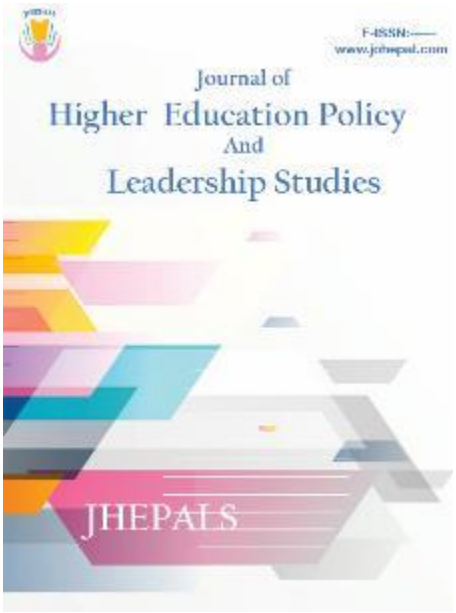
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How Do Students Fund their Higher Education in India? A Study of Loan Financing in Engineering Education

Jandhyala B G Tilak

Former Professor & Vice Chancellor, NUEPA
ICSSR National Fellow & Distinguished Professor
Council for Social Development, New Delhi 110003 India
Email: jtilak2017@gmail.com
https://orcid.org/0000-0002-2560-3508

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Jandhyala B G Tilak *

Abstract

Funding policies in higher education have undergone significant changes over the years in many countries, including in India. Higher education which used to be heavily subsidised by the state, is increasingly becoming dependent on cost recovery measures such as student fee and student loans, both of which have become very popular methods in India since the beginning of the 1990s. Though state subsidises higher education through general and specific subsidies, students incur huge expenditure on engineering education in India. How do the students finance their education? Using the data collected from about 7,000 students studying in 40 engineering institutions in four states in India, it is attempted in the present paper to briefly analyse the pattern of distribution of scholarships among students and, secondly to examine the determinants of student loans, and also the determinants of the amount of student loan one receives in engineering education in India with the help of logit and OLS equations. The robust estimates suggest that gender, household economic conditions (household income, father's occupation) and costs of education exercise considerable influence on opting for and/or receiving student loans from banks, and social background, parental occupation and ownership of assets like house and land, are important factors in explaining the amount of loan received by students.

Keywords: Student loans; Scholarships; Financial assistance; Engineering education; Private institutions; Public institutions

* **Corresponding author's email:** jtilak2017@gmail.com

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Introduction

Funding policies in higher education have undergone drastic changes over the years in many developing as well as advanced countries, including in India. Higher education which used to be nearly fully or heavily subsidised by the state, is increasingly becoming dependent on cost recovery measures such as student fee and student loans, both of which have become very popular methods in neo-liberal era in most societies, including specifically in India since the beginning of the 1990s. Both have contributed to making higher education increasingly costlier for the students, raising questions of affordability, access, and inequality. This is more so in case of engineering (other technical and professional) education in India, which is generally more expensive than general higher education both from the point of view of the state and the student. Though state subsidises higher education through general (universal subsidies) and specific subsidies, students incur, for example on engineering education in India Rs.1.5 lakh[*] per student on average per year (Tilak 2019). How do the students finance their education? While families take responsibility for funding education of their children, those from disadvantaged strata of the society find it difficult to finance on their own. They critically depend upon state subsidies -- financial assistance in terms of scholarships, and on student loans, and/or on work opportunities while studying (on-campus engagement in part-time work).

Theoretical rationale for and practical problems in public and private financing of higher education, including financing through direct and indirect subsidies (grants, scholarships, student fees, and loans) are well discussed in the literature (Psacharopoulos and Woodhall 1985; World Bank 1986; Ziderman 2017; Tilak 1997, 2004). While externalities, public good nature, social responsibility of higher education, imperfections in capital market, etc., formed the basis for arguments in favour of public financing of education, inadequacy of public resources, market efficiency and other arguments favour private financing of education, specifically fees and student loans (Tilak 2004). Apart from general subsidies in terms of grants to institutions, scholarships and other financial assistance to students play an important role in improving access to higher education, particularly for the students belonging to disadvantaged groups. According to a large number of studies (e.g., Schwartz 1985; Moore et al 1991; Glocker 2011), enrolment and persistence in higher education and also the student success are significantly and positively influenced by student aid or financial assistance received from the state. With respect to student loans, the most common argument made in its favour is that students from poor households are not able to enrol themselves in higher education due to their financial problems; and educational loan enables them to pursue higher education by deferring the current costs and to pay the same in future when they have secure jobs. But available evidence (e.g., Boatman et al 2017; Callender and Mason 2017) also shows that prospective undergraduates especially from low social and economic classes feel deterred from applying to university education because of fear of debt.

While scholarships and other measures of financial assistance to students have been used as an important measure of promoting equitable access to higher education for a long period, the allocation of public resources to scholarships has suffered a severe decline in India over the years (Tilak 2005; Narayana 2019). The share of scholarships in total expenditure on higher and technical

[*] The current exchange rate is: one US$ = Rs (INR) 70 (approx). One lakh means one-tenth of a million; and ten million make one crore.

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education has been less than one per cent in the most recent period. Public policy seems to favour a shift from scholarships to loans, as if the latter is a substitute to the former. India has restructured its loan programme (Tilak 1992) in 1990s, and the new scheme (Tilak 2009) is becoming gradually popular over the years, as increasing number of students tend to opt for educational loans. Yet access to educational loans seems to be severely constrained by a variety of factors, and students from lower socioeconomic strata find it difficult to secure loans. All students do not go for and/or get loans. Hence understanding of the determinants of who get/take loans becomes important.

