

Managing Solvency Risk




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Learning Outcomes

- Explain the structure of risk-based capital standards for commercial banks
- Explain what the function of bank capital is both from the view of bank regulators and bank managers.
- Demonstrate the influence of regulatory capital requirements on bank operating policies.
- Describe what balance sheet items constitute bank capital.

Solvency

Solvency is the ability of a company to meet its long-term debts and financial obligations.


$$\text{Solvency Ratio Formula} = \frac{(\text{Net Income} + \text{Non-Cash Expenses})}{(\text{Short Term Liabilities} + \text{Long Term Liabilities})}$$


Bank Liquidity and Solvency

Let's start with the basic definition and then move on to real world examples and complications.

Sussex Bank

Assets

Cash

Loan

Total

\$15

\$95

\$110

Liability

Deposit

Equity capital

Total

\$100

\$10

\$110

This bank's liquidity situation refer to its holding of \$15 cash.

The bank's solvency situation refers \$10 entry for equity capital – banks assets are worth \$10 more than what it owes

A Solvent Bank with Low Liquidity

Now look at this bank

Sussex Bank

Assets

Cash

Loan

Total

Liability

\$1 Deposit

\$109 Equity capital

\$110 Total

\$90

\$20

\$110

It is highly solvent

But it has very little cash available if depositors come looking for their money.

A Highly Liquid Bank with a Solvency Problem

Let's look at this bank again

Sussex Bank

Assets

Cash

Loan

Total

\$20

\$90

\$110

Liability

Deposit

Equity capital

Total

\$109

\$1

\$110

It has enough cash in hand to meet demands for redemption of deposits

But if there are small losses on its loans, (e.g. value of loan falls from \$90 to \$88 because of defaults), it will become insolvent – equity capital is negative.

Why Bank Managers aims at Low-capital-to-asset Ratio

Assume there are 2 banks: BarSan and Mercurial

- *BarcSan's capital to assets ratio is 8.3% (\$900 million/ \$10,900 million)*
- *Mercurial capital to assets ratio is 3.7% (\$400 million/\$10,900 million).*
- *Both banks made \$150 million net profit*

Why Bank Managers aims at Low-capital-to-asset Ratio (cont.)

$$\text{Return on assets (ROA)} = \frac{\text{Net profit after tax}}{\text{Total assets}}$$

Both firms' £150 million/£10,900 million = 1.38 %

Why Bank Managers aims at Low-capital-to-asset Ratio (cont.)

$$\text{ROE} = \frac{\text{Net profit after tax}}{\text{Equity Capital}}$$

$$\text{For BarcSan: ROE} = \frac{\pounds 150\text{m}}{\pounds 900\text{m}} = 16.7\%$$

$$\text{For Mercurial: ROE} = \frac{\pounds 150\text{m}}{\pounds 400\text{m}} = 37.5\%$$

Why Bank Managers aims at Low-capital-to-asset Ratio (cont.)

- The higher your bank capital, the lower your return on equity (ROE)
- Tradeoff between safety (high capital) and returns for shareholders
- Banks also hold capital to meet capital requirements

Why Bank Managers aims at Low-capital-to-asset Ratio (cont.)

Regulator

more concerned with the lower end of the distribution of bank earnings.

financial risk increases the probability of insolvency

must close banks due to capital impairment

VS

Shareholders

focus more on the central part of the distribution, or the expected return available to them.

Excessive capital regulation could inhibit the competitiveness and efficiency of the banking system

What Constitutes Bank Capital?

- Capital (Net Worth):
 - The cumulative value of assets minus the cumulative value of liabilities or ownership in the firm.
- Total Equity Capital:
 - Sum of common stock, surplus, retained earnings, capital reserves, net unrealized holding gains (losses) and perpetual preferred stock.
- Regulatory capital ratios focus on the book value of equity.

What Constitutes Bank Capital? (cont.)

