CHAPTER VII

FACTOR COST OF HIGHER EDUCATION IN
TAMIL NADU

This chapter attempts at examining the magnitude of the draft made by higher education on the resources of the community.

Our enquiry is confined to higher education at the under-graduate level in Universities and Colleges of Tamil Nadu. The period of our study is the academic year June 1978 - May 1979, the year of our sample survey.

The methodology adopted to measure the magnitude of resources used up in higher education at the under-graduate level in Tamil Nadu is based on that of Pro. T.W.Schultz in the Capital Formation by Education",

and adapted by Prof. V.N. Kothari in "Factor cost of
Education in India",[1] of estimating the direct as
well as the indirect costs of education.

Costs of Education:

According to Prof. T.W. Schultz, the costs paid
by the student and his family and the costs paid by
others as for example, the community, state, the union
Government, voluntary agencies etc..... constitute
the factor costs of schooling. The costs paid by
the student and his family can be called private costs,
while those paid by others can be called social costs.
Private costs can further be classified into costs
borne by parents and opportunity costs (earnings for-
gone) by students while attending school.

Costs of education, says,Prof.Gary S. Becker,
include:

(a) Private costs and (b) Social costs. Private costs
can be divided into direct costs including costs of
tuition, books, equipment, staying in hostel, etc......,
and indirect costs comprising opportunity costs. Social
costs, similarly, can be direct costs including the
sum total of expenditures by colleges, and indirect
costs consisting of earnings foregone.[2]

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1. a) Schultz, T.W. - Capital formation being Educat-
       ion, Journal of Political Economy, 1960.

   b) Kothari, V.N. - Factor cost of Education in
      India, The Indian Economics Journal,Volume
      XIII, No.5, April - June 1966

2. a) Schultz, T.W. The Economic Value of Education
      New York,1963

   b) Becker G.S. Human Capital, Columbia University
      Press, New York,1964.

In our present analysis, direct costs consists
of governmental as well as private institutional
expenditure and fees (net of scholarships) and other
incidental expenses incurred by the pupils. The
indirect costs consists of the alternative earnings
foregone by the students while in college and consti-
tute an important element in the cost of education.

Earnings Foregone

The estimate the earnings foregone we need to
know the number of under-graduate students in higher
education in Tamil Nadu. Table VII (1) gives the
number of under-graduate students in Arts, Science
and Commerce Colleges (General Education) and
Engineering and Medical Colleges (Professional Edu-
cation) in Tamil Nadu in 1978-79. The data are
obtained from the Performance Budgets of the Govern-
ment of Tamil Nadu.[3]

Our next problem is to estimate the earnings
foregone by students. In order to calculate the
alternative earnings, we need to know the labour
force participation rates by age, sex, wage-rate and
corresponding educational qualification.

The average age of the sample population is 19.
We can reasonably presume that the earnings forgone

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3. a) Performance Budgets, 1979-80 - Social Education,
   Collegiate Education and Technical Education.

   b) Performance Budget, 1979-80 - Medical Education,
   Government of Tamil Nadu, March - April 1979,
   Madras.

by under-graduate students of higher education
would be equivalent to that of a secondary grade
school teacher,[4] a junior clerk in an educational
institution or government officer, a junior
accountant in a private firm or a junior clerk in
a nationalised bank in the initial stages of their
career. The reasons for this assumption are:

1) the minimum qualification for a secondary
   grade school teacher is S.S.L.C./Matriculat-
   ion and a trained teacher's certificate of
   secondary grade or a senior grade basic
   teacher's certificate;

2) the minimum qualification for a junior
   clerk in an educational institution or a
   government office is S.S.L.C./Matriculation
   with or without the knowledge of typewriting;

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4. Educational Administration in Tamil Nadu
   (a survey report) - 1977 - National Staff
   College for Educational Planners and Admini-
   strators, 17-B, Sri Aurobindo Marg, New Delhi.

Note   In Tamil Nadu there are two types of Primary
       School Teachers, namely,

   a) Secondary Grade Teacher - Those who have
      passed S.S.L.C./Matriculation and hold
      a trained teacher's certificate of
      secondary grade or a senior grade basic
      teacher's certificate. They can teach in
      primary schools from class I to class VIII;
      and

   b) Higher Elementary Grade Teacher - Those
      who passed class VIII and a trained teacher's
      certificate of higher elementary grade or a
      junior grade basic teacher's certificate.
      They can teach in primary schools from
      class I to class V.

