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Earnings and Education among Ethnic Groups in Rural India

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Abstract

In rural India access to education could act as a catalyst to change. Persons acquiring education could break through some of the social and cultural norms associated with certain occupations. However, access to education and the capacity to use it for economic betterment could differ by caste and religion. In independent India, social policies such as the reservation of seats in higher education and jobs in the public sector were intended to help break some of these entry barriers for communities facing centuries of social exclusion and discrimination. The focus of this paper is on the premium on income associated with educational investment and how this varies with ethnic groups. The probit regressions indicated that education, even at the primary level, increased the probability of obtaining a highly coveted salaried job. A 'circle of contacts', through other family members engaged in such jobs, also increased access to a salaried job. Educational attainment, even at very low levels, was a definite route out of poverty for the Scheduled Caste and Tribe households. Aided by the reservation policy, these communities were able to obtain salaried jobs and reap high returns to education. However, when forced to undertake self-employed activities in non-agriculture they did not fare well.

JEL Classification

I2, I 21, I28

Keywords

Education, Earnings, Employment

1. INTRODUCTION

Rural India has undergone considerable changes in the decades of the 1980s and 1990s. There has been economic transformation in both the agricultural and non-agricultural sectors. The growth of employment in the non-farm sector and diversification of economic activities has been considered a major reason for the reduction in poverty in rural areas in the 1980s and 1990s. Human capital has a great potential in overcoming poverty through improved earnings. Investment in education and allocation of labour into varied economic activities or diversification, are two ways in which households utilise available human capital to maximise incomes and overcome poverty. Social and economic factors, however, have a bearing on how efficiently households are able to do so.

In rural India, social and cultural norms are deep-rooted in society. The community links between households are also strong and work as a vehicle to help or hinder access to certain economic opportunities. Access to productive assets, employment opportunities and consequently incomes are to a large extent influenced by these social factors. Access to education could act as a catalyst to change. Inter-generational occupational mobility might be facilitated through education. In fact, persons acquiring education, even at lower levels, could break through some of the social and cultural norms associated with certain occupations. In such circumstances education could help break the vicious cycle of poverty. However, access to education and the capacity to use it for economic betterment could differ by caste and religion.

A large number of indigenous communities in India, with languages and cultural practices relatively distinct from the mainstream, were characterised as tribes by the British in the nineteenth century. Such tribes and certain ex-untouchable castes were listed in Article 312 of the Indian Constitution as ‘Scheduled Tribes’ and ‘Scheduled Castes’. These communities faced social exclusion and suffered centuries of discrimination. In independent India certain social policies were framed to provide access to scarce resources, such as education, jobs and other opportunities, to these communities. One such policy is the reservation of seats in higher education and jobs in government and semi-government organisations. To what extent has reservation played a role in helping socially excluded communities to gain access to resources and to overcome discrimination in access to jobs and earnings is the subject of this paper.

The paper focusses on the premium on income associated with educational investment and how this varies with ethnic groups. The impact of education on incomes from salaried jobs and self-employment in non-agriculture, consisting of trade, service, business or professional activities, is

analysed separately. Ethnicity in India can be defined as a mix of religion and caste, with the Hindu community being divided along caste lines. In the paper five ethnic groups - Scheduled Castes, Scheduled Tribes, Hindus*, Muslims and Christians are defined. In the first part of this paper the incomes, assets, poverty and educational characteristics of households by major sources of income and ethnic groups in rural India are discussed. The possible linkages between education and incomes in salaried and self-employed households in non-agriculture are discussed. The Second part carries out an econometric analysis of the possible correlates of salaried jobs and self-employment in non-agricultural activities among adult men in the five ethnic groups. The returns to education among salaried and self-employed men in each of these ethnic groups are also estimated. These dimensions are explored using data from the NCAER-HDI data¹ of rural households spread over 16 states for the reference year 1993–94.

* includes upper, middle and backward castes.

2. INCOME AND EDUCATIONAL CHARACTERISTICS OF HOUSEHOLDS BY MAJOR SOURCE OF INCOME AND ETHNIC GROUPS

Shariff (1999) observed that 55 per cent of all rural household income was generated from agriculture and allied activities and 16 per cent was obtained from salaried employment. Wage earning from agricultural and non-agricultural activities, generated about 14 per cent of rural household income and about 12 per cent was generated from self-employment in various non-agricultural activities. While households below the poverty line were largely dependent on wage labour, the better-off groups were engaged mainly in cultivation and allied agricultural activities and/or had income from salaried employment.