Engineering education has been rapidly expanding in India in terms of number of colleges and other institutions of higher education, and number of students. The problems of financing engineering education are also assuming different dimensions in quantum and nature (Tilak 1999). A very high proportion of engineering education is also in private sector, making it further costlier. Hence we concentrate on engineering education here.

Based on a survey of about 7,000 students studying in 40 engineering institutions in four states in India, the paper examines the pattern of financial assistance received by the students in the form of scholarships, fee-waivers, and boarding/lodging allowances, and also through part-time work and student loans in engineering education in India. First, we briefly examine the pattern of financial assistance being received by students in engineering education in India. Next, a description of a profile of students who took educational loan by socio-economic and institutional characteristics (gender, family income, type of educational institution and department of study) is presented; and then using a logit model, we also examine the factors determining the receipt of loan by students. Determinants of the amount of loan received by students is also analysed with the help of ordinary least squares equation.

Database

The paper is based on data collected through a sample survey of about seven thousand students studying in 40 engineering institutions in four major states in India, namely, (National Capital Region of) Delhi, Maharashtra, Karnataka, and Tamil Nadu, where engineering education has expanded very fast. Karnataka and Tamil Nadu are in southern India; Maharashtra belongs to western region and Delhi is in the north. Engineering education has not picked up much in eastern states nor in the central parts of the country. The survey includes Indian Institutes of Technology, National Institutes of Technology (known earlier as Regional Colleges of Engineering), central and state universities, private universities, government colleges and private colleges – government aided private, and private institutions that do not receive significant government support and which rely mostly on student fee (known as private unaided colleges). The survey was conducted in the context of a larger international comparative study of BRIC countries (Brazil, Russia, India and China) (Carnoy et al 2013). Considerations of the wider study determined the choice of the states, institutions and students. States and colleges were chosen based on purposive random sampling. All the available students in the final (fourth) year or final semester of their studies in selected departments are surveyed. The reason for selecting fourth year students were: their ability to give nearly authentic, comprehensive and complete information, as they nearly complete their bachelor's degree level studies.

Financial Assistance to Students in Engineering Education

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The financial assistance received by the students consists of merit or merit-cum-means scholarships, simply referred here as scholarships, tuition and other fee waivers, and room or board allowances. We also considered part-time work opportunities in their own departments or institutions as yet another measure of financial assistance or as a means of self-financing. As per our survey, a bare nine per cent of the students have received scholarships; 6.3 per cent received tuition waivers, and 2.7 per cent received room/board allowances; only 2.3 per cent students were engaged in on-campus work. In all the four cases of financial assistance, students enrolled in government institutions benefited marginally higher than those in private institutions. As shown in Table 1, 11.4 per cent of the students in government colleges* have received scholarships while this figure is 7.9 percent in private colleges.

Table 1.
Percentage of Students Who Received Financial Assistance, by Type of Institution and Department of Study

	Scholarship	Tuition/fee waiver	Room/board allowances	On-campus work
Type of Institution				
Government	11.40	9.09	2.80	3.64
Private	7.85	4.81	1.95	2.18
Department of Study				
Traditional	9.93	9.11	3.34	3.74
Modern/IT-related	8.75	5.14	1.81	2.26
Income groups				
Low	13.95	8.96	4.45	3.18
Lower middle	7.53	6.58	1.66	2.25
Upper middle	8.06	2.45	1.79	3.46
High income	12.30	3.57	1.22	3.85
Total	9.09 (472)	6.29 (322)	2.25 (113)	2.69 (132)

Note: Figures in parentheses refer to total number of students.

Girl students fare better than boys in getting scholarships, while in the case of the other three, viz., the fee waivers, room/board allowances, and on-campus work opportunities, boys are marginally at a better position. Around ten percent of students enrolled in conventional/traditional departments* received scholarships in comparison to 8.8 per cent of those enrolled in information technology-related departments. It may be noted that traditional streams of engineering are offered

* Includes government – central and state institutions of higher education (universities, university level institutions and colleges) and government-aided institutions, while private institutions refer to those which mostly depend on student fee income.

* Disciplines/departments of engineering are classified into 'traditional/conventional' that include mechanical, civil, and electrical engineering, and 'modern' or 'information technology-related' disciplines which include computer science and engineering, electronics and communication engineering, and information technology.

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more in government institutions, while many private institutions focus on offering IT-related streams. Private institutions have fewer programmes of financial assistance.

The distribution of scholarships varies by family income. Families are classified based on our survey data into four groups based on annual family income: (i) low income (less than Rs.one lakh) (ii) lower middle (Rs.1 lakh to Rs 5 lakh), (iii) upper middle (Rs.5. lakh to Rs. 10 lakh) and (iv) high income group (more than Rs.10 lakh).* Fourteen per cent of students belonging to low income group received scholarships; the corresponding figures for other groups varies between 7.5 per cent and 12.3 per cent. Except for the lowest income group, the distribution does not seem to be progressive. On the other hand, tuition waivers and room/board allowances are relatively more progressively distributed – distribution favouring relatively more the low and lower income groups. Very few students take up on-campus jobs and those very few are distributed somewhat evenly among all income groups – nearly four per cent among the top income group, and three per cent among the low income group. Students from high income groups also take up on the campus part-time jobs to support their studies or to meet additional expenses.