TABLE VII - (1)

TAMIL NADU

NUMBER OF UNDER-GRADUATE STUDENTS OF HIGHER
EDUCATION - 1978-79

Course-wise break-up of students	Men	Women	Total
General Education	78,730	36,488	1,15,218
Professional Education	17,170	3,030	20,200
Total	95,900	39,518	1,35,418

TABLE VII - (2)

TAMIL NADU

ACTUAL EARNINGS OF A SECONDARY GRADE SCHOOL
TEACHER, JUNIOR CLERK AND JUNIOR
ACCOUNTANT* - 1978-79

(in Rupees)

Type of job	Earnings per month Rs. 00	Earnings per year Rs. 00
Secondary Grade School Teacher	365.00	4,380.00
Junior Clerk in an Educational Institution	365.00	4,380.00
Junior Clerk in Government Office	365.00	4,380.00
Junior Accountant	475.00	5,700.00
Junior Clerk in a Nationalised Bank	596.00	7,152.00

* Note: Total starting salaries including usual allowances

Source: Data collected from Government and Private sources,
Tamil Nadu, 1978-79.

3)   the minimum qualification for a junior
        accountant in a private firm is S.S.L.C./
        Matriculation and a certificate or diploma
        from a recognized school of commerce;

4)   the minimum qualification for a junior clerk
        in a nationalised bank is S.S.L.C./Matricu-
        lation with 60% or above marks; and

5)   a secondary grade school teacher, a junior clerk
        or accountant normally starts earning at the
        age of 19.

        The actual rates of earnings of a secondary
grade school teacher, a junior clerk and a junior
accountant in Tamil Nadu during 1978-79 are given in
Table - VII (2). Since alternative sources of employ-
ment are possible, the earnings also differ. There-
fore, in estimating the earnings forgone by under-
graduate students of higher education, we could appor-
tion an upper estimate as well as a lower estimate.
For students of general education, the upper estimate
of earnings forgone could be assumed as the earnings
of a secondary grade school teacher or a junior clerk
in an educational institution or government office
with 100% of men and 50% of women students as econo-
mically active, and the lower estimate as 100% of
men and only 25% of women students as economically
active. For students of professional education,since
the more talented students are admitted to profess-
ional education, it is assumed that the upper estimate
of the earnings foregone would be equivalent to the
earnings of a junior clerk in a nationalised bank

and the lower estimate equivalent to the earnings of
a junior accountant. We assume that 100% of men and
women of professional education would have been econo-
mically active.

The upper and lower estimates of earnings
foregone by students of general and professional educat-
ion are worked out in Table VII-(3). These estimates
are prepared from the data given in Table VII-(1) and
VII (2). The total earnings per year are shown in lakhs
of rupees. The figures have been rounded up to the
nearest lakh. The total earnings foregone at current
prices came to Rs.424$7$ lakhs (upper estimate) and
Rs.3848 lakhs lower estimate for general education, and
Rs.1445 lakhs (upper estimates) and Rs.1152 lakhs (lower
estimate) for professional education.

We next proceed to analyse the current resour-
ce costs of providing educational services. These can
be broadly divided into direct and indirect expenditure
on education, the terms commonly used in government
publications. Under direct expenditure we have such
items as salaries of teaching staff, salaries of non-
teaching staff, expenditure on equipment and other appli-
ances (recurring), expenditure on non-specified items,
fees paid by the pupils and expenditure of pupils on
non fees. By fees we mean net fees (college and univer-
sity exam fees) after deducting scholarships and free-
ships. By non-fees we mean expenditure on such items
as books and stationery, miscellaneous items, staying
in a hostel etc.[5] Indirect expenditure includes expen-

5. Refer Chapter V of this thesis on 'Private Expenditure
   on Higher Education'.

diture on direction and inspection of educational
institutions, expenditure on buildings, hostels,
scholarships and other financial grants, expenditure
on equipment and other appliances (non-recurring)
and expenditure on other items.[6]

The net fees paid by the students (college and
university exams fees) during 1978-79 came to Rs.530
lakhs for general education and Rs.103 lakhs for pro-
fessional education. Expenditure on non-fees by the
students, that is on books, stationery, private tuition,
miscellaneous items, hostel room rent, hostel mess,
snacks and refreshments, and short and long distance
travel, came to Rs.1452 lakhs for general education
and Rs.469 lakhs for professional education.

