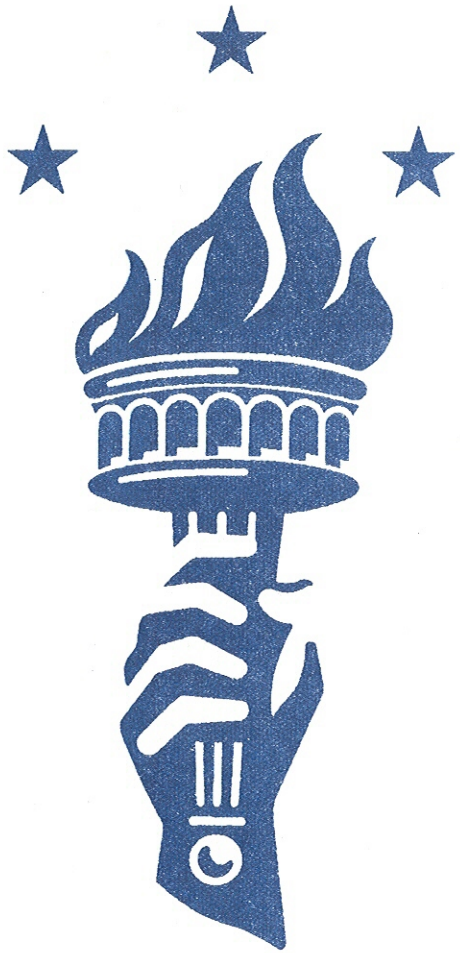

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Finance and Accounting for the Non-Financial Manager

Part II

Jules Schwartz, D.B.A.

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Jules Schwartz, D.B.A.
Boston University

Finance and Accounting for the Non-Financial Manager

Jules J. Schwartz is a professor of Management and Professor of Engineering , and previously served as Dean of the School of Management at Boston University. He earned his doctorate from the Harvard Business School. He did his undergraduate work in mechanical engineering and also received his MBA degree at the University of Delaware. He is a graduate of the Industrial College of the U.S. Armed Forces and the U.S. Air Command and General Staff College.

Before coming to Boston University, he was assistant dean and associate professor of management at the Wharton School of the University of Pennsylvania. Prior to that, he head fifteen years of program management experience with Sperry Rand, Westinghouse Electric and Thiokol Chemical Corporation, and was credited with six U.S. patents.

Schwartz has been a consultant to many U.S. and foreign companies and government organizations, and is a director of five companies. He also served a number of times as a receiver in bankruptcy for the Federal District Court. Most recently, he brought a consumer finance company successfully through Chapter 11 proceeding. He is a trustee of Tiffin University, which awarded him an honorary doctorate. He previously served as director of an investment banking firm and Governor of the Boston Stock Exchange.

He is a member of the Financial Executives Institute, the American Society of Mechanical Engineers , the Army and Navy Club of Washington, and the Harvard Clubs of New York and Boston.

His research interests are in the fields of business policy, technological innovation and corporate finance. He has conducted executive programs in management policy and finance throughout the U.S., Europe and Asia. His book, Corporate Policy is published by Prentice-Hall. In 1985 he was awarded Boston University's Metcalf Prize for distinguished teaching.

Program Overview

The purpose of this program is to give you a manager's perspective of both accounting and corporate finance. You will learn: (1) a working vocabulary; (2) an understanding of financial statements and their limitations; (3) the use of performance measures to control an organization; (4) techniques for making financial decisions; and (5) how to develop strategic options from financial data.

VI. Cost of Current Portion of the Long-Term Debt
- A. Same as the pre-tax cost of the same issue of bonds that are not yet due
- B. Formula (15) applies to the after-tax cost

VII. Cost of Long-Term Debt
- A. Each issue of bonds must be weighted according to the yield to maturity at the time they were issued
- B. Yield to maturity is more correct than coupon rate, because the bonds may have been sold at either a premium or a discount
- C. After-tax yield to maturity is calculated using Formula (15)

VII. Cost of Deferred Income Taxes
- A. Nearest thing to a free ride you'll get
- B. Again, tax rates probably reflect this

VIII. Cost of Preferred Stock (if you issued any)
- A. Preferred dividends paid are not tax deductible
- B. Cost is the annual dividend divided by the price the shares were originally sold for

IX. Cost of Common Stock and Paid-In Surplus
- A. Recall this was the money originally paid for the shares when they were first sold to the shareholders
- B. Disagreement on what the cost of this equity is
- C. Some argue that the shareholders expect a return equal to what they get from a risk-free government T-bill, plus a risk premium.
  1. The risk premium varies in each investment and it varies with economic conditions
  2. Economists try to estimate the premium at any time by comparisons with the market price of the shares
- D. Some argue that shareholders buy a stock with two objectives in mind: appreciation in share value and dividends
  1. Unfortunately, the preference for gains versus dividends is different for people in different tax brackets
  2. The preference also varies with the shareholder's age
  3. The shareholders who have the greatest voice are the major ones, who are usually older and richer
- E. Dividends are paid out of profits and growth is funded with the profits that aren't paid out in dividends. So perhaps the best argument is that shareholders are satisfied with the present return on their equity. We'll learn how to calculate return on equity in Lecture 11.

X. Cost of Retained Earnings
- A. This is the biggest investment shareholders make in an established business.
- B. If the earnings were not retained, but paid out as dividends, the wealthiest investors would face the problem of looking for some other place to invest these funds.
- C. They would only have the after-tax value of the dividend available to reinvest
- D. So it can be argued that the firm doesn't have to earn as much on retained earnings, only something more than the return on other equity times (1 - tax rate).

XI. Theory Doesn't Help the Practitioner Very Much
- A. Cost of capital is at best an approximation
- B. Each project should probably be assigned a cost based on the kind of funds that would finance it if it stood alone
- C. Some finesse the cost of current liabilities by off-setting them against current assets and only requiring a return on the difference, working capital.

XII. Other Demands for the Use of Funds
- A. Creditors normally demand that firm remain liquid enough to pay interest and principal on its debt as it comes due
- B. The bond contract, or indenture, may specify that the firm maintain a current ratio, given in Formula (16), above a certain minimum

$$(16)\ \text{CURRENT RATIO} = \frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}}$$

- C. Like any ratio, the Current Ratio can be fooled with
- D. Some indentures also specify a minimum quick ratio:

$$(17)\ \text{QUICK RATIO} = \frac{\text{CASH} + \text{ACCOUNTS RECEIVABLE}}{\text{CURRENT LIABILITIES}}$$

E. Some indentures may specify a minimum coverage ratio for interest and debt amortization expenses

$$(18)\ \text{INTEREST COVERAGE} = \frac{(\text{PRE} - \text{TAX PROFIT}) + (\text{NON} - \text{CASH COSTS}) + \text{INTEREST}}{\text{INTEREST} + \text{DEBT AMORTIZATION}}$$

F. Some indentures provide for a sinking fund, requiring that the company retire a portion of its debt issues before their stated maturity dates

G. Many indentures specify a maximum ratio of debt to equity for the borrower

QUESTIONS

1. Which is normally more expensive, debt or equity?

2. Why don't firms fund themselves exclusively with debt?

3. If a firm has a very small retained earnings account in its equity, how can you explain it?

4. If you were a beef packer, would you give a supermarket customer terms of 2/10/net 30?

5. A company has the opportunity to refund its long-term debt, before it comes due, with lower interest rate, short-term bonds. What are the arguments for and against this option?.

ANSWERS

1. Generally equity is more expensive; but it gives the firm more flexibility, since it doesn't have to be repaid and no interest is due.

2. First, it reduces flexibility. Next, it is an act of bankruptcy to renege on either interest or principal payments when they come due. Finally, creditors would be taking all the risk, if there was little equity, and would expect the kinds of returns on their bonds that normally attach to share investments.

3. Either it hasn't been in existence long enough to accumulate much in retained earnings, or it has been losing money and eating up its previously retained earnings.

4. Not if you can help it. The operating cycle for the meat department, days of receivables plus days of inventories, is probably only 3 days, since it is sell it or smell it product and the store sells for cash. We would exact earlier payment than 10 days in any case and would gain little by giving a discount to accelerate the payment.

5. The chief argument in favor of refunding is that it would lower interest cast. The arguments against refunding are:
   A. There is an underwriting cost to float the new debt issue
   B. You usually have to pay a premium to call a bond early
   C. You have no certainty that, when the new short-term bonds mature, prevailing interest rates won't be higher, costing you more to issue the replacement debt
   D. If you get a reputation for calling your debt early, creditors will demand higher interest rates, because they assume they're are not really going to earn the interest stated on your bonds for as long a period as the maturity indicates.

Recommendations for Readings for Lecture 10

1. Helfert, Erich A. Techniques of Financial Analysis , Irwin, Eighth Edition, 1994, Chapter 7.

2. Spiro, Herbert T. Finance for the Nonfinancial Manager , Wiley, second edition, 1977, Chapter 17

3. Van Horne, James C. Financial Management and Policy , Prentice Hall, fifth edition, 1980. Chapter 9.

LECTURE 11
Return on Sales, Assets and Equity

I. Overview

In this Lecture we will consider traditional measures of corporate performance: return on sales, assets and equity. You will learn that no single criterion is sufficient, that all are related and that different standards apply at different levels in the company.

