

**Achievement of Market-Friendly Initiatives and Results Program
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Abstracts of Required Readings and Comments on Learning Outcomes
(CFA I, 2003)

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Equity Valuation, Real Estate, and Introduction to Portfolio Management

Abstracts of Required Readings and Comments on Learning Outcomes (CFA I, 2003)

Note: Candidates will need to refer to the Learning Outcomes in your Study Guide for wording of each LO. I have provided you with comments on each LO in each study session, but have not duplicated the LOs in these notes.

by

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Table of Contents

Study Session 11, “Asset Valuation: Corporate Finance: Corporate Investing and Financing Decisions” 3

 Brigham and Houston, *Fundamentals of Financial Management*, 8th ed., “An Overview of Financial Management,” Ch. 1, pp. 18-22. 3

 Brigham and Houston, “The Cost of Capital,” Ch. 9. 3

 Brigham and Houston, “The Basics of Capital Budgeting,” Ch. 10. 5

 Brigham and Houston, “Cash Flow Estimation and Other Topics in Capital Budgeting,” Ch. 11, including Appendix 11A 7

 Brigham and Houston, “Risk Analysis and the Optimal Capital Budget,” Ch. 12. 9

 Brigham and Houston, “Capital Structure and Leverage” Ch. 13 including Appendix 13A. 11

 Brigham and Houston, “Dividend Policy,” Ch. 14. 13

 DeFusco, McLeavey, Pinto, and Runkle, *Quantitative Methods for Investment Analysis*, “Discounted Cash Flow Applications,” Ch. 2, pp 54-60. 16

Study Session 12, “Asset Valuation: Global Markets and Instruments” 16

 Reilly and Brown, *Investment Analysis and Portfolio Management*, 6th ed., “Selecting Investments in a Global Market,” Ch. 3, pp. 78-100. 16

 Reilly and Brown, “Organization and Functioning of Securities Markets,” Ch. 4. 18

 Reilly and Brown, “Security-Market Indicator Series,” Ch. 5. 21

 Reilly and Brown, “Efficient Capital Markets,” Ch. 7. 24

Study Session 13, “Asset Valuation: Equity Investments” 26

 Reilly and Brown, “An Introduction to Security Valuation,” Ch. 13. 26

 Reilly and Brown, “Stock-Market Analysis,” Ch. 18, including 677. 29

 Reilly and Brown, “Industry Analysis,” Ch. 19, pp. 730-735 and 746-770. 30

 Reilly and Brown, “Company Analysis and Stock Selection,” Ch. 20, pp. 783-785 and 802-824. 34

 Reilly and Brown, “Technical Analysis,” Ch. 21. 36

 DeFusco, et. al, “Discounted Cash Flow Applications,” Ch. 2, pp. 72-87. 37

Study Session 17, “Asset Valuation: Alternative Investments” 38

 Gitman and Joehnk, *Fundamentals of Investing*, 8th ed., “Real Estate and Other Tangible Investments,” Ch. 16, pp. 16-1 through 16-28. (*Note: This reading is available only in the 2003 CFA Level I Readings book or on the authors’ website. It is not part of the printed textbook.*) 38

 Reilly and Brown, “Professional Asset Management,” Ch. 26. 41

 Barry, *Alternative Investing*, “Venture Capital,” pp. 36-46 43

Study Session 18, “Portfolio Management: Capital Market Theory: Basic Concepts” 43

 Reilly and Brown, “Investment Setting,” Ch. 1, pp. 15-29. 43

 Reilly and Brown, “The Asset Allocation Decision,” Ch. 2. 45

 Reilly and Brown, “Selecting Investments in a Global Market,” Ch. 3, pp 69-78. 47

 Reilly and Brown, “An Introduction To Portfolio Management,” Ch. 8. 47

 Reilly and Brown, “An Introduction To Asset Pricing Models,” Ch. 9. 49

Study Session 11, “Asset Valuation: Corporate Finance: Corporate Investing and Financing Decisions”

Brigham and Houston, Fundamentals of Financial Management, 8th ed., “An Overview of Financial Management,” Ch. 1, pp. 18-22.

LOs

a) An agency problem is a potential conflict of interests that can arise between a principal and an agent. Two important agency relationships are (1) those between the owners of the firm and its management such as when the managers not owning any stock and (2) those between the managers, acting for stockholders, and the debtholders such as when the managers put firm assets at risk to the benefit of the stockholders but to the detriment of the bondholders.

b) Four mechanisms include: (1) properly structured managerial compensation, (2) direct intervention by stockholders, (3) the threat of firing, and (4) the threat of takeovers.

Brigham and Houston, “The Cost of Capital,” Ch. 9.

This chapter showed how the MCC schedule is developed for use in the capital budgeting process. The key concepts covered are listed below.

- The cost of capital used in capital budgeting is a weighted average of the types of capital the firm uses, typically debt, preferred stock, and common equity
- The component cost of debt is the after-tax cost of new debt. It is found by multiplying the cost of new debt by $(1 - T)$, where T is the firm's marginal tax rate: $k_d(1 - T)$.
- The component cost of preferred stock is calculated as the preferred dividend divided by the net issuing price, where the net issuing price is the price the firm receives after deducting flotation costs.
- The cost of common equity is the cost of retained earnings as long as the firm has retained earnings, but the cost of equity becomes the cost of new common stock once the firm has exhausted its retained earnings. Cost of equity is thus either k_s or k_r .
- The cost of retained earnings is the rate of return required by the firm's stock-holders, and it can be estimated by three methods: (1) the CAPM approach, (2) the bond-plus-risk-premium approach, and (3) the dividend yield plus-growth rate or DCF, approach.
- To use the CAPM approach, one (1) estimates the firm's beta, (2) multiplies this beta by the market risk premium to determine the firm's risk premium, and (3) adds the firm's risk premium to the risk-free rate to obtain the firm's cost of retained earnings
- The bond-Yield-plus-risk premium approach calls for adding a risk premium of from 3 to 5 Percentage points to the firm's interest rate on long-term debt: $k_s = \text{Bond yield} + R_p$

- To use the dividend yield plus growth rate approach, which is also called the discounted cash flow (DCI) approach, one adds the firm's expected growth rate to its expected dividend yield: $k_s = D_1/P_0 + g$.
- The cost of new Common equity is higher than the cost of retained earnings, because the firm must incur flotation expenses to sell stock. To find the cost of new common equity, the stock price is first reduced by the flotation expense, then the dividend yield is calculated on the basis of the price the firm will actually receive, and then the expected growth rate is added to this adjusted dividend yield: $k_e = D_1/[P_0(1 - F)] + g$.
- Each firm has an optimal capital structure, defined as that mix of debt, preferred stock, and common equity which minimizes its weighted average cost of capital (WACC):

- $$WACC = w_d(k_d)(1 - T) + W_{ps}(k_s) + W_{ce}(k_s \text{ or } k_e).$$

- The marginal cost of capital (MCC) is defined as the cost of the last dollar of new capital that the firm raises. The MCC increases as the firm raises more and more capital during a given period. A graph of the MCC plotted against dollars raised is the MCC schedule.
- A break point will occur in the MCC schedule whenever the amount of equity capital required to finance the firm's capital budget exceeds its retained earnings. At that point, the cost of capital will begin to rise because the firm must use more expensive outside equity.
- Various factors affect a firm's cost of capital. The financial environment determines some of these factors, but the firm influences others through its financing, investment, and dividend policies.
- The investment opportunity Schedule (IOS) is a graph of the firm's investment opportunities, with the project having the highest return plotted first.
- The MCC schedule is combined with the IOS schedule, and the intersection defines the **corporate cost of capital**, which is used to evaluate average-risk capital budgeting projects.
- The three equity cost-estimating techniques discussed in this chapter have serious limitations when applied to small firms, thus increasing the need for the small-business manager to use judgment. (Note: Generally, analysts look more to eps for large firms and sales for small firms).
- Stock offerings of less than \$1 million have an average flotation cost of .21 percent, while the average flotation cost on large common stock offerings is about 4 percent. As a result, a small firm would have to earn considerably more on the same project than a large firm. Also, the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of larger firms—this is called the small-firm effect.

LOs

a) Although the firm may use just one component for a specific project, it would use a different component on the next project. Thus, all projects should use the weighted average cost of all components and not the specific cost of the component being used for a specific project.

b) Cost of debt is the yield to maturity on current outstanding bonds. This yield reflects the risk for bonds about to be issued. The current yield on preferred stock (dividend divided by price of preferred) reflects the cost of any new preferred stocks about to be issued; the cost of retained earnings reflects the opportunity cost stockholders incur as a result of management not paying net income as dividends. RE is more expensive than either debt or preferred stock. The difference between the cost of RE and newly issued stock is the flotation cost, which is an added cost for new issues.

c) The optimal structure is the capital structure that minimizes the weighted average cost of capital or, alternatively, maximizes the value of the firm.

d) The WACC represents the cost the firm would incur by raising money in the market in the proportions of the optimal capital structure. It assumes that the new project is of similar risk to the firm's current capital projects.

e) The firm's marginal cost of capital is the cost of obtaining another dollar of new capital

f) The marginal cost is the cost of raising one more dollar; the weighted average cost is cost for the firm's entire capital structure.

g) The cost of capital is affected by two general factors: (1) external market forces that drive investor expectations such as inflation, R_f , and market risk premium, and (2) internal company policies such as the composition of the firm's capital structure that drive micro risk.

Questions/Problems: ETP 9-5, 9-6, 9-7, 9-8, 9-9

Brigham and Houston, "The Basics of Capital Budgeting," Ch. 10.

Capital budgeting is the process of analyzing potential fixed asset investments. Capital budgeting decisions are probably the most important ones financial managers must make.

- Note: The reason capital budgeting is included in your study material at CFA I is so you will see the application of time value of money. More importantly, however, is because capital budgeting techniques are used extensively in stock, bond, and real estate valuation. All three of these investments use the concepts of time value of money to determine the present value of the asset.
- Stocks: The present value of a stock, referred to as the intrinsic value, equals the present value of projected dividends beginning next year and lasting forever. At first glance, you may think this is quite unrealistic. Actually, it isn't. The present value of distant dividends is very small. You can see this from the present value table where the factors become increasingly

small as the time period become long. From a capital budgeting viewpoint, you would invest in a stock if the present value of the projected dividends exceeds the current cost of the stock in the open market. If this is the case, the stock has a positive net present value. Alternatively, you would not invest if the present value of the projected dividends is less than the current cost of the stock. In this case, the stock has a negative net present value.

- Bonds and real estate: The exact same concepts that we just saw for stocks also apply to bonds and real estate. If you can see this, you are well on your way to being an accomplished security analyst. The intrinsic value of a bond equals the present value of its projected coupon payments plus the present value of its terminal value (also called its maturity or face value). As with stocks, you would invest in the bond if the intrinsic value exceeds the current cost of the bond in the open market, and vice versa. The same technique works for real estate, only here you are finding the present value of projected after-tax cash flows and after-tax terminal value, which are equivalent to projected coupon payments and maturity value of a bond.
- Another way of looking at valuation is in terms of the internal rate of return. If the expected internal rate of return for a stock exceeds its required return, the stock is attractive: it has a positive alpha. The same concept applies to bonds and real estate. In valuing any asset, you want to determine if the expected return (IRR) exceeds the required return. Now you may ask whether you can only apply these concepts to positive cash flow stocks (dividends), bonds (coupon payments), and real estate (after-tax cash flows). The answer is no! If any of these investments are non-cash flow producing, you can still use the techniques of net present value and IRR. On your timeline, you would simply show no cash flows in which case you are betting on the appreciation of the asset over time. As you may immediately see, this makes the investment more risk because you are betting on growth to occur in the future and that growth is dependent on many unknown factors including unexpected inflation.
- I hope this brief discussion of capital budgeting helps you understand its importance. Study this material carefully since it is a cornerstone of valuation.

LOs

a) *Capital budgeting is the process of allocating capital to competing projects. The allocation process requires some criteria such as NPV, IRR or payback.*

b) ***The payback period** is defined as the number of years required to recover a projects' cost. The regular payback method ignores cash flows beyond the payback period, and it does not consider the time value of money. The payback does, however, provide an indication of a project's risk and liquidity, because it shows how long the invested capital will be "at risk." **The discounted payback** method is similar to the regular payback method except that it discounts cash flows at the project's cost of capital. It considers the time value of money, but it ignores cash flows beyond the payback period. **The net present value (NPV)** method discounts all cash flows at the projects' cost of capital and then sums those cash flows. The project is accepted if the NPV is positive. **The internal rate of return (IRR)** is defined as the discount rate that forces a projects' NPV to equal zero. The project is accepted if the IRR is greater than the cost of capital.*

c) *The NPV profile is a graph depicting the relationship between NPV and k , the discount rate. This relationship is inverse, meaning that as the discount rate increases, the NPV decreases. The point where the NPV profile crosses the k -axis is the IRR.*

d) *The NPV and IRR methods make the same accept/reject decisions for independent projects, but if projects are mutually exclusive, then ranking conflicts can arise. If conflicts arise, the NPV*

method should be used. The NPV and IRR methods are both superior to the payback, but NPV is superior to IRR. The NPV method assumes that cash flows will be reinvested at the firm's cost of capital, while the IRR method assumes reinvestment at the project's IRR. Reinvestment at the cost of capital is generally a better assumption in that it is closer to reality.

e) Multiple IRRs occur whenever cash flows change sign. For example, if a project has cash inflows followed by a cash outflow, the project will have 2 IRRs. Every time the cash flows change sign, the project has an added IRR.

f) NPV and IRR methods can produce conflicting results for mutually exclusive projects (see d above). For such cases, you should graph the NPV profiles for the two projects and visually determine which discount rate causes the conflict. For discount rates to the right of the crossover point, no conflict occurs; but to the left of the crossover point, the NPV and IRR criteria give conflicting signals.

g) The post-audit is a key element of capital budgeting. By comparing actual results with predicted results and then determining why differences occurred, decision makers can improve both their operations and their forecasts of projects' outcomes.

Questions/Problems: ST-1 a through j; SP 10-1 through 10-7; ETP 10-8, 10-9, and 10-10

Brigham and Houston, "Cash Flow Estimation and Other Topics in Capital Budgeting," Ch. 11, including Appendix 11A

The chapter discussed several issues in capital budgeting. The key concepts covered are listed below.

- The most important (and most difficult) step in analyzing a capital budgeting project is estimating the incremental after-tax cash flows the project will produce.
- Net cash flows consist of net income plus depreciation. In most situations, net cash flows are estimated by constructing annual cash flow statements.
- In determining incremental cash flows, opportunity costs (the cash flows forgone by using an asset) must be included, but sunk costs (cash outlays that have been made and that cannot be recouped) are not included. Any externalities (effects of a project on other parts of the firm) should also be reflected in the analysis.
- Cannibalization occurs when a new project leads to a reduction in sales of an existing product.
- Capital projects often require an additional investment in net working capital (NWC). An increase in NWC must be included in the Year 0 initial cash outlay, and then shown as a cash inflow in the final year of the project.
- The incremental cash flows from a typical project can be classified into three categories: (1) initial investment outlay, (2) operation cash flows over the project's life, and (3) terminal year cash flows.

- Replacement analysis is slightly different from that for expansion projects because the cash flows from the old asset must be considered in replacement decisions.
- If mutually exclusive projects have unequal lives, it may be necessary to adjust the analysis to put the projects on an equal life basis. This can be done using either the replacement chain (common life) approach or the equivalent annual annuity (EAA) approach.
- Inflation effects must be considered in project analysis. The best procedure is to build inflation directly into the cash flow estimates.

