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Implications of the Basel III Final Rule on Credit Portfolio and Capital Management

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Topics for this Session

- ***Basel III final rule***

  → December 2017, the first of BIS documents

  → July 2023, U.S. endgame proposed rules

  … On credit risk regulatory capital, the final rule encourages or requires ***standardized approach***

- Many banks face challenges in ***aligning regulatory capital with intrinsic credit risk***

  … How to effectively account for both ***regulatory capital requirements and concentration risk***?

  … How to ***allocate required buffers*** from portfolio level to lines of business, segments, or instruments?

- Combining insights from the regulatory capital and concentration analysis allows banks to ***better manage and steer the exposures in their portfolio***

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What Basel III Final Rule Says about Capital for Credit Risk

Basel journey – back to standardized approach (plus …)

1988, Basel I
Standardized Approach

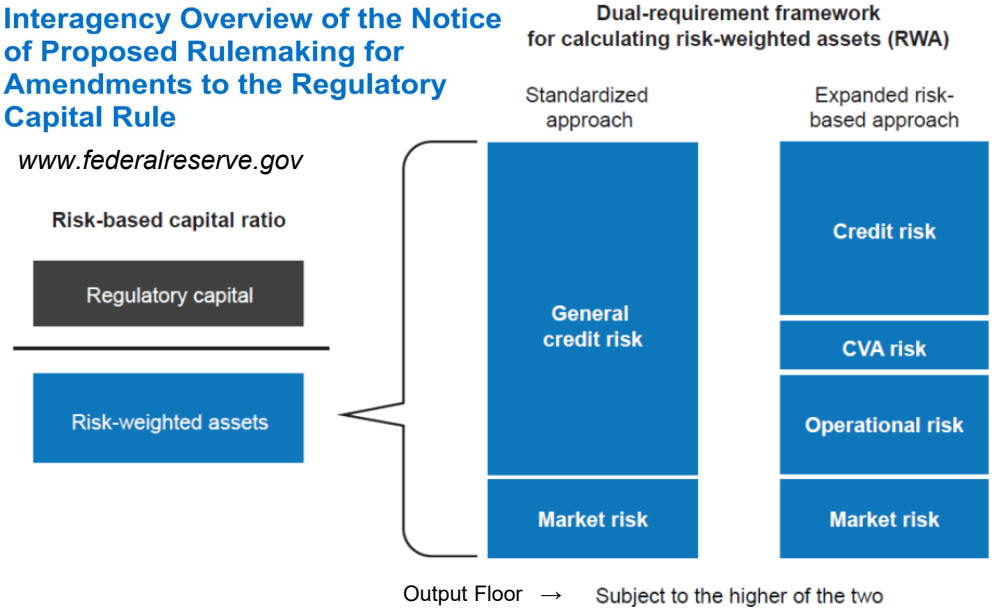
Early 2000's, Basel II
Introducing
IRB / Advanced Approaches

Post-Financial Crisis, 2015-2023
Basel III + Endgame
Limiting or Removing IRB / Advanced Approaches
Wider Use of Standardized Approaches
Buffers, Output Floors

Overview of the US proposal for large banks

Interagency Overview of the Notice of Proposed Rulemaking for Amendments to the Regulatory Capital Rule

www.federalreserve.gov



Regulatory Capital Rule Notice of proposed rulemaking.

"…Although the **proposal would remove use of internal models** for calculating capital requirements for credit and operational risk, **internal models can provide valuable information** to a banking organization's internal stress testing, capital planning, and **risk management functions**…"

What is new in the global Basel III final rule 2017-2022?

Credit Risk – Exposures to Banks and Corporates

Standardized Approach (SA)

Revised tables for risk-weight assets (RWA) of exposures to banks, corporates, and other asset classes

Internal Ratings-Based Approach (IRB)

Floor for internal PDs for individual corporate and banking exposures increases from 0.03% to 0.05%.

