SUMMARY

OF

THE THESIS
ECONOMICS OF SENIOR SECONDARY EDUCATION:
UNIT COST ANALYSIS AT MICRO LEVEL IN EAST DELHI

A SUMMARY OF THESIS
FOR THE AWARD OF THE DEGREE OF

DOCTOR OF PHILOSOPHY IN ECONOMICS

SUPERVISOR: 
Prof. Narayan Prasad 
Professor of Economics
School of Social Sciences
IGNOU, New Delhi

INVESTIGATOR: 
Ramesh Chandra Sharma
Enrolment No. 072676182

DEPARTMENT OF ECONOMICS
SCHOOL OF SOCIAL SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
NEW DELHI
Introduction

The aim of education is to develop the capacities and abilities latent in human nature and to coordinate them for the enrichment and progress of the human being. Education is desired for itself as it opens up a vast world of opportunities and ideas to the person for the progress and development. Therefore, every country of the world maintains a large number of educational institutions. Senior Secondary education is a crucial stage in the educational hierarchy as it prepares an individual for higher education and also for the world of work. It covers the population of the age group of 14-18, which constitute 9.69 crore children in India as on March 2007. Even though large expansion in education is obviously desirable, resource constraints hamper this expansion. Since resources are scare, it is desirable to examine how far the existing resources are being efficiently utilized at the institutional level. The institutional cost analysis facilitates the estimation of operational cost of an educational institution as a whole as well as cost at different levels, by types and streams of education, which in turn is useful for planners to allocate budget and plan the resources for education. The study of institutional cost analysis will be useful for efficient utilization of the available resources.

As the resources allocated goes on a steady decline, the demand goes on increasing at rapid rate. After grading system in Secondary examination of Central Board of Secondary Education (CBSE) more students are qualifying for admission to Senior Secondary classes, which in turn will increase the demand further. Unit cost of education is the cost incurred by the parents and the government in providing or acquiring education. It consists of Institutional Cost and Private Cost. Private Cost is the total expenditure incurred by the households towards educating their wards. It is that part of the investment in education which is made either by the student or parent or both. Parent’s expenditure at Senior Secondary stage differs between different streams under different management of schools. The
socio-economic back-ground of the students influence the expenditure habits and private cost. The study of Unit Cost analysis (Institutional Cost and Private Cost) will be useful for planning the resources by policy makers and households for imparting the education at Senior Secondary level in different streams in the schools managed by different managements.

The Government of Delhi is spending about 10 percent of its total plan allocation on Education sector still having only 79.54 percent students in schools. At Senior-Secondary stage only 54.95 percent students were enrolled in March 2007 and remaining was out of education-system. The share of the Education sector in total Plan- expenditure of Delhi increased from 8.49% in 2004-05 to 10.32% in 2008-09. In the context of huge public expenditure in educational sector, unit cost analysis at micro level is useful to know whether the public funds are being efficiently utilized or not? Who are the beneficiaries of the education provided in the government managed schools? To what extent socially and economically backward sections of the society are beneficiary of this subsidized education? These are relevant questions worth deserves to be probed. An attempt has been made in this study to answer some of these questions. The study broadly aims to

1. Estimate the unit cost of educating the child at Senior Secondary stage in East- Delhi for the year 2008 and 2009.
2. Know the institutional cost of Senior Secondary education of different streams offered by different managements namely Government schools, Government-Aided schools, Rajkiya Pratibha Vikas Vidyalyas, Kendriya Vidyalayas and privately managed Public schools.
3. Examine the variation in institutional cost of education in various streams namely Arts, Science, Commerce and Vocational of different types of schools at Senior Secondary level in East Delhi.
4. Estimate the level of wastage and stagnation of different types of schools at Senior Secondary stage of education in East Delhi.
5. Compute the private cost of education of the students, opting different streams at Senior Secondary stage in different types of schools in East Delhi.
6. Find out the causes responsible for low educational accomplishment of the schools at Senior Secondary stage.
7. Identify the factors responsible for wastage and poor quality of educational products at Senior Secondary level in East Delhi.

