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ABSTRACT

A paper analyzing the cost of education in India is divided into three major sections. In the first section, the author highlights the importance of cost analysis, describes a taxonomy of costs of education, and discusses alternative concepts of unit costs of education and other conceptual and analytical issues. The nature of official and non-official statistics of costs of education--both private and public--is described in section two. In section three an analysis of costs of education in India is presented, based upon empirical estimates. The paper of education, and concludes with suggestions on the problem of cost analysis of Indian education. Eighteen tables accompany the paper. (LP)

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JBGT

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Abstract

The paper has three major objectives: first, to present a conceptual and analytical framework for a comprehensive analysis of costs of education; second, to examine the nature of data available to the practioners and researchers in the area of costs/financing of education; and third, to present an empirical analysis of costs of education in India for the recent period with the help of original analysis of the data, supported by various empirical studies already conducted in the Indian context. The three major parts of the study are devoted to the above three issues respectively. The last part draws several valuable inferences from and implications of the analysis made in the earlier parts.

In the first part the author highlights the importance of cost analysis, describes taxanomy of costs of education, and discusses alternative concepts of unit costs of educaion and several other conceptual and analytical issues. The nature of official and non-official statistics on costs of education - both private and institutional - is described in Part II. In Part III the author attempts at an analysis of costs of education in India, based upon certain empirical estimates of costs. Besides making his own fresh analysis in this paper, the author relies on the studies conducted and estimates made earlier by the author himself and by others on costs and related aspects of education in India, on the basis of which the author draws certain valuable inferences, conclusions and policy implications relating to a variety of dimensions of the problem, such as importance of costs in educational planning, the complementary role between private and institutional costs, the nature of production process in the educational system, regional variations in the costs of education, the relationship between cost of education and economic development, etc. The paper ends with a few major suggestions on the problem.

Analysis of Costs of Education in India

Jandhyala B.G. Tilak

"If you think education is expensive, try ignorance".

- Ann Landers
(as quoted by Bowen, 1977:3).

Educational organisations have become throughout the world so complex that they require detailed investigations into their various dimensions. Costs are one such important dimension. When education has been increasingly viewed as an investment activity, it becomes all the more important. The present paper contains three important parts. Part I attempts at presenting an analytical framework for a study of costs of education, by presenting a brief discussion on the importance of analysis of costs of education in educaional planning, including some theoritical discussion on concepts of costs and other aspects. It should be noted that the discussion has been confined to a few selective issues. Afterall, as Bowman (1966:425) rightly said, "to incorporate in a single paper consideration of all of the many facets of cost theory and assessment along all of their dimensions would of course be quite impossible". Part II discusses the nature and quality of data available for educational planners and researchers in India, with particular reference to costs and financial aspects of education. Part III refers to certain empirical estimates of costs of education in India and the inferences we can make out of them. The paper ends with a few concluding observations.

I. COSTS OF EDUCATION

1.1 Introduction

In the following pages, first we highlight the importance of analysis of costs of education in educational planning, followed by a description of the taxanomy of costs of education. The various concepts of 'unit' costs are discussed indepth. Then we discuss various concepts of costs such as fixed costs, variable costs, average costs, marginal costs, costs at current prices, costs at constant prices, etc. Before we end part I, the determinants of costs of education are also discussed.

At the outset, it is necessary to distinguish between the terms, 'expenditure' on education and 'costs' of education which are often synonymously used. That part of expenditure which has some relationship with the production process and the output only can be referred to as costs; and that part which has no such relationship with the production process and output is merely expenditure. In this sense, expenditure is a broader concept than costs; but the vice-versa is also true, in the sense that while costs can include imputed items like opportunity costs, generally expenditure does not include such items. Expenditure can be expressed only in monetary terms, while costs can be expressed in monetary as well as in real or physicial terms. In this sense, the concept of costs used in economics is quite different from that used by accountants. For example, the concept of shadow prices never figures in the works of accountants. To the accountant, costs mean the expenditures only - the costs of goods and services actually utilised during a particular period in the educational process (Veeraraghavan & Tilak, 1982). To the economists costs include the imputed value of goods and services, depreciation etc., also.

"Analysis of costs represents attempts to render investment decisions rational" (stromquist, 1982:70). Hence statistics on costs of education are of utmost importance for educational planning. Estimates of costs are essential for estimating resources required for educational sector and for various sub-sectors of education. They also help us in understanding whether resources allocated to education reflect optimal level or not and within education whether resources are optimally allocated between different layers. The statistics on costs of education also are themselves indicative of the efficiency of educational system, besides facilitating one to find out the cost effectiveness or cost-benefit ratio of the educational system as a whole and of the different levels of the system. For modern welfare governments whose one of the main objectives is equity, analyses of costs of education do help in formulating the programmes towards equality in educational opportunities, and equality in educational achievements between different groups of population, between different regions, etc. Cost statistics theselves indicate the inequalities both in quantity and quality of education between different groups of population and the regions. Thus, statistics on costs of education are both general and specific purpose tools in that, they are used for different purposes, mainly for planning, forecasting, projecting, analysing, decision-making and policy formulation. Besides, they are

also used for making inter-regional, inter-group and inter-level/type comparisons in education.

A detailed analysis of costs of education requires computing costs of education by levels of education, by components, with reference to a specific point of time and per unit. In other words, costs of education have to be computed by levels and by types of education such as pre-primary, primary, middle, secondary (general), school (vocational), higher (general) and higher (professional). An analysis of costs of education by levels of education depicts very clearly the balanced or even (unbalanced or uneven) nature of the investment in the educational pyramid. Costs of education by components, say by the recurring items and the non-recurring items and by further disaggregated components, would help us to know the nature of production process - whether it is capital-intensive or labour-intensive. They also help us better in identifying the determinants of costs of education and their quantitative influence. Costs of education can also be computed by type of instruction - formal, non-formal, etc. Finally, like any statistics, the statistics on costs of education should refer to a time period. While generally costs of education are calculated per year, it is not unreasonable to calculate the costs by the duration of a given level/type of education, say costs of education of primary level referring to a five-year time period, costs of education of middle level reffering to a 3-year time period, etc. It is also not uncommon sometimes to calculate cost per teaching hour. But such costs, including annual costs, do not reveal the 'full' costs of education. For example, the retirement benefits which are also a part of costs of education, can not be captured in such exercises.

1.2 Taxanomy of costs of education

Costs of education in most economies are incurred at two domains: the private and the public domains, which may also respectively be referred to as individual and institutional domains (Majumdar, 1983). Costs of education incurred at individual domain include costs on education incurred by the pupils and or by their parents or guardians, such as on books, stationery, fees, hostel, uniforms, transport, etc. The institutional costs of education, also known as costs of supply of education, mainly include the recurring costs, e.g., expenditure on teachers salaries, salaries of the non-teaching staff, scholarships, stipends, etc., and the nonrecurring costs which include expenditure on purchase of buildings, furnitures, equipment, etc. The sum of the costs of education incurred at the individual and the institutional

TAXANOMY OF COSTS OF EDUCATION

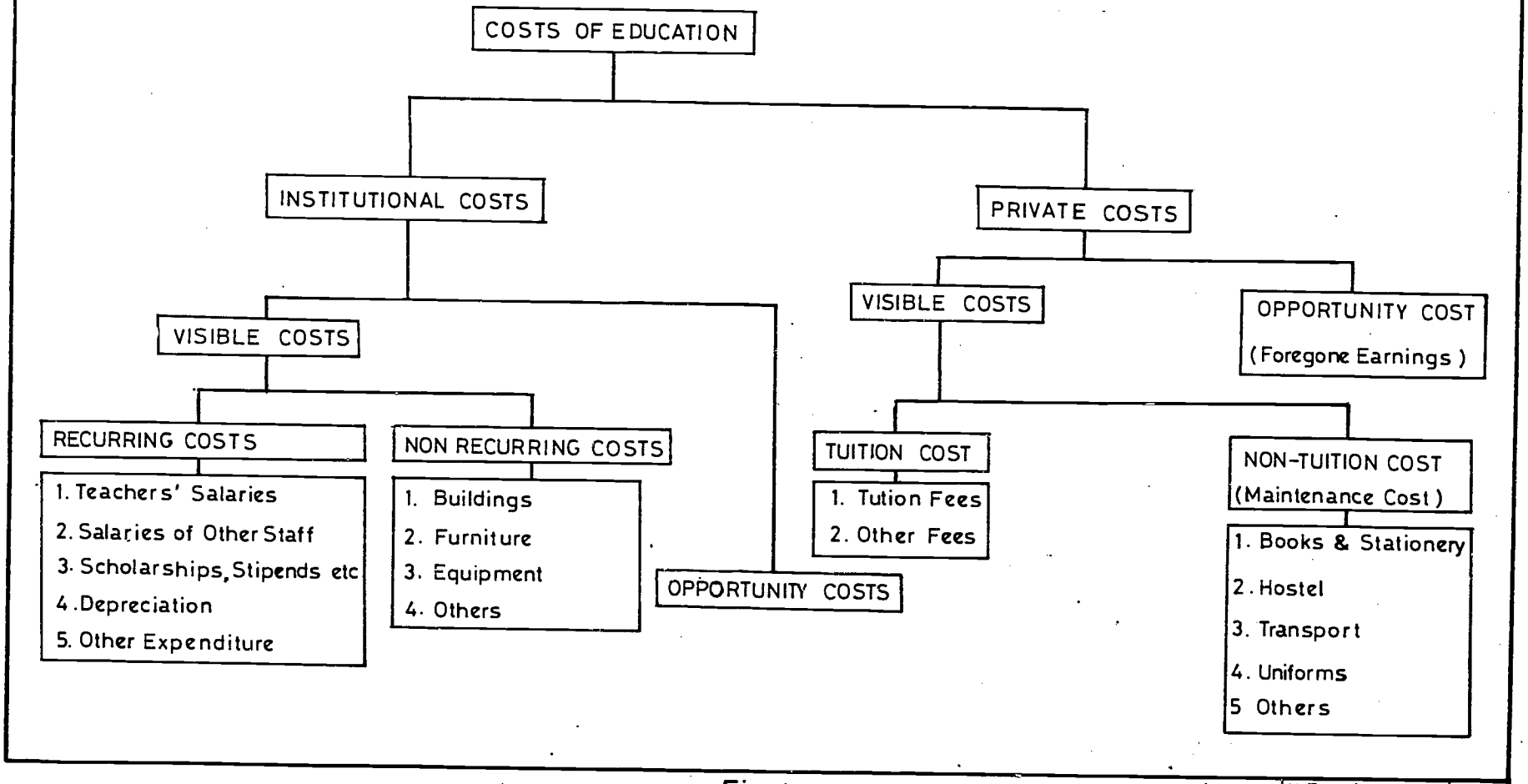

Fig. 1

domains, net of transfers such as fees, scholarships and stipends, gives the social costs of education.