.Direct expenditure by government came to Rs.2266
lakhs and Rs.858 lakhs each for general and professional
education. Indirect expenditure on direction and
supervision and miscellaneous items amounted to Rs.77
lakhs for general education and Rs.150 lakhs for pro-
fessional education. The details are given, in
Table VII - (4).

We must also include implicit interest and depre-
ciation on the physical capital invested in higher edu-
cation institutions, for arriving at current resource:
costs of providing educational services. The data
relating to the value of capital stock in higher educat-
ional institutions are not available. It is however,
possible to make an estimate. The Performance Budgets

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6.   Refer footnote (2) of Chapter III of this thesis
      on "Direct and Indirect Expenditure".

TABLE VII – (3)

TAMIL NADU

UPPER AND LOWER ESTIMATES OF EARNINGS FORGONE BY STUDENTS OF GENERAL
AND PROFESSIONAL EDUCATION

1978 – 79

Course	Number of students			No. of students Assumed to be Economically active	
	Men	Women	Total	Men	Women
1	2	3	4	5	6
General Education					
Upper Estimate	78,730	36,488	1,15,218	78,730	18,244
Lower Estimate	78,730	36,488	1,15,218	78,730	9,122
Professional Education					
Upper Estimate	17,170	3,030	20,200	17,170	3,030
Lower Estimate	17,170	3,030	20,200	17,170	3,030

(CONTD.....)

TABLE VII - (3) (CONTD....)

Course	Earnings per year Rs.00	Total earnings per year Rupees in lakhs		
		Men	Women	Total
1	7	8	9	10
General Education				
Upper Estimate	4,380	4,448	799	4,247
Lower Estimate	4,380	3,448	400	3,848
Professional Education				
Upper Estimate	7,152	1,228	217	1,445
Lower Estimate	5,700	979	173	1,152

Note: a) Prepared from Table VII - (1) and VII - (2);

b) Col. (6) of General Education is 50% and 25% of Col.(3)
for upper and lower estimates, respectively.

on different stages and types of education published
by the Government of Tamil Nadu provides data relat-
ing to investment in educational institutions for
recent years. We have taken the data relating to
the years 1976-77, 1977-78 and 1978-79. Object-wise
classification on the amount of expenditure on build-
ings was available for general education. For
technical education as no such classification was
available, we have calculated the total expenditure on
Minor and Major Works, Machinery and Equipment and
Motor Vehicle as equivalent to the expenditure on
buildings. As no separate data relating to buildings
or their equivalent were available for medical education,
we have imputed to medical education, the same amount of
expenditure on buildings as worked out for technical
education.

On this basis the physical capital invested in
buildings was calculated in the following manner:

1)   First, the average annual enrolment of students
        in general and professional education for the
        three year period 1973-74 to 1975-76 was cal-
        culated.

2)   Secondly, the average annual enrolment of students
        in general and professional education for the
        three year period 1976-77 to 1978-79 was calcu-
        lated.

3)   Thirdly, to find out the average increase in
        enrolment between 1976-77 and 1978-79, the differ-
        ence in the average annual enrolment of students
        between the two-three year periods, 1973-74 to

1975-76 and 1976-77 to 1978-79 was calculated.

4)   Fourthly, the total amount spent on buildings
      from 1976-77 to 1978-79 on general and profess-
      ional education, on the basis outlined above,
      was calculated. ,

5)   Fifthly, the amount of physical capital to be
      invested on buildings in any particular year
      is estimated on the demand for additional acco-
      mmodation arising out of new enrolments in that
      year and in the previous, say three years as
      well as forecast of additional enrolment in the
      next three years. Thus for example, the esti-
      mated investment on buildings during 1978-79 was
      based on the number of additional enrolments,
      say from 1976-77 to 1978-79, and the forecast
      of additional enrolments for the next three
      years. The forecast for the future is based on
      the average rate of additional enrolment during
      1976-1979. On this basis, we have calculated
      the total of the actual and estimated invest-
      ment on buildings from 1976 to 1979. We have
      also calculated the enrolment rates of two-three
      year periods, from 1973-74 to 1975-76 and from
      1976-77 to 1978-79. The difference in the
      average rate of enrolment during these two-three
      year periods, gives us the increase in the
      average rate of enrolment during 1976-1979. By
      dividing the total investment on buildings
      during 1976-79 by the increase in the average
      rate of enrolment, we get the expenditure per
      student on buildings during 1976-79. The
      total capital invested on buildings during

