

# **Economics of Higher Education**

## **Micro Analysis of Private Colleges in Nagaland**

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### **I. Introduction**

Economics of education emerged as a new branch of economics during mid-sixties of the last century on account of the research works of a few American economists like TW Schultz, RM Solow, etc. It was inspired by the findings that economic growth was not explicable by traditional theories. A significant and systematic residual was observed when growth was explained in terms of labour, capital, etc. To explain this residual, the hypothesis of human capital was introduced. Since then, the literature on this branch has grown significantly that deal with many diverse questions such as the concept and formation of human capital, the residual factor in economic growth, correlation between education and earnings, manpower forecasting and planning, estimation of the demand and supply of education, criteria for investment in education, cost-benefit analysis of education, etc.

Education classified according to level and purpose distinguishes between lower education and higher education. The former is meant for literacy and preparation of the stuff that may go into the higher education sector as the basic material. Higher education is mainly to inculcate necessary skills and competence for achieving important personal and social goals and thereby contributing to the development. Higher education is not only a means to generate larger personal and social wealth; it is also a means to intellectual, cultural and aesthetic development.

An economic perspective to higher education raises many issues such as how much should a country spend on education and how should expenditure be financed? Is education primarily 'investment' or 'consumption'? If it is investment then how large is its contribution vis-à-vis other forms of investment in men and material? If it is consumption, what are the determinants of the private demand for more/better education? What is the optimum structure of the educational pyramid - that is the number in the different levels and channels of the educational system? What is the optimum mix of formal education within the schools and colleges and informal education outside them? What contribution does education make to the overall development of human resources and how far can we accelerate economic growth by controlling the expansion of educational system?

The issues enlisted above mainly relate to the 'macro-economics' of education. However, the educational services are provided at a 'micro-level' and educational institutions provide these services. It is needless to stress on the fact that the efficiency of a system at macro-level cannot be achieved but at the micro-level. This fact necessitates a study of the educational system at the level of institutions that impart educational services.

A micro-level study of the institutions of higher education (colleges) would be furthermore important because higher education aims at skill formation (while lower education is mainly for literacy or making the inputs to higher education). An analysis of operation, efficiency, productivity, structure, pricing, etc. of the institutions of higher learning such as the colleges is therefore meaningful.

These issues of operation, efficiency, productivity, structure, pricing, etc. of the institutions of higher learning were never less important. However, in the last two decades, while the government is gradually receding from financing the institutions of higher learning and the private enterprises are coming up to meet the demand for higher education, an in-depth study of these issues has assumed evermore importance. This is so because private institutions must work and charge prices on market principles.

In this milieu, a college is a firm, producing and selling educational services to the customers. A college acts as a mill in which the consumers (i.e. students) come in as the raw material to be shaped for the future benefits. In doing so the college charges necessary fees for the services rendered to the student. Like any producing units in the economy, colleges use resources and technology to turn out something of benefit to individuals and to society.

Unlike the government-run colleges that are motivated by socio-political goals, one of the basic objectives of a private college may be profit maximization, which may be attained in various ways like charging higher admission fees, hostel rent, etc. Other than that, some other objectives of the colleges may be maximisation of the standard of the college, expansion of the college, mitigating the local socio-political aspirations and needs and lastly providing quality education as well.

In the organisational perspective, a private college may take the form of a sole proprietorship, partnership, co-operatives etc. that runs business for the furtherance of its economic interest, although some colleges may have a professional approach and strive for high quality education. Another form of college may be referred to as 'Deficit College'. Both government and private individuals have their shares in the administration of such colleges.

Private colleges have a market structure. As the producing units, they fall under the purview of monopolistic competition. Colleges produce more or less closely substitutable products - such as instruction to pupil and examinations results. One definite thing about the consumers (the students) is that they have a preference to a particular brand of product. These brands are close but not perfect substitutes for each other. In the pricing decision, private colleges follow some norm. There may be no direct communication between colleges, but an informal understanding is established and a leader emerges. It is not necessary that the leading college is the largest one in the industry. Whether the new price initiated by the leading college is acceptable to the followers depends on its comparative advantage over the incremental cost of production

of the colleges as well as the total cost and revenue situation for various activity projections.

## **II. Review of Literature**

Studies on the macro-economics of education abound, but investigations on the micro-economics of the institutions of higher learning (colleges/ universities) are only few and far between. One of the major reasons for this lies in the fact that until recently, the domain of higher education was limited to government. Government colleges scarcely worked on market principles. Emergence of private sector in higher education has nevertheless given a boost to the micro-economics of education. Some of the representative investigations on this line may be presented here.

Verry (1987) analysed the different types of educational cost functions and also dealt with issues of research methodology to be followed in estimating educational costs like choice of unit of analysis, choice and measurement of variables, choice of functional form and interpretation of estimated function, etc. He also examined the relevance of using alternative concepts like private and social opportunity costs, total, average and marginal costs, joint costs etc. in analysing the educational production functions.

Joshi (2000) observed that today with large number of private institutions, both university affiliated and independent, the monopolistic characteristic is widely visible. There are two characteristics of this market: first, firms compete by selling differentiated products, which are highly substitutable for one another but not perfect substitutes (In other words, the cross-price elasticity of demand are large but not infinite) and secondly, there is free entry and exit - it is relatively easy for new firms to enter the market with their own brand of the products (course design) and for existing firms to leave if their products/courses becomes unprofitable.

Thompson and Zumeta (2001) brought out the relationship between key state policy variables - (1) relative (private vs. govt.) tuition prices, (2) state student-aid funding, and (3) public institution density - and the competitive position of private colleges and universities was examined. The findings suggest state policies in this era of strong demand for higher education and constrained public sector capacity should use price signals (student aid and public institution pricing) to encourage students to consider seriously whether private higher education might serve their needs as well as or better than public institutions.

Perna (2002) drew upon the final report of the National Commission on the Cost of Higher Education (1998), Ehrenberg (2000), and King (1999) to explore (a) the cost of higher education in selected private colleges and universities, (b) public concern about the rising costs of higher education, and (c) the shift in financial aid policy from access to affordability.

Bhushan (2004), opined that the private institutions managed by the trust/society be allowed to exploit the market for education under the regulation and control by the government whereas the autonomy of institutions in admission policy, staff recruitment

policy and the teaching-learning process should be provided under the guidelines issued by the government. The government should regulate the quality dimensions of the programmes by making the recognition and accreditation of institutions and programmes mandatory for all private education providers.

### **III. Objectives and the Scope of the Study**

The present study covers all the eleven districts of Nagaland. There are 36 Colleges imparting general education of which 28 are private colleges. In Kohima district there are 9 private colleges, in Dimapur district there are 11 private Colleges, in Mokokchung district there are 2 private colleges. Wokha, Tuensang, Phek, Kiphiri, Peren and Longleng districts have only 1 college each.