Within the two main sectors in rural areas, agriculture and non-agriculture, households undertake both self-employment and wage or salaried employment. The households have been grouped according to whether their major source of income during the reference year, 1993–94, was from the agricultural or non-agricultural sector. Further, agricultural households were grouped according to whether they obtained their major source of income from cultivation or allied agriculture and agricultural labour. The non-agricultural households were further classified as obtaining their major source of income from wages, salaried work or self-employment in trade, services, business or professional activities. Households mainly dependent on rental or interest income and other sources were grouped separately. About 39 per cent of the households derived a major part of their income from non-agricultural activities and were characterised as non-agricultural households. About 13 and 12 per cent of households obtained a major part of their income from self-employment and salaried work in non-agriculture respectively. The predominant activities were cultivation and allied agriculture in the rural sample of households.

2.1 Demographic Characteristics of Households

The non-agricultural households had a slightly higher average household size of nearly 5.8 members as compared to the agricultural households with average size of 5.7. Households with salaried income followed by cultivator households had the largest average household size (Table 1). The stage in the life-cycle of the household can be determined by the age of the head of the household. There was not much variation in the average age of the head of the household by source of income, except for the fact that wage earning households had relatively younger heads followed by self-employed non-agricultural households.

The average sex ratio in the rural households was 904 and not very different by broad agricultural and non-agricultural households. However, wage-earning households and households with other non-agricultural sources of income, mainly non-earned, had higher sex ratios. These households also had smaller number of children per household. Only 5.5 per cent of the rural households were female headed. Non-agricultural households and wage-earning households had slightly higher proportion of female heads. The higher sex ratio in households with other non-agricultural incomes is explained by the higher proportion of female headed households. These households probably received remittances or had other unearned income sources.

2.2 Structure of Income, Poverty and Assets

The average annual household income in the rural households was Rs 25,653 and the average per capita income was Rs 4,846 (Table 2). The overall household income of agricultural households was higher than that of non-agricultural households. However, there were large differences within these broad groups. Among the agricultural households the cultivator and allied agricultural households had much higher incomes than the wage earning households. The highest household income of Rs 36,023 was earned by the salaried households. Among non-agricultural households wage earners had lowest incomes, while self-employed households did better, but still had lower than average incomes. Salaried households had the highest per capita income, in spite of having the highest household size.

About 35 per cent of all households were below the poverty line. A slightly higher proportion of agricultural households were poor compared to non-agricultural households. This was mainly due to a large proportion of agricultural labour households that were below the poverty line. These households were also largely in the lowest segment of poverty groups. Wage earners in non-agriculture were the next largest group of households in poverty.

Households with salary income were the least likely to be below the poverty line, with about 40 per cent being in the top segment. In terms of income poverty, cultivator households were largely above poverty, but they were concentrated in the lower segment above the poverty line. Self-employed households in non-agriculture were also largely above poverty, but the majority were in the lower segment above poverty.

An important determinant of the structure of income and poverty is ownership of land and other productive physical assets. The index of productive assets was heavily weighted in favour of agricultural assets² such as tube well and tractors. In spite of this, salaried households had above

average index of productive assets (Table 3). About half of the salaried and self-employed households in non-agriculture like the wage earners were landless. The key to the better performance in terms of income of the salaried households was better physical wealth, land holding and productive assets. As it will be seen later, salaried households also had better human capital investments. Such physical and human resources helped them to access better salaried jobs.

2.3 Incomes and Poverty among Ethnic Groups

In rural India ethnicity could have a bearing on the nature of economic activities undertaken, incomes, ownership of assets and poverty of the households. The per capita incomes was the highest among Christians partly due to smaller family size. The lowest average and per capita incomes were obtained by Scheduled Caste households, followed by Scheduled Tribe and Muslim households.

The average annual household incomes by major source of income and ethnicity is revealing (Table 6). Irrespective of ethnic communities, salaried households had the highest average incomes. Across ethnic groups salaried households among Christians and Hindus had the highest incomes. This probably reflects the higher skill levels and hence higher status of the salaried jobs obtained by individuals in these communities. Cultivation and allied agriculture, that is self-employment in agriculture, yielded the next highest average incomes in all communities, the highest incomes again being obtained by Christians and Hindus. The Scheduled Caste households had the lowest average incomes in every type of economic activity they undertook. Low levels of education and skill training obtained by this community partly explains the low levels of incomes in salaried and wage jobs. Among the self-employed, poor quality land and low levels of production assets could explain the difference in earnings.