Capital floor on bank-level IRB RWA: the value cannot be lower than 72.5% of the SA (5-year phase-in).

Advanced IRB no longer permitted for banks, large corporates, and certain other exposures.

Regulatory Capital Buffers

Basel III already introduced **bank-level regulatory capital buffers**: capital conservation buffer (CCB), counter-cyclical buffer (CCyB).

Basel III final rule continues in this trend by adding **leverage ratio buffer (LRB) for G-SIBS.**

Exposure to Banks

External rating approach is permitted					
External rating	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-
Risk weight	20%	30%	50%	100%	150%
External rating approach is not permitted					
SCRA	A		B		C
Risk weight	40%		75%		150%

Exposure to Corporates

External rating approach is permitted					
External rating	AAA to AA-	A+ to A-	BBB+ to BBB-	Bb+ to B-	Below B-
Risk weight	20%	50%	75%	100%	150%
External rating approach is not permitted					
SCRA	Investment			Others	
Risk weight	65%			100%	
Risk weight - SME	85%				

SCRA – Standardized Credit Risk Assessment Approach

A more detailed look at the US proposal and its impact

Credit Risk Weights

Exposures to Banks

Standardized Approach: 20%

Expanded Risk-Based (ERB) Approach
SCRA Grade: A = 40%, B = 75%, C = 150%

Exposures to Corporates (general)

Standardized Approach: 100%

ERB Approach: Investment grade & publicly traded security outstanding= 65%; Other= 100%

Exposures to Regulatory CRE

Standardized Approach: 100%

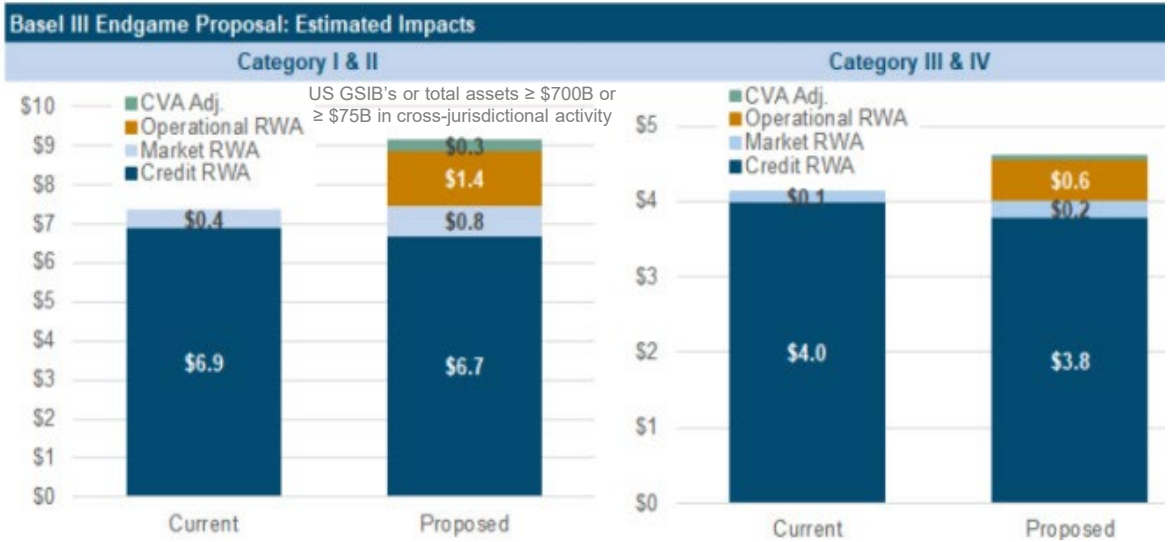
ERB Approach based on LTV

LTV ratio ≤ 60%	60% < LTV ratio ≤ 80%	LTV ratio > 80%
70%	90%	110%

The most ambitious regulatory crossover event in banking history

FINANCIAL TIMES
JULY 31 2023

On the bright side for US banks, they are ahead of the game in holding capital against their credit risk. In fact, CreditSights found that risk-weighted asset measurements for credit should actually *decline*.