**Research Methodology**

An attempt has been made in this study to examine the unit cost at senior secondary level by types of schools being managed by different managements in East-Delhi. In East-Delhi, Senior Secondary education of different streams i.e. Arts, Commerce, Science and Vocational is provided by Government schools, Government-Aided schools, Rajkiya Pratibha Vikas Vidyalayas (RPVVs), Kendriya Vidyalayas (KVs) and privately managed Public schools. A total, 214 Government schools, 22 Government-Aided schools, 4 RPVVs, 4 KVs and 362 Public schools are imparting education in East-Delhi. The facility of senior-secondary classes and all the streams of education are not available in all these schools. Total 14 schools of East Delhi for micro level study were identified on the basis of the availability of all the streams for the present study which included 03 Government schools, 03 Public schools, 02 Rajkiya Pratibha Vikas Vidyalayas, 02 Government-Aided schools and 04 Kendriya Vidyalayas as the universe of the study.

Costs of education are borne at two domains – the Institutions and the Households. Institutional cost may be defined as the aggregate of all expenses incurred by an institution in providing the education. It includes all the expenditure incurred by the Institution such as Salary Cost and Non-Salary Cost. Salary Cost includes Teaching Cost, Non-Teaching Cost and Inspection Cost. Non-Salary Cost includes cost of supports services (academic), cost of supports services (other than academic) and cost of co-curricular activities. For estimating the institutional cost, the information/ data pertaining to total school enrolment, senior secondary enrolment, result, salary of teaching and non-teaching staff, inspection staff, number of teachers teaching different subjects, expenditure on infrastructure, expenditure on co-curricular activities etc were collected through a well-designed questionnaire. For the purpose of calculation of Teaching Cost, total salary of the subject-teachers teaching senior secondary classes have been divided from the number of total enrolled senior secondary students learning the subjects of opted streams from these teachers. For estimating the Non-Teaching Cost, the total salary of non-teaching staff and supporting staff have been divided from the number of
total enrolment of school, since all the students from class first to twelfth are
availing the services of non-teaching and supporting employees. The supervision
and inspection of schools is done at Zonal, District, Regional and Central
(Directorate) level. The Inspection Cost has been calculated on the basis of total
enrolment proportion at zonal, district, regional and central level. The cost of
supports services (academic), cost of supports services (other than academic) and
cost of co-curricular activities have been worked out after dividing the total
expenditure from the number of total learners. After adding the Salary cost and
Non-Salary cost, as projected here, the Institutional Cost has been derived.

Private Cost relates to the total expenditure incurred by the parent or
student or both. It includes the expenditure incurred on School Fee, Examination
Fee, School Development Fee, Boys Fund/PTA/Nidhi Fund, Fines, Laboratory
Charges, School Trips/Picnic, School Clubs, School Functions, School Uniform,
School -Transportation, Sports, Text/Help-Books, Stationary, Mobile/Internet,
Computer, Tuition/Coaching, Pocket Money etc. For estimating the private cost,
data has been collected from 6,336 students of Arts, Commerce, Science and
Vocational streams, studying in Government Schools, RPVVs, Government Aided
Schools, KVs and Public Schools. After having added the two components, unit
institutional cost and unit private cost of education, Average Total Unit Cost of
education have been estimated for all the streams taught in different types of
schools in East Delhi.

**Major Findings**

1. The **Institutional cost** of operating a seat of **Arts stream** annually at
   senior secondary level is Rs.64609, highest in RPVVs in all the
   schools. It is more than double of Government schools (Rs.32134) and
   more than two and half times of Public schools (Rs.24801). Salary
   cost accounts more than 86 percent of institutional cost for
   Government schools and Government-Aided schools. It is more than
   91 percent for RPVVs and KVs. However, Public schools spend only
70 percent on salary of their institutional cost. They spend more than 11 percent of their institutional cost on Co-curricular activities against 3.63 percent in RPVVs. Further, analysis of institutional cost of Commerce stream indicates that salary cost for Commerce stream varies from 64.99 percent to 93.05 percent of institutional cost for different schools. It is 80.34 percent, 86.63 percent, 86.85 percent, 93.05 percent and 64.99 percent for Government schools, Government-Aided schools RPVVs, KVs and Public schools respectively. Public schools spend more than 13 percent of their institutional cost on Co-Curricular activities which is highest in all the schools. They also spend more than 20 percent on the Support Services (other than Academic), which is more than four times of RPVVs.

