Lecture IV: Regulating Banks

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January 8, 2018

Bank Regulations in General

- Jickling and Murphy (2009) describe the two components of banking regulations as
  - capital adequacy
  - deposit insurance
- Initial bank charters allowed banks to take deposits and issue **bank notes** which could be used for circulation.
  - The banks would then maintain some level of specie currency (i.e., gold or silver).
  - Bank runs would then occur when a sufficient number of borrowers demanded currency instead of specie currency.

Crises and Regulations

Event	Perceived Problem	Solution	New Regulator
Panic of 1857	Failure of private clearinghouse that processed state bank notes (circulated as currency)	Create single national currency through system of federally and regulated banks	Office of the Comptroller of the Currency (OCC) – 1863
Panic of 1907	Series of runs on banks with financial trusts with inadequate reserves	Create lender of last resort with power to regulate a a national system of bank reserves	Federal Reserve System (FRS) – 1913
Great Depression	Series of runs on banks by small depositors who feared full value of deposits would not be honored	Create limited deposit insurance to maintain depositor confidence and prevent bank runs	Federal Deposit Insurance Corporation (FDIC) – 1933
	Sharp decline in stock prices along with widespread belief that some investors had an information advantage reduced confidence in securities markets	Restore confidence in securities markets by standardizing disclosures and requiring regular reporting	Securities and Exchange Commission (SEC) – 1934

Capital Adequacy

- A firm is insolvent if its obligations exceeds its assets – it can then be declared bankrupt where its assets are seized in order to pay its creditors.
- The concepts of insolvency and bankruptcy are common across all firms, but it is particularly important for banks.
  - Because banks affect the money supply or purchasing power of depositors, governments are more concerned with bank operations.
- Historically, governments have imposed regulations on bank solvency – they are interested in bank's *capital adequacy* which is a measure of how much bad debt a bank could absorb before it becomes insolvent.

Although both bank directors and bank regulators must look carefully at the quality of bank assets and management and at the ability of the bank to control costs, evaluate risks, and maintain proper liquidity, capital adequacy is the area that triggers the most regulatory action, especially in view of prompt corrective action. The primary function of capital is to support the bank's operations, act as a cushion to absorb unanticipated losses and declines in asset values that could otherwise cause a bank to fail, and provide protection to uninsured depositors and debt holders in the event of liquidation. A bank's solvency promotes public confidence in the bank and the banking system as a whole by providing continued assurance that the bank will continue to honor its obligations and provide banking services. By exposing stockholders to a larger percentage of any potential loss, higher capital levels also reduce the subsidy provided to banks by the federal safety net. Capital regulation is particularly important because deposit insurance and other elements of the federal safety net provide banks with an incentive to increase their leverage beyond what the market '?n the absence of depositor protection' would permit. Additionally, higher capital levels can reduce the need for regulatory supervision, lowering costs to the banking industry and the government (FRB, 2003, Secton 3020.1, p.1).

- We start by rewriting the balance sheet equality

$$E\{\text{ Equity}\} = A\{\text{ Assets}\} - D\{\text{ Debt or Liabilities}\}\ . \quad (1)$$

- One solvency ratio frequently used in finance is the debt-to-asset ratio

$$\text{Debt to Asset Ratio} = \frac{D}{A} \quad (2)$$

which intuitively measures the fraction of assets obligated to pay debt.

- Another frequently cited ratio is the leverage ratio

$$\text{Leverage Ratio} = \frac{D}{E} \quad (3)$$

which measures the number of dollars of debt obligated by the firm for each dollar of owner equity.

- The measures of capital adequacy are related to these traditional measures of solvency, but recognize that different classes of bank assets are more risky than other bank assets.
  - For example, cash held in the bank's vault or bank deposits with the Federal Reserve System have no risk (i.e., their values are well defined).
  - However, home mortgages or business loans have a certain amount of risk (i.e., the bank may not be able to collect the full value of these loans if the borrowers declare bankruptcy).

- The capital adequacy ratiocapital adequacy ratio then involves weighting each asset class by a measure of its relative risk

  For most institutions, the risk-based capital ratio focuses principally on broad categories of credit risk, although the framework for assigning assets and off-balance-sheet items to risk categories does incorporate elements of transfer risk, as well as limited instances of interest-rate and market risk (FRB, 2003, Section 3020, p.1.)

- The Federal Reserve's defines two tiers of capital.
  - Tier 1 capital is the core capital of the institution: (1) Common stockholders' equity, (2) Qualifying noncumulative perpetual preferred stock (including related surplus), and (3) Minority interest in the equity accounts of consolidated subsidiaries (FRB, 2003, Section 3020, p.3.)
  - Tier 2 includes capital claims of the bank that are less well established such as "... a limited amount of the allowance for loan and lease losses; perpetual preferred stock and related surplus that do not qualify for inclusion in tier 1 capital; certain other hybrid capital instruments ..." (FRB, 2003, Section 3020, p.3.)

- Capital adequacy is then defined by the ratio

$$\text{Capital Adequacy Ratio} = \frac{\text{Capital}}{0.00C_1 + 0.20C_2 + 0.50C_3 + 1.00C_4} \tag{4}$$

- This formulation makes two modifications to the equity-to-asset ratio.
  - First, not all equity is included in some of the considerations. By including only Tier 1 in the 4 percent measure, capital regulators focus only on the most certain equity claims.
  - Second, by assets the capital adequacy ratio discounts certain assets.

- Capital adequacy for category 4

$$\text{Capital Adequacy Ratio} = \frac{5}{0.00 \times 0 + 0.20 \times 0 + 0.50 \times 0 + 1.00 \times 100} = 5\% \quad (5)$$

- If we assume that 10 percent of the bank's assets are category 1, 10 percent are category 2, 40 percent of the bank's assets are category 3 assets and 40 percent are category 4, then the ratio becomes

$$\text{Capital Adequacy Ratio} = \frac{5}{0.00 \times 10 + 0.20 \times 10 + 0.50 \times 40 + 1.00 \times 40} = 8.06\% \quad (6)$$

- let us assume that 75 percent of the bank's capital is Tier 1 and 25 percent is tier 2. The secondary capital adequacy ratio then becomes

$$\text{Capital Adequacy Ratio} = \frac{5 \times 75\% = 3.75}{0.00 \times 10 + 0.20 \times 10 + 0.50 \times 40 + 1.00 \times 40} = 6.05\% \tag{7}$$

  which exceeds the capital adequacy ratiocapital adequacy ratio for Tier 1 capital of 4 percent.

Reserve Requirement

- The second major category of bank regulation is the reserve requirement which regulates the liquidity of a bank or level of cash or near cash assets held to meet the transaction demand of borrowers.

Section 204.1 **Authority, Purpose, and Scope**
States that reserve requirements are imposed on depository institutions for the purpose of facilitating the conduct of monetary policy by the Federal Reserve. All depository institutions, including commercial banks, savings banks, savings and loan associations, credit unions, and agencies or branches of foreign banks located in the United States, are subject to reserve requirements.