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Project Management
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Project Finance

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Project Financing

- **Main Features**
  - Economically separable capital investment
  - Cash Flow of the project the main source of the capital recovery
  - Assets of the project is the only source used as collateral
  - No recourse to the assets of sponsoring companies. Unless specifically required in the contract
  - Debt serving has priority over investors equity
  - During construction, interests on debt is accumulated as part of the debt.
Context: Feasibility Phases

- Project Concept
- Land Purchase & Sale Review
- Evaluation (scope, size, etc.)
- Constraint survey
  - Site constraints
  - Cost models
  - Site infrastructural issues
  - Permit requirements
- Summary Report
- Decision to proceed
- Regulatory process (obtain permits, etc)
- Design Phase
Finance

Investment Firms

Company

Equity

Loan

Project

Equity

Company

Equity

Loan

Project

Company Finance

Project Finance
## Company Finance Vs. Project Finance

<table>
<thead>
<tr>
<th></th>
<th>Company Finance</th>
<th>Project Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Formation</td>
<td>Will impact debt capacity</td>
<td>Will not impact debt capacity, because it is off balance sheet</td>
</tr>
<tr>
<td>Risk Exposure</td>
<td>Could impact overall risk structure or the cost of capital</td>
<td>Limited</td>
</tr>
<tr>
<td>Tax Shield</td>
<td>Hard to take advantage of</td>
<td>Easier to bundle</td>
</tr>
<tr>
<td>Cash Flow</td>
<td>To corporate treasurer: subject to corporate policy on dividend</td>
<td>Directly to the investor</td>
</tr>
<tr>
<td>Cost of Project Financing</td>
<td>None</td>
<td>High due to setting up cost</td>
</tr>
<tr>
<td>Capital Cost</td>
<td>Company’s track record</td>
<td>High Due to no history</td>
</tr>
<tr>
<td>Oversight by the Sponsors</td>
<td>None</td>
<td>Very Demanding</td>
</tr>
</tbody>
</table>
# Analysis of Financial Performance

<table>
<thead>
<tr>
<th>Strategic Objectives (Long Run)</th>
<th>Financial Objectives (Short Run)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Market Share</td>
<td>• Return on Investment (ROI)</td>
</tr>
<tr>
<td>• Growth Rate</td>
<td>• Return on Equity (ROE)</td>
</tr>
<tr>
<td>• Market Leadership</td>
<td>• Return on Asset (ROA)</td>
</tr>
<tr>
<td>• Technology Leadership</td>
<td></td>
</tr>
</tbody>
</table>

## Project Decision

- Does the project make financial sense?
- Is the project within the overall strategic framework of the company?
- If there is a clash between the objectives, has financial evaluation correctly taken all the costs and benefits into account?
Financial Ratios

- Profitability Ratios
- Liquidity Ratios
- Debt Ratios
- Activity Ratios
- Leverage Ratios
# Summary of Financial Ratios