The proportion of households below the poverty line was relatively higher among Scheduled Castes and Tribes and Muslims. The former two groups also had more than 20 per cent households in the lowest poverty segment (Table 4). At the other end of the spectrum, about 27 per cent of the Christians and Hindu households were in the upper most poverty segment.

The index of economically productive assets computed for the ethnic groups was extremely high for the other minority households, followed by Hindu households. It is very interesting that Christian households did not appear to possess many productive assets, though they had relatively high income. Scheduled Caste and Tribe households also had low value of the index of productive assets.

More than 60 per cent of Hindu and Scheduled Tribe and Caste households were engaged in agriculture (Table 5). However, while Scheduled Tribes and Hindus derived agricultural incomes from cultivation and allied agriculture, the Schedule Caste households were mainly engaged in agricultural labour. The Muslim and Christian households were almost equally engaged in agriculture, mainly cultivation and non-agricultural activities. The interesting difference in non-agricultural activities was that while the Christians obtained salaried and wage employment, the Muslim households had to generate employment and incomes for themselves through self-employment. The high proportion of salaried employment among Christians partly explains the relatively higher incomes in spite of lack of productive assets. Even after half a century of independence under a secular state, concentration of households in certain occupations by ethnic groups is still observed.

2.4 Human Capital

While grinding poverty is a widespread phenomenon in India, it was observed that Scheduled Caste, Tribe and Muslim households were more likely to be poor. Poverty is one of the biggest barriers to education, making the direct costs of schooling and opportunity costs of forgone child labour too expensive for the household (Khan, 1993). Girl children face other barriers related to social and cultural norms in the society. Again these barriers are ethnicity and region specific. The potential and importance of human capital in mitigating poverty, improving labour productivity, efficiency and consequently raising incomes is well established. The investment in human capital, however, differs according to the social and economic status of the households due to the factors discussed above.

About 35 per cent of the adult men and 65 per cent of the adult women in rural households were found to be illiterate (Table 7). Illiteracy was higher among men and women in agricultural households compared to non-agricultural households. Wage earning households had the highest percentage of illiterate men and women. Only about 14 per cent of the adult men were illiterate in households with salaried incomes. However, 46 per cent of women were illiterate even in salaried households. Households self-employed in non-agricultural activities had the next lowest proportion of illiterate adult men and women. The proportion of illiterate women was, however, double that of illiterate men in these households.

About 37 per cent of the adult men in salaried households had passed school, either till matriculation or higher secondary levels (Table 7). This was followed by about 20 per cent of men in self-employed non-agricultural households with similar achievements. In general a much lower

percentage of adult women passed school, about 7.5 per cent. About 12.5 per cent of men in salaried households completed graduation, post-graduation or professional degrees. Self-employed households in non-agriculture and agriculture had the next highest proportion of adult men with such higher levels of educational attainment. Among adult women only 2.2 per cent in salaried households completed graduation or post-graduation. Persons with formal skills were defined as those who had attended diploma or certificate courses. Only 1.4 per cent of adult men from salaried households had such degrees or diplomas, followed by 0.6 per cent men from households self-employed in non-agriculture. It is obvious that salaried households and households with self-employment in non-agriculture had made maximum investments in education. The impact was also reflected in the relatively higher incomes obtained by these households.

The data set defines the highest level of educational attainment of each individual. Mean years of schooling was calculated by assigning the following average years to persons who had completed certain levels of education. Illiterate persons had zero years of schooling. It was assumed that those who attended primary school (Standard 1–4) had an average of 2 years of schooling. Those who attended middle school (Standard 5–7) were assigned 6 years and those who attended high school (Standard 8–9) were assigned 8 years. Those who completed matriculation, higher secondary, graduation, post-graduation were assigned 10, 12, 15 and 17 years respectively. Persons with diploma or certificate courses were assumed to have had 13 years and those who attended professional courses had 18 years of schooling. Those with diploma and certificate course training were assumed to have acquired a formal skill. Mean years of schooling thus calculated is an approximation.