Source: Federal Reserve, CreditSights
$ in tn, as of YE21

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Incorporating Regulatory Capital into a Portfolio Framework under Basel III Final Rule

How to reconcile the regulatory capital requirements and a portfolio management framework

EC-based portfolio problem

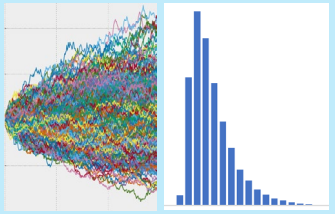
$$\max_{w_1,\dots w_K} \sum_i w_i \cdot ExpRet_i$$

$$\sum_i w_i \cdot EC_i = EC_P \leq RiskAppetite$$

EC allocated based on risk contribution

Maximizing portfolio return

Maintaining portfolio risk in line with risk appetite



Adding regulatory requirement

$$\underbrace{\left[\sum_i w_i \cdot RWA_i\right] \cdot \underbrace{Regulatory\ Capital\ Ratio}_{e.g.\ 6\%}}_{RegC_P} \leq \underbrace{Tier\ 1\ Equity}$$

Required Regulatory Capital ***"Capital Demand"***

Available Capital ***"Capital Supply"***

Source: Levy and Xu, 2017, *A Composite Capital Allocation Measure Integrating Regulatory and Economic Capital, and the Impact of IFRS 9 and CECL*

Solving portfolio optimization problem while including the regulatory capital constraint

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Concentration adjustment to regulatory capital (CARC)

$$RORAC_i = \frac{Expected\ Return_i}{?}$$

What is the RORAC performance measure which would lead to the portfolio that is **optimum** and that also meets the **regulatory requirement**?

Assuming required regulatory capital exceeds economic capital of a portfolio $RegC_P \geq EC_P$

$$CARC_i = EC_i + \left(\frac{RegC_P - EC_P}{RegC_P}\right) \cdot \left[RWA_i \cdot Regulatory\ Capital\ Ratio\right]$$

Concentration-adjusted Regulatory Capital

Allocated Economic Capital

CONCENTRATION ADJUSTMENT

$RegC_i$

Required Regulatory Capital

$$RegC_P = \sum_i w_i \cdot CARC_i$$

$$\left[\sum_i w_i \cdot RWA_i\right] \cdot Regulatory\ Capital\ Ratio$$

CARC is a way to attribute required regulatory capital, while accounting for concentrations

Relative weighting based on the portfolio-level $RegC_P$ and EC_P. The higher the EC_P, the more the concentration adjustment matters.