These private colleges may be studied in terms of their size, location and organisation pattern. The focus of our study has been on the interplay of teachers, patrons, technology and finance towards the development of privately run college and their optimal functioning. Our study attempts at the following:

- (1) Analysis of the structure of the privately run colleges.
- (2) The employment opportunities (part time or full time) created by these colleges.
- (3) Amount of income generated by these colleges in the town.
- (4) The obstacles faced by these colleges in terms of finance and new techniques with the exigencies of time.
- (5) The efficiency and productivity of these colleges.
- (6) To examine the pricing policy of these colleges.
- (7) To suggest a few specific problems for future research through this study/findings.

### **IV. Hypotheses**

- (1) Consumers of higher education services have a revealed preference for private college (vis-à-vis Government colleges).
- (2) Private colleges run in a monopolistic competition/ oligopolistic market.
- (3) Pricing and the product policy in the private college industry are made in an atmosphere of moral hazards.
- (4) Pricing in the private college industry is not competitive.
- (5) Profits make a substantial portion of the proceeds (income) of the private colleges.
- (6) Private college industry generates a number of benefits (employment, income, better opportunity to government services, etc).

### **V. Methodology**

This is an empirical study and therefore, it is mainly based on the data collected from the field. At the gross level, some secondary data were used based on the review of

relevant literature, journals, research and survey conducted by various organisations, viz. the census report, statistical Handbook of Nagaland, Directorate of Higher & Technical and School Education, Nagaland University and University Grant Commission publications.

The data pertain to the following aspects of the college: (1) Name and year of establishment (2) Patron (3) Status of affiliation (4) Location and distance from the main town (5) Streams (6) Residential and allied facilities (7) Vocational and Computer course (8) Extra curricular activities (9) Enrolment of students and students from outside in different classes (10) Academic performance (11) Particulars of Teaching and Non-Teaching staff and their salary (12) Physical assets including Library (13) Fee structure (14) Resources generated other than fees (15) Sources of income and items of Expenditures (16) Problems and suggestions perceived by the College.

Data, which were collected 2003-04, were tabulated, processed and analysed systematically by applying appropriate statistical tools and diagrams. Among the statistical methods, regression analysis, principal components analysis, etc. were mainly used. We could not collect information on three colleges as the principals declined to oblige.

## VI. Summary of Findings

**1. Govt. vs. Private Colleges:** Colleges started being established in Nagaland since 1959. By 1983, there were 8 government and 5 private colleges in the state. However, starting of new govt. colleges ceased afterwards. Since 1983, twenty-three private colleges have been established. In 2003-04, these twenty-three colleges enrolled over 12000 students, while older (pre-1984) colleges enrolled 8.8 thousand students (govt. colleges : 3.5 thousand and private colleges : 5.2 thousand). Overall, private colleges enrolled over 17 thousand students while govt. colleges enrolled 3.5 thousand students. Thus, private colleges serve over 4/5<sup>th</sup> of the consumers(students). This fact indicates the role of private colleges in the higher education sector of Nagaland.

**Table 1. Growth of number of students in the private Colleges in Nagaland. (1999-2004)**

Sl No.	Name of the college	Year of Estd.	Total Number of students. (1999-2004)					Growth	
			1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	Student per year	Annual Average rate
1	Kohima	1967	1503	1458	1340	2105	2201	174.5	9.29
2	Patkai	1974	1285	1133	1305	1374	1594	77.25	4.81
3	Baptist	1982	826	752	863	1070	1115	72.25	6.99
4	Salesian	1982	143	136	154	163	157	3.5	1.96
5	Pfutsero	1982	74	126	132	138	160	21.5	23.24
6	Peoples	1984	427	374	341	428	424	-0.75	-0.14
7	St Joseph's	1985	1494	1580	1651	1676	1676	45.5	2.44
8	Public	1985	605	734	822	749	747	35.5	4.69
9	Peren	1987	100	142	129	134	133	8.25	6.6
10	Mountain	1991	259	242	249	135	78	-45.25	-13.98
11	Pranaba..	1991	489	558	705	678	680	47.75	7.81

12	Salt	1991	1502	1543	1660	1133	1418	-21	-1.12
13	Alder	1992	1002	1032	760	841	1003	0.25	0.02
14	Mount	1992	489	523	540	616	618	32.25	5.28
15	City*	1992	NR	NR	NR	NR	NR	NR	NR
16	Eastern	1992	887	438	443	315	517	-92.5	-8.34
17	Yingli	1992	72	68	58	129	108	9	10
18	S.D. Jain	1993	787	834	1016	985	1088	75.25	7.65
19	Loyem*	1993	NR	NR	NR	NR	NR	NR	NR
20	Kilenkaba	1994	246	236	234	261	246	0	0
21	Tetso	1994	281	248	258	334	433	38	10.82
22	Sakus	1994	417	464	484	553	710	73.25	14.05
23	Oriental	1996	223	154	315	316	406	45.75	16.41
24	Japfü	1996	411	444	383	441	522	27.75	5.4
25	Tuli	1996	46	65	56	41	62	4	6.96
26	Bailey	1996	222	232	175	212	209	-3.25	-1.17
27	Modern	1997	214	167	178	436	471	64.25	24.02
28	Zisaji*	1997	NR	NR	NR	NR	NR	NR	NR
Total (* =Non-reporting)			14004	13683	14251	15263	16776	+693	+3.96

**Table 2. Number of students in Government Colleges in Nagaland. (1999-2004)**

Sl. No.	Name of The College	Year of Estd.	Total Number of students. (1999-2004)					Growth	
			1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	Student per year	Annual Average rate
1	Fazl Ali	1959	975	883	810	525	527	-112	-9.19
2	Kohima Sc	1961	923	974	1000	1065	1240	79.25	6.87
3	Sao Chang	1966	1105	1218	750	695	678	-106.75	-7.73
4	Dimapur	1973	271	205	258	234	420	37.25	10.99
5	Zunheboto	1974	257	465	108	286	213	-11	-3.43
6	Phek	1980	133	134	167	149	213	20	12.03
7	Mt. Tiyi	1981	86	133	118	94	126	10	9.3
8	Wankhao	1983	129	124	129	130	126	-0.75	-0.47
Total			3879	4136	3340	3178	3543	-84	-1.73

Private colleges enrolled 16776 students of which 9150 are boys and 7626 are girls. Enrolment of Non-Naga students is 2240 which is 13.35% of the total enrolment. The highest is 78.98% and in one college there is no Non-Naga enrolment.

Growth rates of students from 1999-2004 indicate that in case of the private colleges there was a positive growth of 693 students per year whereas for the government colleges there was a negative growth of 84 students per year. As for the average annual rate we have a positive growth rate of 3.96 for private colleges and a negative growth of 1.73 for government colleges. The average enrolment in government colleges during this period is 442.87 and 671.04 in private colleges. Thus, our first hypothesis that the consumers have a preference for private colleges is maintained.

**2. Older Colleges Command Larger Market Share :** Of the reporting 25 private colleges, the oldest 9 private colleges enrol 48.92% of the total number of students in the private colleges, while the youngest 16 enroll 51% of the total students. 12 colleges are relatively small in size with students less than 500. These twelve colleges have

enrollment of 48 percent of the total students in private colleges. Three colleges are relatively large with student's enrollment over 1300 students.

