Introduction

Since the mid-seventies, the “project approach” to development aid has come under criticism and, more than three decades later, “project aid” is no longer the only, or, for some international development agencies, the preferred form of development assistance.

This reflects a change in development thinking. Early views (in the 50’s and 60’s) that exclusively focused on the shortage of financial resources for sector investments as the critical constraint for development, have been increasingly broadened, shifting the attention to the policy and institutional context within which investment projects take place. Reflecting such shift, various forms of “program” or “policy-based” assistance, as opposed to specific project financing, have emerged as new aid modalities.

The formulation and selection of investment projects is now increasingly subordinated to the development of sector-wide programs, (in turn framed by medium-term public expenditure frameworks) which are meant to ensure that projects are consistent with good macro and sectoral policies and are financially and institutionally sustainable.

But if planning investment projects is no longer the only, or the main, concern of aid agencies, the task has not gone away or lost its critical importance for aid-recipient governments (central and local) in developing countries. Welfare is improved through investment in change and a substantial part of available resources are invested in projects. Good policies and institutions are critical, but without appropriate investments, the best policies, and most performing institutions, will not deliver sustained economic and social development.

Having lost their absolute prominence as development aid instruments, investment projects remain a key instrument of development administration, and still an important vehicle of international assistance. In fact enthusiasm for a “program approach” to aid delivery should not obscure the wide array of aid modalities that is often necessary to deploy, as well as the importance of specific investment projects among them. There is therefore a continuing role for projects as both (a) a way of managing government interventions and (b) a mode of donors’ intervention, where this is made consistent with the objectives of national programs developed and owned by national authorities.

Project planners in governments and aid agencies continue therefore to face the challenge of ensuring the technical quality, the financial sustainability and the economic, social, institutional and environmental viability of development projects.
Course Description

Goals and Scope of the course

The Course aims at providing students with:

1. An introduction to financial and economic analysis of investment operations and its application to the planning and appraisal of international development projects.

2. An opportunity to acquire and practice basic skills for the financial and economic appraisal of selected urban/rural infrastructure and income-generating projects of moderate scale and complexity in a developing country.

To these ends, the course will introduce the basic concepts and techniques for integrated appraisal of public and private investment projects in developing countries, including:

a) financial analysis
b) economic analysis
c) risk analysis
d) assessment of projects’ distributional effects (winners and losers) and
e) assessment of projects’ impact on poverty.

Format

The class will meet twice a week from 9:00am to 12:00pm, on Friday and Saturday for 5 weeks, as follows.

The Friday sessions will include the main lecture; review of the homework assigned the preceding week and class discussion. The Saturday sessions will include a second shorter lecture and in-class Lab work to model and analyze three major project cases: (i) a rural income-generating project (ii) a transport infrastructure project and (iii) a small urban water supply project.
Assignments and Final Exam

Students will be required to:

1. Carry out two homework exercises which will be assigned in the first and second week
2. Complete the appraisal of two “major” project cases, through a combination of in-class guided lab work and individual off-class work
3. Take a final exam (“take-home”).

The final grade will reflect performance on all the above and will be calculated based on the following weights: Exercises (20%), Major cases (45%) Final Exam (35%)

Textbooks

The main textbook used throughout the course is:


The following texts will also be used in the course. They can be downloaded from the Asia Development Bank and World Bank websites.


Readings and reference materials

All readings and reference materials will be made available to students through the class Blackboard.

Computer Hardware and Software

Students are expected to bring to class a laptop running a version of the MS Windows OS (XP, 2000, Vista or Windows 7) and a compatible version of MS Excel. Additional software for risk analysis (Oracle Crystal Ball-academic time-limited version) will be provided by the instructor to all students for installation in individual laptops.

NOTE: Students who own a laptop running a Mac OS, should also install the MS Windows OS, as Crystal Ball only runs on it
## Course Schedule

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Projects Financial Analysis (Sect.1)</th>
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<tbody>
<tr>
<td><strong>Friday</strong></td>
<td><strong>Introduction</strong> Ovewview of the objectives, scope and logistic of the course</td>
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<tr>
<td>October 21</td>
<td><strong>Lecture 1 A</strong> PART 1: Projects, Project Cycle and Project Appraisal</td>
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<tr>
<td><strong>Saturday</strong></td>
<td><strong>Lecture 1 B</strong> PART 1: The &quot;Discounted Cash Flow&quot; (DCF) technique</td>
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<td>October 22</td>
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<td><strong>PART 2 : Construction of Projects Cash Flow Models</strong></td>
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<td><strong>PART 3 : Investment Criteria</strong></td>
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| Lab Work | Understanding different POV in project appraisal.  
The case of an agricultural diversification project from the point of view of (i) the individual farmers involved (ii) the total project financial efficiency (iii) the domestic economy, and (iv) the Ministry of Agriculture. |
| --- | --- |
| Assignment | Assignment # 1 (due on Thursday, October 27)  
The concept of opportunity cost  
Multiple Points of View (POV) in project appraisal  
Investment Criteria  
Ranking of alternative projects |

