

CH0401 Process Engineering Economics

Lecture 5

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Process Engineering Economics

- 1 Economic Analysis of a complete process
- 2 Operating Plants and Proposed Plants



Process Engineering Economics

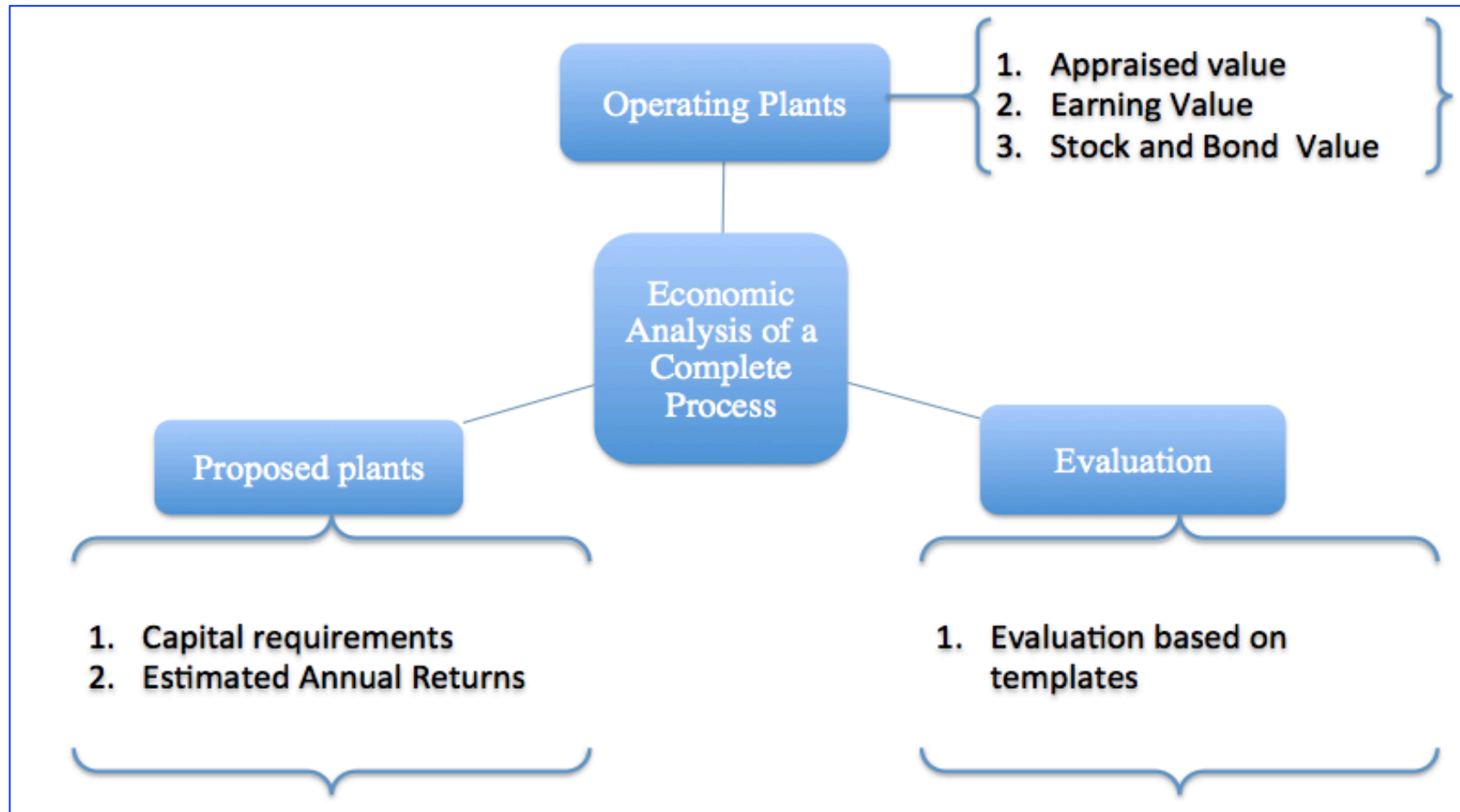
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Economic Analysis of a complete process

2

Operating Plants and Proposed Plants

Process Engineering Economics – *Economic Analysis*





Process Engineering Economics – *Economic Analysis*

The process engineer is sometimes confronted with the necessity of **evaluating an established processing plant** which his company may contemplate purchasing.