(2) The study shows that KVs spend 95.23 percent of institutional cost of Science stream on salary. Salary cost for Science stream is 66.18 percent of institutional cost in Public schools, which is significantly lower in all the schools. They also spend more than 18 percent of the institutional cost on the support services like electricity, water, building maintenance and medical facilities for students. Public schools spend more than 12 percent of its institutional cost on Co-Curricular activities which is more than four times of KVs. The institutional cost of Science stream in RPVVs is Rs. 47533, which is more than double of Public schools (Rs.23022).

(3) Analysis of institutional cost of Vocational stream shows that Salary cost of Vocational stream is lowest in all the streams taught in a school. Facility to study Vocational stream at senior secondary level is not provided to students in all the schools. Teaching cost of
Vocational stream is very low because Vocational teachers are appointed on Part-Time basis in Government schools on a consolidated salary. Public schools also do not pay the salary to Vocational teachers like other subject-teachers. Salary cost of Vocational stream in Public schools is only 56.93 percent of its institutional cost against 78.08 percent in Government schools. Public schools also spend more than 15 per cent of their institutional cost on Co-Curricular activities against the 11 per cent in Government schools. The education of Vocational stream in Government schools at senior secondary stage is neglected. Government of Delhi neither appoints full time Vocational teachers nor provides the better practical facilities in Vocational labs in its schools.

(4) **Institutional cost** as **average of all the streams** of RPVVs, KVs, Government-Aided Schools, Government Schools and Public Schools is Rs.50810, Rs.36682, Rs.34769, Rs.27308 and Rs.21754 respectively. Institutional cost of RPVVs is higher because these schools do not admit more than 35 students in one section as a policy matter of Government of Delhi. The results of the study validate the hypothesis that the unit cost of senior secondary education is higher in Government Schools than in Public Schools. Thus the average institutional cost of education at senior secondary stage varies sharply between Public Schools and RPVVs. Higher institutional cost of education of RPVVs is mainly due to lower student-teacher ratio.

(5) Behavior of management of Government Schools Administration does not differ significantly from that of the Public Schools in respect of mixing the faculties or teachers for effecting economies. If average enrolment size is taken as an index of popularity in a school where all
streams are offered then Science emerges to be the most popular stream which is followed by Commerce. The establishment of either purely Science or Arts school does not find much favor with the managements of Public Schools. Mixing of faculties/papers/teachers reduces cost through the increase in enrolment size. Sometimes senior secondary teacher is asked to teach the middle and secondary classes. More costly education of science stream too attracts the Public Schools as there is rise in demand for science education at senior secondary stage. The expenditure on lab maintenance is higher in the Science stream where more supporting non-teaching staff is required to man the laboratories. Public Schools manage Arts, Commerce, Science and Vocational stream by the diversification of the subject mix which may be an effective planning to cope with higher cost of specialized stream. Institutional costs of senior secondary education in Science steam in Government schools, Government-Aided schools and KVs, being higher among all the streams are mainly dominated by teachers’ salaries and salaries of Laboratory Assistants and also expenditure on Science practical in laboratories.

(6) The analysis of Private Cost of Arts stream indicates that more than 61 percent amount of Private Cost of Arts stream students is spent on tuition expenditure in Government schools. Students of Arts stream of RPVVs spend 44 percent amount of private cost on tuition. Government-Aided schools students also spend more then 54 percent of total Private Cost on tuition or coaching. The Private Cost of Arts stream of KVs is Rs. 29061, which is highest in government managed schools. KV Students pay Vidyalaya Nidhi Fund to their school which is more than 17 percent of the total Private Cost. Parents spend Rs.
55676 for Arts stream education in Public schools. They spend about 70 percent on school fee, school development fee, school uniforms, school transportation etc. Further, it is surprising to find that Arts stream students of these schools spend less on tuition, then the students of Government-Aided schools.

