FINANCIAL APPRAISAL OF PROJECTS

(Special Emphasis to Railways)

S. N. BANERJEA
Joint Economic Adviser
Railway Board
New Delhi

BASIC THEORY OF PROJECT APPRAISAL

- PROJECT IDENTIFICATION
- PROJECT APPRAISAL
- PROJECT IMPLEMENTATION
- PROJECT MONITORING
- PROJECT EVALUATION.

BASIC THEORY OF PROJECT APPRAISAL

- **PROJECT APPRAISAL**

- Technical Soundness
- Market Compatibility
- Fund Availability
- Socio-Economic Impact

BASIC THEORY OF PROJECT APPRAISAL

- **PROJECT IMPLEMENTION**
- Estimates of the Project
- Technology
- Process
- Techniques
- Man Power Need
- Material Need
- Other Costs

BASIC THEORY OF PROJECT APPRAISAL

- **PROJECT MONITORING**
- Pessimistic Estimate of Rated Time (PERT)
- Critical Path Method (CPM)
- Logistics
- Time Schedule
- Project Completion Target

BASIC THEORY OF PROJECT APPRAISAL

- **PROJECT EVALUATION**

- Viability Examination
- Intensive Tests for the Technology
- Socio- Economic & Environmental Soundness
- Financial Feasibility

CRITERIA FOR FINANCIAL APPRAISAL

- PAYBACK PERIOD
- NET PRESENT VALUE (NPV)
- INTERNAL RATE OF RETURN (IRR)
- PROFITABILITY INDEX (PI)

PAYBACK PERIOD

- THE PAYBACK PERIOD IS THE SPAN OF TIME WITHIN WHICH THE INVESTMENT MADE FOR THE PROJECT WILL BE RECOVERED BY THE NET RETURNS OF THE PROJECT.

NET PRESENT VALUE (NPV)

- If the NPV of revenues after adjusting for the capital expenditure works out to be positive figure at the required rate of discount, the project is considered viable and recommended for execution.

$$NPV = -I + \sum_{p=1}^{n} B_p / (1+i)^p = -I + \sum B_1 / (1+i) + \sum B_2 / (1+i)^2 + \ldots + \sum B_p / (1+i)^p + \ldots\ldots + \sum B_n / (1+i)^n$$

Where : I = Initial Investment; B_p = Net Cash Flow in year 'p' ;

n = Life of the Project in Years; i = Discount Rate (required Rate of Return).

INTERNAL RATE OF RETURN (IRR)

- IRR is the Rate of Return internal to the project. If the project turns in a NEGATIVE, NPV at the criterion rate of discount, the project authority works out the IRR, i.e., the rate of discount at which the NPV becomes ZERO, to see how much below the criterion rate the IRR is.

$$I = \sum^{n}_{p=1.} B^p / (1+k)^p$$

Where : k = IRR ; B^p = Net Cash Flow in year ‘p’;

I = Initial Investment; n = Life of the Project in Years.

PROFITABILTY INDEX (PI)

- PI criterion suggests the choice of alternatives, just as IRR does. PI fails to consider the absolute values of the contribution of the project & removes size consideration by placing it in the denominator of the Index & equalizing all mutually exclusive alternatives when they are actually unequal.
- PI = discounted cash inflows / discounted cash outflows.

Appraisal of a Project

- concentrates mainly on the feasibility report submitted by the Study Team.
  The OBJECT of project appraisal process is not only to decide whether to accept or reject the investment proposal but also to recommend how the project could be re-designed or re-formulated so as to ensure better technical, financial, commercial and Socio-economic & Economic viability.

TYPES OF PROJECTS GENERALLY TAKEN UP FOR APPRAISAL (BY THE RAILWAY).

- **New Lines ;**
- **Doubling ;**
- **Gauge Conversion ;**
- **Electrification ;**
- **Mega Bridges ;**
- **Line Capacity Augmentation ;**
- **New Technology ;**
- **Direct Power Supply for Traction ;**
- **Work Shops;**
- **Captive Power Plant, etc.**

APPROACH

- Many a times alternative approaches and iterative procedures are to be followed before final results are arrived at. This calls for a more flexible approach rather than confining oneself to straight-jacketed parameters/norms and working out Financial Rate of Returns mechanically.

