

Explanation on the 3rd Edition of "Construction Projects Economic Evaluation Method and Parameter"

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Key words: Construction Projects, Economic Evaluation, Method and Parameter etc.

SUMMARY

The article aims to briefly introduce a new book and its new ideas, which is named "Construction Project Economic Evaluation Methods and Parameter.(3rd Edition)". This book is the product of a team effort. Also, all authors of this article are belong to the team group.

This book offers a set of usable tools which permit decision makers and analysts to look at a project from the perspective of various stakeholders, particularly the implementing agency, and society in general. It is very important that when decision makers used early in the project cycle, this book can help them to catch bad projects and bad project components. This book takes an important role in Chinese projects feasibility study stage because it can contribute to so much our country's welfare.

The book's history and the main contents will be showed to you. Actually, this book is the rules of economic evaluation, its contents are involved in many detailed steps. Compared with the 2nd Edition, great changes have taken place in the 3rd Edition, which is involved in contents and ideas. A matter of fact, it sends many new ideas to those users. Those new ideas will have widely influence on all kinds of construction projects in the feasibility study stage.

The book is adapt to all kinds of construction projects, both including government and private investment project, also including all industry, such as chemical construction projects and urban development projects, etc. In article we provide an overview of economic analysis—its purpose, the main questions it should answer, the main steps it should follow, and the minimum information that the analysis should convey to enable decision makers to make informed decisions.

The book is different from other publications, such as "Handbook on Economic Analysis of Investment Operations ". The difference and its creation will be showed in the article. This book is adapted to Chinese projects, also it is adapted to other developing country, furthermore some contents are adapted to developed country.

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1. INTRODUCTION

Since 2000, RISN and experts group have made pore dedicated efforts in an ever broader range, including collecting practical evaluation cases and comments on the second edition in varied departments and districts; studying further foreign development on cost-benefit analysis; de-designing and measuring economic parameters in accord with new conditions; and making practical examinations. After six years endeavor, the 3rd edition was published.

This book offers a set of usable tools which permit decision makers and analysts to look at a project from the perspective of various stakeholders, particularly the implementing agency, and society in general. It is very important that when decision makers used early in the project cycle, this book can help them to catch bad projects and bad project components. This book takes an important role in Chinese projects feasibility study stage because it can contribute to so much our country's welfare.

1.1 Compiling and revising background

In the transition from the planned economy to a socialist market economy, Economic Evaluation Method for Construction Project was compiled on the basis of summarizing the practical experiences accumulated on evaluation the effectiveness of investments in the last 50 years or more and of the results of the recently theoretical research. The methodology adopted by other countries, in particular, by UNIDO and World Bank was taken in to account for reference in the compiling process. Given the standardization, the normalization and the international unification of the terminology and the practical conditions of our country, the concepts of some common terms as well as the implications of some indexes and calculation formulae were interpreted and stipulated stipulated in this publication in line with Chinese administration system, and the objective and current institutional system of the project evaluation. Much effort was exerted in order to make the theories more correct ,the methods more scientific and the application simpler.

1.2 Overview and Revising Goals

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The aim, in this regard, is to ensure that each project and entity is financially well maintained, and government can have immediate access to identical information and guidance on using these techniques. The Guidelines have therefore been designed to provide a complete set of reference and training materials to fulfill these requirements and to set up a knowledge management base to enhance and sustain these necessary professional skills in China. The Guidelines’ overall objective is to enhance the quality of Chinese consultation portfolio.

The Guidelines are intended to deal with issues and techniques throughout the project cycle. It was also decided that they should go beyond financial analysis to include project, and entity, financial management.

2. CORE IDEAS & MAIN CONTENTS

2.1 CORE IDEAS & INNOVATIONS

Construction Project refers to any project with physical investment. The book introduces a number of innovations, e.g. core ideas(seeing fig.1) and some method on how to evaluating non-industrial projects e.g.health care project, how to evaluating huge scale project , e.g. three gorge project, and how to finish a well finical analysis report. The book encourages analysts to answer the key questions that increase the likelibook of project and program success, ragher than simply emphasizing the techniques for estimating prices.

