Topic : Project Analysis

—— Planning, estimating, and setting a course in an uncertain future.

—— Providing a basis for considering alternative results to varying future conditions.

—— Searching for a "feel" for the future by the following techniques:
(1) Sensitivity Analysis, (2) Scenario Analysis, and
(3) Break-Even Analysis (Accounting BEA & NPV BEA)

I. Capital Budgeting

Stage 1: The Capital Budget: (a list of planned investment projects)

Bottom-up (divisions & departments):
Project plans for the bottom up bear the specific knowledge of people close to the customers an other business dimensions.
Top-down (Strategic planning):
Senior management has the perspective of corporate strategy and big picture of the firm's operations.

Stage 2: Project Authorization:

a. Outlays required by law (i.e., safety equipment)
b. Maintenance or cost reduction projects (i.e., replacement decisions)
c. Expansion proposals
d. New products or services proposals

Notes: 1. Assumptions should be consistent among competing proposals.
2. Keep the manager reward system consistent with shareholder returns
(*to eliminate the agency problem*)
3. Competition for limited funds may lead to inappropriate estimates of C.F.
4. Capital rationing techniques force divisional managers to send only the best projects forward

II. Sensitivity Analysis:

— Show how variables in a project affect profitability
— Evaluate projects by recording profitability changes that result from changing one variable at a time.
— Ignore interrelationships between variables.
— Assume the individual variables are independent of each other (*Note: This is usually not the case*)

III. Scenario Analysis:

— Like Sensitivity analysis, scenario analysis involves the same change of variables to see the impact on NPV.

— Unlike Sensitivity analysis, scenario analysis involves a comparison of a particular combination of variables under specific assumptions with another scenario of assumptions.

— Simulation analysis, an extension of scenario analysis, generates many scenarios and, with an estimate of their probability, generates NPV estimates for a wide range of scenarios.

IV. Break-Even Analysis (BEA):

— Estimate the **sales point** where the company breaks even

(1) Accounting BEA:

— Estimate the level of sales where **profits** are zero (total revenue = total costs)

— Break-even level of revenues = $\dfrac{\text{fixed costs including depreciation}}{\text{additional profit from each additional dollar of sales}}$

[Note: A project that just breaks even in accounting income terms will have a negative NPV.]

(2) NPV BEA: Estimate the level of sales where NPV = 0.

V. Operating Leverage (O.L.)

— High fixed costs ==> high O.L.

— A store with high O.L. performs relatively badly in a slump but flourishes in a boom
(See the example on Page 206; Table 8.6. Also see the exercise problem #18)

— **D.O.L.** (degree of operating leverage):

$$= \frac{\text{\% change in profit}}{\text{\% change in sales}} = 1 + \frac{\text{fixed costs including dep' n}}{\text{Profits}}$$

VI. Decision Trees:

— Diagram of alternative sequential decisions and possible outcomes