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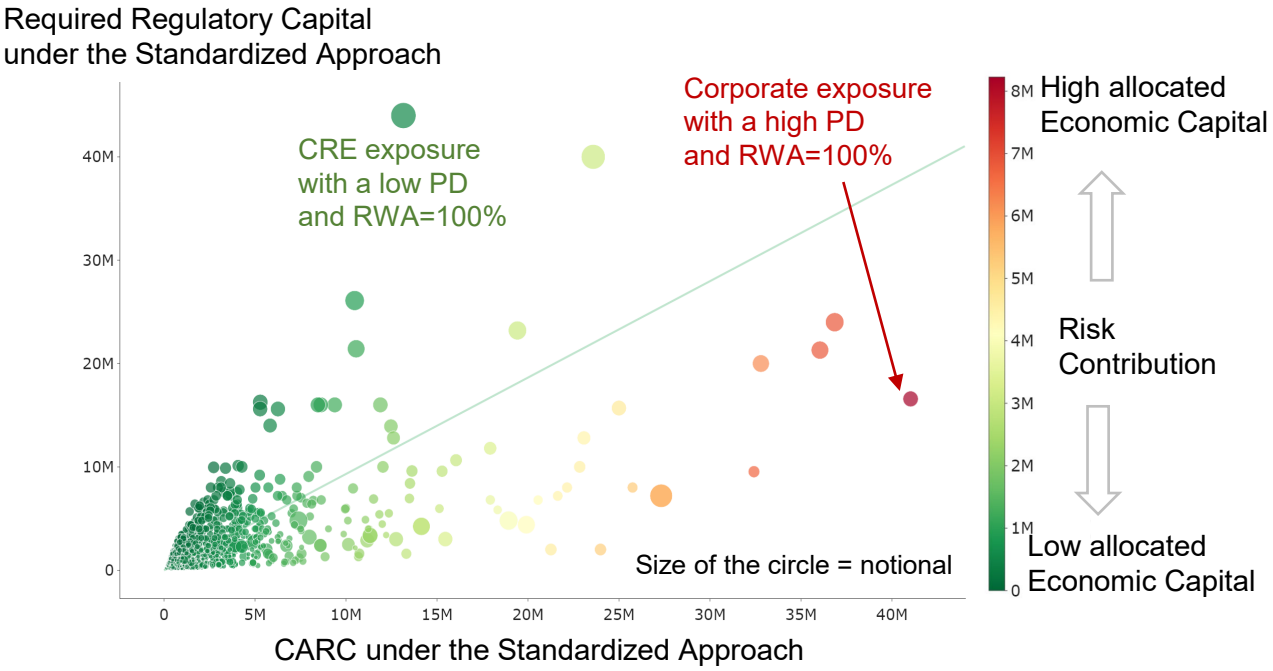
The concentration adjustment brings risk sensitivity into the portfolio analysis

Example – a U.S. credit portfolio of Corporate, Banking, and CRE exposures



Risk contribution captures both

- **standalone risk** (PD, LGD, maturity, etc.) and
- **correlation of the exposure with the portfolio** (country, industry, MSA, sensitivity to systematic shocks, etc.)

Incorporating and allocating Regulatory Buffers in the portfolio management framework

§ 217.11 Capital conservation buffer, countercyclical capital buffer amount, and GSIB surcharge.

Source: Federal Register, Regulatory Capital Rule: Large Banking Organizations and Banking Organizations With Significant Trading Activity

Regulatory buffers add to the regulatory capital constraint at the portfolio level

$$\underbrace{\left[\sum_i w_i \cdot RWA_i\right] \cdot \left[\text{Regulatory Capital Ratio} + \textbf{Regulatory Buffers}\right]}_{RegC_P^{W/Buffers}} \leq \text{Tier 1 Equity}$$

$$CARC_i^{W/Buffers} = EC_i + \left(\frac{RegC_P^{W/Buffers} - EC_P}{RegC_P^{W/Buffers}}\right) \cdot \left[\left(RWA_i \cdot \text{Regulatory Capital Ratio}\right) + \left(\textbf{Allocated Buffers}_i\right)\right]$$

How to allocate the buffers? A range of methods…

Proportional to RWA

$$RWA_i \cdot \textbf{Regulatory Buffers}$$

Concentration-based

$$\left[\sum_j w_j \cdot RWA_j\right] \cdot \frac{CARC_i}{RegC_P} \cdot \textbf{Regulatory Buffers}$$

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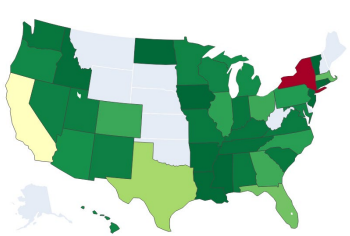
Impact of Basel III Final Rule on a U.S. Wholesale Portfolio