<table>
<thead>
<tr>
<th>Profitability Ratios</th>
<th>Liquidity Ratio</th>
<th>Activity Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross Point Margin</strong></td>
<td><strong>Current Ratio</strong></td>
<td><strong>Inventory Turnover</strong></td>
</tr>
<tr>
<td>An indication of margin available to cover operating expenses and yield profit (Sales – Cost of Goods Sold) /Sales</td>
<td>Indicates the extent to which the claims of short term creditors are covered by assets that are expected to be converted to cash in a period roughly corresponding to the maturity of liabilities Current Assets/Current Liabilities</td>
<td>When compared to industry averages, it provides an indication of whether a company has excessive/inadequate finished good invent. Sales/Inventory of finished goods</td>
</tr>
<tr>
<td><strong>Operating Profit Margin</strong></td>
<td><strong>Quick Ratio (Acid Ratio)</strong></td>
<td><strong>Fixed Asset Turnover</strong></td>
</tr>
<tr>
<td>An indication of firms profitability from current operations without regard to interest changes accounting from capital structure Profit Before Tax and Interest/Sales</td>
<td>A Measure of firms ability to pay off short term obligations without relying on the sale of its inventory (Current Asset-Inventory/Current Liability)</td>
<td>A Measure of sales productivity and utilization of plant and equipment Sales/Fix Assets</td>
</tr>
<tr>
<td><strong>Net Profit Margin</strong></td>
<td><strong>Inventory to Newt Working Capital</strong></td>
<td><strong>Total Assets Turnover</strong></td>
</tr>
<tr>
<td>Shows after tax profit per dollar of sales. Subpart profit margin indicates that the firm sales prices are relatively low or that costs are relatively high or both Profit After Tax/Sales</td>
<td>A measure of the extend to which the firm’s working capital ties up in inventory Inventory/(Current Assets- Current liabilities)</td>
<td>A measure of utilization of all firm’s assets ratio below the industry average indicates the company is not generating a sufficient volume of business, given its asset size Sales/Total Asset</td>
</tr>
<tr>
<td><strong>Return to Total Asset</strong></td>
<td><strong>LEVERAGE RATIOS</strong></td>
<td><strong>Account Receivable Turnover</strong></td>
</tr>
<tr>
<td>A Measure of total investment in the enterprise. It is sometimes desirable to add interest to alter tax profits to add form the numerator of the ratio since the total assets are financed by creditors as well as by stockholders; hence it is accurate to measure the productivity of assets by the returns provided to both classes of investors Profit After Tax/Total Assets</td>
<td><strong>Debt to Asset Ratio</strong></td>
<td>A Measure of the average length of time it takes the firm to collect the sale it made on credit Annual Credit Sale/Account Receivable</td>
</tr>
<tr>
<td></td>
<td>Measures the extend to which borrowed funds have been used to finance the firm’s operation Total Debt/Total Equity</td>
<td></td>
</tr>
</tbody>
</table>

**OTHER RATIOS**
## Summary of Financial Ratios

<table>
<thead>
<tr>
<th>Profitability Ratios</th>
<th>Liquidity Ratios</th>
<th>Activity Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Return on Stockholders Equity</strong></td>
<td><strong>Debt Equity Ratio</strong></td>
<td><strong>Dividend Yield on Common Stock</strong></td>
</tr>
<tr>
<td>A measure of the rate of return on stockholders investment in the enterprises</td>
<td>Provides measure of the funds provided by creditors and equity in the firm’s long term capital structure</td>
<td>Measure of returns to owners received in dividends Annual Dividend per share/Current Market Price</td>
</tr>
<tr>
<td><strong>Profit After Tax</strong></td>
<td><strong>Total Stockholders Equity – Par Value Pref. Stock</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Stockholders Equity – Par Value Pref. Stock</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Return on Common Equity</strong></td>
<td><strong>Long Term Debt to Equity Ratio</strong></td>
<td><strong>Price Earnings Ratio</strong></td>
</tr>
<tr>
<td>A measure of the rate of return on investment which the owners of the common stock have made in the enterprise (Profit After tax-Preferred Stock dividends) [Tot. Stockholders Equity-par value Pref. Stock]</td>
<td>A widely used measure of balance between debt and equity in the firm’s long term capital structure Long Term Debt/Total Shareholders</td>
<td>Faster growing or less-risky firms tend to have higher P/E than slower growing or risky firms Current Market Price/After tax Earning per share</td>
</tr>
<tr>
<td><strong>Earning Per Share</strong></td>
<td><strong>Time Interest-Earned Ratio</strong></td>
<td><strong>Dividend Payout Ratio</strong></td>
</tr>
<tr>
<td>Shows the earnings available to the owners of each share of common stock (Profit After tax-Preferred Stock dividends) Number of Common Stocks Outstanding</td>
<td>Measured the extent to which earnings can decline without the firm becoming unable to meet its annual costs . Profit Before Interest and Taxes/ Total Interest</td>
<td>Percentage of profits as dividends Annual Dividends share/After tax Earning share</td>
</tr>
<tr>
<td><strong>Fixed Cost Coverage</strong></td>
<td></td>
<td><strong>Cash Flow Per Share</strong></td>
</tr>
<tr>
<td>A more inclusive indication of the firm's ability to meet all of its fixed charge obligations</td>
<td></td>
<td>A measure of the discretionary funds over and above expenses that are available for use by the firm After tax Profits + Depreciation Number of Common Shares Outstanding</td>
</tr>
</tbody>
</table>
In Construction

