**LECTURE NOTES, PART ONE:**

Overview / Trends
Risk Management Overview
Operational Risk
Measuring bank profitability

**How do Banks differ from non-bank firms?**

a) Types of assets & liabilities

Simplified Balance Sheet:

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
</table>

Rank the following by aggregate loan popularity:

Real Estate =
Consumer =
Commercial =

What makes up the largest component of the remainder of bank assets?

*Treasury securities / cash / PP&E / fed reserves*

What purpose do these serve?

b) Banks promote economic stability. Need for regulation to ensure industry stability.

c) Banks differ in regard to the type of risk that affects the firms. How so?
I. What are Banks?

Why do we need to know what is and what is not a bank?

Not technically "banks": Credit unions (not insured by FDIC), finance companies (GE Capital), mutual fund companies (deposits can be withdrawn upon demand), investment banks.

Banca (it): bench - a place where transactions took place.

US Banks in the 1800s: Different banks, all with their own currencies, often little supervision, insufficient assets to back currencies, currencies not uniformly accepted as legal tender.

BHC 1956: Banks – two tier definition… Accepts DEMAND deposits and make COMMERCIAL loans.


Some banks also “de-banked” by providing an optional “lag” whereby “demand deposits” would not be available upon “demand”, and hence, did not meet the legal definition of demand deposits.

CEBA 1987: Generalized to…Accepts deposits and makes loans. (Recent addition to definition: firm must have been granted banking powers by state or federal government.)

2004 definition: A financial institution that is owned by stockholders, operates for a profit & engages in lending activities

Note the trend to define banks in a more GENERAL manner, thus reflecting the increased diversity in their lines of business.
II. TYPES OF BANKS (classified by markets they serve)

A) WHOLESALE vs. RETAIL Banking:
Retail: Most US Banks
Wholesale: I.e., US Trust Co.

B) Limited Purpose bank: Focus on one product (often credit for automobiles or credit cards) Examples of some wholesale and limited purpose Banks:

<table>
<thead>
<tr>
<th>LP or WH</th>
<th>Bank Name</th>
<th>State</th>
<th>City</th>
<th>Ch No.</th>
<th>Decision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP</td>
<td>Dillard National Bank</td>
<td>AZ</td>
<td>Gilbert</td>
<td>18777</td>
<td>2/13/1996</td>
</tr>
<tr>
<td>LP</td>
<td>Direct Merchants Credit Card Bank, N.A.</td>
<td>AZ</td>
<td>Scottsdale</td>
<td>22734</td>
<td>3/19/1996</td>
</tr>
<tr>
<td>WH</td>
<td>Wells Fargo HSBC Trade Bank, N.A.</td>
<td>CA</td>
<td>San Francisco</td>
<td>22897</td>
<td>1/8/1996</td>
</tr>
<tr>
<td>WH</td>
<td>Northern Trust Bank of CA, N.A.</td>
<td>CA</td>
<td>Los Angeles</td>
<td>17751</td>
<td>1/15/1997</td>
</tr>
<tr>
<td>LP</td>
<td>MBNA America Bank, N.A.</td>
<td>DE</td>
<td>Wilmington</td>
<td>22381</td>
<td>1/5/1996</td>
</tr>
<tr>
<td>LP</td>
<td>Bank One, Delaware, N.A., (f/k/a First USA Bank, N.A., f/k/a FCC National Bank)</td>
<td>DE</td>
<td>Wilmington</td>
<td>17762</td>
<td>8/7/1997</td>
</tr>
<tr>
<td>LP</td>
<td>TCM Bank, N.A.</td>
<td>FL</td>
<td>Tampa</td>
<td>23363</td>
<td>9/11/1997</td>
</tr>
<tr>
<td>WH</td>
<td>Pacific National Bank</td>
<td>FL</td>
<td>Miami</td>
<td>20010</td>
<td>1/16/1996</td>
</tr>
<tr>
<td>WH</td>
<td>Deutsche Bank Florida, N.A. f/k/a Bankers Trust Florida, N.A.</td>
<td>FL</td>
<td>Palm Beach</td>
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<td>4/16/1996</td>
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<tr>
<td>WH</td>
<td>Pinebank, N.A.</td>
<td>FL</td>
<td>Miami</td>
<td>23181</td>
<td>12/12/1996</td>
</tr>
<tr>
<td>LP</td>
<td>Infibank, N.A.</td>
<td>GA</td>
<td>Atlanta</td>
<td>24308</td>
<td>11/15/2001</td>
</tr>
<tr>
<td>WH</td>
<td>Bank of China (Federal Branch)</td>
<td>NY</td>
<td>New York</td>
<td>80028</td>
<td>10/18/1996</td>
</tr>
</tbody>
</table>

