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SIMULATION/PROJECTION OF INDIVIDUAL DEMAND FOR HIGHER EDUCATION IN TAMIL NADU

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Abstract

The major objective of this study is to understand the social demand for higher education at micro level based on different individual's choice and also projecting/simulating the individual demand for higher education. Individual demand is ultimately a reflection of an individual family/household in society. How people do behave to pursue (purchase) higher education and how they take decisions to enroll (choice) for higher education. To answer these questions, the study plunged into demand for higher education at individual level. For this purpose, fitting the logit model identifies the factors that determine the demand for higher education This aggregation of individual demand helps to understand the social demand for higher education. Getting the result of logistic regression, the study is made attempt to simulation/projection of individual demand of higher education based on significant variables in the different level of models.

Keywords: Economic Factors, Financing Pattern, Student Loan, Education Factor.

1.Introduction

Individual demand is not decided by the decision of individual students. It is influenced by their parents or household. While considering the determinant of the individual's demand the dilemma which arises is whether it has to be taken as consumer good or an investment good or both. As a consumer good, education is demanded in some sense for its own sake and as an investment good it yields an economic return through higher lifetime earnings and all economic welfare aspects. These two types of benefit from education are very closely bound. There is no chance of separating them. (Sheehan, 1973; Vaisey, 1972).

The study focuses on individual demand and attempts to understand this vis-à-vis social demand in the system. There are large number of forces (factors) which operate on the demand side of education; it could be understood while reviewing the extensive literature. What there are the reasons for demand and no demand? What is the socio economic and cultural factors affecting the demand side of our educational system? How much does the family background contribute towards the demand for children's education? What are the distinguishing factors in deciding the demand for education between rural and urban areas?

The study deals with both individual as well as household information to understand the estimate on demand for higher education. The study includes all factors such as individual, socio-economic characteristics, factors related to school and academic ability, factors related to current enrollment, cost and financing pattern of the household, etc. It would be pertinent to recall some of the explanatory factors that assume importance in explaining the choice of students at the individual level. In the present study the following factors have been used to determine the choice of an individual.

This study consists of six sections. The first section introduction includes this section. The second section deals with the specifications of model to estimate the individual demand function for higher education. The third section is projecting the probability of student's enrollment choice between higher education or not (alternatives) using the result of the logit model. Projection of individual choice between the high cost and long-term of degree courses in higher education and the low cost and short-term of diploma courses for immediate job opportunities in the fourth section. The fifth section projecting the choice between the high cost of technical/professional and the low cost of general higher education using the result of the logit model. The last section gives summary and conclusion.

2. General Specification of the Model (Model -1, 2 & 3)

The primary objective of this study was to identify the factor determinants of enrollment (various degree courses) for higher education by fresh higher secondary graduates (pass out) Demand for higher education in sample district analyzed in this study consists of two parts. In the first step, fitting the logit model identifies the factors that determine the demand for higher education in Villupuram district in Tamil Nadu. Logistic regression is used when the dependent variable is in binary form. For example, a variable might indicate the present position of the student after pass out from higher secondary schooling and has value '1' for Enrolled in

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degree course and '0' for Not enrolled" (it includes students enrolled in diploma course and not enrolled anywhere). The analysis has been carried out to identify the factors that influence enrollment in higher education in the model 1.

ENROL_HE = 1 if a student has enrolled in higher education
= 0, otherwise (Not enrolled)

In logistic regression procedure, the probability of an event occurring with the probability of its not occurring was computed. The odds ratio is given as

0 = odds ratio = P/1-P
Therefore, 0(1-P) = P
0 -0P = P
0 = P (1+0)

Therefore,

$$\text{Odds} \qquad \text{……..(1)}$$

$$\text{Probability} = \frac{}{1+\text{Odd}}$$

$$\text{Exp (A+B(X))} \qquad \text{…… (2)}$$

$$\text{Probability} = \frac{}{1+\text{Exp (A+B(X))}}$$

$$\text{Logit} = \text{Log (Odd)} = {}^{B_0+B_1X_1+\ldots..+B_nX_n}$$

Taking Anti-log

$$\text{Odd} = e\ ({}^{B_0+B_1X_1+\ldots..+B_nX_n)}$$

$$\text{Odds} = \frac{\text{Probability of event occurring}}{\text{Probability of event not occurring}} = e^{B_0+B_1X_1+\ldots..+B_nX_n}$$

Here X_1 X_2….. X_n are the independent or influencing variables and B_0 is the constant intercept B_1, B_2……. B_n are the estimated partial regression co-efficient of the independent variables or regressor. The model explains the probability of a student enrolled/not enrolled in higher education. As like estimation of individual student enrollment choice between degree courses diploma courses and choice between professional/technical higher education in the model 2 and 3.

Model -1 Logistic regression analysis reveals that only a few significant variables which can be used for predicting the probability of student enrollment in higher education such as mother's education, siblings' education and scholastic ability. These are the significant determinants of demand for higher education in the sample district of Villupuram in the state of Tamil Nadu. Of these three variables, mother's education and percentage of marks in class 10 are positively related to probability of enrollment. On the other hand, numbers of siblings studying in either school or college in the family negatively impacts probability.

Model-2 reveals that there are four significant variables determining demand for degree courses in higher education such as percentage of marks in class 10 (scholastic ability), type of management (current enrollment), number of siblings getting education in the family and scholarship. Out of these variables, percentage of marks in class 10 and scholarship are positively related to probability of enrollment. On the other hand, type of management and numbers of siblings getting education in the family negatively influence on students enrolled in high cost and long-term degree courses in higher education.