The mean years of schooling of adult men was 5.2 years and those of adult women was 2.4 years (Table 8). Men in non-agriculture households had on average 6 years of schooling, while men in agricultural households had about 5 years of education. Men and women in wage earning households in both agriculture and non-agriculture had the lowest number of years of schooling. The highest schooling achievement was among men in salaried households with 8.3 years. Households self-employed in non-agricultural activities had the next highest mean years of schooling among men (5.6 years), followed by cultivator and allied agricultural households. Similar pattern of mean years of schooling of women was observed though with much lower number of years.

Adult men and women in Christian households had the highest number of years of education, nearly 7 and 6 years respectively (Table 8). The gender difference in schooling of about 1.2 years was the least among Christians. Adult men in Hindu households had the next highest educational

achievements, 5.9 years. Women in these households also had the next highest years of education, but the gender difference was about 3.1 years. The lowest mean years of schooling among men was 3.5 years in Scheduled Tribe households, followed by 3.7 years among Scheduled Castes. The gender difference was 2.2 and 2.4 years, respectively in the two communities. The Muslim households had a slightly higher level of education with 4.3 and 2.0 years among men and women respectively.

Irrespective of ethnic groups, men and women in salaried households had the highest mean years of education. Here again Christian men had the highest of 9 years and women with 7.2 years of education. In general, households self-employed in non-agriculture followed with the next highest achievements in education. Christian men and women in self-employed households had nearly the same years of education as in salaried households. However, the educational attainments in self-employed households in other ethnic groups was 2 or more years lower than in salaried households.

The mean years of education of adult men in salaried households among Hindus was close to the achievements of Christians. This was not so for adult women. Adult men and women in self-employed other Hindu households, however, had much lower educational achievements compared to their counterparts in Christian households. Adult men in Muslim households had slightly higher years of education than Scheduled Caste and Tribe salaried households, but lower than Scheduled Castes in self-employed households.

The importance given to education as a method of upward economic mobility is also reflected in whether children of school going age are sent to school. The percentage of children of school going age who are currently studying by the major source of household income has been computed (Table 9). About 62 per cent of children in the age group 5–14 years attended school. The discrimination against female children was evident as nearly 68 per cent of male children were in school but only 55 per cent of the female children were in school. Households with salaried income as the major source sent the largest percentage of children of school going age to school and discriminated the least against a girl child. Almost similar proportion of children in self-employed agricultural and non-agricultural households were sent to school. Children from wage earning households, particularly girls, were least likely to be attending school.

Beside the proportion of children attending school, the expenditure on education per household with children of school going age also reflects the quality of education being imparted to the child. Expenditure on schooling also reflects the value being assigned to the investment in human

capital. Household expenditure on children studying in the age group 5-14 years was Rs 780 for all households (Table 9). The household expenditure on schooling included expenditure on books, stationery, school uniforms, private coaching and fees. Investment in education of children was the highest in households with the major source being the salaried income, Rs 937. Households self-employed in agriculture (Rs 875) and non-agriculture (Rs 712) were the next highest investors in human capital.

Overall, educational attainment of adults, children attending school and household expenditure on schooling all point towards salaried households and households self-employed in non-agriculture for making the maximum investments in human capital. Christian households, both salaried and self-employed, had the highest achievements in education and the least gender gap. Hindu households had the next highest educational achievements but the gender gap was higher. Muslim men had slightly better educational attainments than Scheduled Castes and Tribes in salaried households.

The possibility of a divide in educational attainments between different ethnic groups due to a north-south divide in India (where the Southern states are more progressive educationally) was investigated. However, it was noticed that adult men in the Northern states (including Punjab, Haryana, Himachal Pradesh and Uttar Pradesh) had the same mean years of schooling — 5.5 years, as that of the Southern states. However, the possibility that the inter-religious differences are less pronounced within South India could be valid. The Christian community in Kerala has exceptionally high levels of education but among Christians, households in the Eastern states had the highest mean years of education (8.2 years). Across states, men in the Northern states had the highest educational attainments among the Scheduled Castes, Tribes and Hindus and the highest achievements among the Muslims was in the Southern states. Such inter-state and inter-regional differences are, however, not explored in this paper.

3. CORRELATES AND RETURNS TO EDUCATION OF SALARIED JOBS AND SELF-EMPLOYMENT

3.1 Correlates of Salaried Jobs and Self-employment in Non-agriculture

Rural non-agricultural activities were traditionally viewed as low productivity activities producing low quality goods. In recent years the importance of this sector has been recognised in absorbing the growing labour force. Another important function of these non-agricultural activities is reducing poverty and promoting an equitable distribution of income.