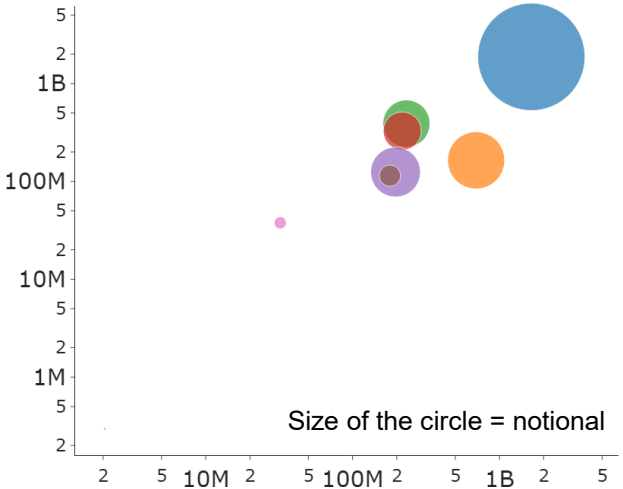
A U.S. portfolio of Corporate, Banking, and CRE exposures

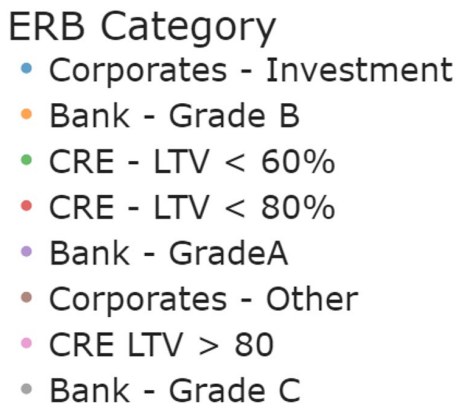
Portfolio Summary Statistics			
Notional		68 billion USD	
Number of Instruments		11,364	
Counterparty Type		C&I	CRE
Average portfolio characteristics	PD	1.32%	2.05%
	LGD	23.3%	16.6%
	Systematic Risk Sensitivity (RSQ)	27.8%	22.8%
	Maturity	10.56 years	9.54 years

Geographic distribution of the CRE exposures



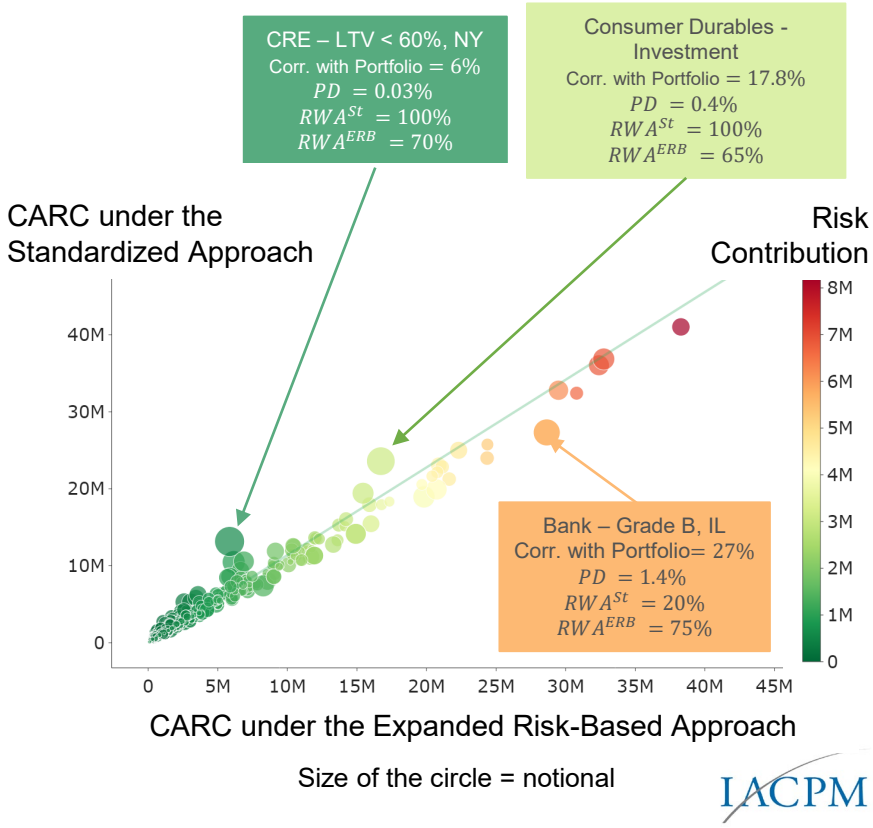
Required Regulatory Capital, with 8% ratio (log scale)