In this Model-3 the student's enrollment choice between professional higher education and general higher education examined. The result reveals that there are six significant variables determining demand for technical/professional courses in higher education such as gender, income group, board of examination at matric level, stream of higher secondary subject, percentage of

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marks in class 12 (scholastic ability-II), type of management (current enrollment), number of siblings getting education in the family and getting student loan. All these variables are found to be positive and they are significant at 1 per cent level, explaining the likelihood of students' enrollment in technical/professional courses

2.1 Result of Logistic Regression with set of explanatory variable and significant variables.

X`Binary Logistic Regression Models	Significant Variables from the result of Binary logistic regression	Explanatory variables as fitted in the Logistic Regression
Model - 1 ENROL_HE = 1 if a student has enrolled for degree or diploma courses. Otherwise, 0 = Not enrolled anywhere	Mother Education No. of siblings in Education Percentage of Marks in Class 10	**Individual factors** Gender **Socio-economic background of household** Caste Father's education Mother's education Father's occupation Mother's occupation Income group – dummy variable Saving Cultivation land No. of siblings in the family Female siblings in the family No. of sibling's education Earners in the family No. of dependents in the family **Previous Educational background And Scholastic ability -I & II** Type of Management of school Location of School Medium of instruction Board of Examinations Percent of Mark in Class 10 & 12. **Financing Patter for Education** Borrowing from relatives/ friends Financing from agencies Mortgage property Sell property Financing from Women SHGs Student loan Scholarship **Educational Expenditure Ed** Education expenditure group Educational burden dummy variable
Model - 2 ENROL_HE = 1 if the students are enrolled in higher education, 0 = 0, otherwise enrolled in diploma course	Percent of Marks in Class 10 Type of Management No. of siblings in education in the family Scholarship	
Model – 3 ENROL_TPHE = 1, if the student has enrolled in various technical and professional courses, otherwise 0 = enrolled in low cost of general course in higher education	Gender Board of Exam 10 Percent of Mark in 12 Income group Type of Management of School Student loan	

The **second part** of the study focuses on the simulation or projection or the likelihood of students enrolling for higher education using result of the logit model. Simulation is a technique used for evaluating alternative course of action based upon facts and assumption with a computerized mathematical model in order to represent actual decision making under conditions of uncertainty.

Simulation is a method of solving decision making problem by designing, constructing and manipulating a model of the real system. It is a useful technique for solving a business problem where many values of the variables are not known or partly known in advance and there is no easy way to find these values. Here, it has operated based on the logistic results, the odds-ratio is used to distinguish the probability of students' enrollment choice between enrolled in higher education or not, choice between degree courses and diploma courses and choice between professional/technical higher education and general higher education. Distinguishing

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probabilities from odds was not only important for accuracy but also for the interpretation of the logistic regression coefficient and making graphs to explain it clearly.

3. Projecting the probability of student's enrollment choice between higher education or Not (alternatives)

The study is to understand the probability of student's enrollment choice between the higher education or not enrolled using simulation or projection method. Simulation has been adopted based on quantitative techniques. It gives us a computerized symbolic model in order to represent actual decision making under uncertainty for determining alternative courses of action based upon facts and assumptions. It is a method of solving decision making problem by designing, constructing and manipulating a model of the real system.

Now we look at the model-1 that the effect of change in the percentage of marks at matric level (Class 10) by controlling all other variables such as mothers' education and number of siblings in education. We are controlling the mothers' education at elementary level which means that mothers are considered elementary graduate or below elementary level of education. So, some of the mothers could be illiterate as well in this composite group. Again, it may be recalled that odd=p/1-p. In other words, p=odd/1+odd. Since odd is equal to exp (equation with explanatory variable) the value of p in terms of explanatory variable, percentage of marks, B6, has given that mothers' education level as 0 and no. of sibling is 1, is as follows:

$$P = \frac{\text{Exp}(-0.37+0.67*0+-0.902*1+0.059*B6)}{(1+\text{EXP}(-0.37+0.67*0+-0.902*1+0.059*B6))}$$

The Figure 3.1. predicts the probability of student's enrollment in higher education with certain assumptions or set of conditions. If a family had only one siblings and mother's education is elementary or below, predicted probability with changing the percentage of marks in class 10 is given in the diagram below. The blue curve represents the probability of entering higher education with one sibling corresponding to change in percent of marks at matric level. The diagram shows each curve depicting the probability of enrollment in higher education with change in percent of marks for different levels of siblings – 1, 3, 5, and 7. For each curve the level of mothers' education is 0 i.e., elementary or below.

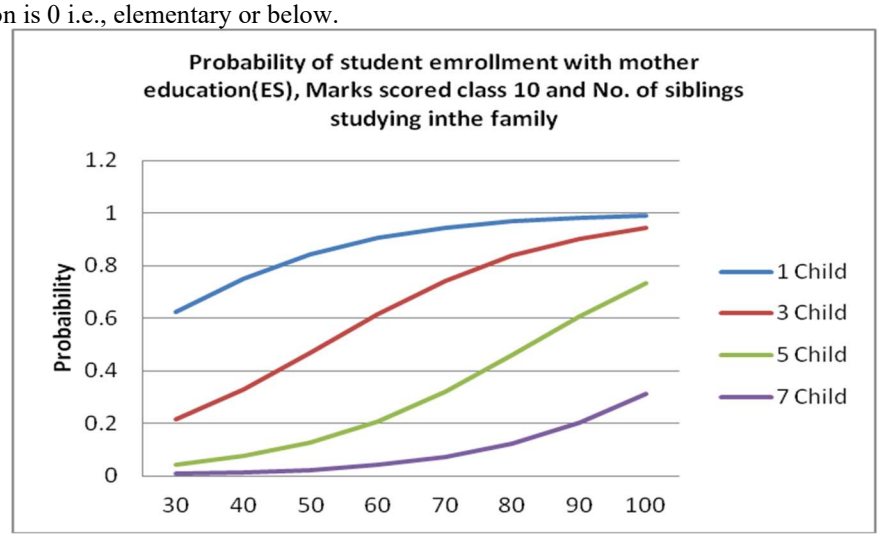

Fig: 3.1

The point to note is, as is evident from the diagram, in a household, mothers with 1 sibling with 30 percent marks in matriculation has 60 percent probability to enter higher education, for mothers with 3 sibling the probability drastically reduces to 20 percent and thereafter with more and more siblings the probability gradually declines to almost zero when marks obtained at matriculation is constant at 30 percent. The central finding of our model is that as the number of sibling decreases, the probability to enter higher education increases, given the levels of education at elementary or below and given the percentage of marks obtained at matriculation.