- **Liquidity Ratios:**
  - **Short term obligations:**
    - Account Payable
    - Accrued Interest and Employee Benefits
    - Advanced billings on contracts
  - **Short Term Assets**
    - Cash Accounts Receivable
    - Inventory
    - Contract in Progress
Relation Between Contracting Firm, Sponsor and Project

Contracting Firm

- Capital Investment & Working Capital
  + Operating Cost
  - Project Revenue

Project

Fund Transfer

Sponsor
Traditional Financing Structure

Stockholders/Investors

Investment in the Company

Sponsor

Loan

Dividend

Profit

Capital Investment

Banks and Financial Institutions

Loan

Interest

+ + + +
Toll Road Project Finance Structure
## Financing – Gross Cashflows

<table>
<thead>
<tr>
<th>Years</th>
<th>Design/Preliminary</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner Investment</td>
<td>($10,000,000)</td>
<td>($20,000,000)</td>
</tr>
<tr>
<td>Owner Cashflow</td>
<td>$0</td>
<td>($10,000,000)</td>
</tr>
<tr>
<td>Owner Cum Cashflow</td>
<td>$0</td>
<td>($10,000,000)</td>
</tr>
<tr>
<td>Contractor Costs</td>
<td>($4,000,000)</td>
<td>($7,000,000)</td>
</tr>
<tr>
<td>Contractor Cashflow</td>
<td>($4,000,000)</td>
<td>$3,000,000</td>
</tr>
<tr>
<td>Contractor Cum Cashflow</td>
<td>($4,000,000)</td>
<td>($1,000,000)</td>
</tr>
</tbody>
</table>

**Owner investment = contractor revenue**

- Early expenditure
- Takes time to get revenue
Typical Project Structure for IPP

Multi-lateral, bi-lateral and Export Credit Agencies

Bank Syndicate

Non-Recourse DEBT Inter-creditor Agreement

Sponsor A
Sponsor B
Sponsor C

EQUITY Shareholder Agreement
Board of Directors

Project Company (Power Plant)

70% 30%

Gas Input Under a supply contract

Technol. License

Labor

Equipment Contract (turbines)

Construction Contract (EPC Contract)

Operating & Maint. Contract

Power Output Under a purchase contract

Host Government:
legal system, permits, Regulation, property rights, etc.

Adapted from: Esty & Sesia; HBS Oct. 2007
Private Owners w/Collateral Facility
Distinct Financing Periods

- **Short-term construction loan**
  - Bridge Debt
    - Risky (and hence expensive!)
    - Borrowed so owner can pay for construction (cost)

- **Long-term mortgage**
  - Senior Debt
    - Typically facility is collateral
    - Pays for operations and Construction financing debts
    - Typically much lower interest

- **Loans often negotiated as a package**
Typical Terms

- Project Company has to complete the project under the terms of contract
- Public Authority provides the land and the right-of-way
- Ownership remains by the Public Sector
- Concession is given for limited period of time
- Operation and Management is in the hand of Project Company
Project Finance and Privatization

- Project finance should be distinguished from privatization, which:

  *either* conveys the ownership of public-sector assets to the private sector—this does not necessarily involve project finance; a privatized former state-owned company may raise any finance required through a corporate loan.