II. The Problem with the Bottom Line

- **A.** Almost anyone can make a million dollars
- **B.** Put $20 million in the bank at 5 percent for a year
- **C.** Question: where do you get the $20 million?
- **D.** Return is only impressive when you know what investment earned it

III. Investment

- **A.** Assets- what you have to work with
- **B.** Permanent Capital- long-term debt plus equity. Assumes current liabilities are free.
- **C.** Equity- the shareholders' investment
- **D.** Use average values, since return is earned over a period of time

IV. DuPont Formula

- **A.** Relates return on sales, assets and equity
- **B.** A mathematical identity
- **C.** Used by Sloan to manage General Motors for DuPont.
- **D.** It must have worked; Sloan has business school named after him at M.I.T.!
- **E.** By factoring the returns into components we can consider strategic approaches to performance

(19) RETURN ON SALES * TURNOVER = RETURN ON ASSETS

$$\frac{\text{PAT}}{\text{SALES}} * \frac{\text{SALES}}{\text{ASSETS}} = \frac{\text{PAT}}{\text{ASSETS}}$$

- **F.** Return on sales is often called profit, or sales, margin, or sometimes, just margin.

- **G.** Don't confuse turnover, asset turns, with the British term for sales.

(20) RETURN ON SALES * TURNOVER * LEVERAGE = RETURN ON EQUITY

$$\frac{\text{PAT}}{\text{SALES}} * \frac{\text{SALES}}{\text{ASSETS}} * \frac{\text{ASSETS}}{\text{EQUITY}} = \text{ROE}$$

ROA * LEVERAGE = ROE

- **H.** Leverage here is financial, not operational. There is inherent risk in using leverage, since high leverage means high debt to equity, with high fixed costs of interest. (Remember, Assets = Debt + Equity)

V. Strategic Choices

- **A.** How does a supermarket play the game to achieve high return on equity?
  1. Tradeoff profit margin to get turnover
  2. Assets are essentially inventory and shelf space
  3. Managers speak of return on shelf space
- **B.** How does Tiffany, the jeweler, play this game?
  1. Demand a high profit margin and sacrifice turnover
  2. You need a lot of selection (inventory) to justify high prices
  3. Fortunately, diamonds don't rust
- **C.** How does a bank play this game?
  1. Accept low ROA (ROS and turnover don't mean much, since banks don't really sell anything) and combine it with high leverage
  2. Use lots of depositors funds and little equity

VI. Corporate Performance

- **A.** ROA is a good measure of asset management
- **B.** ROE is what management was hired for

VII. Subordinate Unit Performance

- **A.** Subsidiaries and divisions don't usually manage capital structure, the leverage term
- **B.** ROA is probably the best measure - what did management do with assets provided, no matter how they were financed?
- **C.** Charge for working capital

QUESTIONS

1. Company A and Company B are in the same business. Which management is doing a better job?

Company	A	B
ROA , %	10	7
ROE, %	20	21

2. Which factors in the DuPont Formula are influenced by a make-or-buy decision?

3. Calculate U.S.Steel's 1972 return on average equity, using the DuPont Formula and the data in the Appendix B in Part I of your course outline. Which factor should improve fastest if sales increased ten percent next year?

4. Which factors in the DuPont Formula most likely account for Microsoft's extraordinary performance?

ANSWERS

1. It's not obvious from the information provided. B has the higher ROE, but it isn't doing as good a job of managing its assets. If B earned as high an ROA as Company A, its ROE would be 30 percent. B is also using more financial leverage than A, 3 versus 2 (21/7 versus 20/10), a riskier capital structure with higher inherent fixed costs in the form of interest. We'd have to know the nature of the industry they operate in to decide whether this is wise.

2. All three. Profit margins will probably be lower, since a portion of the profit will be given up to the supplier. Turnover will probably be higher, since the supplier's assets will produce the product. Leverage will probably be lower, since fixed assets should be lower and less long-term debt can be justified.

3. Average assets for 1972 were $6.5 billion; average equity was $3.6 billion. So:

ROE	=	ROS	X	TO	X	Leverage
	=	.157/5.5	X	5.5/6.5	X	6.5/3.6
	=	2.9%	X	0.85	X	1.81
ROE	=	4.5%				

U.S. Steel is very capital intensive, with about two-thirds of its assets in plant and equipment; so it has high fixed costs. (You can confirm this by examining its income statement.) If sales go up, one would expect profit, and so profit margin, to rise even faster. Turnover should change a little less than sales because accounts receivable would also increase, raising the assets in the denominator of the turnover term. Leverage won't change significantly. Of course, if Steel worked its financials the way it did in 1972, all bets are off.

4. Return on sales should be very high, because of the company's near monopoly on both operating systems and applications software. Microsoft is a labor intensive software writer, so turnover should also be excellent. What assets does it really need to do business? It won't use much leverage, because it doesn't have fixed assets to collateralize long-term debt.

Recommendation for Readings for Lecture 11

1. Helfert, Erich A. Techniques of Financial Analysis , Irwin, Eighth Edition, 1994, pp.122-133.

2. Spiro, Herbert T. Finance for the Nonfinancial Manager , Wiley, second edition, 1977, pp. 56-58.

3. Van Horne, James C. Financial Management and Policy , Prentice Hall, Chapter 23.

LECTURE 12
Financial Limits of Growth

I. Overview
In this Lecture we shall develop a formula to define the maximum rate a company is likely to grow. You will learn that this important measure of corporate performance, growth, is directly related to its return on equity. We shall a discuss a critical decision, made by a firm's board of directors, that also influences the growth rate.

II. What the Shareholders Want
- A. In Lecture 10 on Costs of Capital we described shareholder expectations
  1. Dividends
  2. Appreciation in the value of their shares
  3. But payment of dividends deprives the company of the capital it could use to grow
- B. Why pay dividends?
  1. Some shareholders need the income
  2. But they could, instead, sell a few shares, pay less taxes, and come out ahead
  3. Fiduciaries must follow the "Prudent Man Rule" and can only invest in dividend-paying shares - more buyers mean higher share prices
  4. Once a dividend is expected it's disastrous to cut it
- C. What it takes to grow
  1. Investment opportunities - projects
  2. Capital to invest
  3. Successful implementation of the project
  4. New business usually requires both fixed assets and working capital
  5. Given leverage, profits should grow faster than sales

III. Developing a Limit of Sales Growth
- A. To develop the formula, we make just two assumptions
  1. Well-run companies have no idle assets, so assets must grow to support new sales.

  S/A=C(1), that is, the turnover ratio remains constant
  2. Most companies also maintain a constant leverage factor; that is A/E=C(2) -the creditors insist on it
  3. It's conceivable that a new business would be different enough to modify these assumptions
- B. Given these assumptions
  1. If sales grow, assets will increase by the same percentage
  2. If assets grow, equity will also have to increase by the same percentage

- C. Conclusion: In the long run, no company can grow faster than its equity increases

IV. Growth of Equity
- A. Grow the equity account by selling more shares
  1. Incurs an underwriting expense
  2. More shares dilute the voting interest of present shareholders
  3. New income goes to the new shareholders
  4. Not a great idea
- B. Grow equity by retaining earnings
  1. Easy to do, since directors decide what dividends will be paid
  2. No dilution
- C. Retain all earnings
  1. Percentage growth in equity = PAT/Equity
  2. Equity growth is equal to ROE
- D. Pay some dividends
  1. Payout ratio: Dividend Paid / Earnings = P.O.
  2. Earnings retained now: PAT X (1 - P.O.)
  3. So equity growth = PAT X (1 - P.O.) / Equity = ROE X (1 - P.O.)

V. Real Limit of Sales Growth
- A. Adjust for the inflation rate by subtracting the annual inflation percentage

(21) LIMIT OF SALES GROWTH = RETURN ON EQUITY X (1 – PAYOUT) – INFLATION

In a 2-percent inflation environment, how fast can XYZ grow?

- B. This is the limit of growth, not a guarantee of it
- C. How fast a firm grows, relative to how fast it can grow, is an interesting measure of management performance

VI. Another Growth Strategy - the Price-to-Earnings Game.
- A. Market assigns a higher price to high growth shares at any earnings level
- B. Share price / earnings per share = Price-to-Earnings Ratio, or PE Ratio
- C. Folk wisdom: Buy a stock with a PE ratio less than its growth rate
- D. Company A, with a high PE ratio, can use shares to buy Company B, with a lower PE
  1. Adding B's earnings to A results in apparent additional earnings per share growth
  2. Market likes the result and attributes a still higher PE to A's shares

E. But Company B had a lower PE ratio because its sales were not growing as fast as A's
   1. The year after the acquisition, B's slow growth becomes a drag on A's
   2. To continue to grow, A must buy still another company like B

F. If you climb on the merry-go-round, you can't quit or the market will dump on your shares

QUESTIONS

1. Based on 1972 results, how fast can U.S. Steel increase its real sales in the long run, given 2 percent annual inflation?