LOs

a) *Cash flows include accounting profits plus non-cash outlays such as depreciation.*

b) *Incremental cash flow is the difference between the firm's cash flows with the project and the firm's cash flows without the project; sunk cost is the cost that has already been committed or incurred, hence is not affected by the investment decision. Opportunity cost is the cost of foregoing another project. Externality involves the effects of the project on other parts of the firm. Cannibalization occurs when a new project leads to a reduction in sales of an existing product. Shipping plus installation costs must be considered as part of the initial outlay.*

c) *Net working capital is important since new operations require short-term financing (CA and CL) in addition to long-term financing.*

d) *An expansion project is the investment in new assets to increase sales. A replacement project considers the cash flows from the old asset in addition to those of the new project. This is done by evaluating the incremental cash flows, which are the cash flows you are giving up relative to the cash flows you will be receiving. A replacement project should be undertaken if the NPV of the incremental CFs is positive.*

e) *The marginal cost of capital is the interest cost of an extra unit (dollar) of capital.*

f) *Initial investment outlay includes all costs associated with the investment at current time. Operating cash flows occur during the project's life. Terminal year cash flows are analogous to the maturity value of a bond and include all ending cash flows. Both expansion and replacement projects must consider all cash flows, but remember they are incremental.*

g) *discuss the effects of inflation on capital budgeting analysis. Inflation effects must be considered in project analysis. The best procedure is to build inflation directly into the cash flow estimates and to use the traditional WACC (unadjusted).*

Questions/Problems: Q 11-1, 11-3, 11-5; ST-1b, -2, and -3; P 11-4, 11-6, and 11-11

Appendix 11A is included as an assigned reading to illustrate the impact of taxes on capital budgeting in an environment (country) where taxes are important. Candidates are not expected to memorize the major classes and asset lives for Modified Accelerated Cost Recovery System (MACRS) in Table 11A-1 or the recovery allowance percentages for MACRS in Table 11A-2. Chapter 8 in the White, Sondhi, and Fried text, assigned in Study Session 10, introduces the concept of differences in depreciation schedules for financial reporting purposes and for tax purposes.

LOs

a) *MACRS for a 3-year depreciable base asset actually covers 4 years: half a year in the first year, the second and third years, and half a year in the fourth year. Depreciable basis equals purchase price plus any shipping and installation costs.*

b) *Given an MARCS table, you would multiply the depreciable basis by the percentages to get the depreciation allowance for any year. At the time of sale, if the sale proceeds equal the book value (purchase price – accumulated depreciation), there would be no capital gains tax. Otherwise, there would be either a gain or loss.*

Brigham and Houston, “Risk Analysis and the Optimal Capital Budget,” Ch. 12.

This chapter discussed three issues in capital budgeting: (1) assessing risk, (2) incorporating risk into capital budgeting decisions, and (3) determining the optimal capital budget. The key concepts covered are summarized below.

- A project’s stand-alone risk is the risk the project would have if it were the firm’s only asset and if the firm’s stockholders held only that one stock. Stand-alone risk is measured by the variability of the asset’s expected returns, and it is often used as a proxy for both market and corporate risk because (1) market and corporate risk are difficult to measure and (2) the three types of risk are usually highly correlated.
- Within-firm, or corporate, risk reflects the effects of a project on the firm’s risk, and it is measured by the project’s effect on the firm’s earning variability. Stockholder diversification is not taken into account.
- Market risk reflects the effects of a project on the riskiness of stockholders, assuming they hold diversified portfolios. In theory, market risk should be the most relevant type of risk.
- Corporate risk is important because it influences the firm’s ability to use low-cost debt, to maintain smooth operations over time, and to avoid crises that might consume management’s energy and disrupt employees, customers, suppliers, and the community.
- Sensitivity analysis is a technique which shows how much a project’s NPV or IRR will change in response to a given change in an input variable such as sales, other things held constant.
- Scenario analysis is a risk analysis technique in which the best- and worst-cash NPV’s are compared with the project’s expected NPV.
- Monte Carlo simulation is a risk analysis technique in which a computer is used to simulate probable future events and thus to estimate the profitability and riskiness of a project.
- The pure play method and the accounting beta method can be used to estimate betas for large projects or for division.
- The risk-adjusted discount rate, or project cost of capital, is the rate used to evaluate a particular project. It is based on the corporate WACC, which is increased for projects which are riskier than the firm’s average project but decreased for less risky projects.

- Capital rationing occurs when management places a constraint on the size of the firm's capital budget during a particular period.
- The investment opportunity schedule (IOS) is a graph of the firm's investment opportunities, listed in descending order of IRR.
- The marginal cost of capital (MCC) schedule is a graph of the firm's weighted average cost of capital versus the amount of funds raised.
- The MCC schedule is combined with the IOS schedule, and the intersection defines the firm's marginal cost of capital for use in capital budgeting.

Learning Outcomes

Note: This chapter discusses the concepts of beta and the security market line. These concepts are also discussed in Ch. 9 of the Reilly and Brown text, which is assigned in Study Session 18.

LOs

a) project's stand-alone risk is the risk the project would have if it were the firm's only asset and if the firm's stockholders held only that one stock. Stand-alone risk is measured by the variability of the asset's expected returns, and it is often used as a proxy for both market and corporate risk because (1) market and corporate risk are difficult to measure and (2) the three types of risk are usually highly correlated.

b) Sensitivity analysis is "what if" using an electronic spreadsheet. Scenario analysis is a risk analysis technique in which the best- and worst-cash NPV's are compared with the project's expected NPV. Carlo simulation is a risk analysis technique in which a computer is used to simulate probable future events and thus to estimate the profitability and riskiness of a project.

c) Actually, the security market line is used the same way in capital budgeting as it is in security analysis. Calculate IRR and compare it to the required rate of return (this is WACC assuming firm only uses equity capital) adjusted for risk. If the IRR exceeds the WACC, accept project, and vice versa.

d) Pure play is where the firm tries to find a company that produces one product that is the same as the project being analyzed and uses the beta of that company for calculating the project's required rate of return. Accounting betas are calculated using the firm's ROA regressed against an industry average ROA (using time series data). You would use accounting betas when you cannot find a pure play.

e) A risk-adjusted discount rate involves altering the firm's discount rate depending on the risk of the project. An average risk project would have an average discount rate. As the risk increases, the discount rate likewise increases.

f) Capital rationing occurs when the firm allocates a fixed amount of capital to competing projects. Typically, the firm would rank from high (most profitable) to low (least profitable) and continue to allocate capital until it runs out.

Questions/Problems: Q 12-2; ST-1a through e

Brigham and Houston, “Capital Structure and Leverage” Ch. 13 including Appendix 13A.

In this chapter, we examined the effects of financial leverage on stock prices, earnings per share, and the cost of capital. The key concepts covered are summarized below.

- A firm’s optimal capital structure is that mix of debt and equity, which maximizes the stock price. At any point in time, management has a specific target capital structure in mind, presumably the optimal one, although this target may change over time.
- Several factors influence a firm’s capital structure. These include the firm’s (1) business risk, (2) tax position, (3) need for financial flexibility, and (4) managerial conservatism or aggressiveness.
- Business risk is the uncertainty about projections of future returns on assets. A firm will have little business risk if the demand for its products is stable, if the prices of its inputs and products remain relatively constant, it can adjust its prices freely if costs increase, and if a high percentage of its costs are variable and hence will decrease if sales decrease. Other things the same, the lower a firm’s business risk, the higher its optimal debt ratio.
- Financial leverage is the extent to which fixed-income securities (debt and preferred stock) are used in a firm’s capital structure. Financial risk is the added risk borne by stockholders as a result of financial leverage.
- Modigliani and Miller developed a trade-off theory of capital structure. They showed that debt is useful because interest is tax deductible, but also that debt brings with it costs associated with actual or potential bankruptcy. Under MM’s theory, the optimal capital structure strikes a balance between the tax benefits of debt and the costs associated with bankruptcy.
- An alternative (or, really, complementary) theory of capital structure relates to the signals given to investors by a firm’s decision to use debt versus stock to raise new capital. A stock issue sets off a negative signal, which using debt is a positive, or at least a neutral, signal. As a result, companies try to avoid having to issue stock by maintaining a reserve borrowing capacity, and this means using less debt in “normal” times than the MM trade-off theory would suggest.
- A firm’s owner’s may have to use a relatively large amount of debt to constrain the managers. A high debt ratio raises the threat of bankruptcy, which carries a cost but which also forces managers to be more careful and less wasteful with shareholders’ money. Many corporate takeovers and leveraged buyouts in recent years were designed to improve efficiency by reducing the free cash flow available to managers.
- Although it is theoretically possible to determine a firm’s optimal capital structure, as a practical matter we cannot estimate it with precision. Accordingly, financial executives generally treat the optimal capital structure as a range—for example, 40 to 50 percent debt—rather than as a precise point, such as 45 percent. The concepts discussed in this chapter help managers understand the factors they should consider when they set the target capital structure ranges for their firms.

LOs

- a) Target capital structure is the capital structure the firm desires. It is not necessarily optimal. Optimal capital structure is the capital structure that minimizes the firm's WACC or, alternatively, maximizes its stock value.
- b) The main factor is risk. The higher the risk tolerance of the firm, the greater the amount of equity in its capital structure, and vice versa. Another factor is taxes. The higher the tax rate, the greater the advantage of using tax-deductible interest payments. Another is the need for financial flexibility. The greater this need, the more the firm wants to use equity, which does not involve a requirement to repay any money.
- c) Business risk is the uncertainty about projections of future returns on assets. A firm will have little business risk if the demand for its products is stable, if the prices of its inputs and products remain relatively constant, it can adjust its prices freely if costs increase, and if a high percentage of its costs are variable and hence will decrease if sales decrease. Other things the same, the lower a firm's business risk, the higher its optimal debt ratio. Financial risk is the uncertainty of being able to pay back the loan (principal and interest). Use of borrowed money (leverage) incurs financial risk. More leverage means more financial risk.
- d) DFL equals %change in Net Profits (NI) for a given %change in EBIT. With no debt in the firm's capital structure, DFL equals 1.0. As financial leverage increases, DFL increases and reflects higher risk.
- e) Operating leverage is the percentage change in operating income (or EBIT) that results from a given percentage change in sales. $DOL = \%change\ EPS / \%change\ in\ EBIT$. The greater the fixed cost, the greater the DOL and the greater the risk to stockholders. Thus, higher DOL implies higher risk and, in turn, a higher expected return.
- f) $Q(BE\ in\ sales) = Fixed\ Cost / (P - V)$ where $P - V$ equals the contribution to covering fixed costs. Q can either be in units or dollars. If given in units, multiply by price per unit to get BE in dollars. Given a sales level, determine gain or loss (in EBIT) by subtracting FC and VC from Sales. BE is where EBIT equals zero.
- g) Financial leverage (see d above).
- h) The degree of total leverage (pg 537) measures how a given change in sales will affect earnings per share. $DTL = DOL \times DFL$ where DFL measures how a given change in EBIT will affect earning per share. DTL and DFL are both affected by the amount of debt financing. Generally, the higher the debt financing, the greater the risk and the higher the return expected by stockholders.
- i) DOL equals %change in Operating Profits (EBIT) for a given %change in sales. With no fixed costs, DOL equals 1.0. As fixed costs increase, DOL increases and reflects higher risk; $DFL = \%change\ in\ NI\ divided\ by\ \%change\ in\ EBIT$; $DTL = DOL \times DFL$. That is, DTL is the %change in NI for a given change in sales.
- j) The cost of debt increases as greater amounts of debt is in the capital structure because creditors see more risk and, thus, require a higher return. The stockholders view it the same way.

k) *Changes in debt can cause changes in the company's earnings per share and in the stock price by requiring the firm to commit itself to paying back a loan, with interest. If the firm can invest borrowed money at a return greater than the interest rate on the borrowed money, earning per share should increase (after the fact), and vice versa. Eventually, the stock price should follow earnings. Another way of looking at it is that the greater use of debt requires a greater amount of EBIT to pay interest that, in turn, reduces net income available to the stockholders. But since more debt means fewer shares outstanding, EPS usually increases. Stockholders see greater risk with more debt and, thus, require a higher return, which tends to reduce the price of the stock. Remember $P = D1/(k-g)$ where k reflects risk.*

l) *Company value may be determined by the value of its assets, as would be the case in a liquidation proceeding. Stock value is determined by the earning power (and, hence, future dividends according to the dividend discount model) of those assets. Thus, company value is often more of a balance sheet calculation whereas stock value is more of an income statement calculation (actually, a projection of net income).*

m) *Taxes encourage the use of debt because interest is deductible. Bankruptcy possibilities encourage the use of equity since more leverage incurs greater obligations to repay the borrowed money. The tradeoff between the two creates a balance that defines the optimal capital structure. Modigliani and Miller developed a theory that, in the absence of taxes, says the choice is irrelevant between the use of debt and equity. Even though debt is cheaper, the stockholders' increased risk offsets the advantage of the cheaper debt.*

n) *MM's capital structure irrelevance proposition says that the firm is indifferent between the use of debt and equity in the absence of taxes. When taxes are present, the firm should use as much debt as possible. These two propositions are inconsistent with the trade-off theory since they both ignore the possibility of bankruptcy.*

o) *If management believes its earnings prospects are good, it behooves management to raise new capital via debt. The stockholders would benefit more this way than by issuing new stock that dilutes earnings. The opposite occurs if management believes its earnings prospects are not good.*

Questions/Problems: Q 13-13; SP 13-1; ETP 13-3; P 13A-1, 13A-2, 13A-4c

Brigham and Houston, "Dividend Policy," Ch. 14.

Dividend policy involves the decision to pay out earnings versus retaining them for reinvestment in the firm. The key concepts covered in the chapter are listed below.

- Dividend policy involves three issues: (1) What fraction of earning should be distributed, on average, over time? (2) Should the distribution be in the form of cash dividends or stock repurchases? (3) Should the firm maintain a steady, stable dividend growth rate?
- The optimal dividend policy strikes a balance between current dividends and future growth so as to maximize the firm's stock price.
- Miller and Modigliani developed the dividend irrelevance theory, which hold that a firm's dividend policy has no effect on either the value of its stock or its cost of capital.

- The bird-in-hand theory holds that the firm's value will be maximized by the high dividend payout ratio, because investors regard cash dividends as being less risky than potential capital gains.
- The tax preference theory states that because long-term capital gains are subject to less onerous taxes than dividends, investors prefer to have companies retain earnings rather than pay them out as dividends.
- Empirical tests of the three theories have been inclusive. Therefore, academicians cannot tell corporate managers how a given change in dividend policy will affect stock prices and capital costs.
- Dividend policy should take account of the information content of dividends (signaling) and the clientele effect. The information content, or signaling, effect relates to the fact that investors regard an unexpected dividend change as a signal of management's forecast of future earnings. The clientele effect suggests that a firm will attract investors who like the firm's dividend payout policy. Firms that are considering a change in dividend policy should consider both factors.
- In practice, most firms try to follow a policy of paying a steadily increasing dividend. This policy provides investors with stable, dependable income, and departures from it give investors signals about management's expectations for future earnings.
- Most firms use the residual dividend model to set the long-run target payout ratio at a level, which permits the firm to satisfy its equity requirements with retained earnings.
- Legal constraints, investment opportunities, availability and cost of funds from other sources, and taxes are also considered when firms establish dividend policies.
- A dividend reinvestment plan (DRP or DRIP) allows stockholders to have the company automatically use dividends to purchase additional shares of stock. DRIPs are popular because they allow stockholders to acquire additional shares without incurring brokerage fees.
- A stock split increases the number of shares outstanding. Normally, splits reduce the price per share in proportion to the increase in shares because splits merely "dividend the pie into smaller slices." However, firms generally split their stocks only if (1) the price is quite high and (2) management thinks the future is bright. Therefore, stock splits are often taken as positive signals and thus boost stock prices.
- A stock dividend is a dividend paid in additional shares of stock rather than in cash. Both stock dividends and splits are used to keep stock prices within an "optimal" trading range.
- Under a stock repurchase plan, a firm buys back some of its outstanding stock, thereby decreasing the number of shares, which should increase both EPS and the stock price. Repurchases are useful for making major changes in capital structure, as well as for distributing temporary excess cash.