- Tier 1 (Core) Capital:
 - Common stockholders' equity, noncumulative perpetual preferred stock and any related surplus.
 - Minority interest in consolidated subsidiaries, less intangible assets such as goodwill.
- Tier 2 (Supplementary) Capital:
 - Preferred stocks and any surplus.
 - Limited amounts of term-subordinated debt and a limited amount of the allowance for loan and lease losses (up to 1.25 percent of gross. risk-weighted assets)

What Constitutes Bank Capital? (cont.)

Components and Rules Governing Qualifying Capital Under Risk Based Capital Rules

Components

Tier 1 (Core) Capital

Common shareholder's equity and no limit retained earnings

Qualifying noncumulative perpetual preferred stock and related surplus

Minority interests in equity accounts of consolidated subsidiaries

Less:

Goodwill and some intangible assets, subsidiaries of S&Ls in some cases

Minimum Requirements

Must equal or exceed 4% of Risk-Weighted Assets (RWAs)

No limit, but regulatory warning against "undue reliance"

No limit, but regulatory warning against "undue reliance"

What Constitutes Bank Capital? (cont.)

Tier 2 (Supplementary) Capital

Limited to 100% of Tier 1

Allowance for Loan and Lease Losses

Limited to 1.25% of RWAs

Perpetual Preferred Stock Not Qualifying for Tier 1 Capital

No limit within Tier 2

Hybrid Capital Instruments and Equity-Contract Notes

No limit within Tier 2

Subordinated Debt and Intermediate-Term Preferred Stock

Limited to 50% of Tier 1

What Constitutes Bank Capital? (cont.)

Tier 3 Capital allocated for market risk

Applicable only to banks that are subject to the market risk capital guidelines

Minimum Requirements

May not be used to support credit risk.

Tier 3 capital allocated for market risk plus tier 2 capital allocated for market risk are limited to 71.4% of a bank's measure for market risk

As a general rule, one-half of aggregate investments would be deducted from Tier 1 capital and one-half from Tier 2 capital

Tangible Common Equity

- Equals a bank's tangible assets minus its liabilities and any preferred stock outstanding.
 - Reflects what would be left over if a bank liquidated and used its proceeds to pay off debt and preferred stockholders.
 - Assigns no value to intangible assets.

$$\text{TCE} = \frac{\text{Common Stockholders Equity} - \text{Intangible Assets}}{\text{Total Assets} - \text{Intangible Assets}}$$

Basel III Capital Standards

- Approved in July 2013 with intent to increase bank capital requirements and upgrade capital quality.
 - Imposes higher minimum capital ratios and places a greater emphasis on common equity as a preferred form of capital.
 - Rules apply differently to larger organizations vs. smaller.
 - Smaller organizations can count more items as capital and have more time to comply with the new requirements.
 - Stricter rules on what qualifies as capital and a new minimum capital ratio.

Basel III Capital Standards (cont.)

- When implemented, banks must hold a capital conservation buffer plus old RBC minimums.

$$\text{CET1} = \frac{\text{Common Equity Tier 1 Capital}}{\text{Risk-weighted Assets}}$$

- Minimum capital requirements when implemented in 2019:

	Current Minimum	Final Rule		
		Minimum	Buffer	Total
Tier 1 capital/risk-weighted assets	4%	6.0%	2.5%	8.5%
Total capital/risk-weighted assets	8%	8.0%	2.5%	10.5%
Leverage ratio	4%	4.0%	–	–
CET1 ratio	–	4.5%	2.5%	7.0%

Calculating Risk-Weighted Assets

- Each asset item on a bank's balance sheet and each off-balance-sheet commitment it has made are multiplied by a risk-weighting factor
- Designed to reflect its credit risk exposure
- The most closely watched off-balance-sheet items are standby letters of credit and long-term, legally binding credit commitments

Calculating Risk-Weighted Assets (cont.)

Step 1:

Multiply each balance sheet item and the credit-equivalent amount of each On balance Sheet item by its risk weight.