**3. Employment Generation:** Private Colleges in Nagaland employed 451 lecturers on regular basis and 10 on contract. In all there are 29 lecturers who have Doctorate of which two are female. There are 15 lecturers who hold M.Phil degree of which 12 are male and 3 are female. The rest 407 are post-graduates. There are 22 colleges that have number of lecturers between 5 to 25 - with the maximum number of lecturers within the range of 15 and 20. All the colleges have lecturers more than 5 and only one college employ more than 45. Lecturers working for a period of less than five years received on an average a monthly salary of Rs 7304, for lecturers working for more than five years but below 10 years received Rs 8523 and lecturers above ten years of service received Rs 11035 on an average.

The number of non-teaching staff is almost same in all the colleges with staff less than 10. Only one college has staff more than 45. Private colleges employed 226 Non-Teaching staff of which 10 are on contract. On an average a grade I staffs monthly salary is Rs 7096, a grade II staff is Rs 4746, a grade III staffs is Rs 397.13 and grade IV staffs is Rs 2619.

**4. Resource Utilization:** The student/ Lecturer ratio is about 37 on an average, the highest being 62.89 and the lowest being only 7.10. Male Lecturers constitute 63% of the total number of lecturers. The student/ classroom ratio is a little over 62 on an average, the largest being 129.47 and the smallest being only 9.75. The index of utilisation of classroom indicates that the classrooms are slightly over utilized. In an average it is 101.2. The existing classroom is 287 and the required classroom is 295. The maximum value of utilization of classroom is 220 and the minimum value is 20. For the 25 colleges 1136 classes are taken in a day. In an average it comes to 46 classes per college per day. For a lecturer the average classes per day comes to 2.54, with highest number of classes being 4.38 and lowest being 1.4. The average workload per lecturer in a week is 13.99 classes. The highest number of classes for a lecturer per week is 24.09 and the lowest is 7.70.

**5. Performance:** Performance of the colleges were analysed through internal and external examinations. Ten indicators of performance were constructed taking a period of five years from 1998-2002. The results suggest that Japfu, Patkai and Salesian Colleges were ranked first, second and third respectively according to mean factor- I. According to mean factor-II Salesian, Eastern and Patkai colleges were ranked first, second and third respectively.

**6. Earning, Expenses and Profits:** Private colleges in Nagaland earned revenue of Rs 9,70,63,207 and spent Rs 7,63,19,467 during the session 2002-2003. Thus the Net revenue comes to Rs 2,07,43,740. Ten colleges incurred losses amounting to Rs.37,98,113. The total net profit for the fifteen colleges comes to Rs.2,45,41,853. Overall, the profit earned by the colleges is a little more than 27 percent (over expenses). Some

colleges profit much more while some others incur losses. This relates to our fifth hypothesis.

**Table 3. Gross indicators regarding private colleges in Nagaland. 2002-2003**

Items	Measure	Items	Measure
No. of Private colleges	25	A&A cost	7189308
No. of Students	15263	Students activities	1223616
No. of P.G Lecturers	407	<b>Gross expenses</b>	<b>76319467</b>
No. of M.Phil Lecturers	15	Revenue from Tuition Fees	45146290
No. of PhD Lecturers	29	Revenue from Admission Fees	34419115
No. of contract lecturers	10	Revenue from Computer Fees	1677090
No. of Computer Teachers	15	Revenue from Hostel fees	9692720
No. of Non-Teaching staff	216	Government Grants	2350000
No. of contract N-T Staff	10	Donations	1789917
No. of Office rooms	75	<b>Gross Annual revenue</b>	<b>92923290</b>
No. of class rooms	270	<b>Gross Annual income (GAI)</b>	<b>97063207</b>
No. of Lecturers room	25	<b>Profits</b>	<b>20743740</b>
Salary to Lecturers (regular)	44581884	Gross Profit Rate on Expenses	27.18%
Salary to Lecturers (contract)	88200	Share of Lecturers in Income	46.54%
Salary to N-T Staff (regular)	10252442	Share of Staff in Income	10.73%
Salary to N-T staff (contract)	162500	Share of A&A expenses in Income	7.41%
Salary to Computer teacher	500500	Share of Students' expenses	0.53%
Scholarships and awards	210000	Share of Miscellaneous Expenses	0.07%
Expenses on Infrastructure	7753649	Share of Infrastructure expenses	10.16%
Miscellaneous Expenses	55000	Share of Rent in Income	0.11%
Expenses on Rent	1110000	Share of library in income	2.79%
Library	2705781	Share of Capital in GAI	<b>21.36%</b>
Laboratory	340134	Share of Labour in GAI	<b>57.27%</b>
Water and electricity	702045	Share of Entrepreneur in GAI	<b>21.37%</b>

**7. Production Function:** 'Production Function' represents the technological relationship between output and factor inputs. This relationship conveys the returns to the scale of production, substitutability between factors of production, the overall efficiency of production and the overall contribution (in distributive sense) of different factors to production.

Empirical work on production function requires choosing of a particular form of functional relationship to be estimated (Mishra, 2004). Various forms have been proposed and used by the practicing econometricians, of which: (a) Cobb-Douglas [ $P = AK^{\alpha}L^{\beta}$ ], and (b) CES [ $P = \alpha\{\delta K^{-\beta} + (1-\delta)L^{-\beta}\}^{-\eta/\beta}$ ] are prominent. Among these, the Cobb-Douglas type of production function is most frequently used mainly for reasons of ease in estimation. The CES production function is a generalization of the Cobb-Douglas, Leontief and linear specifications of production function, identified by the value of the elasticity of substitution, [ $\sigma = 1/(1+\beta)$ ]. The value of  $\sigma = 1$  for Cobb-Douglas, zero for Leontief and indefinitely large for linear production functions. In the CES production function,  $\alpha(>0)$ ;  $\beta(\geq -1)$ ;  $\delta(0 < \delta < 1)$ ; and  $\eta > 0$  are called scale, substitution, distribution and homogeneity parameters respectively.

We have represented production, capital and labour in value terms, since substantial variations in types of output (HS, BA, BCom, etc), capital (various types of infrastructure) and labour (teachers, non-teaching staff of different types) did not permit

an aggregative measurement. Thus, we have proxied output by total revenue, capital by overhead capital expenses, and labour by the aggregate salaries (all at the college level).