Our analysis of household level data showed that about 39 per cent of the rural households obtained the major part of their income from non-agricultural activities. An important finding was that households with their major source of income from salaries were clearly better off. Eventhough self-employment in non-agriculture yielded incomes below the average household income, it was the second best alternative. It was also observed that the participation in these activities and the incomes derived from them differed across ethnic groups. In this section the factors associated with employment of male workers in these non-agricultural activities separately among ethnic groups will be examined. As observed in the earlier analysis, education plays an important role in determining both the participation and earnings levels. In Section 3 analysis on how the returns to education differs across activity status groups and ethnic groups is carried out.

There are entry barriers or labour market constraints for obtaining salaried jobs on which there is a premium. Similarly, barriers also operate on opportunities for non-agricultural self-employed activities since a certain minimum skill or capital is required to undertake such activities. Econometrically, two separate Probit models of the probability of having salaried jobs and self-employment in non-agricultural activities are estimated. These models are fitted separately for the ethnic groups, Scheduled Castes, Scheduled Tribes, other Hindus, Muslims and Christians. A clear selection rule for the entry barriers has to be identified and selectivity corrected Ordinary Least Squares (OLS) earnings functions are estimated again separately for salaried and self-employed workers for each ethnic group. For a meaningful empirical analysis, the observed variables which reasonably determine the entry barriers or job rationing, but do not directly belong to the earnings function must be singled out.

Specification of the Variables

The names and definitions of the variables used in the models are specified in Table 10. The dependent variable in the Probit on determinants of salaried jobs is a dummy variable, which takes the value 1 if the individual is engaged in a salaried job (SALARIED). The reference (or base) category is all persons who are not in salaried jobs, that is, it includes all persons who are self-employed or employed on wages in agriculture or non-agriculture, unemployed and non-workers. While only about 7 per cent of the Scheduled Tribe men were in salaried jobs, this figure stood at nearly 16 per cent for Christian men. The dependent variable for the selectivity corrected earnings function for salaried jobs is the logarithm of the average salary earned per salaried worker in the household ($\text{Log}Y_{\text{SAL}}$).

The dependent variable in the Probit on determinants of self-employment in non-agriculture is a dummy variable, which takes the value 1 if the individual is engaged in non-agricultural self-employment (SENA). The reference (base) category includes all persons who are salaried or wage employed in non-agriculture and self or wage employed in agriculture, unemployed and non-workers. While only about 5 per cent of men in Scheduled Tribe households were self-employed in non-agriculture, this figure stood at 21 per cent for the Muslim men. The dependent variable in the earnings function is the logarithm of average earnings from self-employment in non-agriculture per individual worker engaged in this activity in the household ($\text{Log}Y_{\text{SENA}}$).

One limitation of the NCAER-HDI data source is that it does not provide the income or self-employed earnings of an individual worker. The earnings variables used here are only approximations of the actual earnings of individuals. The data provides information on salaries earned and incomes from self-employed activities in non-agriculture, separately for each household. The number of individuals working per household in each of these activities is computed. The household income from salaries is divided by the number of salaried workers by primary occupation in the household to obtain salary per individual engaged in salaried employment as a primary activity.

Similarly, household income from self-employment in non-agriculture is divided by the number of workers in the household engaged in these activities. The secondary workers in these activities are excluded from the denominator, but their contribution to income cannot be excluded from the numerator. To this extent the earnings per worker is over-estimated. Since the income is averaged out per household it could under-estimate the earnings of some workers in households with more than one salaried worker. In case of self-employed workers one is assuming that all workers contribute equally to incomes generated in the non-agricultural enterprise. Since there are fewer

women salaried and self-employed workers in non-agriculture and they are likely to be engaged in lower skilled activities, it does not make sense to estimate separate earnings functions by gender. Hence, bearing in mind the limitations of the earnings variable, the analysis is restricted to male workers only.

Self-employment is a major source of income and livelihoods in a developing country like India. The relationship between education and earnings among self-employed persons has rarely been analysed in India. One reason for this being paucity of data on self-employed incomes. The NCAER-HDI data is unique in this respect. Hence in spite of the limitation of the earnings data, highlighted above, it is important to analyse these data to throw some light on these issues.