2. If XYZ were to cut its dividend payout to 30 percent, and experienced 3 percent annual inflation, given its 1995 performance, how fast could sale grow?

3. Estimate what your answer to question 2 might mean for earnings growth.

4. I have a client that plans to continue to grow its sales at 15 percent per year for the next five years. Its ROE is 30 percent, and it pays out 83 percent of its earnings in dividends. What advice should I offer management?

ANSWERS

1. In Lecture 10 we calculated that Steel's ROE was 4.5%. It paid out 55% of its 1972 earnings in dividends.

LIMIT OF SALES GROWTH = ROE X (1 - DIVIDEND PAYOUT) - INFLATION
= 4.5 X (1 - 0.55) - 2
= 0

2. We calculated XYZ's ROE to be about 22 percent earlier in this Lecture:

LIMIT OF SALES GROWTH = ROE X (1 - DIVIDEND PAYOUT) - INFLATION
= 22 X (1 - 0.3) - 3
= 12%

3. In 1995, XYZ's sales increased 25% (100/80), but leverage caused its sales to increase 40% (14/10). One might expect earnings to increase 1.6 times as fast as sales (40/25), so the limit of earnings growth would be 1.6 X 12 = 19%.

4. My client's dividend policy severely limits its nominal sales growth rate to:

SALES GROWTH LIMIT = ROE X (1 - DIVIDEND PAYOUT)
= 30 X (1 - 0.83)
= 5%

It will have to sell additional shares or make acquisitions for stock to generate growth. If it makes acquisitions, it should seek out companies with PE ratios less than 15.

Recommendations for Readings for Lecture 12

1. Helfert, Erich A. Techniques of Financial Analysis , Irwin, Eighth Edition, 1994, pp.137-138, p450.

2. Spiro, Herbert T. Finance for the Nonfinancial Manager , Wiley, 1977, Chapter 18.

3. Van Horne, James C. Financial Management and Policy , Prentice Hall, Chapter 11.

LECTURE 13
Strategic Signatures Case I

I. Overview

In Lectures 13 and 14, we shall examine the financial data of ten well-known U.S. companies. You will find the Strategic Signatures Case in Appendix D to your outline. We shall be referring to the case throughout these Lectures, so you'll want to have it in front of you. Which set of data belongs to which company is not revealed in the case. Our task will be to match the data to the right company. You will have an opportunity to apply many of the concepts you have learned so far, to determine what each company should look like. Remember, you should never look at financial data without first developing a set of expectations.

II. Developing a brief description of what it takes to succeed in each industry cited on the first page of the case

- A. Airlines
  - 1. Simplify fleet with standard equipment
    - a. Better purchase price
    - b. Easier financing
    - c. More flexible crew assignments
    - d. Easier maintenance
    - e. Smaller parts inventories
    - f. Parts universally available
  - 2. Keep seats occupied
    - a. Flying involves high fixed costs
    - b. Offer discounts to tourists, but not business travelers
  - 3. Do maintenance on the ground
    - a. Scheduled maintenance at central depot, based on usage
    - b. Replace problem parts and fly away
    - c. Less unscheduled maintenance, if you do scheduled maintenance
  - 4. Dominate city-pairs served
    - a. Passengers like to make round-trips on one airline
    - b. Planners look at the airline with the most offerings first
  - 5. Own the reservation system
    - a. Show your flights first
    - b. Travel agents quit looking as soon as they satisfy their client
  - 6. Don't maintain your own fuel or food inventories
- B. Breweries
  - 1. Advertise to perfect your brand
  - 2. Big beer drinkers like to think they're young, in shape and desirable to good-looking young women
  - 3. Product is low bulk value, so watch transportation expenses
  - 4. Breweries are large process plants, i.e. capital intensive
- C. Banks
  - 1. Solicit deposits - current liabilities
  - 2. Loan money out long term at an interest rate greater than that paid on deposits
  - 3. Diversify loan portfolio to limit bad debts
  - 4. Avoid disintermediation - offer variable-rate loans
  - 5. Liquidity provided by the central bank (Federal Reserve)
- D. Oil
  - 1. Integrate from exploration through retailing to insure busy refineries
  - 2. Diversify sources of crude
  - 3. Use pipelines or jumbo tankers to keep transport costs down
  - 4. Operate refineries world scale
    - a. Lang effect
    - b. Efficient use of by-products
  - 5. Retail service stations
    - a. Accept bank and company credit cards - days receivable approximately 45 days
  - 6. Product mix limits seasonality
    - a. Produce gasoline, heating oil and kerosene
    - b. Gasoline and kerosene summer products
    - c. Heating oil winter product
    - d. Since output mix is relatively fixed, large storage capacity is required
- E. Auto Tires
  - 1. Two businesses
    - a. OEM to auto makers
    - b. Replacements for owners
    - c. Counter-cyclical
  - 2. Owners loyal to satisfactory OEM items
    - a. Get your tires on new cars
    - b. Makers know your aspirations
    - c. Sell OEM at variable cost (or less?)
    - d. Go for volume and learning effect
    - e. Just-in-time (JIT) required by makers - requires high inventories
  - 3. Replacement purchases must be convenient
    - a. Multiple retail outlets
    - b. Service
    - c. High inventory requirements
    - d. Give dealers good terms
    - e. Go for margins
  - 4. Not a great business - Ford never made tires
  - 5. Production is still labor intensive

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LECTURE 9
Financial Decisions

I. Overview

Companies invest money today to realize returns tomorrow. Because they can earn a return on these funds in the meantime, the promise of future returns is not as attractive as money now.. In this Lecture you will learn to deal with concept of present value, the discounting of any expected future payments. You will also learn how companies evaluate the financial portion of an investment decision. Finally, you will see that the techniques developed here are also applicable to investments in bonds.

II. Future Versus Present Value

- **A.** Money in the future is worth less than money now because:
  1. You could earn a return in the interim
  2. Inflation might erode the value of the money received later
  3. There is a risk that you won't get back what you expect
  4. You lose the flexibility to invest in better deals that might come along after you commit your capital
- **B.** Schedule of Capital Investments
  1. Company invests funds in a project
  2. It begins to receive cash flows as the result of the investment
  3. It may have to commit additional funds, greater than the cash received to date, to build inventories, finance receivables, and increase capacity
  4. Cash flows continue to flow in
  5. Project ends; fixed assets are salvaged; working capital is recouped
- **C.** Techniques for Evaluating the Economics of a Capital Investment Proposal
  1. Assumes you trust the information provided by its advocate
  2. Payback
  3. Net present value of the proposal
  4. Internal rate of return of the proposal
  5. Some general rules:
     - **a.** Be more skeptical about promises far in the future - no one is very good at estimating things very far out, the situation can change dramatically and the advocate may not be around to be held accountable
     - **b.** Distrust excessive precision in the promises - people quote many significant figurse in their promises because they are naive or because they want to convince you they really know what they're talking about

F. Nuclear Electric Utilities
   1. Monopoly situation
      a. Regulated for a "reasonable" ROA
      b. No rate increases on election years
      c. Reviews lead to regulatory lag on rate increases
   2. Rates vary
      a. Residential rates low; they have the votes
      b. Big-business rates low; they can leave
      c. Local-business rates high; they're not going to leave
      d. Billing cycle leads to 30-40 days of receivables
   3. Demand varies both daily and seasonally
      a. Use capital-intensive plant for base load, less efficient plant for peaks
      b. Join a grid and buy excess of other companies at just over variable cost
   4. Build new capacity big
      a. Lang effect
      b. Anticipates demand growth
      c. Sell excess to grid
      d. Finance with debt

G. Pharmaceuticals
   1. R&D to generate new products
      a. High product obsolescence
      b. Safety and efficacy testing for regulatory approval is slow
      c. Low success rate
      d. Sell globally to recapture costs
   2. Protect products with brands or patents
      a. Permits higher margins
      b. Introduce generics before patent runs out and competition can enter market
   3. Marketing
      a. Detail ethicals
      b. Advertise proprietaries to consumers
   4. Foster medical contacts
      a. Get new ideas
      b. Get help with testing
      c. Generate prescriptions

H. Women's Garments
   1. Risky - bet your company on style choice up to four times each year
      a. No protection for designs
      b. Knock off French designs quickly
      c. Obsolete after just one season

   2. Avoid fixed costs
      a. Buy, not make
      b. Variety requires flexibility of labor-intensive production - find cheap labor
   3. Finished-goods inventory should be in the retail stores
      a. Leads to long operating cycle for retailer and many days receivables
      b. Reduce AR investment by factoring to generate cash and make collections more efficient
   4. Control fabric inventory to keep out competition

I. Fast-Food Restaurants
   1. Locations with high traffic critical
   2. Own some stores
      a. Develop new product and systems
      b. Own property so landlords can't gouge
   3. Franchise some stores
      a. Use franchisee investment in real estate
      b. Requires royalty policing - based on sales
   4. QC critical to protect product reputation
   5. Preparation is labor intensive
      a. Simplify to reduce waiting time
      b. Use low-cost labor
   6. Tie-ins, especially with soft-drink manufacturers
      a. Excellent margins
      b. Margins on all products are quite good