### Week 2

#### Projects Financial Analysis (Sect.2)

<table>
<thead>
<tr>
<th>Friday</th>
<th>Review</th>
<th>In-class review of previous week lab work and Assignment #1</th>
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</table>
| October 28 | Lecture 2 A | PART 1: Use of consistent prices in project appraisal  
Definition of Prices and Price Indices  
Incorporating Inflation in the Financial Analysis  
Impacts of Inflation on Financial Cash flow  
Inflation and rates of exchange  
Inflation and Interest Rates |
| Saturday | Lecture 2 B | PART 2: Financial Cost of Capital  
Discount Rates in Financial Analysis from different POV  
Required Return on Equity (ROE)  
Weighted Average Cost of Capital (WACC)  
Consistency Check for Financial Points of View  
PART 1 - Scale, Timing, and Length of life  
Determination of Scale in Project Selection  
Timing of Investments  
Adjusting for length of life in project appraisal  
Projects with Interdependent and Separable Components |

#### Lab Work

| Lab Work | Appraisal of a Rural Income-generating project  
The case of the “Incentives to Women Farmers” (IWF) project from Nicaragua. Presentation of the project logic and distribution of a template for financial and economic analysis. In-class work to complete the financial analysis from the total project point of view. |
| --- | --- |
| Assignment | Assignment # 2 (due on Thursday, November 3)  
Optimum timing of project start  
Optimum size of project design |

### Week 3

#### Projects Risk Analysis

<table>
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<tr>
<th>Friday</th>
<th>Review</th>
<th>In-class review of previous week lab work and Assignment #2</th>
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<tbody>
<tr>
<td>November 4</td>
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</table>
Lecture 3 A  PART 1: Assessing Project Risks
   Sensitivity Analysis
   Scenario Analysis
   Monte-Carlo Simulations

PART 2: Risk Analysis by Monte-Carlo Simulation
   Building a forecasting model
   Selecting key risk variables
   Running simulations
   Assessing correlation conditions among risk variables
   Analyzing the results of simulations

Saturday  Lecture 3 B  PART 1: Using Crystal Ball to select key risk variables
November 5  developing Tornado Charts
            developing Spider Charts
            Simultaneous assessment of project sensitivity to multiple risk variables

PART 2: Using Crystal Ball to build a custom probability distribution from available data
   Getting and formatting the historical data
   Identifying trends and disturbances
   Determining range and intervals of the errors frequency distributions
   computing and adjusting the errors probability distributions
   replacing deterministic with probabilistic values in risk variables

PART 3: Using Crystal Ball to fit a theoretical probability distribution to available data
   Getting and formatting available data
   Direct sampling vs. sampling from a fitted distribution
   Using CB to fit theoretical distributions to available data.
   Goodness-of-fit testing: visual inspection of plotted data and CB statistics
   replacing deterministic with probabilistic values in risk variables

Lab Work  Appraisal of a Rural Income-generating project
   The case of the “Incentives to Women Farmers” (IWF) project from Nicaragua. Completion of financial analysis from the individual farmers’ point of view and project risk analysis.

Week 4  Projects Economic Analysis

Friday  Review  A review of lessons learned from the appraisal of the “Incentives to Women Farmers” (IWF) project (1st Lab case)
November 11

Lecture 4 A  PART 1: Microeconomics Foundations of project appraisal
   Economic vs. Financial Prices
   Three postulates of welfare economics
   Economic prices in undistorted markets
Economic Prices in distorted markets
consumer surplus
producer surplus

PART 2: Economic valuation of Inputs and outputs
Traded and non-traded goods
Incremental and non-incremental inputs and outputs
Valuation of traded inputs and outputs
valuation of non-traded inputs and outputs
valuation of Land
valuation of labor
valuation of non-marketed goods
The economic opportunity cost of capital (EOCK)

Saturday November 12

PART 1- Financial-to-Economic Conversion Factors (CF)
Calculating CF for traded inputs and outputs
Calculating CF for non-traded Inputs and Outputs

PART 2 - Appraisal of Transport Projects
Forecasting Traffic
Reduced Operating Expenditures
Savings on Vehicles Operating Costs
Savings of Time
Accident Reduction
Economic Development
Secondary Benefits
Investment Costs
Routine and Periodic Maintenance Costs
Timing of Investment

Lab Work

Appraisal of a Transport Infrastructure Project
The case of the “Toll Bridge over the Mango River “(TBMR) project from Nicaragua. Presentation of the project logic and distribution of a template for financial and economic analysis. In-class work to complete the financial analysis from the point of view of the Operating Authority.

Week 5 Projects Distributional Analysis

Friday November 18
Review
In-class review of previous week lab work

Lecture 5
PART1: Distribution Analysis
Externalities and the project FNPV and ENPV
Identification of Stakeholders
Stakeholders sharing the FNPV
Distribution of ENPV among stakeholders

PART 2: Poverty Impact
Poverty Impact Ratio
Poverty impact of transport projects
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Description</th>
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<tbody>
<tr>
<td>Saturday</td>
<td>Lab Work</td>
<td>Appraisal of a Transport Infrastructure Project</td>
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<tr>
<td>November 19</td>
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<td>The case of the “Toll Bridge over the Mango River “(TBMR) project from Nicaragua. Completion of the project appraisal from the economic efficiency and distributional point of view, and related risk analysis.</td>
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<tr>
<td></td>
<td>FINAL EXAM</td>
<td>Individual Take Home Final Exam is assigned. Deadline for submissions ( e-mail to the Instructor , with copy to the TA) is midnight of Monday, December 5, 2011</td>
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