Take another extreme case where marks obtained by a student at matriculation are kept constant at 90 percent. We observe that as the number of siblings falls from 7 to 1 the probability to enter higher education goes up from roughly 20 percent to 100

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percent. The increase in the number of siblings adds to the economic burden of the family. On the other hand, the scholastic ability of the child might also get adversely affected. Combined effect reduces the chance to enter higher education with higher siblings (See Table 3.1).

Figure 3.1 shows the curves representing different number of siblings where each curve depicts the relation between percentage of marks at matriculation and probability of entering higher education. In all such cases the mothers' education has been assigned the value of 1 which means mothers' education is secondary or, higher secondary or below it but above elementary. The finding is almost the same as shown in figure 3.1. The higher the number of siblings at a given percent of marks the probability to enter higher education falls. Secondly, at a given number of siblings, higher the percent of marks, the higher is the probability to enter higher education. Additionally, the difference in figure 5.1 and figure 5.2 in terms of mother's education can also be seen. For example, for 30 percent marks in matriculation, mother with one sibling and elementary or below education has the probability of the child going for higher education at 60 percent whereas a mother with one sibling and senior secondary or below education has a probability of the child going to higher education is less than 80 percent.

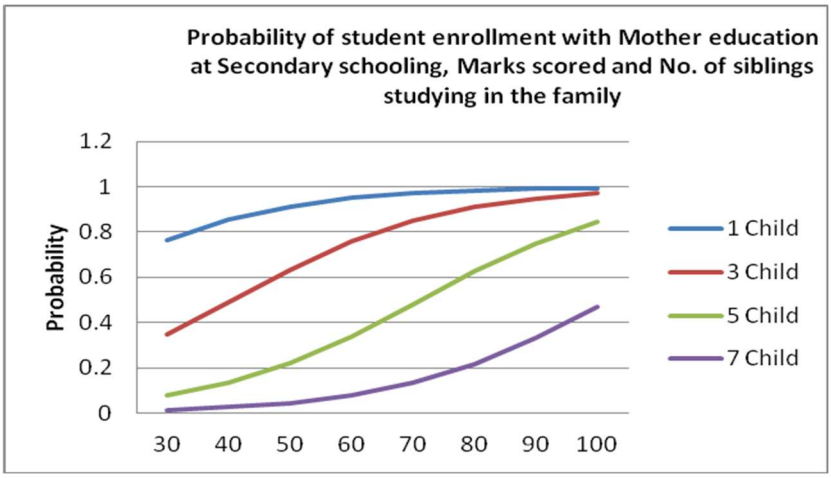

Fig: 3.2

Figure 3.2 shows the curves representing different number of siblings where each curve depicts the relation between percentage of marks at matriculation and probability of entering higher education. In all such cases the mothers' education has been assigned a value of 2 which means mothers' education is higher education (undergraduate/postgraduate) or below but above senior secondary (See Table 3.2). The finding is almost the same as shown in figures 3.1 and 3.2. The higher the number of siblings at a given percent of marks the probability to enter higher education falls. Secondly, at a given number of siblings, the higher the percent of marks, the higher the probability to enter higher education. Additionally, the difference in figure 3.1, figure 3.2 and figure 3.3 in terms of mother's education can also be seen. For example, for 30 percent marks in matriculation, mothers with one sibling and elementary or below education has probability of child going to higher education at 60 percent whereas mother with one sibling and senior secondary or below education has probability of child going to higher education at little less than 80 percent and mother with one sibling and higher education but above secondary has probability of child going to higher education at above 80 percent.

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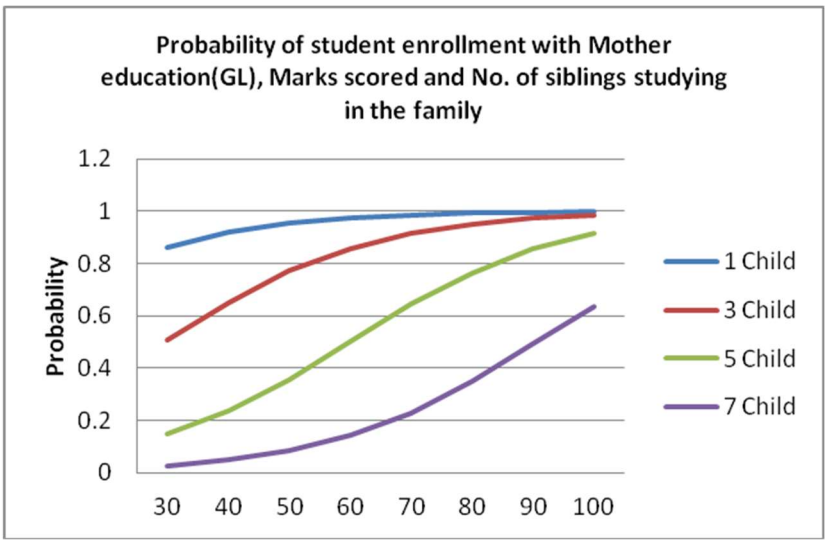

Fig: 3.3

It is concluded that there are three variables influencing demand for higher education as education is found to have a positive effect on student enrollment (demand) in higher education, mother's education, percent of marks in class 10 and number of siblings getting education. This means that mother's education plays a greater role than father's education level in sending their children for higher education. It increases the probability of enrollment with varying percent of marks in class 10 and number of siblings getting education in the family at the same time (See Table 3.3).