Table 2.
Average Amount of Financial Assistance Received by Students, by Type of Institution and Department of Study (Rs. / annum)

	Scholarship	Tuition/fee waiver	Room/board allowances	Earnings from on-campus work
Type of Institution				
Government	12,489	14,525	6,500	9,353
Private	18,488	33,095	12,670	17,542
Department of Study				
Traditional	16,160	18,404	9,575	12,585
Modern/IT-related	15,672	27,156	17,374	31,769
Per Student Financial Assistance	15,828	23,619	14,010	23,515

It is not only the number (percent) of students, but also the distribution of amount of financial assistance depicts a similar pattern. The annual average amount of financial assistance received by students on average, from scholarships is Rs. 15.8 thousand, tuition waiver is Rs. 23.6 thousand, and room/board allowances Rs. 14 thousand; and through on-campus work, a student on average earns Rs. 23.5 thousand per year. The amounts of assistance – scholarship, fee waivers, allowances, and earnings from campus work, received by the students in private institutions are higher than those in government institutions. Students enrolled in IT-related departments get an annual average amount of Rs. 15.7 thousand as scholarship, whereas students in traditional departments get an annual average scholarship amount of Rs.16.2 thousand (Table 2). But in case of tuition/fee waiver, students

* While (i) is regarded as the low or bottom income group, and (ii) and (iii) as middle income group, (iv) is referred here as high/rich income group.

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in IT-related departments get higher financial assistance than students in traditional departments. Similar is the pattern in case of room/board allowances and earnings from on-campus work.

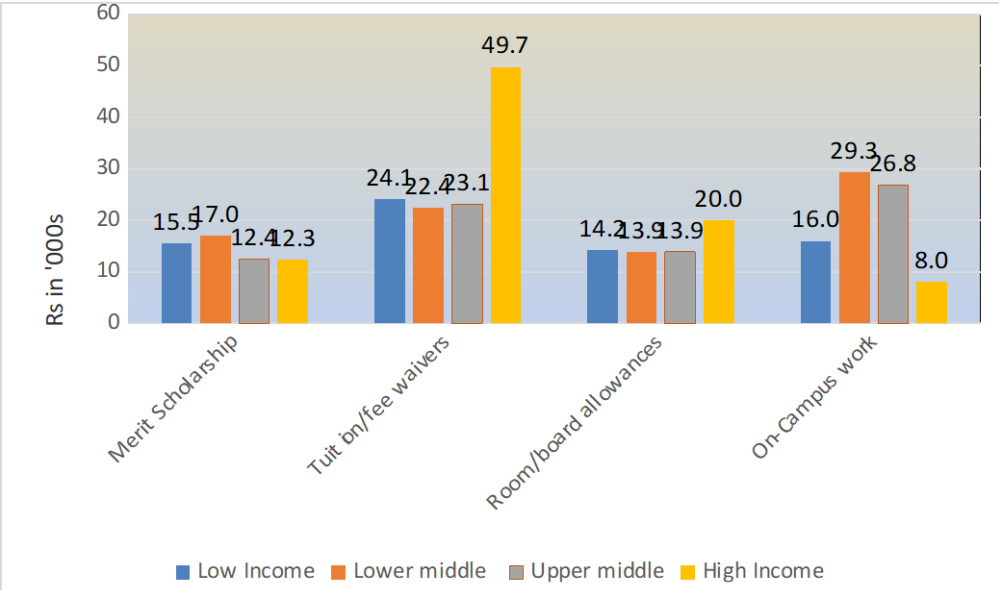


Figure 1. Annual Average Amount of Financial Assistance Received by the Students, by Annual Income of the Family (Rs. in '000)

The scholarships seem to be more progressively distributed in terms of the amount of scholarship. Students belonging to high income households have received the lowest amount of scholarship (Rs. 12.3 thousand per student) followed by upper middle income households (Rs.12.4 thousand), low income households (Rs. 15.5 thousand), and lower middle income households (Rs. 17.3 thousand). But the pattern of distribution of tuition and other fee waivers and other allowances is different: students from high income groups received the highest amounts of tuition/fee waiver and room/board allowances. With respect to on-campus work, students belonging to high income households earned the least amounts of all the income groups (Figure 1).

Student Loans

As we have noted, scholarships, fee waivers, etc., benefit only a small fraction of student community. A large number of students, even among the low and middle income groups entering into the higher and professional education are either left out of these benefits, and/or even after receiving such a kind of assistance are not in a position to cover their remaining costs (tuition fees, costs of living and other additional expenses) on their own and hence they search for alternative sources. One major alternative is borrowing -- educational loan.

Government of India introduced a restructured student loans scheme as a method of financing higher education in the mid-1990s. As per the restructured scheme, it is not the government, but commercial banks that provide loans to the students. The loan covers the expenses on tuition fees and other fees payable to the institution, travel expenses, purchase of books and

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other equipment, and other necessary expenditure, total with a fixed upper limit of Rs. 10 lakh for the students studying within India and Rs. 20 lakh for the students studying abroad. This scheme is getting popular now-a-days. As per the latest statistics available, in 2018-19, there were about 2.5 lakh student loan accounts with the banking system in India, which, however, used to be 3.3 lakh in 2015. The total amount of disbursements of students in loans in 2019 was of the order of Rs. 22.5 thousand crore (TOI 2019). Many commercial banks are operating this scheme with a common set of conditions, within the broad framework of rules, regulations and procedures agreed by the Indian Bankers' Association with the Reserve Bank of India[*]. For example, the State Bank of India provides student loans to Indian nationals for pursuing higher education in India or abroad where admission has been secured. The repayment commences one year after completion of course of study or 6 months after securing a job, whichever is earlier, and the entire loan amount with interest is to be repaid in 5-7 years of commencement of repayment. Government of India has also introduced in recent years several measures to make educational loan programme popular among the students, with interest subsidies (for the duration of the studies plus one year) as an incentive to the disadvantaged sections of the society.