On-balance-sheet items	Amount	factor	
Cash (0)	\$21	0	\$0
Interbank deposit (20%)	\$25	20%	\$5
Mortgage loans (50%)	\$70	50%	\$35
Consumer loan (100%)	\$70	100%	\$70
Total risk-adjusted on-balance-sheet assets			\$110

Calculating Risk-Weighted Assets (cont.)

Step 2

Compute the credit-equivalent amount of each off-balance-sheet item, then times their credit weights of 100%.

Off-balance-sheet items	Amount	Factor	
Performance-related standby LCs	\$30	50%	\$15
1 to 5 year FX contracts	\$40	5%	\$2
1 to 5 year interest rate swaps	0	0.5%	\$0
5 to 10 years interest rate swaps	\$300	1.5%	\$4.5
Total risk-adjusted off-balance-sheet assets			\$21.5

Calculating Risk-Weighted Assets (cont.)

Step 3

Sum all the risk weighted on-balance-sheet assets and off-balance-sheet-asset

total risk adjusted on balance sheet asset + total risk adjusted off balance sheet asset

$$\$110 + \$21.5 = \$131.5$$

Calculating Risk-Weighted Assets (cont.)

EXHIBIT 12.3 General Description of Assets in Each of the Four Risk Categories

Asset Category	Risk Weight	Effective Total Capital Requirement*	Obligor, Collateral, or Guarantor of the Asset
1	0%	0%	Generally, direct obligations of OECD central government or the U.S. federal government (e.g., currency and coin, government securities, and unconditional government-guaranteed claims). Also, balances due or guaranteed by depository institutions.
2	20%	1.6%	Generally, indirect obligations of OECD central government or the U.S. federal government (e.g., most federal agency securities, full faith and credit municipal securities, and domestic depository institutions). Also, assets collateralized by federal government obligations are generally included in this category (e.g., repurchase agreements [when Treasuries serve as collateral] and CMOs backed by government agency securities.)
3	50%	4%	Generally, loans secured by 1–4 family properties and municipal bonds secured by revenues of a specific project (revenue bonds).
4	100%	8%	All other claims on private borrowers (e.g., most bank loans, premises, and other assets).

*Equals 8 percent of equivalent risk-weighted assets and represents the minimum requirement that must be met to be adequately capitalized.

Calculating Risk-Weighted Assets (cont.)

Risk Weights and Risk Categories for Specific Balance Sheet Items*

Category 1: 0%

- (1) Currency and coin (domestic and foreign) held in the bank or in transit
- (2) Securities issued by the U.S. government and other OECD central governments (including U.S. Treasury securities)
- (3) Claims that are unconditionally guaranteed by the U.S. government and its agencies and other OECD central governments (including GNMA and SBA securities and loans guaranteed by the Export-Import Bank)
- (4) Gold bullion held in the bank's vaults or in another's vaults on an allocated basis, to the extent offset by gold bullion liabilities
- (5) Credit equivalent amount of those off-balance sheet direct claims on, or claims unconditionally guaranteed by, the U.S. government and other OECD central governments

Category 2: 20%

- (1) Cash items in the process of collection (CIPC)
- (2) Balances due from (claims guaranteed by) U.S. depository institutions and other OECD banks
- (3) Short-term (one year or less) claims guaranteed by non-OECD banks
- (4) Securities, loans, local currency, and other claims conditionally guaranteed by the U.S. government and its agencies and other OECD central governments (e.g., VA and FHA mortgage loans and student loans on which the U.S. Department of Education acts as a reinsurer)
- (5) Claims on, guaranteed, or collateralized by securities issued by U.S. government-sponsored agencies (e.g., loans collateralized by FHLMC pass-through securities) or official multilateral lending institutions or regional development banks (e.g., the World Bank including the International Finance Corporation)
- (6) Certain privately issued mortgage-backed securities representing indirect ownership of U.S. government agency or U.S. government-sponsored agency mortgage-backed securities (e.g., GNMA, FNMA, and FHLMC pass-through securities)
- (7) General obligation claims on municipal securities and the portion of claims that are guaranteed by the full faith and credit of local governments and political subdivisions in the U.S. and other OECD local governments
- (8) Credit equivalent amount for those off-balance sheet items that are risk weighted at 20 percent; e.g., credit equivalent amount of claims collateralized by cash on deposit (standby letters of credit collateralized by cash)

Calculating Risk-Weighted Assets (cont.)