On the other hand, the number of siblings studying in the family is a high determinant of the probability of student's enrollment for higher education rather than mother's education. When there is an increasing number of siblings undergoing schooling in a family, it decreases the probability of student enrollment for higher education even if mother's education was at graduate and above. More number of siblings in a family lead to burden of cost of education for the head of the family. It means that parents cannot give higher education to their children, if the number of children is more in the family. Thirdly**,** the percentage of marks in class 10 is positively associated with enrollment for higher education. It means that students who scored good marks and performed well in class 10, the student went for higher education. Further, the percentage of marks scored in class 10 is a turning point for each and every student studying further based on their interest and aptitude.

4.Predict the Probability of Student's Enrollment into Degree Courses Versus Diploma Courses

Figure 4.1. shows the probability of enrollment for degree courses due to change in percentage of marks in class 10. Blue line shows the probability of enrolment with 1 sibling without scholarship into Government Colleges. Green line shows the probability of enrolment with 1 sibling with scholarship in Government Colleges. Effect of scholarship easily captured in the two lines. Similarly, the lower two lines show the scholarship effect on probability of enrollment for degree courses with 5 siblings.

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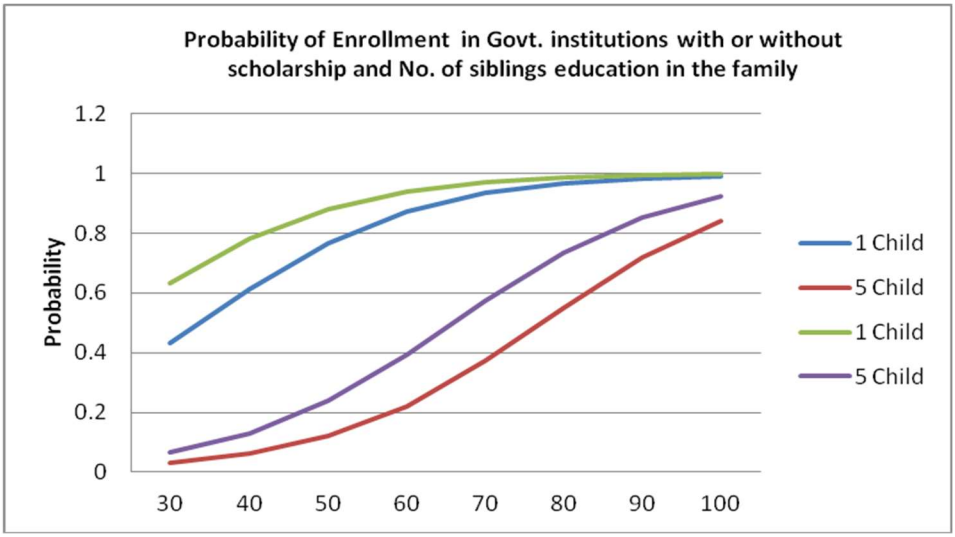

Fig: 4.1

The same effect of scholarship on probability of enrollment in degree courses could be seen even in private institutions in figure 4.2. Therefore, whether it is government or private institution, scholarships have an important effect on increasing the probability for enrolment into degree courses in higher education.

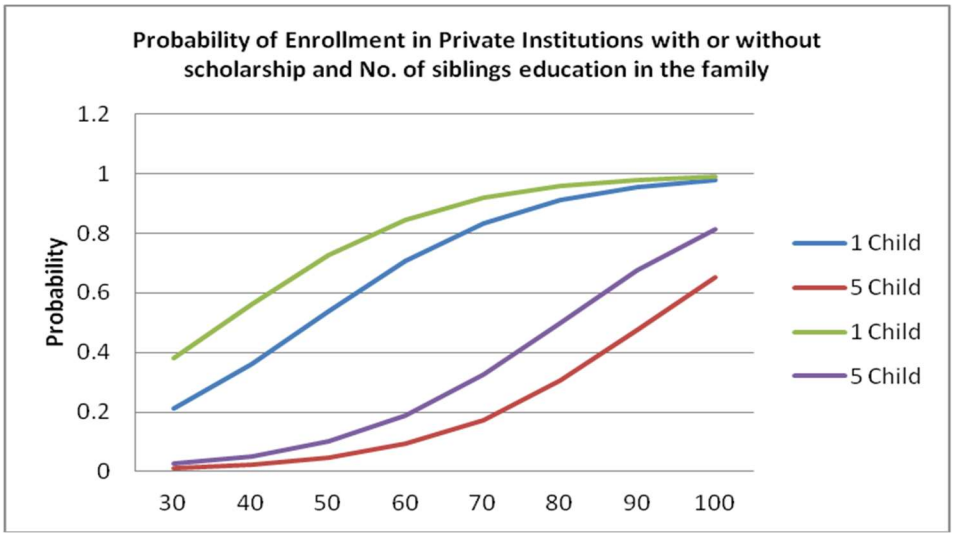

Fig: 4.2

Figure 4.3. shows the probability of enrollment into degree courses in government institutions is higher than that of private institutions with 1 sibling and 5 siblings.

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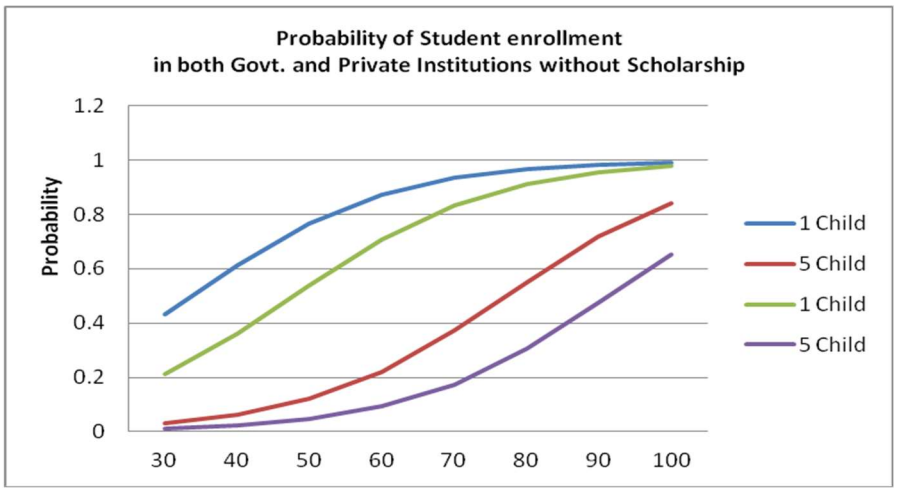

Fig: 4.3

Similar is the case even with scholarships. As we move to government rather than private institutions the probability of enrolment into degree courses is higher.