  *or* provides for services to be supplied by a private company that had previously been supplied by the public sector (e.g., street cleaning) – again, this does not necessarily involve project finance: the private company may not have to incur major new capital expenditure and so not require any finance at all, or may use a corporate loan to raise the finance to make the investment required to provide the service.
Project finance may come into the picture if a company needs finance for the construction of public infrastructure on the basis of a contract or license, e.g.,

- An Off-take Contract, based on which a project will be constructed to sell its output to a public-sector body (e.g., construction of a power station to sell electricity to a state-owned power company)
- A Concession Agreement under which a project will be constructed to provide a service to a public-sector body (e.g., provision of a public-sector hospital building and facilities)
- A Concession Agreement under which a project will be constructed to provide a service to the general public normally provided by the public sector (e.g., a toll road)
- A Concession Agreement or license under which a project will be constructed to provide new services to the public (e.g., a mobile phone network).
Examples of other types of structured finance

- Receivables financing
- Securitization
- Leveraged buyout ("LBO") or management buyout ("MBO") financing
- Acquisition finance
- Asset finance
- Leasing
## Benefit of Leverage on Investor’s Return

<table>
<thead>
<tr>
<th></th>
<th>Low Leverage</th>
<th>High Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Cost</strong></td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>(a) Debt</td>
<td>300</td>
<td>800</td>
</tr>
<tr>
<td>(b) Equity</td>
<td>700</td>
<td>200</td>
</tr>
<tr>
<td>(c) Revenue from project</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>(d) Interest rate on debt (p.a.)</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>(e) Interest payable [(a)x(d)]</td>
<td>15</td>
<td>56</td>
</tr>
<tr>
<td>(f) Profit [(c) – (e)]</td>
<td>85</td>
<td>44</td>
</tr>
<tr>
<td>Return on equity [(f)÷(b)]</td>
<td>12%</td>
<td>22%</td>
</tr>
</tbody>
</table>
Contractor Financing

- Payment schedule
  - Break out payments into components
    - Advance payment
    - Periodic/monthly progress payment (itemized breakdown structure)
    - Milestone payments
  - Often some compromise between contractor and owner
  - Architect certifies progress
  - Agreed-upon payments
    - retention on payments (usually, about 10%)
  - Often must cover deficit during construction
  - Can be many months before payment received
S-curve Work

Man-hours

months
Expense & Payment

(A) Expenses and payments

(B) Cumulative net cash flow of contractor

Image by MIT OpenCourseWare.
Contractor Financing

- Owner keeps an eye out for
  - Front-end loaded bids (discounting)
  - Unbalanced bids
Contractor Financing

- **Owner keeps an eye out for**
  - Front-end loaded bids (discounting)
  - Unbalanced bids

- **Contractors frequently borrow from**
  - Banks (Need to demonstrate low risk)

- **Interaction with owners**
  - Some owners may assist in funding
    - Help secure lower-priced loan for contractor
  - Sometimes assist owners in funding!
    - Big construction company, small municipality
    - BOT
Contractor Financing

- Agreed upon in contract
  - Often structure proposed by owner
  - Should be checked by owner (fair-cost estimate)
  - Often based on “Masterformat” Cost Breakdown Structure (Owner standard CBS)
- Certified by third party (Architect/engineer)
Latent Credit

Many people forced to serve as lenders to owner due to delays in payments
- Designers
- Contractors
- Consultants
- CM
- Suppliers

Implications
- Good in the short-term
- Major concern on long run effects
Role of Taxes

- Tax deductions for
  - Depreciation -
    - the process of recognizing the using up of an asset through wear and obsolescence and of subtracting capital expenses from the revenues that the asset generates over time in computing taxable income
  - Others
Develop or Not Develop

- Is any individual project worthwhile?
- Given a list of feasible projects, which one is the best?
- How does each project rank compared to the others on the list?
Project Evaluation Example:

- Project A
  - Construction = 3 years
  - Cost = $1M/year
  - Sale Value = $4M
  - Total Cost?
  - Profit?

- Project B
  - Construction = 6 years
  - Cost = $1M/year
  - Sale Value = $8.5M
  - Total Cost?
  - Profit?