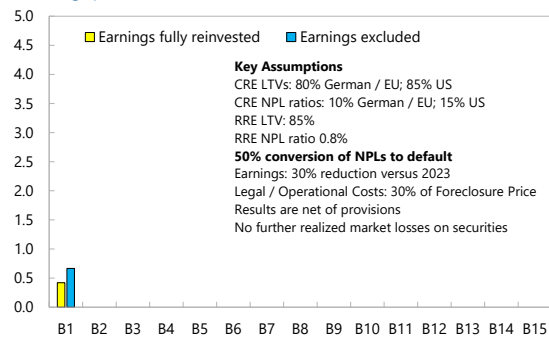
Adverse Capital Impact for Selected Banks 1/

(Percentage points of CET1 ratio)



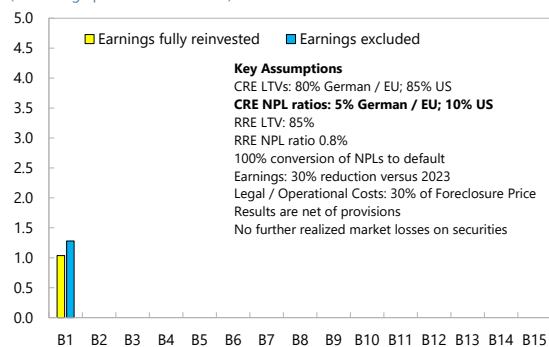
Adverse Capital Impact for Selected Banks 1/

(Percentage points of CET1 ratio)



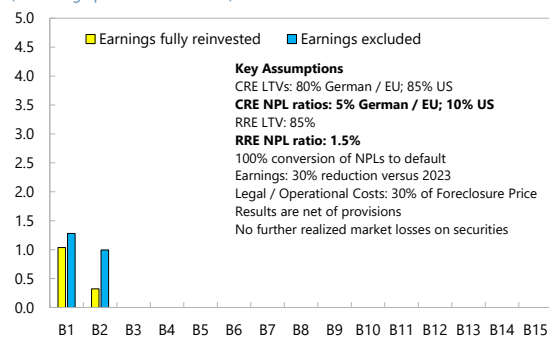
Adverse Capital Impact for Selected Banks 1/

(Percentage points of CET1 ratio)



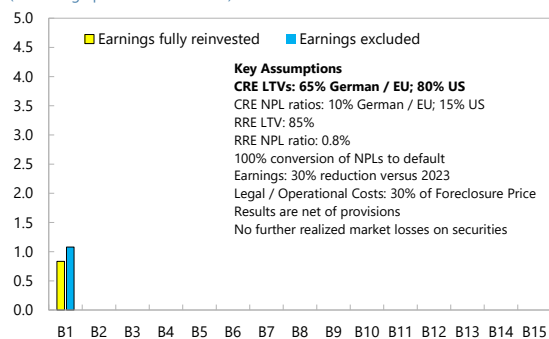
Adverse Capital Impact for Selected Banks 1/

(Percentage points of CET1 ratio)



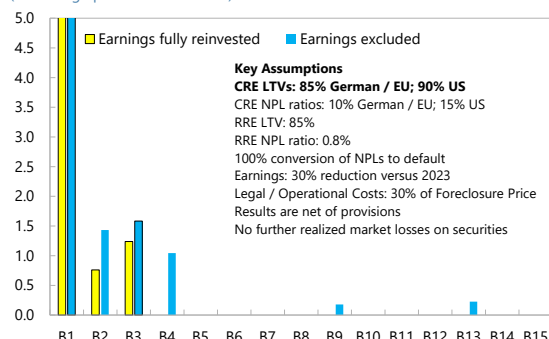
Adverse Capital Impact for Selected Banks 1/

(Percentage points of CET1 ratio)



Adverse Capital Impact for Selected Banks 1/

(Percentage points of CET1 ratio)

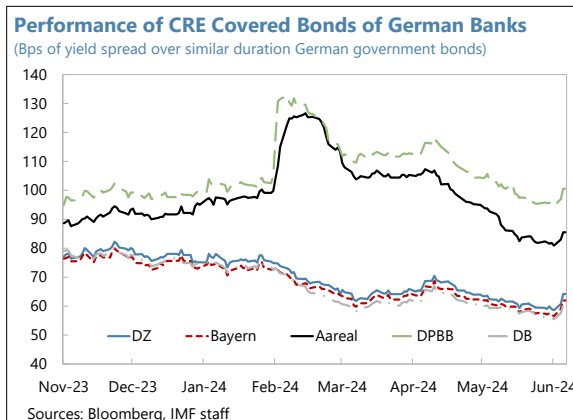


Sources: Bank filings, Bundesbank, and IMF staff estimates.