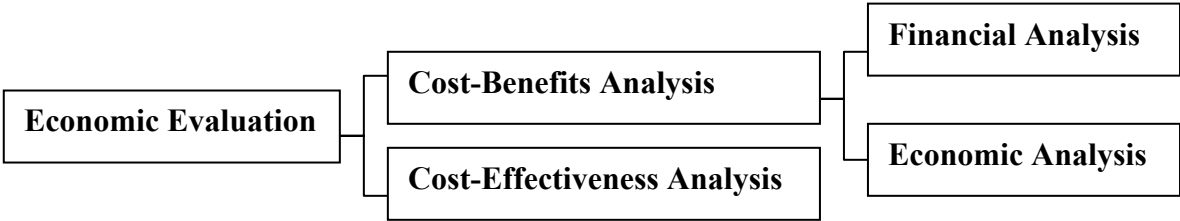


Fig1.core ideas

THE OBJECTIVE OF THE PROJECT

The first step in the economic appraisal of a project is to define clearly the objective(s) that the project is trying to achieve. Different types of projects should choose different appraisal techniques. A clear definition of the objective is essential to reduce the number of alternatives

considered, and to select the tools of analysis and the performance indicators. The appropriate tool of analysis also depends on the breadth of the objective. For example, if the objective is to reduce the cost of vaccination, cost-benefit ratios might be adequate ways of comparing and selecting among interventions. If the objective is to improve health status, then the interventions need to be compared in terms of the impact on health status. If the objective is even broader—say, to increase a country's welfare—then the comparisons need to be done in terms on a common unit of measurement, usually a monetary measure.

It was also considered that Chinese project portfolio contains a wide array of projects that require specialized financial management and measurement techniques, ranging from public sector revenue-earning operations to non-revenue-earning ones such as in the health and education sectors; from public and private sector financial institutions (FIs) to public utilities and transportation, plus the many specialized elements of agriculture.

It is important that how to apply these Guidelines to differing types of projects. But, as a fact matter is many analysts (1) only can use software of economic evaluation (2) or copy financing and economic methods (3) even choose unsuitable methods (4) never consider the types of projects and its goals. Different types of projects should select suitable methods according to different aims and project character. So we emphasize it again and again. Next after a brief introduction of the types of projects, a sheet will be shown to you and tell you which kind of project should choose what analysis contents is necessary.

According to kind of project, there are some necessary analysis constant. (seeing sheet1)

Sheet 1 Detailed methods

Appraisal content	Type of project		Financial analysis			Economic Cost-Benefits	Cost-Effectiveness	Uncertainty Analysis	Risk Analysis	Influence on Micro-Economic and Area-Economic analysis
			Financial Sustainability	Debt payment	Benefit					
Government investment	Direct investment	Competitive Operations project	●	●	●	●	□	●	□	□
		Non operation project	●	□	○	●	●	□	□	□
	Capital inflow	Competitive Operations project	●	●	●	●	□	●	□	□
		Non operation project	●	□	○	●	●	□	□	□
	Transferred-Loan of Foreign Government	Competitive Operations project	●	●	●	●	□	●	□	□
		Non operation project	●	●	○	●	●	□	□	□
	Subsidy	Competitive Operations project	●	●	●	●	□	●	□	□
		Non operation project	●	●	○	●	●	□	□	□
	Interest subsidizing	Competitive Operations project	●	●	●	●	□	●	□	□
		Non operation project	○	○	○	○	○	○	○	○
Company investment		Competitive Operations project	●	●	●	□	●	●	□	○

“●”means “must do”; “□”means “perhaps need to doing” according to character of project; “○”means “didn’t need to doing”

2.2 MAIN CONTENTS

The book is divided into five parts. In addition to the Several Regulations, the 3rd Edition comprise four principal parts as follows.

- ◆ **Part 1 Economic Evaluation Method for Construction Projects**
- ◆ **Part 2 Economic Evaluation Parameters for Construction Projects**
- ◆ **Part 3 Compiling Explanation for Economic Evaluation Method**
- ◆ **Part 4 Compiling Explanation for Economic Evaluation Parameters**

Part 1 comprise eleven principal chapters as follows.