J. Discount Drug Chains
   1. Convenience shopping
      a. Multiple locations
      b. Wide selection of products, sizes, brands
      c. Offer store brands as bargains (with big margins)
      d. Carry substantial inventory to avoid stockouts and loss of customers
      e. Rent on percent of sales
   2. Include a pharmacy in the store
      a. Pharmacist a trusted advisor for proprietaries
      b. Sell ethicals for one-stop shopping
      c. Requires long store hours
   3. Accept low margins
      a. Customer is shopping in a discount store
      b. Accept cash or bank cards - no AR's
   4. Turnover is good because inventory is principal asset
   5. Low labor productivity - use low-wage sales clerks and pay the manager well

III. Developing Strategic Variables

A. Ideal Variable Can Be Measured From Accounting Data And Has Sufficient Range To Be Discriminating

B. Capital Intensiveness - Measure by percent of assets invested in plant and equipment
   1. Range 1-86%
   2. High - more than 75%
      a. Often financed with long-term debt
      b. Keep busy to spread attendant fixed costs
      c. Leverage creates risk
      d. Examples: McDonald, Florida Power & Light
   3. Low - less than 25%
      a. Generally labor intensive
      b. Variable cost operation
      c. Exception - professional services business
      d. Examples: Liz Claiborne, Bristol Myers

C. Sales Margin
   1. Usually a tradeoff against turnover
   2. Range 0-18%
   3. High - more than 11%
      Examples: Liz Claiborne, McDonald, Bristol-Myers
   4. Low - less than 3%
      Examples: Firestone, Walgreen, Citibank (interest-rate spread)

D. Turnover
   1. Other half of the margin tradeoff
   2. Range 0.9X-3.54X
   3. High - more than 3X
      Examples: Liz Claiborne, Walgreen
   4. Low - less than 0.5X
      Examples: Citibank (no sales), Florida Power & Light

E. Return on Assets
   1. Best return comparison for dissimilar companies; notice ROE is less discriminating
   2. Range 1-30%
   3. High - more than 14%
      Examples: Liz Claiborne, Bristol Myers
   4. Low - less than 4%
      Examples: Citibank, Firestone, Florida Power & Light

F. Leverage
   1. Measure by Assets / Equity; notice that this equal to (Debt / Equity - 1)
   2. Range 1.34X - 25.79X
   3. High - more than 3.5X, implies high financial leverage
      Examples: Citibank, Florida Power & Light
   4. Low - less than 2X
      Example: Liz Claiborne

G. Inventory Investment
   1. Measure by both percent of assets in inventory and days of inventory
   2. Range 0 - 46%; 0-209 days
   3. High (%) - more than 38%
      Examples: Walgreen, Liz Claiborne
      High (days) - more than 200 days
      Example: Florida Power & Light
   4. Low (%) - less than 1%
      Example: Citibank, McDonald
      Low (days) - less than 5 days
      Examples: Citibank, McDonald

H. Credit Policy
   1. Measure by days of receivables
   2. Range 2 - 264 days
   3. High - more than 90 days
      Examples: Citibank, Bristol-Myers
   4. Low - less than 11 days
      Examples: Walgreen, McDonald

I. Labor Productivity
   1. Measure by economist definition: sales per employee; notice that this measure is inflation sensitive
   2. Range $25K - $610K per employee
   3. High - more than $250K
      Example: Exxon, Florida Power & Light, Liz Claiborne (subcontracts)
   4. Low - less than $75K
      Examples: McDonald, Walgreen

J. Liquidity
   1. Measure by Current Ratio
   2. Range 0.32 - 3.40
   3. High - more than 3
      Example: Liz Claiborne
   4. Low - less than 1
      Examples: Citibank, Florida Power & Light

QUESTIONS

1. Which company in the Strategic Signatures Case would be the best comparison for a super-market chain?

2. Which Strategic Variables would best describe a transcontinental railroad?

3. Why isn't return on equity a discriminating variable for dissimilar businesses?

ANSWERS

1. Walgreen. Both businesses accept lower sales margin to achieve turnover. They have low days of inventory and receivables. Supermarkets may have somewhat higher investment in plant and equipment.

2. Railroads, like airlines, are relatively capital intensive. They are paid quickly under Interstate Commerce regulations; so they have few days of receivables. They also have little inventory. Traditionally, they use a lot of long-term debt to finance their properties, so their leverage factor is high.

3. As we learned in the DuPont formula, ROE is ROA multiplied by the financial leverage factor. All firms try for a good ROE: that's what they are in business for. Some achieve it with high ROA and low leverage, like Liz Claiborne; others accept low ROA but leverage up, like Citibank. If a business consistently earned a low ROE, it would make good sense to exit it in favor of one with a higher ROE.

Recommendations for Readings for Lecture 13

1. Dun and Bradstreet's Dun's Financial Profi les.

LECTURE 14
Strategic Signatures Case II

I. Overview

In this lecture we will use the strategy definitions we derived for the ten companies in the Strategic Signatures Case, along with the Strategic Variables we defined, to determine which set of financials belongs to each company. You will discover that accountants do a reasonably good job of describing each company in financial terms, despite the limitations of their craft and the odd results one expects to see within Generally Accepted Accounting Principles!

II. Identifying the Companies

- **A.** Citicorp: high current liabilities, low liquidity, low capital intensiveness, low sales margins, low ROA, high leverage, low inventory, high days receivable ((C))
- **B.** Florida Power & Light: high capital intensiveness, high leverage, low percent inventory, high days of inventory, high labor productivity ((E))
- **C.** McDonald: high capital intensiveness, high sales margin, low days inventory, low days receivables ((I))
- **D.** Liz Claiborne: low capital intensiveness, high sales margins, high ROA, high labor productivity ((J))
- **E.** Firestone: low sales margin, labor intensive, low ROA ((F))
- **F.** Bristol Myers: high sales margins, low capital intensiveness, high ROA, high days inventory and days receivables ((D))
- **G.** Walgreen: low sales margin, high turnover, low days receivable, high inventory ((G))
- **H.** AMR: high long-term debt, relatively high capital intensiveness, relatively low inventory ((B))
- **I.** Exxon; high labor productivity ((H))
- **J.** Anheuser Busch: relatively low days of receivables, relatively high capital intensiveness ((A))

III. Conclusions

- **A.** Accountants did a good job
- **B.** Strategic Variables do define a business in a discriminating manner
- **C.** Taking a set of expectations to a data set improves your analysis

QUESTIONS

1. What factors would explain high labor productivity?
2. Why can a bank maintain such a low current ratio?
3. Why isn't sales margin meaningful for a bank?
4. AMR issues an airline credit card which it bills once each month. Cardholders are then given 30 days to pay. Why doesn't AMR have 45 days of receivables on its books?
5. Why does McDonald have 11 days of reveivables on its books when it is a cash business?

ANSWERS

1. Skilled labor, automation, or subcontracting.
2. While liquidity is an important concern because its current ratio is so low, access to instant borrowing form the Federal Reserve mitigates the problem. (It is also a federal crime to instigate a run on a bank that is Fed member.)
3. Did you ever try to buy anything from a bank? They always want what ever they provide back.
4. AMR also accepts bank credit cards that typically clear in 3 days; so you're seeing the average for both kinds of receivables.
5. McDonald is owed royalty payments by its franchisees at any given time

LECTURE 15
Measuring and Controlling

I. Overview

In this Lecture we will explore additional uses of accounting data and financial analysis. You will discover how they offer managers the chance to predict opportunities and problems and to control the activities of their organizations better. You will also learn about some of the problems inherent in measuring the performance of people and units.

II. What Is Measured Becomes Important

- **A.** Not everything can be measured, so we measure what we can, even if it's the wrong thing
- **B.** Measurement is a signal - If the boss cares, I suppose I should also
- **C.** Measurement may be a check on whether I'm keeping my promises and fulfilling my responsibilities

III. Measuring more than one variable of performance may force tradeoffs

- **A.** Return on assets is a reasonable criteria for management performance below the corporate level
- **B.** Minimizing rejected product is also a reasonable measure
- **C.** Zero rejects can only be achieved by not producing anything
- **D.** If you don't produce anything, ROA is zero, or negative
- **E.** Producing too many rejects also results in negative ROA
- **F.** Maximum ROA is achieved by producing a specific number of rejects
- **G.** Do we tell production to produce these rejects?
- **H.** Try the same reasoning with accident rate versus ROA!
- **I.** Who should make the tradeoffs?