1/ Note that the banks' numbering above does not correspond to asset size.

10. Banks have faced little market risk from holding covered bonds issued on CRE collateral or from issuing such bonds for funding. Holders of covered bonds are not exposed to

the credit risk of the CRE loans, as long as the issuer is not in default (i.e., any shortfalls in the principal and interest payments relative to scheduled payments from the underlying collateral loans are fully “covered” or made whole by the issuer). If the issuer were to default, then covered bond holders would be protected from bail-in with respect to the issuer and have full recourse to the underlying collateral. Covered bonds are legally required to have at least two percent more in the nominal amount of loans



collateral versus the par value of covered bonds issued. CRE loans are only eligible as collateral up to 60 percent of a property’s lending value (“Beleihungswert”). Banks typically also carry an additional collateral cushion, often as much as 20–30 percentage points more than the two percent requirement. Banks frequently, though not always, diversify the collateral for covered bonds across both residential and commercial real estate loans and are also required to add high-quality liquid assets for liquidity protection. Spreads on covered bonds, which had widened out for some banks during February–March 2024 have largely recovered through early June (Text Figure). Correspondingly market losses on banks holding such securities have reversed.

11. The results from some adjustments to assumptions in the stress scenario are presented in Figure 3. If the assumption on all NPLs going into default is relaxed to allow only half of NPLs to go into default, due as a result of banks working out loan extensions or other proactive restructurings with borrowers to keep them current on loan payments, then the capital impact on banks is less severe, with only one bank facing a capital hit, which is marginal. Other assumptions that lead to different estimates of potential loan losses and corresponding capital impact include those related to the LTV cushion on German and US CRE, the peak NPL impact that occurs on German banks’ exposure to CRE, and potentially higher RRE loan losses.

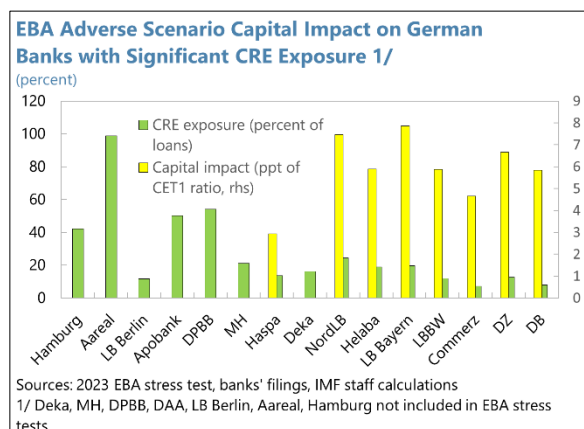
12. The analysis above is subject to several important caveats.

- **Losses on other types of loans.** It should be noted that within the scenario described above, there is no assumption of deterioration in the NPL ratio for other household or corporate loans beyond those directly for real estate. If further deterioration in the CRE sector leads to knock-on effects on related industries or is part of a broader downturn in economic activity and higher unemployment, then banks’ loans to those firms could also come under pressure.
- **Securities losses.** The analysis above does not assume additional losses realized on banks’ holdings of securities either. On the securities side, the Bundesbank in its 2023 FSR noted that nearly $\frac{2}{3}$ of banks had unrealized losses on securities, amounting to 15 percent of par, which were due to higher interest rates but had not been realized due to reclassifications of some types of securities as long-term assets. During Q1 2024, the Bundesbank estimates that banks’

unrealized losses from securities have declined to 1/3 of its earlier estimate because many securities have gained in market value as they have approached maturity (the a “pull-to-par” effect). In addition, the 1-year horizon may be viewed as rather severe for the scenario, as this allows only one year of earnings to provide a buffer against loan losses associated with CRE deterioration.

- **Contagion.** Banks could also face contagion risks from other entities, such as insurers or asset management subsidiaries, from within the same banking group.
- **Funding pressures.** The scenario assumes some decline in earnings from their high levels in 2023, but it does not assume a dramatic increase in funding costs, which could arise for some banks in highly adverse scenarios.