Chapter 1. General Principle; Economic evaluation is an organic part and important contents of feasibility study of a construction project, and it is also important to scientific the investment decision-making. In accordance with long term strategies of national economic and social development in different regions and sectors, the economic evaluation provides a scientific basis for project investment decision through cost-benefit analysis, alternative comparison, financial feasibility and economic rationality analysis of a project. Project locating, demand forecasting for the output provided by the potential project and selection of technology used in the project are all prerequisite of carrying on its economic evaluation.

Chapter 2. Identifying Financial Cost & Benefit, identifying the costs and benefits of the project should consider from the country's point of view. This chapter provides guidance on adjusting the monetary flows of these financial statements to assess the costs and benefits to society. focuses on "getting the prices right." While financial analysis relies on prices faced by the project's implementing agency, economic analysis is based on opportunity costs to society.

Chapter 3. Funding Sources and Financing

Every project, those factors should be considered that who provides the cash, how many business or personal provide capital, and whether those capital is safety. In summary, financial channel, financial structure, financial cost and financial risk of projects should be analyzed before financial analysis.

Chapter 4. Financial Analysis, include those financial management techniques, e.g. sectional and project-specific financial analysis, financial performance measurement, design, and operation of institutional financial management systems, including accounting, financial reporting and auditing, supported by the loan management and disbursement techniques.

Chapter 5. Economic Analysis (Economic Cost- Benefit Analysis), provides an overview of economic analysis—its purpose, the main questions it should answer, the main steps it should follow, and the minimum information that the analysis should convey to enable decision makers to make informed decisions. Also, it deals with the broad subject of "externalities," and in particular with the techniques for measuring the value of environmental impacts, health influence and time saving so that they can be taken into account in the economic analysis of projects. There are basic principles of economic analysis, such as the

need to search for alternatives, the with- and without-project comparisons, and the problem of displacement of existing services.

The main purpose of project economic analysis is to help design and select projects that contribute to the welfare of a country. Economic analysis is most useful when used early in the project cycle, to catch bad projects and bad project components. If used at the end of the project cycle, economic analysis can only help in the decision of whether or not to proceed with a project. When used solely to calculate a single summary measure, such as the project's net present value (NPV) or economic rate of return (ERR), economic analysis serves only a very limited purpose.

Chapter 6. Cost-Effectiveness Analysis

There is a vast class of projects whose benefits either do not have a readily accessible market price or are not easily measurable in monetary terms. If the benefits of the project are measured in some non-monetary unit, the NPV criterion for deciding whether we finance a project cannot be used. Is economic analysis useful in these cases? The answer is an unqualified yes. Economic analysis can be of great help in project design and selection. The choice of technique depends on the nature of the task, the time constraints, and the information available. Cost-effectiveness is appropriate whenever the project has a single goal that is not measurable in monetary terms.

Chapter 7. Uncertainty Analysis, Risk and Sensitivity Analysis, discusses the risk assessment tools that allow us to assess systematically the impact of changes in the economic variables and in the physical relationships of the project. Risk assessment allows the analyst to rethink the project design and make corrections to reduce risks, or to increase the project's net benefits to society. There are break-even analysis, sensitivity analysis and probability analysis. Sensitivity analysis is used to find out the sensitive factors and measure their influences through analysis and the forecast of changes of the indexes caused by related factors fluctuation. Break-even analysis is the method in which break-even point(BEP) is applied to assess the ability of a project to adapt market changes. Probability analysis is a quantitative analysis method which studies and forecasts the effect of uncertainty or risk factors on evaluation index of a project.

Chapter 8. Influence on Micro-Economic and Area-Economic, such as Three Gorge project, Qinghai-Tibet railway project, South-to-north water diversion project, this kind of projects is unique in world, and have an strong influence on some area economy and society development, also have an solid impacts on Chinese economic on the whole. Chapter 8 deals with evaluating the influence aspects and method.

Chapter 9. Alternative comparison is a essential mean of selecting proper techniques and making reasonable economic decision, and it is also an important component of economic evaluation of a project. For the major economic or technical decisions, all possible alternatives should be raised and screened, then the alternatives suited out should be compared, making decision, via careful verification and economic calculation.