While the number of students opting for student loans is rapidly increasing, the total number is still very small compared to the student numbers in higher education. Hardly three lakh students out of nearly 36million total enrolments in higher education get educational loans from institutional sources[*] (2017-18) (see also Narayana 2005; Tilak 2009). Despite a few measures taken by the government to make it attractive, loans are still found to be not easily accessible to the weaker sections of the society, who may actually need them more. It is often observed that commercial banks discriminate against those whose loan repaying capacity is low, and against those types of higher education that do not necessarily promise high wage employment to the graduates, and against those higher education institutions that do not have a good brand name or reputation. Banks might, however, prefer engineering or professional education to other areas of higher education, as it is more closely related to employment. From the demand side, it is also generally observed that students belonging to lower socioeconomic strata do not prefer taking educational loans, for some of the familiar reasons -- they are risk-aversive, employment and economic returns from higher education are not certain, and loan is still culturally not popular among all (Chandrasekhar et al 2019). Lack of credit constraint due to capital market imperfections on the one hand and the individual characteristics, family circumstances, preferences and attitudes and other factors, on other hand, make access to educational loans difficult. While in principle, many students in general and professional/technical higher education opt for student loans to finance their education, usually the probability of opting/getting educational loans is higher for a student pursuing an engineering degree in India as engineering education (and also professional education like medical education) is expensive. Hence it will be useful to examine factors that determine who take/receive educational loans in higher education in India.

There are quite a few important studies on this issue in a few countries, but not many on India. In a study on United Kingdom, Johnes (1994) established that women are significantly less likely to

[*] For detailed information on eligibility, rate of interest, security deposit and repayment, and related conditions and features of the scheme, see *http://www.iba.org.in/educational_loans.asp* (Accessed on 12th July 2012).

[*] There is hardly any information on non-institutional loan financing of higher education like family and friends.

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take out a loan than are men, and that quite interestingly low parental occupational status does not deter students from taking out a loan. In studies on loans in Italy and England, Perali and Barzi (2011) and de Gayardon et al (2019) found that family circumstances, such as family income, indicators of family wealth (home ownership), private education, not living in a deprived area, parental education, gender, ethnicity, debt aversion, individual characteristics, preferences and attitudes, outcomes and efforts are found to be very significant determinants of student loan take-up. In the study on England (de Gayardon et al 2019) only social class was found to have no independent effect. Among the determinants of the amount of loan, tuition and fees were found to be the most important one in USA (Macy and Terry 2007). The amount of loan taken also varies by several individual characteristics (Avery and Turner 2012). Such studies are rare in India, as data available from the banks do not include student and other background factors, and very few surveys are conducted of students who applied/got/did not get loans. Mostly available data at macro level (from Reserve Bank of India or from other banks) on educational loans in India include number of students getting loans, amount of loans disbursed, number of existing loan accounts, and amount of loss due to non-repayment, etc., and hence only these aspects were analysed by scholars (e.g., Narayana 2005; Rani 2014). Choudhury (2012), however, analysed, drawing from a sub-sample of the survey data used here in the present study, some of these aspects relating to student characteristics and other factors in Delhi.

A short Profile of Educational Loanees

Our survey gives information on some important aspects on who gets loans. It is generally expected that a large number of students in engineering education would have got loan from banks, as engineering education is considered expensive; most students apply for loans and the banks prefer giving loans to engineering students compared to the students enrolled in disciplines of higher education.

Table 3.
Number of Students Who Received Educational Loan, by Type of Institution and Department of Study

	Total Number of students surveyed	Percentage of students who received loan
Type of Institution		
Government	1852	8.37
Private	4181	11.22
Department of Study		
Traditional	1963	11.21
Modern/IT-related	4070	9.93
Total	6033	10.34

However, in the present study, we find that only 10.3 per cent of students have got loans from banks to pursue their engineering degree studies (Table 3). The smaller number of students availing loan may be due to the non-availability or the rigid structure of the loan scheme or due to lack of demand for loans by the students and or their families or both. It is also quite possible that many

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students might not have applied for student loans. Generally it is also expected that students in private institutions go for loans, as private education is costlier than education in public institutions. But we note that only 11 percent of students studying in public (government) institutions received loans from banks whereas the corresponding figure is 8.4 per cent in case of students studying in private institutions. Coming from relatively higher socioeconomic background, students in private institutions might not need loans. That the quality of public institutions is higher and that accordingly graduates from public institutions would have higher probability of securing employment compared to the others might influence the banks in the sanctioning of loans. Third, the general presumption is that banks prefer giving loans to the students in IT-related departments like computer science and engineering, electronics and communication engineering, or information technology to students enrolled in traditional areas of engineering, assuming higher probability of employment of graduates of the IT-related disciplines of engineering.

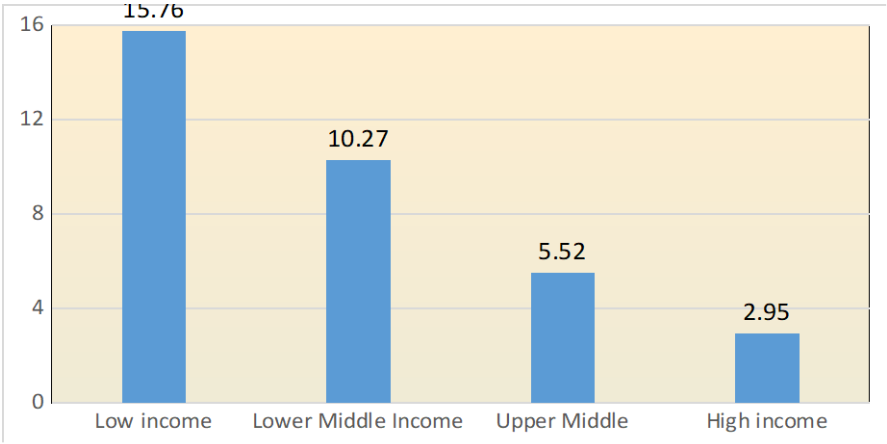


Figure 2. Percentage of Students Availing Educational Loan, by Annual Income of the Family

But contrary to this, a marginally higher proportion of students enrolled in traditional streams of engineering (11.2 percent) have got educational loans than the students enrolled in IT-related courses of study (9.9 percent). We also find that a higher number of male students received educational loan than women (11.2 percent against 8.1 percent). It is generally felt that parents in India are more willing to go loans for their sons' than for their daughters' education. For a long time, it is widely felt that loan works as a 'negative dowry' and hence there is a serious disincentive in taking loans for girls' education, though the situation is changing slowly over the years.