The individual, institutional and the social costs of education thus calculated is nothing but the money costs of education, which can be termed as visible costs of education. The total costs of education not only include the money costs of education, but also the invisible opportunity cost of education. The earnings which would have been earned by the amount of investment made in education had it been invested otherwise (in the best or the average sector) in the economy other than education is known as the opportunity costs of education. The concept of opportunity cost is relevant in calculating private, institutional, as well as social costs of education. The earnings which would have been earned, had the pupil opted not to go for a given level of education are known as the private foregone earnings of the given level of education or the private opportunity costs of education. For example, the earnings of an individual with say i-th level of education will be the opportunity costs of (i+1)th level of education. The sum of private monetary costs and the private opportunity costs gives us the total private costs of education. The sum of private costs of education and institutional costs of education, including the society's opportunity costs of education, net of transfers such as scholarships and fee, gives us the total social cost of education.

Thus, it can be summarised in the form of following equations:

$$C = C_h + C_i \qquad \text{.....Eqn. 1}$$

where C represts total social costs of education and C_h and C_i represent the household (individual or private) and the institutional costs of education respectively. Further if c_d stands for direct private costs and c_f for foregone earnings or opportunity costs,

$$C_h = c_d + c_f \qquad \text{.....Eqn. 2}$$

and

$$c_d = f + c_m \qquad \text{.....Eqn. 3}$$

where fee is denoted by f and the maintenance costs by c_m.

Institutional costs of education (C_i) can be broken into two components, viz., recurring costs (C_r) and non-recurring costs (C_{nr}), i.e.,

$$C_i = C_r + C_{nr} \quad \text{.....Eqn. 4}$$

Figure 1 gives details on the taxanomy of costs of education.

Now we shall take up the concept of the 'unit' cost in education. However we return to the details on institutional and private costs of education later in Section 1.4.

1.3 Unit costs of education

Costs of education have no meaning if they do not refer to a unit, in which case the same statistics can be called the unit costs of education. Unit costs should be defined as the cost of an educational unit. Then the question that arises is : what is an educatonal unit? Ideally, educational unit can be defined as "the ability acquired by the educated to participate in the development of the economy and of civilisation" (Gern, 1967). But as such 'ability' can not be measured in any meaningful way. Hence in practice, the units in the unit costs of education refer to the number of pupils enrolled (or on rolls). Sometimes, it is also argued that the number of pupils actually attending the schools/colleges should be taken as the units, and not the total number of students on roll. The large divergence between enrolment and attendance particularly at lower levels of education, lends support to this argument. It is interesting to note that while in general economic theory the unit costs in general refer to units of output,[1] in either case described above we consider the inputs, viz., the pupils as the units. So, in terms of standard economic theory, and more importantly for effective manpower planning, it would be better if costs of education are calculated per unit of output, i.e., per successful student. Sometimes, this is also known as the 'effective' costs of education (Nair, 1981). The effective costs of education takes care of wastage in education.[2]. The difference between the effective costs and what can be called 'normal' costs of education reveals the level of efficiency of the given level of education system.

Sometimes, it is also being suggested that unit costs of education should be calculated per child of the relevant age-group population. This may indicate to some extent the 'efficiency' of the education system, efficiency being measured in terms of tne coverage

of the relevant age-group population by the education system. For certain purposes of comparison, costs of education per capita, taking the whole population of the concerned region into account, are also computed. Sometimes such a ratio is computed taking the population of the school/college going age-group (6-23) as the denominator. Thus, we have five alternative terms of unit costs of education:

(a) Cost per pupil enrolled (which can be called 'normal' cost of education);

(b) Cost per pupil actually atending the school/college.

(c) Cost per successful pupil (which can be caled effective cost of education);

(d) Cost per pupil of the relvant age-group population; and

(e) Cost of education per capita.

However, it is necessary to note that all these concepts of unit costs are nothing but average costs of education.[3]

The selection of the unit should obviously be influencedd by the purpose of analysis. It is not difficult to explain that each of the above concepts serves a specific purpose. Concept (a) is the most generally used concept in planning at every level of education. But when there arises large difference between 'reported' enrolment and the actual attendence (a) does not serve the purpose adequately. In such contexts (b) is a better one, particularly at lower levels of education where mere attendance is considered as an enough of indicator of education (or educational performance). But, for manpower planning purpose (c), i.e., the effective unit cost is basically essential. To relate costs of education with the performance of the system, the latter being defined as coverage (for example, at elementary level) (d) would be a better tool. In the absence of detailed data and essentially for crude comparisions very often (e) and (f) are also adopted.

In all these cases, it may be noted that 'unit' in unit costs refers to students in different forms - as an input, or as an output, or its wider base (viz., population or population of the relevant age-group) from which the imputs are drawm. But sometimes, unit costs are also calculated with reference to other 'units' such as cost per school, cost per class-room, cost per teacher, etc. The selection of

the unit however depends upon the purpose on hand. As the costs are generally found to be highly sensitive to the number of students, the student is most often considered as the unit. But suppose we are calculating costs of class-room equipment such as tables, black-boards, globes, maps, charts, chalks, dusters, etc., the 'class' forms the right unit. Similarly while unit costs are calculated per year or so in general, sometimes they are calculated per teaching hour, or per the whole duration of a course, or costs per working day, etc. While the literature is abundant with estimates of such costs, rarely attempts are made to cover costs in a wider perspective. In fact, based upon the above mentioned different concepts of unit costs, costs of wastage in education, costs of stagnation, etc., can also be calculated. Conceptually it may also be possible, and will be highly useful for planning to estimate costs of under optimum utilisation of resources in education, costs of misallocation of resources in education (Dougherty & Psacharopoulos, 1977), costs of irrelevance of education, costs of mismanagement of resources in education, costs of under optimum coverage of pupils in education, costs of introduction of new curriculum in education, and so on.

Unit costs of education are of particular importance in educational planning. They are most essential for educational planning in general and planning the resources in particular. Certain concepts of Unit costs are also efficiency indicators. The inverse of unit costs based on output of the system, is after all, an index of total factor productivity in the production process.

1.4 More on taxonomy of costs of education

Now let us discuss on some more details on institutional and private costs of education.

1.4.1 Institutional costs of Education

Many a study on costs of education are confined to the institutional costs of education, essentially because of unavailability of data on private costs of education. The institutional costs of education are generally analysed following either of the following ways of classification:

a) Variable and fixed costs of education;
b) recurring and non-recurring costs of education; and
c) current and capital costs of education.

One may expect that but for the terminology the three classifications are just alternative ways of classification. In other words, the fixed, the capital, and the non-recurring costs mean more or less the same, viz., the costs incurred almost once for all (unless the scale of operation/production changes), and the costs that do not vary along with a change in the inputs/outputs of the educational system. On the other hand, the variable, direct or recurring costs refer to the costs that are incurred every year and have direct correspondence with the inputs or output of the system, viz., the pupils. It may be noted that recurring costs are defined as one that are incurred every year; and non-recurring costs are incurred, generally once for all. Recurring and non-recurring costs are synonymous with variable and fixed costs respectively. Fixed costs are defined as those costs that do not change with a change in the number of pupils, e.g., costs on buildings; while variable costs vary with every change in the number of pupils, e.g. costs on teachers' salaries, laboratory materials, costs on scholarships, etc. On average terms, fixed costs go on declining given that the scale of operation does not change, with increase in the number of pupils, but variable costs may follow a different pattern.

However, one can not rigidly argue that certain costs are fixed, and others are variable. For example, if the number of students increases by a reasonably large number, not only the number of teachers have to be increased, but additional number of class-rooms may also have to be constructed. Similarly if the number of students increases by a small number, the 'variable' cost on teachers may not change, in which case they may also be called fixed costs. Sometimes distinction is made between short run fixed costs and long run fixed costs. While cost of buildings forms long run fixed costs, costs on teachers' salaries etc., are referred to as short run fixed costs. Rather the scale of operation (size of the school) and the size of the incremental changes determine whether the cost on an item can be called fixed costs or variable costs.

Broadly, the fixed costs include the costs on the following items: purchase of land and buildings or costs of construction of buildings; purchase of durable equipment like microscopes, globes, charts, etc; and costs on other non-recurring items. With regard to the fixed costs like that of the buildings it is quite difficult to calculate the unit costs per year. Generally in many a study it is either ignored, or sometimes rent is imputed on the fixd assets (Blaug et al, 1969). This forms a component in the recurring costs. Thus while the costs of buildings forms fixed or non-recurring costs, in

case of a hired building, the rent, that represents the depreciation and interest on the cost of the building, forms recurring cost. On the other hand, the variable or the recurring costs include salaries and allowances of the teaching staff, salaries and allowances of the non-teaching staff, scholarships, stipends, fee concessions, etc., including the imputed costs of free student-ships; purchase of non-durable or consumable material; and costs on maintenance and repairs of buildings, furniture, equipment, etc.

Direct and indirect costs

Sometimes costs are also classified as direct and indirect costs. Direct costs are referred to as those in which money figures, while indirect costs are those that are imputed, and monetary transactions do not figure in. Often opportunity costs are known as indirect costs, while all the others are known as direct costs. They are also sometimes referred to as invisible and visible costs of education respectively.

Capital costs and current costs

Many a time the concepts of capital costs and current costs are synonymously used with those of fixed costs and variable costs. The distinction between current costs and capital costs is not precise. It can be argued that goods such as books which last several years could be counted as capital equipment, but these are almost always counted as current costs. In practice the distinction between current and capital costs is often one of administrative convenience: expensive and long-lasting items such as buildings are paid for out of a separate budget. But they are ncessarily a part of capital costs.

From economists' point of view, buildings' costs provide an example of direct or indirect (opportunity costs). Direct cost is the capital cost that is paid as price for the purchase of the building. For planning purpose, we take the annual depreciation cost of buildings, taking into consideration the life-time of the building. This indicates the annual value of the use of the buildings in general. However if the rent or annual depreciation is not taken into account, one should take into account the opportunity cost of the investment in the purchase of the buildings. If the money had not been used for this purpose, it would have been used for a different purpose and that is the opportunity cost of the building.[4] The opportunity cost indicates the economic usefulness of the asset. On the whole, the benefits, foregone which would have been available to

the society in the absense of educational programmes would be the social opportunity cost of education (Misra, 1972).[5] The social opportunity cost of education might be different from private opportunity costs. All scarce resources allocated to education involve opportunity costs (Bowman, 1962: 69-92). Allocation of scarce resurces may even have negative consequences for the quality of life locally. For instance, Stromquist (1982: 72) cites the example of construction of community education centres whose programmes result in the out migration of newly skilled people.