TABLE VII - (4)

FACTOR COST OF HIGHER EDUCATION IN TAMIL
NADU AT CURRENT PRICES - 1978-79

(Rupees in Lakhs)

Sr. No.	Items	General Education	Professional Education
1.	2	3	4
1.	Net fees paid by the students (College & University Exam fees)	530	103
2.	Expenditure on Non-fees by the students	1452	469
3.	Direct expenditure by government	2266	858
4.	Interest and Depreciation (Implicit)	660	192
5.	Direction and Supervision	263	114
6.	Miscellaneous Indirect Expenditure	51	36
7.	Earnings foregone (upper estimate)	4247	1445
8.	Earnings foregone (Lower estimate)	3848	1152
9.	Total of all costs (upper estimate)	9232	3217
10.	Total of all costs (lower estimate)	8833	2924

Note: a) Items 1 and 2 are prepared from Chapter V, Table V
(12) of this thesis as explained in foot note 4,
page 7.
b) Items 3,5 and 6 have been taken from the Performance
Budgets,1979-80, foot note 3, Chapter VII.
c) Item 4 is explained in page number 224f.
d) Items 7 and 8 are calculated from Table VII-(3) as
explained earlier.

1976-1979 came to Rs.189.9 lakhs for general education and Rs.197.7 lakhs each for technical and medical education. The increase in enrolment came to 6900 for general education and 3715 each for technical and medical education. The expenditure per student cane to Rs.2750 for general education and Rs.3715 each for technical and medical education.

6) Sixthly, by multiplying the expenditure per student by the number of students enrolled in 1978-79, we get the total investment on buildings for 1978-79 at current prices. The total expenditure cane to Rs.5500 lakhs for general education and Rs.1600 lakhs each for technical and medical education.

The depreciation at 2% per annum and the interest rate at 10% on the book value of capital (the rate on fixed deposits in India) came to Rs.660 lakhs for general education and Rs.192 lakhs for professional education.

Note: As separate data on physical capital invested in Engineering colleges alone were not available, the expenditure given here on buildings for technical education includes both Engineering Colleges and Polytechnics. In calculating the per student expenditure on buildings, we have, therefore, taken the total enrolment in Engineering Colleges and Polytechnics. The amount thus calculated for Engineering Colleges is bound to be on the higher side. Since equivalent amount was imputed for medical education, it is also bound to be on the higher side.

Thus the total factor cost of higher education in Tamil
Nadu came to Rs.9232 lakhs (upper estimate) and Rs.8833
lakhs (lower estimate) for general education, and Rs.3217
lakhs (upper estimate) and Rs.2924 lakhs (lower estimate)
for professional education.

OBJECTIONS:

It can be argued that these figures overestimate the costs
of higher education. The following objections may be
raised:

1)   In the Indian context where there is so much of
        disguised and open unemployment, it is unrealistic
        to talk of earnings forgone. The opportunity cost
        of higher education is zero.

2)   The assumption that 50% of women students of
        general education and 100% in professional
        education would have been economically active is
        very much often to question.

3)   Not all college going students forego income while
        studying. Some of them do combine work with study.

To the first objection that in the face of large scale
disguised and open unemployment, it is unrealistic to think
of alternative earnings foregone, one must make a distin-
ction between disguised unemployment which refers to zero
marginal productivity of labour and open unemployment
which refers to the availability of labour at the current
wage rate and has no implication about its productivity
as such. In the case of the former, additional output
is not possible, while in the case of the latter additional
output is possible if the currently unemployed can be
put to work. The concept of disguised unemployment is

more applicable to unskilled workers while in the case of educated persons open unemployment is more appropriate. From the long-run social point of view, the foregone earnings, says Prof. Mary Jean Bowman,[7] cannot be zero because from the long-run point of view education is just one of the many possible ways of utilizing the time of the unemployed labour.

As Prof. Schultz puts it, the earnings foregone while attending school are likely to exceed all of the other school costs incurred by the students and for them. Earnings foregone, therefore, present an important factor in the factor costs of education. Students can augment the family income by staying have to work than by going for higher education.

