

Effectiveness of supervisory activities in mitigating banks' commercial real estate risk

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This Paper: Supervision of banks' CRE exposures

This paper: assessment of the effectiveness of supervision of banks' exposure to the **Commercial Real Estate (CRE) sector**

- How do **On-Site Inspections (OSIs)** and **Targeted Reviews (TRs)** deployed by the Single Supervisory Mechanism (SSM) affect **banks' provisioning** for their CRE exposures?
 - OSI: on-site inspections + binding remedial action with deadlines
 - TR: off-site supervisory exercises + recommendations

Paper relies on:

- Confidential ECB supervisory data (FINREP) for 81 significant institutions, quarterly 2020Q1–2024Q4
 - 22 banks subject to OSIs (staggered across 2021–2022), 15 to TRs in 2022Q3 (no overlap), 44 control banks
- Information on supervisory activities (IMAS): timing, scope, thematic focus

Main results:

- **OSIs** are followed by **persistent** increases in provisions for CRE exposures (CRE coverage ratio up to +20pp after 6 quarters)
- **TRs** are associated with immediate but **short-lived** improvements in CRE provisions (significant at t+1 and t+2 only)

Methodology: Difference-in-Differences

Dependent variable: **CRE coverage ratio** (y_{bct}) of bank b in country c at time t

CRE coverage ratio = CRE loan-loss reserves / non-performing CRE loans

- ATT of Targeted Reviews (TRs): TWFE DiD

$$y_{bct} = \alpha_b + \alpha_t + \beta Post_t \times TR_b + \gamma X_{bt-1} + \delta Z_{ct} + \varepsilon_{bct}$$

where $Post_t = 1$ for $t \geq 2022Q3$ (when Phase 2 supervisory feedback was communicated).

- ATT of On-Site Inspections (OSIs): staggered DiD (Sun and Abraham, 2021)

$$y_{bct} = \alpha_b + \alpha_t + \beta Post_{bt} \times OSI_b + \gamma X_{bt-1} + \delta Z_{ct} + \varepsilon_{bt}$$

where $Post_{bt} = 1$ for $t \geq$ the quarter when bank b 's on-site inspection starts (staggered across 2021–2022).

Expected ATT: $\beta > 0$.

Main Results

Dependent variable: coverage ratio of bank b in country c at time t

- Table 3: ATT of On-Site inspections (OSIs)

$$y_{bct} = \alpha_b + \alpha_t + \beta Post_{bt} \times OSI_b + \gamma X_{bt-1} + \delta Z_{ct} + \varepsilon_{bt}$$

- Table 4: ATT of targeted reviews (TRs)

$$y_{bct} = \alpha_b + \alpha_t + \beta Post_t \times TR_b + \gamma X_{bt-1} + \delta Z_{ct} + \varepsilon_{bct}$$

Table 3: Effect of OSIs on CRE Coverage Ratio

	(1)	(2)	(3)	(4)
Post $\times$ OSI	0.139 (0.092)	0.143*** (0.045)	0.145*** (0.045)	0.121*** (0.045)
Share of CRE in total loan	—	−3.948*** (1.365)	−4.143*** (1.408)	−3.969*** (1.399)
Number of Obs.	1,148	1,033	1,024	1,024
Adjusted R^2	0.686	0.762	0.764	0.768

Table 4: Effect of TRs on CRE Coverage Ratio

	(1)	(2)	(3)	(4)
Post $\times$ TR	0.004 (0.077)	0.031 (0.073)	0.036 (0.070)	0.035 (0.071)
Share of CRE in total loan	—	−2.356** (1.082)	−2.656** (1.190)	−2.512** (1.233)
Number of Obs.	1,018	936	922	922
Adjusted R^2	0.712	0.721	0.730	0.731
Bank fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes
CRE controls	No	Yes	Yes	Yes
Bank controls	No	No	Yes	Yes
Country controls	No	No	No	Yes

Note: Robust standard errors clustered at the bank level in parentheses. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

My Comments

This paper documents the effectiveness of supervision targeting Commercial Real Estate (CRE) exposures of banks

- contrasting effectiveness of Targeted Reviews (TRs) and On-Site Inspections (OSIs)
 - OSIs: persistent increases in the CRE coverage ratio (up to +20pp after 6 quarters)
 - TRs: immediate but short-lived improvements in CRE coverage ratio (significant at $t+1$ and $t+2$ only)

Comment 1: Intended Outcome

- The coverage ratio is the *intended* target of the supervisory exercises.
- Growing OSI effects may reflect mechanical compliance, not behavioral change.

Comment 2: Methodology

- Bad control problem? The role of controlling for CRE share in total loans.
- Endogenous treatment assignment: treatment assignment *conditional* on the outcome variable.
- Choice of estimator and discussion of identification assumptions.

Comment 1: Intended Outcome

The dependent variable (CRE coverage ratio) is *the explicit supervisory target*.

- The paper states: “coverage ratio [...] provides a metric that is **directly aligned with supervisory priorities**” (p. 4)
- Table 2: >50% of supervisory measures have “direct financial consequences” on the coverage ratio components (rating models, provisioning, collateral valuation, NPL classification)
- Contrast with TRs: “OSI measures are more directly linked to provisioning” (p. 27)

Persistence = mechanical compliance? The growing OSI effect (Figure 2: +9pp at $t = 0$ to +20pp at $t = 6$) may simply trace the staggered compliance schedule with binding remedial actions and deadlines.

