CHAPTER 3 - PROJECT EVALUATION

The Time Value of Money

An Example

Most of the time, a company does not have necessary resources to undertake all the projects with positive cash inflow. This is especially the case in the oil and gas business where risks and initial investment are usually quite high. Companies are often in a position to evaluate different investment opportunities in order to choose the one(s) that would yield the highest return. Consider the following investment opportunities. Each require an initial investment of $100, but have different income streams for the four-year life of the operation.

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<thead>
<tr>
<th>Year</th>
<th>A</th>
<th>B</th>
<th>C</th>
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Project E appears to offer the highest return to the initial investment of $100, and Project C offers the least. Projects A, B, and D provide equal returns. However, money has a time value. An amount of money received today is worth more than the same dollar amount received a year from now. Similarly, a payment of a certain amount is worth less if it is paid a year from now. The main reason for why this is the case is that one dollar today can be invested to earn a rate of return. When one considers this opportunity of earning interest, the ranking of the five projects changes. Project E is not as attractive anymore as the company would have to wait until the last year of the operation to receive the majority of its income. Similarly, Project C is not necessarily the worst option any longer, because the company receives most of the cash the first two years of operations and can earn interest on this income over the next two years of the operation. Projects A, B, and D are not equivalent either. The sooner the company receives most of its income and the higher the interest that can be earned from this cash, the higher its value will be. Accordingly, Project D looks better than both Projects A and B.

Present Value and Future Value Concepts

Project managers make constant use of the time value of money. As we discussed above, any decisions involving investing or financing where cash flows occur at different points in time require an understanding of the time value of money. In borrowing or lending money, the amount due can be calculated using either simple interest or compound interest. The principal is the amount of money borrowed or invested, the term of a loan is the length of time or number of periods the loan is outstanding, and the rate of interest is the% of the principal the borrower pays the lender per time period.

Simple interest is the interest paid on the principal sum only.

\[ I = PV_0 \times i \times n \]

where \( I \) = simple interest in dollars, \( PV_0 \) = principal amount at time 0, \( i \) = interest rate per time period, and \( n \) = number of time periods.

For simple interest, the present value of the loan is

\[ PV = \frac{I}{i} \]
The future value (amount due at time $n$) using simple interest is

$$FV_n = PV_0 + I, \text{ or } FV_n = PV_0 + (PV_0 \times i \times n) = PV_0 [1 + (i \times n)].$$

Compound interest is due not only on the principal but on prior interest which has not been paid (or withdrawn). The amount of interest due each period is the interest rate times the principal amount at the beginning of the period.

For one period, the future (compound) value is

$$FV_1 = PV_0 (1 + i)$$

and for two periods, the future value is

$$FV_2 = FV_1(1 + i), \text{ or } FV_2 = PV_0 (1 + i)(1 + i) = PV_0 (1 + i)^2.$$

In general, the future value at the end of year $n$ for a sum compounded at interest rate $i$ is

$$FV_n = PV_0 (1 + i)^n$$

Present value calculations find the amount at time zero, or the present value ($PV_0$) today, that is equivalent to some future amount $FV_n$. The present value of a future amount received in $n$ years or time periods discounted at interest rate $i$ is:

$$PV_0 = FV_n \frac{1}{(1 + i)^n}$$

When $i$ appears in the numerator, the interest rate is referred to as the compound interest rate or the growth rate. On the other hand, when $i$ appears in the denominator, the interest rate is called the
discount rate.

Major Steps in Evaluating Capital Investment Projects

Capital Budgeting

Capital investment decisions can be the most complex decisions facing a company’s management. Capital budgeting is the process of planning for purchases of assets whose returns are expected to continue beyond one year. A capital expenditure is a cash outlay, which is expected to generate a flow of future cash benefits. Normally, a capital project is one with a life of more than one year. Capital budgeting models are used to evaluate a wide variety of capital expenditure decisions, including the following:

1. Investments in assets to expand an existing product line or to enter a new line of business.
2. Replacement of an existing capital asset.
3. Expenditures for research and development.
4. Investments in permanent increases in inventory or receivables levels.
5. Investments in education and training.

The company’s cost of capital is the overall cost of funds, which are supplied to the company. The cost of capital is also called the investors' required rate of return, because it is the minimum rate of return, which must be earned on the capital invested in the company. The required rate of return helps provide a basis for evaluating capital investment projects.