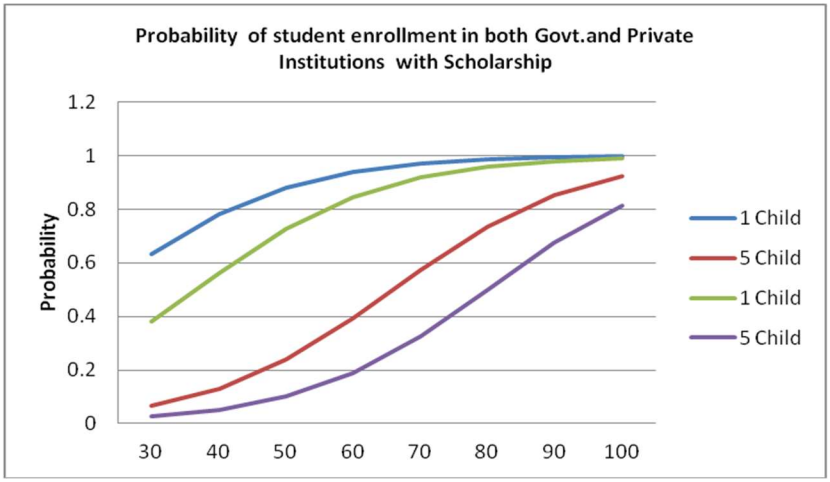

Fig: 4.4

Model-2 explained that student's enrollment choice between degree courses and diploma courses, it is determined by four variables influencing the student's enrollment into degree courses such as percentage of marks in class 10, number of siblings in education, current enrollment by type of management and scholarship. The percentage of marks in class 10 and scholarship are positively associated with enrollment into degree courses; and number of siblings studying in a family and type of management where students are enrolled currently has a negative effect on student's choosing degree courses. Firstly, a student scores good marks in class 10. This motivates to undertake higher education like technical or profession degree courses in higher education. On the contrary, the student who scored low marks, was more likely to choose (choice) short-term and less expensive diploma courses and defer from higher education.

Secondly, students from poor socio-economic background are more dependent on government higher educational institutions to pursue higher education. They cannot go for high-cost private higher educational institutions. But there is a limit in the number of students admitted into government institutions and the rest have to go to less expensive short-duration (three month or six month) diploma courses in private institutions. It reveals that more number of government colleges increases the probability for degree enrollment and higher the private institution, higher is the probability of enrollment into diploma courses.

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Thirdly, more the number of siblings getting education in a family/household, has negative effect on students enrolling for degree courses. They choose six months or one year diploma courses due to burden of cost of education and time. Where number of children in a family is more, the problems faced are also numerous like basic needs and hence higher education is ruled out. Finally, scholarships influence on student's enrollment into degree courses. It has motivated students to study further and it also gives financial support or reduces the burden of cost of education on the household.

5. Predict the Probability of Students' Enrollment into Technical/Professional Education versus General (higher) education

In Figure 5.1, student's enrollment choice for technical/professional education is considered for males without student loan in Government institutions. It can be noted that whether poor (Q0) or rich (Q1) the probability to join professional courses increased with percentage of marks in higher secondary board examination. In the case of Tamil Nadu state board (EB=0) as well as for Central Board of Secondary Education (EB=1) the above relationship holds. It is important to note that students of CBSE exam at secondary level have higher probability to join technical/professional courses as compared to students passing out of Tamil Nadu board in all the income groups (Q0 and Q1).

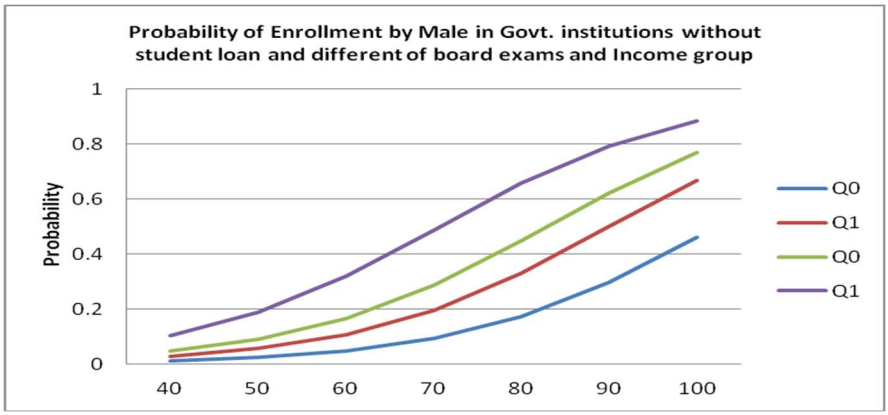

Fig: 5.1.

In Figure 5.1., student's enrollment choice for technical/professional education courses is considered for females without student loan in the Government institutions. It can be noted that whether poor (Q0) or rich (Q1) the probability to join professional courses increased with percentage of marks in higher secondary board examination. In the case of Tamil Nadu state board (EB=0) as well as Central board of secondary education (EB=1) the above relationship holds. It is important to note that a students of CBSE exam at secondary level have higher probability to join technical/professional courses as compared to students passing out of Tamil Nadu board in all income groups (Q0 and Q1).