C) GLOBAL, INTERNATIONAL or MONEY CENTER Banks: Serve markets through out the world.
E.g., Citicorp, JP Morgan, Wells Fargo.

D) Correspondent banks: Banks which offer financial services to other banks
e) **Internet banks**: Operation exclusively or predominantly on the internet. Some may have ATMs or Kiosks.

III. What do Banks Do?

a) **Payment (or transaction) services**: Movement of funds, checking services, electronic banking, wire transfers, credit card transactions, "making change" & foreign currency conversion.

b) **Intermediation** ("inter" "med" =)

   *Why we do need intermediaries to channel funds from depositors to lenders? (ie: What services do they provide in doing so?)*

c) **Other Services & non-bank activities**:

   - **Fee income** - stand-by letters of credit for guaranteeing other party's performance of a derivative type of contract – banker’s acceptance for international trade

   - **Brokerage Services**

   - **Trust services**

   - **Insurance Products**
IV. Size, Market Share, Trends

A. Facts & Figures:

Largest Bank in the World: Mizuho Financial Group (Jap) approx. 1.3 trillion in assets

Largest US Bank? __________________________

Why have banks lost market share since 1980?

B. Trends and Recent History

1) Double digit inflation & interest rates in the 1980s
   a) S&L and Bank failures:

   (long term assets with fixed rates, implicit interest on deposits, TBTF, Zombie institutions and liquidity crises)


   b) debanking to avoid costly regulations (esp. Reg Q)

2) Securitization (a.k.a. securitisation) techniques used for transforming illiquid sources of cash flow into tradable securities – i.e., sell off loans. Illiquid Sources of Cash Flow may include Home Loans (Mortgages), Credit Card Accounts, Car Loans, Consumer Loans, Corporate Bank Loans, Illiquid Bonds, Aircraft Leases, and many more asset and receivable types

   CLO: Collateralized Loan Obligations

   CDO (CBO): Collateralized debt (or bond) obligations: Bonds (or debt) backed by given assets (such as a portfolio of loans)
Special Purpose Vehicle company (SPV): Company set up solely to buy the assets used to back the CLO or CDOs. The company issues securities to fund the purchase of the assets. The assets are then removed from the bank’s balance sheet.

It is more usual that the SPV issues several tranches of investment, each of which has a different claim on the cash flows that come into the SPV. Usually there is a hierarchy where some classes have access to the cash before others.

The 'Senior Classes' have first claim on the cash that the SPV receives, the more junior classes only start receiving repayment after the more senior classes have repaid. Because of the cascade effect, these arrangements are often referred to as a cash flow waterfall.

There are usually three different waterfalls in these types of transaction, with different groups of investors having different rights:

Revenue distribution during the normal life of the securities, i.e. when there has been no default in the underlying asset portfolio

- Scheduled principal repayment
- Distribution of funds after a default

This means that each class of investor has a different 'payment risk' and will therefore receive a different return.

- The most junior class (often called the 'equity class') is the most exposed to payment risk.

In some cases, this is a special type of instrument which is retained by the originator as a potential profit flow. In the extreme version, the equity class receives no coupon (either fixed or floating), just the residual cash flow (if any) after all the other classes have been paid. There may also be one other special class which will absorb early repayments in the underlying assets. This is often the case where the underlying assets are mortgages which, in essence, are repaid every time the property is sold. Since any early repayment is passed on to this class, it means the other investors have a more predictable cash flow.