Then, we have estimated the CES production function directly using a non-linear estimation method. The least squares methods did not give acceptable results. Hence we used the least absolute deviation method of estimation. The results are presented in the table below:

Table 5. Estimated Parameters of CES Production function				
Statistic	Parameters			
	$\alpha$ (Scale)	$\delta$ (Distribution)	$\beta$ (Substitution)	$\eta$ (Homogeneity)
Estimate	0.43450	0.066416	0.543953	1.1026
Std.Err.	0.00628	0.023215	0.655959	0.0060
t(21)	69.15683	2.860855	0.829248	182.6921
p-level	0.00000	0.009357	0.416291	0.0000
R <sup>2</sup> = 0.755, Method of estimation : Least absolute deviation due to presence of outliers				

In the functional form it is given as:

$$P = 0.4345(0.066416K^{-0.543953} + 0.933584L^{-0.543953})^{-\left(\frac{1.1026}{0.543953}\right)}$$

The value of homogeneity parameter,  $\eta$ , is 1.1026, suggesting a slightly increasing returns to scale. The value of the substitution parameter,  $\beta$ , is 0.543953 (although statistically not significantly different from zero), giving the elasticity of substitution,  $\sigma = 0.6477$ , substantially smaller than unity. This suggests that the substitution between labour and capital is feasible only to some extent. Also, a small value of distribution parameter,  $\delta$  (= 0.066) indicates that capital contributes only meagrely to production. These findings clearly suggest the labour-intensive nature of output in the colleges of Nagaland.

**8. Pricing and Product Policy:** Pricing and product policy of the colleges under study has many dimensions. How many types of services (education in HS, BA, BCom, BSc, Hostel, etc) to offer, how many students to enroll, what fees to charge for different services, etc are covered under pricing and product policy.

Admission and tuition fees charged from the students make the core revenue of the college, which makes 82.6 percent of the gross revenue. There is a wide variation across the colleges in the unit (average) revenue accruing from admission as well as tuition fees. While the middle sized SD Jain College charges the lowest admission fees (about Rs.1300), immediately followed by Salesian (about Rs. 1500) and Eastern (about Rs. 3800). The largest college, Kohima, charges admission fees as modest as Rs. 1670, which is much below the industry average (Rs. 2358). Kohima College is a deficit college. The second largest college, Josephs College, charges admission fee at Rs. 2942. These figures are the mean figures over different standards (higher secondary and graduation, arts and commerce streams).

Revenue Source	No.of Colleges	Minimum	Maximum	Mean	Std. Dev
Admission	25	1298.89	4086.97	2358.00	688.34
Tuition	25	1875.56	4002.27	2865.21	524.70
Core	25	3889.08	6818.32	5223.21	878.91

On the other hand, the lowest tuition fees are charged by Salt (Rs. 2190), a medium size college. On the other hand, Japfu, a small college, charges the highest tuition fees of about Rs. 4000 per year. Kohima College charges Rs. 3000 as tuition fees per annum. The third largest college, Patkai, also charges the tuition fees at approximately same rate. However, Josephs, the second largest college, charges Rs. 3680, which is the second highest rate (after Japfu).

Admission fee as a price has many attributes and scopes. It may be used (and often works) as a prestige price, reference price or psychological price. It may also be used as a deceptive price. Admission fees may be used as a tool of captive product pricing or two-part pricing policy. It may also be used as a tool of penetrating pricing policy.

Psychological pricing is the concept that certain prices are more appealing than others are. The psychology of prices and not simply the economics are considered. The price is used to say something about the product. One special form is reference pricing where there are prices that the buyers carry in their minds and refer to when looking at a given product. Image pricing or prestige pricing is used as a measure of quality. A prestige price often goes with the snob appeal. A college that has earned reputation and is sought after for admission may use high admission prices. The richer section of the consumers who considers it prestigious to join the college will join it. High admission prices may discourage the relatively poorer section of students, but the college will raise enough revenue from those who opt for admission to it.

Low admission fees followed by significantly large tuition fees may work as a deceptive price. Students may be attracted to take admission at low prices. Since tuition fees are paid in installments later, students may not feel the burden even when they pay somewhat more. In doing so, the college may earn more.

A small new college may use lower admission fee policy to attract more students, and enter into the market or increase its market share. In this case, it would use admission fees as a tool of penetration pricing.

In any case, admission fees work as a tool of two-part pricing; in the first part students are registered to obtain the services (teaching) for which they pay in the second part. In this policy, admission fees cover a good part of the uncertainty as well the payment for initial investments made by the college.

Admission fees together with the tuition fees, therefore, make up the core price that students pay for the services of a college. The minimal core price (about Rs. 3890) is charged by Salesian, a small college. Bailey, SD Jain and Salt charge about Rs. 4200 per annum. On the other hand, Eastern College charges the maximum (about Rs. 6800), followed by Josephs and Pfutsero, all above Rs. 6500 per annum.

Cluster analysis suggests four bands of core prices (admission plus tuition fees): the lowest around Rs. 4200 set by SD Jain and Salt colleges, both located in Dimapur.; the next higher around Rs. 5000 set by Modern at Kohima main town; the second highest around Rs. 5800 set by Alder at Kohima main town; and the highest around Rs. 6600 set by Joseph's College at Kohima (outskirts). It may be noted that in core revenue, Josephs has the largest market share (about 14 percent). Such large variations in prices suggest that prices are far from being competitive (hypothesis 4).

It may be noted that SD Jain, Baptist, Salt, Patkai, Josephs and Kohima are the six largest colleges under study, with enrollments between 985 and 2105, admitting 8343 students and with a market share of 55.66 students. All these colleges charge tuition fees in the range of Rs. 2100 to 3700 and admission fees in the range of Rs. 1300-3000.

A distinction may be made among the colleges located in different places, because location affects competition and pricing policy adopted by the colleges. Salt and SD Jain are the medium level colleges located in Dimapur and therefore may compete with each other. Patkai, Testo and Salesian are in the outskirts of Dimapur. Like Kohima College, Alder, Baptist, Mount and Modern are located in Kohima town. They may closely compete for the market share. Josephs, Oriental, Mountain, and Japfu are in the outskirts of Kohima town. Peren, Yingli and Tuli are rural colleges. Peoples, Bailey and Pfutsero are in Mokokchung, Wokha and Phek and have no private colleges to compete with them.

If we look into the core pricing policy of the colleges located in and around Kohima town, we observe that they charge in the range of Rs. 4668 and 6623, Kohima College at the lowest and Josephs College at the highest. Kohima College is a deficit college and may justify lower charges. Oriental and Baptist are close to each other in the Rs 5000-5200 range. Japfu, Mount and Alder are in Rs. 5500-6000 range. Modern, Mountain and Josephs charge higher than Rs. 6000 per year.

Colleges in and around Dimapur charge core fees in the range of Rs. 3889-6818. Salesian charges the lowest and Eastern charge the highest core fees. Both are very small colleges. SD Jain and Salt are medium size colleges. They charge a little less than Rs. 4200.

All colleges in Kohima earn 40 to 85 percent profit. All colleges in the outskirts of Kohima except Josephs are in loss, due to high average cost and small size. All colleges except Eastern in Dimapur earn profit. Eastern incurs a loss due to high cost, higher pricing policy and small enrollment. Kilenkaba is a distinct case that cannot be

dealt with without its efforts in running the science stream with a good enrollment. Saku is a little better than at the break even.

All colleges in the outskirts of Dimapur incur losses. Patkai is a distinct case that cannot be dealt with without its efforts in running the science stream with a good enrollment. All colleges in rural areas and other district headquarters, except Peoples College, run at a loss, mostly due to small enrollment and high cost. Peoples College has a good enrollment and it charges a relatively high core fees. As a result, it earns profit. Pfutsero incurs a loss due to high charges, very high cost and poor enrollment.