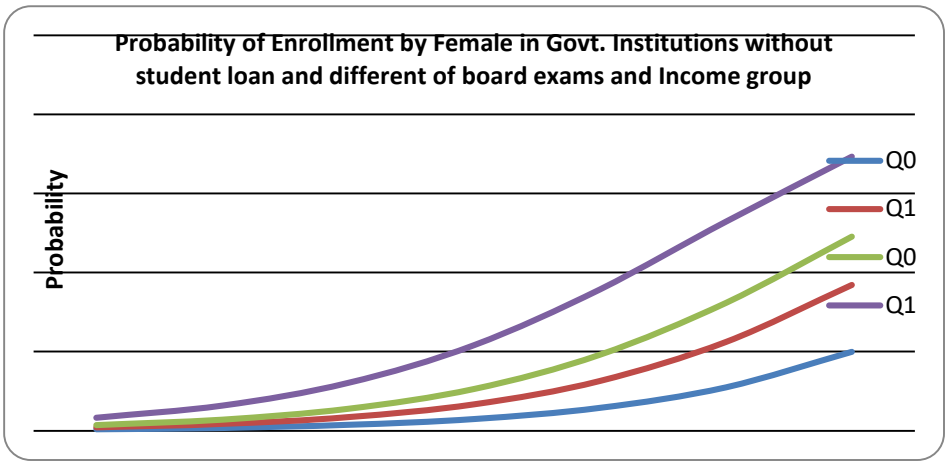

Fig: 5.19

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Model-3 explores the student's choice between technical/professional higher education and general higher education and its determinants on demand for technical/profession education. There are six variables influencing on demand for technical/professional higher education such as gender, board of examination at class 10, percentage of marks in class 12, income group, type of management (in currently enrollment) and student loan. All these variables are positively associated with student's enrollment choice on technical/professional courses and they are significant at 1 per cent level except among income-group variable. Income group is also showed expected positive sign and its significant at 5 per cent level.

Gender is positively associated with enrollment. It means that more number of male students are accessing technical/professional higher education. It seems that female students are discriminated in enrolling in high cost technical/professional courses by family/household. Board of examination at class 10 positively influences students to enroll (choice) in technical/profession courses. It is a different story but still valid about students who graduated in class 10 from non-state boards like Matriculation, Central board of secondary education and Anglo-Indian school. They studied in different curriculum set up and in English medium. These two aspects encourage them to go for going higher education. Thus, board of examination is highly influencing students enrollment choice in technical/professional education.

Percent of marks is considered as proxy for measurement of student's scholastic ability. It has evaluated at two different points in this study i.e. class 10 and class 12 levels. In model-3, percentage of marks is significant and positively influencing student's choice. It reveals that better the percentage of marks in class 12, higher the chance of getting technical/professional courses where competitions were high.

Income group plays a significant role in student's enrolled into technical/profession courses. It has been explored in model-3. Income groups are positively significant on student's enrollment choice into technical/professional education. It means that higher the income, higher the students enrolled in technical professional courses. It seems that students from well to do families can afford the high cost of technical/profession education on the contrary, students from poor economic (low income) groups, could not afford hence opted for low-cost general higher courses in public institutions.

Private sector plays an important role in providing higher education to the masses. It is explicit that type of management (current enrolment) is positive and significant at 1 per cent level. It means that more number of students enrolled into technical/professional courses in private institutions. It shows that an increase in the number of private institutions increases the student's enrollment into technical/professional courses.

Student loan is an important reason for students moving into mainstreams of higher education. Results of logit model shows that student loan is significant and has a positive influence on student's enrollment choice into technical/professional courses. It shows that student's loan is more supportive to students enrolling in high cost technical/profession courses. It also helps to students from lower economic strata (lower income group) to access the high cost of technical/professional education. As discussed above, it has helped them in understanding the choice between technical/professional higher education and general courses in higher education.

Summary and Conclusions

Major objective of this study is to understand the social demand for higher education at micro level based on different individual's choice. The study also predicts the probability of student enrollment choice by influencing significant variables in the logistic regression models. In the situation, the study needed to understand the individual behavior (choice) for opting higher education or not. The study made three logit models to estimate individual (student) enrollment choice for higher education.

Model-1 explains that mother's education and percentage of marks in class 10 is positively influencing while number of siblings studying in a family is negatively influencing on demand for higher education in the sample distinct. The result of model 2 reveals that percentage of marks in class 10, number of siblings in education, type of management by currently enrolled, and scholarship are influencing more the student enrolled in degree courses than diploma courses. Model-3 explains that there are six variables highly influencing on demand for technical/professional higher education such as gender, board of examination at class 10, percentage of marks in class 12, income group, type of management (in currently enrollment) and student loan.

It explicit that logistic regression analysis on estimation of individual demand for higher education in the model 1, 2, and 3. These significant variables of the models are positive and negative impact on influencing individual demand for higher education. With help of the figures to predicts the probability of student's enrollment in higher education with certain assumptions or set of

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conditions. For this purpose, simulation method has been adopted based on a quantitative technique. It has been given a computerized symbolic model in order to represent actual decision making under uncertainty for determining alternative courses of action based upon facts and set of assumptions.

For example, in the model -1, if a family had only one siblings and mother's education is elementary or below, predicted probability with changing the percentage of marks in class 10 is given in the diagram 3.1. The blue curve represents the probability of entering higher education with one sibling corresponding to change in percent of marks at matric level. The diagram shows each curve depicting the probability of enrollment in higher education with change in percent of marks for different levels of siblings – 1, 3, 5, and 7. For each curve the level of mothers' education is 0 i.e., elementary or below level of education. It is simulation technique used for evaluating alternative course of action based upon facts and set of assumption with a computerized mathematical model in order to represent actual decision making under conditions of uncertainty.