Risk Weights and Risk Categories for Specific Balance Sheet Items*

Category 3: 50%

- (1) Loans that are fully secured by first liens on 1–4 family residential properties and loans fully secured by first liens on multifamily residential properties that have been prudently underwritten
- (2) Privately issued mortgage-backed securities representing direct and indirect ownership of the mortgage loans (if the mortgages are prudently underwritten and are not restructured, past due, or in nonaccrual status)
- (3) Revenue bonds (municipal revenue securities) or similar claims that are obligations of U.S. state or local governments, or other OECD local governments, for which the government is committed to repay the debt only out of revenues from the facilities financed
- (4) Credit equivalent amount for those off-balance sheet items that are to be risk weighted at 50 percent; e.g., credit equivalent amounts of interest rate and foreign exchange rate contracts that are not accorded a lower risk weight as a result of the counterparty, collateral, or a guarantee

Category 4: 100%

- (1) All other loans, debt securities, and other claims where the counterparty is a private obligor
- (2) Premises and fixed assets
- (3) Margin accounts on futures contracts
- (4) Other real estate owned
- (5) All other assets not already reported above
- (6) Credit equivalent amounts of those off-balance sheet items where the counterparty is a private obligor and which are not accorded a lower risk weight as a result of collateral or a guarantee

*Several of the risk-weight categories refer to claims against OECD countries; i.e., the Organization for Economic Cooperation and Development. The following countries are members of the OECD: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. In addition, Saudi Arabia should be treated as an OECD country. All other countries should be treated as non-OECD countries.

Note: For more details, see the Federal Financial Institutions Examination Council FFIEC Report Forms available on the Internet at www.ffiec.gov.

Calculating Risk-Weighted Assets (cont.)

EXHIBIT 12.6 Summary of Off-Balance Sheet Conversion Factors for Risk-Based Capital Requirements

100% Conversion Factor

1. Direct credit substitutes (general guarantees of indebtedness and guarantee-type instruments, including standby letters of credit serving as financial guarantees for, or supporting, loans and securities)
2. Risk participations in bankers acceptances and participations in direct credit substitutes (for example, standby letters of credit)
3. Sale and repurchase agreements and asset sales with recourse, if not already included on the balance sheet
4. Forward agreements (that is, contractual obligations) to purchase assets, including financing facilities with certain drawdown

50% Conversion Factor

1. Transaction-related contingencies (for example, bid bonds, performance bonds, warranties, and standby letters of credit related to a particular transaction)
2. Unused commitments with an original maturity exceeding one year, including underwriting commitments and commercial credit lines
3. Revolving underwriting facilities (RUFs), note issuance facilities (NIFs), and other similar arrangements

20% Conversion Factor

1. Short-term, self-liquidating trade-related contingencies, including commercial letters of credit

0% Conversion Factor

1. Unused commitments with an original maturity of one year or less, or that are unconditionally cancelable at any time

Calculating Risk-Weighted Assets (cont.)

Credit conversion process for off-balance sheet interest rate, foreign exchange, equity derivative, and commodity and other contracts—

In general, to calculate the credit equivalent amount for these contracts, a bank should, for each contract, add:

- (1) The mark-to-market value (only if a positive value) of the contract; i.e., the contract's current credit exposure or replacement cost, and
- (2) An estimate of the potential future increase in credit exposure over the remaining life of the instrument.