Now we may take into account the two colleges, Patkai and Kilenkaba (in the town/outskirt of Dimapur) that offer education in the science stream. Education in sciences, primary due to laboratory requirements, is costlier. Students who opt for science stream are psychologically prepared to pay more.

For the higher secondary classes, Kilenkaba charges higher admission fees (Rs. 5700) and annual tuition fees (Rs. 3000) against Rs. 2300 and Rs. 2160 respectively for arts stream. At the graduation standard, admission fees are Rs. 4635 for pass course and Rs. 4965 for honours course, against Rs. 2300 charged for arts pass and honours uniformly. Annual tuition fees for the science stream are Rs. 3000 (pass) and Rs. 3360 (honours) against Rs. 2400 (uniform) for the arts stream. Kilenkaba admits 191 students at the higher secondary level out of which 102 are in the science stream. At the graduation level, it admits 70 students of which 34 are in the science stream. Due to servicing of the science stream, Kilenkaba raises substantial revenue to make its (overall) average revenue of Rs. 6744 much higher than the average cost (Rs. 6524). Its profit margin is a meager 3 percent over the average cost.

Patkai College admits 1374 students of which 275 are in the science stream. Of the total (481 students) 143 are in the science stream at the higher secondary level. Admission fees are Rs. 3630 (against Rs. 2180 for arts) and tuition fees are Rs. 2880 (against Rs. 2520 for arts) per year. At the graduation level, the college admits 893 students of which 132 are in the science stream. Admission fees for BSc are Rs. 2845 (pass) and Rs. 3780 (honours) against Rs. 2400 (pass) and Rs. 2600 (honours) respectively for arts. Annual tuition fees for BSc are Rs. 3240 and Rs. 3840 against Rs. 2880 and Rs. 3480 arts. It is interesting to note that admission fees for BSc (pass) are lower than that for the higher secondary class. Revenue from the science stream is substantial addition to the total revenue, making the overall average revenue (all streams) of Rs. 5548 against the average cost of Rs. 8926. Due to high costs Patkai College incurs losses at the core activity of teaching.

**9. Hostel facilities as a device to raise revenue:** Hostel facilities are the additional service provided by a college to its students. While cheap accommodation facilities may be attracting students, high price accommodation facilities may be used as a tool of optional-product pricing policy. Optional-product pricing is the pricing of optional or accessory products along with a main product. The price charged to the clients for such

optional product (service) may be much higher than its average cost of production. Revenue from the sale of optional price makes up for lower main product revenue. If an oligopolist were not able to raise enough revenue from selling the main product (either due to high cost of the main product or inability to charge enough price to main product), he would make it up by selling the optional product to the customers.

Out of 25 colleges that we are dealing with in this study, 12 offer hostel facilities at widely varying lodging rates. Modern and Josephs charge only Rs. 1700, Testo Rs. 2300, Mountain Rs. 3250 and Patkai Rs. 3530 per year. Oriental, Saku and Alder charge over Rs. 5000 per year. Others charge between Rs. 4000 to 5000. These charges do not include boarding.

Of these colleges, Oriental, Mountain and Japfu, located in the outskirts of Kohima town, incur losses in the main product (teaching) business. Josephs and Modern are profit earners in the main product business and charge very low prices for lodging. Only Alder, located in the Kohima town, charges at a very high rate (Rs. 6300 per year).

In Dimapur town, Kilenkaba, Eastern, Salt and Saku offer hostel facilities. Of these, Eastern is a small college that runs in the loss in the main product business. Even after offering hostel facilities it does not make profits. Kilenkaba and Saku, earning a modest profit in the main product business, enhance their profit margin by providing hostel facilities. Salt provides hostel facilities at a large scale. Its hostels provide lodging to 350 students (over 30 percent of its students).

In the outskirts of Dimapur, two colleges provide hostel facilities. Testo runs at a loss even after providing hostel facilities. Patkai hostels provide lodging facilities to 1174 students (over 85 percent to its students) at the rate of Rs. 3530 per year. Patkai incurs loss in the main product business. Revenues from hostels greatly reduce the loss, but the college remains left to the break-even point.

Overall, hostels rescue out Japfu and Mountain from the red in the main product market; Patkai, Oriental and Eastern come very close to the break even point, Kilenkaba and Saku become comfortable and Salt and Alder raise their profit margins substantially.

**10. Computer courses as a source of additional revenue:** Eleven colleges offer computer course. Total Revenue (Gross) comes to Rs 1677090 which is 1.73% to the total revenue generated. These figures are excepting Salesian college as it did not furnish the details. Altogether 2402 students took up computer in 10 colleges. All colleges earned a profit in offering computer course. The total net revenue is Rs 995090. Introduction of computer course does not bring about any drastic increase in the overall profit margin. Public and Salt colleges earn a profit margin higher than 10%.

**11. Marginal Analysis of Cost and Revenue:** An investigation into the behaviour of the colleges under study regarding profit maximization may indicate how prices are

determined in the higher education industry in Nagaland. To this end we analyse average and marginal cost against revenue accruals.

The quadratic regression equation of average cost curve is given by

$$AC = a_0 + a_1N^{-1} + a_2N + a_3N^2 + e$$

The estimated average cost curve (details given in the table below) is obtained as:

$$\hat{AC} = 8408.230 + 233244.840N^{-1} - 7.112N + 0.00251N^2 ; R^2 = 0.568$$

From this equation, we obtain the estimated marginal cost curve as

$$\hat{MC} = \hat{a}_0 + 2\hat{a}_2N + 3\hat{a}_3N^2$$

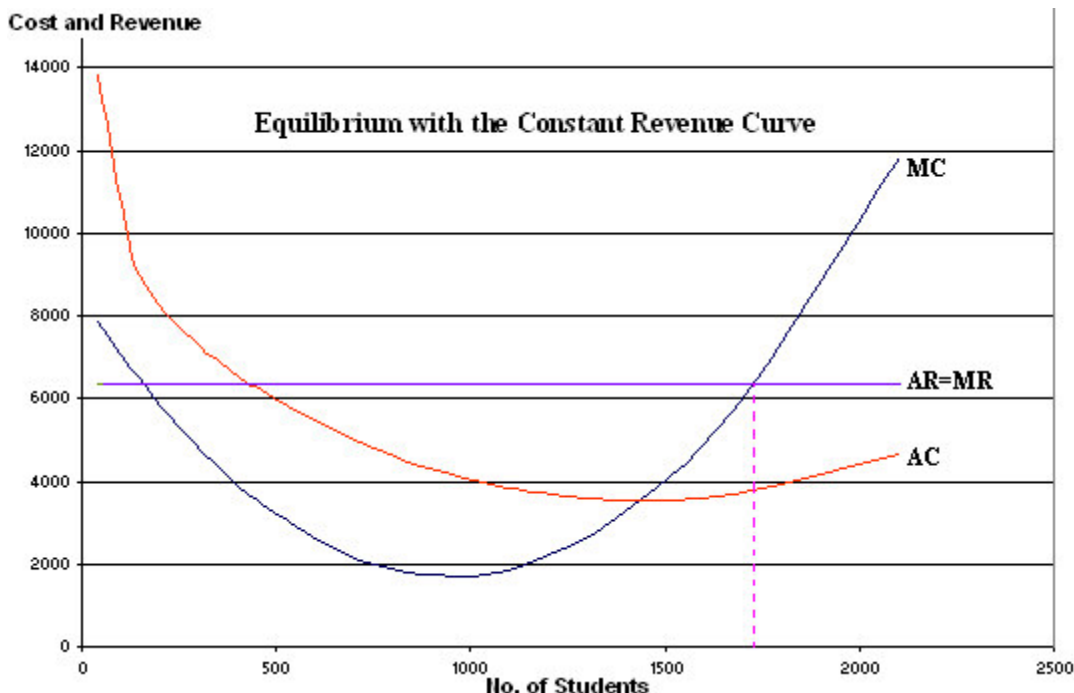
$$\hat{MC} = 8408.230 - 14.224N + 0.00753N^2$$