III. Allocation Can Be Arbitrary

- **A.** Accountants try to allocate fixed costs to different activities efficiently
- **B.** Often, efficient isn't accurate and results in poor measurement of unit performance
- **C.** Allocating space cost in a major university seems easy
  1. Charge each dean a percentage of the total classroom space cost on the basis of his percentage of total credit hours taught
  2. A B-School dean puts ninety students in a classroom and pays ninety times as much as a Fine Arts dean who puts a single cello player in the same space to rehearse
  3. Result - the business school subsidizes the arts school and appears to make less contribution to the university surplus

IV. Every Economist Knows Sunk Costs Are Irrelevant
- A. This wisdom is passed on to each new generation of finance majors - don't consider past investment when looking at new investment decisions
- B. Sunk costs are certainly relevant to the manager who advocated sinking them in the first place
- C. Sunk costs are also relevant to the senior managers who will take the write-off if the project is abandoned
- D. Sunk costs are a form of track record when it's time to evaluate an advocate's newest proposal

V. Control Systems Are Often Used to Protect the Firm
- A. Any system that attempts to be foolproof is infinitely expensive to administer
  1. You need people to check the people, who are checking other people
  2. Best bet - don't let people who handle assets, particularly cash, handle the supporting paper work
- B. Usually a system designed to protect the company doesn't protect the people it deals with. How often does your credit card account make mistakes in your favor?

VI. Growth Curves (Or Life Cycles)
- A. All living things, including organizations seem to evidence an S-shaped growth curve
- B. Understanding where you are on this curve helps in developing a strategy
  1. Startups avoid fixed costs - they exacerbate an already risky situation
  2. Growth-phase businesses usually can't self-finance
  3. Mature businesses must seek new avenues for growth with their free cash flow
  4. Declining businesses seek graceful ways to disinvest

V. Learning Curves Offer Opportunities
- A. In Lecture 7 we learned how moving down the learning curve faster than a competitor resulted in pricing options to seize additional market share or greater profit margins
- B. When two important components of a larger assembly are on different learning curves, the pressures on the operator with the shallower curve are predictable

VI. Boston Consulting Groups Product-Market Matrix
- A. Dimensions: market growth rate and relative market share
  1. Market growth rate a surrogate for position of the industry in its life cycle
  2. Relative market share, defined as a firm's market share divided by the share of its largest competitor, a surrogate for the firm's position on the learning curve compared to the competitor
- B. Dogs - low relative market share in a low-growth industry; no answers
- C. Wild-cats - low market share in a high-growth industry; add Lang-efficient capacity ahead of your competitor
- D. Stars - high relative market share in a high-growth industry; don't pay dividends
- E. Cash-Cows - high relative market share in a low-growth industry; milk the business to feed your wild-cats
- F. Seductive idea ,but what about the poor dogs?
  1. Almost half of all businesses are defined as dogs
  2. No strategy, other than exit, is generally offered

VII. Financial Information May Offer a Strategy For Dogs- a facial tissue example
- A. Kimberly Clark's Kleenex brand dominates the market for facial tissues
  1. Tissue is a low bulk vale product; transportation constitutes up to 8 percent of the retail cost of the product. A patent for drawing a vacuum on the box increases bulk value by 15 percent
  2. Tissue a very small part of total paper production
  3. Production is very capital intensive
  4. Kleenex trademark is universally known
  5. K.C. has a good, but not great, ROE
- B. New entrant to the field
  1. Has patent on a way to make tissue softer
  2. Is a very large consumer products company
  3. Spends substantially on advertising its products
  4. Normally earns a higher ROE than K.C.
- C. A regional map of the U.S. shows that the South and Southeast produce more paper than they consume, so are net exporters
  1. Suggests the chance to buy excess at just over variable cost - and timber accountants have a problem valuing a growing timber inventory
  2. Multiple sourcing should reduce average transport costs to market
  3. Buy, rather than make, means availing the new product of the supplier's learning curve, and avoids capital investment
- D. Solution
  1. Buy ,not make, at least during the risky introductory phase
  2. Achieve acceptable return by not investing in plant
  3. Spend on advertising to introduce the new product

QUESTIONS

1. What advantages accrue to a firm that elects to buy, rather than make?

2. A firm has a product that is in the mature phase of its life cycle. It's principal competitive advantage would lie in controlling what part of its business?

3. What is accomplished by separating control of an asset from the paper work that accounts for it?

4. If a wild-cat firm decides to add capacity, should it try to keep its decision a secret?

ANSWERS

1. Buying: (1) gains the supplier's experience; (2) avoids capital investment; (3) permits multiple sourcing to cut transportation costs; and (4) may enable the buyer to bargain down to variable production cost for a price.

2. Probably total cost per unit. In the mature phase of a product's life cycle, it tends to become standardized and is traded as a commodity. Unless the brand name is of significance, price rules.

3. Separating the two functions makes it difficult for employees to defraud the firm without collusion.

4. Probably not. The star in the market, and perhaps some of the other wild-cats, may also have reached a decision to add capacity. A public announcement of a new commitment to a large capacity plant may dissuade them from going ahead, since they would then face a situation of over-capacity in the industry.

Recommendation for Reading for Lecture 15

1. Boston Consulting Group, Perspectives on Experience, Boston Consulting Group, third edition, 1972.

LECTURE 16
Legal Issues and Summary

I. Overview

In this Lecture you will have the chance to consider some of the regulatory issues that influence management's financial policies. We shall examine the rules applying to patents, trademarks, and copyrights, since they affect the value of intellectual property. We shall also look at the laws that govern competition, since they regulate pricing, sales approaches and the ability of the firm to grow. Environmental and product liability laws affect the balance sheet and, ultimately, the income statement. Securities and Exchange rules limit what the firm can do with its shares. Even senior employee compensation is subject to government oversight.

II. Understanding Law

The Senior Federal District Judge for the District of Delaware, home of most major U.S. corporations, teaches that, if you understand the public policy that led to enactment of a law, you'll usually understand the law. We'll emphasize the policy, rather than the details, in this lecture. With the exception of patent and copyright powers, which are specifically granted to the Congress by Article 1 of the Constitution, most other laws derive from extensions of interstate commerce clause of Article 1.

III. Intellectual Property Laws

- A. Policy: The government grants monopolies in the form of patents and copyrights only grudgingly. You have to seek enforcement of your rights, even after you have them. These rights are awarded for only a limited time to encourage invention and, more importantly, full disclosure.
- B. Patents
  1. Typically granted to the inventor for 17 years by the Federal Government.
  2. Unlike most of the rest of the world, the patent belongs to the person who invents first, not the one who files first
  3. Others can infringe your patent, if they can show lack of full disclosure or prior art.
  4. Enforcement is at the expense of the patentee
  5. Less than half of infringement suits win
  6. Infringers often counter-sue for huge damages on antitrust claims
- C. Copyrights
  1. Usually granted for life of the author plus 50 years
  2. Copyright must be clearly indicated on a publication

3. Fair usage permits a lot of copying without penalty by not-for-profit institutions
4. Enforcement is at the expense of the owner, but success recovers costs
5. Remedies for infringement are severe, can be both equity and criminal

D. Trademarks (Lanham Act)
1. Trademarks must be filed with the federal government to be included in the Principal Register or Supplemental Register (less valuable). They have indefinite life.
2. Trademark must bear an indicator
3. Enforcement is at the owner's expense
4. Remedies against infringers include triple damages and destruction of offending materials
5. Failure to enforce may lead to loss by abandonment or loss of significance, e.g. aspirin
6. Lacking a specific constitutional provision, states have also legislated in this area
7. Trade names generally get the same treatment as trademarks

IV. Antitrust Laws
A. Policy: The government seeks to insure a "level playing" for all competitors. We have only one office to grant monopolies, the U.S. Patent Office; but two federal agencies to break them up, the Federal Trade Commission and the Antitrust Division of the Justice Department. In addition, most states have antitrust laws. Laws are complicated because courts apply the word "reasonable" to all their analyses.
B. Sherman Act imposes severe penalties on anticompetitive agreements. Trade associations are often involved in these cases.
1. Declares all contracts, combinations and conspiracies that seek to restrain trade to be illegal.
2. Reciprocity and tie-ins are generally illegal
C. Robinson-Patman Act governs price discrimination in selling to customers that compete, including discounts and cooperative advertising. Defenses include: meeting competition, cost justification, available to all, going out of a business
D. Several other acts also govern mergers
1. Federal Trade Commission must be given time to review and approve any proposed merger or buyout
2. It may require divestiture of some of the assets involved, if it feels competition will be lessened by the deal

V. Environmental Laws
Policy seems to seek to get things cleaned up, no matter who has to pay the bill. e.g. You can unknowingly acquire a piece of real estate that is polluted and then be required to clean it up

VI. Product Liability Laws
A. Policy is to try to protect the public from defective or poorly-designed product
B. Courts can assign liability proportionately, when the manufacturers can't be identified, as in the asbestos and breast implant cases
C. Misuse by the consumer is not always a defense. Witness the recent finding against McDonald, when a woman scalded herself by dropping hot coffee. A jury found that she didn't think it was all that hot!

VI. Securities Laws
A. Policy: Investors are entitled to full disclosure concerning their investments and treatment more or less equal to that received by corporate insiders.
B. New issues of securities must go through a registration process. It is the obligation of the underwriter to see that investors receive a copy of the prospectus before they put up any money.
C. Public companies are generally required to report their earnings and condition at least quarterly
D. Any information that can materially affect the price of a security must be made public promptly and given to everyone at the same time
E. Insiders, including major shareholders, directors and officers, may not realize short-term capital gains in the securities of their firm. Any such profits must be turned back to the firm for the benefit of all investors. Getting information from an insider makes you one also.
F. Directors and officers compensation must be reported to the shareholders. Option plans are subject to shareholder approval.