Projects under consideration may be independent of each other or have some types of interdependencies.

1. An independent project is one whose acceptance or rejection has no effect on other projects under consideration.
2. Two projects are mutually exclusive if one or the other can be accepted, but not both.
3. A contingent project is one whose acceptance is contingent upon the adoption of one or more other projects.
4. One additional complication is capital rationing, which occurs when the company has a limited total amount of dollars available for investment and the outlay for profitable investments exceeds this limit. On the other hand, when the company has sufficient funds available to invest in all profitable projects, we say the company is operating without a funds constraint.

The basic framework for capital budgeting is widely employed. Economic theory demonstrates that the company should expand its output until marginal revenue equals marginal cost. In capital budgeting, the company should invest in its most profitable projects first and should continue accepting projects as long as the last project's rate of return exceeds the marginal cost of funds to the company. Some practical problems are encountered when using this capital budgeting model.

1. All capital projects may not be known to the company at one time. Changing markets, technology, and corporate strategies can make some current proposals obsolete and make new ones profitable.
2. Estimates of future costs and revenues can be made subject to varying degrees of uncertainty.

The capital budgeting process can be broken into four steps.

1. Generating capital investment project proposals.
2. Estimating cash flows.
3. Evaluating alternatives and selecting projects to be implemented.

4. Reviewing or post-auditing prior investment decisions.

The initial step in the capital budgeting process is generating capital investment project proposals. The process of soliciting and evaluating investment proposals varies greatly among companies. Investment projects can be classified as:

1. projects generated by growth opportunities in existing product lines or new lines,
2. projects generated by cost reduction opportunities, and
3. projects required to meet legal requirements and health and safety standards.

The size of an investment proposal frequently determines who has authority to approve the project. A very large outlay might require approval of the corporation president or board of directors and lower and lower levels of management can authorize successively smaller outlays. If an investment decision is critical and must be made fast, a lower level manager can approve it or it can bypass the normal time-consuming review process to reach the appropriate responsible manager as fast as possible.

Capital Budgeting Criteria

Net cash flow (NCF) is the foundation of all investment decisions. It converts geological and engineering estimates into a common unit - money. Only cash can be used to acquire assets and to make profit distributions to investors. Negative cash flows over an extended period of time reduce an organization’s ability to satisfy its financial obligations. This is why the decision criteria we will see in this chapter are based on the cash flow, rather than revenues or profit. We will study two capital budgeting criteria. These are the net present value (NPV) and internal rate of return (IRR).

Net Present Value

The net present value (NPV) of an investment project is defined as the present value of a stream of future net cash flows from a project minus the project’s net investment.

The net present value is:

\[ NPV = PV_{NCF} - INV, \]

\[ NPV = \sum_{t=1}^{n} \frac{NCF_t}{(1 + k)^t} - INV \]

where:

NPV = net present value
NCF_t = expected net cash flow in period t
n = expected project life
k = cost of capital
INV = initial investment.

The NPV decision rule is to accept a project when the NPV is greater than zero (because, in this case, the present value of the project’s net cash flows exceeds the project’s net investment outlay) and to reject a project when its NPV is less than zero (the present value of the net cash flows is less than the outlay).

What causes some projects to have positive or negative NPV’s? When product and factor markets are not perfectly competitive, it is possible for a company to earn above-normal profits and invest in positive NPV projects. Some examples of conditions that allow above normal profits include.
a. buyer preferences for established brand names,
b. ownership or control of favored distribution systems,
c. patent control of superior product designs or production techniques,
d. exclusive ownership of superior natural resource deposits,
e. inability of new companies to acquire necessary factors of production (management, labor, equipment),
f. superior access to financial resources at lower costs (economies of scale in attracting capital),
g. economies of large-scale production and distribution arising from capital intensive production processes and high initial start-up costs, and
h. access to superior labor or managerial talents at cost which are not fully reflective of their value.