To the second objection that 50% of women students of general education and 100% of professional education would have been economically active, we assume that since only the more tabulated students among women go for professional education out of one's own choice rather than due to parental influence or compulsion, they would have been otherwise economically active. As for women students of general education, we have assumed both an upper and a lower estimate. As the percentage of educated women seeking employment is on the increase, we assume that the upper estimate of 50% and the lower estimate of 25% being economically active are within reasonable limits.

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7. Bowman M.J. - Economics of Higher Education, Ed. Selma Mushkin.

To the third objection that not all college
students forego income while studying, because
some of them combine work with study, our
experience during the sample survey is to the
contrary. In the entire sample population of
1274 students, only 2 students reported as
doing part-time work while studying. An import-
ant reason for this is the fact that in the uni-
versities and colleges of Tamil Nadu, the time
table is so drawn up as to engage the students
in academic work daily from 10'O clock in the
morning to 4'O clock in the evening on five or
six days in a week. This leaves him little
time for part-time employment.

On the basis of our foregoing analysis
given in Table VII - (4), we get the following
estimates of earnings foregone and total costs
of higher education in Tamil Nadu during 1978-79:
as given in Table VII-(5)

The importance of earnings foregone is
obvious. They formed 46 and 45 per cent each of
total costs of higher education for general and
professional education, if we take the upper
estimate, and 44 and 39 per cent each of the
total costs of higher education, if we take
the lower estimate.

Resource allocation and cost of higher education:

How much of the states resources are allo-
cated to higher education? The total factor cost
of higher education (1978-79) as percentage of
state net Domestic Product (1977-78) (SNDP) came

TABLE VII - (5)

TAMIL NADU

TOTAL FACTOR COST OF HIGHER EDUCATION UPPER
AND LOWER ESTIMATES OF EARNINGS FOREGONE
1978 - 79

(Rupees in lakhs)

	Total costs	Earnings foregone
General Education (Upper estimate)	9232 (100)	4247 (46)
General Education (Lower estimate)	3217 (100)	1445 (44)
Professional Education (Upper estimate)	8833 (100)	3848 (45)
Professional Education (Lower estimate)	2924 (100)	1152 (39)

to 2%, if we take the upper estimate and 1.9%, if we take
the lower estimate for general education. The correspond-
ing figures for professional education were 0.7% and 0.6%
each.

Our next question is: what is the relative cost of
higher education in Tamil Nadu? The per capita expenditure
on higher education (1978-79) with respect to the per
capita income of the state (1977-78) came to:

8:1 (upper estimate) and 7:1 (lower estimate) for general
education, and 15:1 (upper estimate) and 14:1 (lower
estimate) for professional education. That is to say, the
cost of educating a student for general higher education is
8 times the per capita income of the state and that for
professional education is 15 times the per capita income
of the state. The relevant data are given in Table VII-(6).

TABLE VII - 6

TAMIL NADU - FACTOR COST OF HIGHER EDUCATION - 1978-79

THE TOTAL FACTOR COST OF HIGHER EDUCATION (1978-79) AS PERCENTAGE OF SNDP (1977-78) AND THE PER CAPITA EXPENDITURE ON HIGHER EDUCATION (1978-79) AS RATIO OF PER CAPITA INCOME OF STATE (1977 - 78)

Course	Number of students	Total factor cost of Higher Education (1978-79) (Rs. in lakhs)	Per capita expenditure on Higher Education (1978-79) (in rupees)	State Net Domestic Product (SNDP) (1977-78) (Rs. in lakhs)	State per capita income (1977-78) (in rupees)	Column (3) as percentage of column (5)	Column (4) as ratio of column (6)
1	2	3	4	5	6	7	8
General Education (Upper estimate)	1,15,218	9232	8,013	4,66,990	1031	2	8:1
General Education (Lower estimate)	1,15,218	8833	7,666	4,66,990	1031	1.9	7:1
Professional Education (Upper estimates)	20,200	3217	15,926	4,66,990	1031	0.7	15:1

TABLE VII - 6 (CONTD...)

1	2	3	4	5	6	7	8
Professional Education (Lower estimates)	20,200	2924	14,375	4,66,990	1031	0.6	14:1

Note: SNDP and per capita income of Tamil Nadu refer to 1977 - 78 only, the latest available published data (Quick Estimate). An increase of 10 to 15 per cent may be assumed for 1978-79.

Source: Tamil Nadu - An Economic Appraisal - 1978, Finance Department, Government of Tamil Nadu, Madras 1979.