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The effects of macroprudential buffers on commercial real estate lending volumes and interest rates

Ex post assessment of the impact of the sectoral systemic risk buffer in Austria

The sectoral systemic risk buffer (sSyRB) was introduced in Austria in 2024. It applies to commercial real estate (CRE) lending and aims for greater banking sector resilience. Our study finds that, on the aggregate level, the sSyRB has no economically or statistically significant adverse effects on CRE lending volumes or rates. Moreover, we identify a lending shift: Higher capitalised banks with lower NPL ratios markedly increased their CRE lending. Overall, this helped reduce financial stability risks.

JEL classification
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Commercial real estate, financial stability, macroprudential policy

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The sSyRB has made the Austrian banking sector more resilient

Thanks to the introduction of the sSyRB, Austrian banks have increased their capital buffers and thus become more resilient to risks in the commercial real estate (CRE) segment.

The sSyRB has no significant adverse effects on CRE lending

Our study shows that the introduction of the sSyRB for CRE lending in Austria has neither driven up CRE lending rates nor caused a decline in the volumes of CRE lending.

Redistribution of CRE lending reduces financial stability risks

Banks with higher capitalisation and lower volumes of non-performing loans have increased their CRE lending relative to other banks. This shift in CRE lending has reduced the related risks to financial stability.

The views expressed are those of the authors and do not necessarily reflect those of the Oesterreichische Nationalbank or the Eurosystem.

1 Introduction and literature review

The sectoral systemic risk buffer (sSyRB) on commercial real estate (CRE) loans was introduced in Austria in 2024 in response to elevated structural systemic risks in the CRE lending market.[1] Based on related OeNB systemic risk analyses, the Financial Market Stability Board (FMSB) recommended in 2024 and 2025 that Austrian banks should hold additional regulatory capital for potential periods of stress (OeNB, 2026).[2] While the introduction of the sSyRB was aimed at enhancing the resilience of the Austrian banking sector, this contribution explores potential changes in banks' CRE lending rates and lending volumes around the announcement date of the sSyRB. We will start by setting out, from a theoretical and literature perspective, how capital requirements and additional factors affect banks' lending decisions. The remaining sections of this short paper present the empirical results of our ex post impact assessment.

The sectoral systemic risk buffer (sSyRB) increases the amount of regulatory capital that banks must hold against risk-weighted assets associated with loans to firms in the real estate and construction sectors. In principle, higher capital requirements may increase the marginal cost of supplying affected loans and thereby influence loan pricing and credit volumes. However, the ultimate effect of higher capital requirements on lending is not straightforward. Lending conditions are jointly determined by credit risk, funding and liquidity costs, operational costs, competitive pressures and regulatory requirements (Enthofer and Haas, 2018; Motaze, 2022; Davis et al., 2025). Banks may respond to higher capital requirements by adjusting their funding structure, raising additional capital, increasing lending rates, reallocating lending activities or absorbing the additional requirements through existing managerial capital buffers. Responses may therefore differ across banks, depending on their capitalisation, asset quality, balance sheet structure and market position.

The empirical literature is consistent with this ambiguity, providing mixed evidence regarding the effects of higher capital requirements on lending in general. A key challenge is that bank capital is endogenous and adjusts jointly with lending activity, balance sheet management and regulatory requirements, complicating causal inference (Da Rocha Lopes et al., 2025). Earlier studies exploiting regulatory shocks nevertheless document meaningful credit supply effects. For example, Fraisse et al. (2017) find that tighter capital requirements reduce corporate lending by affected banks, while D'Amario et al. (2026) estimate for the United Kingdom that a 100-basis-point increase in banks' capital ratios is associated with a decline in corporate lending of roughly 0.25% after six quarters and an increase in corporate lending rates of 7–10 basis points. Specific analyses on CRE lending in this context are scarce. Glancy and Kurtzman (2018) analyse a subcategory of CRE lending in the USA that was made subject to a 50% increase in capital requirements in 2015, namely so-called high-volatility CRE loans, i.e., for instance, CRE loans for land acquisition exceeding certain loan-to-value-limits or CRE loans with a low equity share in financing. They find that a 100-basis-point increase in capital requirements for these loans led to a 9.5-basis-point increase in lending rates. At the same time, other studies find that higher capital requirements need not necessarily translate into lower lending. Bahaj and Malherbe (2020) show that stronger capitalisation can improve bank safety and funding conditions, partly offsetting contractionary effects. Likewise, evidence from the Bank of England suggests that banks' responses depend importantly on institution-specific characteristics, including capitalisation and financial strength (Bahaj et al., 2016).