We note that loan facilities are availed by a higher proportion of students belonging to low income group than middle and upper income groups. As per our survey, 16 percent of the students from low income group could secure educational loans from banks; and only three per cent of students from top income group have taken loans. The corresponding figures are 10 percent for lower middle income households and 5.5 for upper middle income households (Figure 2).

Determinants of Educational Loans

Now we analyse the probability of getting educational loan by engineering students using a logit model. The model considers 'whether the student has taken/received an educational loan or not'

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as the dependent variable and individual characteristics, household factors, academic background of the students and factors related to current education of the students as explanatory variables. Though there are many other relevant variables, the selection of the variables is constrained by the availability of information collected in the survey. In the survey, information was collected from the students, not from the banks or the higher education institutions. Further, there is one major limitation. The survey provides only information on whether student has received loan or not and how much, besides on background and other characteristics students and their families. Information was not collected whether a student has applied for loan or not. So it is assumed that all the students have opted for but only some got loans and others did not. This may be noted as an important limitation of our analysis. The equation used for logit estimation is as follows:

$$\begin{aligned} ED_LOAN = {} & \alpha + \beta_1 GENDER + \beta_2 SC + \beta_3 ST + \beta_4 OBC + \beta_5 HINDU + \beta_6 MUSLIM \\ & + \beta_7 lnHHY + \beta_8 FATHOCP_PROF + \beta_9 FATHOCP_BUS \\ & + \beta_{10} MOTHOCP_PROF + \beta_{11} MOTHOCP_BUS + \beta_{12} FATHER_ED \\ & + \beta_{13} MOTHER_ED + \beta_{14} OWN_HOUSE + \beta_{15} OWN_LAND \\ & + \beta_{16} SIBLINGS + \beta_{17} SEC_MARKS + \beta_{18} SEC_LOCATION \\ & + \beta_{19} SEC_MANGMT + \beta_{20} SEC_MEDIUM + \beta_{21} SEC_BOARD \\ & + \beta_{22} lnHHEXPR + \beta_{23} ENRL_PVT + \beta_{24} STREAM_STUDY \\ & + \beta_{25} EMPLOYMENT + \varepsilon \end{aligned} \quad \text{(Eqn. 1)}$$

where,

ED_LOAN = whether the student has received educational loan or not, α = constant, β_i = respective coefficients of the explanatory variables (explained in Table 1 in the Appendix), and ε = error term.

The results are given in Table 4. Two individual factors – social category (CASTE) and gender are found to be statistically significant in determining students' decision to take/get a loan. As expected, female students are less likely to prefer taking an educational loan than male students. Similarly, students belonging to backward social category find difficulty in accessing the credit market for education. This is found to be true here in case of the scheduled tribe students. Students belonging to scheduled tribes are less likely to get educational loan than the students belonging to general category. The other two caste dummies (SC and OBC) are found to be statistically not significant. The probability of getting an educational loan is inversely related to the economic conditions of the household: a one unit increase in income reduces the probability of getting educational loan by 3 percentage points. It implies that higher the income, lower will be the requirements or demand for educational loan and vice-versa. Similarly, families having no house of their own – another measure of economic conditions, are more likely to get loan from banks than the families having owning a house. But is also possible that those who own houses may offer it as collateral and may accordingly have better chances of securing a loan.

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Table 4.
Logit Estimates of Determinants of Educational Loans

Variables	Coefficient	Odds Ratio	Standard Error	Marginal Effect (dy/dx)
Individual Characteristics				
GENDER	-0.336**	0.715	0.152	-0.030
SC	0.092	1.096	0.238	0.009
ST	-1.954*	0.142	1.037	-0.093
OBC	-0.044	0.957	0.172	-0.004
GENERAL	Reference			
HINDU	0.162	1.176	0.234	0.015
MUSLIM	-0.386	0.680	0.453	-0.032
OTHERS	Reference			
Household Factors				
LnHHY	-0.319***	0.727	0.074	-0.030
FATHOCP_PROF	-0.524***	0.592	0.176	-0.045
FATHOCP_BUS	-0.478***	0.621	0.163	-0.041
FATHOCP_OTHER	Reference			
MOTHOCP_PROF	-0.250	0.770	0.200	-0.022
MOTHOCP_BUS	0.080	0.770	0.290	0.007
MOTHOCP_OTHER	Reference			
FATHER_ED	-0.0002	1.070	0.022	-0.00002
MOTHER_ED	-0.006	0.994	0.019	-0.0005
OWN_HOUSE	0.246**	1.278	0.120	0.023
OWN_LAND	-0.118	0.888	0.082	-0.011
SIBLINGS	0.158**	1.171	0.070	0.015
Student's Academic Background				
SEC_MARKS	-0.008	0.992	0.006	-0.0007
SEC_LOCATION	0.253	1.288	0.193	0.026
SEC_MANGMT	0.007	1.008	0.136	0.0007
SEC_MEDIUM	0.058	1.059	0.182	0.006
SEC_BOARD	0.252*	1.286	0.146	0.023
Student's Current Education Status				
*ln*HHEXPR	0.164*	1.178	0.086	0.016
ENRL_PVT	0.149	1.160	0.161	-0.014
STREAM_STUDY	0.024	1.024	0.141	0.002
EMPLOYMENT	-0.038	0.963	0.142	-0.004
Constant	1.903		1.422	
Log-Likelihood	-929.85			
Pseudo R^2	0.058			
Number of Observations	2657			

Notes: ***significant at 99 percent level of confidence, **significant at 95 percent level, and *significant at 90 percent level of confidence.

