TRAINING ON FINANCIAL MANAGEMENT FOR KSAD OFFICERS

Project Financing

18th April 2017
Introduction
Plan of action

- Basics
- Project financing
- Project appraisal
- Project financial analysis
- The Project Report
- Financial Model
- PPP and other topics
- Sample financial analysis
- Learning resources
What is a Project?

- A project can be defined as a temporary endeavor undertaken to create a *unique product or service*

- Projects are different from other ongoing operations in an organization, because unlike operations, projects have a *definite beginning and an end* - they have a *limited duration*
What is a Project?

"You’d be surprised the headaches you can avoid by addressing these four simple questions before beginning a project."
Examples of Projects?

- Real estate project
- Waste recycling plant
- Infrastructure project
- Development project
- Establishment of service centres
- Establishment of a data centre
- Establishment of an educational institution
- Mass awareness campaign
- Public finance reform project
- Training and capacity building project

Do not result in asset creation
What are the different types of financing you can think of?

- Capital contribution
- Asset financing
- Working capital financing
- Project financing
- Grants – Tied and Untied
- Internal generation
What are the different forms financing can take?

- Equity
- Debt
  - Term loans
  - Overdraft
  - Cash credit
  - Bill discounting
  - Packing credit
  - Unsecured loan
- Grant/Subsidy
Unique features of project financing

- For a project (specific objective, specific duration, expected returns)
- Distinct from general finance
  - Different set of risks
  - Future looking
- Long term or medium term
- Can be a mix of different financial products
- Can happen in multiple phases (tranches)
Project financing – the parties

Is my project bankable?

Is the project viable?
What is required to be financed?

- Capital cost – non-recurring
- Construction period expenses – non-recurring
- Working capital – recurring
- Future capital costs – non-recurring
- Funded interest
How will it be financed?

- Grant/Subsidy
- Equity
- Debentures
- Term loan
- Multilateral assistance/loan
- Unsecured loans
- Beneficiary contributions
- Internal accruals
- Viability Gap Funding (VGF)
Stages of project financing

- **Pre Financing Stage**
  - Project identification
  - Risk identification & minimizing
  - Technical and financial feasibility
  - Financing arrangement

- **Financing Stage**
  - Negotiation and syndication
  - Commitments and documentation
  - Disbursement

- **Post Financing Stage**
  - Monitoring and review
  - Financial Closure / Project Closure
  - Repayments & Subsequent monitoring
Project risks

- Completion risk - Delays
- Technological risk - Obsolescence
- Raw material supply risk
- Economic risk – Fall in demand
- Financial risk – Interest rate fluctuations
- Currency risk – Exchange rate fluctuations
- Political risk – change in taxes/ regulations
- Environmental risk
- Internal risk
Project Appraisal

Process of assessing, in a structured way, the case for proceeding with a project or proposal, or the project’s viability.
Project appraisal

- Technical analysis
  - Availability of infra, permissions
  - Technology
  - Availability of material, labour, resources

- Economic analysis
  - Market research, competition analysis, product life cycle

- Financial analysis
  - Profitability, Balance Sheet, Financial Analysis, Sensitivity
PROJECT FINANCIAL ANALYSIS

Session 2
Financial analysis

- Ratio analysis
- Debt service coverage analysis
- Break-even analysis
- Cash flow/funds flow analysis
- Payback period analysis
- Discounted Cash Flow (DCF) analysis - Net Present Value (NPV), Internal Rate of Return (IRR)
- Sensitivity analysis
Ratio analysis

- Debt:Equity ratio
- Current ratio
- Quick ratio
- Return on Investment
- Turnover ratios
Debt Service Coverage

- Whether the cash profit is adequate to cover loan repayments (principal and interest)

\[
DSCR = \frac{\text{Profit after Tax + Depreciation + Interest on Term Loan}}{\text{Term Loan Repayment + Interest on Term Loan}}
\]

Cash generated

Loan commitment

Should be between 1.8 and 2.0

Consistency is the key
## DSCR Calculation
(Rupees in lakhs)