Additional evidence suggests that well-capitalised banks may be better positioned to sustain lending despite higher funding costs and tighter credit conditions (Faccia et al., 2024), while lending can be

[1] The sSyRB envisages a phase-in of buffer rates of 1% from 1 July 2025, 2% from 1 July 2026 and 3.5% from 1 July 2027. It is being implemented gradually to avoid any cliff effects or policy shocks or any sudden changes in lending behaviour and to grant banks more time to adjust to this policy measure.

[2] For details on the methodology used in the OeNB's analyses, see Barmeier et al. (2024) and OeNB (2026). The FMSB's recommendation and the OeNB's expert opinion are available at https://fmsg.at/publikationen/risikohinweise-und-empfehlungen/2024/empfehlung-fmsg-6-2024.html and at https://www.fma.gv.at/wp-content/plugins/dw-fma/download.php?d=7805&nonce=ba0d331c474d11d5, respectively.

constrained by weak portfolio quality and elevated non-performing loans (Spiegel, 2025). The Deutsche Bundesbank (2026) likewise argues that stronger capital positions are compatible with higher lending growth. Moreover, regulatory tightening may induce a reallocation of credit provision across institutions and funding sources rather than a uniform contraction in aggregate credit supply (Bednarek et al., 2025).

These considerations are particularly relevant for the Austrian sSyRB. Unlike broad-based regulatory capital measures, it applies only to a narrowly defined subset of risk-weighted assets, namely to loans to firms in the commercial real estate and construction sectors. Furthermore, as the sSyRB had not previously been activated in Austria and banks do not seem to have widely anticipated its activation, despite multiple risk-related communications by the Financial Market Stability Board, its introduction represents a plausibly exogenous increase in regulatory capital required for affected exposures. This setting allows us to identify associations between the sector-specific capital requirement, lending volumes and lending rates in a difference-in-differences framework while examining whether banks' responses differ according to their capital headroom and portfolio quality.

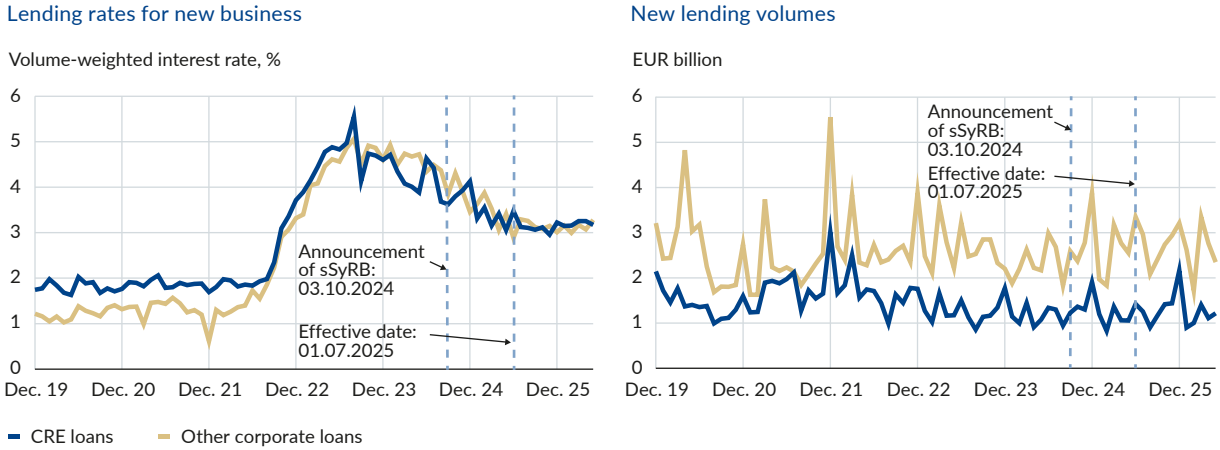
2 Empirical strategy

2.1 Data

To estimate the effect the sSyRB on CRE loans has on CRE lending rates and loan volumes, we use granular data from the OeNB's collection of granular credit data in Austria.[3] The dataset is at loan level and includes all loans by Austrian banks to legal entities exceeding a reporting threshold of EUR 25.000. Given the low reporting threshold, the data cover virtually all loans to legal entities. Our sample contains data from December 2019 to April 2026, providing a wide range of detailed information including lending volumes, lending rates, debtors' probability of default (PD), the value of collateral and the risk weights associated to loans. In our analysis, we focus on new lending, i.e. loans that were newly granted in the reporting month. This does not include renegotiated loans or forbearance measures, but it includes new loans granted due to companies' liquidity constraints.