Example:

Let us revisit our example in Section I, and calculate the net present value of each project. First, assume that the company requires a 10% after tax rate of return, that is, \( k = 0.1 \).

\[
\begin{align*}
\text{NPV}(A) &= 50/(1+0.1) + 50/(1+0.1)^2 + 50/(1+0.1)^3 + 50/(1+0.1)^4 - 100 = 58.49 \\
\text{NPV}(B) &= 20/(1+0.1) + 40/(1+0.1)^2 + 60/(1+0.1)^3 + 80/(1+0.1)^4 - 100 = 50.96 \\
\text{NPV}(C) &= 80/(1+0.1) + 70/(1+0.1)^2 + 20/(1+0.1)^3 + 20/(1+0.1)^4 - 100 = 59.27 \\
\text{NPV}(D) &= 60/(1+0.1) + 40/(1+0.1)^2 + 60/(1+0.1)^3 + 40/(1+0.1)^4 - 100 = 60.00 \\
\text{NPV}(E) &= 10/(1+0.1) + 20/(1+0.1)^2 + 70/(1+0.1)^3 + 110/(1+0.1)^4 - 100 = 53.34
\end{align*}
\]

According to the net present value calculations, Project D is the best option and Project C is the second best. Project E is the second worst alternative despite the largest straight sum of cash flows ($110) it provides. Overall, projects are ranked from best to worst as follows: D, C, A, E and B. This ranking may change if the company requires a higher rate of return, say 20%.

\[
\begin{align*}
\text{NPV}(A) &= 50/(1+0.2) + 50/(1+0.2)^2 + 50/(1+0.2)^3 + 50/(1+0.2)^4 - 100 = 29.44 \\
\text{NPV}(B) &= 20/(1+0.2) + 40/(1+0.2)^2 + 60/(1+0.2)^3 + 80/(1+0.2)^4 - 100 = 17.75 \\
\text{NPV}(C) &= 80/(1+0.2) + 70/(1+0.2)^2 + 20/(1+0.2)^3 + 20/(1+0.2)^4 - 100 = 36.50 \\
\text{NPV}(D) &= 60/(1+0.2) + 40/(1+0.2)^2 + 60/(1+0.2)^3 + 40/(1+0.2)^4 - 100 = 31.79 \\
\text{NPV}(E) &= 10/(1+0.2) + 20/(1+0.2)^2 + 70/(1+0.2)^3 + 110/(1+0.2)^4 - 100 = 15.78
\end{align*}
\]

When the company discounts the future returns more, that is, the returns further in the future are less valuable to the firm, Project E becomes the worst option whereas Project C becomes the best investment opportunity despite the lowest straight sum of cash flows ($90) it provides. Now, the projects are ranked from best to worst as follows: C, D, A, B and E. Chart 3.1 provides a visual representation of the rankings and demonstrates how the ranking and project NPVs change as we change the discount rate.
In practice, NPV calculations take into account the many complexities of capital budgets. These include variations in timing of expenditures and revenues; complex tax rules; and depreciation, amortization and depletion allowances.

**Internal Rate of Return**

One of the most common methods used to calculate the return on investment for a capital expenditure project is the internal rate of return (IRR) method, or discounted cash flow (DCF) method, as it is often called. The *internal rate of return* (IRR) is defined as the rate of discount that equates the present value of net cash flows of a project with the present value of the net investment. In other words, the IRR is the discount rate which makes a project's NPV equal zero. The algebraic definition of the IRR is:

\[
\sum_{t=1}^{n} \frac{NCF_t}{(1 + r)^t} = INV
\]

where \( r = \text{IRR} \).

The *IRR decision rule* is to accept a project when its IRR exceeds the cost of capital (\( k \)), for example, the interest rate on borrowed money, and to reject a project when its IRR is less than \( k \). Like the NPV, the IRR takes account of the magnitude and timing of a project's net cash flows over its entire life. One occasional difficulty with the IRR is that an unusual cash flow pattern (cash flows switching signs from positive to negative and vice versa) can result in multiple rates of return.

When two or more mutually exclusive projects are acceptable using the IRR and NPV criteria, and if the two criteria disagree on which is best, the NPV criterion is generally preferred. Both the NPV and IRR criteria will always agree on accept/reject decisions (i.e., if NPV > 0, then IRR > \( k \); and if NPV < 0, then IRR < \( k \)), even if the NPV and IRR do not rank the projects the same. Different rankings result from the implicit reinvestment rate assumptions of the two techniques: the NPV assumes that cash flows over the project's life may be reinvested at the cost of capital \( k \) while the IRR assumes that cash flows may be reinvested at the IRR.
Example:

Using our example from Section I, let us calculate IRR for each investment project.