VII. Foreign Corrupt Practices Act
A. Policy: American law regarding corrupt business practices follows both the firm and its representatives, no matter where they go.
B. Our philosophy is probably unique in the world and places some restrictions on American companies operating abroad that are not imposed on foreign firms
C. Basically, you can't bribe foreign officials to influence their decisions with respect to your company. If you are do and are convicted back in the U.S., you can go to jail.

VIII. Conclusions

A. Most of the regulations we have reviewed have a direct impact on either the decisions a firm makes or the way that it reports its results
B. Penalties for violations can be quite severe, often involving triple damages and jail terms
C. Our laws favor competition, subject to the test of reasonableness
D. Intellectual property is given limited protection because it seems to be in the public interest to do so
E. All investors are entitled to equal information and treatment

IX. Final Summary

A. You have learned about the three principal financial statements of the firm, its balance sheet, and income and cash flow statements. The chief difficulty in reporting is valuation and matching costs and revenues. Ultimately, cash is what counts.
B. You should now understand how the nature of costs influences business decisions. Fixed and variable costs result in different risk and results. Experience and scale effects give the advantage to the firm with greater market share. Product bulk value is a major determinant in the scale and location of an operation.
C. Generally Accepted Accounting Principles afford great discretion in reporting, particularly in the short run
D. Financial investments have a time scale. Money now is worth than more than money later. You must estimate the cost of capital and use it to discount future cash flows, in order to decide whether a proposal makes sense.
E. Performance is best measured in return on assets or equity and in growth.
F. Accountants, despite all their problems do a reasonable job of describing a business in their reports. You must, however, take a set of expectations to their financials to derive real information from them. "How do you make a buck in this industry?" is a good starting point. Always check the pattern of earnings and inventory change against the change reported in sales; it's relatively hard to hide unusual results without distorting these numbers.
G. Control systems affect behavior, so measurement and reporting are a way to implement strategy.
H. Finally, accounting and financial decisions are not made in a vacuum. They are subject to public policy.

QUESTIONS

1. Why do we limit the life of a patent? How would you handle this on the balance sheet?

2. A company is subject to a class action involving product liability. Should its financial statements reflect the suit?

3. The president of a public company, that he controls, would rather take a very large salary in place of paying a substantial dividend. Who should be concerned?

4. The two U.S. producers of widgets are concerned the large store in New York is discounting their products. They agree not to sell to the discounter. Is there a problem?

ANSWERS

1. The purpose in granting the patent monopoly in the first place was to insure full disclosure, so that anyone skilled in the state of the art could duplicate the invention. After the patent expires, it is expected that competitors will enter the field. If the patent has any value on the company's books, it should be written off over the expected life of the patent.

2. If the company believes that it will be required to pay damages as the result of the suit, it is expected to set up a reserve the liability side on its balance sheet for the loss. The offsetting entry is a reduction in equity, since liabilities went up without an equivalent increase in assets. This reduction in equity represents a tax-deductible loss.

3. While shareholders might not care that they are not receiving the dividend, the tax collectors would most certainly be concerned. Salary is a tax-deductible expense, so the company will pay less in taxes. If a dividend were paid, it would be out of after-tax income and would be further taxable to the shareholders receiving it. The IRS is particularly interested in large salaries paid to sole owners of corporations. It argues that these are really dividends on the investment.

4. This is a conspiracy to boycott the discounter and would very probably be viewed as an anti- trust violation.

Recommendation for Reading for Lecture 16

1. Hancock, Executive's Guide to Business Law , McGraw-Hill, 1979, pp7-5 through 15-1.

Appendix C

	DISCOUNT FACTORS					
YEAR	RATE:	10%	15%	20%	25%	30%
0		1.00	1.00	1.00	1.00	1.00
1		0.91	0.87	0.83	0.80	0.77
2		0.83	0.76	0.69	0.64	0.59
3		0.75	0.66	0.58	0.51	0.46
4		0.68	0.57	0.48	0.41	0.35
5		0.62	0.50	0.40	0.33	0.27
6		0.56	0.43	0.33	0.26	0.21
7		0.51	0.38	0.28	0.21	0.16
8		0.47	0.33	0.23	0.17	0.12
9		0.42	0.28	0.19	0.13	0.09
10		0.39	0.25	0.16	0.11	0.07
11		0.35	0.21	0.13	0.09	0.06
12		0.32	0.19	0.11	0.07	0.04
13		0.29	0.16	0.09	0.05	0.03
14		0.26	0.14	0.08	0.04	0.03
15		0.24	0.12	0.06	0.04	0.02
16		0.22	0.11	0.05	0.03	0.02
17		0.20	0.09	0.05	0.02	0.01
18		0.18	0.08	0.04	0.02	0.01
19		0.16	0.07	0.03	0.01	0.01
20		0.15	0.06	0.03	0.01	0.01
21		0.14	0.05	0.02	0.01	0.00
22		0.12	0.05	0.02	0.01	0.00
23		0.11	0.04	0.02	0.01	0.00
24		0.10	0.03	0.01	0.00	0.00
25		0.09	0.03	0.01	0.00	0.00

Appendix D
Strategic Signatures

Financial statements should reflect the strategic decisions of a firm. They record how the corporation has positioned its assets, how those assets were financed, and the results achieved. An understanding of the strategy of a company should lead one to take certain expectations to an analysis of its financials. This case was developed to test this premise. Does a business have a distinctive signature related to its strategy?

Reported in the attached exhibits are financial data extracted from the 1983 annual reports of ten major U.S. corporations. A dash entry means a small value, but not zero. The companies included are:

1. AMR - holding company for American Airlines, a large, primarily domestic, east-west carrier.
2. Anheuser-Busch - largest U.S. beer brewer.
3. Citicorp* - holding company for Citibank, a major money center banker.
4. Exxon - largest integrated petroleum company in the world.
5. Firestone - major producer of tires and rubber.
6. Florida Power and Light - nuclear electric utility.
7. Bristol-Meyers - large pharmaceutical, nutritional, health-care and consumer products producer.
8. Liz Claiborne - designs, manufactures through contract, and markets an extensive line of garments for career women.
9. McDonald's - nation-wide, fast-food chain.
10. Walgreen - discount health-aid stores.

*Since banks don't report "sales", we have used net pre-tax investment results in place of the revenue figure.

The data for this case was researched by Randi Alterman under the supervision of Professor Jules J. Schwartz. The companies were selected as the basis for class discussion and not as representative either effective or ineffective management results.

Exhibit 1

Stratefic Signatures
Balance Sheet items
(Percent of Total Assets)

		A	B	C	D	E	F	G	H	I	J
1.	Cash and marketable securities	5	23	11	25	-	13	9	7	2	21
2.	Accounts receivable	7	12	6	28	4	24	2	13	2	27
3.	Inventories	7	4	-	17	3	17	46	8	1	38
4.	Other current assets	2	1	10	4	2	3	2	3	1	5
5.	Net plant and equipment	74	41	1	25	85	39	38	66	86	9
6.	Other fixed assets	5	19	72	1	6	4	3	3	8	=
	Total Assets	100	100	100	100	100	100	100	100	100	100

7.	Notes Payable	-	10	23	-	5	1	-	1	3	-
8.	Accounts payable	13	11	2	5	1	18	21	18	7	25
9.	Other current liabilities	5	10	62	17	5	11	18	5	2	4
10.	Long Term debt	25	32	9	3	35	15	3	7	29	-
11.	Other liabilities	1	2	-	-	7	2	4	8	4	-
12.	Deferred taxes	14	3	-	-	19	4	5	14	8	-
13.	Preferred stock	-	5	-	-	-	-	-	-	-	-
14.	Capital stock surplus	5	16	1	23	16	9	11	4	3	19
15.	Retained earnings	37	11	3	52	12	40	38	43	44	52
	Total liabilities and equity	100	100	100	100	100	100	100	100	100	100

Exhibit 2

Strategic Signatures
Selected Financial Ratios

1.	Current ratio	1.24	1.30	0.32	3.40	0.81	1.99	1.55	1.29	0.54	3.07
2.	Quick ratio	0.70	1.13	0.21	2.43	0.36	1.31	0.30	0.83	0.36	1.63
3.	Net profits/sales	0.06	0.05	-	0.18	0.09	0.03	0.03	0.05	0.11	0.10
4.	Sales/total assets	1.47	1.10	0.09	1.21	0.46	1.40	3.54	1.49	0.88	3.05
5.	Total assets/equity	2.48	4.04	25.79	1.34	3.56	2.11	2.05	2.16	2.12	1.44
6.	Net profits/total assets	0.08	0.05	0.01	0.15	0.04	0.04	0.10	0.08	0.10	0.30
7.	Net profits/equity	0.21	0.21	0.16	0.19	0.15	0.09	0.21	0.17	0.21	0.43
8.	Days inventory	28	20	-	209	535	58	73	23	5	86
9.	Days receivables	18	43	264	90	32	62	2	32	11	40
10.	Sales/employee ($000)	155	112	200	92	262	65	73	610	25	325