IMPORTANT AREAS OF ESTIMATE OF A PROJECT REPORT

- Traffic Projection – Goods & Passenger,
- Working Expenses for Goods & Passenger,
- Earnings from Goods & Passenger Traffic,
- Capital Cost of Construction,
- Alternative Scenario of the Project,
- Least Cost Option, etc.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

- The percentage outlay of TOTAL CAPITAL COST of the project has to be distributed realistically over the different years of construction.
- The PERIOD of construction should be seen against the time taken on similar projects.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

- Capital cost of ROLLING STOCK should be calculated accordingly as per the traffic projections.
- Capital cost of ROLLING STOCK should be reckoned in the last year of construction in the Cash Flow statement, i.e. in the ZEROETH year.
- The mid-life cost of RENEWAL & REPLACEMENT during the life of the project should be taken into account.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

NOTE : IN CASE OF GAUGE CONVERSION PROJECTS, THE VALUE OF UNUTILISED LIFE OF M G ROLLING STOCK MUST NOT BE ADJUSTED TOWARDS THE CAPITAL COST OF B G ROLLING STOCK, UNLESS GAINFUL DEPLOIMENT OF M G STOCK CAN BE SHOWN ON A SPESIFIC ROUTE ON THE SAME RAILWAY.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

- EARNINGS must be calculated both for GOODS & PASSENGER according to the traffic projections.
- LEAD for the traffic necessarily be the lead of the project, unless sufficient justification is there for taking Origin to Destination lead OF THE ROUTE.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

- NOTE: IN CASE OF LEAD IS FROM ORIGIN TO DESTINATION IS TO BE CONSIDERED, IT IS TO BE SEEN WHETHER ANY LINE CACITY AUGMENTATION WORK IS NEEDED ENROUTE. IN SUCH CIRCUMSTANCE, THE CAPITAL COST OF SUCH WORK SHOULD BE RECKONED IN THE INSTANT PROJET.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

- All the WORKING EXPENSES of the considered traffic should be accounted for in the Cash Flow Statement.
- The calculation of Working Expenses MUST be based on UNIT COST BOOK published by each Railway's Corporate Office.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

NOTE: ALL THE COST PARAMETERS SHOULD BE IN THE LEVEL OF SAME REFERENCE YEAR, I.E., THE CURRENT YEAR'S LEVEL. IN ORDER TO DO SO PROPER ESCALATION FACTOR FROM THE UNIT COST BOOK MUST BE APPLIED.

OTHER IMPORTANT AREAS OF A PROJECT REPORT

- **CRRM VALUE and the RESIDUAL/TERMINAL VALUES of the assets must be accounted for in the Cash Flow Statement in the FIRST Year of operations and in the last year of the project life, respectively.**

FINANCIAL APPRAISAL

- Benefits over the different years for the entire life of the project are discounted & compared with discounted Present Worth of Capital investment,
- Discounted Cash Flow Technique (DCF),
- Project viability criteria,
- Present Cut Off Rate of Return,
- Net Present Value,
- Sensitivity Analysis, etc.

CONCLUSIONS - I

- With very tight targets laid for the Corporate Plan objectives, it has become extremely essential to invest judiciously the scarce capital resources and for doing so, a detailed project appraisal has to be carried out. In order to carry out a realistic project appraisal, it is most essential that various kinds of Survey Reports, i.e., Traffic and Engineering Surveys are done with utmost sincerity without adopting short-cut methods or over-looking certain relevant socio-geographic data.

CONCLUSIONS - II

- The economic viability has to be seen before accepting or rejecting a project. It is essential to work out Social Cost Benefits as a result of taking up new projects including construction of new railway line, gauge conversion, doubling or other improvements to enhance the line capacity or to undertake the new passenger / goods services.

- **Any More Questions please ?**

- **THANK YOU FOR BEING WITH ME**
- **IN THIS SESSION.**