(Source: Wikipedia.org. For more info, see http://en.wikipedia.org/wiki/Credit_derivative)

credit tranches, By setting a subordinated tranche or subordinating one risk-taker's position to another, an issuer can create various cascading credit qualities within one single type of risk. E.G.,

- Tranche A absorbs the first 25% of losses on the portfolio
- Tranche B absorbs the next 25% of losses
- Tranche C the next 25%
Tranche D the final 25%
- Tranches B, C and D are sold to outside investors
- Tranche A is bought by bank itself

What do collateralized loans have in common?

Why are loans securitized?

3) Consolidation of the banking industry (fewer small banks - banks are larger on average)

What term describes an industry whereby larger firms are more profitable (or more cost-efficient?)

ECONOMIES OF ...(choose one) SCOPE or SCALE ?

How is this measured?

Why the trend to consolidation now?

4) Globalization of the Banking industry

Why the trend toward Globalization?

Does globalization increase or decrease the risks within the banking industry? [Could it potentially have either effect?]

5) Direct Finance (vs. Intermediated Transaction)

Commercial Paper (what is this) is cheaper than bank borrowings.

What kinds of firms issue commercial paper? Larger firms or smaller firms?

Exg: prime rate = 8.25% in 1999 vs. 5.98% for commercial paper.

Do the most credit-worthy of borrowers pay the prime rate?
6) Deregulation

What has been deregulated?

   a) Types of products

   b) Geographic Location

   c) Rates paid on deposits

Does it make sense to "deregulate" in response to numerous bank failures?
Did the regulations promote stability or instability?

What is still regulated (if anything)?

Are there any regulations that been strengthened in the recent past?
V. Bank Risk Management (the short version)

Risk: From the Latin, *risicu*, meaning “barrier reef”

Overall objective:
Ensure outcomes of risk-taking activities are within the company’s risk tolerance
Ensure there is an appropriate balance between risk & reward to max stock price.

Enterprise Risk Management (ERM) (a.k.a. integrated risk management, enterprise-wide risk management, holistic risk management, global risk management): The process of assessing and addressing an organization’s risk from all sources, from those that threaten the achievement of strategic goals to those representing opportunities for achievement

A. Credit Risk:

Managed through credit derivatives
CLO (Collateralized loan obligations / tranches)

B. Interest Rate Risk: (balance sheet example)

C. Liquidity Risk
D. Price Risk

E. Foreign Exchange Risk

F. Strategic Risk (AKA. operational risk)
{AllFirst Article Discussion}

Causes:
Inadequate segregation of duties.
Insufficient training
Lack of management supervision
Inadequate auditing procedures
   (example: Trading in markets that are open when bank is closed.)
Inadequate security measures

Events:
Internal Fraud
External Fraud
Employment Practices / workplace safety (theft / disaster)
Damage to physical assets
   Banks in major cities / hurricane / earthquake or areas of other natural disasters
   Need for contingency plans
Business disruption & System failures
Execution, Delivery & Process management

Consequences:
Legal liability
Regulatory, compliance and penalties
Loss / damage to assets
Restitution
Write-downs

Can lead to reputation loss
Business interruption
Lessons from Storms: Katrina and Rita’s impact
214 financial institutions affected (100 by Katrina, 87 by Rita, 27 by both)
30 institutions w/ $6 B in assets significantly affected by these hurricanes

Problems:
- ATMs flooded
- Roads closed
- Fuel shortages
- Confiscation of supplies by FEMA (including gas to run generators & generators)

Typical institution responses:
- expeditious check-cashing services
- waiver of (late) fees
- suspension on interest on credit accounts
- extension of grace periods
- expedited increases in credit lines
- automatic forbearances in affected areas

What worked:
- Deployment of cash from FED to affected areas. (Why was this necessary?)
- Financial institution cooperation (shared facilities)
- Most banks worried about fraud later

What didn’t work:
- FEMA debit card program
- Coordination with charities
- Communications systems
- Energy / Power (generators sometimes confiscated by FEMA)
- Some loss of public confidence

Lessons:
- The disaster you plan for is not the one you get – but plan anyway
- Mobile ATMs are important
- Telecommunications are a priority (Satellite phones)
- Value of regional coalitions

G. Compliance Risk

G.1 Capital Adequacy Risk

General idea: Loan loss reserve covers expected losses. Capital (equity) covers unexpected losses (99% of time, capital should be sufficient to cover these.)