Table. 7. Quadratic Regression of Average Cost (AC) on No. of Students (N)*				
Variable	Coefficient	Standard Error	't' value	Prob
Intercept	8408.230	1768.454	4.755	0.000
N <sup>-1</sup>	233244.840	137383.377	1.698	0.104
N	-7.112	3.799	-1.872	0.075
N <sup>2</sup>	0.00251	0.002	1.444	0.163
Dependent variable: Average Cost; R <sup>2</sup> = 0.568; F=9.212 significant at 0.000				

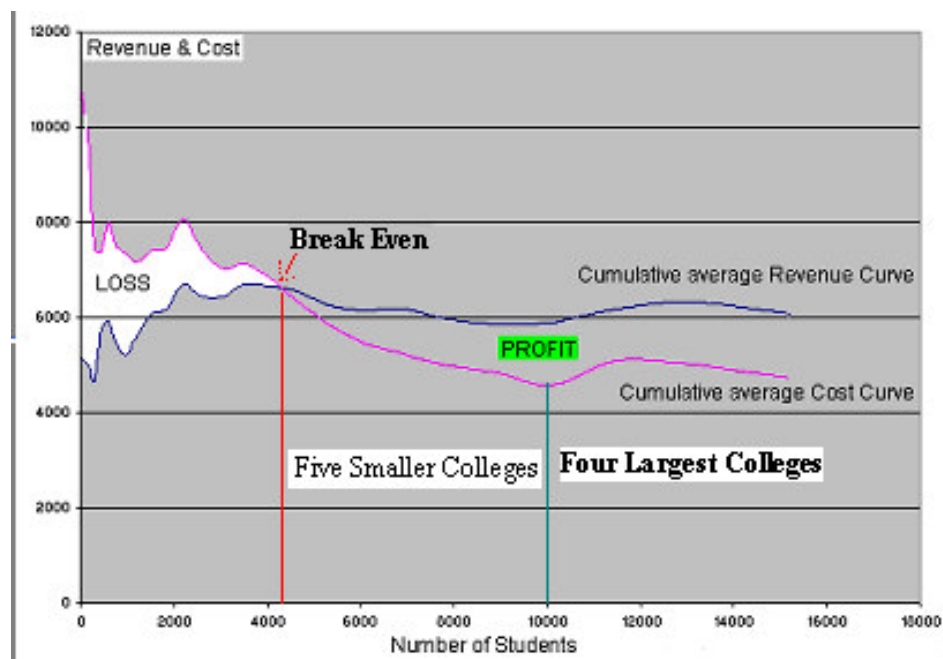
An attempt to fit a quadratic regression equation to the average revenue (AR) data has shown that the average revenue does not respond to the number of students. No regression coefficient (except the intercept) is significant even at 20 percent probability level. The coefficient of determination (R<sup>2</sup>) also is insignificant. Attempts to fit a linear and inverse regression equations to the average revenue data also have shown that the average revenue does not respond to the number of students.

These results indicate that the average revenue is a constant value (with sample disturbances), not responding to the number of students. The mean revenue per students is obtained as Rs. 6359.379.

This analysis indicates the likelihood of St Joseph's college emerging as the most efficient college. It also functions as a leader firm in setting the prices (fees to be charged) that other firms (colleges) follow with some variations in consideration of their own cost structure and policies. St. Joseph's college is the second largest college after Kohima college, with an enrolment of 1676 students.



The cumulative (from the smallest to the largest college, in terms of enrolment) average revenue and cost curves suggest that smaller colleges run in loss. The four largest colleges (Salt, Patkai, Joseph's and Kohima colleges) enroll 41.2 percent of students. These colleges charge a more or less stable mark-up (or cost plus) price over their average cost as shown in the diagram below.



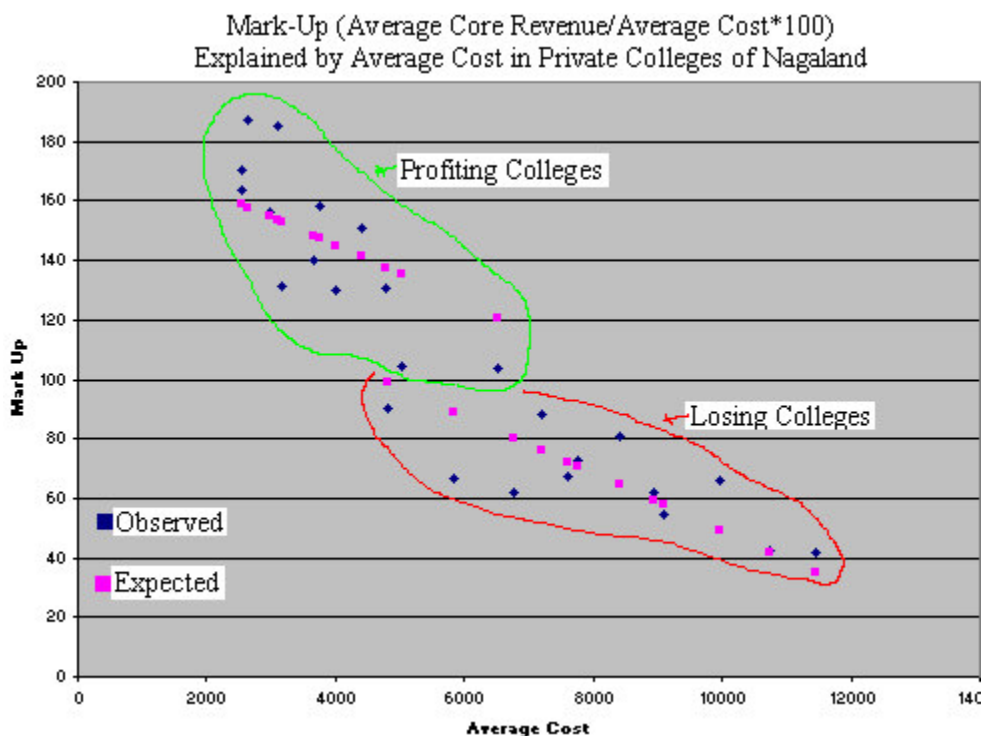
**12. Evidences of Mark Up Pricing:** To test the hypothesis of mark up pricing by the colleges we have formulated three alternative models. In the first model, we regress the ratio of average core revenue to average cost (MARK-UP) on (i) average cost (AC), (ii) location dummy (LOC) and (iii) market share, that is the percentage of the enrolment in a particular college to total enrolment (SHARE). We visualize that location dummy (1 for Kohima main town, 2 for Kohima outskirts, 3 for Dimapur main town, 4 for Dimapur outskirts, 5 for other urban colleges and 6 for rural colleges) may be an important explanatory variable to the extent of mark up. Similarly, market share, being a measure of monopoly power, may explain the extent of mark up. Our results suggest (table 8) that except the average cost, no other variable (i.e. LOC and SHARE) shows statistically significant impact.

