INTRODUCTION

Cost-benefit analysis is a practical way of assessing the desirability of projects. Marglin remarks (1967 : 18) "CBA was introduced as a means of project justification rather than a tool for project design". If the projects are to be undertaken under a budgetary constraint the cost-estimates will play a major role in the process of selection. The costing data will have to be supplemented by a rough estimate of total area and population to be benefited by each of the projects. The question that the cost-benefit analysis (hereafter referred to as CBA) seeks to answer is: given a number of projects, say, A, B, C etc. and the budgetary constraint, which of the projects should be undertaken?

In the private sector economic activities are normally guided by profitability consideration. A rational entrepreneur will try to maximise his profit by equalising marginal revenue and marginal cost. When production of commodity or supply of service comes under private sector, the state may interfere from time to time to correct the imbalance in distribution. But there are cases where the state has to participate directly, e.g., when outputs are not divisible activities they cannot be decentralised. The state looks after measures relating to defence, maintenance of law and
order, tax-policy etc. Services like education, communication etc. may be provided by the state in the interest of the community. Again distribution of energy, steel, water, mineral oil may be entrusted to public enterprises because of their external effects. Hence allocation of resources in these spheres has to be determined carefully.

Marginal cost pricing is a sound rule for practical policy framing. But the trouble is, money cost does not always reflect social cost and monetary return, social benefit. If we want to think in terms of social welfare, the old analysis has to be supplemented by new ideas and monetary costs and benefits have to be adjusted accordingly. A quantitative criterion is expected to examine a project objectively. By this criterion a planner can choose comparatively more desirable projects from a long list and determine priority of different proposals. Moreover he can judge the efficiency of the project already executed and prescribe remedy for faulty steps undertaken. The criterion may not be fully reliable - but it provides a check against the misuse of funds in public sector. The cost-benefit analysis (henceforth referred to as CBA) has been applied to public sector production in recent years.

With the growing recognition of the role of education in the process of economic development, CBA has been applied
to educational projects of many countries of the world. In India also CBA has been applied to evaluate educational projects. But this technique has been used in evaluating educational programmes in a few states of India. The present study is a modest attempt at applying CBA to educational projects in West Bengal.

The study has been undertaken for the following reasons: First, until now no cost-benefit analysis of higher education in West Bengal has been undertaken. Second, higher education creates a wide array of human skills which are essential for fueling dynamics of development. So several issues regarding the desirability of higher education in the state should be examined. Third, there is high rate of educated unemployment in West Bengal. Still we find a heavy rush for higher education in the state. What is the cause of heavy rush for higher education in spite of the widespread educated unemployment in the State?

Purpose of the Study

The purpose of the study is to provide answers to the following questions: (1) What are the direct and indirect benefits of education? (2) What are the recurring and non-recurring costs of education? (3) What is the most profitable form of higher education both from social and private points of view? (4) Whether professional higher education is more desirable than general higher education.
(5) Which form of investment, educational or other alternative investment, is desirable both from social and private view-points?

Sources of Data

The data used in this study have been obtained by field survey in Burdwan municipal area and in Durgapur town in two phases during 1991-92 and 1992-93. The data were collected from employees having qualification of Madhyamik level and higher levels of education through a structured questionnaire. Apart from this the government publications and Income-Expenditure accounts of several educational institutions and budgets were utilised for secondary data and other information.

Methodology

The costs and benefits of different types and levels of education have been calculated here. Social costs of education have been calculated by adding private costs, public costs and opportunity cost of education.

The opportunity cost of education has been measured by the earnings foregone by the students while they are engaged in study. The benefits of education have been calculated by taking into consideration only direct benefits which are in terms of the salary of the educated persons. Indirect benefits of education and consumption benefits of education
are important but it is difficult to quantify these benefits of education. So our calculation of benefits has a downward bias. Before estimating rates of return the age-education specific earnings profiles (both pre-tax and post-tax) for all types and levels of education have been constructed. Unadjusted age-education-earnings profiles are constructed on the assumption that all earnings are due to education.

Before calculating adjusted rate of return we have constructed adjusted age-education-earnings profiles (both pre-tax and post-tax). At the time of constructing adjusted profiles the earnings of the persons are standardised by socio-economic variables and demographic variables. The annual income of an individual of a particular "Qualification group" is supposed to depend on five independent variables, namely, age, sex, origin, sector of work and nature of work. We have tried to isolate the effects of age and education on the earnings of the individual with the help of multiple regression analysis. The unadjusted age-education-earnings profiles have been constructed for eleven types/levels of education. The adjusted age-education earnings profiles have been constructed for eight types/levels of education. But in our adjusted profiles we have not been able to construct profiles for all qualification groups due to small sample size.