It has an earnest attempt to develop the innovative approach for estimating individual student enrollment choice to go for higher education through simulation or projection method. It will be developed in future researcher for understanding the practical problems of individual student and their household for demanding higher education in the system

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APPENDIX

1.Predict the probability of student's enrollment choice between Higher Education and Not enrolled or Alternatives (Diploma/Job Market)

Table: 3.1. Probability of students enrolled in higher education with varying the percentage mark in class 10 and no. of siblings studying in the household with Elementary level educated mother

	1	2	3	4	5	6	7	8
10	0.33581507	0.1702297	0.0768455	0.0326726	0.01352	0.00553	0.00225	0.0009147
20	0.477016209	0.2701227	0.1305619	0.0574323	0.024127	0.009932	0.00405	0.00164889
30	0.621989209	0.4003517	0.213157	0.0990344	0.042697	0.017775	0.00729	0.00297065
40	0.748004922	0.5463664	0.3282744	0.1654809	0.074468	0.031615	0.01307	0.00534625
50	0.842639516	0.6848174	0.4685416	0.263472	0.126751	0.055619	0.02334	0.00960329
60	0.90619191	0.7967331	0.6139627	0.3922176	0.20751	0.096042	0.04133	0.01719149
70	0.945730743	0.8760994	0.7415423	0.537927	0.320821	0.160839	0.07216	0.03059043
80	0.96917144	0.9273043	0.8380785	0.677433	0.460085	0.256927	0.12303	0.05386013
90	0.982672822	0.9583535	0.9032614	0.7911713	0.605874	0.384143	0.20197	0.09313023
100	0.990320324	0.9764776	0.943959	0.8723613	0.734973	0.529466	0.31346	0.1563026

Table: 3.2 Probability of students enrolled in higher education with varying the percentage mark in class 10 and no. of siblings studying in the household with Secondary level educated mother

	1	2	3	4	5	6	7	8
10	0.497000036	0.286182	0.1399145	0.0619195	0.026084	0.01075	0.00439	0.00178598
20	0.640607077	0.4197012	0.2268823	0.106405	0.046089	0.019227	0.00789	0.00321727
30	0.762783316	0.5661106	0.3461513	0.1768262	0.080173	0.034158	0.01415	0.00578894
40	0.852958997	0.7018243	0.488502	0.2792872	0.135873	0.059974	0.02523	0.0103948
50	0.912775126	0.8093821	0.6327424	0.4114438	0.220974	0.103215	0.04462	0.01859669
60	0.949693261	0.8845253	0.7565763	0.5577412	0.338497	0.171931	0.0777	0.033054
70	0.97147404	0.9325163	0.8486433	0.6946607	0.480011	0.272495	0.13193	0.05808541
80	0.983983663	0.961432	0.9100299	0.8040812	0.624806	0.403236	0.21518	0.10011027
90	0.991057878	0.9782468	0.9480438	0.8810069	0.75026	0.549339	0.33093	0.1671447
100	0.995023304	0.9878235	0.9705166	0.9303449	0.844224	0.687402	0.47153	0.26580728

Table: 3.3 Probability of students enrolled in higher education with varying the percentage mark in class 10 and no. of siblings studying in the household with Graduate and above level educated mother

	1	2	3	4	5	6	7	8
10	0.658810973	0.4393009	0.2412205	0.1142546	0.049737	0.020796	0.00854	0.00348429
20	0.77695346	0.5856473	0.3644735	0.1887734	0.086274	0.036898	0.01531	0.00626806
30	0.862711999	0.718291	0.5084992	0.2956706	0.145542	0.064646	0.02728	0.01125082
40	0.918937675	0.8214203	0.6511277	0.4309442	0.235052	0.110859	0.04815	0.0201144
50	0.953380714	0.8924486	0.7710059	0.5773734	0.356635	0.183622	0.08363	0.03570867
60	0.973609341	0.9373798	0.8586352	0.7113603	0.5	0.28864	0.14136	0.06262024
70	0.985196829	0.9642913	0.9163686	0.8163783	0.643365	0.422627	0.22899	0.1075514
80	0.991739702	0.9798856	0.951846	0.8891413	0.764948	0.569056	0.34887	0.17857969
90	0.995404172	0.9887492	0.9727215	0.9353541	0.854458	0.704329	0.4915	0.28170903
100	0.997447179	0.9937319	0.9846927	0.9631019	0.913726	0.811227	0.63553	0.41435275

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2. Predict the probability of student's enrollment choice between Degree Courses and Diploma Courses

Table: 4.1 Probability of students enrolled degree course (comparatively diploma course) in higher education with varying the percentage of mark in class 10 and enrolled in government institutions with receiving scholarship

	1 Child	2	3	4	5	6	7	8
10	0.2863863	0.1538134	0.0760688	0.0359505	0.01661	0.0075923	0.0034532	0.001567
20	0.4543773	0.273885	0.1459158	0.0718242	0.0338624	0.0156271	0.0071391	0.0032463
30	0.6334393	0.4390545	0.2617293	0.1383574	0.0677991	0.0318916	0.0147014	0.0067128
40	0.7819387	0.6189279	0.4238472	0.2499273	0.1311305	0.063984	0.030032	0.0138298
50	0.8815301	0.7711824	0.6042009	0.4087827	0.2384856	0.1242266	0.0603697	0.0282776
60	0.9391749	0.8749004	0.7600585	0.5892825	0.3938876	0.2274089	0.117637	0.0569471
70	0.9697341	0.9355352	0.8679553	0.74857	0.574198	0.3791871	0.2167003	0.1113525
80	0.9851822	0.9678604	0.9316936	0.8606861	0.736722	0.5589742	0.3647052	0.2063613
90	0.9928039	0.9842494	0.9658749	0.9276407	0.8530844	0.7245211	0.5436387	0.3504641
100	0.9965192	0.9923472	0.9832588	0.9637712	0.9233671	0.8451425	0.7119759	0.52822

Table: 4.2 Probability of students enrolled degree course (comparatively diploma course) in higher education with varying the percentage of mark in class 10 and enrolled in government institutions without receiving scholarship