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The results seem to confirm the latter view, though collateral is not strictly required for most educational loans in general. Parental occupation also seems to be influencing the probability of securing a loan. The student whose father is a professional worker or involved in business activities is less likely to go for educational loan than the student whose father is engaged in 'other' occupations such as clerical work, service work, skilled and unskilled work, or is a retired person. But the variable mother's occupation is found to be statistically not significant.

Other household factors included in the model such as educational level of the parents, and family wealth in terms of ownership of land turned out to be statistically not significant. The probability of securing an educational loan increases with the increase in the number of siblings in the family. After all, as family size increases, family burden increases, necessitating households to resort to loans -- educational loans in this case.

Expecting previous academic background of the students to have an effect on getting educational loan from banks, variables such as percentage of marks secured in senior secondary examination, location of the school (rural or urban), type of school (government or private), the medium of instruction followed in the school (English or others) and the examination board (central board or state board) are included in the equation. All these reflect some key aspects relating to students' academic background. Results reported in Table 5 show that students who completed their senior secondary schooling in schools affiliated to central boards (SEC_BOARD) are more likely to get a loan than the students graduating from state boards. Students of central board schools are likely to be more informed about the scope and availability of loans than others. Academic background of the students does not seem to matter in securing loans, as other four academic variables on academic background are found to be statistically not significant. In the pre-restructured scheme of educational loans in India, academic merit of the student was an important consideration in granting loans by the government. But as per the new scheme operated by the banks, merit is not a condition for, nor does it seem to influence the banks in their decision making regarding awarding of student loans.

Among the factors included on students' current education status, household expenditure on education, a proxy for the household cost of education, that includes fees, living expenses and other expenditures, is found to be statistically significant. The higher the cost of engineering education, that the households have to bear, higher is the probability of going for and/or getting an educational loan. Surprisingly other factors such as the type of institution the student is currently studying in (public or private), or type of engineering stream the student has chosen, or even the employment prospects do not seem to have any statistically significant effect on securing a loan.

Amount of Educational Loan Received by Engineering Students

Besides examining the question who gets educational loans, an attempt is also made here to analyse the evidence to assess which types of students are likely to be borrowing/receiving too much or too little as loans. The commercial banks consider, in addition to the amount of loan sought by the student, the costs of education (fees, living, and other costs that students have to incur), while deciding on the amount of loan to be sanctioned. On average, according to our study, students in engineering education in India have received Rs. 80.3 thousand as loan per annum per student during their programme of study. Women students received higher amounts than men -- Rs. 97.7 thousand as against Rs. 73.2 thousand in case of men. As the fees in government institutions is much less than that in private institutions, obviously students studying in public institutions receive less

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amount as loan from the banks. Students enrolled in government institutions received on average Rs. 69.7 thousand, while it is Rs. 90.8 thousand in case of students enrolled in private institutions (Table 5). The amount of student loan is expected to vary by the stream of engineering education that a student is enrolled in, as fees (and even other expenditure) also differ by stream of engineering.

Table 5.
Amount of Educational Loan Received, by Type of Institution and Department of Study

	Amount of Loan (Rs in '000)
Type of Institution	
Government	69.68
Private	90.77
Department of Study	
Traditional	85.39
Modern/IT-related	78.23
Family Income	
Lower	61.51
Lower middle	95.15
Upper middle	56.86
Higher	108.33
Total	80.29

Students enrolled in traditional or conventional departments seemed to have received higher amount of loan per annum than the students enrolled in IT-related departments. Students in traditional departments have received Rs. 85.4 thousand as loan as compared to Rs. 78.2 thousand in case of students of IT-related departments. Economic condition of the household is expected to be negatively related with the amount of loan received by the students. In a sense, students from low income households require more amounts of loan to bear the costs associated with engineering education, as they may not be able to afford to spend much out of their own pockets. However, the results here reveal that the amount of loan received by the students increases with the increase in the annual income of the family, excepting in case of the upper middle income group. While a student on average belonging to low income families received Rs. 61.5 thousand as loan, those from lower middle income families received Rs. 95.2 thousand, and those from high income families Rs. 108.3 thousand. Banks might tend to be guided more by credit-worthiness and repayment capacities, apart from mortgage (surety) provided by loanees, than genuine requirements of the loan seekers and may discriminate against low income families in granting higher loan amounts. Though comparatively higher number of students from low income households has got loans as noted earlier, the amount of loan received by them seems to be significantly less than what the high income households received.

What are the factors that determine the amount of educational loan taken by the students? As already stated, while tuition fee and other costs of education are necessarily considered by the banks while deciding on the amount of loan to be sanctioned, many other factors – individual

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characteristics, socioeconomic background, and previous and current education related aspects might also influence the amount of loan. Otherwise, the amount of loan would be the same for all students in an institution or same for all at least in a given department in a given institution. But that is not the case.

Using ordinary least squares technique, the factors that determine the amount of loan are examined here estimating the following equation:

$$ln\text{LOAN AMOUNT} = \alpha + \beta_i + \varepsilon \qquad \text{Eqn. 2}$$

where LOAN AMOUNT is the amount (Rs.) of loan received by the student and β_i are a set of independent variables.

The independent variables are already described and defined in Table 1 in the Appendix. The estimated results of the OLS equation are presented in Table 6.

