Optimal Risk Weights

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Motivation

- Banks create short-term, safe, and liquid liabilities (e.g. deposits) from long-term, risky, and illiquid assets (e.g. loans).
- Moral hazard:
  - **Distorted incentives** from deposit insurance (i.e. limited liability) and expectations of ex-post bailout (e.g. too big to fail).
  - **Asymmetric information:** Regulators and depositors have less information about the riskiness of bank assets.
- **Broad research question:** How should bank regulation address moral hazard?

Risk-Weighted Capital Requirements

- To address moral hazard, banks are currently subject to risk-weighted capital requirements:

$$E \geq \mathbf{A} \cdot \mathbf{w}$$

  - E is shareholder equity in the bank.
  - $\mathbf{A}$ is a vector of bank assets.
  - $\mathbf{w}$ is a vector of risk weights.

- The higher credit risk of asset A_i, the higher w_i.
  - E.g. $w_{\text{Treasury}} = 0$ and $w_{\text{residential mortgage}} \approx 0.5$.

- Risk-weighted capital requirements seek to address moral hazard by limiting leverage.

Risk Weights

- The method of calculating risk weights $\mathbf{w}$ has changed:
  - Under Basel I, "less informed" regulators set $\mathbf{w}^R$.
  - Under Basel II, "more informed" banks determine $\mathbf{w}^B$ using in-house models.
    - ★ Key tradeoff: While banks have better information about their riskiness, they also have an incentive to underestimate risk.
  - Under Basel III, banks use $\max\{\mathbf{w}^R, \mathbf{w}^B\}$.
- **Specific research question:** What are optimal risk weights given this trade-off between information and incentives?