LOs

- a) *Irrelevance implies that the dividend policy does not matter; bird in hand says stockholders prefer cash dividend now opposed to possibly a higher dividend later; tax preference says stockholders prefer firm retains earnings that, in turn, should boost price of stock where capital gains are taxed at a lower rate than cash dividends.*
- b) *The dividend irrelevance theory suggests that the value of the firm is independent of the firm's dividend policy.*
- c) *The principal conclusion of for dividend policy is that the value of the firm depends only on total income and not the division of that income into retained earnings and dividends. Another way is view this is via DDM. If D increases, for example, g decreases in such a way to offset the impact on P .*
- d) *Shareholders can construct their own dividend policy in a couple of ways. If you think current dividends are too low, you can sell stock to create your own stream of desired dividends. Likewise, if you think current dividends are too high, you can purchase stock with your dividends via reinvestment of those dividends.*
- e) *Growth = ROE \times (1 – payout ratio).*
- f) *Managers signal by implying higher dividends suggest higher future earnings, and vice versa.*
- g) *The firm employs a dividend policy that caters to its shareholders of record, it clientele.*
- h) *Most firms use the residual dividend model to set the long-run target payout ratio at a level, which permits the firm to satisfy its equity requirements with retained earnings. Any earning left over are then paid out to stockholders.*
- i) *Declaration date is when firm declares dividend; Holder-of-record date lists the stockholders who will receive the dividend; Ex-dividend date is day after which current dividend no longer accompanies stock.*
- j) *A stock dividend is a dividend paid in additional shares of stock rather than in cash. Both stock dividends and splits are used to keep stock prices within an “optimal” trading range. A stock split increases the number of shares outstanding. Normally, splits reduce the price per share in proportion to the increase in shares because splits merely “dividend the pie into smaller slices.” However, firms generally split their stocks only if (1) the price is quite high and (2) management thinks the future is bright. Therefore, stock splits are often taken as positive signals and thus boost stock prices.*
- k) *Advantages include: (1) taking stock off the market that, in turn, increases the price of remaining stock, (2) quick way to restructure firm—change capital structure, and (3) positive signal that management considers the stock undervalued. Disadvantages include: (1) paying too high a price for stock, (2) foregoing payment of money as dividends, and (3) potential taxes due to selling stockholders. Stock repurchase is a transaction in which a firm buys back shares of its own stock, thereby decreasing shares outstanding, increasing EPS, and, often, increasing the stock price.*

Questions/Problems: SP 14-1, 14-3; P14-9c, d, and e.

DeFusco, McLeavey, Pinto, and Runkle, Quantitative Methods for Investment Analysis, “Discounted Cash Flow Applications,” Ch. 2, pp 54-60.

LOs

a) NPV and IRR are discounted cash flow techniques used in the valuation of all assets whether financial such as stocks and bonds, or real such as plant and equipment. The basic methodology is net present value (NPV), which equals the difference between the present value of cash inflows and the present value of cash outflows discounted at the required rate of return. If discounting is for a stock, use cost of equity; if a bond, use cost of debt; if for a capital project, use WACC. If the project has a positive NPV, the project is acceptable, and vice versa.

b) Accept the project if the NPV is positive and reject otherwise; accept project if IRR exceeds the required rate of return (also called the discount rate) and reject otherwise.

c) IRR is an alternative way of looking at the same problem. Instead of calculating present values, you determine the rate at which the future cash flows makes the NPV equal zero. If the IRR exceeds the required rate, the project is acceptable, and vice versa. The main problem with the IRR is that you can have multiple IRRs if the sign of cash flows alternate between negative and positive. Also, IRR and NPV can conflict for mutually exclusive projects when the discount rate is relatively low.

Problems: 2, 3, 4

Study Session 12, “Asset Valuation: Global Markets and Instruments”

Reilly and Brown, Investment Analysis and Portfolio Management, 6th ed., “Selecting Investments in a Global Market,” Ch. 3, pp. 78-100.

International diversification reduces portfolio risk by introducing securities with low positive or negative correlations into the portfolio. Low or negative correlations mean that the securities’ returns tend not to move together or move in opposite directions. This results in a more stable portfolio return. Figure 2.4 shows what happens to the risk-reward tradeoff when we combine U.S. and foreign bonds. When we compare 100 percent U.S. portfolio with the 100 percent non-U.S. portfolio, we see that foreign portfolio has higher rate of return and higher standard deviation (higher total risk). Nonetheless, as you move toward the center of the curve, diversification increases and risk (standard deviation) of combined portfolio decreases

Figure 2.5 demonstrates the impact of international equity diversification. These curves demonstrate that as you increase the number of randomly selected securities in a portfolio, the standard deviation (total risk) will decline due to the benefits of diversification within your own country. The lower curve indicates the benefits of international diversification. Adding foreign securities to a U.S. portfolio to create a global portfolio enables US investors to experience lower overall risk because the non-U.S. securities are not perfectly correlated with U.S. securities. When international securities are added to a U.S. portfolio, systematic risk decreases and the total risk of the combined portfolio becomes lower than the total risk of a U.S. portfolio.

Exchange Rate Risk

An additional risk introduced through international investing is exchange risk. The exchange rate exposure of a security is related to its sensitivity of return to changes in exchange rates. If an investor receives cash flows from securities held in an appreciating currency (domestic currency weaker), the cash flow after the exchange rate causes an increase in the return on investment specified in the domestic currency.

Global Investment Choices

Fixed-income investments: these are Investment contracts that promise specific payments at predetermined times, although the legal force behind the promise varies and this affects their risks and required returns. Fixed-income investors are lenders. In return, they expect periodic interest payments from the issuer and, at the maturity of the loan, to get back the principal lent. There are several fixed income investments.

1. Savings accounts - deposit funds, and low risk
2. Capital market instruments - trade in secondary markets, i.e., between individuals or institutions.
 - a) U.S. Treasury Securities - bills, notes, or bonds
 - b) U.S. Government Agency Securities - Ginnie Mae, Fannie Mae, Federal Land Banks (FLB), Federal Housing Administration (FHA), etc.
 - c) Municipal Bonds - issued by local government entities, and tax exempt
 - d) Corporate Bonds - issued by industrial corporations
 - i) Senior secured bonds - the most reliable bond in the firm, and lowest risk
 - ii) Debentures - bondholder depend on the success of the borrower to make the promised return, and has right first call on the firm's earnings
 - iii) Subordinated bonds - similar to debentures, ranks third in term of claiming the assets of the firm after senior secured bonds and debentures
 - iv) Income bonds - pays interest only if the firm earns the income
 - v) Convertible bonds - bondholder has option to change them with the firm's common stock, and generally pays lower interest.
3. International bond investments:
 - a) Eurobond market - there are many kinds like Eurodollar bonds, Euroyen bonds, Eurodeutschemark bonds, and Eurosterling bonds (all issued outside home economy).
 - b) Yankee bonds - denominated in U.S. dollars, issued by foreign corporations or governments (sold in U.S.).
 - c) International domestic bonds - sold domestically with domestic currency.
 - d) Preferred stock - fixed income security but income treated as dividend.
4. Equity instruments:
 - a) Common stock - classification by business line
 - b) Foreign equities
 - i) American Depository Receipts (ADRs) - issued by a U.S. bank, which holds the shares in safekeeping as a convenience to an investor. Handling costs are deducted from dividends.
 - ii) American shares - issued in the U.S. by a transfer agent acting on behalf of a foreign firm.
 - iii) Direct purchase - buying and selling in domestic market and with domestic currency of foreign country.

- iv) International mutual funds - global funds, international funds, etc. This is a convenient way of investing globally.
- 5. Special Equity Instruments: These are equity derivative securities, which are securities that have a claim on the common stock of a firm.
 - a) Warrants – provide an option to buy the stock (longer term than call options)
 - b) Call options - option to buy stock within a certain period and a specified price.
 - c) Put options - used by investors who want protection from stock price decline or by investors who expect stock price decline during a specified period.
 - d) Futures contracts - agreements that provide for the future exchange of a particular asset at a specified delivery date in exchange for a specified payment at the time of delivery. There are two kinds of futures: commodity and financial futures.

LOs

The candidate should be able to:

a) *Savings accounts - deposit funds, and low risk; US. Treasury securities - US government agency securities - Ginnie Mae, Fannie Mae; Municipal bonds - issued by local government entities, and tax exempt; Corporate bonds - issued by industrial corporations; Eurobonds - all issued outside of the home economy; Yankee bonds - denominated in US dollars, and issued by foreign governments or corporations, sold in the US.*

b) *Common Stock - classification by business line; Foreign equities - American Depository Receipts, American shares, direct purchases, and international mutual funds.*

c) *Warrants are options to buy the underlying stock at a specified price. Warrants have longer terms than call options and are issued directly by firm. Calls are options to buy a stock within a certain period and a specified price and puts are options to sell; Future contracts - commodity and financial futures – are agreements providing for the future delivery a particular asset at a specified date in exchange for a specified payment at the time of delivery. Short (sell) and long (buy) positions are opposite.*

d) *Investment companies allow for professional management with broad diversification. Historically, riskier assets experienced higher returns than less risky assets. Real estate has provided an average return somewhat lower than stocks but somewhat higher than bonds, depending on the amount of leverage. International stocks and metals have provided high rates of return but also have high risks whereas bonds and cash equivalents have relatively low returns with a low risk. Remember that all historical data are time dependent. That is, relationships can and do change depending on the time period being analyzed. Low-liquidity investments such as corporate loans present greater risk and, thus, should provide a greater return.*

Self test question: Explain why investors should have a global investment perspective.

Suggested answer: International diversification reduces portfolio risk by introducing securities less than perfectly positively correlated with domestic securities. This means that returns tend not to move together, which produces more stable portfolio returns.

Reilly and Brown, “Organization and Functioning of Securities Markets,” Ch. 4.

Characteristics of a Good Market: A good market should provide **accurate information** on the price and volume of past transaction, and current supply and demand. Clearly, there should be rapid dissemination of this information. Adequate **liquidity** is desirable so that participants may buy and sell their securities rapidly at a price reflecting the supply and demand. The costs of

transferring ownership (**commissions**) should be low. Finally, the prevailing **price** should reflect all available information.

Primary and Secondary Capital Markets: The Primary market in securities is where new issues are sold by corporations to acquire new capital via the sale of bonds, preferred stock or common stock. The sale typically takes place through an investment banker. The secondary market is simply trading in outstanding securities. It involves transactions between owners after the company has sold the issue to the public. Consequently, the proceeds from the sale do not go to the company as is the case with a primary offering. Thus, the price of the stock is of relevance mainly to the buyer and seller. The functioning of the primary market would be seriously hampered in the absence of a good secondary market. A good secondary market provides liquidity to an investor who wants to alter the composition of his or her portfolio from securities to other assets (i.e., house, etc.). Thus, investors would be reluctant to acquire securities in the primary market if they felt they would not subsequently have the ability to sell the securities quickly at a known price. Also, the secondary market provides a guide to issuers for the price they can expect in the primary market.

Major Stock Exchanges in the United States: The New York Stock Exchange (NYSE), the older of the two national exchanges, has more rigorous requirements for listing than American Stock Exchange (AMEX). The requirements for net income, asset value, number of shares outstanding and number of stockholders insures that the largest companies are listed on the NYSE. Shares and dollar volume is also substantially higher on the NYSE. Until mid-1976 the AMEX maintained its uniqueness by not allowing dual listing –listing both on the NYSE and the AMEX at the same time. However, in August, 1976 the “New York Rule” prohibiting dual listing was repealed. Subsequently, several firms retained their AMEX listing even after they obtained NYSE listing. Long-term, the trading market shifted to the NYSE and many stocks were delisted on the AMEX. The AMEX has been quite innovative in allowing listing of foreign securities, which constitute about 10 percent of volume. It also preceded the NYSE in the listing of warrants, and began trading in call options on NYSE listed securities.

Major International Stock Exchanges: Tokyo Stock Exchange (TSE) is similar to the NYSE in terms of dominance of its country’s market. The TSE currently has about 1,766 companies listed on the exchange compared to 2,089 companies listed on the NYSE. However, volume on the TSE far exceeds trading on the NYSE. The TSE also operates differently. Specifically, stocks of domestic companies are divided into two sections: the 150 most active stocks are traded on the stock floor, while computer conducts trading in all other stocks. London Stock Exchange (LSE) is the largest stock exchange market in the United Kingdom. The pricing system on the LSE is by competing dealers who communicate via computers in offices away from the stock exchange. This system is very similar to the NASDAQ system used in the Over -the-Counter (OTC) market in the U.S.

Types of Orders in the Exchange Markets: (1) Market Orders: this is an order to buy or sell a stock at the ask/bid prices prevailing at the same time the order hits the exchange floor, (2) Limit Orders: the individual placing a limit order specifies a maximum price that the individual will pay to purchase the stock or the minimum he will accept to sell it, (3) Short Sales: this is the sale of stock that is not currently owned by the seller with the intent of purchasing it later at a lower price. Borrowing the stock from another investor through broker does this. A short sale can be made only on an uptick trade, meaning the price of the short sale must be higher than the last trade price, (4) Special Orders: there are several special types of orders (a) stop-loss order is a conditional order whereby the investor indicates that he wants to sell the stock if the price drops to a specified price, thus protecting himself from a large and rapid decline in price, (b) stop-buy

order is also used by investors to protect themselves from an increase on price, (5) Margin Transactions: Leverage is accomplished by buying or selling on margin, which means that the investor pays some cash and borrows the rest through the broker, putting up the stock for collateral. The interest rate charged by investment firms is typically 1.5 percent above the bank rate, which is called as *call money rate*. In margin transactions, there is margin requirement, which is the proportion of total transaction value that must be paid in cash.

After the initial purchase, changes in the market price of the stock will cause changes in the investor's equity, which is equal to the market value of the collateral stock minus the amount borrowed. Leverage magnifies both gains and losses.

LOs

a) Characteristics of a well-functioning securities market - (1) accurate information on the price, transaction volume, supply and demand, (2) adequate liquidity, (3) price should reflect the all available information.

b) Primary markets are similar to the new car market while the secondary markets are similar to the used car market. In primary markets, corporations sell new issues such as bonds, equities, or preferred stocks. Secondary markets involve the trading of outstanding securities. A good secondary market provides liquidity to investors. Without a good secondary market, primary market does not function very well because if there is no demand for equities in secondary market, investor will not buy securities in primary market to resell in secondary market.

c) Call markets clear only periodically. Continuous markets clear continually.

d) National exchanges have wide distribution capabilities whereas regional exchanges have more narrow distribution capabilities. OTC market trade in stocks not listed on an organized exchange. Third market refers to OTC trading of a security listed on an exchange. Fourth market refers to direct trading of securities between two parties without a broker.