\[
\begin{align*}
50/(1+r_A) + 50/(1+r_A)^2 + 50/(1+r_A)^3 + 50/(1+r_A)^4 &= 100 \\
20/(1+r_B) + 40/(1+r_B)^2 + 60/(1+r_B)^3 + 80/(1+r_B)^4 &= 100 \\
80/(1+r_C) + 70/(1+r_C)^2 + 20/(1+r_C)^3 + 20/(1+r_C)^4 &= 100 \\
60/(1+r_D) + 40/(1+r_D)^2 + 60/(1+r_D)^3 + 40/(1+r_D)^4 &= 100 \\
10/(1+r_E) + 20/(1+r_E)^2 + 70/(1+r_E)^3 + 110/(1+r_E)^4 &= 100
\end{align*}
\]

Spreadsheet programs and financial calculators can calculate IRR very easily once you provide the net cash flows and the initial investment. All they do, however, is to solve for \( r \) in above equations. In our example, we obtain the following values for internal rate of return of each project:

\( r_A = 35\% \), \( r_B = 27\% \), \( r_C = 45\% \), \( r_D = 37\% \), \( r_E = 26\% \).

These results rank the projects from best to worst as follows: C, D, A, B and E. High values of IRR indicate that the company discounts future returns significantly. Since, in Project C, the most of the cash inflows are received during the first two years of operations, the company would have to discount the next year’s dollar at a rate of 45% for sum of the discounted net cash flows to equal the initial investment. Remember that the company is trying to recover the cost of capital. The cost of capital, \( k \), is less likely to be in the 40\% range than in the 20\% range.

### Risk and Return Concepts

**Risk** refers to the potential variability of returns from a project. A project is considered *risk-free* if the monetary returns from a project are known with certainty. Probability distributions are the probabilities of every particular outcome. These probability distributions may be objectively or subjectively determined. The expected return is a weighted average of the individual possible returns,

\[
\hat{r} = \sum_{j=1}^{n} r_j p_j
\]

where \( \hat{r} = \text{expected return} \)

\( r_j = \text{return for the jth case, where there are n possible outcomes} \)

\( p_j = \text{probability of occurrence of the jth outcome} \).

The standard deviation is an absolute measure of risk. It is defined as the square root of the weighted average of the squared deviations of individual observations from the expected value.

\[
\sigma = \sqrt{\sum_{j=1}^{n} (r_j - \hat{r})^2 p_j}
\]

If the outcomes are normally distributed (on a plot they would take the shape of a bell curve with the expected value at the top of the curve) the actual outcome should be between ±1 standard deviation of the expected value 68.26\% of the time, and between ±2 standard deviations of the expected value 95.44\% of the time. The number of standard deviations, \( z \), that a particular value of \( r \) is from the expected value of \( r \) is computed with the relationship
Risk is an increasing function of time with early returns being less risky than distant returns.

One of the key variables in capital budgeting decisions is the cost of capital. The cost of capital can be thought of as what the company must pay for capital (interest rates on borrowing) or the return required by investors in the company's securities. Risk can also be thought of as the minimum rate of return required on new investments undertaken by the company. The cost of capital is determined in the capital markets and depends on the risk associated with the company's activities.

The weighted cost of capital is the discount rate used when computing the net present value of a project of average risk. Similarly, the weighted cost of capital is the hurdle rate used in conjunction with the internal rate of return. The weighted cost of capital is based on the after-tax cost of capital where the cost of the next (marginal) sources of capital are weighted by the proportions of the capital components in the company's long-range target capital structure. The weighted, or overall, cost of capital is obtained from the weighted costs of the individual components. The weights are equal to the proportion of each of the components in the target capital structure.

The general expression for calculating the weighted cost of capital, $k_a$, is:

$$k_a = (\text{equity fraction})(\text{cost of equity}) + (\text{debt fraction})(\text{cost of debt})$$

$$k_a = \frac{E}{B+E}(k_e) + \frac{B}{B+E}(k_d)(1-T)$$

$$k_a = \frac{E}{B+E}(k_e_i) + \frac{B}{B+E}(k_i)$$

where $B = \text{amount of debt}$ and $E = \text{amount of equity}$. 