Chart 1

Comparison of developments in CRE loans and other corporate loans



Note: The first vertical line indicates when the sSyRB for CRE lending was announced and the second vertical line indicates the date the sSyRB took effect.

Source: OeNB (granular credit data).

[3] The OeNB collects granular credit data from all Austrian banks. The details on the related reporting requirements can be found at https://www.oenb.at/serviceportal/meldebereich/meldebestimmungen/granulare-kreditdatenerhebung.html (German).

Chart 1 shows how CRE loans developed relative to other corporate loans in terms of lending rates and new lending volumes. As the left-hand panel shows, lending rates for new business increased substantially (both for CRE loans and other corporate loans) after monetary policy rates were raised in late 2022. As a consequence, the volumes of new business decreased (see right-hand panel). New lending generally exhibits high intra-year volatility.

The visual evidence presented in chart 1 indicates that, during the period under observation, the sSyRB had no significant effect on either CRE lending rates or lending volumes. The lending rates for CRE loans did not rise either following the announcement of the sSyRB or following the date it took effect, and they remained at the same level as those for other corporate loans. Similarly, CRE lending volumes did not change significantly after the sSyRB was announced or took effect.

However, a purely descriptive aggregated view on the data, as presented in chart 1, is not sufficient to evaluate the effect the sSyRB had on CRE lending rates and volumes: The risk profile of loans may have changed, confounding factors (such as other regulatory changes) may play a role and the aggregate view may obscure borrower migration within the banking sector. We therefore continue with an empirical estimation of the effects of the sSyRB on CRE lending.

2.2 Econometric specification

We gauge the effect the sSyRB on CRE loans had on CRE lending rates and new lending volumes in a difference-in-differences (DID) framework. The DID approach compares changes in lending outcomes for sectors affected by the sSyRB with changes in lending outcomes for corporate sectors not covered by the measure. Under the standard DID assumption that both groups would have followed similar trends in the absence of the policy intervention, the estimated effects can be interpreted as causal (Angrist and Pischke, 2009). Visual inspection of chart 1 suggests that lending rates and lending volumes evolved broadly in parallel prior to the announcement of the sSyRB, although no formal parallel-trends test is performed. As discussions of systemic risks in the CRE sector predated the official recommendation of the measure, the estimates should be interpreted as effects around the announcement (or implementation) date and may not fully capture any earlier adjustments in lending. Econometrically, we implement the DID approach by estimating the following fixed effects linear regression

$$Y_{b,s,t} = \beta_1 \, Treated_s \times Post_t + \gamma \, X_{b,s,t} + \delta_t + \mu_b + \eta_s + \varepsilon_{b,s,t} \tag{1}$$

where $Y_{b,s,t}$ captures the two variables of interest – either the volume-weighted lending rate for new lending from bank b to debtors in sector s at time t or the log new loan volume from bank b to debtors in sector s at time t. By aggregating individual loans at the bank-NACE sector level, the coefficient of interest, β_1, captures the average effect of the announcement (or implementation) of the sSyRB on banks' CRE lending business. The coefficient is identified through the interaction of two dummy variables: $Treated_s$, which is equal to 1 for CRE loans and 0 otherwise, and $Post_t$, which is equal to 1 for all time periods after the date the sSyRB was first announced on 3 October 2024, and 0 otherwise. As a robustness check, we also consider the date the sSyRB took effect on 1 July 2025.

Our regression specification is supported by a series of fixed effects: We include time fixed effects δ_t to account for structural aspects that affect all loans simultaneously (e.g. macroeconomic conditions), bank fixed effects μ_b to capture banks' average properties over time (e.g. banks' business models) and two-digit NACE sector fixed effects η_s to account for sectors' average structural properties over time (e.g. credit demand). In addition, we control for a number of covariates at the bank-sector-period level. In particular, we include the exposure-weighted PD as a measure of the riskiness of new loans, their exposure-weighted value-to-loan (VTL) ratio as a measure of collateralisation and, therefore, of loss given

default, and the exposure-weighted risk weight to capture regulatory changes such as the implementation of the Capital Requirement Regulation (CRR) III and the discontinuation of the derogation for exposures secured by CRE.[4] Following the recommendations of Bertrand et al. (2004), we employ a three-way clustering of standard errors at the bank-, two-digit NACE and time period levels to account for serial correlation within groups as well as for the within-period cross-sectional correlation of estimation errors.