*e) Exchange members transact for themselves as well as clients. Market makers are dealers who buy securities with intention of selling later at a higher price (a markup). (1) Market Orders: this is an order to buy or sell a stock at the ask/bid prices prevailing at the same time the order hits the exchange floor, (2) Limit Orders: the individual placing a limit order specifies a maximum price that the individual will pay to purchase the stock or the minimum he will accept to sell it, (3) Short Sales: this is the sale of stock that is not currently owned by the seller with the intent of purchasing it later at a lower price. Borrowing the stock from another investor through broker does this. A short sale can be made only on an uptick trade, meaning the price of the short sale must be higher than the last trade price, (4) Special Orders: there are several special types of orders (a) stop-loss order is a conditional order whereby the investor indicates that he wants to sell the stock if the price drops to a specified price, thus protecting himself from a large and rapid decline in price, (b) stop-buy order is also used by investors to protect themselves from an increase on price, (5) Margin Transactions: Leverage is accomplished by buying or selling on margin, which means that the investor pays some cash and borrows the rest through the broker, putting up the stock for collateral. The interest rate charged by investment firms is typically 1.5 percent above the bank rate, which is called as *call money rate*. In margin transactions, there is margin requirement, which is the proportion of total transaction value that must be paid in cash.*

f) Short selling is where investor borrows shares from broker, sells them, and intends to buy them back for repayment to broker at a later time at a lower price.

g) *On listed exchanges, you cannot short on a downtick.*

h) *This means borrowing money from broker at the call rate and investing that money with the intention of achieving a return greater than the interest rate paid the broker.*

i) *Say investor has \$1000. Borrows \$1000 from broker, and invests \$2000 in ABC stock that, over 1 year, appreciates 10 percent. At end of year, account is worth \$2,200. Ignoring interest, profit is \$200 on equity investment of \$1000 for a return of 20 percent. Without margin, profit is \$100 for a return of 10 percent. Downside works in reverse. Interest reduces profit.*

j) *Maintenance margin requires investor to maintain a certain amount of equity in account. If market value of margined account declines far enough, investor receives a margin call whereby investor must either put more money in the account or broker will sell sufficient amount of securities to bring account into compliance with margin requirement.*

k) *Major impact is improved liquidity that should reduce bid-ask spreads.*

Problems: 2, 3, 4

Self test question: Define liquidity and discuss the factors that contribute to it. Give examples of a liquid asset and illiquid assets, and discuss why they are considered liquid and illiquid?

Suggested answer: Liquidity is the ability to sell an asset quickly at a price not substantially different from the current market assuming no new information available. A share of AT&T is very liquid, while an antique would be a fairly illiquid asset. A share of AT&T is highly liquid since an investor could convert it into cash within 1/8 of a point of the current market price. An antique is illiquid since it is relatively difficult to find a buyer and then you are uncertain as to what price the prospective buyer would offer.

Reilly and Brown, “Security-Market Indicator Series,” Ch. 5.

Uses of Market Indicator Series: The Purpose of market indicator series is to provide a general indication of the aggregate market changes or market movements. More specifically, the indicator series are used to derive market returns for a period of interest and then used as a benchmark for evaluating the performance of alternative portfolios. A second use is in examining the factors that influence aggregate stock price movements by forming relationships between market (series) movements and changes in the relevant variables in order to illustrate how these variables influence market movements. A further use is by technicians who use past aggregate market movements to predict future price patterns. Finally, a very important use is in portfolio theory, where the systematic risk of an individual security is determined by the relationship of the rates of return for the individual security to rates of return for a market portfolio of risky assets. Here, a representative market indicator series is used as a proxy for the market portfolio of risky assets.

Differentiating Factors in Constructing Market Indexes: A characteristic that differentiates alternative market indicator series is the sample--the *size* of the sample (how representative of the total market it is) and the source [whether securities are of a particular type or a given segment of the population (NYSE, TSE)]. The *weight* given to each security plays a discriminatory role -- with diverse securities in a sample, it would make a difference whether the series is price-weighted, value weighted, or unweighted. Finally, the *computational procedure* used for calculating return--i.e., whether arithmetic mean, geometric mean, etc. is important.

Price-weighted series: This is an unweighted arithmetic average of current prices of the securities included in the sample--i.e., closing price of all securities are summed and divided by the number of securities in the sample. Because the series is price weighted, a high priced stock carries more weight than a low-priced stock, so as shown in Table 4.2, a 10 percent change in \$100 stock (\$10) will cause a larger change in the series than a 10 percent change in a \$30 stock (3).

Table 4.2 Demonstration of the Impact of Differently Priced Shares on a Price-Weighted Indicator Series

	Period T	Period T+1	
		Case A	Case B
A	100	110	100
B	50	50	50
C	<u>30</u>	<u>30</u>	<u>33</u>
Sum	180	190	183
Divisor	3	3	3
Average	60	63.3	61
Percentage Change		5.5	1.7

Major price-weighted indexes are: (1) Dow Jones Industrial Average (DJIA) - The DJIA is a price-weighted average of 30 large, well-known industrial stocks that are generally the leaders in their industry (blue-chips) and are listed on the NYSE. It is contended that the DJIA probably reflects price movements for large, mature blue-chip firms rather than for the typical company listed on the NYSE, (2) Nikkei-Dow Jones Average - This index is an arithmetic average of prices for 225 stocks on the First Section of the Tokyo Stock Exchange (TSE).

Value-weighted Series: Value weighted index begins by deriving the initial total market value of all stocks used in the series (market value equals number of shares outstanding times current market price). The initial value is typically established as the base value and assigned an index value of 100. Subsequently, a new market value is computed for all securities in the sample and this new value is compared to the initial value to derive the percent change, which is then applied to the beginning index value of 100. An example of a computation of a Value-Weighted Index is illustrated in Table 4.3

Table 4.3 Example of a Computation of a Value-Weighted Index

Stock	Share Price	Number of Shares	Market Value
December 31, 1993			
A	\$10.00	1,000,000	\$ 10,000,000
B	15.00	6,000,000	90,000,000
C	20.00	5,000,000	<u>100,000,000</u>
Total			\$ 200,000,000
			Base Value Equal to an Index of 100
December 31, 1994			
A	\$12.00	1,000,000	\$ 12,000,000
B	10.00	12,000,000 (a)	120,000,000
C	20.00	5,500,000 (b)	<u>110,000,000</u>
Total			\$ 242,000,000

$$\begin{aligned} \text{New Index Value} &= (\text{Current Market Value} / \text{Base Value}) \times \text{Beginning Index Value} \\ &= (\$242,000,000 / \$200,000,000) \times 100 \\ &= 1.21 \times 100 = 121 \end{aligned}$$

-
- (a) stock split two-for-one during year
(b) Company paid a 10 percent stock dividend during the year
-

Major value-weighted indexes are: (1) Standard & Poor Indexes, (2) New York Stock Exchange, (3) NASDAQ series, (4) American Stock Exchange, (5) Dow Jones Equity Market Index, (6) Willshire 5000 Equity Index, (7) The Russell Indexes, (8) Financial Times Actuaries Share Indexes (United Kingdom), (9) Tokyo Stock Exchange Price Index (TOPIX) (Japan)

Unweighted price indicator series: In an unweighted price indicator series, all stocks carry equal weight irrespective of their price and/or their value. One way to visualize an unweighted series is to assume that equal dollar amounts are invested in each stock in the portfolio, for example, an equal amount of \$1,000 is assumed to be invested in each stock. Therefore, the investor would own 50 shares of a \$20 stock, 100 shares of a \$10 stock, and 20 shares of a \$100 stock.

Major Unweighted price indicator series are: (1) University of Chicago Series, (2) Indicator Digest Index, (3) Value Line Averages. An example of a Computation of Value Line Index is illustrated in Table 4.4

Financial Times ordinary Share Index

Stock	Share Price		Index of Change
	T	T+1	
X	10	12	1.2
Y	22	20	0.91
Z	44	47	1.07
$\Pi = (1.20 \times 0.91 \times 1.07)^{1/3} = 1.0531$			
Index Value (T) x 1.0531 = Index Value (T+1)			

LOs

a) *Price weighting - unweighted arithmetic average of current prices of securities; Value-weighting - computed new market value for all securities in the sample compared to the initial market value to derive the percent change; No weighting - all stocks carry equal weight regardless of their price or value.*

b) *A price-weighted index is biased upward by changes in high-priced stocks than by changes in low-priced stocks since the index is price weighted. In the case of stock splits, the weight of a stock is reduced that tends to put a downward bias on high-priced stocks, which are the ones that tend to split more. Market-weighted indexes experience greater changes when the value of a large company changes compared to when the value of a smaller company changes. Unweighted index schemes (all stocks carry equal weight regardless of price or market value) do not suffer from the biasness of either a price-weighted index or a market-weighted index.*

c) *(see tables above)*

d) *Domestic and global stock indexes differ by weighting scheme, sample size, and arithmetic methodology. The creation and computation of bond market indexes is more difficult than that of*

stocks because of the variety of bond types, different maturities, calls, and bond sinking funds. The volatility of bonds prices changes because of the duration. Furthermore, problems with correctly pricing the individual corporate or mortgage bond issues in an index.

Problems: 1, 2

Reilly and Brown, “Efficient Capital Markets,” Ch. 7.

Why Should Capital Markets Be Efficient? : (1) Numerous Profit Maximizing Participants, (2) New Information Comes to market in Random Fashion, (3) Investors Adjust Security Prices Rapidly to new information. Thus, Security Prices at any Point in Time are an Unbiased Reflection of all Available Information.

Alternative Efficient Market Hypotheses—reflects different forms of an efficient market

- I. Fair Game Model--prices reflect all information at a specified point in time. Recognize that this model is the general model of the three models that follow.
- II. Weak-Form Efficient Market Hypothesis--prices reflect all market information (price and volume data)
- III. Semi-Strong-Form Efficient Market Hypothesis--- prices reflect all public information (i.e., earnings reports)
- IV. Strong-Form Efficient Market Hypothesis---- prices reflect all public and private information

Tests of Alternative Efficient Market Hypotheses

I. Weak-Form Hypothesis: Statistical tests of independence—are prices correlated through time? These are; (1) Autocorrelation—are returns of a particular security correlated with past values?, (2) Runs tests—are positive price changes followed by positive price changes, and negative price changes followed by negative price changes?, (3) Tests of trading rules—can investor create mechanical rule (i.e., charts) and win with it?, (4) Tests of simulations of specific trading rules (filters)—can investor trade a stock when it moves more than a pre-set amount (i.e., more than 5%)? **Conclusion: consistent support for hypothesis, meaning market prices fully reflect historical price and volume data.** Be aware, however, that these tests have potential pitfalls in that they: (1) use only available data, (2) usually do not consider transactions costs, (3) do not adjust for risk In other words, these tests may not capture the way the market is reacting to historical data.

II. Semi-Strong Form Hypothesis: Involves an examination of Return Prediction Studies that focus on the potential for abnormal risk-adjusted profits on basis of public information (i.e., after the public announcement), or an analysis of event studies that focus on price movements around the time of an important announcement such as earnings announcement. Return prediction studies do not support the efficient market hypothesis (several anomalies found), but event studies do support it. **Be careful not to become too concerned with the details of these studies. You could over-allocate your time on details.** Return Prediction Studies are either **time series** or **cross sectional**. **Time series** tests assume that in an efficient market the best forecast of future rates of return is the historical average. **Cross sectional** tests assume that in an efficient market all returns should reflect risk and lie along a security market line (SML) showing the relationship between risk and return. Event Studies examine stock splits, initial public offerings, exchange listings, unexpected world events and

economic news, and accounting changes corporate events. **Summary: Again, return prediction studies do not support the efficient market hypothesis (several anomalies found), but event studies do support it.**

III. Strong Form Hypothesis: This hypothesis states that stock prices reflect all information, both public and private. Tests examine whether there any group that consistently enjoys abnormal returns?;(1) Corporate Insider Trading - does not support hypothesis, (2) Stock Exchange Specialists - they do not support hypothesis, (3) Security Analysts—mostly involves the Value Line stock selection method, which is computer driven. Earlier evidence did not support hypothesis, but later evidence seems to support hypothesis, (4) Professional Money Managers - their performance supports hypothesis. **Conclusion Concerning the Strong Form Hypothesis - clearly some evidence does not support the hypothesis, but the bulk of the evidence does support it**

Implications of Efficient Capital Markets: (1) If the market is efficient, technical analysis should not generate abnormally high risk adjusted returns, (2) If the market is efficient, fundamental analysis may generate abnormally high risk adjusted returns if the analyst properly identifies the relevant variables that affect a security's return , and does a better job of forecasting these variables than the market.

Efficient Markets and Portfolio Analysis: (1) If you are a superior analyst, you should concentrate your attention on market anomalies, (2) If you are not a superior analyst, you should concentrate your attention on your client's risk preferences and construct the portfolio that reflects these risk preferences; (a) Diversify completely--use index funds, (b) Maintain the desired risk level, (c) Minimize transactions costs

Efficiency in European Equity Markets--Studies indicate a level of efficiency similar to that of U.S. markets

LOs

a) *Efficient market theory claims that security prices at any time reflect all available information in the market. The reason to that - (1) market participants want to maximize their profits; (2) new information comes randomly; (3) security prices are adjusted rapidly to a new information.*

b) *Weak form EMH - prices reflect all public information in terms of prices, rates of return, and trading volume. Semi strong form EMH - encompasses weak form plus asserts that prices adjust rapidly to the release of public information, e.g., earning estimates. Strong form of EMH - prices reflect all public and private information and no one can derive above average profits.*

c) *Statistical tests of independence—are prices correlated through time? These are; (1) Autocorrelation—are returns of a particular security correlated with past values?, (2) Runs tests—are positive price changes followed by positive price changes, and negative price changes followed by negative price changes?, (3) Tests of trading rules—can investor create mechanical rule (i.e., charts) and win with it?, (4) Tests of simulations of specific trading rules (filters)—can investor trade a stock when it moves more than a pre-set amount (i.e., more than 5%)?*

d) *Tests of the semistrong form involves an examination of Return Prediction Studies that focus on the potential for abnormal risk-adjusted profits on basis of public information (i.e., after the*

public announcement), or an analysis of event studies that focus on price movements around the time of an important announcement such as earnings announcement.

e) January effect says stock prices rise abnormally high in January. P/E effect says low P/E stocks outperform high-P/E stocks, Size effect says smaller firm stocks outperform larger firm stocks, Neglected firms effect says stocks of neglected firms outperform stocks of more popular firms, Book value effect says stocks with low P/Book value outperform stocks with higher P/Book value. Surprise earnings effect says stocks with surprise earnings outperform averages for some time after the announcement. These effects contradict the EMH>

f) Overall, the weak form is accepted, the semistrong form is somewhat accepted, and the strong form is rejected.

g) The EMH implies that all forms of fundamental analysis are useful but technical analysis is not. Portfolio managers should constantly evaluate investment advice whether it is superior or not.

h) In an efficient market, the portfolio manager should concentrate your attention on the client's risk preferences and construct the portfolio that reflects these risk preferences; (a) Diversify completely--use index funds, (b) Maintain the desired risk level, (c) Minimize transactions costs

i) Index funds do not try to beat a market index but simply replicate its movement. Index funds are cheaper and more broadly diversified than actively managed funds.

Self test question: If you were to observe a statistically significant tendency for stock price increases to be followed by more stock price increases, explain how would you use this information.

Suggested answer: You would use this information to generate abnormally high risk adjusted returns if the returns exceed the trading costs. Usually, this is not the case.

Questions/Problems: Q 1, 2, 3, 10, 23(a and b), 25(a, b, c)

Study Session 13, "Asset Valuation: Equity Investments"

Reilly and Brown, "An Introduction to Security Valuation," Ch. 13.

Analysts use either top-down approach or bottom-up approach to decide on an investment in a country. The top-down approach rests on the assumption that both the economy and the industry have significant effects on the returns of individual stocks. The bottom-up approach assumes that it is possible to identify undervalued stocks irrespective of the market and industry outlook. It is intuitively logical that aggregate market analysis precedes industry and company analysis because the government and federal agencies can exert influence on the aggregate economy via fiscal (changing in government spending, taxes, etc.) and monetary (changing money supply, interest rates, etc.) policy. Further, inflation, another aggregate economic variable, must be considered because of its major impact on interest rates and spending and saving/investment of consumers and corporations. Therefore, a major decision is the asset allocation among countries based upon the differential economic outlook including exchange rates (the outlook for the currency). Again,

industry analysis should precede individual security analysis since there are several factors that are generally national in scope but have a pervasive effect on some industries --e.g., industry-wide strikes, import/export quotas, etc. In addition, alternative industries feel the impact of economic change at different points in the business cycle -- e.g., industries may lead or lag an expansion. Further, some industries are cyclical (e.g., steel, auto), some are stable (utilities, food chains, etc.).

