

## Economics of Education

### A TREND REPORT

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#### Introduction

What is the economic value of education? How much to spend on education? Who should bear its cost? Which type of education should be supplied and when? How should education be integrated with the economy? These and several of such questions are the subject matter of the specialized field of economics of education. Though the last two decades have witnessed a spate of writings in this field, research interest in the economics of education has a long history. In India, in particular, awareness of the economic value of education can be traced back to the great Upanishadic literature. The well-known epigrams of the king poet Bhartrihari of the Vikramaditya period refer to education as the concealed wealth of man प्रच्छन्नं गुप्तं धनम् विद्याख्यं अंतर्धनम् etc., indicating that the economic value of education was amply recognized by Indians in the distant past. It is not intended to review all the writings on the economics of education in India in this trend report. It is proposed to review some of the main contributions to this field made during the period 1941-1982, particularly during the last decade, keeping in mind the trend report on the subject published in the First and the Second Surveys of Research in Education (Buch, 1974; Buch, 1979). It may be noted that ICSSR also sponsored a Survey of Research in Economics of Education in India which was published in their 'Series of Research Surveys'—Vol. VI—infrastructure, in 1980.

Studies from this publication have also been considered while developing the present trend report.

The first research study in the economics of education

submitted for a formal degree of the Bombay University was done in 1933 by B.M. Kale on the economics of primary education in Bombay, which was essentially concerned with the problems of financing, enrolment, etc. in primary education. Writings on the basic education conceived by Mahatma Gandhi very clearly emphasized the need to integrate education with the economy and thereby maximize economic benefits from the more relevant education. The other reforms in education introduced at different points of time, like multipurpose schools, vocational schools, 10+2+3 pattern, etc. also had a predominant focus on the economic dimensions of education. Literature on these various reforms makes an interesting general reading on some aspects of the economics of education. These writings make one fact clear that the economics of education is essentially interdisciplinary. This is likely to be a mixed blessing so far as the development of this discipline is concerned, for, on account of the need for expertise in different disciplines, the research analysis here is likely to be more realistic since the reality is not accessible to single discipline expertise. At the same time, in view of rarity of interdisciplinary expertise, there is a danger of generalistic writings in this field. During the past two decades, however, research work in this field has been of a fairly high analytical rigour, and hence, the foundations for the discipline are getting firmly established. Human knowledge grows in a cyclical fashion — with several ebbs and flows. Research work in this field has also followed this pattern. Certain premises of the economics of education which had an unquestioned acceptability a few years ago are now being questioned.

### Recent Origins

Recent researches in the economics of education owe their inspiration to the contributions of T.W. Schultz, who is considered to be the father of modern economics of education. Schultz showed how recognition of education as an economic factor would help resolve a number of puzzles in economics. For example, one of the puzzles in the theory of economic growth highlighted by Robert Solow in his classic contribution to Technical Progress and Aggregate Production Functions about the inability of the conventional factors to fully explain economic growth, could be resolved satisfactorily by T.W. Schultz, Denison and others by recognizing education as an additional Factor. The term 'human capital' acquired great significance following the writings of T.W. Schultz and G.S. Becker. Schultz (1961) wrote, "Labourers have become capitalists, not from a diffusion of the ownership of corporation stocks; as folklore would have it, but from the acquisition of knowledge and skill that have economic value. To omit them in studying economic growth is like trying to explain Soviet ideology without Marx." Subsequent writings have either supported and elaborated — these views or have criticized and provided further insights into the main issues. By and large, these writings can be grouped into the following categories:

- (a) Education and economic growth
- (b) Concept and measurement of educational capital
- (c) Education and socio-economic inequalities
- (d) Planning of education for economic benefits: micro and macro perspectives
- (e) Educational finances and costs
- (f) Other issues.

### Education and Its Coverage

In the majority of the writings, education is interpreted to mean formal education. But, following the notable contributions of Jacob Mincer and others, an in-depth analysis of the economics of on-the-job training is also attempted in some research studies. The economics of education at home or education provided in religious institutions, or that in the Armed Services, the three other major types recognized by F. Machlup, have not received researchers' attention that they deserve.

Major research contributions in India on the economics of education can also be grouped under the above six categories. Chronologically also, interest

seems to have moved from (a) and (b) during the sixties and early seventies to (c) to (e) during the late seventies and the eighties. This also seems to be on the pattern of development of international interest in the economics of education. The number of studies during the seventies and eighties in the economics of education is considerably larger than the number during the sixties, indicating that this branch is taking firm roots in the field of economics. Introduction of the economics of education as one of the papers at the postgraduate level in the discipline of economics or in education in a number of leading universities (e.g. Osmania, Andhra, Bombay, etc.) in the country in recent years, is a clear testimony of the increasing attention that the economics of education has been receiving in recent years. The trend of research studies according to the above classification has been reviewed in the following paragraphs:

### EDUCATION AND ECONOMIC GROWTH

The residual in economic growth, not explained by the conventional factors of production, is indeed 'the coefficient of ignorance', as the other relevant factors are not explicitly recognized in the model of explanation of economic growth. The quality of labour as a factor of production would greatly help in explaining this residual. Education as a factor for differentiating the quality of labour thus plays a crucial role in the theory of economic growth. The past two decades have witnessed the most fascinating flow of research contributions in this field. Denison's pioneering attempts at explaining the sources of economic growth provided a lead to such studies in other countries. Simple correlation and regression studies, those of Harbinson and Myers for example, relating education on the one hand and G.N.P. and the rate of growth of G.N.P. on the other provided further insights into the education—economic growth nexus. Education was also linked to sectoral growth rates. Griliches (1963) considered education a factor in the agricultural production function.

Is education merely a differentiating factor for labour, or does it really change its basic traits which are useful in the production process? What is the process through which education changes the quality of labour input? Does education change responsiveness of man to his surroundings? What are the effects of education on population growth? How does education lead to innovations? What is the nature of interdependence between education and economic growth? Some of these questions have been examined by a number of studies in this field in India.

\* T.W. Schultz: Investment in Human Capital, 'American Economic Review', March 1961

### *Aggressive and Sectoral Studies*

Nalla Gounden's (1965) was one of the earliest attempts to estimate the rate of return to different levels of education and also to estimate the contribution of education to economic growth. According to this study, education accounted for around 27 per cent to 46 per cent of labour productivity as per different assumptions about the labour share in national income. Adopting Denison's methodology, Bakul Dholakia (1974) traced different sources of economic growth. Education was estimated as contributing to the extent of 6.79 per cent of growth rate and 14 per cent of productivity per person. Though taking relative earnings as the measure of relative marginal productivity is not free from limitations, the conclusions are revealing in that they showed that education's contributions to growth in India is not very impressive. Relating education to farm rates of growth suggests that education's contribution to farm productivity is realized through education's effect on the diffusion of technology and improved farm practices. Choudhari's study (1979), using Punjab and Haryana data, came to the conclusion that secondary education (i.e., 10 years of conventional schooling) among cultivators had a significant impact on agricultural productivity in the Punjab-Haryana wheat belt of India. Studies by B. Dey and by Raju (1975) are not so categorical in their conclusions about the influence of education on farm efficiency. While in advanced countries with high farm efficiency levels, education's influence may be significant, in the less advanced farm sector, education is found to be less effective.

Taken together, the sectoral studies in India seem to support T.W. Schultz's conclusion that the effectiveness of education is enhanced in a modernizing environment. There is indeed a vicious circle; unless education develops, there is no modernization and unless there is modernization, education is not effective. A full dynamic model, therefore, of education and growth needs to be developed. David Wheeler (1980) developed such a model. Choudhari (1979) also developed a simultaneous equation model for reaching the above conclusions in the context of the wheat belt of India.

### *Reverse Causation*

That education may be less effective in the context of less developed environment is clearly brought out by the example of Kerala, where despite the highest literacy rate (in comparison with other States), the growth rate of SDP is far below that for advanced States. This raises the question of the nature of interdependence between education and literacy and economic growth. In this con-

text, State-wise case studies of development of education may provide insights into at least one aspect of this problem. Nair (1978) examined the historical development of education in Kerala and showed how indigenous schools during the British period were largely responsible for the expansion of primary education in the State. Nair (1980) suggested some important reforms in Kerala education to make education promote economic development in the State. Another study by Nair (1978) also came to the conclusion on the basis of analysis of Kerala's experience that economic backwardness by itself need not hinder progress of education. In the case of Tamil Nadu, George (1982) found that cost per pupil was not correlated with the enrolment, indicating that it was not so much the cost but 'educational culture' which promoted education. On the other hand, a study by Venkatasubramanian (1977) found that enrolments depended upon the school facilities and 'educational culture' of the parents. A detailed statistical study of literacy rates in rural Gujarat by Shah (1981) also brings out the validity of 'educational culture' or the 'tradition factor' of the villages as an important factor along with other socio-economic factors like occupational composition, S.C./S.T. population, distance of villages from the towns and cities, size of the village and irrigation facilities, in explaining the differential literacy rates. Karnik (1967) also traced educational development in Gujarat in the light of its economic development. A study of educational development in the four selected States of Orissa, Gujarat, Maharashtra and Bihar by Dave (1979) concluded that mere supply of educational facilities does not ensure the spread of education so far as primary and secondary education is concerned, though at higher educational level, the number of educational institutions might induce an increase in enrolment. Another interesting conclusion of the study was that social backwardness of population and predominance of rural population do not act as a handicap for the spread of elementary education, though for secondary and higher educational levels, they do act as hurdles. Other Studies with this focus are those of Singh (1974), and Sharma (1973).

### *Further Research Opportunities*

Thus, with regard to the question of the dynamics of education and economic growth and tracing the direct and reciprocal relationship between the two, the conclusions of different studies are not uniform, suggesting the need for more indepth studies of individual sector and region. Abroad, rethinking about the education-economic growth nexus has already started. More atten-

tion needs to be paid to the negative aspects of the current pattern of education (see for instance Sharma, 1978) and to the nature of structural reforms to be introduced within education and also the economy to raise the effectiveness of the former vis-a-vis the latter. More attention also needs to be paid to the process through which different types and levels of education can contribute to economic growth, so that innovations in education for this purpose are made possible.

#### CONCEPT AND MEASUREMENT OF EDUCATIONAL CAPITAL

Since education is found to contribute to the worker's productivity and hence aggregate productivity of the economy, it can be legitimately treated as a produced means of production, or capital. But is educational capital a more analogy? Can this capital be clearly defined and measured? What are the different conceptual and statistical problems in this connection?

Like any other capital input, educational capital can be defined and measured from two points of view: (a) in terms of cost of creating capital and (b) in terms of the value created by capital. The two measures do not necessarily lead to the same value. By and large, cost approach is adopted for estimating the educational capital.

Educational costs consists of direct costs—student-parent costs, teacher costs and institutional costs (both public and private)—and indirect costs which refer to the opportunity cost of students' time while receiving education. While studies regarding direct costs are discussed in the section on educational costs and finance, the issues concerning indirect costs are briefly discussed here. What is the opportunity cost of students? Which opportunity is foregone while receiving education? Economists consider job and earnings to be the opportunity foregone. What is the opportunity foregone in case of this opportunity itself? Are we in the utility quagmire, as Mary Jean Bowman put it? Assuming that student's opportunity cost is measured in terms of earnings foregone, would it be proper to assume that students would get jobs? What about the opportunity cost of students below 14, who are supposed to be outside the labour force according to labour legislation? Does this mean that child labour does not exist in the country? Should time be valued only in terms of earnings? Is marginal productivity theory of earnings realistic? These are the types of questions involved in the definition and measurement of educational capital.

Pioneering studies in this area were done by Pan-chamukhi (1965), Kothari (1966), Nalla Gounden (1967) and others. Subsequently, all the studies on the

rate of return reviewed in the section on educational planning, have estimated educational capital or educational costs. These studies show that the share of opportunity costs in total resource costs of education is too high to be overlooked.

It should, however, be stated that not all conceptual issues raised above have been successfully tackled by the various empirical studies. The studies seem to be monotonous in that no significant innovations are made in the methodology of estimation.

#### EDUCATION AND SOCIO-ECONOMIC INEQUALITIES

##### *Major Questions*

'Every individual is born with a collection of abilities and talents', says the World Development Report (of the World Bank), 1980. 'Education, in its many forms, has the potential to help fulfill and apply them.' In this sense, education has a definite economic function to perform. It would raise the economic capabilities of the educands and hence the rewards from the use of these capabilities. Thus, if 'properly' phased, the policy of supply of education should be a potential redistributive agent to reduce the socio-economic inequalities in the country. But how effective is education as a redistributive agent?

The effectiveness of education in this context depends upon the fulfilment of a large number of pre-requisites. Are educational facilities equitably distributed among all the regions of the country? Are the facilities adequate? Is there inter community, inter-sex and inter-personal equality in access to education? Are educational opportunities equitably utilized? How far is the performance in education, covered under the above questions, ensured?

Is there equality in job opportunities, defined in terms of job access, job conditions, job rewards, etc.? How far are equality in education and equality in job set off by inequality in asset distribution? These are some of the relevant questions in this context. A large number of empirical studies with a focus on some of these questions in the Indian context are available.

##### *Inter-regional Inequalities*

The All India Educational Surveys conducted by the National Council of Educational Research and Training provide wealth of information about the nature and extent of inequalities and inadequacies in the supply of dif-

ferent educational facilities like buildings, teachers, library and equipment, in respect of different levels and types of education, etc., in different States of the country.

The Education Commission (1964–66) had initiated a number of exercises for understanding inter-district inequalities in each of the selected States, the reports of which are available in unpublished forms. In recent years, some interesting studies with inter-State and intra-State (inter-regional) focus have been attempted. Panchamukhi (1970) used the statistical technique of factor analysis to construct a composite index of educational development for different States determining their ranks on this basis. In the context of the resource allocation from the Centre to the States, through the Finance Commission and Planning Commission, studies about educational distance of different States, assume great importance, Tilak (1980) and Panchamukhi (1981) suggest simpler methods for measuring the composite educational development of States. Jain (1981) uses Kendall's coefficient of concordance for measuring educational disparities. On this basis, Kerala, Tamil Nadu, Punjab, Himachal Pradesh and Maharashtra were found to be the leading States, and Bihar, West Bengal, Karnataka, Orissa and Madhya Pradesh were the most backward States during the decade 1966–76. Bihar undoubtedly was and is the most backward State in respect of all types and levels of education, whatever the method used.

Maitra (1981) focused on rural-urban disparities of public education in West Bengal in his sample study of 1927 rural and 1,843 urban households. This survey revealed that though in the course of the past ten years, there had been some improvement in public education in rural areas, it had not reached the levels obtaining in urban areas.

### *Interpersonal Inequalities*

Studies on interpersonal disparities have been more numerous. They may be divided into two groups according to their foci; (a) access and preferences, and (b) performance and other personality factors. Naik (1965) developed a coefficient of equality of educational opportunities for the scheduled caste population and found that caste-based disparities continued to be predominant in India. Disparities in respect of access and utilization of educational opportunities between caste groups and within the backward communities were highlighted in the empirical studies of Chitnis (1974, 1977) and Shah and Patel (1977). Panchamukhi (1973) estimated the extent of such disparities at higher educational level.

Nukat Lal (1979) in his Ph.D. study showed that even though higher education was received by students of low intellectual calibre also, the majority of students came from high-income groups. Even with regard to subject preference there seemed to be an inherent inequality in that the students from high-income groups preferred subjects leading to better-paying jobs as is shown in the study by Sahoo (1978). That performance in education is a positive function of the socio-economic status of the student and his parents has been the conclusion of a number of empirical studies. [George and Tharakan (1977); Dhama (1974); Sharma (1978); Saivanandan (1969); Salunke (1979); Rao (1976); and Panchamukhi (1981)]; Srivastava and Gupta (1980) concluded from their study of fifty primary and middle schools that poor educational and economic background of the parents coupled with the lack of job opportunities were the major causes for the drop-out and non-utilization of educational opportunities. The incidence of failures in public examinations was also high among students with low socio-economic status. [Directorate of Higher Education, Hyderabad (1965)] Adisai (1978) concluded from his comparative study of 300 Indian students and 300 Thai students that students of higher socio-economic status had more creative thinking than others. Similar conclusion was reached by Vijayalakshmi (1980). Socio-economically disadvantaged students frequently exhibit symptoms like anxiety, depression, less interest in academic pursuits, less value of time and lower efficiency of the planning of their activities (Ushasri, 1978).