Exhibit 3
Strategic Variables

FIRM	Capitol Intensiveness	Sales Margin	Return on Assets	Leverage	Inventory Investment	Days of Inventory	Credit Policy	Labor Productivity	Liquidity
AMR American Airlines									
Anheuser-Busch									
Citicorp CitiBank									
Exxon									
Firestone									
Florida P & L									
Bristol-Myers									
Liz Claiborne									
McDonald									
Walgreens									
Your Measure									
Range									

c. Know the track record of the advocate - "I'll stake my reputation on it" is only worth something from someone with a reputation to stake
d. Riskier deals require greater returns

III. Payback
A. How soon do we get our money back?
B. For uniform cash flows the question can be answered by the following formula

$$(11)\ \text{PAYBACK (IN YEARS)} = \frac{\text{INVESTMENT REQUIRED}}{\text{ANNUAL CASH FLOW}}$$

C. If the cash flows are not uniform, the usual case, simply accumulate each year's cash flow, starting in year 1 and continue. until the sum equals the initial investment.
D. Problems:
1. This approach doesn't deal with later contributions to the project
2. It doesn't provide for a return for the risk taken
3. It assumes all cash flow estimates are of the same reliability, no matter how far in the future they are to be received
E. Advantages
1. The math is simple
2. If the payback is to occur before the advocate retires, he can be held accountable
3. Quick payback frees up funds for other opportunities that may come along
F. Behavioral Issues
1. Will reviewers sign off on deals that call for cash outflows that will occur while they're up for promotion or transfer?
2. The returns may be credited to their replacements

IV. Net Present Value (NPV)
A. Future cash flows must be discounted for the time we wait to get them
B. Amount of discount depends on the return the firm could expect to earn on an alternative investment or the cost of the capital to the firm
C. Example:
1. $1 invested today at a 10% return would be worth $1.10 a year from now (1 X 1.1)
2. $1 received one year from now would only be worth about $0.91 today, since we could invest the $0.91 at 10% for a year and it would grow to $1

3. At a 20% investment rate, $1 received a year from now is only worth about $0.83 today, since $0.83 would grow to be worth $1 in a year
D. Technique for Calculating Net Present Value
1. Each dollar received in the future is discounted by the following formula:

$$(12)\ \text{PRESENT VALUE} = \frac{\text{FUTURE VALUE}}{(1 + \text{DISCOUNT RATE})^{(\text{YEARS})}}$$

2. For your convenience, Appendix C contains a table of discount factors for various discount rates and times to payment. To use the table, enter with the rate required and pick the discount factor for the year the cash flow is to be received. Multiply the expected cash flow by this factor to calculate its present value.

(13) PRESENT VALUE = FUTURE VALUE X DISCOUNT FACTOR (from table)

3. If a series of cash flows are expected, discount each receipt with the appropriate factor for the year in which it's to be received. The sum of these discounted values is the present value of the series.
E. Net Present Value is simply:

(14) NET PRESENT VALUE = DISCOUNTED VALUES OF CASH FLOWS - INVESTMENT

1. If the investment is made in increments over time, the investment costs should also be discounted in the same manner as the cash flows
2. Helfert and other recommended readings provide more detailed discount tables
3. Many business calculators can do these discount calculations
4. For simplicity, the table we've provided is rounded to two decimal places. As a result, anything in the future seems relatively worthless. Since the very late cash flows may include salvage and recoupment of working capital that can be very large, you will want to use more exact figures in real calculations
F. If two competing proposals have the same NPV, but Project A requires a smaller investment, you should choose A over B.
G. Some companies compute a Present Value Index (PVI) by taking the ratio of the present value of the cash flows to the present value of the investments required to generate them

Glossary

Accounts Payable

What is owed to suppliers who have delivered goods and deferred payment. The account payable of the buyer is an account receivable to the supplier.

DAYS OF PAYABLES = (ACCOUNTS PAYABLE/PURCHASES) X 360

Accounts Receivable

Money owed to us by our customers. A receivable for us is a liability for the firm which owes us money.

$$\text{(2) DAYS OF RECEIVABLES} = \frac{\text{ACCOUNTS RECEIVABLES}}{\text{SALES}} \times 360$$

Assets

What a firm owns that has value, such as cash, accounts receivable, inventory, and fixed assets.

Balance Sheet Overview

A snapshot of what the company owns, its assets, and an explanation of where the funds came from to buy these assets. The sources of these funds are debt (liabilities) and equity (net worth), contributed by lenders and shareholders respectively. The balance sheet equation is:

TOTAL ASSETS = DEBT + EQUITY

Break-even

The volume that results in zero profit before tax.

$$\text{BREAK – EVEN VOLUME} = \frac{\text{FIXED COST}}{\text{UNIT CONTRIBUTION}}$$

Bulk Value

The value per cubic foot of the product. Used in evaluating the cost feasibility of transportation options.

Capital Intensiveness

Percent of assets invested in plant and equipment. A higher plant and equipment investment percentage indicates higher capital intensiveness.

Cash Flow Statement

A financial statement that shows cash receipts and cash payments during a period. To calculate cash flow, add back non-cash expenses to profit after tax:

CASH FLOW = PROFIT AFTER TAX + NON CASH EXPENSES

Copyrights

A right granted by the federal government allowing the owner to reproduce and market an artistic work. Usually granted for life of the author plus 50 years

Cost of Goods Sold (or Services Provided)

The total cost of the merchandise sold during a period. Includes raw materials, direct labor, sales commissions, energy used in the production process, and in some cases, depreciation charges for the fixed assets. These costs, with exception of depreciation, are often called variable costs because they vary directly with the level of production

Costs of Capital

The weighted average costs of what a firm must pay for the use of the funds provided to it by its creditors and its shareholders. The cost of financing and venture is its cost of capital.

Current Ratio

$$\text{CURRENT RATIO} = \frac{\text{CURRENT ASSETS}}{\text{CURRENT LIABILITIES}}$$

Deferred Income Taxes

Taxes deferred because of differences between accounting income and taxable income. If this item shows on the balance sheet, the firm is keeping more than one set of books

Depreciation

The process of allocating the cost of an asset to expense over its useful life. Can be accelerated or straight-line. With accelerated deprecation, depreciation is expensed more in early years than in later years. With straight-line depreciation, depreciation is expensed equally for each year over the useful life of the asset.

DuPont Formula

A mathematical expression which breaks Return on Equity into operating efficiency, asset use efficiency, and financial leverage.

$$ROE = \frac{\text{NET INCOME}}{\text{SALES}} \times \frac{\text{SALES}}{\text{ASSETS}} \times \frac{\text{ASSETS}}{\text{EQUITY}}$$

Economies of Scale

When economists speak of economies of scale, they simply refer to the lower total unit cost, resulting from operating near capacity and spreading fixed costs over a large volume of product.

$$\text{TOTAL UNIT COST} = \text{UNIT VARIABLE COST} + \frac{\text{FIXED COST}}{\text{UNIT VOLUME}}$$

Fixed Costs

Costs that do not vary directly with the production rate are termed fixed costs. Fixed costs may vary but not directly with the level of production.

Foreign Corrupt Practices Act

American law regarding corrupt business practices follows both the firm and its representatives, no matter where they go. Basically, you can't bribe foreign officials to influence their decisions with respect to your company. If you do and are convicted back in the U.S., you can go to jail.

Generally Accepted Accounting Principles (GAAP)

A common set of guidelines that indicate how to report economic events. Rules set by accountants.

Income Statement

A report on the profit results for an accounting period of time, usually a quarter or a year. Format of the statement lists sales, also called revenues (and by the British, turnover), then deducts the costs that were incurred to produce those sales, leaving income.

Internal Rate of Return (IRR)

A single rate of return that summarizes the merits of a project. It is the discount rate that causes NPV to be zero

Inventories

Assets which a firm plans to sell. Can take the form of finished goods, work in process, or raw material.

$$\text{DAYS OF INVENTORY} = \frac{\text{INVENTORY}}{\text{COSTS OF GOODS SOLD}} \times 360$$

Labor Productivity

Measured by economics definition: sales per employee; notice that this measure is inflation sensitive

Lang Effect

Named after the chemical engineer who identified the effect. Capital requirements for plant and equipment seem to go up as only the 2/3 power of plant capacity. All other things being equal, Lang tells us that building bigger plants and equipment is better. This is illustrated in the following formula and table:

$$\left(\frac{\text{CAPACITY 1}}{\text{CAPACITY 2}}\right) = \left(\frac{\text{INVESTMENT 1}}{\text{INVESTMENT 2}}\right)^{2/3}$$

Learning Effects (also called Experience)

As a process is repeated, the cost of each cycle comes down because people and machines become more specialized and efficient at their functions.

Leverage

Measured by Assets / Equity. Indicates the degree to which assets are financed with debt. A high leverage ratio indicates high debt relative to equity.

Liabilities

Obligations to transfer assets or services from one firm to another arising from past transactions.

Liquidity

Indicates how quickly a company's assets can be converted to cash. Measured by Current Ratio: Current Assets/Current Liabilities.