1.4.2 Private costs of education

As mentioned earlier, many studies on costs of education in India, for that matter in many countries, have been confined to institutonal costs only. The institutional costs, however, in some cases, include some private costs of education, viz.,fee. Private costs of education include (i) fee, (ii) out of pocket costs on education excluding fees, such as the maintenance expenditure, expenditure on books, stationery, transport, uniforms, hostel, etc.; and (iii) the foregone earnings, or the opportunity cost, the 'real cost' that is given up to obtain education. It is rightly argued that to exclude household costs on education and institutional costs on incentives like stipends and scholarships from cost calculations is to ignore real costs and to exclude the former, viz., the household costs and include the latter is "to take a superficial and inconsistent view point" (Leite at al, 1968: 24).

While there is no ambiguity with respect to the fees and the maintenance costs such as costs on books, stationery, hostels, etc., opportunity costs received much criticism in the literature. It is generally argued that for planning purposes it is sufficient for the state to know about the institutional or specifically the public costs of education. This is not wholly ture. It is equally important for the state to have a clear idea of the private cost of education and the extent to which individuals will be ready to meet their visible and the invisible (opportunity) costs of education. "This information is absolutely essential to make proper planning of resources for education in general, and to plan public expenditure on scholarships, stipends, free studentships, etc., in particular. Ignoring these aspects is too costly, resulting in a wide gap between the expected (or planned) enrolments and actual enrolments" (Tilak & Varghese, 1983; see also Ahmed, 1975: 47-8; and Hallak, 1969: 16-19). For instance, a substantial part of the problems of non-attendance and the dropouts in school education could be attributed to ignoring the

aspects on private costs including the opportunity costs in resource planning.

Opportunity cost is relatively a simple concept, but one which has powerful implications. As Bowman (1966:450) noted "a generalised opportunity concept has immense analytical power and flexibility..... opportunity costs..... are a part of and indeed in separable from decision theory in any form. The time of the students can not be taken as free and costless. The cost of a very valuable resource that is otherwise ignored, is the cost of time. Opportunity cost of students reflects the value of this scarce resource, viz., the time. While the opportunity cost of the time of the teachers is taken into account in the form of salaries of the teachers, there is no reason why the opportunity cost of the time of the students should not be considered. There are arguments in the literature both for and against consideration of opportunity costs of students' time (see Tilak, 1977 and 1981-a, for details). For example, Vaizey (1962:43) argues: "inclusion of income foregone opens the gate of a flood of approximations which would take the concept of national income away from its origin as an estimation of the measurable flows of the economy..... it is doubtful whether any more useful purpose is served by a statistical exercise of the kind than could be achieved merely by observing the number of people engaged in education". It is also argued that since elementary education is compulsory, the opportunity costs of elementary education should not be considered. But if opportunity cost of students is to be ignored because (elementary) education is compulsory, then direct costs of whole education should equally be excluded (Becker, 1964:74). Sometimes it is argued that opportunity costs should be adjusted for unemployment, expecting, in which case, opportunity costs to be negligible. But as Bowman (1966) argues no adjustment for unemployment should be made because the intention is to measure the value of the resource rather than the failure to use them. "Opportunity costs are measures of <u>real</u> costs, or what is sacrificed..... this is the only empirically operational way of measuring real costs..... if the notion of costs has any meaning at all if must entail something negative; in the opportunity cost approach this negative value is negative income or purchasing power" (Bowman, 1966:425; see also Blaug et al 1969:20 and 198-9; and Kothari & Panchamukhi, 1980: 178-80).

To sum up costs can be calssified in a variety of ways:

a) by source : individual, institutional, social, etc.;
b) by type : fixed, variable, or capital, current, etc.;
c) by item : salaries, maintenance, repaires, teaching supporting material, books, incentives like uniforms, mid-day meals, etc.; and
d) by functions : teaching activities, para-educational or extra-curricular activities, games and sports, supervision, administration, health care, etc.

Obviously all these can also be calculated by levels of education per a given unit of input/output and per unit of time.

1.5 Relationship between private and social costs of education

Both the private and institutional costs of education are of high significances not only because of their magnitudes, but also because of the nature and characteristics that are associated with those costs. While institutional investments can provide the educational facilities, only individual efforts and investment will make it possible to take advantage of them. The two are so inter-related and inter-dependant that, in the absence of either of them, there is likely to be under allocation of rescurces for education in these economies (Panchamukhi, 1977). "Unless the two kinds of investments match there can be only empty or over-crowded, class-rooms", as Majumdar (1983 : 28) rightly argues. The time horizon aspect of the two should be taken into consideration in understanding the relationship between the two. The decision to incur the costs on education from the individual point of time, would be based on a relatively short term perspective - the immediate and life-time, and very rarely inter-generational time period perspective. On the otherhand, the decision to incur costs on education from the institutional point of view would be based upon much longer time perspective. Even the simple example of costs on buildings on the one hand, and costs on stationery on the other explains differences in time dimension.

1.6 Some more concepts of costs of education

Costs of education at current and constant prices

It may be necessary to note here that the costs of education, like any money-based statistic, can be expressed either at current (market) prices or at constant prices. When the costs of education are expressed at constant prices, they take care of price-inflation and thus represent the 'real' costs of education. Particularly, when we are computing costs of education for over a time period, it is necessary to compute the costs of education at constant prices. Costs of education expressed in current prices, when compared overtime gives a false picture, because during the same period the prices of goods and services might have increased, resulting in non-increase in real costs of education. Or in other words, the resource-cost in constant prices might remain the same or might be less than what the costs at current prices indicate. There are two solutions to the problem. A theoritical solution can be to recalculate the costs for a given year applying to each item or goods or services its corresponding price during the base year. Another solution is construction of an educational price index, based on the prices of goods and services used in the educational process. Neither of the two is, however, an easy task, as they require huge information. But it is widely felt that there is no appropriate method of expressing the costs of education in constant prices because of obvious problems. The commodities that enter the educational activity constitute a minor component of the basket of commodities, that is used to construct the whole-sale or any other general price index. More importantly the relative weightage of the commodities would differ quite significantly. Hence any general price index can not serve the purpose adequately. The need for an appropriate price index is widely felt.[6] The use of national/state income deflators generally adopted[7] are only second best alternatives.

Total, average and marginal costs

In economic theory, the other important concept relating to costs, which is rarely used in the educational sector is 'marginal cost'. The concept of marginal cost of education refers to the cost incurred on an additional pupil to get him enrolled in/attended/completed a given level of education. The total cost of education for a given level in a given year and a region, corresponds to all costs. While the average cost is same as the unit costs, the marginal cost is that which would have to be borne in order to enrol

one more unit into the educational process. While the concepts of total and average costs are clear and are extensively used, the use of marginal cost in education is relatively restricted. The costs of enrolling one additional pupil in a school may sometimes be virtually nil, as teachers' costs or costs on non-teaching staff may not necessarily change with every marginal change in the number of pupils. But the costs on incentive etc., may proportionately increase. Similarly if we are concerned with additional groups of pupils or classes the marginal cost concept may be more relevant.

Both the marginal and average costs of education can also be computed with reference to various other units. More importantly for the purpose of planning, statistics on average/marginal cost per school are also very useful. Sometimes, it i also attempted to compute costs, average and marginal, of education per class or grade, per class-room, per section (when a whole class/grade is divided into several operationally manageable sections), per teacher, etc.

1.7 Determinants of unit costs

With a view to influence (often to reduce) unit costs of education one is generally interested in finding out the determinants of unit costs. Generally in an educational system, one can visualise strong relationship between enrolments and unit costs. The other likely determinants are teacher-pupil ratio, average salary of the teacher, ratio of non-teacher staff cost to teaching cost per pupil, etc. It is generally tested, sometimes confirmed and sometimes rejected that unit costs of education are inversely influenced by the size of the enrolments, by the size of the teacher-pupil ratio, by the average salary of the teacher or by the ratio of non-teaching cost to teaching cost. Many a time regression equations (simple and multiple) are used for this purpose, of the following form:

$$C = a + bX_1 + e_1 \qquad \text{Eqn. 5}$$

where C is the unit cost of education, X_i are the explanatory variables and e_1 the error term. In practice, linear as well as non-linear forms are used. Further the equations are also fitted in absolute and logarithmic (semi and/or double log) forms (See Tilak, 1979).

The empirical details on these and other aspects in India form the content of Part III. But before that, we may discuss the nature

and quality of data available to the researchers and planners in education in India.

II. DATA BASE FOR ANALYSIS OF COSTS OF EDUCATION

"In planning in an under developed country inadequacy of data must be taken for granted. What I would like to emphasise is not so much full information, or elaborate tools of analysis as the desire to understand the situation, to define a set of coordinated goals with some precision and to think of possibilities carefully and in some detail".

-D.R. Gadgil[8]

2.1 Introduction

For a comprehensive analysis of costs of education, we need, as Part I indicates, huge amount of data in great detail. Besides on costs of education, we require data on enrolments, attendance, wastage and stagnation, number of schools/colleges, number of teachers, etc. Here we shall largely be concerned with data on costs of education only. But before we proceed to such data, the nature of data available with respect to other aspects such as enrolments is to be briefly noted.[9]

Official statistics in India on enrolments are questioned often. It has been shown that there is a large scale over-reporting with respect to enrolments (AERC, 1971). The deviations between census figures and the data supplied by the Union Ministry of Education and that of all-India Educational Surveys have been found to be quite large. Enrolment ratios are also further found to be over estimates, as they are not adjusted for over and under age-groups (see Kurrien, 1983). There is absolutely no information on 'actual' average attendance in the schools/colleges. Publication of statistics on wastage and stagnation were also discontinued. Data on outturn of the education system were also discontinued. Projections of the population by age-groups have been found to be suffering with large margin of errors.[10] Data on educational institutions have been found to be highly inadequate, e.g. information on the availability of basic equipment, facilities etc., is hardly available. The list goes on indefinitely (see Srivastava & Hirimaiah, 1977). All this restricts the use of data on financial aspects on education for further analysis such as for computing unit costs of educaion of different types discussed earlier. Now let us take up the data base on financial aspects of education.

2.2 Costs of education

We have earlier noted that the total or social costs of education can be broken into two categories - private costs of education and institutional costs of education. What is the data base for these two components? Let us take the latter first, i.e., the institutional costs.