### *Education for Equality: a Lost Hope?*

Whether such performance deficiencies are the results of lower socio-economic status or the cause for such status in the case of the students' parents, may be a point for argument. But, by and large, the studies emphasize the fact that education is a dependent variable rather than an independent variable. The prevailing educational and socio-economic system may be simply agents for the perpetuation of the *status-quo*. Since educational standards are likely to be higher in private schools than in government-run schools, the enrolment of children of richer parents in private schools and that of children of poor parents in government schools is brought out in a study by Rao (1977) which shows how education can perpetuate the socio-economic elitistic pattern of the Indian society.

This need not be taken to imply that educational policy can simply wait until the socio-economic transformation is fully brought about. The Education Commission

(1964-66), in fact, suggested a number of measures under the purview of education to make education an instrument for national development. Singh and Venkatachalam (1976) observed on the basis of their sample study of students of agricultural science that introduction of trimester system in place of the traditional system, could compensate for some of the socio-economic environmental handicaps of under-privileged students so that in the former system, students could perform better.

Similarly, reorganization of classes with a few good students along with ordinary students, adequate supplementation grants to poor parents in place of scholarship to their wards, etc., [Panchamukhi (1981)] may help improve the performance of students despite their environmental handicaps. Even with equitable educational access, utilization and performance, education may not emerge as an equalizing agent unless rewards from education are also 'equitably' distributed. Tilak (1980) found from a sample study in West Godavari district of Andhra Pradesh that the rates of return from education for backward castes were higher than those for others, indicating thereby that education can act as a significant redistributive agent. Singh (1978) conducted a sample study of 450 fathers and 1,300 sons from 450 families of Chandigarh. By using different scales of socio-economic status, occupational prestige, and job satisfaction, the author came to the conclusion that 79 per cent of the population had an upward inter-generational social mobility though with additional education beyond a certain level, education was less effective as an agent for social mobility. This is natural, because the rates of return for higher educational levels are lower than for lower educational levels. Datta (1981) was more categorical in his assertion from a sample study for Rajasthan that education—both formal education for children and adult education—would be quite effective in the redistribution of earnings.

#### *Further Questions*

The above review of studies clearly brings out the potentialities of education for social justice in the background of extreme inequalities. The future studies need to focus on the inter-generational dynamics of reciprocity between equality in education and equality in earnings for more systematically stratified samples, in order to understand the effectiveness of education in advanced, semi-advanced and backward regions and population groups. It may also be useful to identify the more relevant education-job combinations for realizing the ef-

fectiveness of education.

### PLANNING OF EDUCATION FOR ECONOMIC BENEFITS: MICRO AND MACRO PERSPECTIVES

#### *Major Questions*

Properly planned education can act as an effective growth agent for the economy, a useful instrument of social mobility for the underprivileged, and a potential redistributory tool for the society. Since resources are scarce with the competing demands on them, how much of these resources can be allocated to education if economic benefits from education are to be maximized? Which levels and types of education should receive a priority treatment from this point of view? How to recognize the educational and other non-economic aspects in this process of maximization of economic benefits? Does maximization of benefits for the individual or family ensure maximization of benefits for the society? These are essentially the questions related to the planning of education.

#### *Four Approaches to Educational Planning*

There are four approaches to educational planning, viz., social demand approach, rates of return approach, manpower requirement approach and programming approach.

#### *Social Demand Approach*

Social demand approach consists of estimating the number of seats required in the educational institutions and thereby the number of institutions on the basis of demographic projections, political pressures and the past trends of demands for education. With the help of unit cost estimates, resource requirements for the estimated educational expansion can be determined. Prakash's study (1971) developed a method to estimate the social demand, Sharma (1980) analysed the forecasts and trends of education in India as developed in the studies by Jayaraman (1978), Ruddar Dutt (1977), Eswara Reddy (1978), Citizens for Democracy (1978), Coombs (1976), Seth (1978), Education Commission (1964-66), Ezakiel et al. (1976), Rohatgi et al. (1979), and presented an overall view about the nature of educational future by 2000 A.D. On the basis of these projections, Sharma estimated that India may have to spend on education around Rs. 16,000 crores to Rs. 20,000 crores i.e. 8 to 10 per cent of GNP by 2000 AD. This indicates the

stupendous nature of the task just seventeen years later. Kumar (1980) attempted to identify the role of socio-economic and other factors in the determination of educational demand, on the basis of a sample survey of 772 students in Allahabad City.

*Rates of Return Approach:* The rates of return approach is basically a method for taking efficient resource allocation decisions. The internal rate of return (IRR) is the rate at which the present value of benefits is equal to the present value of costs. If IRR of education is higher than the rate of return on alternative investment opportunities, then investment in education is advisable. When education is treated as capital, then the approach of IRR, which is basically the norm for investment decision-making, becomes quite relevant and necessary for efficient investments in education. This approach in education raises many questions. What is the benefit from education? Normally earnings are taken as the benefit, on the basis of marginal productivity theory of earnings. How to measure the non-economic, non-earning benefits from education? Earnings need to be adjusted for other factors, like ability, age, sex, socio-economic conditions, job market, trend factor, inflation, mortality factor, unemployment, etc., in order to understand the precise contribution of education alone. A distinction also needs to be made between the private returns and the social returns. On cost side also there are problems like the treatment of opportunity costs, job search costs, adjustment for wastage and stagnation, etc. There are also formidable general problems like multiplicity of IRR, indeterminacy and problems of investment decisions under uncertainty. The problems of uncertainty become very much pertinent in the case of education, which has a long gestation period and the returns of which are highly dependent upon several other factors.

Notwithstanding the various conceptual and practical problems involved IRR in the calculations, a large number of studies exist in India and abroad with the application of IRR-techniques or the techniques of cost-benefit analysis. For India, Harberger (1966), Hussain (1967), Kothari (1967), Nalla Gounden (1967), Blaug et al. (1969), Choudhari (1970), Pandit (1972), Paul (1972), etc., are some of the early studies in this field. Subsequently, a number of Ph.D.-level studies have been conducted, which have presented the IRR for different types and levels of education with the help of ad hoc sample survey data for different regions. Pandey (1976) estimated rates of return for higher education in Nepal and with the help of his study attempted an exami-

nation of such questions as which were the most profitable level and type (general vs professional) of higher education in Nepal and which were the indirect benefits from education. Doshi (1980) estimated the location-specific-rates of return for medical education, and thereby tried to explain why medical graduates clustered in urban areas instead of starting practice in rural areas. Datta (1981) estimated the private and social rates of return for school education and higher education after adjusting for ability, economic growth and unemployment. Tilak (1980) developed rates of return for different levels of education for different sex and caste groups with adjustment for wastage and stagnation, growth in income, unemployment, participation in labour force and ability. Reddy (1981) estimated social and private rates of return on higher education from a large sample of 20,080 employees mostly in government and semi-government organizations.

These various studies bring out a general conclusion that, by and large, the rate of return from investment in education is higher than from other investments, and the rate of return is lower for higher levels of education indicating that the law of diminishing returns operates in education. These conclusions, marginal variations apart, suggest that there is a need to increase expenditure on education in general and on lower levels of education in particular. The studies also bring out the fact that private rates of return are generally higher than social rates of return for all levels and types of education, explaining why there is a great rush of students especially in higher educational institutions. However, high private rate in itself does not explain why our progress remains unsatisfactory so far as the realization of the goal of universal elementary education is concerned, and why drop-out rates at the school level are so high in India. Though a fascinating field for research, current studies are based upon a number of restrictive assumptions, and they suffer from a number of conceptual difficulties and data limitations, and hence the policy conclusions from such studies are likely to suffer from low level of general applicability and acceptance. The future research needs to focus on the problems of identification and measurement of non-economic benefits and costs of education and on the methods of integrating such non-economic aspects with economic aspects in the rate of return framework by appropriately assigning weights to each aspect. Even with regard to economic aspects, the distributional issues need to be explicitly incorporated into the cost-benefit calculation.

*Manpower Requirement Approach:* The other method of

educational planning is the manpower requirement approach. According to this approach, education should be planned in accordance with the future manpower requirements. The major issues in this connection are: (a) determination of the education-job correspondence, (b) projection of future manpower demands for different sectors with detailed disaggregation, (c) adjustment for the likely changes in technology, so that manpower coefficients are realistic, (d) estimation of educational requirements in future on the above basis, (e) projection of the magnitude of finances for education of different types and levels on the basis of future unit cost estimates, and (f) instead of considering this exercise as simply one of matching numbers of manpower demands with manpower supplies, educational planning needs to consider the aptitudes of students for different subjects and job categories, the job locational preferences, costs involved in education-manpower marriage and distributional aspects of education-occupation match. As observed by Blaug literature on theoretical aspects of manpower planning is not fully developed. Tinbergen-Correa-Bos Model for manpower forecasting provided the theoretical base for the future empirical studies, where input-output approach is used in estimating manpower demands. T. Burgess, R. Layard and Pitambar Pant Study (1968) in manpower and educational development in India 1960-86, drew heavily on Tinbergen-Bos Model and on the basis of some norms developed manpower needs for the future. This study formed a basis for the Education Commission's (1964-66) projections of educational requirements. Layard and Saigal (1966) questioned the basic assumption of the fixity of education coefficients in the context of increasing worker productivity, for, according to them, educational levels of occupations rise with the output per worker. Ramanujam (1970) developed estimates of occupation-educated manpower requirements, for India for 1970-71, 1975-76 and 1980-81 using the input-output data and the Delhi Employment Exchange data. Rabindra Nath (1967) also used the input-output technique for estimating personnel input coefficient for 57 occupations and 17 industrial sectors using ISI data, DGET data, input-output table for 1959. A number of IAMR studies developed projections of requirements of different types of manpower for different regions of India on the basis of certain norms and past trends, and thus provided useful basis for educational projections. For example, Nain, Srivastava, and Bolar study (1975) developed manpower projections for North Eastern region. In Jafri's study (1978) manpower requirements for Madhya Pradesh for 1983-84 were presented with projections for

educational requirements at different levels. Earlier, in a Ph.D. level study, Bhattacharya (1965) analysed the changing educational and occupational pattern for Madhya Pradesh over the post-1921 period and also highlighted different job aspirations of the educated people. David (1978) also traced the link between educational development, employment and industrialization again in the context of Madhya Pradesh. This study also indicated the nature of job preferences of the educated in Madhya Pradesh and brought out that education acted as a catalyst to transform under-employment in the agricultural sector to open unemployment. In another study for the same State, Pendharkar (1977) emphasized the need to take into account explicitly the job preferences and the fact that job preference function is essentially multi-variate wherein education is only one of the variables. This means that job-education correspondence which is the basis for manpower planning, itself has a weak basis. That intertemporal fixity of this correspondence is open to doubt is clearly brought out by Panchamukhi (1975) who showed that there was a continuing process of devaluation of education *vis-a-vis* jobs in the face of job shortage and over-expansion of education. In order to strengthen the basis of educational planning, more studies need to be conducted on *ex ante* correspondence (based upon employer preferences made out through job advertisements, and job preferences of the educated) and *ex post* correspondence (based upon actual recruitments indicating another type of correspondence), for different regions and sectors of the country.

*Programming Approach:* Programming approach to educational planning basically consists of the realization of certain educational or economic objectives subject to certain educational and economic constraints. Programming is an optimization technique of activity analysis, and hence its application to education should give optimum educational pattern under certain assumptions. Mathur's (1964) was one of the early attempts at the use of this approach. Ramanujam (1967) developed three types of programming models with three different objective functions. The first model had the objective functions of maximization of the present value of future national income contribution of education; the second model's objective function was to maximize the stock of human capital and third had cost minimization as the objective function. Panchamukhi (1969) considered cost minimization as the objective function subject to different constraints, the more important of which is the maintenance of a particular educational level in the



country. The educational level of the country was estimated by the author by considering different aspects of education (qualitative and quantitative) and using factor analytic techniques for constructing the composite index of educational level. In a more recent study, Sinha (1980) developed a linear programming model for education to analyse quantitative aspects of educational planning, while maintaining internal balance within education and within the economy. The author calculated the sensitivity to the model which indicated that the optima are quite sensitive to the values of elasticities chosen. There is a need for future research work in this field.

#### *Further Questions*

Thus, educational planning studies for future should strengthen the theoretical base for educational planning by (a) highlighting more rigorously the quantitative significance of different determinants of social demands for education, (b) integrating non-economic and distributional aspects into the rate of return studies, (c) estimating the job preference functions of the educated, and the education preference functions of the employer, (d) developing methods for the treatment of the self-employed in manpower education planning, (e) estimating the sector specific and job specific degree of devaluation of education, (f) the methods of predicting technological change and the likely changes in manpower education coefficients, (g) developing comprehensive model for education with programming techniques, and (h) developing firm-level and micro-level manpower requirement estimates and educational requirement studies.

### EDUCATIONAL FINANCES AND COSTS

Even though large expansion in education is obviously desirable in countries like India, resource constraints hamper this expansion. It is in this context that the problems like cost and the financing of education assume great significance.

#### *Major Questions*

What are the aggregate costs of education of different types and levels? Who bears these costs? What are the sources of meeting these costs? What are the determinants of these costs? Is it possible to determine the optimum size of an educational institution on the basis of educational costs? What is the optimum combination of different sources of finance? Such questions of concrete policy-making have also attracted the attention of

economists of education in India.

The studies dealing with the concept and estimation of the total resource costs of education — also termed as educational capital — have been reviewed above. While such studies do provide insights into the magnitude of economic resources going into education, they do not examine the concrete questions listed here. This group of studies examines the behaviour of the components of educational costs and the methods of their financing.

#### *Educational Costs*

Educational costs consist of (a) institutional costs, (b) student and parent costs and (c) government costs. The official publications dealing with educational statistics provide data on costs in term of direct expenditures and indirect expenditures, which do not cover all cost items. For example, student costs and parent costs consisting of expenditures on uniforms, books and stationeries and transport are not included either under direct expenditures or under indirect expenditures. Direct expenditures only refer to costs which are by definition allocable to different educational levels, and indirect expenditures refer to non-allocable items of costs.

The studies by Shah (1968) and Gupta (1982) estimate private costs of college education and elementary education, respectively. These studies show that such private costs are substantially high and the traditionally conceived private cost, viz, tuition fees, form only a small portion of the total private costs. Understanding the regional variation, variation by sex, by management of the educational institution, etc., of the private costs may provide an extremely useful basis for the policy of expansion of education, and also for the scholarship and student assistance policy. Hence, even if fees were abolished, high non-tuition costs to be borne by students and parents act as effective disincentives for the expansion of education.

#### *Unit Cost of Education*

Unit cost studies are another set of studies in this context, which have a great significance for concrete policy-making. A distinction needs to be made between the unit cost and the per student cost. The former may not necessarily refer to the enrolled student as the unit. Ideally, the intangible concept of educational output should be treated as the unit. However, in the empirical studies, the unit may refer to the 'full-time student', 'attending student', the duration of the course, time units of attending students, etc. Also, the term 'cost' under unit cost

should ideally cover the aggregate cost like institutional cost, student cost, government cost, both of recurring and non-recurring types, and also the resource costs to the society like the opportunity costs of student's time. However, the unit cost studies have invariably considered per student expenditures of the recurring type as the unit cost. They have also not considered the opportunity cost at all.

The Education Commission (1964-66) initiated a number of unit cost studies at different levels of education. The estimates of unit cost were used to determine the optimum size of an educational institution (particularly at the third level of education). Some of the early studies in unit cost were done by Kamat (1968) for Poona University, Panchamukhi (1965) for Bombay University and Mathur (1968).