The appropriate component costs to use in determining $k_a$ are the marginal costs or the costs associated with the next dollar of capital to be raised. These may differ from the historical costs of capital raised in the past. The required return, $k$, on any security may be thought of as consisting of a risk-free rate of return plus a premium for the risk inherent in the security, or

$$\text{Required return} = \text{Risk-Free return} + \text{Risk premium}.$$ 

The risk-free rate of return is usually measured by the rate of return on risk-free securities such as short term government securities. The risk-free rate increases with expectations of future inflation. The risk-free rate depends on the overall supply and demand for funds in the economy.

There are five major risk components, which determine the risk premium on a security.

1. **Business risk** arises from the variability of the company's operating income and is determined by the variability of sales revenues & expenses and by the amount of operating leverage the company uses.

2. **Financial risk** arises from the additional variability of the net earnings associated with the use of financial leverage together with the increased risk of bankruptcy associated with the use of debt.

3. **Marketability risk** refers to the ability to quickly buy and sell the securities. Securities that are widely traded have less marketability risk than those, which are less actively traded.

4. **Interest rate risk** refers to the variability in returns on securities arising from changes in interest rates. Increases in interest rates reduce the market price of the security. Decreases in interest rates reduce the rate at which intermediate interest payments can be reinvested.
5. **Seniority risk** is the risk due to the priority of a security's claim in a company's capital structure. The cost of funds may increase with the amount of financing required. The cost of funds obtained from a particular type of security increases the lower the security ranks in its claims on the company. The cost of common equity is higher than that for preferred stock, which has preference over common stock in the event of corporate liquidation. The return required on preferred stock is higher than that for unsecured debt, which is higher than that for secured debt. The cost of capital is equal to the equilibrium rate of return demanded by investors in the capital markets for securities of that degree of risk.

Regardless of the specific source of financing used at a particular time, a weighted cost of capital dependent on the component costs and the proportions of the components in the target capital structure is used for capital budgeting decisions.

With respect to oil and gas operations, there are specific aspects of risk within the broad categories described above.

1. **Geologic risk.** For both the exploration and production (upstream) businesses, there is considerable geologic risk associated with the occurrence of oil & gas. Any number of factors contributes to risk -- whether oil & gas occur in "commercial" quantities (relative to commodity prices and costs of extraction), the quality of the reservoir, success of any reservoir treatment, and so on.

2. **Engineering risk.** For the upstream and downstream (processing, refining, transportation, chemicals, marketing) businesses, there is risk associated with engineering design of infrastructure requirements.

3. **Market risk.** For the oil and gas industries, this source of risk is tied to supply and demand conditions in specific regions and worldwide.

4. **Commodity price risk.** There is risk inherent in the prices for oil & gas both locally and worldwide. Trading and speculation may contribute to risk while serving as strategies for managing price risk.

5. **Financial risk.** The cost of financing (interest rates, terms & conditions) is a large source of risk.

### Incremental Cash Flow Analysis

The capital budgeting process is concerned primarily with the estimation of the **cash flows** associated with a project, not just the project's contribution to accounting profits. Typically, a capital expenditure requires an initial **cash outflow**, termed the **initial investment**. Thus, it is important to measure a project's performance in terms of the net (operating) **cash flows** it is expected to generate over a number of future years. **Chart 3.2** represents a typical cash flow diagram.

Estimating the cash flows associated with investment projects is crucial to the capital budgeting process. The cash flows associated with a project are the basis for evaluation rather than the project's accounting profits. There are several rules concerning the estimation of cash flows:

1. Cash flows should be measured on an incremental basis. The cash flow stream for a project is the difference between the cash flows to the company with the project compared to the cash flows to the company without adopting the project.

2. Cash flows should be measured on an after-tax basis.

3. All the indirect effects of a project should be included in the cash flow estimates. For example, increases in cash balances, receivables, and inventory necessitated by a capital project should be included in the project's net investment.

4. Sunk costs should not be considered. Since they result from previous decisions, sunk costs are not truly incremental costs.

5. Resources should be measured in terms of their opportunity costs. The opportunity costs of resources are the cash flows they would generate if investment were made in an alternative opportunity rather
than in the project under consideration.