Investment Decision Process: To ensure that you receive your required return on an investment, you must estimate the value of the investment at your required rate of return, and then compare this estimated investment value to the prevailing market price. Basically, investment rule can be summarized as follows:

- If Estimated Value > Market Price, then Buy
- If Estimated Value < Market Price, then Do **not** Buy

Valuation of Alternative Investments: Valuation of Bonds-calculating the value of the bond is easy, because the size and time pattern of returns from the bond over its life are known. A typical bond usually promises (1) interest payments every 6 months equal to one-half the coupon rate times the face value of the bond, (2) the payment of the principal on the bond's maturity date.

Valuation of Preferred Stock: The owner of a preferred stock receives a promise to pay a stated dividend, usually each quarter, for an infinite period. Preferred stock is a perpetuity because there is no maturity. Therefore, its value is simply the stated annual dividend divided by the required rate of return on preferred stock as follows:

$V = \text{Dividend} / \text{Required Rate of Return.}$

Valuation of Common Stocks: The valuation of common stocks is more difficult than bonds or preferred stock because an investor is uncertain about the size of the returns, the time pattern of returns, and the required rate of return (k). Among others, Dividend Discount Model (DDM) has been the most common tool used to calculate the present value of common stock using the future stream of dividends

A. Dividend discount model

$$V = D_1 / (1 + k) + D_2 / (1 + k)^2 + D_3 / (1 + k)^3 + \dots + D_\infty / (1 + k)^\infty$$

V = value of common stock D_t = dividend during period t k = required rate of return

This model can be simplified as: $P = D_1 / (k - g)$

This formula is widely used in corporate finance to estimate the cost of equity capital for the firm. To use this model you must estimate (1) the required rate of return (k), (2) the expected growth rate of dividends (g)

This model assumes that (1) dividends grow at a constant rate, (2) the constant growth rate will continue for an infinite period, (3) the required rate of return is greater than the infinite growth rate (g).

B. Earnings Multiplier Model

Rather than using dividends alone, some investors prefer to use earnings multiplier model: Earnings Multiplier = Price / Earnings Ratio = Current Market Price / Following 12 Month Earnings.

The infinite period dividend discount model can be used to indicate the variables that should determine the value of the P/E ratios as follows: $P_i = D_1 / (k-g)$; Divide both side of equation with E_1 ; $P_1 / E_1 = D_1 / E_1 / (k-g)$

Thus, the P/E ratio is determined by (1) the expected dividend payout ratio, (2) the required rate of return on the stock, (3) the expected growth rate of dividends for the stock (g). Note that a small change in either k or g will have a large impact on the multiplier.

Estimating the Inputs: Required Rate of Return - As discussed previous study sessions, three factors influence an investor's required rate of return: (1) the economy's real risk-free rate, RFR, (2) the expected rate of inflation, I , (3) a risk premium, RP. Expected Growth Rate of Dividends - Valuation models for common stock depends heavily on good estimates of this value. The growth rate of dividends is determined by the growth rate of earnings and the proportion of earnings paid out in dividends (the pay out ratio; note that the retention rate = 1 - the pay out ratio). $g = (\text{Retention Rate}) \times (\text{Return on Equity}) = RR \times ROE$

Decomposition of ROE: the changes in the firm's ROE result from changes in its operating performance or its financial leverage. ROE decomposition can be as follows:

$$\begin{aligned} \text{ROE} &= (\text{Net Income}/\text{Sales}) \times (\text{Sales} / \text{Total Assets}) \times (\text{Total Assets} / \text{Equity}) = \text{Net Income} / \text{Equity} \\ &= \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Financial Leverage} \end{aligned}$$

The first component, net profit margin indicates the firm's profitability on sales. The second component, total asset turnover is the ultimate indicator of operating efficiency and reflects the asset and capital requirements of the business. The final component, total assets/equity, does not measure operating performance, but rather financial leverage, which indicates how management has decided to finance the firm.

LOs

a) *In top-down approach, there are three steps - (1) macroeconomics analysis, (2) industry analysis, (3) security analysis within the better industries. Required inputs - information about monetary and fiscal policy, business cycles, relation of cycles with industries, financial and business information about prospect companies, your required return on investments. Decision process involves - first estimating the value of the investment at your required rate of return, and then comparing this estimated value to the prevailing market price.*

b) Returns can be in the form of earnings, cash flows, dividends, capital gains, or multiples of all these. There is no one way to calculate a return.

c) *Value (preferred stock) = dividend/Required Rate of Return to Preferred Stockholders*

$$d) V (\text{common stock}) = D_1 / (1 + k) + D_2 / (1 + k)^2 + D_3 / (1 + k)^3 + \dots + D_\infty / (1 + k)^\infty$$

$V = \text{value of common stock}$ $D_t = \text{dividend during period } t$ $k = \text{required rate of return}$

This model can be simplified as: $P = D1 / (k - g)$. Length of holding period makes no difference since assumption is that selling after one year means another investor simply picks up dividend stream sold by first investor. Specifically, $P = D1 / (1 + k) + P1 / (1 + k)$, where $P1$ is present value of all subsequent dividends.

e) *(see part d above)*

f) *Given temporary supernormal growth, the single-stage DDM can be modified to a two-stage model where supernormal growth is in the first stage and normal growth is in the second stage. The present value of the stock is the sum of the two present values.*

g) *divide both sides of the DDM by E and you get $P/E = (D1/E) / (k - g)$. Now, $D1/E$ is the dividend payout ratio.*

h) relative value techniques (multiples) avoid all the problems associated with discounting but require a standard against which to compare the multiple. Multiples provide information as to how the market is currently valuing securities.

i) Fisher equation: $k = R_f + \text{risk premium}$ where $R_f = \text{Real rate} + \text{inflation premium}$.

j) Risk factors include business risk, financial risk, liquidity risk, exchange risk, and country risk vary significantly from country to country.

k) The growth rate of dividends is determined by the growth rate of earnings and the proportion of earnings paid out in dividends (the pay out ratio; note that the retention rate = 1 - the pay out ratio). $g = (\text{Retention Rate}) \times (\text{Return on Equity}) = RR \times ROE$.

l) The process: $D1$ comes from income statement, required rate of return from the CAPM, and g from $ROE \times \text{retention rate}$.

Questions/Problems: P 3 through 10, 14, 15

Self test question: Discuss the difference between the top-down and bottom-up approaches. What is the major assumption that causes the difference in these two approaches?

Suggested answer: The top-down approach rests on the assumption that both the economy and the industry have significant effects on the returns of individual stocks. The bottom-up approach assumes that it is possible to identify undervalued stocks irrespective of the market and industry outlook.

Reilly and Brown, "Stock-Market Analysis," Ch. 18, including 677.

The purpose of this chapter is to illustrate a model for evaluating the investment attractiveness of a specific market (or country). This is the first step in the top-down approach. Conceptually, you would evaluate all markets (countries) and select the most attractive one in which to invest. Next, you would evaluate all industries in that market and select the most attractive one. Finally, you would evaluate all companies in that industry and select the most attractive one. It is important that you recognize the connection of these three steps. Doing so will allow you to recognize the similarity among Chapter 16 (market analysis), Chapter 17 (industry analysis), and Chapter 18 (company analysis). The same two-part valuation technique is used in all three chapters; (1) estimate future earnings (EPS), (2) estimate future P/E ratio

Here is the procedure in more detail for evaluating the investment attractiveness of the S&P 400: First estimate EPS. To do this; (1) estimate the relationship between GNP and sales per share for the S&P 400 using a simple regression model, (2) project GNP and plug this estimate into the regression model to derive a sales per share estimate for the S&P 400, (3) Estimate net profit margin using (a) trend analysis based on historical data, (b) an estimate of the before-tax profit margin combined with a projected tax rate, or (c) an estimate of the operating profit margin (OPM) using historical relationships between OPM and capacity utilization, unit labor cost, rate of inflation, and foreign competition.

After estimated EPS, derive an estimate of P/E ratio. Recall that $P/E = (D/E) / k - g$, where D/E is the dividend payout ration, k is the required rate of return, and g is growth in dividends. That is,

$k = R_f + \text{Inflation Premium} + \text{Risk Premium}$, where: risk premium = f(business risk, financial risk, liquidity risk, exchange rate risk, and country risk).

$g = \text{ROE} \times \text{retention rate}$

Remember that you are making projections throughout this entire process, and that historical data are good only to the extent that it allows you to project the future with accuracy.

LOs

a) To estimate EPS, (1) use the simple regression technique and find the relationship between stock series and GNP, (2) project the GNP, and find a sales per share estimate of stock market series using the GNP in regression model, (3) estimate net profit margin using various techniques.

b) This can be done by dividing both sides of the infinite period DDM equation by earnings.

c) Two ways to estimate the earnings multiplier. First, begin with the current earnings multiplier and estimate the direction and amount of any change based on your expectations for changes in the three major components. Second, estimate a specific value for the earnings multiplier by deriving specific estimates for each of the three components in the P/E ratio.

d) Expected return is the same calculation as for an individual security. Find the difference between projected price and current price of stock market series, add the expected dividends on it, and divide your finding by the current price of the stock market series. The result is expected holding period return.

e) Conceptually, you would evaluate all markets (countries) and select the most attractive one in which to invest. Next, you would evaluate all industries in that market and select the most attractive one. Finally, you would evaluate all companies in that industry and select the most attractive one. Differences among countries for inflation expectations, payout ratios and projected growth rates account for variation of P/Es across countries

Questions/Problems: Q4-7; P 2, 4, 5

Self test question: Briefly describe the two-part valuation model for projecting the rate of return for the S&P 400.

Suggested answer: The two-part valuation approach is a disciplined, top-down approach that combines an estimate of EPS and P/E for the purpose of estimating the future price of the index. Having made your two estimates, you would multiple them together to derive a projected price. Next, you would use the projected price to estimate an expected holding period return according to the following formula: $E(\text{HPR}) = (\text{projected price} - \text{current price} + \text{expected dividends}) / \text{current price}$. You would finally compare your E(HPR) to your required rate of return to determine your investment action.

Reilly and Brown, "Industry Analysis," Ch. 19, pp. 730-735 and 746-770.

In a three-step, top down approach, this chapter analyzes the industry in which the firm operates. Techniques for estimating industry rates of return and earnings multipliers are presented The chapter concludes by examining a case of global industry analysis.

WHY DO INDUSTRY ANALYSIS?

- Cross Sectional Industry Performance. Studies have shown a wide dispersion of returns among industries, from -30% to +50%. This dispersion suggests that industry analysis is useful in identifying profitable and unprofitable situations.
- Industry Performance Over Time. Studies indicate no association of performance over time. That is, past performance for an industry alone is not useful in predicting future performance.
- Performance of the Companies within an Industry. (1) If all firms performed about the same in a particular industry, there would be no reason to go beyond industry analysis. One company would be as good as another. (2) Studies indicate there is a wide range of performance among the firms in a given industry. Many stocks show small, but declining, industry effects. (3) Implications of Dispersion within Industries: Even if firms in an industry don't tend to move together, industry analysis useful because it is easier to select a superior company from a good industry than from a poor one.

Differences in Industry Risk. Reilly and Drzycimski found that:

1. Risk varied widely across industries.
2. Risk measures were reasonably stable over time.

Thus historical analysis of industry risk is useful in estimating future industry risk.

Conclusion. Industry analysis is necessary both to avoid losses and to identify superior investment opportunities.

ESTIMATING INDUSTRY RATES OF RETURN. A two step process:

1. Estimate expected earnings per share.
2. Estimate the expected industry P/E ratio. The product of the two will give the expected ending value for the industry index.

Estimating Earnings Per Share. First, forecast sales per share using one of four approaches (a-d).

- a. Sales Forecasting and the Industrial Life Cycle (5 phases). (1) During the pioneering development: Modest growth in sales, and small or negative profits. The market is small and the firm has significant development costs. (2) During rapid accelerating growth: Demand for the product grows, and the firms face little competition. They have high profit margins, but experience backlogs and attempt to build capacity. Profits grow very rapidly. (3) During mature growth: Above average growth in sales, but not at an accelerating rate. High profit margins attract competitors; margins stabilize and begin to decline to normal levels. (4) During stabilization and market maturity: Longest phase. The industry growth rate matches the economy; firm performance varies. (5) During deceleration of growth and decline: Decline in industry sales due to shifts in demand or substitutes, declining profit margins, low or even negative profits and rates of return.
- b. Sales forecasting and input-output analysis: Separates those industries that are suppliers to the industry under study from those that are purchasers of an industry's output. This identifies potential demands for the industry's product as well as focuses on the ability of suppliers to continue to supply the industry, and under what general conditions.
- c. Sales forecasting and the Industry-Economy Relationship: Tries to find a relationship between industry sales and related aggregate economic series.

- d. Earnings forecasting and the analysis of industry competition: One should examine the competitive structure of the industry.

COMPETITION AND EXPECTED INDUSTRY RETURNS

Porter: Competitive strategy is the search by a firm for a favorable competitive position in an industry. (1) Look at the competitive structure of the industry. (2) Examine the factors that determine the relative competitiveness of an individual firm.

Five Basic Competitive Forces:

1. Rivalry among the Current Competitors—how intense is the rivalry among firms? If there are many equal sized firms, then rivalry increases. Slow growth leads to competition for market share and greater rivalry. High fixed costs increase drive to operate at full capacity and thus increase rivalry. Exit barriers tend to keep firms in an industry, increasing rivalry.
2. High barriers to entry keep new firms out and reduce rivalry: (1) Low prices, (2) Large capital requirements, (3) Economies of scale, (4) Distribution channels, (5) High substitution costs, (6) Government policy.
3. Threat of substitute products reduces upward price pressure and increase competition, thus lowering industry profit.
4. The greater the bargaining power of buyers, the lower is industry prices and profits. .
5. The greater the bargaining power of suppliers, the lower is industry profits.

Industry Profit Margin Forecast (5 steps):

1. Industry's gross Profit margin, or operating profit margin (OPM): Earnings before depreciation, interest, and taxes divided by sales (EBDIT/Sales). One can relate this variable to similar macroeconomic series, such as capacity utilization. It can be estimated by regression analysis or time series analysis.
2. Industry depreciation: Time series analysis is appropriate, adjusted for recent capital expenditures. This estimate is subtracted from estimated EBDIT to arrive at estimated earnings before interest and taxes, or EBIT.
3. 3. Industry interest expense: A function of the industry leverage and interest rates. This is subtracted from EBIT to get estimated earnings before taxes, or EBT.
4. Industry tax rate: Differs across industries due to various provisions in the tax code. To estimate the industry tax rate, a time series analysis of the historical tax rate would be in order. The estimated tax rate is applied to estimated EBT to find tax expense and earnings after tax (EAT, or net income), which is equal to $(1 - \text{tax rate}) * \text{EBT}$.
5. Net Profit margin is estimated net income divided by estimated sales. Convert this to an industry earnings per share estimate.

ESTIMATING AN INDUSTRY EARNINGS MULTIPLIER

Macroanalysis of an Industry Multiplier—the major assumption of macroanalysis of the industry earnings multiplier is that the factors that affect the industry multiplier are similar to those that influence the market. Evidence suggests that industry P/Es and market P/Es are significantly and positively related. Check the quality of the relationship.