Bose et al. (1975) estimated 'unit costs' (recurring) of elementary education in West Bengal for two years 1969-70, and 1973-74. They found that the 'unit cost' was slightly higher for metropolitan schools of Calcutta than for other schools, and it increased only marginally over the period of five years. From this they inferred that there is a need to spend more on elementary education. Since unit costs are not standardized for variations in efficiency of use of resources, or other factors, intertemporal or cross-sectional comparisons of unit costs may have to be used with caution for precise guidelines for policy though broad judgements are possible.

Thatte (1977) analysed the institutional expenditure of secondary education in different regions of Maharashtra and showed how in metropolitan and urban areas institutional expenditures per student were likely to be higher. Ramanujam et al. (1979) analysed the educational expenditure data for 43 middle schools, 52 high/higher secondary schools, 9 arts/science colleges and the university, a teachers' training college, a polytechnic, an engineering college, a medical college, an agricultural college and seven industrial training institutes of Jammu and Kashmir. As in other similar studies, the authors found that the teachers' salaries and allowances accounted for more than 80 per cent, and very little was spent on library and laboratories of the educational institutions. Only in the case of agricultural college education the proportion of teachers' salaries in total expenditures per student was found to be considerably lower. This might suggest that while teaching costs might increase due to socio-political pressures, similar pressures are not brought or they have been less effective in getting an increase in the supporting facilities. An optimum combination of teacher costs and non-teacher costs of education is yet to be devised, even at conceptual levels,

for different levels and types of education. Though this is not an easy task, multi-disciplinary approach to this problem may at least help clarify the major issues involved.

For higher educational level, a number of studies on unit cost and finances have been attempted. Sharma (1980) provides a comparative analysis of costs of a large number of general universities, and professional universities for the period 1974-75 to 1976-77. It was found from this analysis that unit operating costs in affiliating universities were higher than those in residential universities. The Central universities supplied education at higher cost than the State universities. The study also estimated that optimum size of the university is 3,097 students if the university has to realize economies of scale. The policy conclusion of the study is quite interesting suggesting the need for more indepth studies in this field. Gogate's study (1979) also came to similar conclusion regarding the operation of economies of scale in educational institutions. In the case of arts, science and commerce colleges in Maharashtra, the minimum unit cost was estimated for a strength of 2,000 students. This is on a higher side in comparison with the estimate given by the Education Commission 1964-66. Also, one should not overlook the fact that the output produced in different colleges is not homogeneous within the same faculty and across different faculties and hence derivation of the average cost schedule becomes an extremely tricky matter.

Shah et al. (1980) estimated unit cost of producing a postgraduate in the Poona University. Such unit costs were estimated to have nearly doubled in the course of five years. A detailed subject-wise unit cost analysis was attempted by Garg (1981) for the Panjab University which highlighted a generally known fact that science departments (laboratory-based departments) had higher unit costs than others (lecture-based ones) and that the salary component was predominant in all departments. Ramanujam and others (1978) came to some revealing conclusions on the basis of their study of 63 engineering colleges and 85 polytechnics in the country. Per student expenditures varied markedly from college to college. However, in the case of polytechnics such marked variations were not observed. In the case of engineering education, IITs set an example to other colleges in respect of per student expenditures. It is in this context that a study of IITs by Chandrakant et al. (1975) assumes significance. This study examined the expenditure data of all the five IITs and revealed that as IIT grew in age it had the tendency to spend more on salaries and allowances than on library and other operating costs.

The study also came to the conclusion that new institutions operate under economies of scale and that it is cost effective to properly combine the postgraduate and undergraduate courses under each IIT, the existing combination being less than optimal.

Instead of measuring cost in money terms, Somaiah (1980) measured educational costs in terms of number of years spent per pupil for completing a given standard of schooling. This time unit measurement of cost, which the author terms as the 'effective cost', essentially refers more or less to the more familiarly known concepts like stagnation and wastage of education.

A general lacuna of the cost studies in education conducted so far is the inadequate treatment of the capital costs. There are also problems of joint cost allocation, the definition of the unit for cost calculation, treatment of expenditure on hostels run by the educational institutions, treatment of scholarships and other student assistance costs, etc.

### *Educational Finances*

The question of who should bear the cost of education brings us to the problem of educational finances. This question is linked with the major goals of socio-economic policy, viz., efficient allocation of resources and distributive justice. Education being a merit good, allocative efficiency requires that the cost of education be borne by both the recipients of education and recipients of the benefits from education and the society as a whole. In this sense, both private financing and public financing seem logically justifiable. Though the private-public finance mix may vary for different levels and types of education, the major burden of financing the first-level education should justifiably fall on the collectivity or the government in view of predominant social benefit component. These theoretical questions, having significant bearing, deserve more adequate attention from the researchers.

The problems of mobilizing private funds for education are different from those from the public sources. In the case of private sources, the major items are donations and fees. What are the determinants of the behaviour of donors? Why have the donations to education declined in importance over the period? How are the fees determined? If fees are treated as price of the service of education, then should this price be average cost based or marginal cost based? Can this price be used as an instrument of policy? In the case of public financing of education, should reliance be placed on tax financing or loan financing? In the case of tax financing, which

taxes must be relied upon — direct taxes or indirect taxes? In the case of loan financing, should the maturity pattern of loan financing be linked with the gestation period of education? What is the role of private trusts and private coaching classes in education? What should be the extent of subsidy for equal distribution of education? These are some of the questions which need to be probed in any rigorous study of educational finances. A number of official agencies and individual research workers have made significant contributions to this field.

Education Commission (1964-66) made a fairly exhaustive study of the problem of financing education, presenting a detailed analysis of different aspects of educational finances and developing estimates of educational expenditures for 1985-86. The Report of the Study Group on Resource Mobilization for Education of the Government of India, published by the Asian Institute of Educational Planning and Administration (1970), after examining the educational expenditures by sources, recommended the levy of betterment fee and the education cess in all States as additional resources for education. Misra (1959), Nair and Pillai (1962), Panchamukhi (1970), Shah (1969), Sinha (1967), Malaiya (1977) are some of the major studies in educational finance. The ICSSR and the UGC jointly sponsored a number of studies on university finance with reference to selected universities. Studies on finances of Karnataka University by Nanjundappa (1975), of Calcutta University by Mukherjee (1974), of Bombay University by Panchamukhi (1974), Jha (1974) for Patna, Mathew for Kerala (1974), University of Rajasthan by Nigam (1974) are some of these studies. While these studies examine the basic problems of the selected universities, the study by Panchamukhi (1974) attempted to develop a theoretical framework about each source of university finance before these principles were used for the analysis of the financial problems of the Bombay University. For example, this study developed a behavioural model of non-profit entities in educational finances like donors and charitable institutions. It also presented the basic principles involved in fee rate fixation and also a detailed analysis of the economics of public grants in aid to universities. In the background of the general principles of financial soundness of the university outlined, the financial condition of the universities in Maharashtra, and of Bombay University in particular, was examined in detail. Since the financial conditions of educational institutions differ from region to region and also according to the management, subject specialization, age, strength, level, etc. of the educational institution, it is necessary

to initiate micro-level studies on educational finances keeping the various differentiating factors in mind while selecting the educational institutions. There are a number of historical studies containing a wealth of information about the educational finances. Studies by Misra (1962, 1967) deserve a special mention here. Nurullah and Naiks (1945) study on history of Indian education also contains an analysis of the aggregative financial data. However, micro-level studies might provide a more useful approach to solving the problems of educational finances. Azad (1972) has presented an incisive analysis of the problems of higher educational finances using official data. He has also provided a comparative analysis of the government grant-in-aid system for higher education (1975).

Historical data on educational finances for all levels and types of education clearly bring out the increasingly predominant role that the public sector is playing in education over the years. Does this historical trend imply that education is emerging more as public goods than private goods? To what extent has the increasing role of public financing for the purpose of distributional considerations come in conflict with the objective of allocative efficiency? To what extent does public financing of education replace private financing? The behaviour of private financing was analysed in depth by Shah (1968). Panchamukhi (1967) brings out the complementary effect of public educational expenditures of private educational expenditures in India during the fifties and sixties.

Sharma (1975) investigated the role that the private enterprise played in the promotion of education in Punjab during 1854 and 1966. The private enterprise in education in Punjab, according to the author, was motivated mainly by the religious considerations of checking the progress of Christian missionaries in Punjab. During the post-Independence period the State's dominating role has weakened this motive force for the private enterprise. Rizvi (1960) viewed the State participation in education in India as desirable and considered it more as a socio-political necessity. The State participation, according to him, has to be strictly on an individual rather than institutional basis for catering to the economic needs of the society.

#### *Further Questions*

Thus, in the background of the number of questions that were posed at the outset in the context of educational finances, the number of studies completed so far

seems to be still less adequate in respect of their coverage of the major issues. Since, over the period, the educational sector is likely to face increasingly the pressures on its finances, a serious attention needs to be paid to these questions of educational finances. In the context of a planned economy, the institutional framework for the government financing of education also calls for a close look. Since non-plan expenditures on education form a major portion of total expenditures, the role of the Finance Commission, the Planning Commission and the various governmental agencies needs to be re-examined. Another area which is practically unexplored is the role of foreign financing of education. This question assumes a great significance at present in India when there is a serious foreign exchange shortage and when science education, requiring development of laboratory and equipment, involving large use of foreign exchange resources, needs to be expanded and deepened.

#### OTHER ISSUES

Other issues in the economics of education which have received some attention of researchers are: (i) the problems of internal efficiency of education — referring to wastage and stagnation and efficiency of utilization of resources by educational institutions and education and labour market, the problem of educated unemployment, and (ii) the economics of educational reforms.

Some of the studies in the field of wastage and stagnation were by Dandekar (1965), the Directorates of Education of Maharashtra and West Bengal, the Education Commission (1964-66), the Agricultural Economics Research Centre of Delhi University, Kamat and Deshmukh (1963), Panchamukhi (1975) and Ramanujam et al. (1979). Since wastage and stagnation rates at the school level in India, are very high, further regional studies need to be conducted in this field with a problem-solving approach. At higher education level, wastage and stagnation studies are very few. For the purpose of efficient resource use, wastage and stagnation problems at this level also need to be overcome. Hence studies in this field need to be initiated on a systematic basis for different regions and community groups and for male and female categories separately. More than quantification, the studies should focus on causes, consequences and remedies of the problem.

There is a general feeling that resource use by educational institutions is not very efficient and that there is a great scope for economy, by avoiding duplication of

physical facilities, equipment and library, etc. The Asian Institute of Educational Planning and Administration (1970), Lakdawala and Shah (1980) are the major contributors to this field. In a recent study Biswal (1980) reported that 62 per cent of schools were found not using school broadcasting programmes even though they had the equipment.

The problem of utilization of physical and financial resources in education is particularly an unexplored field in the economics of education. Studies on production function for different departments of the educational institution might provide insights into the scope for increased efficiency of resource use.

The link between education and labour market is studied in the context of educational planning through the manpower requirement approach. The problem of educated unemployment deserves a more specific attention from researchers. What are the major causes for the problem? Are rigid locational preferences and rigid job preferences the causes? Community specific, sex specific, region specific educated unemployment studies may prove to be more rewarding from the policy point of view. Pratap et al. (1972) conducted such a study for the educated unemployed tribals in Andhra Pradesh.

The study revealed that unemployment was partly due to rigid locational preferences.

Another area which is practically unexplored is the economics of educational reforms. To what extent economic factors were responsible for various educational reforms? What were the economic consequences of these reforms? Panchamukhi (1975) attempted such a study for the World Bank. Basic education, the multipurpose school, compulsory primary education, protective discrimination in education were the four reforms which were analysed from this point of view.

#### **Concluding Observations**

Research studies during the past two decades have raised many questions in the field of economics of education. Some of these questions, which are already indicated at the close of each section above, provide the agenda for future research. Planned and systematic research on some of the major issues, under the sponsorship of the NCERT, the UGC and the ICSSR, may provide studies with great policy significance. The economics of education, which is essentially a policy-oriented discipline, would then deserve the attention that it is now receiving by researchers in the country.

**ABSTRACTS: 359-393**

- 359.** BHATTACHARYA, A.K., *The Educational Pattern and the Employment Structure of Madhya Pradesh*, Ph. D. Eco., Sag. U., 1965

The objectives of the present study were: (i) to obtain statistics on the prevailing employment and unemployment among the graduates of Madhya Pradesh, (ii) to find out the nature of jobs held and the nature of jobs sought by graduates having different divisions or ranks, (iii) to know the type of jobs which most of the graduates were doing, (iv) to review the trends in the unemployed graduates of M.P., (v) to find out the economic condition of the graduates, (vi) to know the stability of the present jobs which the graduates were doing, (vii) to find out the type of work which most graduates were willing to undertake and the minimum salary acceptable to them, (viii) to review pre-war, war and post-war educational trends in M.P., (ix) to note the changing pattern of education at the primary, secondary and university stages and to find out its relation with the employment pattern of M.P., and (x) to know the extent of satisfaction and frustration in the present jobs.

On a stratified random basis, 1,670 graduates of Saugar University (between 1950-60), Vikram University (1958-60) and Jabalpur University (1958-60) were selected. A questionnaire was developed and mailed to the selected graduates along with a self addressed stamped envelope. In all, 656 graduates returned the questionnaire. Since all those who returned did not respond to all the items, in some cases the total number of responses on an item came down to a minimum of 485. Mean, standard deviation and standard error of the mean were calculated.

The records revealed: (i) There was a change in the educational pattern, more so the educational provisions in the State of M.P. before and after the Second World War, with a tremendous growth of education in all the sectors taking place during the post-Independence era. The changing occupational pattern of the people of M.P. from 1921 till the end of the Second World War from a predominantly agricultural labour to a mixed occupational group was obvious. (ii) In terms of employment, the study revealed that 73.1 per cent of the graduates were employed, 10.06 per cent were unemployed, 9.3 per cent did not seek employment, 1.06 per cent were partly employed and 6.2 per cent continued their studies. The study also revealed that 65.42 per cent

graduates took three months to secure appointment, 23.33 per cent took three to six months, 6.67 per cent took six to twelve months, 1.87 per cent took one to two years, and 2.71 per cent got jobs even before graduation. (iii) During the period of unemployment 77 per cent depended on family help for subsistence, 7.71 per cent on government, 2.71 per cent on past savings, 2.29 per cent on loans, 1.89 per cent on charity, and 7.91 per cent did not respond to the question. (iv) The percentage of graduates employed in teaching was 52.5, as executives 15.42, in clerical cadres 15.63, as technicians 11.46, in own business 25 and of other categories 2.71. (v) Suitable jobs had been obtained by 52.29 per cent graduates while for the rest jobs were unsuitable. (vi) The present income of more than 8 per cent of the graduates was between Rs. 150 and Rs. 350; only about 3 per cent received below Rs. 100 p.m. and another about 7 per cent earned above Rs. 350. (vii) The salary was considered adequate by 42.29 per cent. (viii) Among the unemployed graduates, 61.11 per cent did not have any engagement, the remaining were students. (ix) Among the employment-seekers, 60 per cent were without a job, 34.54 per cent sought a change in the job and 5.45 per cent sought a change to a full-time job from a part-time engagement. (x) Among the unemployed, 32.73 per cent sought clerical jobs, 12.73 per cent executive jobs, 28.18 per cent technical jobs, 24.54 per cent teaching jobs, and 1.89 per cent business occupation. (xi) Nearly 75 per cent of the unemployed expected a salary between Rs. 150 and Rs. 350. (xii) By 1960, more than 55 per cent of the unemployed had a graduate degree and more than 40 per cent a postgraduate degree. (xiii) As many as 88.87 per cent graduates were unwilling to undergo training for a job. (xiv) To get a degree for service 81.25 per cent graduates joined a university.