Risk-based capital regulations:

- Basel I
- Basel IIA
- Basel II
Basel II: Allow banks to assess their own capital requirements based on sophisticated means of measuring / managing risk. However, capital can’t be less than 95% of what it was under old Basel requirements. (This percentage is reduced, over time).

(Relevant for largest 10 banks…optional for others)

“The Basel Committee has expressly designed the New Accord to provide tangible economic incentives for banks to adopt increasingly sophisticated risk management practices”
- William J. McDonough (former chair of the Basel Committee and Pres and CEO of the FRB in NY.)

Problem: How do the regulators assess “increasingly sophisticated risk management practices?”

Conflict:
Regulators want high capital to protect depositors (deposit insurance fund…equity is like the “deductible” of deposit insurance)
Bankers want low capital, because leverage increases ROE.

G.2 Other Regulatory Risks

H. Reputation Risk:

Agency-Recognized Risks differ by Regulatory Agency

FRB: Credit, Market, Liquidity, Operational, Legal & Reputation
OCC: Credit, Interest Rate, Liquidity, Transaction, Price, Reputation, Compliance, Strategic, Foreign Exchange
FDIC: Credit, Market, Liquidity, Operational, Legal, Settlement, Interconnection
[Insider joke: FDIC = forever demanding increased capital.]

Major Bank & Investment Bank losses:

Barings Bank – 1.5B
Daiwa Bank – 1.1B
Long Term Capital Management Hedge Fund – 4.5B (“When Genius Failed”)
Allfirst Bank – 691 M (2002: Rogue trader (Rusnak), hid currency option losses by claiming to trade on markets where trade could be verified only when bank was closed. Bullied employees so they never verified his work. Exceeded trade limits. Forged paperwork to confirm profitable activity. His compensation package tied his pay heavily to his trade profits.)

Enron – 30+ lost value / lenders
Mutual Fund Losses
  - Bank of America/Fleet – 675M
  - Alliance Capital – 600M
  - Sun Life – 225 M
  - Putnam Investments – 110M
Chapter 2

The Dual Banking System: Banks can choose a national or a state bank charter. State-chartered banks can elect to be members of the Fed.

Regulatory Authority: What can regulators do if a bank is not in compliance with regulations?

A. Memorandum of understanding: Outlines needed changes
B. Cease and desist order: Prohibit bank (or person) from continuing a particular course of action
C. Bank Closure

CAMEL(S) - system of rating banks by risk category.

C: Capital Adequacy
A: Asset Quality - How "overdue" must a loan be to be removed from the balance sheet?
  • open ended loans: 180 days past due
  • closed-ended loans: 120 days past due

M: Management (including board of directors)
E: Earnings: Profitability of the bank, taking risk into account
L: Liquidity
S: Sensitivity to market risk

Scale 1 to 5, 1=Best, 5=Worst

Regulatory Patterns:

A) Proposal & enactment of regulation.
B) Attempts by banks to avoid regulation they find restrict profits.
C) Adjustment of regulation in response to avoidance. (Go to B, unless regulation is eliminated)


Question: Why is it important to maintain safety within the banking industry? Aren’t regulated industries less (cost) efficient? Note that even the airline industry has been largely deregulated.
Question: What problems does the consolidation of the *financial services industry* create for regulators?

Question: What steps do you believe are most important in maintaining the safety of the banking industry? Why?