For risk-based capital purposes, potential future credit exposure of a contract is determined by multiplying the notional principal amount of the contract (even if the contract had a negative mark-to-market value) by the appropriate credit conversion factor from the chart presented below (existence of a legally enforceable bilateral netting agreement between the reporting bank and a counterparty may be taken into consideration when determining both the current credit exposure and the potential future exposure of off-balance sheet derivative contracts).

Remaining Maturity	Interest Rate Contracts	Foreign Exchange and Gold Contracts	Equity Derivative Contracts	Precious Metals (Except Gold)	Other Commodity Contracts
One year or less	0.0%	1.0%	6.0%	7.0%	10.0%
More than one year through five years	0.5%	5.0%	8.0%	7.0%	12.0%
More than five years	1.5%	7.5%	10.0%	8.0%	15.0%

Source: Federal Financial Institutions Examination Council FFIEC Report Forms, available on the Internet at www.ffiec.gov.

Calculate Capital Requirement

Apply the Basel III minimum capital requirement

$$CET1 \text{ Capital required} = \$131.5 \times 4.5\% = \$5.91$$

$$Tier\ 1 \text{ Capital required} = \$131.5 \times 6.0\% = \$7.89$$

The Effect of Capital Requirements on Bank Operating Policies

- Limiting Asset Growth:
 - Minimum capital requirements restrict bank's ability to grow. Additions to assets mandate additions to capital to meet minimum capital-to-asset ratios.
 - Each bank must limit asset growth to some percentage of retained earnings plus new external capital.
 - Must determine growth strategy while meeting minimum capital requirements. Higher ROA is one option:

$$\text{Undivided profits} = \text{Total assets} \times \text{ROA} \times (1 - \text{dividend payout rate})$$

The Effect of Capital Requirements on Bank Operating Policies (cont.)

- Limiting Asset Growth:
 - Relationship for internally generated capital:

$$\begin{aligned}\Delta TA/TA_1 &= (EQ_2 - EQ_1)/EQ_1 \\ &= \frac{EQ_1 + ROA(1 - DR) \times TA_2 + \Delta EC - EQ_1}{EQ_1} \\ &= \frac{ROA(1 - DR) + \Delta EC/TA_2}{[EQ_2 - ROA(1 - DR) \times TA_2 - \Delta EC]/TA_2} \\ \Delta TA/TA_1 &= \frac{ROA(1 - DR) + \Delta EC/TA_2}{EQ_2/TA_2 - ROA(1 - DR) - \Delta EC/TA_2}\end{aligned}$$

The above relationship can be approximated by:

$$\Delta TA/TA_1 = \frac{ROA(1 - DR) + \Delta EC/TA_2}{EQ_1/TA_1}$$

Where :

TA = total assets

EQ = equity capital

ROA = return on assets

DR = dividend payout rate

EC = new external capital

The Effect of Capital Requirements on Bank Operating Policies (cont.)

Example:

Ratio	Initial Position	Case 1 Initial 8% Asset Growth	Case 2 12% Growth: ↑ ROA	Case 3 12% Growth: ↓ Dividend	Case 4 12% Growth: ↑ External Capital
Asset growth rate (percent)		8.00%	12.00%	12.00%	12.00%
Asset size (millions of \$)	100.00	108.00	112.00	112.00	112.000
ROA (percent)*		1.07%	1.60%	1.07%	1.07%
Dividend payout rate (percent)		40.00%	40.00%	10.28%	40.00%
Undivided profits (millions of \$)	4.0000	4.6934	5.0752	5.0752	4.7190
Total capital less undivided profits (millions of \$)	4.0000	4.0000	4.0000	4.0000	4.3562
Total capital/total assets (percent)	8.00%	8.00%	8.00%	8.00%	8.00%

The Effect of Capital Requirements on Bank Operating Policies (cont.)

Case 1: 8% asset growth, dividend payout = 40%, and capital ratio = 8%.

What is ROA?

$$0.08 = \frac{ROA(1 - 0.40 + 0)}{0.08}$$

Solve for ROA = 1.07%

Case 2: 12% asset growth, dividend payout = 40%, and capital ratio = 8%.