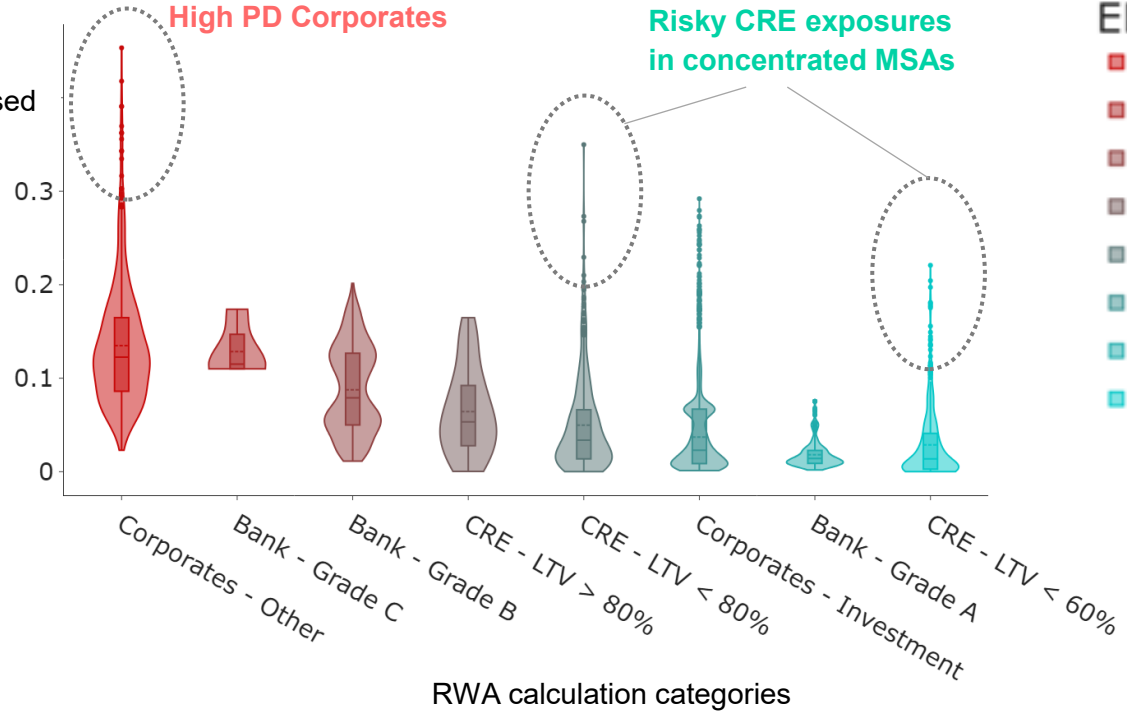
Standardized versus expanded risk-based approaches: How big of a difference do we observe?

	Expanded Risk-Based	Standardized
Economic Capital EC_P	3.19%	3.19%
Required **Regulatory Capital** $RegC_P$, 8% ratio only	5.35%	6.28%
$\frac{RegC_P - EC_P}{RegC_P}$	11.43%	24.61%
Required **Regulatory Capital with Buffers**, $RegC_P^{W/Buffers}$	8.7%	10.22%
$\frac{RegC_P^{W/Buffers} - EC_P}{RegC_P^{W/Buffers}}$	45.5%	53.6%



Which segments & exposures are most penalized by the concentration adjustment to the regulatory capital?