	$\beta$	see of $\beta$	b	see of b	t(21)	p-level
Intercept	-	-	196.9844	15.43936	12.75859	.000000
AC	-0.785892	0.100223	-0.0133	0.00170	-7.84144	.000000
LOC	-0.163004	0.100204	-4.6012	2.82850	-1.62672	.118709
SHARE	0.083303	0.101253	1.1199	1.36116	0.82273	.419907
R <sup>2</sup> = 0.8611; F(3,21)=43.397; p < 0.00000; b= coefficient of regression, $\beta$ =standardized coeff						

In the second model we regress MARK-UP on (i) average cost and (ii) profit-loss dummy (PL ; 1 for the colleges that earn profit and 0 for those that incur loss). The explanatory power of the second model is greater than the first model (R<sup>2</sup>=0.8861 against 0.8611, Table 9). Both AC and PL are statistically highly significant. The mean mark-up level is 144.86 (average price 44.86 percent above the average cost). This is increased when the college has cost advantages (less AC), as the sign of b associated with AC is negative. Thus the hypothesis of mark-up pricing is maintained. This relates to our 2<sup>nd</sup> hypothesis.

	$\beta$	see of $\beta$	b	see of b	t(21)	p-level
Intercept			144.8644	18.25754	7.93450	0.000000
AC	-0.565025	0.126656	-0.0096	0.00215	-4.46108	0.000196
PL	0.419912	0.126656	38.3612	11.57077	3.31536	0.003145
R <sup>2</sup> = 0.8861; F(2,22)=85.537; p < 0.00000; b= coefficient of regression, $\beta$ =standardized coeff						

Table 9(a). Mark-Up of Profiting and Losing Colleges in Nagaland									
College	Students	Core Rev	Av Cost	Mark-Up	College	Students	Core Rev	Av Cost	Mark-Up
Public	749	4961.66	2654	186.95	Peren	134	4324.33	4804	90.02
Mount	616	5725.89	3092	185.18	Mountain	135	6367.7	7216	88.24
Pranaba..	678	4349.71	2556	170.18	Eastern	315	6818.32	8406	81.11
Salt	1133	4154.17	2537	163.74	Japfu	441	5659.92	7776	72.79
Alder	841	5912.17	3742	157.99	Oriental	316	5106.96	7592	67.27
Kohima	2105	4668.8	2983	156.51	Salesian	163	3889.08	5846	66.53
Josephs	1676	6622.58	4394	150.72	Pfutsero	138	6589.13	9968	66.1
Baptist	1070	5128.11	3655	140.3	Patkai	1374	5547.56	8926	62.15
S.D Jain	985	4175.91	3180	131.32	Bailey	212	4190.24	6760	61.99
Modern	436	6228.27	4774	130.46	Yingli	129	4943.41	9105	54.29
Peoples	428	5227.24	4015	130.19	Tuli	41	4522.44	10741	42.1
Saku	553	5263.94	5028	104.69	Tetso	334	4806.38	11463	41.93
<b>Median College</b>	<b>Kilen..</b>		<b>261</b>	<b>6744.29</b>	<b>6524</b>	<b>103.38</b>			



In the third model we regress the logarithmic values of Mark-Up on the logarithmic values of average cost and location dummies. Thus, our model is

$$\text{Mark-Up} = b_0(AC)^{b_1}(LOC)^{b_2}\varepsilon$$

where  $\varepsilon$  is the residual or the unexplained part of the dependent variable (Mark-UP) by the explanatory variables. Details of regression analysis are given in table 9(b). We get

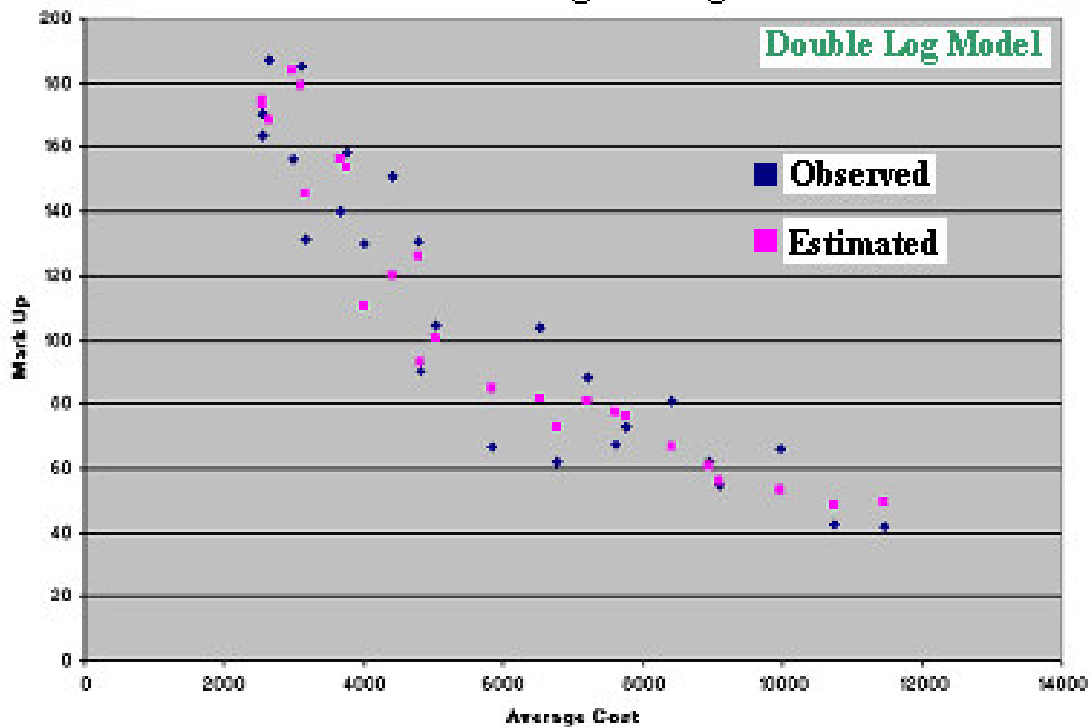
$$\text{Expected}(\text{MarkUp}) = 113859.4418(AC)^{-0.80332}(LOC)^{-0.16839}$$

We find that mark-up can very well be explained by AC and location dummy. Thus, the power of a private college to charge mark-up over and above its average cost draws on its cost advantages and location advantages.