- 360.** BOSE, P.K., BANERJEE, P.K. and MUKHERJEE, S.P., *Cost of Elementary Education in West Bengal: a Sample Survey*, Dept. of Stat., Cal. U., 1975 (NCERT-financed)

The objective of the present investigation was to determine components and differentials of the unit cost of elementary education in West Bengal as also to study the trend as shown in the recent past.

Figures for recurring expenses on items like maintenance of physical facilities and teaching accessories but excepting teachers' salaries from the selected sample of schools and data on teachers' salary pertaining to all government financed (partly or wholly) elementary schools

were compiled. The average teacher cost was calculated for the four years from 1969-70 to 1972-73, while the average recurring cost per student on all other items was found out only for the two years, 1969-70 and 1973-74. In all, 1,375 primary and 213 junior basic schools were covered. A questionnaire was used which included items regarding recurring and non-recurring expenses on such heads as teachers, non-teaching staff, building, library, extra-curricular activities, teaching aids and accessories, establishment in relation to student enrolment, etc.

The study revealed that the average recurring cost per student on non-teacher items was not much and had not shown any remarkable increase over the years. The average total recurring expenditure per student in an elementary school in West Bengal was Rs. 57.08 and Rs. 51.75 among the schools in Calcutta and in the remaining schools, during 1969-70. It rose to Rs. 62.07 and Rs. 59.92, respectively, during 1972-73. The investment on elementary education in West Bengal was unsatisfactory. More investment was a dire necessity.

**361.** CHANDRAKANT, L.S. *et al.*, *Pattern of Expenditure and Per Student Cost in the Indian Institutes of Technology*, IAMR, 1975

The objectives of the study were: (i) to analyse the pattern of actual recurring expenditure of the Indian Institutes of Technology (IITs) relating to the year 1971-72, (ii) to repeat the earlier study based on data relating to actual expenditure for the year 1968-69, (iii) to attempt a comparative analysis of the patterns of actual recurring expenditure for the years 1968-69 and 1971-72, and (iv) to attempt an analysis of the determinants of cost structure through the estimation of long-run cost curves with a view to answering questions relating to future enrolment policies of the Indian Institutes of Technology.

The sample consisted of all the five IITs. The data were collected by using a questionnaire.

The findings were: (i) Analysis of expenditure by functions indicated that the institutional expenditure accounted for about 80 per cent of the total expenditure. Municipal expenditure accounted for about 16 per cent and the balance of expenditure was on university functions. (ii) There was a tendency to increase the expenditure on functions other than institutional at the cost of institutional functions. (iii) Analysis of expenditure by items indicated that a major portion of the expenditure, about 51 per cent, was accounted for by the training component. Within the training component, salaries and allowances of teaching staff accounted for a major

share of expenditure. (iv) A variant of the analysis of expenditure by items indicated that as an Institute grew in age, it spent relatively more on salaries and allowances. Further, it exhibited a tendency to decrease expenditure on library and other operating costs. (v) As usual, the training component accounted for a major portion of the expenditure per student. In the case of postgraduate classes, institutional expenditure per student was fairly close to total expenditure per student. (vi) Analysis of fixed costs indicated that they were higher for undergraduate training than for postgraduate classes. There was a definite advantage in the joint production of undergraduate and postgraduate outputs as it resulted in a considerable saving in fixed costs. (vii) The Institutes were all in the increasing returns to scale phase in all respects in the long run with adequate scope for expanding enrolment capacities in respect of both the levels of education. The expanding capacities were more among the younger institutions than among the older institutions. (viii) Long-run optimal size of enrolment did not exist for the IITs. (ix) Estimates of short-run optimal levels of enrolment in almost all the cases were higher than those based on institutional expenditure. (x) Estimates of the ratio between optimal enrolment in undergraduate and postgraduate classes were generally higher than the actuals.

**362.** DAVE, P.A., *A Comparative Study of Educational Development of the Four States of Indian Union (Orissa, Gujarat, Maharashtra, Bihar) in the Light of Economic Growth*, Ph.D. Edu., Guj. U., 1979

The main objectives of the investigation were: (i) to study all the levels of educational development in the four States of Gujarat, Maharashtra, Orissa and Bihar between 1960-61 and 1970-71, (ii) to attempt to measure mathematically the gap between the advanced States and backward States, (iii) to study the levels of economic development in these States, (iv) to study the impact of economic growth on educational development, and (v) to study the disparities at district levels in the field of educational development and economic development.

Two relatively educationally advanced States, namely, Gujarat and Maharashtra, and two relatively educationally backward States, namely, Orissa and Bihar, were brought under the study. The study of the levels of educational development and economic growth during the period from 1960-61 to 1970-71 was made by the cross-section method. State-level comparisons were

made with the help of rank correlations. The percentage distribution method based on the proportion of the given population in the different States was used to study educational inequality. District-level comparisons of economic and educational development were made with the help of appropriate weights. Various reports and documents of the Indian Union and State governments were the main sources of data for the study.

The major findings of the study were: (i) Mere number of primary or secondary schools was not an effective force as far as the spread of education was concerned. (ii) At the higher level of education, a direct relation between the number of colleges and enrolment was observed. (iii) The control of the local bodies at the elementary level of education was found to have greater impact on the spread of primary education as compared to the control of private bodies at this level. (iv) The contribution of private bodies at the secondary level of education was found very useful in all the four States. (v) At the elementary level, a close affinity existed between the enrolment of girl students and the development of education. However, the same degree of relationship was not evident at the secondary and higher levels. (vi) No direct relationship was found between the spread of female literacy and the enrolment of girls on the one hand and the percentage of lady teachers, on the other. (vii) Density of population was not a contributory factor to the educational development in any of the four States. (viii) The extent of rural population was not a handicap at the elementary level of education. But, there was an inverse relationship between the extent of rural population and educational development at secondary and higher levels. (ix) Urbanization was an influential factor for the spread of secondary and higher education. (x) The rate of literacy was higher in industrial and service towns than in the primary activity towns. (xi) A direct relation was seen between elementary education and literacy, while no such relationship was there at the secondary and higher levels. (xii) Social backwardness was not a handicap at the elementary level. However, an inverse relationship could be observed between the extent of backward population and the spread of education at the post-primary level. (xiii) A State with higher per capita income spent more per capita on education as compared to the other States. (xiv) The percentage of expenditure at the elementary level of education was higher in a State with a higher percentage of income from the agricultural sector. (xv) A higher percentage of expenditure on the secondary and higher levels of education was evident in those States where the percentage of income from industrial and tertiary sectors was higher. (xvi) A clear re-

lationship existed between the distribution of the State income and the pattern of expenditure on education. (xvii) A noticeably higher growth of education at the secondary and higher levels was found in the States where a greater number of workers were employed in industrial and tertiary sectors.

**363. DAVID, V.C.,** *Human Resources Planning in Relation to Employment and Education in Madhya Pradesh*, Ph.D. Eco., Indore U., 1978

The aim of the investigation was to study human resource planning in relation to employment and education in Madhya Pradesh. It was a value-oriented study of human resource development in the context of Madhya Pradesh.

Data were collected from the census reports and official records. The measurement of human resource development was limited by the availability of statistical information. The graphic structure was taken as the basis for making a depth analysis of the role of education in the utilization of human resources in the modern and traditional sectors of the economy.

The findings were: (i) Human resource development was found to depend mainly on the general growth of employment and education in the right direction. (ii) Unemployment and poverty were closely related and measured the gap between human resources and other productive resources. (iii) Educated persons sought white-collar and professional jobs in the modern sector, which were particularly in short supply. (iv) The educational system and its expansion in Madhya Pradesh clearly favoured the doctrine of industrialization and urbanization and it was considered a fundamental right. (v) The government-owned industries were practising on-the-job training programme which should be properly extended to other industries. (vi) Increase in population was one of the major constraints of human resource development in Madhya Pradesh as it affected adversely the employment and education relationship. (vii) The rural unemployment was comparatively larger than the urban unemployment. (viii) The major reasons of expansion of education were modern sector jobs, direct linking of modern sector jobs with the educational qualifications, education as a fundamental human right, increase in the private demand, direct investment by the government and private agencies in education. (ix) The linkage of occupations in the modern sector with the higher educational qualifications had resulted in a sort of devaluation of vocational and technical education,



especially at the secondary level. (x) It was difficult to combine academic and vocational education for rural human resource development because of lack of trained teachers, paucity of relevant courses and literature, inflexibility of present courses and financial constraints.

**\*364.** DEY, B., *Effect of Education on Indian Agriculture*, National Income Research Unit, ISI, Calcutta

The main aim of the study was to assess the contribution of education to agricultural development. Data of 39 countries distributed all over the continents and of 19 States of the Indian Union on literacy together with per capita income, agricultural yield and other relevant indicators were analysed to see both direct and indirect influences of education on agricultural activities.

The findings of the study were: (i) There was a high correlation between education and agricultural development in the countries under study. Developed countries showed universal or near-universal literacy rates where agricultural yield rates were also far above those of the underdeveloped countries having very disappointing rates of literacy. (ii) In India, no such direct influence of education among cultivators or on agriculture was noticed. (iii) The level of literacy and agricultural yield in India were still so low that it was very difficult to assess any causal relationship between the two. (iv) In recent years, however, some microscopic improvement in the consumption of chemical fertilizers and use of implements in agriculture among educated cultivators was noticed. (v) Wretched pecuniary condition of the cultivators seemed to be the principal hindrance in modernizing agriculture in this country.

**365.** GARG, V.P., *Cost Analysis of the University of Panjab 1950-51 to 1974-75*, Ph.D. Edu., Pan. U., 1981

The major objectives of the study were: (i) to examine the trends of expenditure by objects and with respect to the functions of the university, (ii) to analyse the trends in the level, variation and subsidization of unit costs, (iii) to examine the applicability of cost-functions in relation to the optimum use of the resource-inputs, and (iv) to determine the level of private costs by types of courses.

It was a case study aiming at an *ex post facto* cost analysis of the economic and educational processes of internal organization of the Panjab University from the

years 1950-51 to 1974-75 in general, and teaching departments and affiliated colleges in particular, which affect allocative efficiency of resource-inputs. This was realized through time and cross-sectional study of both institutional costs and private costs. The cost factor was examined by a systematic attempt which covered various aspects. For determining the private costs, a student's questionnaire was developed by the investigator. The sample consisted of 382 students, 279 from affiliated colleges and 103 from teaching departments. The sources of other data were the annual statistical surveys of the Ministry of Education, Government of India, the annual reports of the Panjab University, the Panjab University Calendar and the prospectus of affiliated colleges.

The major findings of the study were: (i) The level and composition of the university expenditure during these years showed an upward trend with recurrent expenditure increasing by 10.04 per cent and capital expenditure by 1.77 per cent per year. (ii) Till 1969 the general administration had the largest allocations in recurrent expenditure, followed by a shift in favour of teaching, municipal services, students' welfare, and general welfare functions of the university. (iii) The university expenditure was mainly affected by inflation, displacement and development. (iv) The cost-analysis of thirty teaching departments revealed that both recurrent and capital costs differed in terms of absolute level and their composition. Unit costs of laboratory-based departments were more than those of class-lecture-based departments. (v) The cost component of salaries was predominant in all departments. (vi) The level of capital costs was higher in the majority of the science departments and also in the departments of commerce and management, physical education, law, journalism and geography where investment in equipment and books was proportionately more as compared to the enrolment. (vii) The investigation of the dynamics of internal organization, in relation to enrolment, number of teachers and variations in unit costs showed that it was relatively consistent in the departments of botany, chemistry, zoology, chemical engineering, law and English whereas the departments of anthropology, biochemistry, education, history, political science and Sanskrit were relatively inconsistent in their internal organization. (viii) Some departments were making optimal use of their resources in terms of enrolment and teachers besides other factors. Some departments were found to be undersized, and some had more enrolment as compared to the number of the teaching staff. (ix) Subsidization of unit costs from public funds had increased over the years except for a few departments. (x)

The rate of subsidization of maintenance expenditure of hostels per resident increased from Rs. 0.33 in 1966-67 to Rs. 84.44 in 1974-75. (xi) The levels of hostel expenses and of fee rates and other charges were higher in private colleges charging more than the prescribed limit. (xii) The economic status of the students from teaching departments was found to be better than that of the affiliated colleges. (xiii) Demand for higher education was more from the people belonging to administrative and professional services, farming and business, respectively.

**366. GEORGE, P.P.,** *Economics of Higher Education in Tamil Nadu*, Ph.D. Eco., MSU, 1982

The objectives of the study were : (i) to evaluate the economic factors that influenced higher education, (ii) to find out the impact of economic factors on the choice of various courses by the students, and (iii) to determine the private and social costs of acquiring higher education.

The study was based on an analysis of data available on higher education in India, in general, and in Tamil Nadu, in particular. The undergraduates from different faculties were selected systematically from seventeen colleges. Data were collected through a questionnaire, from published materials, and from government, semi-government and private sources. Data were collected with respect to the growth of enrolment and educational expenditure on higher education from 1960-61 to 1975-76. The data were analyzed by percentages, correlation coefficient, factor cost, state's net domestic product, expenditure on education, benefit cost ratio, etc.

The major findings of the study were: (i) There was no correlation between the cost per pupil and the enrolment at primary and university general education stages. (ii) There had been an increase in Government's share of total expenditure on education at all stages except at the primary stage. (iii) Females, Scheduled Castes and Scheduled Tribes were still lagging behind at every stage of education as shown by the coefficient of equality. (iv) Considering the combined annual total expenditure of day scholars and hostel residents, the private expenditure on professional education exceeded that of general education by 71 per cent and 49 per cent respectively. (v) The relative cost of higher education in Tamil Nadu with reference to the per capita expenditure on higher education and the per capita income of the State came to 8:1 (upper estimate) and 7:1 (lower estimate) for general education and 15:1 (upper estimate) and 14:1 (lower es-

timate) for professional education. (vi) The urban-based families benefited most from higher education.

**367. GOGATE, S.B.,** *Unit Cost of Higher Education for Arts, Science and Commerce Colleges in Maharashtra (1973-74 to 1977-78)*, Indian Institute of Education, Pune, 1979

The objective of the study was to find out the cost per student per year for education in the arts, commerce and science colleges in Maharashtra.

The State had 167 arts and commerce colleges, 67 arts and science and 99 arts, science and commerce colleges. These were all multi-faculty colleges. In addition, there were 31 commerce and 21 science colleges. In all, there were 385 colleges. Of these colleges, about 10 per cent were included in the sample. It was a stratified random sample. The information collected was for the years 1973-74, 1976-77 and 1977-78. A few colleges could not supply information for all the years. The sources for collecting data were primarily the records in the office of the Directorate of Higher Education.

The major observations and findings were: (i) Colleges, generally, received funds by way of fees, grants, donations, and receipts on miscellaneous items. Out of the fees, that received for obtaining eligibility certificate was credited to the university. Receipt on account of other fees was considered direct receipt of colleges by the Government. (ii) The sources for grants were the State Government and the UGC. (iii) The items of expenditure, generally, were salaries to the teaching and non-teaching staff, rent on the building, furniture, equipment, library, laboratory, gymkhana, and general maintenance. (iv) Till 31 March 1979, the grant-in-aid formula to colleges was deficit-oriented and was as follows: Grant = 50% deficit + 5% or 10% admissible expenditure (for student strength of above 1,000 or less than 1,000), + up to 33.3% of dearness allowance provided the deficit was not covered by 50% + 5% or 10% of admissible expenditure. (v) The average cost per student in single-faculty science college was the maximum and that in the single-faculty commerce college was the minimum. (vi) Increase in the average cost per student from 1973-74 to 1977-78 had been about two times in all categories of colleges except single faculty commerce colleges where the increase had been one and a half times. (vii) Expenditure on staff emoluments and essential expenditure was 75 per cent of the total cost during the previous five years. (viii) By and large, colleges had to spend about 25 per cent on other items but as per Gov-

ernment rules this expenditure should be limited to 12 to 18 per cent of the expenditure on salaries. (ix) Average cost per student in a college with a strength of less than 200 was Rs. 1009.21 in 1973-74 and Rs. 2169.66 in 1977-78. For a college with student strength of more than 2,000, it was Rs. 458.40 in 1973-74 and Rs. 791.64 during 1977-78. Larger colleges were more economical than smaller ones. (x) During 1973-74, the per student expenditure in a college with arts, science and commerce faculties was Rs. 486.35 and the same in 1977-78 was Rs. 1452.58. Corresponding figures for a science college were Rs. 1016.92 in 1973-74 and 1539.18 in 1977-78. For a commerce college, the figures were Rs. 373.07 during 1973-74 and Rs. 481.28 during 1977-78.