(7) The study shows that **Commerce stream** students in Public schools spend more on school fee, examination fee, school development fee, school trips/picnic, school uniform and school transportation etc, comparative to government managed schools. **Private Cost** of education of Commerce stream students is Rs. 24342 in Government schools. Commerce students are spending more than 70 percent of private cost on tuition in Government schools, whereas students of RPVVs spend only 47 percent amount of their private cost on tuition/coaching. Commerce stream students of KVs pay Vidyalaya Nidhi Fund which is 13.36 percent of their Private Cost. Students of Public schools spend more for studying Commerce (Rs.57538) than Arts stream (Rs.55676). They spend more on tuitions for Commerce than Arts stream.

(8) Analysis of **Private Cost** of education for **Science stream** shows that more then 70 percent of private cost is being spent on tuition/coaching in Government schools by the students of Science stream. Students opting Science stream in RPVVs spend more then 59 percent amount of their private cost on tuition. The Private Cost of Science stream of KVs (Rs.38256) is higher than the Government schools (Rs.25580). Students studying in KVs spend more then 15 percent of Private Cost on school transportation. Students of Public schools spend Rs. 74185 for the study of Science stream, which is highest in all the streams and
schools. They spend more than 75 percent of private cost on school fee, school transportation and tuition of Science stream subjects. A parent, for educating their wards in Science stream in Public school, has to spend Rs. 74185 about three times of private cost of Government school (Rs 25580).

(9) The study shows that **Vocational stream** at senior secondary stage is opted by few students. Only few Government schools and Public schools in East Delhi offer the option of Vocational stream for students. The analysis shows that Vocational stream student has to spend Rs. 18355 as **Private cost** in Government schools. Students of public school spend Rs. 52703 on vocational education, which is more than two and half times of the students of Government schools. Students of Government school spend more than 58 percent of total private cost on tuitions of Vocational stream subjects whereas Public school students spend less than 10 percent for coaching classes of Vocational subjects.

(10) Unit **private cost** as **average of all the streams** of Public Schools, KVs, RPVVs Government-Aided Schools, and Government Schools is Rs. 60026, Rs. 34234, Rs. 25075, Rs. 21891 and Rs. 20984 respectively.

(11) After having added the two components, unit institutional cost and unit private cost of senior secondary education, the **total unit cost** for Arts, Commerce, Science and Vocational stream offered in **Government schools** in East Delhi is Rs. 47791, Rs. 46305, Rs. 60554 and Rs. 38514 respectively. Out of this 67.24 percent, 47.43 percent, 57.76 percent and 52.34 percent is spent by Government of National Capital Territory of Delhi for Arts, Commerce, Science and
Vocational stream respectively as institutional cost. The remaining amount Rs. 15657 (32.76%), Rs.24342 (52.57%), Rs.25580 (42.24%) and Rs. 18355 (47.66%) is spent by parents as private cost.

(12) The total unit cost for Arts, Commerce and Science stream taught in RPVVs in East Delhi is Rs.86410, Rs. 63221, and Rs. 78024 respectively. Out of this Rs. 64609 (74.77%), Rs.40288 (63.72%), and Rs.47533 (60.92%) is spent by Government of National Capital Territory of Delhi as institutional cost. The remaining amount Rs. 21801 (25.23%), Rs.22933 (36.28%) and Rs.30491 (39.08%) is spent by parents as private cost for education of their wards for Arts, Commerce, and Vocational stream in RPVVs.

(13) The total unit cost for Arts, Commerce and Science stream taught in Government-Aided schools in East Delhi is Rs.52700, Rs. 52685, and Rs. 64596 respectively. Out of this 62.4 percent, 64.1 percent, and 58.3 percent is spent by Government of National Capital Territory of Delhi as Aid to Aided schools managed by private trusts/societies as institutional cost. The remaining amount Rs. 19813 (37.6%), Rs.18908 (35.9%) and Rs.26953 (41.7%) is spent by parents as private cost for Arts, Commerce and Science stream.