Net Present Value (NPV)

Future cash flows which have been discounted to account for the time we must wait to get them. Money later is worth less than money now.

$$\text{PRESENT VALUE} = \frac{\text{FUTURE VALUE}}{(1 + \text{DISCOUNT RATE})^{(\text{YEARS})}}$$

For your convenience, the appendix contains a table of discount factors for various discount rates and times to payment. PRESENT VALUE = FUTURE VALUE X DISCOUNT FACTOR (from table) Net Present Value is simply the Present Value less the investment.

Patent

An exclusive right granted by the federal government to an inventor to manufacture, sell, and control his or her invention, usually for 17 years from the date of the grant. Unlike most of the rest of the world, the patent goes to the person who invents first, not the one who files first

Payback

The time it takes for an investment to return the amount invested in the project. For uniform cash flows the question can be answered by the following formula:

$$\text{PAYBACK (IN YEARS)} = \frac{\text{INVESTMENT REQUIRED}}{\text{ANNUAL CASH FLOW}}$$

Quick Ratio

$$\text{QUICK RATIO} = \frac{\text{CASH + ACCOUNTS RECEIVABLE}}{\text{CURRENT LIABILITIES}}$$

Return on Assets

ROA = RETURN ON SALES X TURNOVER

Return on Sales

Return on sales is often called profit, or sales, margin, or sometimes, just margin. Don't confuse turnover, asset turns, with the British term for sales

$$\text{ROS} = \frac{\text{NET INCOME}}{\text{SALES}}$$

Robinson-Patman Act

Governs price discrimination in selling to customers that compete, including discounts and cooperative advertising. Defenses include: meeting competition, cost justification, available to all, going out of a business.

Sherman Act

Imposes severe penalties on anti-competitive agreements. Declares all contracts, combinations and conspiracies that seek to restrain trade to be illegal. Reciprocity and tie-ins are generally illegal

Trademarks (Lanham Act)

A word, phrase, jingle, or symbol that identifies a particular product or enterprise. Trademarks must be filed with the federal government to be included in the Principal Register or Supplemental Register (less valuable). They have indefinite life.

Turnover

$$\text{TURNOVER} = \frac{\text{COST OF GOODS SOLD}}{\text{AVERAGE INVENTORY}}$$

Indicates how many times a company has sold off it's entire inventory in a period. Measures how efficiency management is managing inventory.

Variable Costs

Costs that vary directly with the level of production. Examples include direct materials, direct labor, and manufacturing overhead.

NOTES

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The Search for a Meaningful Past: Philosophies, Theories and Interpretations of Human History, Parts I-II
Is Anyone Really Normal? Perspectives on Abnormal Psychology
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Einstein's Relativity: Modern Physics for Non-Scientists, Parts I-II
God and Mankind: Comparative Religions
The Old Testament: An Introduction, Parts I-II
The Bible and Western Culture, Parts I-II
Economics, Parts I-II
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Medieval Europe:Crisis and Renewal: Parts I-II

V. Internal Rate of Return (IRR)
   A. Calculated by finding the discount rate that causes NPV to be zero
      1. When the required investment is made incrementally over a period of time, this approach is ambiguous and you can find more than one solution
      2. Business calculators find the IRR by trial and error, but can't handle the problem of serial investment
   B. Competing projects are evaluated to see which offers the higher IRR
   C. Some firms merely set an IRR hurdle rate that a project must meet to be approved
   D. What is the IRR of the project we evaluated in IV.E above?
   E. If a project offers the best IRR we have ever seen, is it likely we can reinvest the cash flows as they are received to achieve a similar high return? If not, are we getting the return promised?

VI. Bonds
   A. Bond returns are exactly analogous to the capital investments we have just discussed
      1. You make an investment to buy the bond
      2. You receive a series of interest payments, usually paid semiannually, called coupons because many bonds actually have a coupons attached, which are clipped and remitted to receive the interest payment due for the given period
      3. At the maturity, or sometimes a prior call date, you receive the principal value of the bond
      4. The yield to maturity, or return, on the bond is determined by calculating the IRR for the cash results we cited above
   B. Bond values can fluctuate during the time you own them
      1. The Federal Reserve Bank may choose to drive interest rates up or down as a matter of policy
      2. The rating of a particular issue may rise or fall because rating agencies have changed their minds about the ability of the issuing company to meet the interest or principal payments

QUESTIONS

1. ABC Company is eva luating a capital appropriation request. The proposal calls for investing $1 million up front to generate annual after-tax profits of $100 thousand each year for 10 years. It plans to charge off $50 thousand in depreciation each year and expects to recover $400 thousand in working capital and salvage at the end of the project. The firm requires payback in no more than 7years. Assuming the data are correct, how do you vote?

2. ABC also requires a discounted rate of return of at least 15 percent on its investments. Does the proposal in question meet this criterion?

3. Is the IRR for the project proposed in Question 1 more or less than 15 percent?

4. An accountant at the firm suggested that the company might change its mind about the investment, if it used accelerated, rather than straight-line, depreciation for the equipment used in the project. Should this make any difference?

5. A broker calls you with a bond deal. The bond is rated AAA and carries an annual interest coupon of 8 percent. It matures in 9 years. What would you be willing to pay for this bond if you were looking for a return of at least 10 percent?

ANSWERS

1. In favor of the proposal. It generates cash flows of $150 thousand per year (CF = PAT + Depreciation). So, payback is calculated from Formula (11): PAYBACK = INV / CF = 1000000/150000 = 6.7 years.

2. No. Depreciating each of the cash flows at 15 percent for the year in which they are to be received and adding the discounted value of the $400 thousand recovered at the end ofthe project results in a present value of about $855 thousand, less than the $1 million to be invested.

3. Less than 15 percent. Remember that reducing the discount rate will increase the value of the cash flows and recovery expected in the future years. The IRR to make these cash flows equal to the initial investment is about 11 percent.

4. Yes. Remember that accelerating depreciation has the effect of increasing cash flow in the early years, even though it decreases profits. The cash flows in later years will be decreased, but they carry heavier discounts in the calculation, and so don't weigh as importantly in the result.. In this case switching to accelerated depreciation will not change the result enough to change the decision, however.

5. Remember that, as interest rates rise, bond values drop; so you should only be willing to pay about $880 for the $1000 bond. (80X.91 +80X.83 +80X.75 +80X.68 +80X.62 +80X.56 +80X.51 +80X..47 +80X.42 +80X.39 + 1000X.39). Incidentally, bonds are normally quoted on Wall Street as a percentage of their face value of $1000, so you would tell the broker you would only pay 88 for the bond. If you got it for 88, you'd actually earn a little better than 10 percent, since bonds traditionally pay their coupons semiannually. On average, you would be receiving your interest payments about 3 months early, increasing their present value. Further, since you would be buying the bond at a price less than its maturity value, part of your return is the long-term capital gain realized on the difference between the $1000 you receive at maturity and the $880 you offered to pay for the instrument. Long-term capital gains are taxed at a rate about 10 percentage points less than the rate you pay on the coupon interest, so the effective after-tax rate is better than you would earn on a straight interest-oaying bond. Of course, bond prices normally reflect these factors.

Recommendations for Readings for Lecture 9

1. Helfert, Techniques of Financial Analysis, Irwin, Eighth Edition, 1994, pp253-331.

2. Spiro, Finance for the Nonfinancial manager, Wiley, 1977, pp98-109.

3. Van Horne, Financial Management and Policy, Prentice Hall, Chapter 2.

LECTURE 10
The Costs of Capital

I. Overview

In this Lecture you will learn about the price a firm must pay for the use of the funds provided to it by its creditors and its shareholders. The weighted average of these costs is the corporation's cost of capital. As you learned in Lecture 9, this cost is often used in determining whether the firm will make a capital investment. If it invests much of its funds at less than its cost of capital, it will soon run into trouble. We will also discuss some of the other demands investors might make on the firm before committing their funds to it.

II. Cost of Salaries and Wages Payable
- **A.** Some argue these funds are free
- **B.** If your employer announced that he intended to pay you only once, at the end of each year, the way Victorian England paid its house servants, what would be your reaction?
- **C.** There is a cost; we just don't know what it is; more, later

III. Cost of Accounts Payable
- **A.** Cost of credit from a supplier is built into his price
- **B.** He may offer a discount for early payment
  1. Example: 2 /10/ net 30
  2. You may take a 2% discount if you pay within 10 days (plus a grace period for postage)
  3. The full amount is due in 30 days
  4. A good deal - you save 2% for paying about 20 days early
  5. It compounds out to 43% per year
  6. Any firm that has more than 10 days of payables on its books is paying its suppliers 43% for the privilege

IV. Cost of Taxes Payable
- **A.** Your generous government charges nothing as long as you pay quarterly
- **B.** No doubt, the corporate tax rate reflects the fact the government is paying interest on its debt while waiting for you to pay

V. Cost of Short-term Bank Loans
- **A.** Since interest is a tax-deductible expense, as long as you didn't borrow to invest in tax-exempt bonds, the after-tax cost of interest is:

(15) AFTER-TAX INTEREST COST = PRE-TAX INTEREST COST X (1 - TAX RATE).

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