Among the individual characteristics, social category of the student turns out to be statistically significant. As expected, caste matters: one's belonging to scheduled castes reduces the amount of educational loan the banks sanction. Banks might doubt their repaying capacity. The female students get higher amount as educational loan than male students but the variable GENDER turns out to be statistically not significant. There does not seem to be much gender discrimination. A student whose father is involved in business activities gets less amount of loan than the student whose father is engaged in other occupations such as farmer, teacher and self-employed. The other significant factor determining the amount of loan received by the engineering students is the ownership of land by their families: families that own land get/take less amount as loan from the banks than the families without land. However, contradicting this, students having their own house get higher amount as loan than their counterparts. It appears ownership of land and ownership of house do not represent economic status in a similar way. Ownership of land may mean much more than owning a house. It is expected that the households with larger number of siblings go for higher amount of loan than the households with less number of siblings to finance the expensive engineering education of their children. The results show the same but the coefficient is statistically not significant.

Interestingly, the type of school students graduated from (public or private) has a significant effect on the amount of loan. Though the probability of getting loans is not influenced by students' academic background, the amount of loan the students get seems to be influenced by some factors relating to students' background. Students graduated from private schools in their senior secondary schooling get/take higher amounts of loan than the students coming from government schools. This may be due to the fact that students who studied in private schools might belong to rich households and are accustomed to spend higher amounts. Similarly students graduating from secondary schools located in rural areas get less amount of loans than their counterparts. The needs as well as the level of spending of the students from rural background may be less. Students from private schools and the students from urban areas are perhaps relatively smarter in getting higher amount of loans. Their levels of spending may also be generally high.

Though the results on a few other factors relating to current educational background of students show expected results, they are found to be statistically not significant.

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Table 6.
OLS Estimates of the Determinants of Amount of Educational Loan Received by Students

Variables	Coefficient	Standard Error
Individual Characteristics		
GENDER	0.163	0.373
SC	-1.711***	0.581
ST	0.835	2.611
OBC	-0.227	0.402
GENERAL	Reference	
HINDU	-0.192	0.580
MUSLIM	0.779	1.081
OTHERS	Reference	
Household Factors		
*ln*HHY	-0.043	0.188
FATHOCP_PROF	0.00009	0.420
FATHOCP_BUS	-0.681*	0.420
FATHOCP_OTHER	Reference	
MOTHOCP_PROF	-0.200	0.478
MOTHOCP_BUS	0.388	0.687
MOTHOCP_OTHER	Reference	
FATHER_ED	-0.075	0.054
MOTHER_ED	-0.041	0.045
OWN_HOUSE	0.470*	0.279
OWN_LAND	-0.687**	0.202
SIBLINGS	0.074	0.159
Student's Academic Background		
SEC_MARKS	0.018	0.015
SEC_LOCATION	-0.489*	0.476
SEC_MANGMT	-0.671	0.326
SEC_MEDIUM	0.585	0.472
SEC_BOARD	-0.072	0.365
Student's Current Education Status		
*ln*HHEXPR	-0.058	0.193
ENRL_PVT	0.379	0.406
STREAM_STUDY	0.488	0.338
EMPLOYMENT	0.734**	0.335
Constant	2.099**	2.588
R^2	0.17	
Adjusted R^2	0.10	
F-Value	2.23***	
Number of Observations	286	

Note: ***significant at 1 percent level of significance; **significant at 5 percent level of significance; *significant at 10 percent level.

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Employment potential of engineering discipline is also expected to have a positive effect on the amount of loan the banks give. This is found to be true here as coefficient is positive in value and statistically significant. Banks seem to give much weightage to the employment prospects of the graduates.

Summary of Findings and Conclusions

Financing of higher education has undergone dramatic changes in India, like in many countries, since the 1990s. Public funding for higher education has not kept pace with growth in enrolments; and cost recovery measures, particularly fees has been used to generate more and more private resources. But since a majority of students in general, and those belonging to lower socioeconomic strata in particular, cannot afford high fee levels, scholarships and more importantly student loans have been thought of as measures that can mitigate the potential regressive effects of student fees, and as those that can improve access to higher education. Based on a survey conducted on about 7000 students in engineering education in forty institutions in four states in India, we have examined, with the help of logit and OLS equations, the question who gets educational loans and how much, besides briefly analysing the kind of financial assistance in the form of scholarships and allowances that students get. Following are some of the key findings of the analysis:

- According to our survey, only a very small proportion of students in engineering education in India receives scholarships, fee waivers and other kinds of financial assistance. Students, particularly those who are not able to get any kind of financial assistance, take part-time work on the campus to partly finance their education. Their number is also very small: 2.7 per cent of the total. All the corresponding numbers are smaller in private institutions than public institutions.
- Given the high private (household) costs of engineering education, many students opt for educational loans. While loans are taken from institutional sources (commercial banks) or from non-institutional sources (family and friends) to finance their education, we concentrated here on intuitional sources. All the students do not necessarily get loans, even if they are eligible to get the loans as per the criteria set by the banks or the government and even if they apply for loans. While educational loans are considered as an important means of financing engineering education in India, we found that only about ten per cent of students have got educational loan from banks. Descriptive statistics show that of the total, higher number of male students got loans compared to women. Further, comparatively a higher number of students enrolled in private institutions get loans than the students in government institutions. Similarly, a higher percentage of students enrolled in conventional/traditional disciplines of engineering study get loans, compared to those enrolled in information and technology related modern streams of engineering education.
- Among the factors that explain the probability of getting loans, social category, family income, ownership of assets (house), parents' occupation and costs of education (that students have to incur) are significant.
- Family income of the students is found to be a significant factor in determining the student's probability to get a loan. More clearly, the value of the coefficient suggests that a student belonging to a rich family is less likely to get loan than a student from a poor family.

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Furthermore, as revealed by the corresponding marginal effect, a student belonging to rich households is less probable by three percentage points, of getting loan than a student from a poor household. But Students from high income groups are found to receive higher amounts of loans, compared to others. So the distribution of loans seems to be somewhat progressive, but not the distribution of amount of loans.