Microanalysis of an Industry Multiplier—the Industry Multiplier versus the Market Multiplier requires: (a) Comparing Dividend-Payout Ratios, (b) Estimating the Required Rate of Return. The required return for all investments is affected by the risk free rate and the expected rate of inflation. It is the risk premium that leads to different estimates for the required return. This risk premium is a function of factors previously discussed. Alternatively, one can consider the beta of the industry relative to the market. Business risk is related to sales volatility and operating

leverage, financial risk. Liquidity risk, Exchange rate risk is in part a function of the percentage of sales that are non-U.S. and the distribution of those sales among various countries. This risk can also stem from the sources of supplies for the industry between domestic and foreign suppliers. Country risk is also a function of foreign sales.

Estimating the Expected Growth Rate—as before, the growth rate is a function of the retention rate and the return on equity: (a) if the earnings retention rate for the industry is higher than for the market, the industry will experience higher growth rates. (b) The return on equity = net profit margin x total asset turnover x financial leverage.

GLOBAL INDUSTRY ANALYSIS.

A. Because of the expansion of business to an international level, one should include global influences on industry returns. For instance, domestic firms have foreign competitors that will affect the ability of the domestic firms to generate excess returns.

LOs

a) Industry performance is related to the stage of the business cycle. Toward the bottom of the cycle, financial stocks excel. In the upswing, consumer durables and capital goods excel. At the peak, basic industries excel. And on the downswing, consumer staples excel. But be aware. Every cycle is different so it is not possible to draw exact predictions of the future based on historical data.

b) The description in a above is based on cyclical changes. Structural changes due to demographics (more people as in the baby boom affected advertising) and changes in technology (the radio brought more info to consumers) as well as political (role of government in business) and regulatory environments (monopolies in the utility industry) all play a role in affecting the cash flow and risk prospects of different industries.

c) see one of four approaches above (a-d)

d) The Industrial Life Cycle has 5 phases. (1) During the pioneering development: Modest growth in sales, and small or negative profits. The market is small and the firm has significant development costs. (2) During rapid accelerating growth: Demand for the product grows, and the firms face little competition. They have high profit margins, but experience backlogs and attempt to build capacity. Profits grow very rapidly. (3) During mature growth: Above average growth in sales, but not at an accelerating rate. High profit margins attract competitors, margins stabilize and begin to decline to normal levels. (4) During stabilization and market maturity: Longest phase. The industry growth rate matches the economy; firm performance varies. (5) During deceleration of growth and decline: Decline in industry sales due to shifts in demand or substitutes, declining profit margins, low or even negative profits and rates of return.

e) There are five basic competitive forces: (1) Rivalry among the Current Competitors—how intense is the rivalry among firms? If there are many equal sized firms, then rivalry increases. Slow growth leads to competition for market share and greater rivalry. High fixed costs increase drive to operate at full capacity and thus increase rivalry. Exit barriers tend to keep firms in an industry, increasing rivalry. (2) High barriers to entry keep new firms out and reduce rivalry: (a) Low prices, (b) Large capital requirements, (c) Economies of scale, (d) Distribution channels, (e) High substitution costs, (f) Government policy. (3) Threat of substitute products reduces upward price pressure and increase competition, thus lowering industry profit. (4) The greater the

bargaining power of buyers, the lower is industry prices and profits. (5). The greater the bargaining power of suppliers, the lower is industry profits.

f) (1) evaluates the past relationship between industry and market, and (2) use DDM, divide by E, and estimate each component on right hand side of equation. Macroanalysis of an Industry Multiplier—the major assumption of macroanalysis of the industry earnings multiplier is that the factors that affect the industry multiplier are similar to those that influence the market. Evidence suggests that industry P/Es and market P/Es are significantly and positively related. Check the quality of the relationship. The Industry Multiplier versus the Market Multiplier requires: (a) Comparing Dividend-Payout Ratios, (b) Estimating the Required Rate of Return.

g) Because of the expansion of business to an international level, one should include global influences on industry returns. For instance, domestic firms have foreign competitors that will affect the ability of the domestic firms to generate excess returns.

Questions/Problems: Q 7, 8, 9, 11, 13; P 8

Reilly and Brown, “Company Analysis and Stock Selection,” Ch. 20, pp. 783-785 and 802-824.

The purpose of this chapter is to extend the top-down analysis began in chapters 16 (market) and 17 (industry) to the company. The same two-step procedure is used to estimate future earnings and future earnings multiple. This is called the earnings multiple approach. Multiplying the future earnings estimate and the future earnings multiple estimate gives an expected future price one year into the future. Given an estimated future price you can calculate an expected holding period return $E(R)$. Remember that $E(R) = (\text{future price} - \text{current price} + \text{future dividends}) / \text{current price}$. Compare the $E(R)$ to the required rate of return (k) to determine your investment action. If $E(R) > k$, buy the stock; if $E(R) < k$, do not buy the stock or sell it if you already own it. If $E(R) = k$, the stock is efficiently priced. The author does not call the difference alpha, but that is what it is [$\alpha = E(R) - k$]. Be sure to recognize that the type of company and the type of stock are not the same thing since the stock of a good company may be overvalued. Also remember that you can calculate $E(R)$ using the dividend discount model where $E(R) = D_1 / P_0 + g$.

Estimating earnings per share.

1. Estimate company sales using a relatively stable historical relationship between company sales and some industry economic series such as industry sales (remember that you need an industry sales forecast)
2. Estimate company profit margin again using a relatively stable historical relationship between company profit margin and the industry profit margin (remember that you need an industry profit margin forecast)
3. Estimate earnings per share by multiplying company sales forecast by company profit margin forecast and dividing by the number of shares outstanding.

Estimating earnings multiple

- Macro: Estimate company P/E ratio using a relatively stable historical relationship between company P/E and either the industry or market P/E ratio (remember that you need an industry or market P/E forecast)

- Micro: Alternatively, you could estimate company P/E ratio using estimates of D/E, k and g. Remember that $P/E = (D1/P) / k - g$ where (D1/P) = dividend payout ratio, k comes from the CAPM and $g = ROE \times \text{retention rate}$.

Additional measures of relative value

1. relative P/B ratio: compare P/B ratio of company to market P/B ratio and evaluate relative to historical value. If ratio is greater than one and it has historically been less than one, then this suggests an overvalued stock, and vice versa.
2. relative P/Cash Flow: same logic
3. relative P/E: same logic

Growth analysis—remember that the dividend discount model is not a good model for growth companies since these types of companies may not be paying dividends. Growth means that the company has the opportunity to invest in projects that generate rates of return greater than the firm's cost of capital. Some analysts say a growth stock is one that is growing faster than average (remember that the average growth in the U.S. has been around 7-8% according to Ibbotson data: total return about 11-12% and average dividend yield around 4% gives average growth around 7-8%).

No-growth model—dividends equals earnings meaning $P_0 = E/k$ or $k = E/P$ (author uses V instead of P).

Simple growth model— $V = E/k + \text{present value of excess earnings from growth investments}$.

Factors affecting growth (common sense):

1. retention rate
2. rate of return on earnings retained
3. time period (duration) growth persists

Alternatives: Given a growth estimate, you could use the relative P/E ratio to solve for how long the market expects growth to persist, and then you could evaluate the merits of this estimate. For example, the relative P/E model may suggest high growth will last 6 years. You would then ask yourself if this length of time is reasonable. A problem with this approach is that the company you are evaluating may have different risk than the market. Remember that typically, high growth stocks have high P/E ratios since the market is betting on future growth.

Final comment: Using an electronic spreadsheet, you could conduct sensitivity analysis for a multi-stage growth model to determine if the current price of the stock falls within a reasonable range of values derived from the multi-stage growth model.

LOs

a) A good company is not necessarily a good stock, and vice versa. The only way to determine whether a stock is a good investment is by comparing its intrinsic value to its market price. A good company could be overvalued, and vice versa. A growth company is one in which sales and earnings are growing faster than average, but a growth stock is one that generates a higher return than another stock of comparable risk. These two concepts are quite different.

b) Estimating future earning per share (EPS); (1) estimate company sales from historical data, (2) estimate company and industry profit margin, (3) estimate the EPS by multiplying the findings in step 1 and step 2, and divide it by the number of shares outstanding. Estimating earning multiplier--there are two ways; (1) estimate Price-to-Earnings ratio (P/E) using historical data

and industry P/E data, (2) estimate P/E using the estimates of Debt-to-Equity ratio, required return and growth rate in the constant dividend growth model. Future value of company shares; multiplying the future earning estimate and the future earning multiple gives an expected future price one year into future. Multiplying estimated future price with number of shares outstanding gives estimated market value of company.

c) There are three main techniques that analyst use in estimating value, and they all follow the same logic. (1) Price-to-Book ratio (P/B)—either compare this ratio to prior historical values or to industry averages to determine if stock is reasonably priced. The same logic applies to Price-to-Cash Flow and Price-to-sales ratio.

Questions/Problems: Q 9, 10, 11; P 12, 13, 14

Note: Candidates who study Problem 12 should also review Reading 1A.

Self test question: Explain how you would use a relative P/E ratio to determine if a stock is properly priced.

Suggested answer: Assuming the stock has the same risk as the market, a relative P/E ratio greater than 1 implies overvaluation, and a ratio less than one implies undervaluation.

Reilly and Brown, “Technical Analysis,” Ch. 21.

Technical analysis is contrary to the efficient market hypothesis, i.e., in an efficient market, current prices fully reflect all current information but technical analysis assumes this not to be the case--that current prices lag current information and that this lag creates a trend that persists for a long period (see Figure 21.1.). Technical analysts do not depend of financial statements, which are incomplete according to the technician, for information. This is a major advantage. Disadvantages of technical analysis are that it is contrary to the academic studies on efficient markets and that the trading rules depend on historical trends to repeat themselves in the future. Moreover, trading rules are very subjective.

Technical trading rules may be classified as:

1. Contrary-opinion rules--based on the belief that the majority of the investors are usually wrong. Examples include: (a) mutual fund cash positions--a ratio above 12% is bullish & around 7% is bearish (see Figure 21.3), (b) Bullish and Bearish Sentiment Indexes--a ratio above 60% is bearish & below 15% is bullish (see Figure 21.4), (c) Relative OTC Volume--a ratio above 60% is bearish & below 40% is bullish (see Figure 21.5), (d) CBOE Put/Call Ratio--a ratio above .75 is bullish & below .35 is bearish (see Figure 21.6), (e) Speculators Bullish on Stock Index Future--a ratio above 70% is bullish & below 30% is bearish (see Figure 21.7)
2. Follow the Smart Money--based on the view that smart investors are correct. An example is Short Sales By Specialists--a ratio above 50% is bearish & below 30% is bullish
3. Other Market Sentiment Techniques--Examples include: (a) Breadth of Market--Daily Advances and Declines--cumulative net advances relative to changes in index (see Table 21.1), (b) Diffusion Index--Advance Decline Diffusion Index--number of advances relative to total shares traded; watch for divergence between diffusion index and trend in the indicator (see Figure 21.8), (c) Block Up-tick-Down-tick Ratio--an uptick would be expected when the transaction was initiated by the buyer, and a downtick would be

expected if it was initiated by the seller. This is an indicator of institutional sentiment. A ratio around 70 is bearish and a ratio around 130 is bullish (see Figure 21.10)

4. Stock Price and Volume Techniques--Examples include: (a) The Dow Theory--in a bull market, watch for highs higher than previous highs with heavy trading volume and lows lower than previous lows with light trading volume--analogous to the incoming and outgoing tide (see Figure 21.11), (b) Relative Strength--a ratio of the stock price to the value for some market series like the DJIA of the S&P 400 (see Figure 21.12), (c) Bar Charting--charting of both price and volume data over time for the purpose of detecting trends. The idea is that heavy volume is an indicator of high demand and vice versa(see Figure 21.14), (d) Point-and-Figure Charts--records only significant price changes regardless of the time interval involved (i.e., 4 point reversals). Look for breakouts (see Figure 21.15)
5. Technical Analysis of Non-U.S. Markets--technical analysis of price and volume data may be viable because of the general lack of financial data. Examples include: (1) a. FTSE time series (see Figure 21.16), (2) Nikkei time series (see Figure 21.17), (3) time series plots of four major currencies, (4) time series plots of ratio spreads
6. Technical Analysis of Bond Markets--based on price and yield to maturity data without volume data (see Figure 21.18)

LOs

a) The major assumption of technical analysis is that markets are not efficient and current prices lag current information, and this lag creates a trend that persists for a long period.

b) Fundamental analysis depends on financial statements but technical analysis does not.

c) Advantages - (1) not heavily depend on financial accounting statements; (2) ability to quickly recognize a movement to a new equilibrium value; (3) better purchase timing of security.

d) Challenges - (1) past price patterns may not be repeated in the future; (2) many price patterns may be self fulfilling prophecies; (3) the success of a trading rule will encourage many investors to adopt it and this will eventually neutralize the value of the technique; (4) great deal of subjective judgment.

e) (see discussion on Technical trading rules above).

Self test question: Technical analysts believe that one can use past price changes to predict future price changes. Justify this belief?

Suggested answer: The principal contention of technicians is that stock prices move in trends which persist for a long periods of time. Because these trends persist they can be detected by analyzing past prices.

DeFusco, et. al, "Discounted Cash Flow Applications," Ch. 2, pp. 72-87.

LOs

a) The three components used in the pricing of a stock using the constant growth dividend discount model (DDM) are: $D1 / k - g$ where $D1$ is next period's dividend, k is cost of equity

capital (not WACC) and g is sustainable growth (REO X retention rate). k usually comes from the CAPM and $D1 = D0 \times (1 + g)$. The assumptions are: constant growth forever, and that the company pays a dividend

b). Constant growth model is appropriate when g is constant, which is generally acceptable for companies in the mature stage of their life cycles. It is inappropriate for companies in the early, high-growth states (see a above for formula).

c) Supernormal growth occurs for new companies with new products where competition is low for such companies. The price of a stock using the two-stage model equals the present value of dividends (if any) during the first stage plus the present value of the constant growth dividends in the second stage. Be sure to draw a time line to see these future dividends.

d) The value of a stock using the Free Cash Flow to Equity (FCFE) model is generally the same as the DDM except that the author estimates a multiple of free cash flow that the stock will sell for at the end of k years. Note that you could use the same technique for DDM. Instead of assuming constant growth forever, you assume selling the stock k periods in the future at a price equal to the multiple times FCFE in year k . Also note that you can define FCFE several ways. One way is $FCFE = NI + \text{Depreciation} - \text{Capital Expenditures} - \text{Increase to Working Capital} - \text{Principal repayments} + \text{New debt}$. Alternatively, just include the first three components.

e) Dollar weighted rate of return equals the IRR and is sensitive to deposits and withdrawals. Time weighted return is not sensitive to these cash flows. It links together holding period returns for each subperiod to obtain an annual rate of return for the year.

Problems: 11, 12, 13, 14

Study Session 17, “Asset Valuation: Alternative Investments”

Gitman and Joehnk, Fundamentals of Investing, 8th ed., “Real Estate and Other Tangible Investments,” Ch. 16, pp. 16-1 through 16-28. (Note: This reading is available only in the 2003 CFA Level I Readings book or on the authors’ website. It is not part of the printed textbook.

The purpose of this chapter is to explain how to use real estate to diversify a portfolio.

Setting Real Estate Investment Objectives:

A. Investment characteristics; (1) personal residence—safest, (2) income property--offers income, appreciation potential, and possible tax shelter, (3) speculative property--risky due to uncertainty, (4) the choice of equity versus debt--depends on borrower's ability to repay the loan and the loan-to-value ratio

B. Constraints and goals; (1) financial constraints and goals--the asset allocation question for how much you allocate to real estate often determined by projected rate of return (net present value methodology), (2) nonfinancial constraints and goals--depends on temperament, repair skills and managerial talents

C. Scope of analysis; (1) physical property--personal property (property not permanently attached) may not come with the property, (2) property rights--get a legal opinion on limits of use and obligations you incur, (3) time horizon--the short-term investor might count on a quick

drop in mortgage rates, a long-term investor might look at population growth potential, (4) geographic area--spatial analysis, means that value directly linked to what is going on around it.