2.2.1 Institutional costs of education

All the statistics on institutional costs of education in India are collected by the Ministry of Education at the school level and by the University Grants Commission at the college and university level. Ministry of Education collects the data from the University Grants Commission,[11] and publishes the whole information in detail on expenditure on education by levels of education in its annual statistical volume on education entitled Education in India. Education in India gives the data on expenditure not only by levels, but also by certain major objects like teachers salaries, salaries of the non-teaching staff and other recurring expenditure. These data on what is familiarly known as institutional or public expenditure on education and include the fees paid by the students, an important component of individual costs, and the donations, endowments and other voluntary contributions, which are also a part of expenditure on education incurred by private sector. All these data are given by levels as well as by states and union territories in the country.

Earlier the same volume used to publish expenditure on education by sources, known as source-wise income of the education sector. The source include the central government, state government, universities, local bodies such as Zilla Parishads, Panchayats, Municipal Corporations, etc., fee, donations and endowments, etc. However the practice of collecting and publishing such detailed data was given up and it has been given as total expenditure on education and the percentage contribution of central and state governments together to the total. However the earlier practice of presenting a detailed breakup is revived in 1976-77.

It is also to be noted that Education in India classifies the whole expenditure on education into two categories: direct and indirect.[12] It is to be noted that this kind of classification of costs of education being adopted by the Ministry of Education as given

in this volume does not fall in conformity with the classifications such as variable and fixed costs, and recurring and non-recurring costs of education. Direct expenditure is that "which is incurred directly for running the education institutions" such as salaries of the teaching and non-teaching staff, expenditure on equipment, maintenance of building, etc. Indirect expenditure is "that part of educational expednditure which is other than on direct expenditure". Broadly speaking, it covers expeniture on direction, inspection, buildings (other than maintenance), non-recurring equipments, scholarships, stipends and other financial concessions, hostel charges (excluding mess charges), etc. (Education in India Vol. II, 1976-77: p. ix). Perhaps this is the essential characteristic that distinguishes direct and indirect expenditure : expenditure divisible by levels of education is known as direct expenditure and expenditure not divisible by levels of education constitutes indirect expenditure on education. While a substantial part of the direct expenditure includes recurring or variable costs of education such as salaries of teachers and of non-teaching staff, a significant component of what can be called recurring expenditure is also included in the indirect expenditure, such as expenditure on inspection and supervision, scholarships, etc. The statistics on direct expenditure on education are available by levels of education, and the statistics on indirect expenditure are not available by levels. On the other hand, they are given as an aggregate.[13] The non-conformity of the official definition with the concepts of standard economic theory poses serious problems for researchers. For this reason many a time unit costs of education are calculated on the basis of direct expenditure only. From 1976-77 (the latest year for which educational statistics are available) onwards the expenditure on education are classified into 'recurring' and non-recurring' categories; and a whole volume (volume-II) is devoted to only expenditure and income aspects of education. This is a welcome improvement.

One may note that all this makes temporal comparisions very difficult. In other words, one of the problems faced by researchers with the official data on expenditure on education is that of temporal comparisions. Frequent changes in the definitions of concepts and in the format of presentation[14] and discontinuation of a series [15] often make inter-temporal comparisions difficult, if not impossible, and increase the margin of error significantly.

Schools in India are classified into primary, middle and high/higher secondary schools, based on the top class in the school. In other words, a secondary school may have classes I to X/XI in some

cases and in some other cases it may have only classes VI to X/XI. Similarly middle schools have primary classes also. Hence, as Blaug at al (1969 : 191) rightly note: "costs per pupil in secondary schools will tend to under-estimate cost per pupil at the secondary level, because some of the children in these schools are receiving cheaper education at middle stage", and also at primary stage. This poses serious problems in estimating costs of education by levels meaningfully (see also Dhar, 1978). Hence, costs by type of schools and costs by level of education are different and the difference is found to be very high.[16] Unesco has suggested long back collection of statistics on expenditure on education by levels, but it has not been attempted until now, presumably because of the difficulties inherent in the process. In fact Unesco (1975) suggested adoption of International Stadard Classification of Education (ISCED), wherein there are three categories: (a) levels (b) fields of study and (c) detailed programmes under each field of study (see Kwatra, 1978). But it could not be attempted in India until now. To avoid this problem Bose (1978) suggests to treat the whole school education as one integrated unit and higher education as another. This solves the problem to a great extent, as school and higher education are easily distinguishable.[17] "It is therefore appropriate to treat entire pre-university period of education as one stage. Such a treatment is inescapable from the point of view of planning and development" (Bose, 1978; emphasis added).

Statistics on expenditure on education, as already mentioned, are given both by objects and sources simultameously. While classification by objects is meaningful, one fails to understand how is it possible to make distinction between sources. "Afterall", as Dhar (1978) rightly notes, "while meeting contingent expenditure, for instance, an institution does not predetermine which rupee to spend from government grants and which from district board grants. In some cases the reported educational expenditure may lead to double counting. Take, for instance, scholarships, part of which student uses for paying institutional fees. This part of the expenditure enters government account twice, first as disbursement and later as 'expenditure met from fees". Nevertheless, one cannot overlook the possibility of such object cum source-wise classification for atleast some items of expenditure for which separate finances are available. For instance, in most of the cases the initial capital expenditure in the case of educational institutions is met by the private sources and only after a certain period, the public sector comes in with the grant-in-aid. If this is so, then we can consider the capital

expenditure according to the sources very clearly, particularly in the cost of buildings and equipment.

Until 1970-71 the whole data were available for rural areas separately and for the total areas. This used to help in making rural-urban comparisions in the costs of education in estimating indices of inequality between rural and urban areas in the institutional costs of education (e.g., see Tilak & Chaudhri, 1982). This was discontinued since 1971-72 and is being revived in 1976-77.

Another problem that generally arises in an analysis of costs of education (for that matter analysis of other aspects of education as well) is the time lag. The time that is being taken for collection, processing and publication of data is so much that the researcher or the planner in ideal conditions cannot afford to wait. For example, the latest year for which Education in India, that we referred to earlier, is available is 1975-76 in complete form and 1976-77 in partial form. The severity of the problem can be easily understood when we look at an educational planner who has to plan in 1983 or 1984 for the seventh five year plan (1985-90), has to rely on data relating to the fourth five year plan or at best on the data relating to a couple of years of the fifth five year plan. This may prove to be quite costly in the long run not only to the planning process in education, but to the education sector and the economy as well.

The existence of multiple sources of educational statistics, and more importantly absence of coordination between them, also pose a problem in the sense that statistics provided by different sources could be different because of (a) difference in methodologies of collection of data (b) difference in definition of the concepts and (c) differences in margin of errors. The differences are more significant between unpublished/published records of the state Directorate of Education and publications of the Ministry of Education at the centre.

Further, publications like Selected Educational Statistics at a Glance of the Union Ministry of Education give budget expenditure on education (revenue account only) as an aggregate of all levels of education. There is no reason why capital account budget is totally ignored in this publication. Analysis of Budgeted expenditure on Education (of the Union Ministry of Education) presents the same by levels of education. However the data given in this series and that given in Education in India are not comparable as the data in Education in India gives 'total' expenditure on education, which

includes fee, donations and endowments also, while the data given in the Analysis of Budgeted Expenditure on Education refers to the government (budget) expenditure only.

2.2.2 Private costs of education

Collection of statistics on private costs of education is totally ignored by the official statistical agencies. Without an idea of private and community expenditure on education, the total effort of the country in supporting education cannot be determined. "Absence of this information tends to underplay the role of private investments in education when plans are formulated; more often than not plans tend to provide for the entire cost of education" (Dhar, 1978; see also Bose, 1978).

The scanty information that we have on private costs of education in India owe their origin to two kinds of sources:

(a) The National Sample Survey (NSS) Reports, and
(b) Surveys conducted by individual researchers and institutions.

The data collected by the National Sample Survey Organisation (NSSO) are processed by the Central Statistical Organisation (CSO) and are presented in the annual publication of the CSO entitled National Accounts Statistics. The CSO gives estimates of 'private final consumption expenditure' in the domestic market on education both at current and constant prices. They are also given as 'a percentage proportion of the total private final consumption expenditure'. The expenditure on recreation, entertainment, education and cultural services is grouped into one category and it is sub-divided into (i) education and (ii) others.

It may not be proper, first, to include education, which is being increasingly recognised as an investment activity, in the group that includes recreation, entertainment, and cultural activities. Second, we do not have any details on these estimates of private expenditure on education. Neither the expenditure is given by levels of education, nor it is given by objects, such as fees, stationery, transport, etc. However, it may be obvious that these figures do not include opportunity costs of education. Thus what we get from the NSS/CSO estimates, is a rough idea on the quantum of household expenditure on education in India. However, the NSS provides information on household expenditure on education by monthly per

capita expenditure classes and by rural and urban areas. Further, we also get this information by states and union territories in India.[18] However the fact that these data are not available by levels of education and by objects seriously restricts the use of these data by the educational planners and the researchers.

The second source of information on private costs of education is the randomly conducted surveys by the individual researchers and institutions. The researchers adopt varying sampling techniques and methodologies and cover varying universes for their surveys. Hence all these results are not totally comparable either across regions, or over a time period or between different groups of population.[19]

III. COSTS OF EDUCATION IN INDIA

In part I we have discussed several concepts of costs of education, the taxanomy of costs, the unit costs and the determinants of costs of education; and in part II the nature and quality of data base available for educational planners and researchers in the country are described. In this overall background, we shall, in this part refer to certain empirical estimates of costs of education in India and the inferences we can make out of them. Obviously for this purpose we rely besides making our own analysis of data, on studies conducted earlier by us and others on costs and related aspects of education in the country. Occasionally we may refer to the studies carried out on other countries of the world as well.

3.1 A review

It is most common to state that investment in education in India constitutes 3.9% of GNP. Such oservations are based on institutional costs only. The private costs - both maintenance costs and opportunity costs are never taken into account. But they are very important, as argued earlier. A modest estimate of the household costs on education in the country, based on NSS data, shows that it constitutes 1.9% of GNP. In fact, over the 1970s this proportion declined from 2.5% in 1970-71 as Table 1 indicates. Based upon another field level data (Tilak, 1980-c), private maintenance costs were estimated to be 3.5% of GNP in 1979-80 as given in Table 2. Further the opportunity costs constitute another 4.2% of GNP (Table 3). Thus contrary to general thinking, the private costs of education far exceed the institutional costs (see also Ram & Schultz, 1979; and Rao, 1983).