**368.** GUPTA, S.L., *A Study of Private Costs of Schooling Girls at the Elementary Stage*, NCERT, New Delhi, 1982

The main objectives of the study were: (i) to find out the nature and details of the private costs of schooling girls at the elementary stage, (ii) to find out overall private costs of schooling girls at the elementary stage, and (iii) to compare the costs incurred in Classes I to VIII in schools under different managements.

The sample for the study consisted of 800 girls studying in Classes I to VIII of four different schools. One school each was selected randomly from the following four categories: (a) schools located in rural areas and under the management of zilla parishad; (b) schools located in urban areas and managed by State government/zilla parishad; (c) schools located in industrial towns and managed by industrial organizations; and (d) schools located in crowded urban areas and managed by recognized private trusts. Two hundred girls were selected randomly from each of these four schools taking twenty-five children each from Classes I to VIII. Data were collected from the selected girls using a specially designed questionnaire-cum-interview schedule.

The major findings of the study were: (i) Girls studying in Standards I to VIII under different managements were required to pay different amounts of fees and funds annually. The average cost per pupil in Standards I to VIII ranged between Rs. 19.19 and Rs. 33.29. (ii) Total cost of books and supplementary reading materials per pupil in different standards also differed from school to school. For example, in standard I the minimum cost per pupil was Rs. 1-30 and the maximum was Rs. 15-50; for Standard VIII the corresponding figures were Rs. 17-70 and Rs. 27-25, respectively. Average cost per pupil, tak-

ing all the ratios and all the students together, was Rs. 22-87. (iii) Average cost per pupil for notebooks used at Standard I ranged from Rs. 2 to Rs. 52-50; at Standard VIII the figures ranged from Rs. 33-75 to Rs. 58-10. (iv) Total cost per pupil on practical work varied from class to class in the same school and also from school to school for the same class. For Standard I it ranged between Rs. 10.00 and Rs. 18-60 while for Standard VIII the range was from Rs. 78.00 to Rs. 162-50. The average cost per pupil on practical work from Standard I to Standard VIII ranged between Rs. 9-19 and Rs. 98-73. (v) The total annual cost for pupil on uniforms/dresses varied from school to school for the same class and from class to class within the same school. The average cost per pupil on uniform/dresses for standards I to VIII ranged between Rs. 92-50 and Rs. 151-25. (vi) Overall private cost of schooling a girl in Standard I ranged between Rs. 92-50 and Rs. 216-50, for Standard II it ranged between Rs. 94.50 and Rs. 237-40, for Standard III it was between Rs. 112-65 and Rs. 281.00, for Standard IV it varied from Rs. 109-33 to Rs. 315-50, for Standard V it ranged between Rs. 117-30 and Rs. 305-65, for Standard VI it ranged between Rs. 280-30 and Rs. 436.00, for Standard VII it was between Rs. 286-70 and Rs. 447-20, and for Standard VIII it ranged between Rs. 295-20 and Rs. 438-15 per pupil. The average overall private cost per pupil for Standard I to Standard VIII ranged between Rs. 151.00 and Rs. 352-98.

**369.** JAFRI, S.A., *Projected Requirements of Educated Manpower for the Economic Development of Madhya Pradesh*, Ph.D. Eco., Sag. U., 1978

The objectives of the study were: (i) to assess the manpower situation in the industries, (ii) to estimate the need for educated manpower in future, and (iii) to suggest guidelines to channelize educated manpower for employment.

Data pertaining to industrial output and employment were collected from the offices of the Directorate-General of Manpower Planning, the Central Statistical Organization, the Directorate of Employment and Training, and the Planning Commission. Data were collected from thirty-three industries in Madhya Pradesh.

The study revealed: (i) More than 80 per cent of the total number of workers were employed in clerical, production processes and other related occupations and a very small proportion was employed in other categories. (ii) Highly educated persons such as scientists, engineers, technicians, and doctors were employed in

technologically advanced industries such as heavy electricals, iron and steel and so on. (iii) Certain industries like ginning and pressing, sugar and *gur*, grain mill products, etc., employed less qualified people. (iv) There was under-utilization of educated manpower between and within the industries. (v) Projections were made for the requirement of manpower at various educational levels, namely, primary, secondary, graduate, post-graduate, etc., inclusive of general education and training, during 1983-84, in comparison to 1970-71 and 1980-81 for each industry, separately and also for each occupational category within each industry.

**370. JAIN, K.P.,** *A Study of Regional Imbalances in Education in India*, Ph.D. Edu., BHU, 1981

The study was undertaken to review the regional imbalances in the field of education in India. For this purpose, a number of indicators were chosen, viz., enrolment, expenditure, average annual cost per pupil, teacher-pupil ratio, trained teachers, etc., for a period of ten years from 1966-67 to 1975-76. For finding out regional imbalances in the country on the basis of these indicators at all levels of education, seventeen States (Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal) were taken up for study.

The study was based on various sources of data which were classified into three categories: data based on population figures and literacy, data for income per capita and statistics like educational facilities provided at primary, middle, high (secondary), higher secondary education, expenditure on education at different levels of education, by the States, teacher-pupil ratio, average annual cost per pupil, and percentage of trained teachers at different levels. To overcome the difficulty of wide ranging fluctuations in the values of educational indicators, ranks were assigned to them. The first rank was assigned to the highest-scoring State and the seventeenth rank was assigned to the lowest-scoring State. Composite ranks were calculated to adjudge the educational attainment of the States for the decade 1966-76. On the basis of these composite ranks the States were categorized, viz., ranks 1 to 4, category 1 — advanced States; ranks 5 to 8, category 2 — moderately advanced States; ranks 9 to 12, category 3 — backward States; and ranks 13 to 17, category 4 — most backward States. Kendall's coefficient of concordance had been used as a mea-

sure of relation among several rankings of the various States.

The major findings were: (i) Haryana, Jammu and Kashmir, Madhya Pradesh, Bihar, and Gujarat had poor enrolment at the primary level. (ii) Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan, and Bihar were backward in percentage enrolment at the middle, high and higher secondary levels. (iii) Uttar Pradesh was quite advanced in the field of higher education. (iv) The teacher-pupil ratio showed the availability of teachers and in this respect Assam, Andhra Pradesh, Haryana, Karnataka, and Uttar Pradesh were having less number of teachers at the primary level. (v) In spite of much expenditure by the State governments of Orissa, Assam, Andhra Pradesh, Rajasthan, and Bihar, adequate facilities for primary schools were not available. (vi) The average annual cost per pupil was quite high in Rajasthan. Yet it was far behind in education in comparison to other States. (vii) Bihar was the most backward State at all levels of education. (viii) On the basis of combined composite ranks of all levels for the decade 1966-76, Kerala, Tamil Nadu, Punjab, Himachal Pradesh, and Maharashtra were the leading States in educational advancement. (ix) Bihar, West Bengal, Karnataka, Orissa and Madhya Pradesh were the most backward States in educational advancement. (x) Population density was inversely proportionate to the educational development and literacy. (xi) Per capita income was not very much related to educational development.

**371. KUMAR, P.,** *A Study of Socio-economic Factors in Educational Demand: a Case Study of Allahabad City*, Ph.D. Eco., All. U., 1980

The study aimed at investigating: (i) the socio-economic background of high school students, (ii) the relationship and effect, if any, of the socio-economic factors on the demand for higher education and on the educational level sought, and (iii) the factors, other than social and economic, which had a bearing on effective educational demand.

The sample consisted of 772 students — 474 boys and 298 girls — from different schools of Allahabad district. Data were collected through personal meetings with the respondents.

The following were some of the findings: (i) More than 84 per cent students demanded higher education. The proportion of girls demanding higher education was more than that of boys. (ii) The proportion of students who were inclined more towards employment was less

than of those who were expected to demand higher education. A high proportion of students were not satisfied with their course of study and were inclined to change it. (iii) Drop-out rate after high school was not high; it was found to be the highest among commerce students and the least among science students. (iv) Due to the inclination towards employment at an early age, vaishya boys and girls did not feel satisfied with their respective course of study as compared to brahmin and kshatriya boys and girls. (v) The highest drop-out rate was in the literary group. (vi) With the increase in their father's education, the inclination of girls in science and literary groups towards higher studies increased. (vii) Nearly 60 per cent boys and girls of literary group whose fathers were in better jobs were expected to demand higher education. (viii) With an increase in the father's income beyond a particular level the charm of getting employment at an early age was lost. (ix) All the Scheduled Caste and Scheduled Tribe girls were expected to demand graduate-level education. (x) Nearly 88 per cent girls whose fathers had high school education or above intended to seek professional education. (xi) There were no drop-outs when the father's income rose above Rs. 750 per month. (xii) As many as 44 per cent students receiving economic assistance for studies could not have continued their studies without it. (xiii) The students of Classes IX and X preferred English, Civics and Sanskrit to other subjects. (xiv) The maximum number of girls sought admission in the science group. (xv) The choice of the group of subjects was not affected by marital status. (xvi) The bases for the selection of group of subjects were a high percentage of marks in the earlier class a special interest in the subject and a necessity for higher education. The choice of employment, better placement and high income along with an effective teaching also influenced the choice of subjects. (xvii) The percentage of high school students who intended to go into professional, technical and related occupations was 37.2. (xviii) The choice of occupation of nearly two-thirds of the students was not influenced by the employment perspective, while that of one-fifth of the students influenced by future opportunities; 72 per cent students selected their occupations themselves. (xix) Two-thirds of the students were of the opinion that professional occupations were the best. (xx) The reasons given for getting higher education were: attainment of knowledge, character-building and helpfulness in the eradication of social and traditional evils.

372. MAITRA, T., *A Repeat Enquiry on the Distribu-*

*tion of Public Expenditure on Social Services in West Bengal*, ISI, Calcutta, 1981

The present survey was undertaken as a repeat survey for making a temporal comparison between the present situation and the situation that prevailed about ten years ago in terms of the distribution of benefits of the two important public services, viz., education and health, among the various sections of the population.

In the present survey the scope of subject coverage was extended from education and public services, covered in the earlier survey, to other directions. While examining the distribution of public services the number of students, etc., was used as measures of such services. The final sample included 11,208 and 8,142 persons in rural and urban sectors, respectively. Information was collected by interviewing the heads of 1,927 rural and 1,843 urban sample households. Data regarding the amount of tuition and other fees paid during the last one year from the date of survey and the amount of fees exempted, scholarship and any other cash help or the value of books, tiffin or any other thing that the students might have received during the same period, were collected.

The findings of the study were: (i) There was some improvement in real consumption expenditure during the period between the two surveys in both rural and urban areas. However, the improvement was more for richer sections, increasing inequality of the distribution. (ii) Total number of students as well as percentage of enrolment appeared to have increased at all levels. The distribution of free-studentship generally favoured the poorer section though there was considerable inequality in the distribution of students above the primary level. The distribution of direct subsidies like scholarship had considerable inequality except at the primary level for urban areas where the inequality was reversed in favour of the poor. (iii) There was a considerable drop-out half-way through the course at all levels. Wastage in terms of repeating the same year of the school was also considerable. (iv) Public distribution seemed to be satisfactory for the urban areas.

373. NAIR, P.K., *Education in Kerala and the Development of Human Resource*, Ph.D. Edu., Ker. U., 1980

The major purpose of the study was to determine whether the existing system of education in Kerala promoted the development of human resources. The impor-

tant objectives were: (i) to assess the opinions of teachers who imparted education, the students who formed the recipients and the industrialists who formed the real employers, (ii) to collect the opinions of teachers regarding all aspects of the present system of education in relation to human resources development, (iii) to determine whether the student population was satisfied with the existing system, and (iv) to collect the opinions of great educationists who are not teachers but contribute much in shaping educational policies and to collect the views of top-ranking industrialists regarding the nature of syllabus and methodology so as to reduce educated unemployment.

The investigation was carried out on a sample of 318 teachers, 45 educationists other than teachers, 45 industrialists and 100 student leaders, using a questionnaire and personal interviews.

The major conclusions of the study were: (i) Self-employment, technical skill and the mobilization of one's potential must be the important objectives of education. (ii) The school course should be a two-tier system of academic and technical course. (iii) The provision of morning and evening classes was necessary in order that school time did not deprive the pupils of their evening hours. (iv) The medium of instruction should be the mother tongue. (v) Primary, middle and high school stages should be three terminals and diversified courses be provided at each terminal. The courses should fall into three major groups, viz., commercial, agricultural and engineering subjects. (vi) Students should go off as wage earners or as per necessity. (vii) The school course must be linked to local crafts and industries and students should be sent to local trade centres once in a week. (viii) The system of determining the performance by a final examination be given up and the different types of skills and the all-round achievement be evaluated throughout the year.

**374. NAIR, P.R.G.,** *Education and Economic Development in Kerala*, Ph.D. Eco., Ker. U., 1978 (a)

The purpose of the study was to understand the socio-economic factors that acted favourably on the process of educational development and the direction of the relationship. The important objectives were: (i) to identify and describe the historical factors underlying the process of educational development in Kerala, and (ii) to compare the structural aspects of the educational system of Kerala with that of other States.

A historical survey of the progress of education in

Kerala was made. A methodology for calculating effective costs of education at the elementary stage was developed and used for comparison. The statistical data for the study were obtained from the Ministry of Education, New Delhi, and the office of the Director of Public Instruction, Trivandrum.

The main conclusions of the study were: (i) The existence of a favourable socio-economic environment contributed to the progress of education in Trivandrum, particularly the expansion of primary education. (ii) Economic backwardness by itself need not hinder the progress of education. (iii) Disparities in the distribution of educational opportunities were low for Kerala. (iv) Kerala differed from other States in not laying undue emphasis on the expansion of higher education; instead it continued to lay emphasis on primary education. (v) The benefits of educational development were felt in Kerala in terms of demographic transition, with birth and death rates showing very low values as compared to those in the rest of the country. (vi) Educational expansion and the consequent social, cultural and political development saw no increase in employment opportunities or in sectorial distribution of the population educated. (vii) Educational development by itself played only a limited role as a catalyst for promoting economic equality, as educational expansion did not result in an increase in employment opportunities or a decrease in the differences in educational attainments among various socio-economic groups.

**375. NAIR, P.R.G.,** *Education and Economic Change in Kerala*, Centre for Development Studies, Trivandrum, 1978 (b) (ICSSR-financed)

The objectives of the study were: (i) to identify the historical factors underlying the process of educational development in Kerala and to highlight the distinctive features of this process, (ii) to compare the structural aspects of the educational system in Kerala with those of the educational systems elsewhere in the country, (iii) to understand the socio-economic factors that act favourably on the process of educational development and the direction along which such development takes place, and (iv) to develop a methodology for calculating effective cost of education at the elementary stage.

Data were collected from the Ministry of Education, Government of India, New Delhi, and the office of the Director of Public Instruction, Kerala. Mean, percentage and correlation co-efficient were used to analyse the data.