- This is a compliance effect, not necessarily a shift in risk culture or incentives.
- Policy implication differs: if mechanical, supervision must be repeated regularly.

Comment 1: Intended Outcome (cont.)

Suggestion: focus on other outcome variables that are *not* directly targeted by supervision.

To disentangle mechanical compliance from behavioral change:

- Provisioning on **new** CRE loans originated *after* the OSI (behavioral change) vs. adjustments on existing/flagged exposures only (mechanical compliance)

To assess the broader economic effects of supervision:

- Credit supply: do supervised banks reduce CRE lending or lending in general?
- Portfolio reallocation/risk taking: do banks shift exposures toward other sectors?
- Bank profitability (ROA)
- CRE loan pricing: do banks reprice CRE loans after supervision?

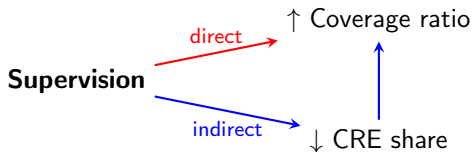
The paper's data (FINREP) already contains many of these variables. This would substantially strengthen the contribution.

Comment 2: Bad Control Problem (Angrist and Pischke, 2009)

In Table 3, the ATT **becomes significant only when controlling for CRE share in total loans**:

	OSI: no controls (Col. 1)	OSI: with CRE controls (Col. 2)
Post $\times$ OSI	0.139 (0.092)	0.143*** (0.045)
CRE share in total loans	–	-3.948*** (1.365)

Suspected causal structure:



Two interpretations of the negative CRE share coefficient:

- 1 **Benign:** CRE share captures a structural confound (banks with large CRE portfolios are different)
- 2 **Bad control:** supervision $\rightarrow$ less CRE + more provisions. Conditioning on CRE share blocks the indirect channel and biases the ATT.

Solution: measure CRE share *before* treatment and hold it fixed (no treatment contamination).

Comment 2: Endogenous Treatment Assignment

Treatment is **not random**: banks are selected for OSIs and TRs based on supervisory risk assessments.

- “supervisory interventions are **not randomly assigned**: banks are selected based on supervisory risk assessments” (p. 5)
- TR selected banks with “**significant exposures** [...], **elevated risk parameters**, or concerns regarding data quality” (p. 10)

The core problem: treatment assignment is conditional on the *outcome variable*.

- Banks selected because supervisors identified weak provisioning, poor collateral valuation, inadequate NPL classification – precisely the components of the coverage ratio
- Banks selected for having low coverage ratios are told to increase their coverage ratios

Threat to identification: the parallel trends assumption requires that treated and control banks would have followed the same coverage ratio trend absent treatment.

- Selection on the outcome makes this implausible: banks with weak provisioning may be on a different trajectory even without intervention

Solution: use outcome variables *not* involved in the treatment selection.

Comment 2: Identification Assumptions

The paper cites Sun and Abraham (2021) who develop an Interaction-weighted estimator (IW), but the equations appear as standard TWFE. Standard TWFE requires **all 3** assumptions below; the IW estimator requires only (1) and (2).

① Parallel trends

- Banks selected *because* of weak provisioning (= low coverage ratios); may exhibit mean reversion even absent treatment

② No anticipation:

- “Some institutions start addressing identified weaknesses **immediately after the kick-off meeting**” (p. 8) – before OSI treatment starts
- For TRs, Phase 1 (benchmarking of 32 banks) preceded Phase 2

③ Treatment effect homogeneity (needed for TWFE, not IW):

- Different numbers/severities of measures across banks (Table 6); different CRE markets across countries

The IW estimator is a **3-step procedure**:

Step 1: Estimate cohort-specific $CATT_{e,k}: y_{bt} = \alpha_b + \alpha_t + \sum_{e \notin \mathcal{C}} \sum_{k \neq -1} \theta_{e,k} (1\{E_b = e\} \cdot D_{bt}^k) + \varepsilon_{bt}$

Step 2: Estimate weights as cohort shares $\widehat{\Pr}\{E_b = e \mid E_b \in [-k, T - k]\}$

Step 3: Aggregate to get the IW estimator: $\hat{\beta}_k = \frac{1}{|g|} \sum_{k \in g} \sum_e \hat{\theta}_{e,k} \cdot \widehat{\Pr}\{E_b = e \mid E_b \in [-k, T - k]\}$

The paper should clarify which estimator is used and discuss these assumptions.

Summary

This paper documents the effectiveness of supervision targeting Commercial Real Estate (CRE) exposures of banks

- compares Targeted Reviews (TRs) and On-Site Inspections (OSIs)

Comment 1: Intended Outcome

- The coverage ratio is the *intended* target of the supervisory exercises.
- Growing OSI effects may reflect mechanical compliance, not behavioral change.

Comment 2: Methodology

- Bad control problem? CRE share in total loans drives significance of the ATT. Suggestion: hold CRE share fixed at pre-treatment level.
- Endogenous treatment assignment conditional on the outcome variable.
- Estimator clarification and discussion of identification assumptions (parallel trends, no anticipation, treatment effect homogeneity).

Main recommendation: use outcome variables *not* directly targeted by supervision (credit supply, portfolio reallocation, bank profitability, loan pricing). This would (i) yield more informative economic insights, (ii) mitigate the endogenous selection problem, and (iii) address the bad control concern.