Table 1

Household expenditure on education in India

(Rs. in million)

Year	At current prices	At 1970-71 prices
1970-71	8960 (2.5)	8960 (2.5)
1971-72	9920 (2.5)	9300 (2.5)
1972-73	10920 (2.5)	9640 (2.6)
1973-74	12800 (2.4)	10360 (2.7)
1974-75	11710 (1.9)	8460 (2.2)
1975-76	12530 (1.9)	8440 (2.0)
1976-77	14400 (2.0)	8660 (2.0)
1977-78	15370 (1.9)	8590 (1.8)
1978-79	18460 (2.1)	8970 (1.8)
1979-80	20920 (2.2)	9080 (1.9)
Growth Rate (%)	9.9	0.2

Source: National Accounts Statistics 1970-71 - 1979-80 February 1982 (New Delhi, Central Statistical Organisation, 1982).

Note: Figures in brackets are % of GNP.

Table 2

Private expenditure on education in India 1979-80

	Private expenditure (Rs. per pupil per annum)	Col. (2) inflated to 1979-80	Enrolment in 1979-80 (in millions)	Total private expenditure (Rs. in millions)	Col.(5) as % of GNP
(1)	(2)	(3)	(4)	(5)	(6)
Primary	280	328	70.9	23255	2.60
Secondary	238	279	28.1	7840	0.90
Higher	1417	1660	3.4	546	0.66
Total				31641	3.50

Source : Col. 2 : Tilak (1980-c)
Col. 4 : Educational Statistics at a Glance 1979-80.

Thus based upon the same evidence we have given earlier (Tilak, 1980-c), the social costs of education in India, including (i) institutional costs, (ii) individual maintenance costs and (iii) private opportunity costs, are estimated to be constituting as high as 11.6% of GNP in 1979-80 and a lower estimate could be about 10% of GNP (maintenance costs being 1.9% only as given by the NSS). In a labour surplus economy characterised by educated unemployment, even if the whole opportunity costs are ignored, it can be concluded that about 7.4% of GNP is incurred as costs on education.

This point was drawn to our attention long back by Panchamukhi (1965). In a pioneering study in India, he estimated total costs of education in India for the decade 1950-51 to 1959-60. He estimated resource costs as well as opportunity costs of education on the basis of the recommendations of the Second Pay Commission. He also found that total costs of education constitute 6.2% of GNP in 1959-60. In another important study Kothari (1966) estimated what is known as total factor costs of education in India for 1950-51, 1955-56 and 1959-60. For this purpose, he first estimated all the different components of costs of education, which include private costs such as fees, costs on books, stationery, private tution, 'net' expenditure on hostels, and earnings foregone, and the institutional costs including direct expenditure from the government, donations and endowments from various organisations, trusts, individuals, etc., and indirect expenditure including interests, depreciation, inspection, hostels and miscellaneous expenditure. He estimated the foregone earnings for male and female, rural and urban pupils separately. Using alternative assumptions, two types of estimates, lower and upper, are made. They are worth-reproducing here (Table 4). It is important to note that the foregone earnings constitute a large part (42-45% or 54-56%, the lower and upper estimates respectively) of the total factor costs of education, and the total costs of education constitute 5% - 6.5% of national income in 1960-61 and not 2.5% as is generally argued considering only the institutional costs.

Thus from the early 1960s onwards, the importance and magnitude of private costs of education are highlighted[20], eventhough the complimentary role between the private and the institutional costs was not taken note of (Majumdar, 1983). While there exists no direct mechanism to estimate this aspect it is generally believed that parents and students respond more promptly than public bodies to educational needs (see, e.g. Schultz, 1981). The coefficient of correlation between the two, to the extent it explains the relationship, indicates that the relationship is strong and positive,

Table 3

Opportunity costs of education in India

	Average opportunity cost per pupil (Rs. per annum 1977-78)	Col. (2) inflated to 1979-80 level (Rs.)	Enrolment in 1979-80 (in millions)	Total opportunity cost (Rs. in millions)	Col. (5) as % of GNP
(1)	(2)	(3)	(4)	(5)	(6)
Primary	126	148	70.9	10493	1.2
Middle	300	351	18.7	6564	0.7
Secondary	992	1162	9.4	10876	1.2
Higher	2531	2982	3.4	10049	1.1
Total				37982	4.2

Source : Col. 2 : Tilak (1980-c)
Col. 4 : Educational Statistics at a Glance 1979-80.

Table 4

Total factor costs of education in India

	Factor costs of Education		Factor costs as % of NNP		Factor costs as % of net investment in the country	
	Upper Estimate	Lower Estimate	Upper Estimate	Lower Estimate	Upper Estimate	Lower Estimate
1950-51	3330	2513	3.6	2.6	62.4	47.1
1956-57	5858	4470	5.2	3.9	40.3	30.7
1959-60	8305	6370	6.5	5.0	61.1	46.8

Source : Kothari (1966).

the value of the coefficient for the period 1970-71 to 1979-80 being 0.9629 (see Tilak and Varghese, 1983). Further it is also found that the income elasticity of costs on education is much higher with respect to household costs than with respect to public costs. The respective elasticity coefficients are 1.0127 and 0.7825, as given in Table 5. It should be underlined that the coefficient is greater than unity with respect to household costs, while in the other case it is much less.

As already noted, most studies on costs of education are confined to the institutional costs only. Let us examine certain important aspects of institutional costs. In most cases unit costs of education estimated are what we called earlier, 'normal' costs, i.e., cost per pupil enrolled. In an important study Nair (1981) estimated 'effective' costs, i.e., cost per pupil who completes a given level of education successfully, and excess costs due to wastage and stagnation separately for different states. Effective costs are found to be much higher than normal unit costs.

The institutional costs of education per pupil increased by several times during the first two and a half decades of planning in the country. For instance, the cost per pupil at primary education increased from Rs.19.9 in 1950-51 to Rs.95.9 in 1975-76, the costs at middle level from Rs.37.1 to Rs.114.2, and so on as shown in Table 6. But as it has been argued earlier this reflects fictious growth, as these figures are given at current prices. Hence when they are adjusted for price increase in the economy during the period, with the help of whole sale price index, the 'real' growth in costs of education can be noticed. While the real expenditure per pupil increased marginally during short phases, over the long period, i.e., 1950-51 to 1975-76, this has decreased, suggesting that we have been increasingly spending less and less amount of resources per pupil on education. When we analyse by levels of education, we find varying impact of price increase between several levels of education. Except at primary and middle levels of education, the 'real' costs of education declined at all other levels of education, compared to positive rates of growth with respect to costs at current prices (see Tilak & Varghese, 1983).

"Educational finance is an issue that pervades all educational planning" (Carnoy et al, 1982:39). Let us briefly look at the financing pattern of education in India. Financial resources flow into educational sector in India from government in two forms - in the revenue budget and in the capital budget. While in the revenue budget

Table 5

Costs of education, household expenditure and national income in India

(Rs.in 10 million)

Year	Household cost on education	Total household expenditure	% of (2) in (3)	Institutional costs of education	Social cost of education Col.(2) + Col. (5)	G.N.P. at current prices	Institutional costs as % of G.N.P.	Social costs as % of G.N.P.
1	2	3	4	5	6	7	8	9
1970-71	896	29838	3.0	1118	2014	36452	3.1	5.5
1971-72	992	32097	3.1	1285	2277	38972	3.3	5.8
1972-73	1092	35131	3.1	1373	2465	42939	3.2	5.7
1973-74	1280	42933	3.0	1450	2730	53447	2.7	5.1
1974-75	1171	52041	2.3	1807	2978	62972	2.9	4.7
1975-76	1253	52992	2.4	2105	3358	66139	3.2	5.1
1976-77	1440	54483	2.6	2349	3789	71826	3.3	5.3
1977-78	1537	63247	2.4	2719	4256	81105	3.4	5.2
1978-79	1846	67532	2.7	2960	4806	86927	3.4	5.5
1979-80	2092	73545	2.8	3500	5592	90173	3.9	6.2
Income elasticity of costs of education	1.0127			0.7825	0.8841			

Note : Figures do not include opportunity costs.

Source : Cols. 2-4 : National Accounts Statistics (New Delhi, CSO)

the share of educational sector is reasonably large, in the capital budget the share of education is infinitesimally small, the net result being pushing down the share of education in the total budget. But most analyses of costs of education are confined to revenue budget only and give the impression that larger allocations are being made for education in the budgets. For instance, it is generally argued that nearly a quarter of the budget goes for education. This is true with respect to only state revenue budgets. If we take into account central and state budgets, both revenue and capital, the total budget resources available for education are just 9.6%, as given in Table 7.

Further we also notice in the same table that while in the central budget the share of education sector is only 1.8%, it is nearly 18% in the budgets of the states and union territories. In other words, of the total government expenditure on education, the centre's contribution has been less than 10%, the remaining 90% being the states' contribution during the last two decades (Table 8).

Now let us make source wise analysis in more detail. It is clear that out of the central budget less than 2% is spent on education, while in the states' budget 18% is spent for the same in 1982-83. Thus a careful analysis leads us to notice that a large part of the institutional costs is met by the state governments, whether it is recurring costs or non-recurring costs. While at every level of education the contribution of state governments is the highest, it declines by increasing levels of education as shown in Table 9. In other words while for primary education the state governments' share is three-fourth of the total, for higher education it is about half. The share of central government is less at lower levels of education, than at higher levels. This looks to be somewhat consistent with the generally favoured position, eventhough the present position is quite far from satisfactory. It is generally argued that the central government may largely concentrate on higher education, and the state government on school education. In fact, it is further argued that while secondary education should be the responsibility of state government, the local governments at district and block levels should be given the responsibility of primary education. It may be noted in this context that the Consitution, until the amendment in 1976 was made, used to allow central government to take interest largely in higher education only, that too in the maintenance of standards in higher education. But it had intervened effectively, both physically and financially, in the lower levels of education as well (see Tilak, 1984-b).

Table 6

Cost of supply of education per pupil in India at current and constant prices

(Rs. per annum)

Year	Primary	Middle	Secondary	Universities & Institutions of higher education	Colleges (General)	Colleges (Professional)
A. At current prices						
1950-51	19.9	37.1	72.9	1905.6	231.2	779.2
1960-61	27.6	40.5	91.7	2524.2	302.4	813.4
1970-71	57.0	84.9	168.4	4141.2	421.6	1179.0
1975-76	95.9	114.2	257.7	5993.6	572.5	1539.9
Growth Rate(%)	6.5	4.6	5.2	4.7	2.5	2.8
B. At constant (1970-71) prices						
1950-51	41.9	78.1	153.5	4011.7	486.7	1640.4
1960-61	50.1	73.5	166.4	4581.1	548.8	1476.2
1970-71	57.0	84.9	168.4	4141.2	421.6	1179.0
1975-76	55.2	83.3	148.9	3664.5	330.9	890.1
Growth rate(%)	1.1	0.3	- 0.1	- 0.3	- 1.5	- 2.4

Source: Tilak & Varghese (1983).