Chapter10. Characteristics of economic evaluation for Rehabilitation and Expansion,

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Merger & Acquisition projects, two kinds of projects have some special rules in addition to the general principle and basic method of new construction project. Specifically discuss the measurement of the benefits of projects in these sectors, as the measurement of costs is more uniform across sectors. Those projects objectives and implementation very different from general projects, their outputs may be improving quality, reducing energy consumption, using resources more reasonably, improving techniques and equipment, improving working environment, etc.

Chapter 11. Characteristics of economic evaluation for some industrial projects

The economic evaluation for industrial projects, including transportation project, forestry, agriculture, urban infrastructure projects, health care, education, real estate projects and social welfare projects, should follow some special rules in accordance with their characteristics in addition to the general economic evaluation principles. There is a shortcoming that chapter 11 is not in detailed.

Part 2 also include three principal chapters as follows.

Chapter 1. General Principle, economic evaluation parameters of construction projects must be measured, adjusted and promulgated periodically to guarantee the economic evaluation of construction projects going smoothly in China, to promote rational allocation of various resources, to improve the efficiency of investment and to secure the relative unification of evaluation standards for different types of projects, the rationality of parameters and the comparability of evaluation conclusions.

Chapter 2. Financial analysis parameters

Financial analysis parameter issued in this document include the standard financial internal rate of return, payback period of investment, average profit-investment ratio and average profit and tax-investment ratio of some sectors.

Chapter 3. Economic analysis parameters

Economic analysis parameter include Social discount rate, shadow exchange rate, shadow wage, shadow cost of land in rural area.

3. THE ROLE AND FUNCTION OF 3rd EDITION

Since the publication of the book, its application ranges have been expanded gradually with the deepening of users understanding. At present, it has already been adopted as (1) guideline for project feasibility study, appraisal and evaluation made by planning and design unit as well as engineering consultant corporation;(2) primary basis on which financial department examines, approves and selects loan projects;(3) significant basis on which government decision-making department examines and approves projects;(4) substantive reference for universities and colleges when compiling specialized teaching materials or training personnel.

As present statistical figure, about thirty thousand book have been sold. The application of 3rd edition has played an important role in promoting the capability of Chinese investment decision-making.

4. PROBLEMS AND SUGGESTIONS FOR FURTHER STUDIES

Any good project entails gainers, and some projects entail losers. Financial analysis shows the gains to the project entity; economic analysis goes further and shows the gains to society and to specific groups in society. Otherwise, there is no contents involved the gainers and losers of project in 3rd edition. In particular, identifying gainers and losers and measuring the fiscal impact are important steps in assessing the project's sustainability, among other things. So, gainers and losers analysis should be added in 3rd edition in the future work.

In spite of the 3rd Edition is not a guidelines, standards, or codes, but institution agency execute project taking it as a guideline. Meanwhile, the international community, as a whole, is supporting the development of guidelines, standards, and codes in relation to good economic evaluation and governance arrangements. In fact, there is no guidelines, standards, and codes in the field of economic evaluation for construction project in china. So we suggest that it is necessary to develop a economic evaluation guidelines for construction project.

The 3rd edition's application ranges are very widely. The focus reason is that construction projects, in china, include much industry, e.g. building and construction, transportation, chemistry, agriculture, infrastructure, health care, and education, etc. Meanwhile, the book can't fulfill this situation requirement because there is no detailed character in the book. Therefore many industry management departments demand detailed rules for some industry as soon as possible.

In summary, the book provides project analysts with a set of practical, easy-to-use analytical tools solidly grounded in economic theory, including financial sustaining, economic benefit, risk analysis, and how to assess the environmental impact of projects. Meanwhile we have been making unremitting efforts to strengthen and improve macroeconomic management and forcefully promoting the sustained, rapid and sound development of the national economy.

A other book is called "case study for 3rd Edition". Many examples used to illustrate the principles and their use are drawn from actual projects of the industrial institutions and other organization.

Our government recognizes that sustained pro-poor growth, social development and good governance are essential for poverty reduction.

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BIOGRAPHICAL NOTES

Working in Division of Feasibility Study and Division of development research of Research Institute of Standards & Norms (RISN) , Ministry of Construction(MOC),since 2003

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Paper

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