The next step in calculating rate of return is to bring returns and costs together into a single stream of net
returns - which are nothing but earnings differentials between two successive levels of education and the tuition costs of the higher level of education. Once the net returns to any level of education is known to us the rate of return to the particular level of education can be obtained by an iterative procedure. The present value of net returns, calculated at different discount rates, ranges from positive to negative, falling as discount rate rises and the internal rate of return is the discount rate at which the present value of net returns is zero.

The unadjusted private and social rates of return have been computed for eleven types and levels of education. The social rates of return have been computed by taking into consideration pre-tax earnings differentials between two levels of education and social costs of the concerned higher level of education. The private rates of return have been computed by considering post-tax earnings differentials and private costs (including the foregone earnings) of the concerned higher level of education. The adjusted social and private rates of return have also been calculated in the similar way as the unadjusted rates of return, the only difference is that here we have used adjusted earnings differentials between successive levels of education.
Lay-Out

The study is divided into ten chapters. Chapter-1 deals with general concept and rationale of CBA. The limitations of CBA are also mentioned here.

Chapter-2 deals with the general issues of cost-benefit analysis of education. In this chapter the procedure of measurement of internal rate of return to education has been explained.

Chapter-3 presents the structure and growth of education in West Bengal from pre-British era. More emphasis has been given on the expansion of education in West Bengal during the plan period. The recommendations of different education commissions set up by government of India as well as by government of West Bengal have been presented in this chapter.

Chapter-4 presents the detailed methodology used in this study and the sampling design.

Chapter-5 discusses the recurring and non-recurring costs of education. Both recurring and non-recurring costs are divided into direct and indirect cost. The private costs, public costs and social costs of education in West Bengal have been calculated in this chapter.

Chapter-6 explains the direct and indirect benefits of education both from individual and social points of view.
Education has an investment component as well as a consumption component. Investment component of education can be measured by monetary gains of individual as one moves higher up the educational ladder. Non-monetary advantages also accrue to the individuals concerned and increase their welfare. It may take the form of "fringe benefits" like subsidized travel, subsidized housing, free travel etc.. Money value of these fringe benefits should be added to the wages. But there are some non-monetary attractions as prestige, satisfaction of being educated etc. which cannot be quantified. Moreover, there are external benefits of education which spillover to the economy as a whole raising economic welfare generally. External benefits are important – but they cannot be quantified. So the calculation of benefits of education has a downward bias. We have constructed unadjusted age-earnings profiles for different types and levels of education.

Chapter-7 presents the effect of education on earnings of the individual. All earnings of a person cannot be attributed to education alone. There are various other factors which have their influence on earnings. Annual income of an individual is supposed to be a function of five independent variables mentioned before. In order to isolate the effect of age and education on the earnings of a person we have taken help of multiple regression. Adjusted
age-education-earnings profiles for different types and levels of education have been constructed.

Chapter-8 presents the unadjusted private and social rates of return to different types and levels of education in the state. The adjusted private and social rates of return are also presented side by side with the unadjusted rates.

An interpretation of the result is also presented.

Chapter-9 presents the Rate of Return Tables calculated by different researchers and economists of India and other countries. The Rate Return to higher education in India and also in some states of India (Andhra Pradesh, Orissa) and Rate of Return Table of Mexico and Canada are narrated in this chapter. Our purpose is to compare our estimates of rates of return to different types and levels of education in West Bengal with the estimates of others in our country as well as in other countries.

Chapter-10 deals with the findings, conclusions and policy implications of the study. Some limitations of the study are also focused in this chapter.

There are two appendices of the study. In appendix 1 some tables, used for calculation of rates of return to different types and levels of education in West Bengal, are presented. Moreover, the literacy-rate of the districts of
West Bengal and pay-scale of some sectors of work have been presented. In appendix 2 we have presented the questionnaire used for the study.

Significance of the Study

The study is expected to throw some light on the process of determining (1) the most profitable type of higher education, (2) the degree of emphasis to be put on different types of 'higher level' of higher education and (3) the importance of different types and levels of higher education from the social point of view as well as from the private point of view.

In spite of several limitations of CBA it focuses attention to the problem of choosing between alternative investment patterns yielding different combinations of benefit in relation to costs.

The study points to the need for changes in resource allocation in favour of those types of education offering the highest rate of return. Educational plans are sometimes framed in terms of requirements and it may obscure the fact that all plannings consist of choice between alternatives.

The study focuses attention on the cost-structure of higher education in West Bengal along with the earnings pattern of the educated manpower and so it provides a tool
for decision-making. The private decision-makers, faced with the task of choice between further studies and entering into the labour market, will want to know if there are monetary returns associated with further studies. Public decision-makers, faced with competing demand for scarce funds between the education sector and other sectors of society and also within the education sector itself, can use social rates of return to guide their spending decisions. Hence rates of return to schooling can be used by both private and public decision-makers in allocating resources.