Table 7

Budgeted expenditure on education by education and other departments, 1982-83

	Expenditure (Rs. in 10 million)	% to total Budget
Centre		
Revenue	511.4	2.8
Capital	5.6	0.1
Loans and advances	4.9	0.1
Total	521.8	1.8
State & Union Territories		
Revenue	4674.6	24.3
Capital	46.6	1.2
Loans and advances	8.5	0.3
Total	4729.6	17.9
Total		
Revenue	5185.9	13.8
Capital	52.1	0.7
Loans and advances	13.4	0.1
Total	5251.4	9.6

Source: Draft Report of the working group on Resources Required for Education Sector in the 7th plan (New Delhi, Planning Commission, 1984) mimeo

Table 8

Centre-state partnership in financing education
(Plan and non-plan expenditure)

(Per cent)

Period	Central Government	State Government	Total
First five year plan	6.8	93.2	100 (4146)
Second five year plan	17.5	82.5	100 (8496)
Third five year plan	20.1	79.9	100 (16554)
Fourth five year plan*	8.0	92.0	100 (56430)
Fifth five year plan**	8.5	91.5	100 (89385)
1976-77	9.0	91.0	100 (23488)
1977-78	8.6	91.4	100 (27191)
1978-79	9.3	90.7	100 (29597)

Note: * Onwards Revenue Account only
** 4 year period, i.e. upto 1977-78

Figures in brackets are Rs. in million.

Source: Tilak (1984).

Further as we notice in Table 9, contributions of local bodies is relatively higher at lower levels of education than at higher levels. Fee, a non-voluntary contribution of students is about 20% of the total recurring costs at higher level of education, and even at secondary general level it is reasonably high 14%. Temporal comparisions, however, reveal that the respective relative shares of local bodies, endowments and donations and that of fees declined rapidly, and correspondingly the relative share of the government has been rapidly increasing and it is now around 85% (see also Tilak, 1980-d).

Object-wise classification of institutional costs as given in Table 10, indicates that teachers' cost amounts to more than 70% of the total costs and costs of the non-teaching staff amount to about 10%. Non-recurring cost, including buildings, libraries, equipment is as low as 5% in 1976-77. Next to salaries of the teaching and non-teaching staff, the major item is financial concession to students, which constitutes about 6% of the total costs. If we analyse by levels of education, we notice that at primary level teachers' salary costs amount to 93% of the total cost, salaries of non-teachers to 1.9%, and buildings to 1.1%. The corresponding figures for middle level of education are 88.8%, 3.5% and 1.3% respectively. Thus one can conclude that teachers' cost increases as a proportion of the total cost, as one goes down the educational ladder. Another important thing to be noted is that costs on fixed capital such as buildings increase with increase in levels of education. That many primary schools are run in open space, kachha buildings, inadequate rooms etc., is a clear indication of the same.

Thus an analysis of institutional costs of education reveals clearly that non-recurring costs constitute a very small percentage of the total institutional costs of education. It constitutes less than 5% at school level and about 11% at the higher educational level as shown in Table 11. In other words, formation of fixed capital in education such as buildings takes place at a very slow pace. This is clearly understandable as we very often find not only schools, but also clleges and even universities with no basic infra-structure facilities like buildings, furniture, and equipment.

Costs of education reflect to a great extent the quality of education, the availability of physical inputs and teachers to the pupils etc., even though the monetary costs or even the levels of physical resources cannot depict the 'real' quality of education - the abilities and skills imparted to the pupils. Estimates of unit costs

Table 9

Institutional costs of education by sources in India 1976-77

	Central Govt.	State Govt.	Univer-sities	Local bodies	Fees	Endow-ments	Total
Recurring							
Primary	0.6	75.8	-	20.7	1.6	1.3	100 (5467)
Middle	0.6	79.7	-	14.1	3.3	2.2	100 (4121)
Secondary (G)	1.2	79.1	-	1.5	14.2	3.9	100 (6051)
Secondary (V)	1.9	84.3	1.0	1.0	1.0	7.7	100 (210)
Higher	15.8	51.6	3.8	1.4	19.6	7.6	100 (6033)
Total	4.9	70.9	1.1	8.6	10.4	4.0	100 (21883)
Non-recurring							
Primary	6.5	70.1	-	15.0	-	8.4	100 (107)
Middle	3.7	63.3	-	5.5	-	27.5	100 (109)
Secondary (G)	4.2	50.2	-	3.3	-	42.3	100 (239)
Secondary (V)	7.7	61.5	-	-	-	30.8	100 (13)
Higher	37.9	35.0	2.5	2.8	-	21.8	100 (752)
Total	25.2	43.9	1.6	4.1	-	25.2	100 (1220)
Total							
Primary	0.7	75.7	.	20.6	1.6	1.4	100 (5574)
Middle	0.7	79.3	.	13.9	3.2	2.9	100 (4230)
Secondary (G)	1.4	76.4	.	1.6	13.6	5.4	100 (6290)
Secondary (V)	2.2	82.6	0.9	1.3	4.0	9.0	100 (224)
Higher	18.3	49.8	3.6	1.5	17.5	9.3	100 (6785)
Total	6.0	69.4	1.1	8.4	9.9	5.2	100 (25103)

Note : Secondary (V) includes vocational, technical, professional and other types; and Secondary (G) includes general education
. : Negligible
- : Nil
( ) : Rupees in millions

Source: Education in India 1976-77, Vol. II.

Table 10

Institutional costs of education per pupil by objects in India, 1976-77

	Rs.	% to total cost.	Total Percentage to the total recurring/ non-recurring cost
Recurring			
Salaries of teaching staff	165.34	71.6	75.5
Salaries of non-teaching staff	21.97	9.5	10.0
Maintenance of buildings	2.46	1.0	1.1
Maintenance of equipment and furniture	1.82	0.8	0.8
Apparatus, chemicals etc.	3.06	1.3	1.4
Libraries	1.09	0.5	0.5
Stipends, fee concessions, etc.*	6.26	2.7	2.9
Games & sports	1.30	0.6	0.6
Hostels	1.30	0.6	0.6
Other items	14.43	6.2	6.6
Total recurring cost	219.04	94.8	100.0
Non-recurring			
Libraries	0.93	0.4	7.7
Buildings	5.17	2.2	43.0
Equipment	1.94	0.9	16.2
Furniture	0.88	0.4	7.3
Other items	3.09	1.3	25.8
Total non-recurring	12.02	5.2	100.0
TOTAL	231.06	100.0	

Note: * includes scholarships and other financial concessions.

Source : Education in India in 1976-77.

Table 11

Institutional costs of education per pupil in India by levels, 1976-77

	Recurring costs (Rs.)		Non-recurring costs (Rs.)		Total institutional costs (Rs.)	
Primary*	110.36	(98)	2.24	(2)	112.60	(100)
Middle	161.79	(97)	5.28	(3)	167.08	(100)
Secondary (G)+	309.08	(96)	12.18	(4)	321.25	(100)
Secondary (V)++	224.49	(95)	11.22	(5)	236.73	(100)
Higher**	1386.48	(89)	163.17	(11)	1549.65	(100)
Total	219.09	(95)	12.03	(5)	231.11	(100)

Note : Figures in parentheses are percentages to total institutional costs of education.
** : includes, general, professional and other.
* : includes pre-primary.
+ : general education.
++ : includes vocational, professional, technical and other types.

Source : Education in India, 1976-77, Vol. I & II.

of education by regions, viz., by countries, states, provinces, districts, etc., exhibit significant regional variations in the costs and thereby in the quality of education.

For instance, we notice in Tables 12 and 13 that there are wide variations in the costs per pupil in education between different states in India: the coefficient of variation is as high as 21.3% in 1976-77. We also notice that inter-state variations, measured by the same coefficient of variation, have not diminished significantly during 1960-61 to 1976-77, despite the fact that such regional inequalities had been noticed by educational planners much earlier. While this refers to all levels of education, as an aggregate, level-wise comparisions present a different picture: the inter-state variations have increased quite significantly with respect to primary and middle levels of education, while there is a decline in the case of other levels. However the decline is quite marginal.

It is difficult to explain either these regional variations or the differential growth in the variations between different layers of education. However it is significant to note that the increase in the coefficient of variation has been higher with respect to those two levels of education, where the attention of the policy makers has been focussed. From the Fifth Five year Plan (1974-78) onwards elementary education has become a part of the national minimum needs programme and received resources from the central government. The mismatch between central resources and provincial (state) resources, inter alia can be tentatively noted as having increased the overall regional variations in the costs of primary and middle levels of education. Nevertheless, it should be noted that the relative position of some of the backward states has improved quite significantly. For example, the position of Uttar Pradesh with respect to the costs of primary level education per pupil improved from 12th in 1960-61 to the top position by 1976-77. Similarly somewhat significant improvements can be noted in the relative position of Orissa and Jammu & Kashmir.

Interestingly, one can note from Table 14 that, the regional variations, more precisely inter-state variations, in the cost of education have no significant correspondence with the regional variations in economic development, the latter being measured by per capita state domestic product (SDP). The simple coefficients of correlation given in Table 15 make it clear that neither the recurring costs, nor non-recurring costs, nor the total costs per pupil have any significant relationship with the per capita SDP. While with respect to recurring cost and total cost per pupil the coefficients of

Table 12

Regional variations in costs of education per pupil in India, 1960-61

State	Primary	Middle	High Schools	Higher Education	All Education
Andhra Pradesh	28.42	47.23	102.77	680.79	53.06
Assam	21.30	49.21	86.16	387.07	42.72
Bihar	16.39	32.47	55.22	313.17	32.87
Jammu & Kashmir	26.38	48.52	73.41	319.63	55.43
Kerala	30.61	44.13	66.29	465.33	47.20
Madhya Pradesh	37.08	52.52	61.83	629.46	63.46
Tamil Nadu	29.21	37.64	93.41	525.74	51.07
Maharashtra	39.51	35.06	92.00	593.78	59.55
Karnataka	30.77	32.32	77.58	484.27	46.71
Orissa	15.22	57.66	67.89	509.20	28.67
Punjab	36.07	54.01	67.18	521.30	64.83
Rajasthan	33.45	56.32	114.13	506.86	65.22
Uttar Pradesh	19.98	49.68	117.23	711.23	54.27
West Bengal	23.21	66.98	95.98	463.93	60.20
Mean	27.70	46.50	85.30	508.00	51.80
Standard Deviation	7.60	10.60	19.30	119.70	11.30
Coefficient of variation	27.40	22.80	22.60	23.60	21.80

Source : Growth Rates of International, National and State Expenditure on Education, 1950-70(New Delhi, NCERT, 1973) mimeo

Table 13

Regional variations in costs of education per pupil in India, 1976-77

State	Primary	Middle	High Schools	Higher Education	All Education
Andhra Pradesh	124.29	66.93	309.1	1190.82	234.9
Assam	95.16	65.49	205.2	1152.64	166.2
Bihar	86.22	162.55	216.5	1307.67	150.2
Jammu & Kashmir	148.59	-	207.3	1694.52	232.0
Kerala	240.48	55.83	226.4	1479.99	283.8
Madhya Pradesh	120.03	104.83	-	1434.79	201.8
Tamil Nadu	114.51	157.45	276.3	1677.30	198.4
Maharashtra	135.51	105.77	300.0	1124.66	233.4
Karnataka	107.18	56.40	345.1	912.90	186.7
Orissa	113.93	-	276.2	1417.08	188.5
Punjab	129.42	355.56	240.7	1632.77	260.5
Rajasthan	168.80	257.17	393.5	1787.18	275.1
Uttar Pradesh	446.38	108.47	214.4	1371.85	149.4
West Bengal	96.19	156.51	239.8	754.42	170.2
Mean	151.9	137.7	265.4	1352.8	209.4
Standard Deviation	93.2	90.2	58.4	302.4	44.6
Coefficient of variation	61.4	65.5	22.0	22.4	21.3

Source : Education in India, 1976-77, Vol. II.