What is the required ROA to support 12% asset growth?

$$0.12 = \frac{ROA(1 - 0.40 + 0)}{0.08}$$

Solve for ROA = 1.60%

Case 3: ROA = 1.07%, 12% asset growth, and capital ratio = 8%.

What is the required dividend payout ratio (DR) to support asset growth?

$$0.12 = \frac{0.0107(1 - DR) + 0}{0.08}$$

Solve for DR = 10.28%

Case 4: ROA = 0.99%, 12% asset growth, capital ratio = 8%, and dividend payout = 40%.

What is the required increase in external capital to support 12% asset growth?

$$0.12 = \frac{0.0107(1 - 0.40) + \Delta EC/TA_1}{0.08}$$

Solve for $\Delta EC/TA = 0.32\%$ $\Delta EC = \$356,200$

The Effect of Capital Requirements on Bank Operating Policies

- Changing the Capital Mix:
 - Internal versus external capital.
- Changing Asset Composition:
 - Shift from high-risk to lower-risk categories.
- Pricing Policies:
 - Raise rates on higher-risk loans.
- Shrinking the Bank:
 - Fewer assets requires less capital.

Contingent Convertible Capital

- Common stock advantages:
 - No fixed maturity and thus a permanent source of funds.
 - Dividend payments are discretionary.
 - Losses can be charged against equity.
- Common stock disadvantages:
 - Dividends are not tax-deductible.
 - Transactions costs on new issues exceed new debt costs.
 - Shareholders sensitive to earnings dilution and possible loss of control in ownership.

Contingent Convertible Capital

Preferred Stock:

- Form of equity in which investors' claims are senior to those of common stockholders.
- Dividends are not tax-deductible.
- Corporate investors in preferred stock pay taxes on only 20 percent of dividends.
- Most issues take the form of adjustable-rate perpetual stock.
- Has the same disadvantages of common stock but the earnings dilution is less than with common stock.

Contingent Convertible Capital

- Trust Preferred Stock:
 - Hybrid form of equity capital at banks.
 - Effectively pays dividends that are tax deductible
 - To issue the security, bank establishes a trust company.
 - Trust company sells preferred stock to investors and loans the proceeds of the issue to the bank.
 - Interest on the loan equals dividends paid on preferred stock.
 - Interest on loan is tax deductible such that the bank deducts dividend payments.
 - Counts as Tier 1 capital.

Contingent Convertible Capital

- TARP Capital Purchase Program:
 - The Troubled Asset Relief Program's Capital Purchase Program (TARP-CPP), allowed institutions to sell preferred stock that qualified as Tier 1 capital to the Treasury.
 - Could issue senior preferred stock equal to not less than 1% of risk-weighted assets and not more than the lesser of \$25 billion, or 3%, of risk-weight assets.
 - Paid 5% per annum for five years and 9% afterwards.
 - In 2014, many banks with outstanding TARP stock saw the required dividend payment rise to the higher price.
 - Many institutions repaid their TARP stock by 2014.

EXHIBIT 12.10 The 25 Largest TARP Fund Recipients (November 2008)

Rank by Amount	Institution	Amount \$ (millions)	Announcement Date
1	American International Group	\$40,000	November 12, 2008
2	Citigroup	\$25,000	October 12, 2008
3	J.P. Morgan Chase	\$25,000	October 12, 2008
4	Wells Fargo	\$25,000	October 12, 2008
5	Bank of America	\$15,000	October 12, 2008
6	Goldman Sachs Group	\$10,000	October 12, 2008
7	Merrill Lynch	\$10,000	October 12, 2008
8	Morgan Stanley	\$10,000	October 12, 2008
9	PNC Financial Services Group	\$7,700	October 12, 2008
10	U.S. Bancorp	\$6,600	November 12, 2008
11	Capital One Financial	\$3,550	October 12, 2008
12	Regions Financial	\$3,500	October 12, 2008
13	SunTrust Banks	\$3,500	October 12, 2008
14	Fifth Third Bancorp	\$3,400	October 12, 2008
15	BB&T	\$3,100	October 12, 2008
16	Bank of New York Mellon	\$3,000	October 12, 2008
17	KeyCorp	\$2,500	October 12, 2008
18	Comerica	\$2,250	October 12, 2008
19	State Street	\$2,000	October 12, 2008
20	Marshall & Ilsley	\$1,700	October 12, 2008
21	Northern Trust	\$1,500	October 12, 2008
22	Huntington Bancshares	\$1,400	October 12, 2008
23	Zions Bancorp	\$1,400	October 12, 2008
24	Fannie Mae	\$1,000	September 12, 2008
25	Freddie Mac	\$1,000	September 12, 2008