However, an evaluation of the value of a going company constitutes a detailed problem, and only a summary treatment to illustrate the general principles will be given here.

A second type of evaluation to be considered is that of estimating the **economic feasibility of a totally new process developed through research**, for which the total investment must be estimated.

Economic analysis of operating plant

Determination of value of a company

The methods used to determine the value of company are of 3 types

- Appraised value
- Earning value
- Stock and Bond value

Appraised value

Appraised value is determined by estimating the present value of all the company's assets

Earning value.

The earning value of a company is an alternate evaluation of the book value based on either capitalization of the annual earnings at some interest rate or evaluation of the present worth of the annual return for an assumed time at some assumed interest rate.

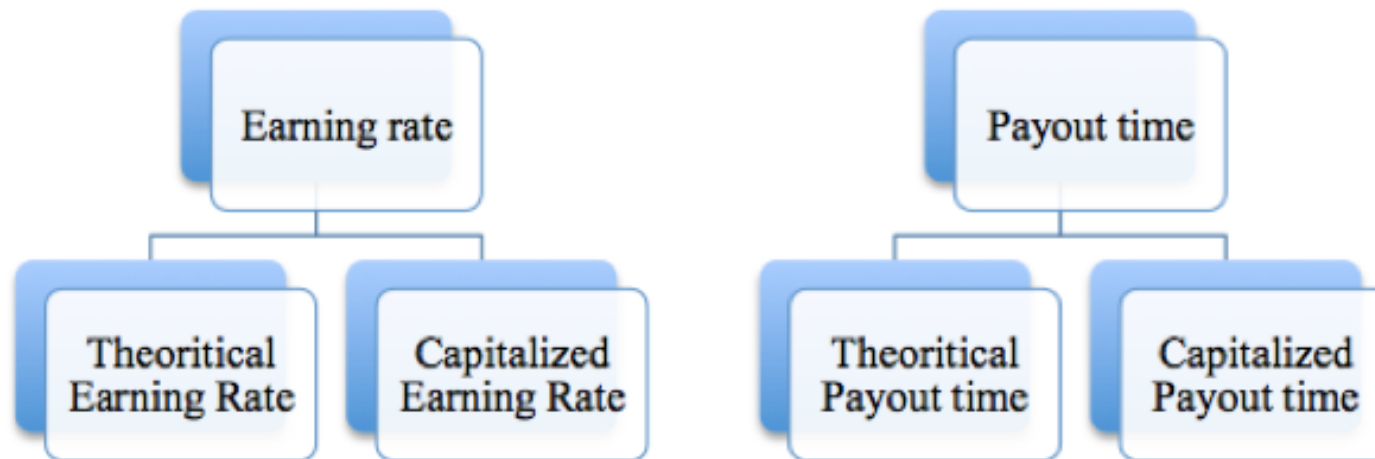
Stock and Bond value

This method is the most simple of the three for determining value and perhaps is least related to the true value because it depends on general public's opinion of the company and the general economic conditions existing.

It is computed as the sum of the following two items:

- Stock market price per share times the number of shares of stock outstanding
- Bond market price per bond times the number of bonds outstanding

Earning rate and Payout time



Earning rate and Payout time

Theoretical Earning Rate	Theoretical earning rate of a company is the ratio of profit to sum of capital and it allows tax on profits
Capitalized Earning Rate	Capitalized earning rate of a company is the ratio of net profit to the total investment
Theoretical Payout time	Theoretical payout time of a company is the ratio of sum of capital to a profit or earning. It allows tax on profits
Capitalized Payout time	Capitalized payout time of a company is the ratio of investment to the annual return using the proprietary earning

- Herbert E. Schweyer. (1955) *Process Engineering Economics*, Mc Graw Hill
- Max S. Peters, Kaus D. Timmerhaus, Ronald E. West. (2004) *Plant Design and Economics for Chemical Engineers*, 5th Ed., Mc Graw Hill
- Max Kurtz. (1920) *Engineering Economics for Professional Engineers' Examinations*, 3rd Ed., Mc Graw Hill
- Frederic C. Jelen, James H. Black. (1985) *Cost and Optimization Engineering*, International Student edition, Mc Graw Hill
- Grant L. E, Grant Ireson. W, Leavenworth S. R. (1982) *Principles of Engineering Economy*, 7th Ed., John Wiley and Sons.