Table 14

Costs of education and state domestic product in India, 1976-77

State	Cost per pupil (Rs.)			Cost of education per capita (Rs.)	Per capita SDP	Col.5 as % of Col.6	Per capita SDP	
	Recurring	Non-recurring	Total				1970-71	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Andhra Pradesh	243.46	9.16	252.62	31.45	877	3.59	585	895
Assam	174.30	12.23	186.53	27.53	875	3.15	539	781
Bihar	156.63	13.89	170.52	21.39	697	3.07	402	661
Gujarat	258.93	11.82	270.75	50.69	1398	3.63	829	1253
Haryana	240.42	15.35	255.77	40.81	1646	2.48	870	1333
Himachal Pradesh	321.29	14.41	335.71	63.61	1029	6.18	678	1078
Jammu & Kashmir	249.53	43.76	293.29	37.46	909	4.12	548	883
Karnataka	193.03	11.48	204.51	35.85	999	3.59	685	1005
Kerala	295.57	14.83	310.40	72.43	980	7.39	557	892
Madhya Pradesh	209.45	4.09	213.54	27.15	786	3.45	484	768
Maharashtra	237.29	14.30	251.59	49.77	1515	3.29	784	1393
Manipur	241.34	46.06	287.40	73.80	752	9.81	396	807
Meghalaya	154.16	46.42	200.57	45.37	—	—	598	—
Nagaland	266.19	12.06	278.25	76.35	—	—	—	—
Orissa	196.19	12.33	208.51	28.16	690	4.08	482	715
Punjab	280.37	11.13	291.50	61.29	1812	3.04	1030	1597
Rajasthan	280.30	7.63	287.93	33.52	948	3.54	620	857
Sikkim	232.84	96.47	329.31	73.57	—	—	—	—
Tamil Nadu	207.50	9.89	217.38	41.28	944	4.37	581	860
Tripura	256.66	7.78	264.44	47.39	896	5.29	502	813
Uttar Pradesh	155.79	5.78	161.57	28.21	818	3.45	486	730
West Bengal	176.73	13.68	190.41	31.32	1194	2.62	735	1120

Source : Cols. 2 to 5 : Education in India, 1976-77.
Cols. 6, 8 & 9 : Statistical Pocket Book of India (Delhi Central Statistical Organisation).

Note : — Not available

correlation are small, and positive, the coefficient of correlation between non-recurring cost per pupil and per capita SDP is, small but negative. However since none of them is statistically significant, it can be concluded that there exists no relationship between economic development of the state and cost of education per pupil at any level of education.[21] However, one may argue that probably an examination of the relationship with a time lag between the two, may yield a different conclusion. But it is not. For example, we estimated the coefficient of correlation between recurring cost per pupil (1976-77) and per capita SDP in 1975-76 and between the former and per capita SDP in 1970-71.[22] The coefficients are respectively 0.4240 and 0.3661. Thus, even lagged relationship between the two is found to be not significant. In other words, the familiar argument that a state invests less (or more) in education per pupil, essentially because the state is economically poor (or rich) is found to be not totally valid. However cost of education per capita and SDP per capita (with no time lag) are positively related and the coefficient is slightly higher, 0.4987.

It may also be noted that the private costs of education, including the opportunity costs, estimated on the basis of a sample survey conducted in the context of the earlier mentioned study on Andhra Pradesh (Tilak, 1980-c), and institutional costs differ significantly across different socio-economic groups of population, as shown in Table 16 for backward castes and non-backward castes, and in Table 17 for rural and urban population.[23] It can be easily understood that the private costs of education depend upon the household income and as the income/earnings levels of backward castes are much lower than those of non-backward castes, and the income/earnings levels of rural population are lower than those of urban population, the private costs of education of the backward castes and rural people would be less than those of their respective counterparts. For the same reason, opportunity costs would also tend to exhibit similar inequalities. With respect to institutional costs the pattern can not be explained easily. While the institutional costs per pupil at primary and middle levels of education in rural areas exceed those in the urban areas, the costs at other levels of education in rural areas are much less than those in urban areas.[24] However the total (social) costs of education per pupil are much less in rural areas than in urban areas.

On the other hand, with respect to backward castes the private costs, including opportunity costs, are less than those of thenon-backward castes at every level of education. But due to the special

Table 15

Coefficients of correlation (r) between costs of education and state economic development in India, 1976-77

r between	r
recurring cost per pupil at primary level and per capita SDP	- 0.1382
recurring cost per pupil at middle level education and per capita SDP	0.0112
recurring cost per pupil at high school education and per capita SDP	- 0.0192
recurring cost per pupil at higher education and per capita SDP	0.0890
recurring cost per pupil (all levels of education) and per capita SDP	0.3692
non-recurring cost per pupil (all levels of education) and per capita SDP	- 0.1104
total cost per pupil and per capita SDP	0.3226
cost of education per capita and per capita SDP1	0.4987

Table 16

Private and scial csts of education by caste groups in Andhra Pradesh.

Educational level	Private expenditure	Foregone earnings	Total private cost	Institutional cost	Social cost
Non-Backward Castes					
Primary	419.01	136.00	555.01	99.65	654.66
Middle	158.29	360.00	518.29	244.28	762.57
Secondary	269.23	1350.00	1619.23	404.98	2024.21
Intermediate	1019.25	1720.00	2739.25	504.40	3243.65
I Degree (G)	1377.59	1910.00	3287.59	504.40	3791.99
II Degree (G)	2237.50	3314.50	5552.08	504.40	6056.40
Higher (G)	3583.50	2471.80	6055.30	504.40	6559.70
Higher (P)	4479.17	2415.60	6894.77	..	..
Backward Castes					
Primary	110.54	132.00	242.00	108.00	350.54
Middle	116.83	240.00	356.83	251.77	608.60
Secondary	213.67	753.00	966.67	423.82	1390.49
Intermediate	723.70	900.00	1623.70	716.08	2339.78
I Degree (G)	1031.36	2064.66	3096.02	716.08	3812.10
II Degree (G)	1350.00	4050.50	5400.50	716.08	6116.58
Higher (G)	1057.90	2859.00	3916.91	716.08	4632.99
Higher (P)	1687.42	2509.20	4196.62	..	..

Note : .. not estimated
(G) General
(P) rofessional

Source : Tilak (1981-b)

Table 17

Private and social costs of education in rural and urban areas in Andhra Pradesh.

Educational level	Private expenditure	Foregone earnings	Total private cost	Institutional cost	Social cost
Rural					
Primary	169.29	101.20	270.10	124.10	394.59
Middle	92.19	240.00	332.19	270.18	602.37
Secondary	186.31	800.00	986.31	333.43	1319.74
Intermediate	700.00	960.00	1660.00	478.54	2138.54
I Degree (G)	138.33	1866.67	2005.00	478.54	2483.54
Urban					
Primary	398.65	167.20	565.85	80.47	646.32
Middle	181.08	360.00	541.08	262.15	803.23
Secondary	285.74	1120.00	1405.74	370.90	1776.64
Intermediate	1104.12	1700.00	2804.12	577.91	3382.03
I Degree (G)	1387.19	1633.33	3010.52	577.91	3588.43
II Degree (G)	2060.00	2821.50	4881.50	577.91	5459.41
Higher (G)	3379.55	2102.60	5482.15	577.91	6060.06
Higher (P)	4479.17	2151.80	6630.97	..	..

Note : See Table 16.

Source : Tilak (1982-b)

monetary incentive schemes in favour of backward castes, the institutional costs are higher for the backward castes. However institutional costs are not that much high to make the total costs of education of backward castes much higher than that of non-backward castes (see also Kothari et al, 1982).

The ratio of cost per pupil between higher education and primary education can be expected to reflect some kind of imbalance or unevenness of the educational pyramid, or in otherwords it reflects misallocatioon of resources in education. While social rates of return do provide better basis to comment on the pattern of allocation or misallocation of resources (see Tilak, 1981-c), the estimates of unit costs also indicate the direction of the allocation pattern. For instance, the World Bank (1980 : 71-72) also makes use of unit costs to make a similar observation on the pattern of allocation of resources: the gap in the unit costs between lower and higher levels of education "cannot be attributed to the gradual shift within total enrolment toward higher and more expensive education....even a small percentage decrease in unit costs of secondary and higher education could release additional funds for providing basic education to more people. Moreover countries that have budgets favouring secondary and higher education disproportionately....can with some reallocation finance sizeable increase in enrolment at the elementary level".[25] As higher education is necessarily costlier, the ratio of unit costs of higher education over that of primary education would be high and as long as the ratio is not very high, one may not bother about it. But if the ratio is 'alarmingly' high, it needs the serious attention of the educational planner. Since there is no absolute norm about the size of the ratio, one can at best compare the ratio between different regions. Inter-state comparisions in Table 18 lead us to certain interesting conclusions.[26] While one may expect that the ratio (cost per pupil at higher level/cost per pupil at primary or elementary level) will be positively and significantly correlated with per capita SDP, we find that they are not at all related, the coefficient of correlation between the two in 1976-77 being 0.0742. Thus the misallocation of resources can be noticed both in the economically developed as well as in the underdeveloped states, and the misallocation obviously favours higher education sector at the cost of lower levels of education.[27]

Until now we are concerned with formal education only. There is very little work done on non-formal education. Costs of non-formal education tend to be much less than the costs of formal education. It may be noticed that not only the institutional costs, particularly

Table 18

Uneven costs of education in India, 1976-77 (Ratio of cost of higher education/cost of primary education per pupil)

State	Higher/Primary
Andhra Pradesh	9.58
Assam	12.11
Bihar	15.17
Gujarat	7.18
Haryana	12.37
Himachal Pradesh	10.19
Jammu & Kashmir	11.40
Karnataka	8.52
Kerala	6.15
Madhya Pradesh	11.95
Maharashtra	8.30
Manipur	4.98
Meghalaya	19.33
Nagaland	10.08
Orissa	12.44
Punjab	12.62
Rajasthan	10.59
Sikkim	40.77
Tamil Nadu	14.65
Tripura	6.26
Uttar Pradesh	3.07
West Bengal	7.84

Source : Based on Education in India, 1976-77.

teachers, salaries, but also the private costs of non-formal education are substantially less than those of formal education. As non-formal education is part-time in nature and suits to the time of the pupils, the private opportunity costs of non-formal education is negligible. However there exists little research work done in India on the subject. In the Sohna block of Gurgaon district we find that the recurring costs of non-formal education per pupil works out to be Rs.33.78 per annum /- Rs.33.66 on teachers' salaries, and Re.0.12 on non-teaching cost on recurring items. Besides, Rs.1.90 is spent on non-recurring items per annum (Tilak and Bhatt, 1983: 71). Thus the evidence clearly suggests that costs of non-formal education are much lower than those of formal education. It is interesting to note that in either formal or non-formal, teachers' costs constitute the most significant item /- 94% in the case of non-formal education, and 93% in the case of formal primary education in 1976-77.