Determinants of Value: (1) demand-- to buy or rent, (2) population characteristics--demographics and psychographics (mental dispositions such as lifestyle), (3) mortgage financing--depends on tightness of money, (4) supply--means sizing up the competition, (5) sources of competition--what other properties are available, (6) inventory competitors--analysis of competition in terms of features and prices

The Property: (1) restrictions on use--zoning laws important, (2) location analysis--consider convenience and environment, (3) site characteristics--consider size of property, (4) improvements (5) property management--means finding the optimal level of benefits for a property, and then providing them at the lowest costs by either you or a hired manager. (6) the property transfer process--no one believes the real estate market is efficient, (7) promotion--getting information about a property to its buyer segment, (8) negotiation--investor skills determine the final transaction price

Real Estate Valuation: recognize the difference between market value of real estate and market value of stocks: each property is unique, terms and conditions of sale vary, market information is imperfect, properties may need substantial time for exposure, buyers sometimes need to act quickly estimating market value through the appraisal process, which is subject to substantial error. (1) Cost approach--based on the notion that an investor should not pay more for a property than it would cost to rebuild it at today's prices for land, labor, and construction materials, (2) comparative sales approach--uses the sales prices of properties that are similar to a subject property as the basic input variable; the problem is that all properties are unique in some respect, (3) income approach--present value of all its future income; market value (V) = annual net operating income (NOI) / market capitalization rate (R)

Forecasting Investment Returns: market value differs from investment analysis; (1) retrospective versus prospective--project future changes affecting property such as population shifts, buyer expectations and interest rates, (2) impersonal versus personal--each real estate transaction can be structured to meet individual needs, (3) unleveraged versus leveraged--market value (V) ignores financing plans; leverage either positive (return above cost of debt) or negative (return below cost of debt); leverage alters risk/return relationship, (4) net operating income versus after-tax cash flows--calculate net present value defined as the difference between the present value of benefits (after-tax cash flows) and equity required

Passive Forms of Real Estate Investment:

A. Investing in various REITs; (1) real estate investment trust (REIT)--a type of closed-end investment company that invests money, obtained through the sale of its shares to investors, in various types of real estate and/or real estate mortgages, (2) equity REITs--invest in properties such as shopping centers, hotels, apartments, and office buildings, (3) mortgage REITs--make both construction and mortgage loans, (4) hybrid REITs--invest in both properties (like equity REITs) and construction and real estate mortgage loans (like mortgage REITs), (5) shares of REITs are traded on organized exchanges such as the NYSE

B. Investing in REITs provide; (1) professional management--allowing passive investing, (2) mortgage REITs tend to trade like bonds, (3) equity REITs tend to trade like stocks

Real Estate Limited Partnerships (RELPs): RELP--a professionally managed real estate syndicate that invests in various types of real estate, Managers of RELPs assume the role of general partner, which means their liability is unlimited, while other investors are limited partners, meaning they are legally liable for only the amount of their initial investment. There are two types of limited partnerships; (1) single property--invests in a specific property, (2) blind pool syndicates--invested at the discretion of the general partner, who has usually picked out some of the properties before hand.

LOs

a) In order to set the real estate investment objectives, (1) decide what are the investment characteristics - residence, income property, speculative, or the choice of equity versus debt; (2) decide what the financial goals and constraints; (3) decide the scope of analysis - physical property, property rights, time horizon, and geographic area; (4) define the determinants of value; demographics, population, supply, competition; (5) identify and locate the property in terms of restrictions on it, location, site, characteristic improvement and so on.

b) Physical property, property rights, time horizon, and geographic area are important features.

c) Supply (how much like properties are on the market?), 2. demand (how much are people willing to pay for the property?), 3. the property (what are the restriction, location, site, improvements, and property management requirements?) and 4. the property transfer process (how much promotion and negotiation is required?).

d) Demographics refer to measurable characteristics, such as household size, age structure, occupation, gender, and marital status. Changes in these variables alter the demand for real estate.

e) Common valuation techniques- (1) cost approach- based on the cost of rebuilding the same property; (2) comparative sales approach - based on the use of prices of comparable properties; (3) income approach - based on calculating the present value of all its future income.

f) This is basically the ratio of annual net operating income to market capitalization rate. This technique is very similar to the DDM used for stock valuation. Be sure not to confuse it with the Discounted Cash Flow method, which is similar to the bond valuation model.

g) Positive leverage - if a property can have a return in excess of the cost of the borrowed funds, the investor's return will be increased to a level well above what could have been earned from an all-cash deal. Negative leverage - if a property's return is below its debt cost, the investor's return will be less than from an all-cash deal.

h) Process; (1) define investor's objectives; (2) analyze the important features - physical property, property rights, time horizon, geographic area; (3) determine the value - data collection in terms of demand supply, the property, property transfer process; (4) analyze the data - valuation using either market value techniques or investment analysis techniques, (5) interpretation of results

i) NOI is calculated by subtracting vacancy and collection losses and property operating expenses, including property insurance and property taxes, from an income property's gross potential rental income.

j) *Because it is a non-cash item, depreciation reduces taxable income that, in turn, reduces taxes and increases after-tax cash flow.*

k) *After-tax cashflows are the annual cashflows net of all expenses, debt payments, and taxes.*

l) *Discounted cash flow is the present value of discounted after-tax cashflows plus the present value of after-tax net proceeds of sale. This model is similar to the bond valuation model.*

m) *Equity REITs invest in properties such as shopping centers, hotels, apartments, and office buildings, mortgage REITs make both construction and mortgage loans, hybrid REITs-invest in both properties (like equity REITs) and construction and real estate mortgage loans (like mortgage REITs),*

Self test question: What is an REIT? Describe three alternative types of REIT?

Suggested answer: A real Estate Investment Trust (REIT) is basically a closed end mutual fund investing in real estate. The nature of real estate investment precludes the possibility of wide geographical dispersion and generally limits a REIT to one of several types of real estate. The three types of REITs are (1) construction and development trusts, (2) mortgage trusts, and (3) equity trusts. Construction and development trusts finance initial construction of buildings, shopping centers or projects that are typically of a short-term duration. Mortgage trusts, in contrast, are long-term in nature and acquire mortgages on property after the construction is completed. Finally, equity trusts offer their clients a portfolio of income producing properties by acquiring office buildings, apartment houses, etc.

Reilly and Brown, “Professional Asset Management,” Ch. 26.

This chapter explains how both open-end mutual funds and closed-end investment companies operate, and reviews their historical risk-adjusted performance relative to the risk-adjusted performance of the market.

An investment company invests a pool of funds belonging to many individuals in a portfolio of individual investment such as stocks and bonds. The net asset value (NAV) equals the total market value of all assets in the fund divided by the number of fund shares outstanding. The company usually hires a separate company as its investment manager.

Closed-end funds: operates like IBM, for example, but instead of investing in computers the closed-end fund invests in financial assets. Shares of the closed-end fund trade on the open market just like the shares of IBM. The price, however, is almost never equal to the net asset value. Instead, shares trade at either a discount or premium. Closed-end funds that invest in the securities of a particular country are called country funds.

Open-end funds may sell with a load (commission to broker in which case they sell above their NAV), or no-load (buy directly from investment company in which case they sell at their NAV). All funds charge a management fee to cover expenses such as salaries and rent.

Investment companies are classified by type and investment objective within each type. For example, a stock may be either growth or value, or a blend of both. On a risk-adjusted basis net of all fees, investment companies beat the aggregate market less than 50 percent of the time. Still, investment companies provide some advantages to the small investor such as professional portfolio management and diversification. Several studies show that investment company

managers are not able to time the market. That is, they do not possess superior ability to know when the top or bottom has occurred. Other studies suggest that historical performance should not heavily enter your decision when selecting a fund. Not stated in the chapter, but investment style (i.e., growth or value) is a better selection criterion. Concerning risk, you have to accept the risk preferences of the mutual fund opposed to the fund adjusting its risk preferences to your needs.

LOs

a) An investment company is typically a corporation that has its major assets in the portfolio of marketable securities referred to as a fund. A separate investment management company handles the management of the portfolio and other administrative duties.

b) A closed-end investment company operates like a public firm, that its stock trades on the regular secondary market. It does not issue no further shares and does not repurchase the shares on demand. Open-end investment companies are funds that continue to sell and repurchase shares after their initial public offerings. A load fund is sold through a broker with a commission; a no-load fund is sold directly from the investment company without a commission.

c) The Net Asset Value (NAV) is the ratio of total market value of all assets in the fund to the number of fund shares outstanding. If a fund is selling at a premium, it means that fund is selling above its NAV. If at a discount, it is selling below its NAV.

d) The net asset value is computed daily based on prevailing market prices of the securities in the portfolio. The supply and demand forces in the marketplace determine the market price continually.

e) The offering price is the ask price. The difference between the NAV and the ask price is the load or commission.

f) All funds charge a management fee to cover expenses such as salaries and rent. The larger the management fee, the lower the performance tends to be.

Self test questions: (1) **Explain** how to compute the net asset value. (2) **Discuss** the difference between an open-end investment company and a closed-end company. (3) **Explain** the two prices provided for a closed-end company as well as the difference between them. (4) **Explain** the difference between a load fund and a no-load fund. (5) **Explain** why you may buy a money market fund. (6) **Explain** whether you would judge the performance of a fund on the basis of return alone or on a risk-adjusted basis. (7) **Explain** why net returns are more important than gross returns.

Suggested answers: (1) net asset value (NAV) equals the total market value of all assets in the fund divided by the number of fund shares outstanding. (2) An open-end company buys and sells shares directly from the investor at its NAV or, in the case of a load fund, at a price above its NAV. A closed-end company issues a set number of shares and the market determines its price, which is rarely equal to its NAV. (3) A closed-end company has two prices: a NAV and a market price. (4) A load fund charges a fee via the broker; a no-load fund has no sales charge since you buy it directly from the company. (5) A money market fund is highly liquid. You would buy it in order to have immediate access to your money without the risk of large price swings. (6) You would judge performance on a risk-adjusted basis because to do otherwise would amount to comparing apples to peaches. (7) Net returns represent your return after paying all fees, which is another way of saying what return you put in your pocket. Gross returns represent the manager's ability to pick stocks.

Barry, Alternative Investing, “Venture Capital,” pp. 36-46

In this article, the author explains that the venture capitalists improve and create firm value by resolving agency conflicts between themselves and investors and between entrepreneurs and themselves.

LOs

a) Venture capitalists create value through careful deal origination and evaluation or perhaps via syndication to share risk and improve access to capital.

b) When selecting venture capitalists, investors must understand exactly how both sets of relationships are to be handled and whether the incentive structure is competitive. One of the problems that the entrepreneur has is making sure that the venture capitalist does not abandon the deal prematurely. The entrepreneur has only 1 deal going; the venture capitalist may have 15 or 20. The venture capitalist should be compensated in such a way that the cost for managing the fund are covered and those venture capitalist’s interests are aligned with investors’ interests. Investors should also look at noncompensation factors such as prohibitions against certain kinds of self-dealing. Additionally, the investor should have finite life funds, which is similar to an abandonment options.

c) (1) Factors affecting returns include investor expectations (sometime too high), variability among investments (about 1 in 15 deals is responsible for half of all gains), the stage of investing (returns are lowest in first or seed stage), the level of venture capital funding (a rapid influx of money tends to cause higher valuation for deals and lower ex post returns), market timing (private transactions are more successful at market timing than public deals), and post-IPO performance (after the IPO is issued, companies tend to have relatively poor performance over the next 3 to 5 years). (2) Factors affecting risk include diversification (the more diversified the venture capital portfolio is, the more correlated it is with the public market and, hence, the less valuable it is for diversification purposes), the venture capitalist’s track record and experience) and no centralized clearinghouse for all deals to allow venture capitalists to determine the capacity of the market.

d) The more diversified the venture capital portfolio is, the more correlated it is with the public market and, hence, the less valuable it is for diversification purposes.

e) Most of the emerging countries have a lack of capital for creating young companies. Agency problems also abound between the investors and the venture capitalists and between the venture capitalists and the entrepreneurs. Many countries lack adequate legal systems to enforce contracts. Finally, many countries lack an active IPO market, which provides the necessary exit strategy for the venture capitalist.

Study Session 18, “Portfolio Management: Capital Market Theory: Basic Concepts”

Reilly and Brown, “Investment Setting,” Ch. 1, pp. 15-29.

The required rate of return is the minimum rate of return that you should accept from an investment to compensate you for deferring consumption and accepting risk. There are three components of required rate of return: (1) finding securities that provide a rate of return that compensates you for the time value of money during the period of investment—this is the real

rate, (2) the expected rate of inflation during the period, and (3) the risk involved—this is the risk premium.

The behavior of market rates over time plays important role on the analysis and estimation of the required rate of return. First, a wide range of rates is available for alternative investments at any time. Second, the rates of return on specific assets change dramatically over time. Third, the differences between the rates available on different assets change over time. The degree of riskiness of each investment is a determining factor of returns, i.e., higher the risk, higher the returns.

The real risk-free rate: The real risk-free rate (RFR) is the basic interest rate. It does not consider inflation and uncertainty about future economical environment. In an inflation-free economy, investors know with certainty what cash flows they will receive at what time. The objective factor that influences the real-risk free rate is the set of investment opportunities available in the economy. The investment opportunities are determined in turn by the long-run real growth rate. There is a positive relationship between the real growth rate in the economy and the RFR. Three factors influence the real growth rate of the economy: (1) the long-run growth rate of the labor force, (2) the long-run growth rate of the average number of hours worked by the labor force, (3) the long-run growth in productivity of the labor force (measured by output per hour)

Risk Premium: This is what causes differences in rates of return between assets at a point in time. The major determinants of the risk premium are: (1) Business risk - sales volatility and operating leverage, (2) Financial risk - how you finance assets, (3) Liquidity risk - the ability to buy or sell an asset quickly with little price change (bid-ask spread), (4) Exchange rate risk - the uncertainty of returns on securities acquired in a different currency, (5) Country risk - the uncertainty of returns due to changes in the political or environment of a country.

Measures of risk: (1) Variance of rates of return - total risk, (2) Standard deviation of rates of return - total risk, (3) Coefficient of variation of rates of return (standard deviation/mean), (4) Covariance of returns with the market portfolio (beta) - systematic risk.

LOs

a) The required rate of return (k) is the minimum rate of return that you should accept from an investment to compensate you for deferring consumption. The three components of k - (1) the time the funds are committed; (2) the expected rate of inflation; (3) the uncertainty of future payments.

b) The real rate equals the rate of productivity plus a return for postponing consumption. The nominal rate equals the real rate plus an inflation premium.

c) Risk premium is the excess amount added to the interest rate. Sources of risk premium - (1) business risk due to sales volatility and operating leverage; (2) financial risk, which is the way the assets financed; (3) liquidity risk; (4) exchange rate risk, (5) country risk.

d) The SML shows the risk (beta) return tradeoff in a perfectly efficient market. This relationship is linear meaning that the expected return is constant relative to the risk (beta) of the underlying stock.

e) Changes in Beta cause movements along the SML. Changes in risk preferences cause changes in the slope of the SML. The SML shifts over time because all the forces that affect it are changing: R_f , beta, expected return on the market, risk preferences that drive the risk premium.

Self Test Question: Briefly discuss the two major factors that determine the market nominal-risk-free rate (RFR). Explain which of these factors would be more volatile over the business cycle.

Suggested Answer: The two factors that influence the RFR are liquidity (i.e., supply and demand for capital in the economy) and the real growth rate of the economy. The Federal Reserve Board influences the amount of liquidity in the economy via control of the money supply. It is more volatile over the business cycle. The real growth rate has a positive relationship with the RFR—i.e., the higher the real growth rate, the higher the RFR. It is more stable over the business cycle and changes only gradually over time.