Question: What are the problems in regulating "Virtual Banks" – i.e., those banks run on a computer network. These may have scattered operations, internet operations, or work on a satellite network. Should such an institution be regulated?
Chapter 3: Measuring Bank Performance

Bank Balance Sheet:

**Assets:**

Cash assets
Interest-bearing bank balances
Fed funds sold:

US Treasury & Agency securities
Municipal securities
All other securities
Net loans & leases
  - Real estate
  - Commercial
  - Individual
  - Agricultural
  - Other loans & leases
Less (Reserve for loan and lease losses)

Premises, Fixed assets and capitalized leases
Other real estate

**Liabilities & Net Worth:**

Demand deposits
NOW and ATS Accounts
MMDA accounts
Other savings deposits
Time < 100 K (book incorrectly lists as 100 M)
Time deposits > 100K (CDs > 100,000 - secondary market)

Fed funds purchased
Other borrowings
Banker's Acceptance
Subordinated notes and debentures

Common & preferred equity
**Income Statement:**

**Revenue & Expenses:**
- Interest & fees on loans
- Income from lease

**TOTAL INCOME ON LOANS & LEASES**
- US Treasury & Agency income
- Municipal income (tax exempt)
- Other security Income

**INVESTMENT INTEREST INCOME**
- Interest fed funds sold
- Interest due from banks

**TOTAL INTEREST INCOME**
- Interest on CDs > 100K
- Interest on other deposits
- Interest on Fed funds and repos
- Interest on borrowed money
- Interest on mortgages and leases
- Interest on subordinated debt & notes

**TOTAL INTEREST EXPENSE**

**Net Interest Income** (Interest income - Interest expense)

**Non-interest Income**

**Adjusted Operating Income** (Net interest income + non-interest income)

- Overhead expense
- Provision for loan & lease losses

= Pretax operating income

+ Security gains(losses)
= Pretax net operating income

- Income Taxes

= Net Operating Income
- Net extraordinary items

= Net Income
Analyzing Bank Performance: The ROE Decomposition Model

Purpose of the model:

\[ \text{ROE} = \text{ROA} \times \text{Equity Multiplier} \]

**Equity Multiplier** = Total Assets / Total Equity

**Equity Multiplier measures:**

\[ \text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} = \text{Profit Margin} \times \text{Asset Utilization Ratio} = \]

(Net Income/Operating Revenue = PM)
\[x (\text{Operating Revenue/Total assets} = AU) = \]

**Profit Margin Measures:**

If PM is substandard, examine...

**Asset Utilization Measures:**

If AU is substandard, examine….

Query: Is it easy to improve the PM without affecting the AU? Similarly, is it easy to improve the AU without adversely affecting the PM? Explain.

Other Ratios:

Net Interest Margin =
\[ \text{Net Interest Income} / \text{Average earning assets} \]

*Note: Interest income must be expressed in tax-equivalent form. For tax exempts, the tax equivalent yield = \( i/(1-t) \)
Where \( i = \text{tax exempt interest (}$)\)
**Harmonization:** Uniform international banking regulations

**Capitalization Ratios:** What does *this* refer to?

**Equity Multiplier**

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Must be</th>
</tr>
</thead>
<tbody>
<tr>
<td>{Tier I capital}/Risk-weighted assets</td>
<td>&gt; 4%</td>
</tr>
<tr>
<td>{Tier I + Tier 2 Capital} / Risk weighted assets</td>
<td>&gt; 8%</td>
</tr>
<tr>
<td>Tier I capital / Total Assets</td>
<td>&gt; 3%</td>
</tr>
</tbody>
</table>

*Risk weighted assets* only include a given proportion of assets. Multiply weight by $ Book value of asset, and sum over all assets, to get risk-weighted assets. Note cash and some gov't securities get a weight of "0". In other words, they're not counted in risk-weighted assets.

Mortgage backed securities, security claims on gov't agencies get weights of 20%, Mortgages with 80% loan to value ratio get 50% weight, and commercial loans get weights of 100%

**Tier I capital:**
Common equity, ret. Earnings, non-cumulative preferred.

**Tier II capital:**
Allowance for loan & lease losses, other preferred, subordinated debt.
**Asset Quality Ratios:**

**Provision for loan loss ratio:** PLL/Total loans & leases

*Measures: Exposure to credit risk*

**Charge-offs:** loans which are deemed to be uncollectable

**Reserve for loan losses (RLL) (time=1) =**

RLL (time=0)
- gross charge offs
+ PLL
+ Recoveries

Management may set a minimum RLL, so the more charge-offs, the more likely the management may boost PLL to maintain their desired RLL

* Other capitalization ratios may examine charge offs or recoveries measured relative to loans & leases.