Results of another micro level attempt in Maharashtra (Chitra Naik, 1982) make it quite striking : while in the formal system of education in Maharashtra a conservative estimate of costs of elementary education would be Rs.140 per year, the cost of non-formal education works out to be Rs.50 per year. Further, it was reported that 2 years of such non-formal part-time education (costing Rs.100) would provide the same education that a 4-year full time formal system would provide (costing Rs.560). It was also estimated that if books and other learning material are provided by the project, the total cost for 2 years would not exceed Rs.144 per pupil. The project also would save Rs.1.6 - Rs.2 million on account of opportunity cost of children's education.

Now let us examine the determinants of unit costs of education. Generally, attempts are made to explain the variations in unit costs with the help of the following four important variables: (a) the size of the institutions, measured by enrolment; (b) teacher-pupil ratio; (c) average salary of the teachers; and (d) ratio or non-teaching cost to teaching cost per pupil. While in many cases all the above variables turned out to be significant in explaining the variations in unit costs, the first two being the most important (see e.g., Lakdawala & Shah, 1978), it is only in a few studies, the size of the institutions has been found to be unimportant (Tilak, 1979).

3.2 A summary

Before we end Part III, let us quickly and briefly summarise the main points. A survey of the costs of education in India leads us to conclude the following:

a) The total costs of education in India constitute about 10% of GNP, in contrary to the commonly held view that 3% - 4% of GNP is being invested in education. The latter statement is based upon institutional costs only.

b) Private costs of education in India are substantial and they are at least equivalent to the institutional costs, if not more.

c) Households respond to educational needs more promptly than public bodies, as the income elasticity of expenditure on education is greater than unity with respect to households and not only smaller but also less than unity with respect to institutions.

d) Based upon institutional costs, it could be observed that, in real terms we are spending increasingly less and less amount on education per pupil, as against the generally held belief, based on growth of expenditure at current prices, that increasingly larger investments are made on education per pupil.

e) While it is generally pointed out that about a quarter, on average, of the budgets of the states are devoted to education, the correct figures are much less, if we consider both revenue and capital budgets.

f) Both as a proportion of the budgets and as a proportion or total costs of education, state governments meet the major part, and the share of the central government is quite small.

g) A very large part of the costs of education goes to the teachers in the name of their salaries and allowances and an infinitisimally small amounts are invested in physical capital formation in education, such as buildings, equipment and furniture. However the proportion of the teachers' salaries to the total costs marginally declines by increasing levels of education. Thus educational activity is labour intensive in nature but for the human capital embodied in the teachers.

h) There are high variations in the costs of education per pupil between different states in the country, and inter-state inequalities have been doubled with respect to costs at primary and middle levels of education, and declined marginally in other cases.

i) The inter-state variations have no relationship at all with the variations in the levels of economic development of the states. In other words, costs of education are not influenced by the per capita state domestic product.

j) Costs of education, particularly the private costs, also vary significantly between different socio-economic groups of population like between backward castes and non-backward castes and between rural and urban areas : the costs are less on the part of the weaker sections, compared to their counterparts.

k) The nature of the educational pyramid in each state, measured by a ratio of costs of education at higher level per pupil and costs of education at primary level per pupil also has no relationship with the economic development levels of the states.

l) Costs of non-formal education, both private and institutional, are much less than the costs of formal education.

m) Coming to the determinants of costs of education, the size of the educational institution, the average salary of the teachers and the teacher-pupil ratio are found to be quite significant in explaining the variations in the costs of education per pupil.

Besides the above, the present survey also indicates that private costs of education have often been excluded while studying costs of education. Since private costs of education are not trivial in size, the review suggests the need for indepth studies on private costs of education.

IV. GENERAL OBSERVATIONS

Any economic analysis of education system or any planning exercise in education remains incomplete, if cost aspects are ignored. Statistics on costs of education are both general and specific purpose tools in that, they are used for different purposes, mainly for planning, forecasting, projecting, analysing, decision-making and policy formulation. We have, in this paper, first described the importance of analysis of costs of education in educational planning, followed by

an elaborate theoritical discussion on various concepts and related aspects of costs of education, some of which like private costs, more particularly opportunity costs, are too important to ignore any more in educational planning. Then the nature and quality of data available to the educational planners and researchers in india are discussed. Lastly, an empirical analysis of costs of education is attempted, based on which several valuable policy inferences are drawn, and they are too many to summarise here in this last section. However we wish to underscore the following points, which I consider as basic conditions for a sound and healthy education system, with respect to costs and financing of education:

i) Public resources are allocated to education and they are allocated to different sectors within education quite arbitrarily, in an ad-hoc manner. The fact that the size of the educational budgets is cut often during the planning process without a corresponding cut in the targets testifies to this lacuna. It is essential that they should have some correspondance with reliable estimates of costs of education.

ii) Even for the state planners, a thorough knowledge of the capabilities of households to invest in education directly (e.g. maintenance costs) and indirectly (e.g., opportunity costs) is absolutely essential, if any meaningful exercise on educational planning is to be attempted. Hence efforts should be iniated by the state planners to collect data on private costs of education periodically. The complementary role of public and private costs should clearly be noted.

iii) A proper devision of financial responsibilities between the federal, provincial and local governments can be recommended as follows: the federal or central government may concentrate on higher education, provincial or state governments on secondary education and local governments on primary level education.

iv) A minimum level of costs of education per pupil should be defined, and in no region and time, actual costs per pupil can be allowed to fall below this minimum level. Further, costs of education in real terms should not be allowed to be less than the costs relating to the preceding year.

v) The importance of educational price index is now well known. It is a basic requirement for any inter-temporal analysis of investment in education. Hence, attempts should be made to construct an

educational price index. Perhaps it may be necessary that different indices are to be constructed for different levels of education.

vi) Every insitution should be provided and encouraged to maintain some financial reserves over and above the general requirements, for good house-keeping purposes and to encourage innovations.

vii) Lastly, the total resources invested in education drawn from the public exchequer as well as from household budgets, should be taken into account in the national accounts. Otherwise national income accounts remain highly incomplete.

NOTES

1. However some times for a specific purpose, we do calculate cost per capital unit or cost per labour unit etc., even in general economic theory.

2. But this is based on the assumption that incomplete education constitutes total wastage.

3. See Majumdar (1983 : 12-14) for a critique of the concept of unit costs of education per student.

4. See Adelman (1966) who computed opportunity cost of institutional investment in education on buildings.

5. The concept of social opportunity cost of capital is often discussed in the literature, particularly in the context of social discount rate or alternative rate of return to education (see Blaug et al 1969).

6. See Robbins Commission (1963) and Education Commission (1966). There are very few attempts of constructing a meaningful educational price index. See the pioneering attempt of Vaizey (1958). See also Wasserman (1963) and ESCD (1979).

7. See Pandit (1972) and Shri Prakash (1978). See also Tilak & Varghese (1983).

8. As quoted by Haldipur (1974).

9. Interested readers may refer to Kamat (1977), Srivastava and Hirinnaiah (1977), Pandit (1976), Dhar (1978), Kwatra (1978), Department of Education (1977) and IAMR (1981) for a general account of statistics on education in India.

10. Compare, for instance, 1981 Census data with the population projections of the Committee on Population Projections (1977).

11. The publications of the University Grants Commission (e.g. University Development in India : Basic Facts and Figures) do not contain any data on expenditure/income aspects of higher education, even though the Commission collects data from colleges and universities.

12. These concepts and our concepts of direct and indirect costs discussed earlier in Section 1.4.1 are totally different.

13. However for a few years (in the 1950s and 1960s) data on indirect expenditure were made available by levels of education.

14. If we look backwards, the format of presentation of financial statistics on education in India has been changed a number of times, e.g., in 1961-62, 1971-72 and 1976-77.

15. For instance, in the early 1960s two series, namely, Education in India (Volume II) and Education in States were discontinued.

16. For example, costs of education per pupil in India (1960-61) are as follows :

(Rs. per annum)

	By type of school	By level of education
Primary	28	28
Middle	41	62
Secondary	92	126

Source : Blaug et al (1969 : 191)

17. However in certain cases the problems of a different order continue. For instance intermediate education in some places is provided by higher secondary schools and in some places by colleges. See Education Commission (1966 : 948-9) for some more interesting details on this issue.

18. See Lakdawala (1978) for a detailed analysis of NSS data on private expenditure on different social service activities, including education.

19. For a review of a good number of such surveys, see Veeraraghavan & Tilak (1983).

20. One of the earlier, rather pioneering attempts on private costs of education in India, is made by Shah (1968) which is, however, not accessible to the present author. See Shah (1969).

21. See also Tilak (1984-a) for similar results on a few countries of the south Asian region.

22. The number of observation are 19 and 20 respectively. Data used are given in Table 14.

23. See Tilak (1980-a) for a similar pattern with respect to women and men.

24. See also Tilak & Chaudhri (1982) for similar details on all-India level.

25. See also Krishna Kumar (1984).

26. See Tilak (1980-a; and 1984-a) for inter-continental and inter-country comparisons, respectively.

27. See Tilak (1980-b; and 1983) for factors responsible for such a pattern of misallocation of resources.

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