CARC under the Expanded Risk-Based Approach



ERB Category
- Corporates - Other
- Bank - Grade C
- Bank - Grade B
- CRE - LTV > 80%
- CRE - LTV < 80%
- Corporates - Investment
- Bank - Grade A
- CRE - LTV < 60%

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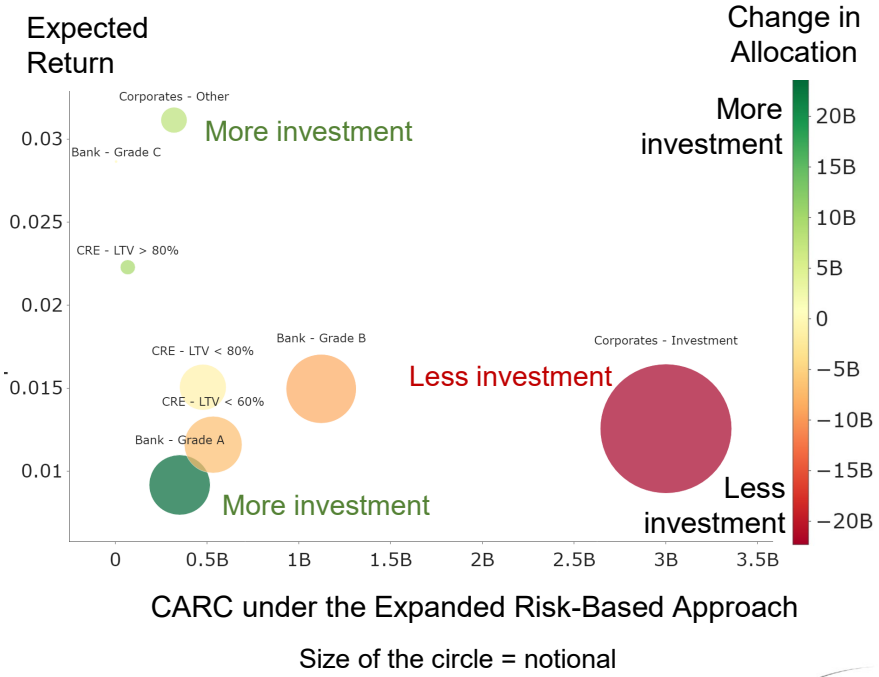
Improving portfolio performance while controlling for the regulatory capital constraint

Steering the portfolio ↑↓: increasing the return while controlling for the required regulatory capital

⟶ however, the total economic capital increased

	Expanded Risk-Based	Standardized
Economic Capital EC_P	4.7% (↑ 1.51%)	
Required **Regulatory Capital** $RegC_P$, 8% ratio only	5.33% (↓ 0.03%.)	4.97% (↓ 2.14%)
Expected Return $ExpRet_P$	1.5% (↑ 0.2%)	
Profitability $RORAC_P = \frac{ExpRet_P - RiskFreeRet}{CARC_P = RegC_P}$	28.29% (↑ 3.87%)	30.36% (↑ 9.58%)

Other steering methods: controlling the total economic capital as well, while accepting lower return