<table>
<thead>
<tr>
<th>Years</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>25.7</td>
<td>28.0</td>
<td>31.6</td>
<td>33.7</td>
<td>33.7</td>
</tr>
<tr>
<td>Expenditure</td>
<td>(16.4)</td>
<td>(17.5)</td>
<td>(19.4)</td>
<td>(22.5)</td>
<td>(23.4)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>(6.8)</td>
<td>(4.5)</td>
<td>(3.1)</td>
<td>(2.1)</td>
<td>(1.5)</td>
</tr>
<tr>
<td>Interest on term loan</td>
<td>(2.2)</td>
<td>(1.7)</td>
<td>(1.2)</td>
<td>(0.7)</td>
<td>(0.1)</td>
</tr>
<tr>
<td>Tax</td>
<td>(0.1)</td>
<td>(1.5)</td>
<td>(2.8)</td>
<td>(3.0)</td>
<td>(3.1)</td>
</tr>
<tr>
<td><strong>Profit After Tax</strong></td>
<td><strong>0.2</strong></td>
<td><strong>2.8</strong></td>
<td><strong>5.2</strong></td>
<td><strong>5.5</strong></td>
<td><strong>5.7</strong></td>
</tr>
<tr>
<td>Term loan repayment</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
</tr>
</tbody>
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(Rupees in lakhs)

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<th>IV</th>
<th>V</th>
</tr>
</thead>
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<td>Profit After Tax</td>
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<td>5.2</td>
<td>5.5</td>
<td>5.7</td>
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<td>3.1</td>
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<td>1.5</td>
</tr>
<tr>
<td>Interest on term loan</td>
<td>2.2</td>
<td>1.7</td>
<td>1.2</td>
<td>0.7</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>9.2</td>
<td>9.0</td>
<td>9.5</td>
<td>8.3</td>
<td>7.3</td>
</tr>
<tr>
<td>Term loan Principal+Interest</td>
<td>5.9</td>
<td>5.4</td>
<td>4.9</td>
<td>4.4</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>DSCR</strong></td>
<td><strong>1.6</strong></td>
<td><strong>1.7</strong></td>
<td><strong>1.9</strong></td>
<td><strong>1.9</strong></td>
<td><strong>1.9</strong></td>
</tr>
<tr>
<td>Average DSCR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>1.8</strong></td>
</tr>
</tbody>
</table>
Discussion point

Is a continuously high DSCR (>3) throughout the Project period a healthy sign? What are the implications? Discuss
## Payback period analysis

<table>
<thead>
<tr>
<th>Pay Back Period Analysis</th>
<th>Rs./Lakh</th>
<th>Project - A</th>
<th>Project - B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td></td>
<td>8.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Cash Inflows (Net):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year I</td>
<td></td>
<td>4.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Year II</td>
<td></td>
<td>3.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Year III</td>
<td></td>
<td>2.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Year IV</td>
<td></td>
<td>1.00</td>
<td>2.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>10.00</strong></td>
<td><strong>10.00</strong></td>
</tr>
</tbody>
</table>
## Payback period analysis

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<th>Pay Back Period Analysis</th>
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<th>Project - B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td></td>
<td>8.00</td>
<td>7.00</td>
</tr>
<tr>
<td>Cash Inflows (Cumulative):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year I</td>
<td></td>
<td>4.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Year II</td>
<td></td>
<td>7.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Year III</td>
<td></td>
<td>9.00</td>
<td>7.50</td>
</tr>
<tr>
<td>Year IV</td>
<td></td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td><strong>Payback period in years</strong></td>
<td></td>
<td><strong>2.5</strong></td>
<td><strong>2.8</strong></td>
</tr>
</tbody>
</table>
Which Project would you invest in, if:

A. It is a commercial project?
B. If it is a development project?
Discounted Cash Flow (DCF) Analysis

What is Time value of Money?
DCF analysis methods

Net Present Value (NPV)  Internal Rate of Return (IRR)
Net Present Value (NPV)

- Present value of future cash flows
- Arrived by applying discounting rate to future cash flows
- Discounting rate is the cost of funds
- Add all the discounted cash flows
- Deduct investment value
- Arrive at the NPV

+ve NPV means Project is viable
NPV Illustration

An investment of Rs.10,000 is required in a project. This investment yields returns as follows:

- Year I  Rs.4,000
- Year II Rs.4,000
- Year III Rs.3,000
- Year IV Rs.3,000
- Year V  Rs.2,000

