

# Banks' Real Estate Exposures: Risk-Based Approach to Measurement of Exposures and Concentrations

Patrick Slovik and Farah Azman

## Abstract

The study develops a holistic risk-based approach to measuring banks' real-estate exposures and real-estate sector concentrations. As banks' real-estate exposures increasingly extend beyond traditional lending, adequate statistics shall cover broader types of on-balance sheet exposures and off-balance sheet exposures. The study describes a novel approach to measuring banks' exposures and concentrations utilising a risk-based approach aligned with the more granular post-crisis reforms of the Basel standards. It outlines a method of integrating the revised Basel standards with statistics on banks' sectoral exposures and concentrations and proposes refined metrics based on credit risk-weighted assets.

# Banks' Credit Risk and Sector Concentrations

## Sector Exposures and Concentration Risk

- Historical experience shows that sector concentration risk in banks' portfolios has been one of the main causes of bank distress, which warrants a focus on appropriate statistical methodologies.
- Sector concentrations in banks' portfolios arise from excessive exposures to a sector, several highly correlated sectors, and also apply to other exposures exhibiting high default dependencies.

## Sector Exposures and Financial Distress

- Banks' credit risk concentrations, particularly real estate sector exposures, exert material impact on the soundness of the financial system and contributed to numerous financial or bank crises globally.
- Real-estate-linked financial crises were not limited to a particular real estate category, as the causes stem from exposures to both residential real estate and commercial real estate rather equitably.

## Sector Exposures and Financial Innovation

- While banks' real estate financing has been traditionally dominated by loans, other types of on-balance sheet and off-balance sheet exposures to the real estate sector increased in prominence.
- This is attributable to broadening financial innovation and deepening market-based finance. In response, authorities should adjust statistics to accommodate changes in financial structures.

## Extending Measurement Scope of Sector Exposures

- Adequate measurement and analysis of banks' real estate exposures require extending their scope to include all types of on-balance sheet and off-balance sheet exposures to the real estate sector.
- Measurement and disclosure of off-balance sheet sector exposures are commonly missing even in relatively advanced contemporary frameworks and dashboards, resulting in material data gaps.

### Consolidated Sector Exposures

Equation (1)

$$CSE = \sum_{i=1}^n On\_SE_i + \sum_{j=1}^m Off\_SE_j \times CCF_j$$

*Legend: CSE – Consolidated Sector Exposures; On\_SE – On-Balance Sheet Sector Exposure; Off\_SE – Off-Balance Sheet Sector Exposure; and CCF – Credit Conversion Factor.*

Off-balance sheet items can be converted into credit-exposure equivalents through the use of harmonised credit conversion factors that were developed as part of the BCBS's Basel Accords.

## Enhancing Risk Sensitivity of Sector Exposures

- While the consolidated sector approach defines an all-inclusive scope, it might not be sufficiently risk-sensitive. Risk sensitivity recognises that credit risk of same-sized credit exposures differs.
- The credit risk of real estate exposures relates to factors such as loan-to-value ratios, counterparties' external credit ratings, source of repayment cash flows, exposures' asset quality, or others.

### Credit Risk-Weighted Consolidated Sector Exposures

Equation (2)

$$CRWA(CSE) = \sum_{i=1}^n CRW_i \times On\_SE_i + \sum_{j=1}^m CRW_j \times Off\_SE_j \times CCF_j$$

*Legend: CRWA(CSE) – Credit Risk-Weighted Consolidated Sector Exposures; CRW – Credit Risk Weight; On\_SE – On-Balance Sheet Sector Exposure; Off\_SE – Off-Balance Sheet Sector Exposure; CCF – Credit Conversion Factor.*

*Note: The equation has been simplified to provide a more intuitive expression of the use of risk weights and credit conversion factors for the measurement of risk-sensitive sector exposures. A more detailed calculation might also recognise the impact of credit risk mitigants as defined in the BCBS's Basel Accords, the role of specific provisions, and other relevant factors.*

Credit risk weights derived from the harmonised BCBS's Basel Accords can be utilised to obtain credit risk-weighted consolidated sector exposures.

# Revised Risk Sensitivity of Real Estate Exposures

- The revised standardised approach for credit risk (part of finalising post-crisis Basel III reforms) enhances risk-weight granularity of bank real estate exposures to residential and commercial properties.
- Revised risk-weight granularity varies based on loan-to-value ratios, risk weights of counterparties, sources of repayment cash flows, issue-specific ratings of covered bonds, and other relevant factors.

## Risk Weights for Residential Real Estate Exposures

Repayment is not materially dependent on the cash flow generated by the property						Table (1)
LTV ratio	≤50%	50% to 60%	60% to 80%	80% to 90%	90% to 100%	> 100%
Risk weight	20%	25%	30%	40%	50%	70%
Repayment is materially dependent on the cash flow generated by the property						
LTV ratio	≤50%	50% to 60%	60% to 80%	80% to 90%	90% to 100%	> 100%
Risk weight	30%	35%	45%	60%	75%	105%
Source: BCBS (2017)						

The revised standardised approach enables a greater integration between the measurement of sector exposures and the harmonised Basel Accords' risk sensitivity (also applicable in the IRB approach).

## Revised Risk Sensitivity of Real Estate Exposures (*continued*)

### Risk Weights for Commercial Real Estate Exposures

Repayment is not materially dependent on the cash flow generated by the property			Table (2)
LTV ratio	≤60%	>60%	
Risk weight	Min (60%, Risk weight of counterparty)		Risk weight of counterparty
Repayment is materially dependent on the cash flow generated by the property			
LTV ratio	≤60%	60% to 80%	>80%
Risk weight	70%	90%	110%
Source: BCBS (2017)			

### Risk Weights for Covered Bond Exposures

Rated covered bond exposures							Table (3)
Issue-specific rating	AAA to AA-		A+ to A-	BBB+ to BBB-	BB+ to B-		Below B-
Risk weight	10%		20%	20%	50%		100%
Unrated covered bond exposures							
Risk weight of issuer	20%	30%	40%	50%	75%	100%	150%
Risk weight	10%	15%	20%	25%	35%	50%	100%
Source: BCBS (2017)							

## Risk-Weighted Sector Concentration Ratio

- Sector concentrations in banks' portfolios represent a key driver of credit risk. For this reason, adequate measurement of concentrations remains crucial for risk management and banking supervision.
- Similar-sized sector exposures of different banks or banking systems may have significantly different credit risk characteristics, rendering concentration risk statistics that are not risk-sensitive inadequate.

Sector Concentration Ratio

Equation (3)

$$\text{Sector Concentration Ratio} = \frac{CRWA(CSE)}{CRWA}$$

*Legend: CRWA(CSE) – Credit Risk-Weighted Consolidated Sector Exposures; CRWA – Total Credit Risk-Weighted Assets.*

A sector concentration ratio defined through credit risk-weighted assets benefits from the Basel Accords' harmonised methods for risk sensitivity (and also, credit conversion factors, risk mitigants, etc.).

## Extending Measurement Scope of Sector Exposures

- Holistic and harmonised approaches for measurement of sector exposures shall include all types of on-balance sheet and off-balance sheet exposures to a sector.
- Off-balance sheet exposures can be converted into credit-exposures equivalents using harmonised credit conversion factors developed as part of the Basel Accords.

## Risk-Based Measurement of Sector Exposures

- Sector exposure and concentration measures need to be adequately risk-sensitive. The BCBS's Basel Accords provide the only globally harmonised methodology for risk sensitivity.
- Sector exposures and concentrations expressed in terms of credit risk-weighted assets provide a more comparable and intuitive approach related to credit risk and capital adequacy.