Source: Time, www.time.com/time/includes/charts/trap_chart_1112.html.

Changes to Capital Standards Under Basel III

- Basel Committee agreed on principles to “strengthen global capital and liquidity rules” known as Basel III.
 - Standards will be implemented over time by G20 countries and have the general impact of increasing capital requirements (decreasing financial leverage).
 - Formal standards that set minimum liquidity requirements, increase minimum capital requirements and redefine what constitutes regulatory capital.
 - Focuses on common equity as the “best” form of capital.

Changes to Capital Standards Under Basel III

EXHIBIT 12.13 Minimum Capital Thresholds for Prompt Corrective Action under Basel III

	Total Capital RWA	Tier 1 Capital RWA	Tier 1 Leverage Ratio	CET1
Well capitalized	≥10%	≥8%	≥4%	≥6.5%
Adequately capitalized	≥8%	≥6%	≥4%	≥4.5%
Undercapitalized	<8%	<6%	<4%	<4.5%
Significantly undercapitalized	<6%	<4%	<4%	<3.0%

Changes to Capital Standards Under Basel III

EXHIBIT 12.14 Phase-in Capital Requirements for Minimum Adequately Capitalized Requirements: 2015–2018

	2015	2016	2017	2018	2019
Common equity Tier 1 capital ratio	4.5%	4.5%	4.5%	4.5%	4.5%
Capital conservation buffer	0.0	0.625%	1.25%	1.875%	2.5%
Minimum CET1 ratio plus buffer	4.5%	5.125%	5.75%	6.375%	7.0%
Tier 1 capital ratio	6.0%	6.0%	6.0%	6.0%	6.0%
Minimum Tier 1 capital ratio plus buffer	6.0%	6.625%	7.25%	7.875%	8.5%
Total capital ratio	8.0%	8.0%	8.0%	8.0%	8.0%
Minimum total capital ratio plus buffer	8.0%	8.625%	9.25%	9.875%	10.5%
Leverage	4.0%	4.0%	4.0%	4.0%	4.0%

Changes to Capital Standards Under Basel III

- Regulatory capital standards that put more emphasis on common equity required generally lower financial leverage.
 - Requirements will put pressure on bank returns on equity.
 - Lower returns will increase cost of capital making it more expensive and difficult to issue new stock to investors.
 - Banks will be forced to raise loan rates, cut expenses, or find new income to cover higher cost of capital.
- Impact is much broader than provisions suggest.

Will it work?

- Increasing capital adequacy leads to decrease in Return on Equity.
- Raising in capital adequacy ratio means dilution in shareholder control, which may result in increase in agency costs.
- Regulators should focus on the risk assets rather than bank's capital.
- Comparing with issuing new equity, banks prefer to reduce loans and shrink their RWA to increase their capital ratio, as a result, limit banks' growth.
- In order to maintain the ROE, higher capital ratio may encourage risk taking.

Summary

- We reviewed the importance of bank capital and the different views between regulator and shareholders regarding to bank capital.
- We discussed the definition for bank's capital and the different tiers.
- We discussed the regulatory capital requirements and its impact on bank's operating policies
- We demonstrated how bank's capital influences bank asset growth.