The cost of funds (or cost of capital) is 10%. Would you finance this project?
<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Inflows Rs.</th>
<th>Discounting Factor - 10%</th>
<th>Present Value Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>4,000</td>
<td>0.909</td>
<td>3,636</td>
</tr>
<tr>
<td>II</td>
<td>4,000</td>
<td>0.826</td>
<td>3,284</td>
</tr>
<tr>
<td>III</td>
<td>3,000</td>
<td>0.751</td>
<td>2,253</td>
</tr>
<tr>
<td>IV</td>
<td>3,000</td>
<td>0.683</td>
<td>2,049</td>
</tr>
<tr>
<td>V</td>
<td>2,000</td>
<td>0.621</td>
<td>1,242</td>
</tr>
<tr>
<td></td>
<td><strong>16,000</strong></td>
<td></td>
<td><strong>12,484</strong></td>
</tr>
</tbody>
</table>

NPV Rs. 12,484 > Investment Rs. 10,000. Hence project is viable.

In Excel, use the function **NPV**.
Discussion point

What if the project gave cash inflow of Rs. 7,000 each in 4\textsuperscript{th} and 5\textsuperscript{th} year? Would you invest? Why?
Internal Rate of Return (IRR)

- Measure of the Project’s earning capacity
- IRR must be greater than the cost of capital

\[
NPV = 0 = CF_0 + \frac{CF_1}{(1 + IRR)^1} + \frac{CF_2}{(1 + IRR)^2} + \ldots + \frac{CF_n}{(1 + IRR)^n} = \sum_{t=0}^{n} \frac{CF_t}{(1 + IRR)^t}
\]

In Excel, just use the function IRR.
# IRR Illustration

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flows Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-10,000</td>
</tr>
<tr>
<td>I</td>
<td>4,000</td>
</tr>
<tr>
<td>II</td>
<td>4,000</td>
</tr>
<tr>
<td>III</td>
<td>3,000</td>
</tr>
<tr>
<td>IV</td>
<td>3,000</td>
</tr>
<tr>
<td>V</td>
<td>2,000</td>
</tr>
<tr>
<td></td>
<td><strong>6,000</strong></td>
</tr>
</tbody>
</table>

Gives an IRR of 20%. If cost of capital is 14%, is this project viable?
Sensitivity Analysis – What if?

- Start with Base Case
- Scenarios
  - What if land cost goes up by 15%?
  - What if sales come down by 5%?
  - What if employee cost goes up by 10%?
- Analyse at least 3 or 4 scenarios
- Analyse the impact on all the important ratios
Quiz

1) The denominator for calculating DSCR consists of ________________ and ________________.

2) DSCR should be ________ than 1.

3) Pay back period indicates the period within which the amount invested is realised. (T/F) ____

4) It is okay for certain projects to have negative IRR. (T/F) True

5) Sensitivity is not very important for long term projects. (T/F) False
Discussion point – Development projects

Possible economic and social benefits...

How can these be quantified?
Socio-economic benefits

- Employment creation
- Revenue generation (for beneficiaries, not project)
- Reduction in crime
- Smooth flow of traffic
- Lower school dropout rate
- Increase in awareness
- Environment/forest/wildlife protection
Economic/Social cost-benefit analysis

- Economic benefits can be quantified
- Social benefits must be quantified applying reasonable assumptions
- The appraisal should rely on market survey and study reports
- Where the social cost-benefits are not quantifiable, the project report must state the fact
## Social cost-benefit examples

<table>
<thead>
<tr>
<th>Project</th>
<th>Social benefit</th>
<th>Quantified benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of toilets</td>
<td>Improved sanitation</td>
<td>Reduced health cost</td>
</tr>
<tr>
<td>Distribution of energy efficient bulbs</td>
<td>Reduced power bills</td>
<td>Saving in electricity costs</td>
</tr>
<tr>
<td>Improvements to policing</td>
<td>Reduced crime rate</td>
<td>Savings in losses due to crime</td>
</tr>
<tr>
<td>Establishment of industrial park</td>
<td>Better economic activity</td>
<td>Increase in duties and taxes</td>
</tr>
</tbody>
</table>
Technical appraisal – Development projects

- Whether the project is capable of achieving the social objectives spelt out?
- Whether the cost estimates are realistic?
- Whether the quantitative targets mentioned are implementable and achievable?
- Whether the physical and financial targets correlate?
- What happens if certain parameters change?
  - Sensitivity analysis
The Project Report