	$\beta$	see of $\beta$	b	see of b	t(21)	p-level
Intercept			11.64272	0.566662	20.5462	0.000000
Log(AC)	-0.832668	.071202	-0.80332	0.068692	-11.6945	0.000000
Log(Loc)	-0.220201	.071202	-0.16839	0.054449	-3.0926	0.005316

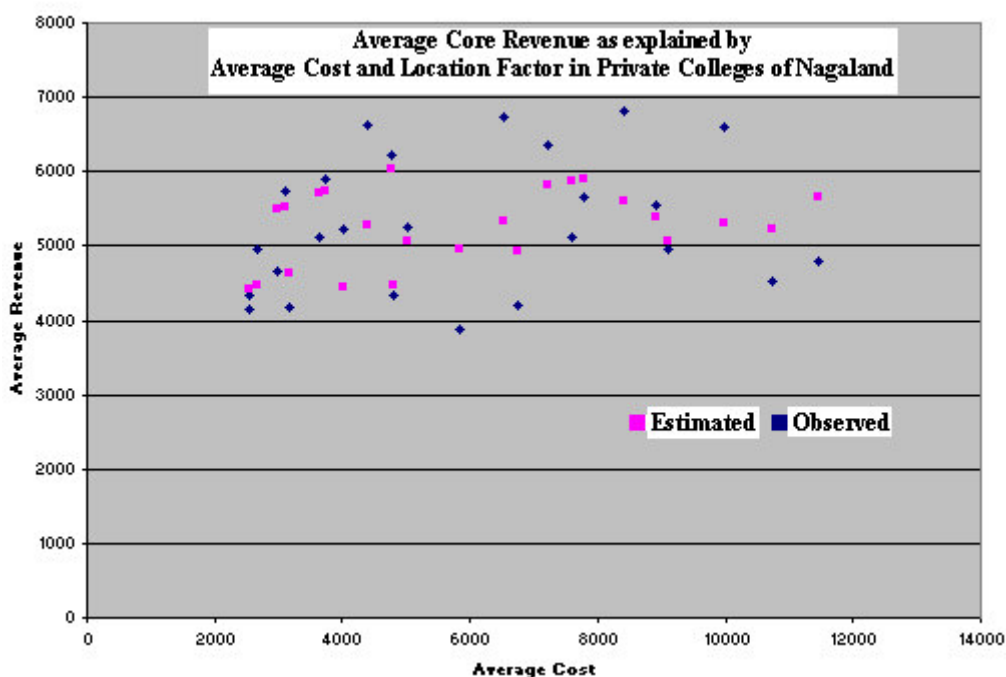
R<sup>2</sup>= 0.9127 ; F(2,22)=114.97; p < 0.00000; b= coefficient of regression,  $\beta$ =standardized coeff

### Mark Up Explained by Average Cost and Location Factor in Private Colleges of Nagaland



Finally, we regress the logarithmic values of the average core revenue on the logarithmic values of average cost and location dummy. The details of the result are tabulated in table 10. Although the explanatory power of this model is relatively poor ( $R^2 = 0.356$ ), significance of the regression coefficients associated with the explanatory variables suggest that cost advantages and location dummy are very important in explaining the variations of average core revenue.

Intercept			07.037409	0.566701	12.41820	0.000000
Log(AC)	00.553748	0.193399	00.196696	0.068697	2.86324	0.009035
Log(Loc)	-0.598113	0.193399	-0.168404	0.054453	-3.09264	0.005316
R <sup>2</sup> = 0.3558; F(2,22)=6.0742; p < 0.00794; b= coefficient of regression, $\beta$ =standardized coefficient						



**13. Academic Performance and Mark-Up:** We investigate the relationship between mark-up and academic performance of colleges. Two performance indices have been constructed with the following 10 variables, using principal components analysis.

- x1 = percentage of students promoted to Class XII
- x2 = percentage of students selected for Board exams
- x3= percentage passed students in Board examinations
- x4 = percentage passed in first division in Board examinations
- x5= percentage passed in second division in Board examinations
- y1 = percentage of students promoted to Graduation II and III
- y2 = percentage of students selected for University exams
- y3 = percentage passed students in University examinations
- y4 = percentage passed in first division in University examinations
- y5= percentage passed in second division in University examinations

The regression coefficients (table 11) indicate that both academic performance indices have statistically insignificant coefficients. From this we conclude that academic performance does not determine profitability. This also shows that charging of fees does not depend on the performance. Thus, consumers suffer moral hazards and fees paid by

them do not provide even a slightest assurance to quality. This relates to our 3<sup>rd</sup> hypothesis.

<b>Table 11. Regression of Mark-Up on Average cost and Performance indices</b>						
	$\beta$	<i>see of <math>\beta</math></i>	b	see of b	t(21)	p-level
Intercept	-	-	194.2215	9.694398	20.0344	0.000000
AC	-0.912616	0.090170	-0.0149	0.001468	-10.1211	0.000000
Perform-1	-0.012038	0.093362	-0.7436	5.767336	-0.1289	0.898693
Perform-2	-0.064934	0.093318	-3.5167	5.053868	-0.6958	0.494539
R <sup>2</sup> =0.83757835; F(3,20)=34.38; p < 0.00000; b=coefficient of regression, $\beta$ =standardized coeff						

## VII. Concluding Remarks

The main points of our findings are summarized below:

1. Private colleges serve over 4/5<sup>th</sup> of the consumers(students). The market share of private colleges is increasing over time, while the market share of govt. colleges is decreasing over time. Among the private colleges, older colleges command larger market share. Crowding is also observed in larger colleges.
2. Private colleges employ 461 teachers and 226 non-teaching staff. They are the largest employment generators in the higher education sector.
3. Private colleges earned revenue of Rs 9.7 crore and spent Rs 7.6 crore (during the session 2002-2003). Thus, they generate income of a sizeable amount. Overall, they earn a little over 27 percent profits over the cost.
4. Production function of private college industry indicates that it is a labour intensive industry with some substitutability of labour for capital.
5. Private college industry is not competitive, but it has a monopolistic competition (or somewhat oligopolistic) market. Several bands of prices (fees charged) are observable.
6. In general, colleges use mark-up policy for fee determination. There is some evidence of leadership and barometric pricing also.
7. Charging of prices is not dependent on academic performance.

In view of all these, we agree with Bhusan (2004) that the private colleges be allowed to exploit the market for education only under the regulation and control by the government whereas the autonomy of institutions in admission policy, staff recruitment policy and the teaching-learning process should be provided under the guidelines issued by the government. The government should regulate the quality dimensions of the programmes by making the recognition and accreditation of institutions and programmes mandatory for all private education providers.

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