It is unlikely that the real growth rate will change dramatically over the short-run. However, liquidity depends upon the government's monetary policy and would change depending upon what the government considers to be the appropriate stimulus. Besides, the demand for business loans would be greatest during the early and middle part of the business cycle.

Reilly and Brown, "The Asset Allocation Decision," Ch. 2.

The portfolio management process involves four steps: (1) construct a policy statement, (2) study current financial and economic conditions and attempt to forecast future trends, (3) construct the portfolio, (4) continually monitor the investor's needs and capital market conditions. Reilly and Brown include evaluating performance in the fourth step, but other authors treat it as a separate fifth step. This chapter focuses on asset allocation, which is the process of deciding how to distribute an investor's wealth among different countries and asset classes for investment purposes. The asset allocation is usually included in the investor's policy statement (please see my Executive Summary for a diagram of the Dynamic Portfolio Management Process).

Life Cycle

1. Accumulation phase—accumulation of assets for satisfying fairly immediate needs such as down payment for a house. Younger people are in this phase with net worth being small.
2. Consolidation phase—Mid-life where excess income allows for investing in preparation of retirement
3. Spending phase—retirement where living expenses are taken care of via retirement plans.
4. Gifting phase—late retirement where giving away assets is priority.

Portfolio Management Process.

1. construct a policy statement
2. study current financial and economic conditions and attempt to forecast future trends
3. construct the portfolio
4. continually monitor the investor's needs and capital market conditions.

Need for policy statement—it stimulates careful thinking; it should be in writing (palest ink is better than best memory). Should be realistic and not pie in the sky. Writing statement is responsibility of investor.

Portfolio Performance Standard

Important to have the proper benchmark, which could be a custom benchmark. For example, if the asset allocation calls for a 60/40 split of equities/fixed income securities, the benchmark should likewise be customized to a 60/40 split of an equity index and a fixed income index.

Input to the Policy Statement

- Objectives stated in terms of return preferences (capital preservation, capital appreciation, current income) and risk (affected largely by age and health). Total return includes both income (yield) and appreciation (growth).
- Constraints include (1) liquidity, (2) time horizon, (3) taxes, (4) legal and regulatory, (5) unique needs. Time horizon is often the most important. Diversification is important both across multiple asset classes and within each asset class.

Objectives and Constraints of Institutional Investors

- Mutual funds—clear statement is important so investing public can understand risks.
- Pension funds—depends on whether defined benefit (formula drives retirement benefits that makes employer at risk) or defined contribution (self-direction of investments make employee at risk where retirement benefits are driven by investment performance).
- Endowment funds—tension between need for current income and future growth.
- Insurance companies—spread between investment return and return credited policy holders defines profit to company. Cash flows somewhat predictable for life insurance companies, but not so for property and casualty companies. This makes P&C companies more risk averse (greater need for liquidity to meet claims).
- Banks—profit is defined by how much investments return in excess of cost to borrow money (certificate of deposit rate paid to depositors).

Importance of Asset Allocation—four steps highlight importance:

1. What asset classes to include?
2. What normal or policy weights to assign to each?
3. What are the acceptable ranges for weights?
4. What specific securities in each?

Real investment returns after taxes and costs—a nominal return of 10.1% before taxes would equal 7.0% after taxes and 1.2% after inflation. The important point is to look after taxes and inflation for a real, after-tax return. Please carefully study Table 2.2 for relationships, not absolute numbers. For example, the real return to large-cap stocks has been 7.1% (10.2% - 3.1%). Also note the risk of each asset class (expect to see several multiple-choice questions on these relationships).

Although this reading covers the taxation of individual investors from the viewpoint of a U.S. investor, the candidate is not expected to know the tax code of the United States. This reading is intended to illustrate the importance of taxation to investors, particularly individual investors.

LOs

a) (1) accumulation—retirement and children's college are long-term plus house and car short-term, (2) consolidation—retirement long term plus vacations and college short term, (3) spending—estate planning long term plus gifts short term.

b) The Investment Policy Statement is important because it captures the objectives of the client in terms of risk tolerance and return expectations. It also identifies the goals and constraints of the investor.

c) *The investor's objectives are stated in terms of risk tolerance and return expectations. The higher the risk tolerance, the higher the expected return, and vice versa.*

d) *The constraints include: liquidity, time, taxes, legal and regulatory, and unique needs. These constraints act as upper limits on the amount of risk the investor can assume.*

e) *Importance of Asset Allocation—four steps highlight importance:*

- (1) What asset classes to include?*
- (2) What normal or policy weights to assign to each?*
- (3) What are the acceptable ranges for weights?*
- (4) What specific securities in each?*

Self test question: Explain whether the asset allocation decision is top-down or bottom-up, and whether it is driven by capital market conditions prevailing at the time.

Suggested answer: The asset allocation decision is top-down. It begins with an assessment of the investor's risk preferences (utility function, which is independent of capital market conditions), and proceeds to create the optimal portfolio by superimposing this utility function on top of the efficient frontier, which reflects prevailing capital market conditions. The process brings together internal factors unique to the investor (utility function) and external factors outside the control of the investor (efficient frontier). After the asset allocation decision is made, the next decision is what specific industries and securities will be included in each asset class.

Reilly and Brown, "Selecting Investments in a Global Market," Ch. 3, pp 69-78.

LOs

a) *Higher returns, reduced risk, and diversification.*

b) *In 1995, the US market comprised 30.7 percent of the global equity market and 23.7 percent of the global bond market. Keep in mind that these percentages can change dramatically very quickly.*

c) *Currency exchange rates are important even though returns in a local currency may be positive, the conversion back to the base currency can more than offset the positive return. For example, given a 10% return in UK when the US dollar has strengthened by 15% would mean a 5% loss to the US investor.*

d) *Changes in risk include: currency risk, political risk, transaction risk, accounting data risk, and trade risk.*

Reilly and Brown, "An Introduction To Portfolio Management," Ch. 8.

An Efficient Portfolio is one that generates the highest possible expected return for a given level of risk, or the lowest possible risk for a given level of expected return. Modern portfolio theory assumes investors are risk averse.

Markowitz Portfolio Theory—his main contribution was the quantification of risk, as measured by standard deviation of portfolio. Covariance is focus.

Alternative Measures of Risk: (1) standard deviation, (2) range, (3) semi-variance—measure of dispersion that considers only outcomes below expected return

Expected Rates of Return --a simple weighted average

Variance (Standard Deviation) of Returns--not a weighted average of standard deviations of securities in portfolio, but depends on covariance (interaction) of securities within portfolio

Covariance of Returns—measure of degree to which two random variables move together

Covariance and Correlation—related in that both have same sign, but correlation has boundaries ($-1 < R < 1.0$) whereas covariance does not. Also note that beta has same sign as correlation and covariance.

Standard Deviation of a Portfolio—as securities are added to portfolio, the weighted average of standard deviations of individual securities becomes less important and covariance becomes more important.

The Two-Asset Portfolio:

1. Equal Risk and Return - Changing Correlations—the result of this is a more efficient frontier. Be sure you can draw this effect. In other words, know what happens to the risk of the portfolio as you change the correlations keeping expected return constant. One portfolio dominates another if it is more efficient.
2. Changing Weights—having a correlation equal to -1.0 is not by itself sufficient to generate a riskless portfolio. You must also have the proper weights assigned to each asset. Thus, the perfectly riskless portfolio depends on two items: (1) correlation of -1.0 and (2) selection of proper weights.
3. Software programs use trial and error to generate the efficient frontier given three estimates: (1) expected returns, (2) correlations, (3) standard deviations

If portfolio contains a large number of securities, the standard deviations of the individual securities in the portfolio disappear. That is, micro risk (unsystematic) is diversified away.

The Efficient Frontier and Investor Utility—an investor's optimal portfolio is the one generated where the investor's utility function touches the efficient frontier. The optimal portfolio will differ among investors depending upon their utility functions, which will affect the point of tangency. A more risk averse investor's optimal portfolio will be closer to R_f and a more risk taking investor's optimal portfolio will be further away from R_f . An indifference curve depicts the set of expected returns and levels of portfolio risk (standard deviations) of which the investor is indifferent. In other words, the investor is satisfied with any combination of expected return and risk on an indifference curve. The utility function describes the location of the investor's indifference curve relative to the efficient frontier.

The material covered in "Efficient Capital Markets," Ch. 7 of Reilly and Brown assigned in Study Session 13, is an important precursor to the material covered in the following Readings 1C and 1D. Candidates may wish to review Ch. 7 and its expected Learning Outcomes prior to commencing Ch. 8 and Ch. 9.

LOs

a) *Risk aversion means that given a choice between two assets with equal rates of return, investors will select the assets with lower level of risk. Therefore, there is a positive relationship between expected return from an investment and expected risk of that investment.*

b) *Covariance is a measure of the degree two returns move together. It is related to correlation as follows: Covariance (AB) = correlation (AB)/ (standard dev of A x standard deviation of B)*

c) *In Markowitz Portfolio theory, risk can be measured by standard deviation, range or semi-variance. Expected rate of return is a simple weighted average. Variance of returns depends on covariance of securities within the portfolio. Covariance of returns is the measure of degree to which two random variable move together. Standard deviation for a portfolio of assets is a function of the weighted average of the individual variances plus the weighted covariances between all the assets in the portfolio.*

d) *The lower the correlation between two assets, the greater the diversification benefits, and vice versa.*

e) *(see b above).*

f) *Efficient frontier is the envelope curve that encompasses all of the best combinations of numerous assets and investor's utility curves.*

g) *The optimal portfolio is the one portfolio on the efficient frontier that is tangent to the investor's utility function.*

h) *Expected return is the weighted average of expected return of the individual assets. Expected return does not depend on the covariance. Portfolio variance is the weighted average of individual variances plus weighted covariances between all the assets in the portfolio.*

Problem: 4

Self test question: Portfolio A has an expected return of .22 and a standard deviation of .18. Portfolio B has an expected return of .20 and a standard deviation of .16. Portfolio B, however, lies on a higher indifference curve than portfolio A. **Explain** whether portfolio A dominates portfolio B.

Suggested answer: Portfolio A does not dominate portfolio B because A has a lower expected return and lower risk. The fact that A lies on a higher indifference curve simply means that the investor would prefer A to B. A is optimal to this particular investor.

Reilly and Brown, "An Introduction To Asset Pricing Models," Ch. 9.

This chapter builds on the prior two chapters for the purpose of showing the importance of the market portfolio M, which Sharpe derived. M is the main concept of this chapter. Recognize its importance.

All Investors are Markowitz Efficient Investors: (1) You can Borrow or Lend at the RFR, (2) Homogeneous Expectations, (3) Same One Period Time Horizon, (4) Investments Infinitely

Divisible, (5) No Taxes or Transactions Costs, (6) No Inflation, (7) Capital Markets are in Equilibrium

The Initial Development- be sure to recognize that the Sharpe efficient frontier (year of 1964: straight line) came after the Markowitz efficient frontier (year of 1952: curve) because the Sharpe frontier includes R_f .

A Risk-Free Asset: (1) What is it? It has no risk over the period (i.e., one year). This is why the One Period Time Horizon assumption is important, (2) Covariance with the Risk-Free Asset—the covariance of any risky asset with R_f is zero, (3) Combining the Risk-Free Asset and a Risky Portfolio—the result is a new portfolio whose risk is proportional to the risk of the risky asset. In other words, the new portfolio lies on a straight line drawn between the risky asset and R_f , (4) Expected Return of the new portfolio is also on the straight line. If the risky portfolio contains all securities in the market, this risky portfolio is the market portfolio M and the line is called the Capital Market Line (CML). Portfolio combinations lying between R_f and M are lending portfolio because you are lending money to the government at R_f , and portfolios lying beyond M are borrowing portfolio because you are borrowing money at R_f (you are leveraged) This is why the R_f rate assumption is so important.

The Market Portfolio M includes all assets proportional to the market value of the asset to the total market value of M. M is perfectly diversified meaning it has eliminated all unsystematic risk.

The CML and Separation Theorem - investment and financing decisions are separate. Be sure to recognize this important concept. In other words, draw the Sharpe efficient frontier first, and then draw your indifference curve that reflects your level of risk. These two acts are separate (independent), and the intersection of the two is your optimal portfolio.

Risk Measure for the CML—recognize that the CML includes M, which is perfectly diversified. Thus, any combination of R_f and M contains only systematic risk. The unsystematic risk is not relevant in a perfectly diversified portfolio.

The CAPM—The Security Market Line (SML) reflects the relationship between expected return and systematic risk (beta) for any security or portfolio. Recognize the difference between the CML (risk = standard deviation), and SML (risk = beta). You can derive the SML by measuring the relationship between all securities in the market and M (beta of each security), ranking all the betas from high to low, and drawing the line that depicts this relationship. The intercept of the SML is R_f (zero beta). In equilibrium, all securities plot on the SML. Any security that plots off the SML is mispriced, and represents an investment opportunity of either buying it or selling it short. Recognize that different firms calculate different betas because they may use different holding periods (i.e., one week or one month), different time periods (5 years from 1990 to 1995 or 5 years from 1989 to 1994), or different market indices (S&P 500 or Dow Jones Industrial Average). Theory does not address these issues since we are estimating the future and these issues are concerned with historical data.

Arbitrage Pricing Theory (APT)—was developed by Ross mainly because M cannot be measured. Thus, we do not know if its proxy (i.e., S&P 500) lies on the efficient frontier. It probably does not. APT differs from CAPM in that it does not require; (1) investors to have a quadratic utility function, (2) security returns be normally distributed, (3) identification of the market portfolio M

Think of APT as a multi-factor model, and the CAPM as a single factor Model (beta, which reflects the impact of M, is the single factor). The problem with APT is that it does not tell us the factors that affect a security's returns. We must estimate these factors using empirical analysis. Empirical Tests of APT show it superior to CAPM in estimating expected returns.

LOs

a) Risk free asset has no risk over the assumed period. The covariance of any risky asset with risk free asset is zero. If you combine the risk free asset and a risky Markowitz portfolio, the new portfolio lies on a straight line drawn between the risky asset and risk free asset.

b) Market portfolio contains all securities in the market. The line drawn between risk free asset and market portfolio is called the capital market line (CML).

c) Systematic risk is defined as the variability in all risky assets caused by macroeconomics variables, remains in the market portfolio. Systematic risk cannot be eliminated. Unsystematic risk is all risk unique to individual assets, and can be diversified away.

d) Security Market Line (SML) reflects the relationship between expected return and systematic risk (beta) for any security or portfolio. The difference between CML and SML is that CML uses standard deviation concept as risk and SML uses beta as risk.

e) In equilibrium, all expected returns plot on the SML, which identifies required returns. Any security that is above or under SML is undervalued or overvalued respectively.

f) In CAPM, expected return is determined by the risk free rate plus a risk premium for the individual asset. SML is also represents this relationship, which means that at zero risk (or $\beta=0$), the intercept of SML is risk free rate, and if the risk increases, then expected return will increase.

g) The characteristic line measures the relationship (beta) between the returns of a security and the returns of a market index. In a diversified portfolio, this relationship is a measure of systematic risk. That is, it measures how the returns of the security move relative to the returns of the index.

h) APT is a multifactor model while CAPM is single factor model. APT divides the market risk factor into many other subfactors, while CAPM considers the risk as an impact of the market. The main difference between APT and CAPM is that APT does not require (1) investors to have a quadratic utility function, (2) security returns be normally distributed, or (3) identification of the market portfolio.

Problem: 15.

Self test question: Assume that there is only one factor in the market and that it is beta.

Explain the relationship between APT and CAPM given this assumption.

Suggested answer: The CAPM makes certain assumptions about the risk preferences of the investor and the distribution of security prices. APT avoids these restrictive assumptions. If there is only one factor (beta), APT and CAPM are identical.