- Talks about the Project
  - *Rationale, Objectives, Implementation methodology, stakeholder value mapping*

- Contains technical information about the Project

- Contains financial information about the Project

- Presents viability and sensitivity analysis

- Meant for funding agencies

- Prepared by the Project Entity/Consultant
Essentials of a Project report

- About the Project
  - Overview
  - Market
  - Technology
  - Infrastructure
  - Funding
  - Patents, Statutory clearances/approvals

- Financial projections for next 5 to 10 years

- Financial Analysis
  - Ratio Analysis
  - Sensitivity Analysis
Essentials of a Project report

- Risk Analysis
  - SWOT
  - Mitigation Strategies

- Value Proposition to Stakeholders
  - Expected benefits to stakeholders
  - Wealth creation
  - Job opportunities
  - Other benefits to society/citizens
The Project Report – Essential Statements

- Cost of Project and Means of Finance
- Projected Profitability Statement
- Projected Cash Flow Statement
- Projected Balance Sheet
- Projected Working Capital Statement
- Ratio Analysis
- Sensitivity Analysis
- Underlying assumptions
Financial Viability – points to appraise

- Project Cost should
  - *Be reasonably estimated*
  - *Consider all assets that are needed*
  - *Include*
    - Contingency provision
    - Margin for Working Capital
    - Preliminary expenses
Financial Viability – points to appraise

- Profitability Statement should
  - Consider level of Plant/production capacity utilization
  - Assumptions to estimate revenue are realistic
  - Estimate cost of production properly
  - Profitability shows improvement over the projected period (increasing trend)

- Loan related
  - Loan Interest rate/Term assumed is realistic, computations are accurate
  - Moratorium considered is reasonable
  - Security for loan disclosed
Financial Viability – points to appraise

■ Cash Flow Statement
  - Cash surplus should show increasing trend
  - Identify when there is payback of investment
  - Initial years – if any deficits – see how it gets funded

■ Working Capital Statement
  - Credit periods are realistic
  - Stock assumptions are correct – all RM, WIP, FG & Spares considered
  - Should remain reasonably stable provided the level of production is constant
The Financial Model

“Because a large font makes profits look bigger.”
Essentials of Financial Model

- With reasonable level of detail
- Realistic estimate of costs
- No overambitious targets for growth/market
- All known elements have been included - cost of project, means of finance, revenue, expense, CAPEX, liabilities and working capital
- State capacity limitations (plant production capacity)
- Convince credit worthiness
- State assumptions clearly
  - Made based on studies, pilots, previous experience, market research, etc.
Public Private Partnerships

■ **Principle**
  - *The project is not viable on its own*
  - *Risks are too high for only private sector to handle*
  - *Government lacks the necessary skill sets*

■ **Government contribution may be in kind (typical example: land)**

■ **For the private sector - access to land and government resources**

■ **For the government – access to expertise and technical know how, concessions**

■ **Few important terms**
  - Viability gap funding
  - Concession period

■ **Important to understand the financial implications of different models**
Problems with PPPs in India

- Overenthusiastic revenue assumptions
  - DMRC experience – footfall of 20,000 per day against projection of 40,000
- Delays from government in meeting its commitments
- Government not prepared for contract renegotiation / no institutional mechanism
  - GMR and GVK have walked out of highway projects
  - Gurgaon expressway
- Unforeseen events
  - Crude/coal prices
  - Unwillingness to pay - Airport toll agitation
- Capacity issues within government
Innovative project financing tools

- Value Capture Financing
- Municipal Bonds
- Results-based financing
  - *Green bonds*
  - *Cool bonds*
- Securitization
- Infrastructure Investment Funds/Trusts
- Off-shore rupee bonds
Discussion point – Experience sharing

Can you give examples of projects which did not succeed? Why?

What could have been done at the appraisal stage to prevent failure?
Further Learning

- Online course

- Certificate course in Project Finance by Indian Institute of Banking and Finance
  - [http://iibf.org.in/pns_e_iibfc.asp](http://iibf.org.in/pns_e_iibfc.asp)

- The Project Appraisal Practitioners’ Guide


- Workshops on project appraisal techniques by MaGC

- YouTube