	1	2	3	4	5	6	7	8
10	0.149694391	0.07385	0.0348578	0.0160953	0.0073549	0.0033448	0.0015178	0.000688
20	0.267567366	0.1419728	0.0697199	0.032831	0.0151424	0.0069158	0.0031443	0.0014266
30	0.431189419	0.2555933	0.1345865	0.0658043	0.0309183	0.014245	0.0065028	0.0029559
40	0.611352274	0.4160524	0.2439766	0.1275274	0.062094	0.0291137	0.0134001	0.0061143
50	0.765486783	0.5965234	0.4010721	0.2327228	0.1207868	0.0585798	0.0274115	0.0126047
60	0.871355807	0.7541742	0.581516	0.3862744	0.2218358	0.1143559	0.0552527	0.0258061
70	0.933578236	0.8642445	0.7424994	0.5663563	0.3716838	0.2113178	0.1082251	0.0521042
80	0.966849979	0.9296287	0.8568046	0.7304683	0.5510713	0.3573235	0.2011697	0.1023851
90	0.983745541	0.9648043	0.9254631	0.8490283	0.7180886	0.5356892	0.3432149	0.1913905
100	0.992100304	0.9827238	0.9626372	0.9210718	0.8409081	0.7053696	0.5202389	0.3293779

Table: 4.3 Probability of students enrolled degree course (comparatively diploma course) in higher education with varying the percentage of mark in class 10 and enrolled in private institutions with receiving scholarship

	1	2	3	4	5	6	7	8
10	0.125538	0.06105396	0.0286092	0.0131642	0.0060058	0.0027292	0.001238	0.0005611
20	0.2295242	0.1188883	0.057595	0.0269356	0.0123826	0.0056784	0.0025656	0.0011637
30	0.382016	0.21874413	0.1125455	0.0543206	0.0253574	0.0117819	0.0053092	0.0024117
40	0.5619304	0.36748998	0.2083335	0.1065001	0.0512223	0.0244433	0.0109544	0.0049916
50	0.7269097	0.54661424	0.3532006	0.1982926	0.1007427	0.0506999	0.0224667	0.0103026
60	0.8467065	0.71443044	0.5312094	0.3391689	0.1886203	0.1051126	0.0455206	0.0211446
70	0.9197533	0.83848518	0.701615	0.5157448	0.3254142	0.2177143	0.090052	0.0429015
80	0.9596509	0.91505654	0.8299115	0.6884751	0.50025	0.4500499	0.170371	0.085099
90	0.9801402	0.95718057	0.9101117	0.8209798	0.6750247	0.9265489	0.2988039	0.1617859
100	0.9903299	0.97889677	0.9545662	0.904909	0.8116856	1.8918056	0.4692887	0.2859778

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Table: 4.4 Probability of students enrolled degree course (comparatively diploma course) in higher education with varying the percentage of mark in class 10 and enrolled in private institutions without receiving scholarship

	1	2	3	4	5	6	7	8
10	0.059245076	0.0277332	0.0127549	0.0058178	0.0026435	0.0011991	0.0005435	0.0002461
20	0.115576845	0.0558825	0.0261095	0.0119973	0.00547	0.002485	0.0011271	0.0005107
30	0.213324728	0.1093887	0.0527	0.0245784	0.0112842	0.0051428	0.0023359	0.0010597
40	0.360083903	0.203105	0.1034932	0.0496893	0.023135	0.0106131	0.0048351	0.0021989
50	0.538672605	0.345925	0.1932545	0.0978805	0.046842	0.0217745	0.0099814	0.0045629
60	0.707857271	0.5232333	0.332034	0.1837717	0.0925407	0.0441503	0.0204923	0.0094684
70	0.834104414	0.6948728	0.5077494	0.3184292	0.1746534	0.087464	0.0416066	0.0196476
80	0.91253598	0.8253466	0.6815708	0.4922506	0.3051272	0.1658956	0.0826405	0.0407704
90	0.955849659	0.9074593	0.8162283	0.667966	0.4767667	0.2921427	0.1574931	0.084602
100	0.978225486	0.953158	0.9021195	0.8067455	0.654075	0.4613274	0.2794885	0.1755559

3. Predict the Probability of Student's enrollment choice between Technical/Professional Higher Education and General Higher Education

5.1 Probability of students enrolled in technical/professional degree course (comparatively general degree course) in higher education by **male enrolled in Government institutions** with varying the percentage of mark in class 12 and with different board of examinations at class 10 and two different income groups (Q0&Q1) and without getting student loans.

Percentage of marks in class 12	**State Exam Board**		**Non-state Exam Board**	
	Income group(Q0)	**Income group(Q1)**	**Income group(Q0)**	**Income group(Q1)**
40	0.012692127	0.029255378	0.047335602	0.104331223
50	0.025234127	0.057216195	0.090957457	0.190001566
60	0.049547801	0.108902584	0.167702273	0.320821301
70	0.095004991	0.197498933	0.28863967	0.487502604
80	0.174509295	0.331368951	0.449671019	0.657010463
90	0.29859444	0.4995	0.621989209	0.794129628
100	0.461575909	0.667744197	0.768168804	0.885947619

5.2 Probability of students enrolled in technical/professional degree course (comparatively general degree course) in higher education by **female enrolled in Government institutions** with varying the percentage of mark in class 12 and with different board of examinations at class 10 and two different income groups (Q0&Q1) and without getting student loans.

Percentage of marks in class 12	**State Exam Board**		**Non-state Exam Board**	
	Income group(Q0)	**Income group(Q1)**	**Income group(Q0)**	**Income group(Q1)**
40	0.003728551	0.008697363	0.014259075	0.032799263
50	0.007480107	0.017361264	0.028305096	0.063924107
60	0.014949722	0.034356616	0.055409523	0.120893081
70	0.029655602	0.066857153	0.105646736	0.216870104
80	0.057976088	0.126087957	0.192165536	0.358012714
90	0.11026864	0.225133011	0.323879452	0.528967525
100	0.199727237	0.369118574	0.491000972	0.693386592