(14) The total unit cost for Arts, Commerce and Science stream taught in KVs in East Delhi is Rs.55053, Rs. 67860, and Rs. 89834 respectively. Out of this Rs. 25992 (47.21%) Rs.32475 (47.86%), and Rs.51578 (57.41%) is spent for Arts, Commerce and Science stream by Kendriya Vidyalaya Sangathan as institutional cost. The remaining amount Rs. 29061 (52.79%), Rs.35385 (52.14%) and Rs.38256 (42.59%) is spent by parents as private cost for the education of their wards in KVs.
The **total unit cost** for Arts, Commerce, Science and Vocational stream taught in **Public schools** in East Delhi is Rs.55676, Rs. 57538, Rs.74185 and Rs. 52703 respectively. This total cost is spent by the parents for educating their wards in Public schools which includes institutional cost and private cost. Out of this Rs.39171 (70.35%), Rs.39159 (68.05), Rs.41881(56.45%) and Rs.40325(76.51%)is charged on different heads by the Public schools from parents for teaching of Arts, Commerce, Science and Vocational stream respectively. The remaining amount is spent by parents on text books, stationary, mobile, computer, pocket money and tuitions. In Public schools teaching and non-teaching staff is not being paid their salaries and allowances according to the recommendations of VI Central Pay Commission, hence their institutional cost of different streams are comparatively lower then Government Schools, Government Aided Schools, RPVVs and KVs. If we look towards the recovery of the unit institutional cost in terms of the average fee and other charges paid by the students, the striking picture emerges. Analyses show that the recovery rate ranges from **1 % to 2 %** in different types of schools run by Government of Delhi. The recovery rate is **14%** in KVs run by Kendriya Vidyalaya Sangathan, Government of India. Whereas, the Public schools being run by private managements the recovery rate is more than **116%**, meaning thereby that they charge **16%** higher than what they incur the cost in providing the education at the senior secondary level. Further, striking facts are that on the name of school uniforms and schools transportation they charge per student Rs. 3312 and Rs. 11400 respectively, which is almost double the expenditure incurred by the students in Government managed schools.
(16) In East Delhi the problem of having all the streams i.e. Arts, Commerce, Science and Vocational in one school is being faced by the students. The admission policy in different streams after passing secondary examination is not rationalized. The availability of subject teachers and the methodology of teaching the particular subject greatly influence the admissions and result of students in the different streams. The inadequate and poor facilities for experiments in vocational labs in vocational subjects are another cause of great concern and students do not opt for admission in vocational stream. Relatively, low priority and preference to Vocational stream in East Delhi reflects the pathetic condition of vocational education.

(17) In any education system **wastage and stagnation** are two symptoms of malfunctioning of the educational system. Wastage in education always exists because of the system failure. System fails to send the student to next grade or class. Even system, sometime, fails to hold the children within the educational-system. The study shows that Government schools and Government-Aided schools have maximum wastage per school at senior secondary level in East Delhi, because per school failure (11% to 14%) in same class at senior secondary stage is higher in these schools. Since enrolment and students’ strength in one class of senior secondary stage in Government schools of East Delhi is high, average institutional cost is low. In these Government managed schools in East Delhi, failure rate is higher, and so is the wastage. In RPVVs, because of higher teaching cost, average institutional cost is highest. However important point to be underlined is that **wastage** is lowest in RPVVs due to better results (98.7%). Per school failure rate in KVs is less than the Government schools and
Government-Aided schools. The data of Public schools on results of students at senior secondary classes shows that the problem of wastage (in terms of cost) is quite significant in these schools also. The result of Public schools, under study, remained only 92% in Senior Secondary classes in East Delhi. However, the failure rate of students in Public Schools is lower than the Government Schools, Government-Aided Schools and KVs, but it is more than six times compared to RPVVs.

**Suggestions**

(1) To rationalize per unit institutional cost, it is essential to have cost-effective but result-oriented enrolment policy for all the streams. Like RPVVs, Government schools and KVs should also decide the number of students in one section. Though, additional enrolment in one section may lower average institutional cost, but it may decline the quality of teaching, which may further lead to stagnation and consequently wastage of resources. It is suggested that in Government schools, suitable enrolment policy of 45 to 50 students in one section may be adopted to rationalize the average unit institutional cost.