**Operating Efficiency Ratios**

- Examine *specific expenses* as either a percentage of total operating expenses or as a percentage of Adjusted Operating Income (*See ratios that affect the profit margin*)

**Liquidity Ratios**

1) Government securities/Assets

2) Temporary Investments ratio:

The numerator defines "*temporary investments*"

[Fed Funds sold + < 1-yr investments + Due from banks]

Total assets

A [high / low] value indicates high liquidity (a.k.a. low liq risk)?
• **Volatile Liability Dependence**: Measures extent to which riskiest assets are funded by most unstable liabilities.

\[
\text{Net Loans & leases} = \left( \text{Total volatile Liabilities} - \text{Temporary Investments} \right)
\]

*Volatile liabilities* are "hot" or "unstable" funds that can disappear from a bank, overnight. These include brokered deposits, jumbo CDs, deposits in foreign offices, fed funds purchased, other uninsured borrowings. *"Brokered" deposits* are a typical last resort for sources of funds.
Chapter 4: Bank Valuation

Which of the following are valid firm objectives? Consider each separately.

Minimize risk

Maximize profits

Maximize dividends

Maximize stock price

Maximize shareholder wealth

P-E Ratios: What do they tell us?

Price / EPS = P-E

Can these ratios be negative? What does this imply?
A synopsis of Bank M&A activity

What is the difference between a merger and an acquisition?

Statistic: 1985 to 1995, financial services M&As accounted for 44% of global M&A activity.

Who are the winners & losers in bank m&a?

Target s/hs: Gain 11.5% (+ 5.76% for cash transactions)
Bidder s/hs: Lose 1-2%. Losses greater when the bidder & target bank were similar in size.

Why do bidders bid when, on average, their s/h's lose?

Long run profit potential?
• Hubris
• Winner's curse
• Make firm larger (or more diverse)?

Note: Increase in size (scale) and diversity of activities (scope) has been occurring simultaneously in the banking industry. Why?

• CEOs of more diverse firms enhance reputation
• Due to uncertainty in the industry, increasing size and scope may be necessary to reduce risk.

Could mega-mergers (and international mega-mergers) result in a re-instatement of TBTF?
Supplement #1

**The Underinvestment Problem**

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>LIAB + EQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>500</td>
</tr>
<tr>
<td>LOANS</td>
<td>3,000</td>
</tr>
<tr>
<td>T-bills</td>
<td>4,000</td>
</tr>
<tr>
<td>PP&amp;E</td>
<td>500</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8,000</strong></td>
</tr>
<tr>
<td>DEPOSITS (gov’t insured)</td>
<td>9,000+</td>
</tr>
<tr>
<td>Equity</td>
<td>9,000+</td>
</tr>
</tbody>
</table>

The firm has THE FOLLOWING project available to them:

- 50% chance to increase assets by $2000
- 50% chance to increase assets by $1500

Cost of project = 1000 (to be obtained from an equity issue)

\[
\text{NPV} = 0.5 \times (2000 - 1000) + 0.5 \times (1500 - 1000) = 500 + 250 = 750
\]

\[
\text{E}[\text{EQ}] = 0.5 \times \text{NPV} = 375
\]

<table>
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<tr>
<td>Equity</td>
<td>9,000+</td>
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</tbody>
</table>
50% chance:

<table>
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<td></td>
<td>DEPOSITS (gov’t insured)</td>
</tr>
<tr>
<td></td>
<td>Equity</td>
</tr>
</tbody>
</table>
QUESTION: When are NEGATIVE NPV projects acceptable to shareholders?
ANSW: When they increases the value of their equity.

EXG:

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities + Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000 Cash</td>
<td>9500 Debt (uninsured)</td>
</tr>
<tr>
<td>7,000 Other assets</td>
<td>500 Equity</td>
</tr>
<tr>
<td>10,000 Total</td>
<td>10,000 Total</td>
</tr>
</tbody>
</table>

The firm is considering a project, which they would finance using $3000 from cash. The project would increase the value of the assets to $18,000 (with 20% likelihood) or decrease the value of the assets to $7000 (with 80% likelihood).