The education variable has been specified in two ways in the model. It has been specified as the number of years of education (EDUYRS), as discussed earlier and also with education splines. The seven education splines distinguished are those who completed primary school (PRIMARY), middle school (MIDDLE), high school (HIGH), matriculation (MATRIC), higher secondary (SECONDARY), graduation (GRADUATE), post-graduation and medical or engineering degrees (POST-GRADUATE) and those who obtained formal skill training through a diploma or certificate course (FSKILL).

The earnings function includes the variable years of experience (EXPERIENCE) and its quadratic (EXPSQ). This variable has been computed as given below to take care of the fact that much of the labour force is illiterate or did not attend formal schooling. For persons with positive years of schooling, Experience = (age - years of schooling - 6). For persons with zero years of schooling, Experience = (age - 18). Subtracting the years of experience from age, an average age of entry in the workforce of about 15.2 years is obtained. This is the average for salaried and self-employed workers. While salaried workers are expected to enter the workforce only at 18 years, self-employed men could have a much lower average age of entry.

In rural areas where agriculture is a predominant activity, participation in a salaried job may simply be related to the number of other workers in the household already engaged in such jobs (FSALWK). This might operate as a pull factor to the non-agricultural sector and can also help in easing of the entry barrier. It can also be interpreted as a 'circle of contacts' variable (Unni, 2000). It is included as an identifying variable in the Probit model for salaried worker.

Ownership of agricultural land (OWNLAND) is used as an identifying variable in both Probit models. It is hypothesised that access to agricultural land would act as a disincentive to

participation in non-agricultural work, but not in any way influence the earnings from salaried jobs or self-employment in non-agriculture.

The index of productive assets (ASSET) included, both agricultural and non-agricultural assets, but greater weight was given to agricultural assets. It could influence the participation decision for both salaried and the self-employed workers and is therefore used as an identifying variable. The development of the village in terms of infrastructure and markets would influence both the opportunities for jobs and self-employment as well as earnings. The index of development of the village (VILINDEX) is used as a proxy for these effects. Finally VILINDEX, along with the size of the household (HHSIZE) and age (AGE) of the individual are used as control variables. The mean and standard deviations of these variables by ethnic groups are presented in Table 11.

Probit Estimates of Salaried Jobs

Three Probit models were estimated. The first with the education variable specified as years of education alone, the second with years and its quadratic and the third with the seven education splines. The quadratic term was included to relax the assumption of linearity. However, no non-linearity was found in the Probit estimate for salaried jobs in any of the ethnic groups. Since the level of education was expected to influence participation in salaried jobs, the preferred equation is the third one (Table 12).

The participation of males in salaried jobs had a non-linear inverted U-shaped relationship with age. The probability of participation increased up to the age of 42 years for Scheduled Castes, 48 for Scheduled Tribes, 39 for Hindus, 59 for Muslims and 38 for Christians. It declined thereafter. In comparison to the uneducated, those with education were generally more likely to find salaried jobs. Secondly, there was a basic threshold level of education for obtaining such salaried jobs, which varied by ethnic groups. Thirdly, the probability of obtaining a salaried job increased with the level of education. Possession of a formal skill also had a high positive impact on participation in a salaried job.

Similarly increasing probability of participation in non-agricultural employment with higher levels of education was observed in Ecuador (Lanjouw, 1999). Lanjouw cautioned that the exogeneity of education in such Probit models of participation could be questioned. Hence, one must 'refrain from concluding that improvement in education would necessarily lead to increased employment' in non-agricultural occupations.

The threshold level of primary education for obtaining a salaried job was very low, for Scheduled Tribes and other Hindus. For Scheduled Castes and Muslims the threshold level of education to significantly influence the participation in salaried jobs was that of middle school. The level of education above which participation in salaried job became significant for Christians was much higher, that is completion of matriculation. This probably implied that Christians aspired for and obtained jobs at higher levels of skills with consequently higher incomes.

The other variable to positively and significantly influence participation in salaried jobs among all ethnic groups was the number of other family members engaged in salaried jobs. This probably acts as a 'circle of contacts' increasing access to such jobs. In order to see whether this variable was simply picking up the impact of household size, the household size is introduced as a control variable separately in the model. The level of development of the village (VILINDEX) positively and significantly influenced the participation in salaried jobs for Scheduled Tribe men only.