(2) The teaching of Vocational stream in Government schools is completely neglected. All schools do not offer the option of study of Vocational stream. Vocational teachers in these schools are being appointed on Part-Time basis. Like teachers of other subjects, Vocational teachers also should be appointed on regular basis. The facility of practical in Vocational labs is not provided satisfactorily in Vocational subjects. It is suggested that Vocational labs should be equipped with full infrastructures for practical. It will encourage the students to opt Vocational stream, which will result in optimum utilization of school resources.
(3) In Government schools, failure students in senior secondary examination are allowed re-admission. The valuable resources are wasted on these re-admitted students. School administration should encourage them to opt and take the liberal examination system of National Institute of Open Schooling.

(4) The problem of wastage and stagnation at senior secondary level of education is faced by the Government schools. To minimize the stagnation, the quality of teaching should improve in these schools. In Government schools 75 percent senior-secondary teachers (Post Graduate Teachers) are promoted from secondary teachers (Trained Graduate Teachers), remaining is directly recruited. The teachers, who have been teaching Mathematics or Science at secondary level for years, should not be allowed to teach the English language or Social-Science subjects on promotion. Mathematics or Science teachers were not trained during their teachers’ training for the methodology of teaching of English or Social-Science subjects or vice-versa. Kendriya Vidyalaya Sangathan and Navodaya Vidyalaya Samiti allow the promotions according to the feeder cadre of Science or Social-Science stream, same system of promotion should be followed by Government schools to improve the quality of teaching and minimize the wastage, which will result in reduction of the institutional cost. Also to reduce the stagnation of students in one class and minimizing the wastage, students should be allowed admission in the streams of their choice. In this regard it is suggested that admission policy in different streams should be based on the aptitude and interest of students in the stream concerned and authorities should rationalize the admission policy for each stream separately.

(5) In Government schools, posts of subject teachers have been lying vacant for years, though it has reduced the institutional cost but students have to arrange tuitions of these subjects which increase the private cost.
(6) To lower the private cost of senior secondary education, students’ dependence on tuitions/coaching should be minimized. For this, it is suggested that senior secondary curriculum and methodology of teaching of different subjects taught in different streams, should be students friendly.

(7) Government schools, RPVVs and Government-Aided schools spend very less on Co-Curricular activities due to financial constraints. It is suggested that like KVs, these schools may charge the fund from the students like KV’s Vidyalaya Nidhi Fund.

(8) Students transportation cost should be reduced to minimize the Private Cost, for this, it is suggested that government should encourage the admission in neighboring school through mutual transfer of students in the choice of their stream.

(9) Public schools managements instruct students to wear different types of school uniform on different days. It increases the expenditure on uniform, which in turn increase the Private Cost of education. It is suggested that single uniform should be allowed to wear on all days of the week.

**Suggestions for Further Research**

The field of economics of education, particularly of Senior Secondary education in India is a less researched area. It is indeed need of the hour to do more research in the context of huge public investment in this segment of educational sector. A few areas that deserve to be taken up for further research, especially at micro level, are indicated below:

(1) Which section of the society is the beneficiary of the Senior Secondary level of education imparted in government managed schools?
(2) What are the returns of Senior Secondary education to individuals, society and nation?

(3) Institutional Cost should be calculated on the year basis at micro level for the different streams offered by different school managements.

(4) The impact of teaching of additional subjects, on cost structure of Senior Secondary education, should be investigated.

(5) The cost-effectiveness at Senior Secondary stage, from additional stream point of view in the existing school, may be another area of interest for further research.

(6) Cost and returns of education at senior secondary stage for SCs, STs, OBCs and General category students, may be another area of further studies.

(7) Studies on cost effectiveness may be conducted for Boys’ schools, Girls’ schools and Co-Ed schools separately.

(8) Studies on cost of vocational education for establishing the exclusive vocational schools may be carried out.

(9) The benefit of Senior Secondary Vocational education to the society and the industry in the context of ongoing large scale demand of computer and IT professionals should be studied.

(10) The intensive study, on wastage and stagnation in different streams, from cost effectiveness point of view should be taken up.