13. The more comprehensive 2023 EBA stress test had significant hypothetical impact on German banks supervised by the ECB. This test featured a highly adverse hypothetical 3-year scenario for Germany, in which GDP falls cumulatively by 6.4 percentage points, inflation rises by 21 percentage points, unemployment rises by 4 percentage points, and residential and commercial real estate prices fall by 26 and 33 percent respectively. In this scenario, German banks *included in the test* lose about 6 percentage points in their CET1 capital ratios, which fall to about 9 percent on average at the end of the scenario horizon. Such an impact would erode existing macroprudential and systemic institution buffers for most of the banks included in the test. It is uncertain what impact it would have on other banks, not included in the test, especially those with high exposures to CRE. While such a scenario is far from the baseline, it highlights the importance of the capital buffers that have been put in place since the Global Financial Crisis and the need for a continued prudent approach to capital conservation.



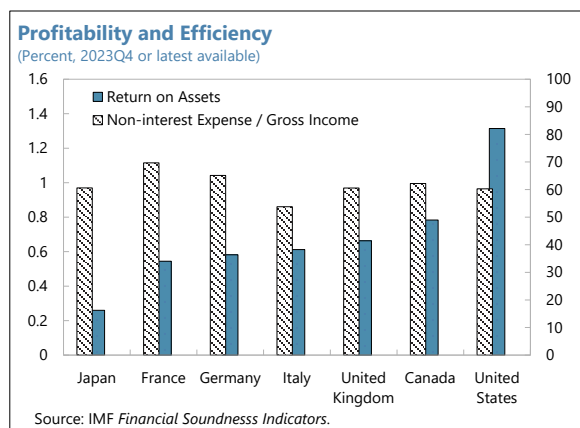
E. Policy Recommendations

14. Given the uncertainties in CRE stress analysis, the authorities should remain cautious and monitor CRE-related risks closely. The following key areas would seem appropriate:

- **Continued close micro-prudential supervision.** Close supervision of banks with high CRE exposure, including in the US, remains appropriate. The authorities should ensure that banks' provisions remain adequate for potential losses. Banks should be conservative with capital distributions, and the authorities should exercise their prerogative to restrict such distributions as warranted by potential losses in relation to existing provisions and buffers.

- **Review of financial safety arrangements.** The authorities should review and test mechanisms for addressing problem banks swiftly, which could include, for instance, taking prompt corrective action, establishing bridge bank and protocols for public communication, or ensuring timely payout arrangements for deposits. Similarly, there may be a case for facilitating swift debt restructuring mechanisms for troubled developers, possibly by deploying online technology to link debtors and creditors.
- **Assessment of macroprudential buffers.** The authorities should also continue to maintain existing macroprudential buffers, including the CounterCyclical Capital Buffer (CCyB) and the Sectoral Systemic Risk Buffer (SSyRB) for loans secured by RRE. Adding income-related borrower-based measures, such as debt-to-income (DTI) and debt service-to-income (DSTI) ratios for RRE, to the macroprudential toolkit would also be welcome. It is also critical to close gaps in CRE data collection with respect to credit underwriting assessments and exposures.
- **Conversions of CRE to other uses.** In some countries, such as the United States, where the CRE market is under pressure, there has been a push for conversions of CRE properties to residential use, which remains in demand.⁴ This poses several technical, legal, and operational challenges: for example, plumbing and ventilation systems have to be retrofitted to match the residential use and there can be legal zoning restrictions. While recognizing these challenges, the authorities could help support private sector initiatives aimed at such conversions by reducing the burden of administrative and legal requirements, for example in relation to zoning restrictions.

15. Over the medium term, the authorities should continue to take steps to strengthen financial stability. Efforts made to strengthen structurally low profitability of banks would also have positive impact on financial stability generally. In this regard, there may be ways to reduce the operational overhead associated with physical offices of many small banks, for example by digitalization of banking services or consolidation. The latter could also have benefits for banks by increasing opportunities for income diversification. A capital markets union (CMU) across the European Union increase savings from economies of scale and might create opportunities for banks to expand sources of non-interest income, for example from investment banking or asset management services.