The size of agricultural land holding (OWNLAND) had a significant negative effect on participation in salaried jobs irrespective of ethnic group. This acts as an entry barrier for non-agricultural jobs, while number of family members or 'circle of contacts' in salaried jobs (FSALWK) ease this entry barrier. The index of productive assets (ASSET) had a significant, negative effect on salaried jobs only among other Hindus. This index is heavily weighted in favour of agricultural assets, such as tube wells and tractors and may influence participation in non-agricultural activities like the land variable. These three variables are used as identifying variables and are not included in the earnings functions for salaried jobs. These variables while being likely to affect the access to salaried jobs are not expected to influence the earnings from such jobs.

Probit Estimates of Self-employment in Non-agriculture

Three Probit models, with the education variable as linear, quadratic and with splines, were estimated for participation in self-employment in non-agriculture. The preferred equation was the one with education splines (Table 13). In general, education was found to have a non-linear, inverted U-shaped relationship with participation in self-employment. That is persons with lower levels of education were more likely to be engaged in these activities. However, among Muslims the years of education variable in fact did not significantly influence the participation in self-employment. By education splines also, only schooling up to middle and high school level had any significant influence on self-employment. In contrast, all levels of education had a significant effect on self-employment in Hindu households. Among the Scheduled Caste households, the lower level of education up to higher secondary school, had a positive influence on self-employment in non-agriculture. Among Christians only education levels above high school and up to graduation had a positive and significant impact on self-employment. The possession of a formal skill had a positive effect on self-employment only among Christian males.

The age of the individual had an inverted U-shaped relationship with participation in self-employment in non-agriculture. Probability of participation increased up to the age of 42 years for Scheduled Castes and Hindus, 47 for Scheduled Tribes, 44 for Muslims and 32 for Christians.

The size of agricultural land holding acted as a disincentive from engaging in self-employment in non-agriculture in all ethnic groups except Christians. The index of productive assets had a negative and significant effect on self-employment in other Hindu households, whereas it had a positive effect in Scheduled Tribe households. Both these variables are used as identifying variables and are excluded from the earnings function for self-employed workers. The index of development of the village had a significant positive effect on participation in self-employment among Scheduled Castes, Hindus and Muslims.

3.2 Estimates of Educational Returns

The standard human capital earnings framework is used to estimate the salary income premia associated with education (Mincer, 1974). The standard Mincerian semi-logarithmic earnings function is employed to investigate the determinants of earnings. A simple least squares model of earnings may, however, be inadequate since persons with salaried jobs or self-employed in non-agriculture are likely to be self-selected groups. With self-selected samples, the mean value of the

error term in the earnings equation may not equal zero and the error term may be correlated with the included variables, leading to biased estimates. In order to correct for the possibility of selectivity bias, selectivity corrected earnings functions using the Heckman two stage procedure is estimated. The Probit model of choice into salaried or self-employment is used to construct Inverse Mills Ratios (λ) which are introduced in the earnings function to correct for possible selectivity bias.

A second econometric problem, arising due to the wide dispersion of incomes, is the problem of heteroskedasticity. That is, the error term may not be identically distributed across sample members. This problem particularly arises if the variance of the disturbance term varies systematically with one or more of the explanatory variables, such as education. The logarithmic transformation of the dependent variable, earnings, may reduce heteroskedasticity by reducing dispersion. However, the OLS earnings functions (with and without selectivity correction) are tested for the existence of heteroskedasticity using the Breusch Pagan Chi-Square test. In case these showed existence of heteroskedasticity, White t-statistics were computed to correct for the problem.

Salaried Jobs

The OLS estimates of the earnings functions for salaried males by ethnic groups are reported in Table 14. The two stage Heckman estimates of the earnings function corrected for sample selection are shown in Table A.1, where the standard errors are corrected to take account of λ being predicted. The variables agricultural land, wealth and other salaried workers in the households are used to identify the Probit equations. It has been noted that unless the estimate on the selection correction term λ , is statistically different from zero, one is justified in accepting that the OLS estimates are consistent and are preferred because they are more efficient than the two stage sample selection corrected estimates (Mwabu and Schultz, 2000). Although both the Heckman and OLS estimates are being reported, the OLS estimates are interpreted as being more reliable across all groups due to the lack of significance of λ in all groups (Table A.1). Our discussion will, therefore, focus on the OLS estimates given in Tables 14 and 15. The OLS functions for salaried males in all ethnic groups were corrected for heteroskedasticity since the Breusch Pagan Chi-Square test was significant in all cases. The corrected t-statistics are presented.