The study revealed the following: (i) The process of

rapid educational growth in Kerala began first in Travancore, then in Cochin, and very recently in Malabar. However, even in Malabar the literacy rate was higher than that in the rest of India during the British period. (ii) The success of the attempts to spread primary education depended, to a great extent, on the large number of indigenous schools already in existence. Such schools were either taken over directly by the government or modernized and supported by grant-in-aid. (iii) The existence of a favourable socio-economic environment was mainly responsible for the large-scale support the process of development of primary education received spontaneously from almost all sections of the population. (iv) Educational opportunities in Kerala were not, however, distributed evenly among the population. The backward sections were invariably overtaken by the better-off sections of the society in their race for educational advancement. (v) However, inequalities in the distribution of educational opportunities were much lower in Kerala than those elsewhere. (vi) The average level of educational attainment of even those pupils who did not complete elementary education was found to be significantly higher in Kerala than in other parts of the country. (vii) The emergence of cultural organizations with local, voluntary and popular base helped in fostering the positive results of social progress and the gains of literacy among the masses. (viii) Both the death rate and the birth rate showed highly significant negative correlation with the literacy rates in the different districts of the State. (ix) Educational expansion and social, cultural and political developments that followed it, did not lead to any significant change in the rate of participation in economic activities by the population, nor did they bring about major changes in the sectoral distribution of the population. The degree of occupational mobility increased to a limited extent.

376. PANCHAMUKHI, P.R., *Devaluation of Education: a Quantitative Analysis*, Unit in Eco. of Edu., Bom. U., 1974

The basic objective of the study was to examine the implication of expansionism in education on devaluation of education. An attempt was made to quantify the degree and pattern of devaluation, especially in higher education.

To quantify the degree of devaluation of education, it was assumed that preferences and actions of employers pertaining to educated individuals for different jobs were revealed from the vacancy registers published in

leading newspapers. So, from the *Times of India* details of job vacancies, such as job specifications, educational requirements, experience desired, training needs, salary admissible, etc., were taken for three years, viz., 1954, 1964 and 1974 for 112, 379 and 319 jobs, respectively. Data for each year were grouped according to identical jobs. A comparison of these identical jobs was made with reference to above-stated job characteristics. To know which job categories experienced more devaluation, twenty-eight homogeneous job categories were compared at three points of time.

The main findings of the study were : (i) For all jobs taken together there was a low degree of overvaluation measured in terms of average years of schooling and experience during the period 1954-64. But there was clearly a marked devaluation for the same during 1964-74. (ii) Fewer job categories experienced devaluation for the same during 1954-64, but a maximum number of jobs revealed educational devaluation during 1964-74. (iii) There was a high degree of correlation between years of experience desired and years of schooling expected for each job. The coefficients of correlation and coefficients of regression increased over the years 1954-74 confirming the devaluation of education. (iv) It was difficult to identify which particular educational categories experienced more devaluation. However, on the additional information obtained from the vacancy register it was estimated that maximum devaluation was felt by the educational categories, which experienced more expansion, viz., arts, science and commerce graduates, engineering diploma-holders, etc. No categorical answer could be given to the question of exploitation of education unless estimates of indices of academic excellence for each type of education were drawn up.

377. PANCHAMUKHI, P.R., *Inequalities in Education*, Centre for Multi-Disciplinary Research, Dharwar, 1981 (Government of Karnataka financed)

The study centred upon the problem of equality in educational opportunities. The basic objective of the study was to examine the extent to which the policies of expansion had achieved the aim of equitable distribution of education.

A sample survey was conducted with nearly one thousand and fifty students from selected primary and secondary schools of an educationally advanced city, viz., Dharwar. The scope of the enquiry was restricted to pre-college education only covering nearly 12 per cent

students from high schools and about 7 per cent students from primary schools of a single town. The investigation aimed at collecting detailed information on the dual aspects of the problem, namely, distribution of schooling facilities and participation in these educational facilities. With this in view, details with respect to students' characteristics, their socio-economic background, their other neighbourhood characteristics, and school characteristics were obtained. Bivariate analysis based on percentages and averages, was done to know general trends and to draw broad inferences. Multivariate analysis, consisting mainly of regression analysis, was undertaken to quantify the degree of association between various students' characteristics. Forty-seven variants of combination of different explanatory factors of performance were analysed, using least square techniques. Mainly linear models were used in the analysis, as the results of the non-linear models were coinciding with those of the linear.

The main conclusions of the study were: (i) Even in an educationally advanced environment in a city like Dharwar, participation in education was severely constrained by socio-economic environment of students. (ii) Not scholarship but parents' income had a significant positive influence on the performance of students. (iii) Home study rather than study in the hostel contributed positively to students' performance. (iv) Even the performance of friends had a significant positive influence on performance. (v) When there were extreme socio-economic inequalities, policies for only equalization of education were destined to be least successful, because the access to and participation in education was a function of several socio-economic factors, and many of them could not be controlled by an educational policy. (vi) The study reinforced the argument that extension of educational facilities did not necessarily ensure distributive justice in respect of use of the educational facilities.

378. PANDEY, N.P., *Cost Benefit Analysis of Education — a Case Study of Nepal*, Ph.D. Eco., Bom. U., 1976

The study attempted to evaluate the precise contribution of education to the development of Nepal. The scope of the study was limited to higher education only. The specific questions that the study attempted to answer were: (i) What was the most profitable level of higher education both from private and social point of view? (ii) Was professional higher education profitable in comparison with general higher education? (iii)

Should higher level of higher education be controlled by the Government? (iv) What were the indirect benefits of higher education in Nepal? The study was an extension of the general tools of cost-benefit analysis to assess the *profitability* of investment in higher education in Nepal.

The rate of return analysis being the main method adopted, the investigator calculated rates of return to different types and levels of higher education in Nepal. For this both private and social adjusted rates of return were compounded with the alternative procedure for seven types and levels of higher education. Similarly, the adjusted rates of return were also calculated following the same method, though, for three levels of higher education only. In order to construct adjusted age earnings profiles, earnings were standardized by adjusting other socio-economic variables with the method of multiple regression analysis. For this five independent variables, viz., age, sex, origin (urban or rural), nature of service and experience, were taken into consideration to isolate the effect of educational earnings. Besides the rates of return, the present values of life-time earnings differentials were also calculated to evaluate the different levels of higher education through B-C criterion. Data used in the study were obtained from a field survey conducted in two phases in Kathmandu City in 1974-75. The primary data collected were supplemented by some government publications and records of some educational institutions.

The main findings of the study were: (i) The cost of higher education in Nepal was heavily subsidized in comparison with the cost in India and other countries. Professional education, however, was an exception. (ii) Due to inadequacy of professional education facilities like engineering and medical, many students had to go abroad for these courses. Hence the private costs of these courses in the total social costs were much higher than those of public costs. (iii) The earnings pattern of educated people in Nepal varied from sector to sector. Hence there was no standard earnings pattern set for the educated population with varying academic qualifications. However, the general salary structure of Nepal for the educated was more or less akin to the earnings pattern found in most of the developing countries. (iv) All age earnings profiles (social and private) held the general characteristics with a few exceptions. (v) The effect of education on the earnings of the educated in Nepal increased as one moved to higher and higher levels of education. The effect on earnings of general undergraduates was estimated to be 23.58 per cent only and it was 38.53 per cent and 82.11 per cent for general graduates and general postgraduates, respectively. It showed that



socio-economic variables other than education had an influence in determining the earnings of the educated.

**379. RAJU, K.N.,** *The Influence of Education on Farm Efficiency*, NIRD, Hyderabad, 1975

The objectives of the study were to find out: (i) the influence of education on farm efficiency and (ii) the impact of education on the use of modern agricultural practices such as fertilizers, HYV seeds, tractor, human labour input and cropping pattern forms.

The sample of the study consisted of thirty-three illiterate farmers and thirty-three educated farmers possessing land holdings of different sizes in the delta area of West Godavari district, Andhra Pradesh. Both illiterate and educated farmers operating holdings of equal sizes ranging from less than 1.0 acre to 9.99 acres were selected. Farm efficiency was measured in terms of farm business, income per unit of land, human labour, fertilizer, tractor input and family labour.

The following findings emerged from the study: (i) The educated farmers used 4.7 kg. NPK fertilizers, 102 man-days of human labour, and 2.2 tractor hours per acre. (ii) The illiterate farmers used 35.7 kg. of NPK fertilizers, eighty-eight man-days of human labour, and 0.8 tractor hours per acre. (iii) The illiterate farmers had higher percentage of area under HYV seed (9.4 per cent) than the educated farmers (8.7 per cent). There was no difference in the percentage of area under cash crop between the educated and the illiterate farmers. (iv) The holdings ranging from 2.50 to 4.99 acres of the educated farmers were the most efficient as the productivity of land, human labour, and family labour was higher than that of any other group either of the illiterate farmers or of the educated farmers for the respective inputs. The productivity of fertilizers and tractor power was more in the case of smaller holdings of below 2.49 acres of the educated farmers and the illiterate farmers, than in any other group. (v) The productivity of land and human labour decreased as the size of the farm increased, especially among the illiterate farmers while in the case of educated farmers the productivity of fertilizer and tractor power decreased as the size of the operational holding increased. (vi) The educated farmers having holdings of the same size were found to be slightly better than the illiterate farmers as far as the productivity of inputs was concerned. (vii) The productivity of the tractor power was found to be higher in the illiterate farmers' holdings than in the educated farmers' holdings.

**380. RAMANUJAM, M.S., MANOCHA, L. and BALA, M.,** *Pattern of Expenditure and Per Student Cost of Degree and Diploma Courses in Engineering and Technology in India*, IAMR, 1978

The objectives of the study were: (i) to help the engineering colleges and polytechnics appreciate their relative patterns of expenditure, (ii) to attempt a comparative analysis of the patterns of recurring expenditure at two different points of time, (iii) to estimate the level of quality of each institution taken up for the study, and (iv) to analyse the determinants of the pattern of per student expenditure.

From among all the colleges, a sample of sixty-three engineering colleges and eighty-five polytechnics were chosen. Of these, forty-nine engineering colleges and eighty polytechnics responded to the mailed enquiry. The forty-nine colleges belonged to different types of management and were spread over all the four regions.

The findings were: (i) The distribution of the responding engineering colleges by the age and the type of management indicated significant association between the two factors. This implied that engineering colleges belonging to certain types of management were started during specific periods. However, regular considerations did not appear to have significant influence over the age structure of engineering colleges. (ii) The pattern of enrolment observed did not have significant association with either the management or regional factors. (iii) Out-turn-intake ratios were observed to be varying widely among the responding engineering colleges. (iv) The teacher-pupil ratio also varied considerably. However, in respect of average teacher-student ratio, differences among the four types of management were not observed to be significant. (v) Quality differentials were found to be ranging widely among the responding engineering colleges. Quality differentials were also observed to be significant among the four regions based on the 1968-69 data and among different age groups of colleges based on the 1971-72 data. (vi) Expenditure on training constituted a major portion of the total expenditure of all engineering colleges. This was followed by expenditure on supporting services and that on welfare services. Further, salaries and allowances of all categories of staff accounted for nearly 65 per cent of the total expenditure. (vii) Per student expenditure was observed to be varying widely among all colleges. For instance, in 1968-69, per student expenditure ranged between Rs. 691 and Rs. 4,048 while in 1971-72 the variation was from Rs. 481 to Rs. 7,304. These observed variations in the pattern of per student expenditure among

the responding colleges were found to be influenced by the management and location factors and also the levels of quality. (viii) Per student expenditure estimates relating to undergraduate and postgraduate classes were very close to those observed in the case of the IITs. Estimates of per student expenditure of undergraduate classes in the IITs were found to be far above those in the case of engineering colleges where predominantly undergraduate classes were organized. (ix) There was no significant difference between the two types of management in respect of average levels of enrolment in polytechnics. Likewise, locational advantages and age factor did not influence the pattern of enrolment among the responding polytechnics. (x) The two types of management were observed to differ between themselves in respect of average out-turn-intake ratio. On the other hand, it was observed that there were significant differences between the two types of management in respect of average teacher-pupil ratio. (xi) The management and regional factors were observed to have no influence on the level of quality of the responding polytechnics in 1968-69. On the other hand, the age factor appeared to have influenced their levels of quality. (xii) A relatively more stable pattern of per student expenditure was observed in government polytechnics than in non-government polytechnics. Average per student expenditure was found to be more in government polytechnics than in non-government polytechnics. (xiii) Estimates of elasticity of total cost for all the polytechnics indicated that almost all the responding polytechnics operated in the increasing returns to scale phase. (xiv) In relative terms expenditure on training was more in engineering colleges than in the IITs. Polytechnics spent relatively more on training than engineering colleges. Among the three types of institutions, the IITs were observed to be spending the highest proportion of their expenditure on supporting services.

**381. RAMANUJAM, M.S., RAGHAVAN, K., BOLAR, M., NAIN, J.S., SRIVASTAVA, M.B. and BHATT, P.R., *Pattern of Expenditure and Per Student Cost in Educational Institutions in Jammu and Kashmir*, IAMR, 1979**

The aims of the study were: (i) to help the educational institutions at various levels in the State to appreciate their relative pattern of per student cost better and (ii) to analyse the determinants of cost structure through the estimation of long-run cost curve, with a view to facilitating future enrolment policies.

The per student cost estimated at various levels of education in this study referred to per student per annum recurring cost for the given level of education. Relevant data for the analysis pertaining to the year 1973-74 were collected from forty-three middle schools, fifty-two high/higher secondary schools, nine arts/science colleges including the Kashmir University, one teachers' training school, one teachers' training college, seven ITIs/craftsmen training institutes, one engineering polytechnic, one engineering degree college, one agricultural college and one medical college. Data were collected through a questionnaire designed for the purpose and through personal canvassing.

The findings were: (i) At the middle school level the average per student recurring cost was of the order of Rs. 232, of which 85.9 per cent was accounted for by salaries and allowances of the teaching staff and 8.7 per cent by salaries and allowances of the non-teaching staff. The expenditure on library and other operating cost and on scholarships was found to be very small in proportion. An analysis of the cost curve indicated that all the middle schools in the State were operating in increasing returns to scale phase. (ii) The per student cost estimated in respect of high/higher secondary level school education in the State was Rs. 270-80. Of this 83.2 per cent was accounted for by salaries and allowances of the teaching staff and 10.9 per cent by salaries and allowances of the non-teaching staff. The per student cost in high/higher secondary schools located in the rural areas was less than that in urban areas. As an analysis of the cost curve showed in all the schools, irrespective of the districts, increasing returns to the scale of operation were observed. (iii) At the undergraduate level in arts and science, the per student cost was Rs. 382 and Rs. 575, respectively. Further, the pattern of distribution of expenditure among various components at both arts and science courses was found to be more or less the same. When compared to undergraduate courses, the postgraduate courses in arts and science were found to be very expensive. The average per student cost for postgraduate courses in arts was found to be Rs. 2,624, while for science courses it was Rs. 5,314. (iv) At the teacher's training (certificate level), the per student cost was Rs. 2,075, of which 78.9 per cent was accounted for by scholarships. In contrast to teacher's training (certificate), the degree course was less expensive as the average cost was only Rs. 789. This was because in the case of the former more than three-fourths of the total expenditure was on scholarships

alone while there was no expenditure on scholarships in the case of the latter. At the craftsmen training level, the per student cost was Rs. 792 of which 59.8 per cent was accounted for by salaries and allowances. The average per student cost at the ITI was Rs. 566. (v) The per student cost at the diploma level of engineering was Rs. 1,691, salaries and allowances of the teaching and non-teaching staff accounted for 85.2 per cent of the expenditure. (vi) At the degree level in engineering the per student cost was Rs. 4,716. On an average, 83.6 per cent of this expenditure was accounted for by salaries and allowances of the teaching and non-teaching staff. The expenditures on library and other operating cost and on scholarships were not very significant. (vii) The per student expenditure for the degree course in agriculture was Rs. 3,018 of which 88.5 per cent was accounted for by salaries and allowances alone.

**\*382.** RAMACHANDRAN, *A Study of Some Problems of Higher Education in Kerala with Special Reference to the Financing of Education During the Period 1957-75*, Ph.D. Edu., Calicut U., 1981

The major objectives of the study were: (i) to identify vital problem areas in higher education such as enrolment, expenditure, financing, and planning, (ii) to assess the total costs in higher education classified under relevant institutional categories, (iii) to compare costs for different aspects of higher education like salaries, laboratories, libraries, students' amenities, and (iv) to compare investment of different agencies in higher education like the State Government, the UGC, etc.