- Other things being constant, socially backward (schedule caste) students, who may actually require more, are less likely to get educational loan than other students. The amount of loan provided to these students is also less. Perhaps banks are more willing to give loans to the students belonging to higher social category.

Reasons for many of the findings arrived at here need to be probed with further research. In the present analysis, some of the important factors turned out to be statistically not significant as a determinant of receipt of educational loan and also the amount of loan. These include: educational level of the parents, department of the study, type of institution etc. Probable reasons need further probing. An important limitation that one has to note about the present analysis is: the statistical analysis here considered some of the important quantifiable variables only on which data are available; there are many other important factors on which the survey has not provided needed data and hence could not be incorporated in our analysis. So is the case with respect to many other non-quantifiable qualitative factors. Besides stressing the need for more in-depth studies in this direction, the analysis is still very useful in shedding light on quite a few important dimensions on higher education policy, particularly the loan financing.

The conclusions arrived here have valuable policy implications for modifying or redesigning the educational loan programme in India and in other countries, besides stressing the need to expand other kinds of financial assistance to improve the access to higher education. Policy makers may need to note that educational loans are not so popular as generally believed. There may be constraints on both supply and demand side. They need to be addressed. It also appears that loans cannot substitute scholarships and other financial assistance, not only theoretically but also in practice. Given the resource constraints, we may need both, even though many rightly argue that scholarships (and general subsidies) are a more effective method of financing of higher education. Third, all specific subsidies like scholarships, loans, fee waivers etc., need to be designed in such a way that they will be progressive in effect, benefiting the relatively deprived sections more than the others. Generally administration of specific or targeted subsidies suffer from errors of omission and commission. Efforts need to be made to reduce scope for such errors while designing them.

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Professor Jandhyala B.G. Tilak, former Professor and Vice-Chancellor, National University of Educational Planning & Administration, is currently ICSSR National Fellow & Distinguished Professor at Council for Social Development, New Delhi, India. Doctorate from the Delhi School of Economics, Dr Tilak had teaching and research experience at the NUEPA, University of Delhi, Indian Institute of Education, Hiroshima University, Virginia University, Sri Sathya Sai Institute of Higher Learning and the World Bank. His recent publications include *Higher Education, Public Good and Markets* (Routledge, 2018), and *Education and Development in India: Critical Issues in Public Policy* (Palgrave Macmillan, 2018. Former Editor of the *Journal of Educational Planning and Administration*, and former President of the Comparative Education Society of India, Tilak is on the Board of Comparative Education Society of Asia. Recipient of several honours/awards, Dr Tilak had the privilege of delivering a keynote address in a meeting of the Noble laureates in Barcelona in 2005.

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Appendix

Table 1.
Definition and Notation of the Variables used in the Probit and OLS Analyses

Individual characteristics

GENDER Gender of the student
= 1 if female, 0 otherwise

Caste Caste of the student
SC =1 if SC, 0 otherwise
ST = 1 if ST, 0 otherwise
OBC = 1, if belonging to other backward classes, 0 otherwise
GENERAL = 1, if general (non-reserved) category, 0 otherwise (reference category

Religion Religion of the student
HINDU =1 if Hindu, 0 otherwise
MUSLIM =1, if Muslim, 0 otherwise
OTHERS = 1, if belongs to other religions, 0 otherwise

Household factors

Economic Conditions

HHY Annual income of the household (in Rs.)

OWN_HOUSE = 1, if the student's family owns a house; = 0, otherwise *Parents' occupation*

OWN_LAND = 1, if the student's family owns land; = 0, otherwise

Father's occupation

FATHOCP_PROF: = 1, if professional/technical worker, 0 otherwise
FATHOCP_BUSN = 1, if businessman, 0 otherwise
FATHOCP_OTHERS = 1 if belonging to other occupations, 0 otherwise

Mother's occupation

MOTHOCP_PROF = 1, if professional/technical worker, 0 otherwise
MOTHOCP_BUSN = 1, if businessman, 0 otherwise
MOTHOCP_OTHERS =1 if belonging to other occupations, 0 otherwise

Parental Education

FATHER_ED: actual years of schooling of father
MOTHER_ED: actual years of schooling of mother

SIBLINGS: Number of siblings in the family

Student's Academic Background (at School level)

SEC_MARKS: % of marks secured in the board (school-end) examination

SEC_MEDIUM: Medium of instruction at the school = 1 if English, =0 otherwise

SEC_BOARD Board under which secondary school studies were completed
= 1, if the student has studied under state board;
= 0, otherwise, i.e. if the student has studied under central board.

SEC_MANGMT Management of the school in which the student studied
= 1, if the student completed senior secondary schooling from a private school;
= 0, otherwise, i.e., if the student completed secondary schooling from government school.

SEC_LOCATION: Location of the school, =1 if located in rural areas, =0 otherwise

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Student's current education

ENRL_PVT	Type of institution the student is currently studying = 1, if the student is enrolled in a private institution; = 0, otherwise, i.e., if the student is enrolled in a government institution.
STREAM_STUDY	Stream of Engineering Discipline in which the student is enrolled =1 if enrolled in modern/IT-related courses, =0 otherwise
HHEXPR	Total household expenditure on engineering education of the student for the current academic year (Rs…)
SCHOLARSHIP	Scholarship (Merit or merit-cum means scholarship) =1, if received any scholarship, =0 otherwise
ED_LOAN	Education Loan =1, if received education loan from any commercial bank, =0 otherwise
LOAN MOUNT	Amount of educational loan received (Rs.)

Employment

EMPLOYMENT	Employment Prospects = 1, if the student has not got any offer of employment in the on-campus recruitment; = 0, otherwise, i.e., if the student has got any offer of employment

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