⁴ See, for instance, the October 2023 US government measures to support conversions of CRE to residential use: <https://www.whitehouse.gov/briefing-room/statements-releases/2023/10/27/fact-sheet-biden-harris-administration-takes-action-to-create-more-affordable-housing-by-converting-commercial-properties-to-residential-use/>

References

- Deutsche Bundesbank, 2023, *Financial Stability Review 2023*.
<https://www.bundesbank.de/en/publications/reports/financial-stability-reviews/financial-stability-review-2023-918848>
- Davies, Gareth, and others, 2024, "CRE'eping into Europe", J.P. Morgan (March).
- Dey, Suraj, 2023, "Global Covered Bonds—A Primer", J.P. Morgan (August).
- DZ Hyp, 2023, "Real Estate Market Germany, 2023/2024".
[Immobilienmarkt Deutschland 2023 EN final rV.pdf \(pfandbrief.market\)](#)
- European Banking Authority, 2023, *2023 EU-wide Transparency Exercise*.
[2023 EU wide transparency exercise | European Banking Authority \(europa.eu\)](#)
- European Central Bank, 2024, *Financial Stability Review, May 2024*.
[Financial Stability Review, May 2024 \(europa.eu\)](#)
- European Insurance and Occupational Pensions Authority, 2024, *Insurance Stress Test 2024*.
[Insurance stress test 2024 - European Union \(europa.eu\)](#)
- European Systemic Risk Board, 2023, "Vulnerabilities in the Commercial Real Estate Sector," Official Journal of the European Union. [Vulnerabilities in the EEA commercial real estate sector \(europa.eu\)](#)
- Heinrich, Benjamin, and others, 2024, "German Banks in 2024", S&P Global Ratings (January).
- International Monetary Fund, 2024, "The Last Mile: Financial Vulnerabilities and Risks", Global Financial Stability Report (Washington: IMF). [The Last Mile: Financial Vulnerabilities and Risks \(imf.org\)](#)
- Deutsche Bank, 2023, investor presentation, [Deutsche-Bank-Q4-FY-2023-Presentation.pdf \(db.com\)](#)
- DZ Bank, 2023, annual report, https://www.dzbank.com/content/dam/dzbank/dokumente/en/dz-bank/investor-relations/reports/DZ_BANK_Group_2023_Annual_Report.pdf
- Commerzbank, 2023, investor presentation, https://investor-relations.commerzbank.com/media/document/5ff718a1-4462-4291-9eef-7ef59d5e69f1/assets/2023_Q4_Analysts_Presentation_Final.pdf
- Landesbank Baden-Wuerttemberg, 2023, investor presentation, https://www.lbbw.de/konzern/investor-relations/finanzberichte/presentationen/2023/presentation-result-31-december-2023-lbbw-group_ahyzxdf9ui_m.pdf

Landesbank Bayern, 2023, Investor presentation, https://www.bayernlb.com/internet/media/en/ir/downloads_1/investor_relations_3/ir_praesentation/aktuell_5/ir_praesentation.pdf

Landesbank Hessen-Thuringen, 2023, investor presentation, <https://www.helaba.com/media/docs/int/investor-relations/publications/presentations/investor-presentations/investor-presentation-short-version.pdf>

Norddeutsche Landesbank, 2023, investor presentation, [FY2023_NORDLB_Investor_ENG_final.pdf](#)

Deka Bank, 2023, investor presentation, https://www.deka.de/site/dekade_deka-gruppe_site/get/params_E606846174/10862155/DekaGroup_Presentation_Business_development_2023-12-31_EN.pdf

Hamburger Sparkasse, 2023, annual report, https://www.haspa.de/content/dam/myif/haspa/work/pdf/Unternehmen/ueber_uns/geschaeftsberichte/haspa-annual-report-2023.pdf?n=true

Muenchner Hypothekenbank, 2023, investor presentation, https://www.mhb.de/sites/default/files/2024-06/investor%20presentation%20english%203rd%20Update%202024_rating%20upgrade.pdf

Deutsche Pfandbriefbank, 2023, investor presentation, https://www.pfandbriefbank.com/fileadmin/user_upload/downloads/investor_relations/presentation_s/Q423_pbb_AP_FINAL_07032024_01.pdf

Deutsche Apotheker- und Aerztebank, 2023, annual report, <https://www.apobank.de/dam/jcr:e49e4ce8-3f8b-4a30-aeb5-fd076715a1f8/apobank-annual-financial-report-2023.pdf>

Landesbank Berlin. 2023, investor presentation, https://cdn0.scrvt.com/e07c34c5527d0f24bcd27c648605aec1/000000000a246249/c879b6825603/92_Investor_presentation_long.pdf

Aareal Bank, 2023, investor presentation, https://www.aareal-bank.com/fileadmin/downloadlist/DAM_Content/IR/Praesentationen/2024/240229_analyst_conf_en.pdf

Hamburg Commercial Bank. 2023, investor presentation, <https://www.hcob-bank.com/en/media/hcob-investor-presentation-fy-23-update-for-finals-2/>