This was a normative historical study. Necessary data were collected from primary sources like documents and reports of the State Government, universities, the UGC, and the Planning Commission. The secondary sources for data were mainly published books, research papers, reports of conferences and seminars on higher education.

The major findings of the study were: (i) There was a phenomenal growth of institutions of higher education in Kerala during the period under review. There was only one university in 1956 and the number increased to four, and the number of arts and science colleges increased from 46 to 128 by 1975-76. The establishment of colleges was done without much forethought and planning. The district-wise distribution

of arts and science colleges and the population served by each college showed, in certain districts like Quilon, Palghat, Cannanore, and Calicut, the number of colleges were, on an average, less in relation to their population. (ii) More than 82 per cent arts and science colleges in the State were under private management. (iii) The average annual rate of growth of enrolment for general education courses was about 11.8 per cent during the period under study. (iv) Public expenditure on education has been growing very rapidly in the State of Kerala. A sum of Rs. 1,037 lakhs, about 31.5 per cent of the total revenue expenditure, was spent on general education in 1957-58, but the total expenditure increased to Rs. 13,226 lakhs by 1975-76, i.e. 37.3 per cent of the total expenditure of the State. Though the percentage of annual increase was not high, in absolute terms the increase was to the tune of 11.76 times. The index of growth during the period under review was 1275. The average annual expenditure on education during the period of study was about 34 per cent of the State's total budget. (v) Whereas the total public expenditure on general education was increasing year after year, the corresponding return to the revenue of the State Government was very low. The receipt under education was about 3.6 per cent of the total revenue receipts of the State in 1975-76, whereas total public expenditure on general education during this year was to the tune of Rs. 13,226 lakhs. (vi) The expenditure on university education showed phenomenal increase. When the total expenditure increased by 11.76 times the amount spent in 1957-58 the share of higher education increased by 28.61 times over the 1957-58 amount. The total expenditure was only Rs. 52.98 lakhs in 1957-58 but it increased to Rs. 1,568.79 lakhs by 1975-76 showing an increase to 29.61 times. The expenditure on higher education was only 6 per cent of the overall expenditure on education in 1957-58 but it constituted 11.9 per cent in 1975-76. (vii) The bulk of the public expenditure on higher education was spent for the development and maintenance of arts and science colleges in Kerala. The total direct expenditure on these colleges in 1957-58 was only Rs. 22.22 lakhs and formed about 41.9 per cent of the overall expenditure on higher education. An amount of Rs. 1,262.93 lakhs was the direct expenditure on arts and science colleges in 1975-76 and constituted 80.5 per cent of the total expenditure on higher education during that year. Thus expenditure on higher education showed tremendous growth both as a percentage of the total expenditure on higher education as well as in absolute

terms.

383. REDDY, P.N., *A Study of Social and Private Rates of Return on Higher Education*, Ph.D. Eco., Osm. U., 1981

The investigation attempted to examine whether the policies in relation to allocation of resources to different levels and types of education were rational and efficient in terms of rate of return. The investigation posed four specific questions centred around social and private rates of return on (i) professional and non-professional graduates, (ii) professional graduates and postgraduates like doctors, engineers, agriculture graduates, and secondary school teachers, and (iii) different levels of academic performance (first, second, and pass classes) among graduates and postgraduates. The hypotheses formulated were: (i) The rates of return were higher for postgraduates compared with graduates. (ii) The rates of return were different for graduates drawn from faculties of arts, science, and commerce. (iii) The rates of return were different for postgraduates drawn from arts, science and commerce faculties. (iv) Rates of return were higher for professional graduates representing doctors, engineers, agriculture graduates, and secondary school teachers as compared with non-professional categories of graduates and postgraduates. (v) The rates of return were different within the professional categories between doctors, engineers, agriculture graduates, and secondary school teachers. (vi) Rates of return of graduates and postgraduates were higher for higher levels of academic performance as between first classes as compared to second classes and pass classes.

The sample consisted of 2,080 employees, working in the offices and undertakings of the State, the Central Government, and the local bodies situated in Hyderabad and Secunderabad. An age-income profile of the respondents was constructed. Mean, percentage and correlation co-efficient were used to analyse the data.

The findings of the investigation were: (i) Investment in postgraduate non-professional education did not guarantee the expected financial success. (ii) Social and private rates of return for all postgraduates were found to be below 5 per cent, except those with first class. (iii) A variation in the trend in social and private rates of return for graduates of different faculties was found. (iv) Postgraduate education

seemed to need special attention in terms of balancing the cost incurred and benefits accruing to individuals as well as to society. (v) The most favoured professional category of doctors and engineers was found to be distinguished from the not-so-favourable professional category of agriculture graduates and secondary school teachers. (vi) The superior students in terms of academic performance were found to be the highest beneficiaries.

384. RIZVI, F.H., *Financing of Higher Education in Less-developed Countries*, AMU Press, 1960

The major objective of the study was to investigate the question of financing educational facilities in less-developed countries, with special reference to higher education. The following specific research questions were raised to investigate the problem: (i) Was there any method which could determine the optimal level of investment in the provision of educational services? (ii) What should be the proper role of the State in this sphere? (iii) Was there any special form of investment that could be considered desirable for less-developed countries with respect to higher education? (iv) What was the historical retrospect of educational finance in India? (v) In the light of the statistical data, was the size of the educational expenditure consistent with socio-economic policy of the country expressed through its official channels? (vi) Was the expenditure on universities and colleges in India, and its distribution between the different types of education, of a size and character that reflected optimum level of investment? If not, what were the main obstacles and what reforms could remove these obstacles and bring them adequate resources but without curtailing their autonomy or free choice of individuals? (vii) If the appraisal showed that the need for additional resources was imperative, who should acquire them and how?

The investigator had gathered materials from a large variety of sources, official and non-official, Indian and those of other nations and the international organizations ranging from purely educational to those relevant to economic theory.

The findings were: (i) The problem of resource allocation was real and almost universal and there was no universally acceptable formula that could serve as an easy, mechanical and fool-proof device for determining the size of the economic resources which tended to bring optimum investment in the provision

of educational services. (ii) There was disagreement as to who or which institutions should perform the process of valuation. Different communities belonging to different political creed approached this problem differently and, consequently, their emphasis on the role of the State in this respect also showed radical differences. (iii) The lesson for less-developed countries was that State participation in education was necessary, particularly given the kinds of objectives commonly supported in such countries. However, State participation would have to be strictly on an individual rather than an institutional basis, if it was desired to encourage education which could be in tune with the economic and social needs of the country. (iv) In view of the acute economic backwardness, the right policy for less-developed countries would be to develop all types of education but to facilitate economic development and to banish disease, poverty, hunger, and ignorance, they should invest more in scientific and technical education. (v) Creation of new universities, expansion of arts and science colleges, professional, technical, and special education colleges and a substantial increase in enrolment were the highlights of the post-Independence era. However, the complexion of educational structure and its problems were more or less the same as they were in pre-Independence period. The only difference was that the outlook had become rather more expansionist. (vi) There had been a continuous rise in educational expenditure. Notable as this increase appeared to be, proportions of the outlays diverted to education and higher education of NDP ( Net Domestic Product) were 2 per cent for general education and 0.37 per cent for higher education. Expenditure on higher education incurred by private bodies was 65.9 per cent, whereas on government-maintained institutions was 33.6 per cent. The public sector had larger share in the institutions imparting professional and technical education. Income from public funds and fees continued to be the mainstay of the higher education finance. The bulk of the public expenditure on education was incurred on primary education. Secondary education was given second priority. Higher education accounted for 11.4 per cent of the total public expenditure of education. (vii) The expenditure on higher education in India and its distribution between the different types of education was of a size and character that was well below the optimum level of investment. With reference to criteria of both the democratization of educational opportunities and higher education's effectiveness to serve as a sound and dynamic basis

for the solution of the nation's socio-economic problems, there existed a vast disparity between the community's honest professions and a record of its actual achievements. This situation could be attributed to the low level of investment but primarily to the system of finance by which the already inadequate resources were actually made available to the institutions of higher education.

385. SHAH, A.B. and INAMDAR, C.S., *The Unit Cost of Post-graduate Education in the University of Poona — a Case Study*, Indian Institute of Education, Pune, 1980

The study sought to determine, in an approximate manner, the unit cost of higher education at the postgraduate level in the University of Poona. In the absence of balance sheets and liabilities for the period from 1948-49 to 1977-78, interest charges on the total investment could not be calculated. Interest was calculated on the total non-recurring and capital receipts of the university during the period 1948-49 to 1977-78 (Rs. 58.617 million). The depreciation charges on buildings, library books, etc., were not taken into account. For the years 1973-74 to 1977-78 the actual expenditures were taken into account in the absence of audited statements. Only the major heads of recurring income and expenditure were considered. Under certain heads like examination, it was not possible to break up the expenditure into parts pertaining to undergraduate and postgraduate stages. While calculating the unit cost, the three Centres of Advanced Study in Sanskrit, Linguistics and Economics were not considered.

The major findings were : (i) The income and expenditure of the university had steadily gone up from its inception in 1948-49 to 1977-78. Since 1974-75 the university had had a deficit budget. The accumulated deficit exceeded Rs. 10 million in 1979-80. (ii) The expenditure per student at the postgraduate level incurred by the university, exclusive of the expenditure on general administration and common facilities, had grown by nearly 50 per cent, from Rs. 2,369 in 1973-74 to Rs. 3,462 in 1977-78. The cost per pupil was the highest in the science faculty and except for the year 1974-75, it was lowest in the humanities faculty. In 1977-78, costs per student in the humanities, social sciences, and natural sciences were Rs. 1,728, Rs. 2,757 and Rs. 3,462, respectively, without considering the non-departmental expenditure and interest

charges on buildings, equipment, books, etc. If these charges were estimated and included, the cost of education of one M.A./M.Sc./LL.M./Ph.D. student was Rs. 6,033 per year in 1973-74 and Rs. 11,056 per year in 1977-78. If the cost of conducting post-graduate examinations was added, the unit cost would go up by a further amount of Rs. 225.

386. SHAH, K.R. and SRIKANTIAH, S., *Education Earnings and Income Distribution: an Inquiry into Equity Issues Involved in the Government Financing of Higher Education in India*, Dept. of Bus., Eco., MSU, 1981 (ICSSR-financed)

The study attempted a scientific and critical analysis of the role of education as an equalizer and a tool for socio-economic change. The main objective of the study was to examine the syndrome of structure of subsidy and the equality of educational opportunities in the context of the Indian economy. Specific hypotheses tested were: (i) General public subsidy was less egalitarian under the prevailing economic, social, and political system and initial glaring inequalities. (ii) Specific subsidy helped reduce educational distance between generations and between socio-economic groups. (iii) The private demand for education was characterized by optimizing behaviour of maximizing economic welfare. (iv) The human capital and earnings were positively related. (v) The effect of family background on education was direct and substantial whereas that on earnings was indirect and small relative to the effect of education on earnings. (vi) Starting earnings were positively related to education. (vii) Present earnings were positively related to occupational rank showing, indirectly, the relation between education and earnings. (viii) Earnings and the nature of employment were positively related. (ix) Variations in earnings were explained more by the human capital than by mere education. (x) More equal distribution of income moved sympathetically with more equal distribution of schooling. (xi) Mere continuous expansion of education, altering the distribution of schooling of persons and the age structure of the labour force in favour of young persons, was capable of altering earnings distribution.

Necessary data were collected through survey from a 5 per cent sample of randomly selected graduates of the four benchmark years, 1961, 1965, 1970, and 1975 from the M.S. University of Baroda. The survey was conducted during the latter half of 1979. Of the

523 sampled graduates spread throughout India, information could be collected from 294 graduates accounting for 56 per cent response. The data were mainly related to male earners classified as respondents, respondents' parents, and respondents' brothers and sisters. Cost calculations were based on private costs (investments) data collected through the field survey and the net of subsidies. The issue of intertemporal equity in educational opportunities was studied by employing the techniques of trend and ratio analysis to the time series data covering the period 1960 to 1980. Size distribution of earnings of the labour force was assessed by analysing individual earning profiles involving the parameters of height (level), rate of growth (slope), and rate of change of growth (curvature). The technique of step-wise regression was followed to gauge the significance of various determinants of earnings. Four widely known inequality measures, namely, Gini coefficient, skewness and dispersion, coefficient of variation, and variance of log of earnings and education, were employed to measure earnings inequality. The analysis was based mainly on the primary data collected through the field survey and partly on the secondary data.

The main conclusions of the study were: (i) Persons with low mean education, of older age, and preponderantly self-employed showed greater education and income inequalities. (ii) Persons with higher mean education, of younger age, and declining proportions of being self-employed showed less distribution of education and income. (iii) Tendency towards better size distribution of income was very slow and was not consistent. However, the financing of education had not furthered inequalities. (iv) The bridging of educational distance inter-temporally, the creation of efficient human capital stock, and better distribution of income were clear social benefits with far-reaching effects on the future course of the economy. (v) The emerging human capital stock was characterized by younger persons with more education and expected to have multiplier effect on future distribution pattern and earnings. (vi) With regard to the overall subsidy, the stratifier effect was much more pronounced than the equalizer effect. The specific subsidy, in contrast, did have the equalizer effect in the sense of higher per capita subsidy going to beneficiaries with low per capita income. (vii) Specific subsidy had reduced the educational distance between various classes and generations as revealed by relative enrolment ratio and relative participation rate which had improved for BC and EBC categories. (viii) Education and earnings

were positively related only after a critical minimum education which was ten or more than ten years of schooling. (ix) The rates of growth of earnings were higher for persons with more schooling. The earnings were subject to diminishing marginal returns and the efficiency of the investment in education increased. (x) The results were in conformity with the wage competition model according to which diminished inequality of schooling was associated with diminished inequality of income.

**387. SHAH, M.,** *Economic Factors Explaining Variations in Literacy Rates in Rural Areas: a Case Study of Gujarat*, Dept. of Eco., MSU, 1981

The objectives of the study were: (i) to find out the relationship between the higher proportion of irrigated land and the rate of literacy, (ii) to find out the relationship between the size of the village and the literacy rates, (iii) to find out the relationship between the distance of the village from a larger city and the literacy rates, (iv) to find out the relationship between the proportion of SC/ST population and the literacy levels, and (v) to find out the relationship between the proportion of agricultural workers and the literacy rate.

Six districts were selected on the basis of literacy rate of which three had high and the remaining low literacy rates from among the nineteen districts of Gujarat. The villages were selected from these districts on the basis of three criteria for non-selection, viz. villages which did not have primary schools in 1951, villages which were not linked with any town, and villages which did not have any irrigation facility. Out of 7,210 villages, the study covered 789 villages, which were divided into three subgroups — A<sub>1</sub>, A<sub>2</sub> and B. A<sub>1</sub> group consisted of villages having a link with cities with more than one lakh population, A<sub>2</sub> group had a link with cities with a population ranging from 30,000 to one lakh and B group belonged to lowest literacy rate districts. Data were collected from district census handbook, village-and town-wise primary census abstract, village and town directory, etc. The data were analysed by step-wise regression for different groups of villages, separately.

The major findings of the study were: (i) The five independent variables were significantly correlated with the literacy rates in the case of villages belonging to A<sub>1</sub> group. (ii) Size variable, proportion of irrigated land, proportion of SC/ST had significant positive

correlation with literacy rates, whereas distance and concentration of agricultural workers had significant negative correlation with literacy rates in the case of A<sub>2</sub> group villages. (iii) In the case of B group villages, proportion of SC/STs and proportion of agricultural workers had significant relationship with the literacy rate, whereas proportion of irrigated lands, size variable, and distance variable did not have significant relationship with the literacy rate. (iv) Proportion of irrigated land, proportion of agricultural workers, distance, and proportion of SC/STs were the variables which could explain 20 per cent of variance in the case of A group villages. (v) Proportion of Scheduled Castes and Scheduled Tribes could explain 39 per cent variance in the case of B group villages and by adding the factor of proportion of agricultural workers 53 per cent variance could be explained.