3 Results

We present the results of our estimation of the association between the introduction of the sSyRB and CRE lending rates in table 1. We find that the sSyRB has no statistically significant effect on interest rates for new CRE loans. While point estimates suggest a 3–4-basis-point increase, they are statistically indistinguishable from zero and should be considered chance measurements. This assessment is robust to a number of variations in estimation approaches. First, the estimation results do not significantly change whether we consider the effective date of the sSyRB (1 July 2025) or its date of announcement (3 October 2024). Second, in columns (2) and (4) of table 1, we control for additional factors that influence loan pricing, i.e. the PD, the VTL ratio and the respective risk weight. All coefficient estimates on these covariates display the economically expected signs. Third, our results are robust to variations in the design of fixed effects as well as to changes in the time period considered. In more detail, we exclude the period of the COVID-19 pandemic from our estimation to ensure that our estimation results are not distorted by this unprecedented economic phase.[5]

Table 1

Impact of sSyRB on lending rates

Dependent variable	Lending rates			
Model	(1)	(2)	(3)	(4)
$Treated_s \times Post_t^{announced}$	0.0003 (0.0004)	0.0002 (0.0005)		
$Treated_s \times Post_t^{effective}$			0.0003 (0.0005)	0.0004 (0.0004)
Probability of default		0.0408*** (0.0046)		0.0408*** (0.0046)
Value-to-loan ratio		-0.0001 (0.0002)		-0.0001 (0.0002)
Risk weight		0.0013* (0.0008)		0.0013* (0.0008)
Fixed effects				
Bank	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes
Fit statistics				
Observations	135,104	124,355	135,104	124,355
R2	0.48590	0.52290	0.48590	0.52290
Within R2	1.13e-5	0.01399	3.48e-6	0.01399

Note: Significance codes: *** = 0.01, ** = 0.05, * = 0.1. Standard errors triple-clustered at the bank, sector and reporting period level are in parentheses.

Source: OeNB.

[4] For details on the hard test, please refer to https://www.fma.gv.at/en/banks/fma-disclosure/applicable-laws/disclosure-on-compliance-with-maximum-loss-rates/.

[5] Due to space constraints, the results of these estimations are not reported here. They are available from the authors upon request.

Our findings are broadly consistent with those of the OeNB's ex ante impact assessment (OeNB, 2026), which concluded that the effects of the sSyRB on CRE lending rates in Austria were likely to be small. The assessment argued that most affected banks possessed sufficient capital buffers to absorb the additional requirements and therefore anticipated only limited effects on lending conditions.

The results of our estimation of the association between the sSyRB and CRE lending volumes are shown in table 2. The estimated coefficients suggest an increase in lending volumes. However, they exhibit weak to no statistical significance. The increase implied by the point estimates may reflect an increased need for bridge financing (e.g. due to longer property disposal periods) at the current stage of the property cycle that coincided with the introduction of the sSyRB. The magnitude of the positive coefficient weakens considerably upon inclusion of standard covariates (columns (2) and (4) of table 2).

All additional covariate coefficients exhibit the economically expected signs: Higher default risk is associated with lower new lending, whereas higher collateralisation allows banks to extend larger loan volumes. Moreover, higher loan growth is associated with higher risk weights, which suggests a shift of lending to larger companies that do not have the preferential regulatory treatment (namely the CRR "supporting factor", i.e. a capital discount factor for small and medium enterprises). Again, our results are robust to additional variations in the estimation design. Our estimation results suggest no evidence for the introduction of the sSyRB having constrained CRE lending.

Table 2

Impact of sSyRB on lending volumes

Dependent variable	Log new loan volume			
Model	(1)	(2)	(3)	(4)
$Treated_s \times Post_t^{announced}$	0.0503*	0.0406*		
	(0.0264)	(0.0243)		
$Treated_s \times Post_t^{effective}$			0.0811**	0.0480
			(0.0365)	(0.0352)
Probability of default		-2.536***		-2.533***
		(0.3982)		(0.3984)
Value-to-loan ratio		0.1149***		0.1150***
		(0.0165)		(0.0165)
Risk weight		1.056***		1.055***
		(0.0955)		(0.0956)
Fixed effects				
Bank	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes
Fit statistics				
Observations	135,104	124,355	135,104	124,355
R2	0.23507	0.27349	0.23507	0.27348
Within R2	1.97e-5	0.02734	2.48e-5	0.02733

Note: Significance codes: *** = 0.01, ** = 0.05, * = 0.1. Standard errors triple-clustered at the bank, sector and reporting period level are in parentheses.

Source: OeNB.