Chart 3.2 Cash Flow Diagram

Estimating the Initial Investment

The initial investment is the initial cash outlay for a project (usually at time zero). A four-step procedure for estimating the net investment can be summarized as follows:
Economics of the Energy Industries

Step 1. The new project cost plus any installation and shipping costs associated with acquiring the asset and putting it into service,

PLUS

Step 2. Any increases in net working capital initially required as a result of the new investment,

PLUS

Step 3. The net proceeds from the sale of existing assets when the investment is a replacement decision,

PLUS or MINUS

Step 4. The taxes associated with the sale of the existing asset and/or the purchase of a new one,

EQUALS

The initial investment.

Some projects involve outlays for more than a year. The net investment for a multiple-period investment is the present value of the series of outlays discounted at the company's cost of capital. Reviewing or post-auditing is a final step to review the performance of investment projects after they have been implemented. While projected cash flows are uncertain and one should not expect actual values to agree with predicted values, the analysis should attempt to find systematic biases or errors by individuals, departments, plants, or divisions and attempt to identify reasons for these errors. Another reason to audit project performance is to decide whether to abandon or continue projects that have done poorly.

Inflation is easily incorporated into the basic capital budgeting criteria. Make sure the cost of capital takes account of inflationary expectations. Make sure that future cash flow estimates also include expected price and cost increases. If these are done, the capital budgeting techniques outlined in these chapters serve the financial decision maker reasonably well.

If a project generates additional revenues and the company extends credit to its customers, an additional initial investment in accounts receivable is required. Moreover, if additional inventories are necessary to generate the increased revenues, then an additional initial investment in inventory is required, too. This increase in initial working capital -- that is, cash, accounts receivable, and inventories -- should be calculated net of any automatic increases in current liabilities, such as accounts payable or wages and taxes payable that occur because of the project. As a general rule, replacement projects require little or no net working capital increase. Expansion projects, on the other hand, normally require investments in additional net working capital.

Estimating the Annual Operating Cash Flows

The expected future net operating cash flows (NCF) are easily computed. The after-tax net operating cash flow is:

\[ NCF = \Delta OEAT + \Delta Dep - \Delta NWC, \]

where \( \Delta OEAT \) (change in earnings after tax) = \( \Delta OEB T(1 - T) \)

\( \Delta Dep = \) change in depreciation

\( \Delta NWC = \) increase in the net working capital investment

\( \Delta OEB T = \) change in earnings before tax

\( T = \) tax rate,
and
\[
\Delta \text{OEBT} = \Delta R - \Delta O - \Delta \text{Dep},
\]
where
\[
\Delta R = R_W - R_{WO} \quad \text{(revenues with project - revenues without project)}
\]
\[
\Delta O = O_W - O_{WO} \quad \text{(operating costs with project - operating costs without project)}
\]
\[
\Delta \text{Dep} = \text{Dep}_W - \text{Dep}_{WO} \quad \text{(depreciation with project - depreciation without project)}.
\]

Based on these definitions, two useful expanded versions of the basic NCF equation are
\[
\text{NCF} = (\Delta R - \Delta O - \Delta \text{Dep})(1 - T) + \Delta \text{Dep} - \Delta \text{NWC}
\]
\[
\text{NCF} = [(R_W - R_{WO})-(O_W - O_{WO})-(\text{Dep}_W - \text{Dep}_{WO})] (1 - T) + (\text{Dep}_W - \text{Dep}_{WO}) - \Delta \text{NWC}
\]

Estimating the Terminal Year Cash Flows

There are two potential cash flows at the end of a project's life. First, cash inflow due to incremental salvage must be included at the end of the project. Incremental salvage is the difference between salvage with the project and without the project. There will be taxes due or saved when an asset is sold for more or less than book value. **Book value** is the installed cost of the asset less accumulated depreciation. There are four possible tax situations.

**Case 1:** Sale of an asset for book value. No tax consequences.

**Case 2:** Sale of an asset for less than book value. The loss is treated as an operating loss to offset operating income. The tax saving is the marginal tax rate times the amount of the loss.

**Case 3:** Sale of an asset for more than book value but less than original cost. The gain is taxed as operating income, with taxes due equal to the marginal tax rate times the amount of the gain.

**Case 4:** Sale of an asset for more than original cost. The part of the gain that represents a recapture of depreciation is treated as an operating gain and the gain in excess of original cost is treated as a capital gain.

Don't forget that the recovery of book value is tax-free. Only gains and losses from book value result in tax savings or obligations. Also, recovery of net working capital can be a cash inflow. There are no tax consequences of liquidating working capital.