**\*388. SHANTA, N.,** *A Study of the Returns from Education to Employed Women in Bangalore City*, Ph.D. Edu., Mys. U., 1982

The main objectives of the study were: (i) to make a comparative evaluation of economic and non-economic returns to private investment in various levels and types of education with reference to education and employment of women, (ii) to compare and evaluate the private cost of different levels of education to women, the lifetime earnings associated with the various levels of education, the net present value of lifetime earnings of women with various levels of education in relation to the cost of acquiring that education, rates of return from investment in various levels of education, (iii) to examine and compare attitudinal and behavioural returns from education towards the institutions of education, employment, marriage and family, religion, politics, and social life, and (iv) to highlight the levels of education that was most viable for women from the investment point of view.

The study was conducted on a sample of 1465 women employees working in the organized sector, both public and private, in Bangalore City, drawn by multi-staged stratified random sampling from seventy-five establishments (thirty-five private and forty public), who responded to structured questionnaires and interviews, regarding economic and non-economic returns. The other sources of data were the pay scale(s), allowances, tax payments, etc., from the establishments. The data were subjected to correlation

matrix, multivariate regression analysis, return methods, and descriptive methods, adjustments being made for costs and lifetime earnings on the basis of the rupee value of 1960-61.

The major findings of the study were: (i) Private investment on education was most profitable at the secondary level for women. (ii) Among post-secondary levels and types of education, vocational education yielded higher returns than all other types and levels of education. (iii) Professional education yielded better returns than graduate and postgraduate levels. (iv) Higher education had not been able to develop adequately a commitment essential for desired social and economic changes though its performance was better with respect to orientation of women towards the desired changes. (v) Education was, in general, a profitable investment for the women at the primary, secondary and vocational levels. (vi) With higher levels of education, the proportion of women favouring coeducation for girls and higher education for their daughters increased. (vii) With higher education, a favourable attitude of women towards the choice of marriage partner, consent of the boy, intercaste and inter-religious marriages, non-payment of dowry, nuclear families, decisions about education, occupation, and marriage on a consultative basis and family planning techniques increased. (viii) Highly educated women favoured the reading of political literature, participation in political campaigns, becoming active members of parties, and reservation of seats for women in the State legislature. (ix) Irrespective of the level of education, the majority of women favoured the view that women should believe in God and read religious texts. (x) Women favoured mixing with people of higher castes as also with lower castes and also permitted their daughters to do so. (xi) With the increase in education, there was an increase in the proportion of respondents favouring fine arts in actual practice, in learning and participation. (xii) The study supported the contention that women aspiring for education beyond the matric level would profit more from vocational education than from pre-university and college education.

389. SHARMA, K.D., *Socio-economic Study of Women Employees in Bhopal*, Ph.D. Eco., Vik. U., 1973

The study attempted to analyse the socio-economic condition of women employees in Bhopal. The sample

consisted of 1,119 women, selected randomly. Data were collected by using an interview schedule. The questions pertaining to the different aspects of life, namely employment, education and training, demographic characteristics, income and expenditure pattern, indebtedness, family aspects, housing, health and conveyance, domestic work, attitude towards employment, marriage and family planning, and any specific problems, were included.

The findings were: (i) The number of women employed in different fields was : in Central and State Government offices—486, health—514, education—963, autonomous bodies—432, big industries—200, PWD and irrigation and public health engineering—925, trade and commerce—285, small industries—1,323. (ii) Forty-two per cent of women worked on daily wages whereas 31 per cent had permanent service. Casual leave, earned leave, medical leave and other types of leave were available to nearly 53 per cent women employees. (iii) More than 50 per cent women employees were illiterate. (iv) Nearly 80 per cent women employees were married. (v) Over 80 per cent husbands had monthly income of less than Rs. 300. (vi) A majority (90 per cent) of women employees belonged to lower income group. (vii) Women employees' contribution to their family income was significant. (viii) Nearly 51.7 per cent families spent as much as they earned. The overall per capita expenditure of families was Rs. 60 per month. The per capita expenditure on food was Rs. 26.8 per month, followed by hotel, entertainment, etc. (ix) The overall savings accounted for 7.8 per cent of the total income; general provident fund accounted for 46 per cent of the total money saved. (x) Nearly 46 per cent women employees were found spending less than Rs. 10 per month on their clothing. Over 50 per cent women employees did not spend even a single paise on luxury goods. (xi) A majority (91.7 per cent) of women had no insurance policy. (xii) Nearly 34 per cent families were in debt. (xiii) The total value of assets of sample households was estimated to be above 35 lakhs; the investment in buildings and land was the highest. (xiv) Nearly 31.5 per cent women employees had government accommodation. (xv) The percentage of women employees having amenities like separate kitchen, bathroom, water tap, latrine and electricity was 62.3, 58.1, 37.3, 38.6 and 51, respectively. (xvi) Only 10.5 per cent women enjoyed excellent health. (xvii) Nearly 27 per cent women employees worked at their residence or near it; the percentage of those who had to cover a



distance of one to three km. and four to eleven kms. was 16 and 45, respectively. (xviii) Nearly 50 per cent women performed their domestic duties efficiently and independently, but the remaining ones expressed their inability to do so. (xix) Over 50 per cent women employees were forced to join their present profession in order to supplement the family income whereas 48 per cent joined either because of financial gain or interest in work or both. (xx) The majority liked their present profession. (xxi) Nearly 62 per cent women had one to three children and 14 per cent did not have any children. (xxii) Educated women employees adopted the means of family planning more frequently than the illiterates. (xxiii) Nearly 26 per cent women employees working as casual workers had no security of service like the employees in the public sector.

**390. SOMAIAH, M., *Effective Cost of Education in Karnataka*, IIM, Bangalore, 1980**

The study attempted to calculate and compare the effective cost incurred at the elementary stage for five consecutive academic years (1974-79) in Karnataka. The effective cost was defined as the number of years spent per pupil for completing a given number of classes of schooling.

Enrolment data were obtained from the Statistics Department of the office of the Commissioner of Public Instruction, Government of Karnataka. The analysis followed the cohort method in which the simple market chain model was used for estimating the effective cost.

The study drew the following conclusions: (i) There was a tremendous decrease in the effective cost within the period under study, which could be attributed to the various incentive programmes of the State. (ii) The effective cost of girls' education was higher than that of the boys', which could be remedied by increasing incentives to encourage girls to remain in school and making curricular programmes more relevant to the needs of girls, both urban and rural. (iii) The higher percentage of wastage between Classes V and VII indicated that the curriculum should include work experience and socially useful productive work.

**391. THATTE, Y.V., *Cost of Secondary Education in Maharashtra (an Analysis of Regional Differences)*, Ph.D. Eco., Poona U., 1977**

The main aim of the study was to analyse institutional expenditure of secondary schools in Maharashtra with a view to ascertaining regional differences in per pupil cost in the three constituent regions of the State, viz., Western Maharashtra, Vidarbha and Marathawada.

Main sources of data were the records in the office of the Directorate of Education. The total direct expenditure consisted of teachers' salary, salary of the non-teaching staff, equipment, library, laboratory, etc. The relative shares of expenditures on different heads in total direct expenditure, in terms of percentages, were calculated. Again, in relation to the enrolment of pupils, crucial ratios like pupil-teacher ratio, per pupil direct cost, per pupil salary of teacher, per pupil salary of non-teaching staff, etc., were also calculated. The schools covered under this study numbered 3,121 of which 333 had Classes I to X, 1,287 had Classes V to X and 1,501 had Classes VIII to X.

The major findings were: (i) Per pupil total direct expenditure for private aided schools with Classes I to X in Greater Bombay (urban) was Rs. 238.04. It was Rs. 125.04 in Bombay region (urban), Rs. 447.96 in Poona region (urban), Rs. 222.59 in Poona region (rural), Rs. 249.28 in Vidarbha (rural), Rs. 119.89 in Marathawada (urban) and Rs. 151.64 in Marathawada (rural). The percentage of teachers' salary to the total direct expenditure varied from 62.04 in Poona (rural) to 83.10 in Bombay region (urban). The pupil-teacher ratio was seventeen in Vidarbha (rural), eighteen in Poona (urban) and elsewhere it varied between twenty-one and twenty-eight. (ii) In the case of schools with Classes V to X per pupil direct expenditure for Greater Bombay was Rs. 214.78, for Bombay region (urban) Rs. 184.56. It was Rs. 194.17 for Bombay region (rural), Rs. 214.70 for Poona region (urban) and Rs. 180.87 for Poona region (rural), Rs. 189.24 for Vidarbha (urban), Rs. 184.82 for Vidarbha (rural), Rs. 179.86 for Marathawada (urban) and Rs. 186.14 for Marathawada (rural). The percentage of teachers' salary to the total direct expenditure varied from Rs. 68.37 in Greater Bombay to Rs. 74.28 in Marathawada (rural). The pupil-teacher ratio varied from twenty-one in Marathawada (rural) to thirty in Greater Bombay and Poona (urban). (iii) Per pupil total direct expenditure was Rs. 143.07 for Greater Bombay, Rs. 217.34 for Bombay region (urban), Rs. 220.74 for Bombay region (rural), Rs. 201.96 for Poona (urban), Rs. 213.16 for Poona (rural), Rs. 267.50 for Vidarbha

(urban), Rs. 256.70 for Vidarbha (rural), Rs. 190.71 for Marathawada (urban) and Rs. 233.66 for Marathawada (rural). The percentage of teachers' salary to the total direct expenditure varied from 63.89 in Marathawada (urban) to 71.04 in Poona (rural). The pupil-teacher ratio varied from sixteen in Vidarbha (urban) to twenty-six in Poona (urban). (iv) As far as zilla parishad schools were concerned, per pupil total direct expenditure for schools with Classes I to X was Rs. 118.52 for urban areas and Rs. 123.95 per school in rural areas. The percentage of teachers' salary to the total direct expenditure was 83.64 for urban schools and 87.07 for rural schools. The pupil-teacher ratio was twenty-nine in urban schools and twenty-five in rural schools. (v) Per pupil total direct expenditure for zilla parishad schools with Classes V to X was maximum in Poona (urban) with Rs. 204.56 and minimum in Marathawada (urban) with Rs. 133.94. The percentage of teachers' salary to the total per pupil direct expenditure varied between Rs. 78.81 and Rs. 87.08. The pupil-teacher ratio varied between twenty-two and twenty-eight. (vi) Per pupil total direct expenditures in zilla parishad schools with Classes VIII to X were Rs. 357.57 in Poona (rural), Rs. 269.71 in Vidarbha (rural) and Rs. 167.58 in Marathawada (rural). The percentage of teachers' salary to the total per pupil direct expenditure in these schools was Rs. 65.16 in Poona (rural), 69.90 in Vidarbha (rural) and 81.23 in Marathawada (rural). The pupil-teacher ratio was five in Poona rural, seventeen in Vidarbha (rural) and fourteen in Marathawada (rural). (vii) The State aggregate figures for all the three categories of schools were taken together. The per pupil total direct expenditure for private aided schools was Rs. 208.60 for Greater Bombay, Rs. 189.60 for Bombay region (urban), Rs. 212.86 for Bombay region (rural), Rs. 213.05 for Poona (urban), Rs. 209.30 for Poona (rural), Rs. 190.64 for Vidarbha (urban), Rs. 197.89 for Vidarbha (rural), Rs. 175.39 for Marathawada (urban) and Rs. 194.90 for Marathawada (rural). The figures for zilla parishad schools were Rs. 204.56 for Poona (urban), Rs. 357.57 for Poona (rural), Rs. 168.03 for Vidarbha (urban), Rs. 191.98 for Vidarbha (rural), Rs. 127.53 for Marathawada (urban) and Rs. 125.16 for Marathawada (rural).

392. TILAK, J.B.G., *Inequality in Returns to Education*, Ph.D. Eco., Del. U., 1980

The hypotheses of the study were: (i) The returns

to education accrued differently to different groups of population and unfavourably to the weaker sections. (ii) There existed inequality in human capital formation between different groups of population, the distribution being skewed against the weaker sections. (iii) The weaker sections were subjected to labour market discrimination in employment and wages.

West Godavari district of Andhra Pradesh was selected for the survey on educational characteristics and earnings of the sample population. One town and a village each from the eight taluks of the district were selected. Further 2 per cent of the number of households in the selected villages and the town was randomly selected. Basic information was collected from 415 households through interviews with the heads of households with the help of pre-tested questionnaire. In all, information relating to 415 households—206 in rural areas and 209 in urban areas—was collected. The sample yielded data on individual characteristics such as education, age, experience, occupation and earnings of 966 members in the workforce—678 males, 288 females and 397 backward castes and 569 non-backward castes, and data relating to educational levels and private educational expenditure on 722 pupils in the schools or colleges who belonged to the same households. Data from published and unpublished secondary sources relating to the district and the State were used in the context of several related aspects, such as institutional cost of education, economic growth, participation in labour force, etc., using survey and secondary data, and following the internal rate of return method, rates of return to various levels of education from literacy to higher general and professional levels were estimated for sex and caste groups and for the sample population as a whole. Crude marginal and average rates of returns were estimated from private and social angles, which had then been adjusted for factors like wastage and stagnation in education, growth incomes, unemployment, participation in labour force and ability.

The major findings were: (i) The crude rates of return, in general, were found to decline with increasing levels of education. However, the varying magnitudes of the factors of adjustment pushed down the rates of return significantly. (ii) The crude rates of return for women were greater than the returns for men for most levels of education. (iii) With few exceptions, both marginal and average rates of return to the education of backward castes were above the corresponding rates for the non-backward castes. This

was true in respect of private as well as social rates of return. (iv) The per capita and per person of labour force total as well as active human capital stocks were found to be lower for women and backward castes compared to men and non-backward castes, respectively. (v) The coefficients of discrimination showed that both women and backward castes were subjected to severe wage discrimination. The analysis of wage discrimination showed that women were subjected to employment discrimination as well.

**393. VENKATASUBRAMANIAN, K..** *Economic Aspects of Growth of Primary Education in Tamil Nadu*, Ph.D. Eco., MSU, 1977

The major objectives of the study were: (i) to compute the costs of various inputs of primary education in Tamil Nadu—factor costs, unit costs, (ii) to make a cost benefit analysis of primary education in Tamil Nadu by finding the rates of return and some other intangible effects related to economic development, (iii) to find out the internal efficiency and productivity of the system of primary education in Tamil Nadu, (iv) to locate the pitfalls and weaknesses hindering the efficiency of educational system, (v) to identify the constraints on universalization of primary education in Tamil Nadu, and (vi) to measure the wastage in primary education and its impact on the system of education and economic system as a

whole.

Educational statistics compiled at the State and national level were mainly used for analysis in respect of enrolment and investment on education. Data related to economic indicators were obtained from the Department of Statistics. For cost benefit analysis, factor costs and unit costs of primary education estimated from the available data for the year 1970-71 were used. Primary data on private expenditure were collected from parents all over the State, on stratified sample basis, by the investigator. Data were also collected on (a) wastage and stagnation in education and (b) opinion of agriculture researchers. The effects of primary education on primary, secondary and other sectors of economy are studied separately.

The major findings of the study were: (i) The variations in enrolment were influenced by the school facilities provided, the literacy level attained by parents, the number of inhabited villages, etc. (ii) A comparison with all-India growth trends in enrolment showed that progress in Tamil Nadu was more impressive at the higher primary level. (iii) The percentage of unit costs to per capita was 30.1 for lower primary and 107.7 for higher primary, both private and social expenditure. (iv) The coefficient of efficiency of primary schools was found to be 0.55. (v) The cost of wastage in Tamil Nadu was 211.05 lakhs. The poor economic status of parents and the inability of the management to provide better facilities contributed to wastage.