NPV of project = (.2 x 8000) + .8 x -3000 = 1600 + (-2400) = -800

Upside of project (likelihood = 20%)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities + Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>18,000</td>
<td>9500 Debt (uninsured)</td>
</tr>
<tr>
<td></td>
<td>8500 Equity</td>
</tr>
<tr>
<td>18,000 Total</td>
<td>18,000 Total</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Assets</th>
<th>Liabilities + Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,000</td>
<td>7000 Debt (uninsured)</td>
</tr>
<tr>
<td></td>
<td>0+ Equity</td>
</tr>
<tr>
<td>7,000 Total</td>
<td>7,000 Total</td>
</tr>
</tbody>
</table>

E[EQ] = .2 x 8,500 + (.8 x 0+) = 1,700
Double Leverage Example:

How to run a bank with fewer shareholder-contributed dollars & meet regulatory requirements:

Current Law: Required equity/assets is a function of the risk of the assets. Does this make sense? Why?

BHC Balance Sheet – owns 100% of bank sub shares

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities + Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000 Shares of bank stock</td>
<td>5000 Bonds</td>
</tr>
<tr>
<td></td>
<td>5000 HC equity (stock)</td>
</tr>
</tbody>
</table>

Bank Subsidiary Balance Sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities + Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000</td>
<td>90,000 deposits</td>
</tr>
<tr>
<td></td>
<td>10,000 bank sub. equity</td>
</tr>
</tbody>
</table>

What is the equity/assets ratio of the BHC?

What is the equity/assets ratio of the bank?

What is the ratio of original shareholder contributed equity/assets of the bank?
Important Banking Acts since 1980:

1) Deposit Institutions Deregulation & Monetary Control Act (1980)
   - Standardized some regulations with respect to ALL types of depository institutions
     1. Reserve Reqmts at Fed
     2. Fed check clearing services (for a fee to all depository institutions).
   - Phase-out of Reg Q (as of 3/86) – authorized NOW Accounts
   - Raised limit of deposit insurance to $100K per person (200K for joint accounts), per bank.

2) Garn-St, Germain Dep Inst Act (1982)
   - Authority to acquired failed banks/S&Ls based on priority with respect to location (priority given to firms in same state acquiring same type of institution; lowest priority given to firms in a different state trying to acquire a different type of institution.)

3) Financial Institutions Reform, Recovers and Enforcement Act (1989)
   - Act tried to reduce the bank and S&L failures
   - Renaming/redistricting of regulatory agencies
   - Increased capital requirements – absolute min equity/assets = 3% for all banks no matter how risky their assets, but each bank’s min equity ratio differs depending on the risk of their assets (mostly default risk).
   - Limits on amount lent to single borrower / limits on extent of commercial real estate lending
   - Source of strength doctrine for BHCs – healthy bank subsidiaries must be used to support failing ones. Can’t let one subsidiary fail, and continue with others

4) FDIC Improvement ACT (1991)
   - End of too big to fail policy
   - Expanded power to regulators to close failed or failing banks/thrifts

5) Riegle-Neal Interstate Banking and Efficiency Act (1994)
   - By 1997, most restrictions on interstate banking eliminated. Led to wave of M&As.

6) Fin. Services Modernization Act of 1999
   - Ended prohibition of the combination of investment banking / commercial banking within a given firm (or BHC).
7) Sarbanes-Oxley (2002)
- External audit restrictions, independent board
- Financial statement certification by CEO/CFO
- Material off-balance sheet transactions must be disclosed in fin stmts
- Internal control attestation
- Financial expert member of audit committee

8) Corporate “Best Practices”
- Hire & promote knowledgeable & honest management team
- Separate individual’s personal interests from institution’s best interests
- Provide independent reviews
- Avoid preferential transactions involving insiders
- Apply financial transparency
- Design deliberate & controlled decision-making process


Overview:
- Credit Risk (Bank supplies inputs, goes into regulatory model)
- Market risk (VAR: Value at risk): internal measure
- Operational Risk (internal models)

Fundamental Objectives:
- Encourage disciplined risk management
- Better assessment of capital charges in relation to underlying risk
- Potential ability to leverage further, with better risk management