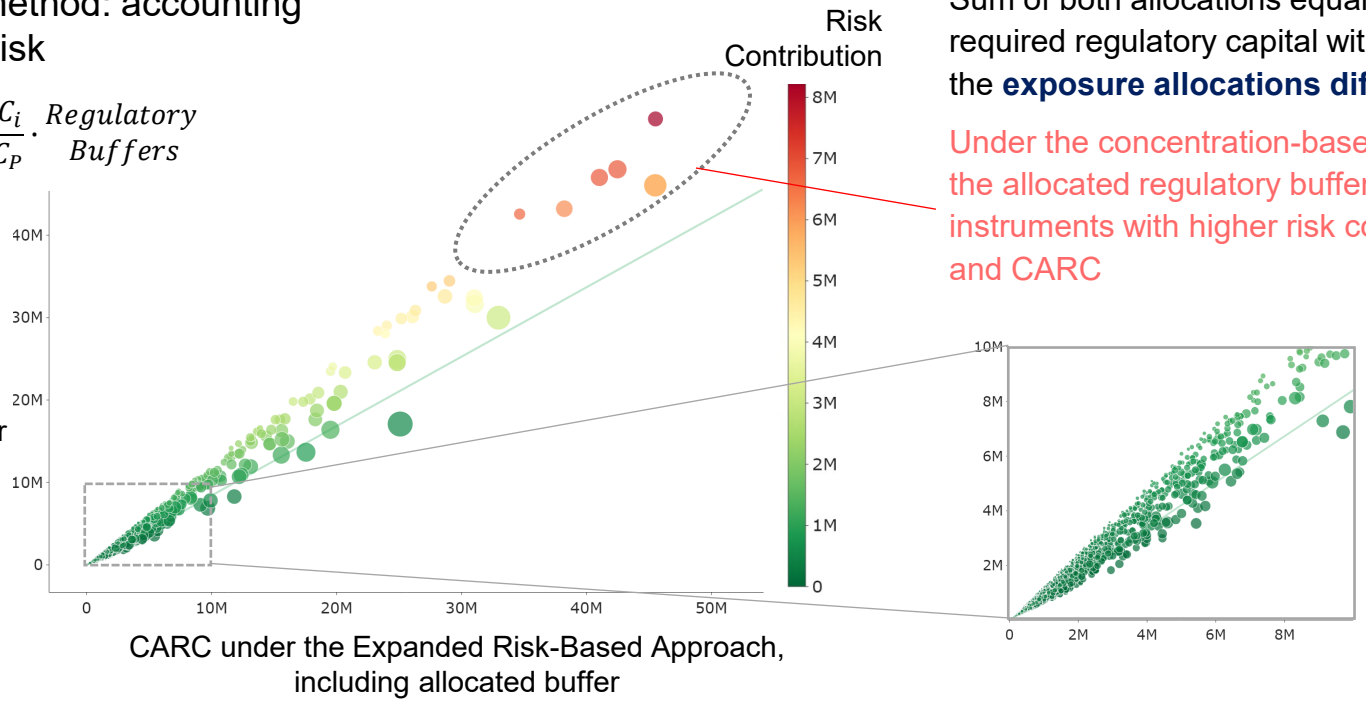


Impact of various methods of regulatory buffer allocation

Buffer allocation method: accounting for concentration risk

$$\left[\sum_i w_i \cdot RWA_i\right] \cdot \frac{CARC_i}{RegC_P} \cdot Regulatory\ Buffers$$

CARC under the Expanded Risk-Based Approach, including allocated buffer



CARC under the Expanded Risk-Based Approach, including allocated buffer

Sum of both allocations equals the required regulatory capital with buffer, but the **exposure allocations differ**.

Under the concentration-based allocation, the allocated regulatory buffer is higher for instruments with higher risk contribution and CARC

Buffer allocation method: proportional to RWA $RWA_i \cdot Regulatory\ Buffers$

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Conclusion and Q&A

Key Takeaways

» The Basel III final rule and the corresponding U.S. proposals will steer banks to using the **standardized approach for credit risk**, or its **expanded version (ERB),** for the calculation of required regulatory capital.

→ Given the **low-risk sensitivity** of the standardized approach, it is even more **important to consider intrinsic economic risks** in addition to regulatory capital when measuring performance of investments.

» There are several methods how to account for both economic risks and regulatory capital costs in a performance measure; our **concentration-adjusted regulatory capital** is one of them.

→ The concentration adjustment recognizes **risks coming from excessive exposures** to various asset classes, segments, and instruments

» The question arises how to efficiently allocate portfolio-level regulatory rules – for example, **output floors or additional regulatory buffers**. The regulation does not provide a guidance, and there are multiple ways of such an allocation.

» By including regulatory capital constraint into a portfolio framework, it is also possible to consider various **strategies for steering a credit portfolio** – managing the regulatory capital level, while controlling for the underlying economic risks.

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Q&A