In addition to the overall average effect of the sSyRB on the banking sector in Austria, we evaluate potential sSyRB-related lending redistribution effects within the banking sector. For this purpose, we conduct two sets of sample splits to gauge the magnitude of the redistribution of new lending within the Austrian banking sector. We categorise banks into terciles based on the share of NPLs in their corporate lending portfolios and on their capital headroom beyond the regulatory requirement. Thus, we classify banks as "low NPL banks" when they are among the one-third of banks with the lowest NPL ratios and as "high NPL banks" when they are among the one-third of banks with the highest NPL ratios. Our classifi-

cation of banks as "low-capitalised banks" and "high-capitalised banks" follows the same logic. Both rankings are measured in the reporting period prior to the date when the sSyRB was first announced. In the subsequent analyses, we focus on the announcement of the sSyRB, as it constitutes the relevant treatment event and provides the variation used to identify the estimated effects of the policy measure.

Table 3 shows the estimation results for the impact of the sSyRB on CRE lending with the sample splits depending on banks' NPL ratios and capitalisation. The estimation results suggest a redistribution of CRE lending from banks with high NPL ratios and lower capitalisation towards banks with lower NPL ratios and stronger capitalisation. While the negative coefficients in columns (2) and (3) suggest that banks with high NPL ratios and low capitalisation may have reduced their CRE lending, the estimates are not statistically significant. In contrast, we find banks with low NPL ratios and strong capitalisation stepped up their CRE lending relative to other corporate lending, with the effects being both economically and statistically significant. Our estimates imply a 9.3% increase in CRE lending for low NPL banks (column (1) of table 3) and an even higher 20.8% increase for highly capitalised banks (column (4) of table 3).[6] Although the estimated coefficient in column (4) lies at the upper end of the plausible range, our findings are consistent with recent evidence documenting a positive relationship between bank capitalisation and lending activity (Deutsche Bundesbank, 2026; Faccia et al., 2024; Spiegel, 2025). Our results are broadly consistent with the OeNB's own ex ante impact assessment, an exercise that is performed for all newly introduced macroprudential policy measures. It found that the sSyRB would have negligible effects on the interest rates on CRE loans and, consequently, on lending investments and GDP growth in Austria (Schmitz, 2025; OeNB, 2026).

While consistent with the broader literature, our findings differ from Glocker et al. (2026), who estimate the policy effect using only three identifying observations in a Bayesian VAR with 76 total observations and conclude that the introduction of the sSyRB significantly reduced CRE lending and subsequently negatively affected construction activity.[7]

Table 3

Impact of sSyRB by banks' NPL share and capitalisation before announcement

Dependent variable	Log new loan volume			
	Low NPL banks	High NPL banks	Low-capitalised banks	High-capitalised banks
	(1)	(2)	(3)	(4)
$Treated_s \times Post_t^{announced}$	0.0894*	-0.1100	-0.0055	0.1893***
	(0.0478)	(0.0775)	(0.0522)	(0.0531)
Probability of default	-1.866***	-2.184***	-2.631***	-1.023
	(0.6648)	(0.4919)	(0.4695)	(0.6825)
Value-to-loan ratio	0.1593***	0.1102***	0.0830***	0.1165***
	(0.0297)	(0.0183)	(0.0170)	(0.0170)
Risk weight	0.7450***	1.266***	1.262***	0.4565
	(0.2170)	(0.1034)	(0.1060)	(0.3385)
Fixed effects				
Bank	Yes	Yes	Yes	Yes
Time	Yes	Yes	Yes	Yes
Sector	Yes	Yes	Yes	Yes
Fit statistics				
Observations	31,175	40,965	55,511	21,589
R2	0.23749	0.27548	0.32457	0.22879
Within R2	0.01883	0.03881	0.03879	0.00944

Note: Significance codes: *** = 0.01, ** = 0.05, * = 0.1. Standard errors triple-clustered at the bank, sector and reporting period level are in parentheses.

Source: OeNB.

[6] At face value without accounting for possible econometric corrections.

[7] For a discussion of Glocker et al. (2026), see Barmeier et al. (2026).

4 Summary

Taken together, the results of our estimates suggest that the introduction of the sectoral systemic risk buffer (sSyRB) on commercial real estate (CRE) lending in Austria has so far neither materially impaired CRE loan provision nor led to a significant increase in interest rates on newly granted CRE loans. This confirms the effects anticipated by the OeNB's ex ante impact assessment and is in line with empirical literature. At the same time, we find that the sSyRB has led to a shift of CRE lending towards banks with higher capital positions and lower NPL ratios. By causing this shift, the sSyRB has been contributing to making the Austrian financial system more resilient without generating any discernible adverse effects on credit supply or loan pricing.

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