The private returns to education among salaried males were equally high, 8.3 per cent, among Scheduled Castes, Hindus and Christian men. Men among Scheduled Tribes had returns of 7.5 per cent. The most interesting result was that the returns to education for Muslim men with

salaried jobs were insignificant.

To further explore the relationship between education and earnings by ethnic groups, the assumption of linearity is being relaxed and a quadratic term for years of education has been introduced. There was no clear indication of non-linearity in the relationship between earnings and education among salaried males except among Hindus. These results are not presented or discussed here.

Earnings functions with education splines were also estimated in order to see if there are any differences in returns by level of education. The OLS earnings functions for salaried males are presented in Table 15, whereas the selectivity corrected functions are presented in Table A.3. The estimate on the selection correction term λ , is significant only for Scheduled Tribes. Hence, our discussion is based only on the OLS earnings functions. All the functions were found to be heteroskedastic and hence the t-values presented are White t-statistics.

There were insignificant returns to lower levels of education among all ethnic groups. The returns increased at higher levels of education. Scheduled Caste male salaried workers had increasing and significant returns to levels of education above high school. Among Scheduled Tribes and Hindus, returns to education were significant only after secondary schooling and it increased for each successive higher level up to post-graduation. The wage premium received by Scheduled Caste men with an additional year of matriculation, secondary level schooling, graduation and post-graduation was 73.1, 100.5, 133.0 and 174.8 in log per cent respectively. Among other Hindu men an additional year of secondary level schooling, graduation and post-graduation yielded 81.7, 107.2 and 127.0 in log per cent respectively. Among ethnic groups, the Scheduled Caste men obtained the maximum returns to education from salaried jobs. The most striking result was that salaried males among Muslims and Christians had no significant returns to education at any level. However, the possession of a formal skill, with a diploma or certificate, proved to have significant returns among Muslims, as well as among Scheduled Castes and Hindus.

The results have major policy implications. At lower levels of education salary earnings were insignificantly different from the returns to illiterate persons. This implies that just being literate or having only primary or middle schooling was not enough to obtain better labour market rewards. The Scheduled Caste males seemed to have an advantage with higher returns at all levels of schooling above matriculation. The minority groups, Muslims and Christians, did not seem to gain

from education at any level, though the OLS earnings functions earlier did indicate 8.4 per cent returns for Christian men.

A reservation policy for jobs for Scheduled Castes and Tribes has been framed in independent India. It is likely that this reservation of jobs has worked effectively for Scheduled Castes and to some extent for Scheduled Tribes. The backward castes also obtain the advantages of reservation of jobs. Since these groups are clubbed with Hindus in this sample, the significance of educational attainment of the latter group may partly be explained by this. The Muslims were definitely the losers, firstly because a very low proportion of them were in salaried jobs, and secondly, they did not have any significant returns to their education.

Self-employment in Non-agriculture

The OLS estimates of the earnings function (Table 16) and the selectivity corrected earnings functions were estimated (Table A.3) for self-employed males in non-agriculture. The selection correction term, Lambda, was found to be insignificant for all ethnic groups, hence only the OLS function is being discussed.

The private rate of returns to education among self-employed men was much lower (2.5 per cent) than that to salaried men (7.6 per cent). This was true for all ethnic groups. It was about 2.5 per cent for Scheduled Castes and 3.2 per cent for other Hindus. The returns was insignificant among self-employed Christian and Muslim men.

The relationship between education and earnings was checked for non-linearity by introducing the quadratic term for years of education. The relationship was not found to be non-linear for any of the ethnic groups. Further, to see if there were varying returns by level of education the OLS and selectivity corrected earnings functions introducing education splines were estimated (Table 17 and Table A.4). The selection correction term, Lambda was found to be insignificant for all the ethnic groups and hence only the OLS results are being discussed.

As in the case of salaries, there were insignificant returns to lower levels of education in self-employment. However, unlike salaried jobs, the Scheduled Castes did not have significant returns to education at any level, except secondary level. Scheduled Tribe³ and Hindu men in self-employment, however, had significant and increasing returns to education at graduate and post-graduate level. The self-employed Muslim men had significant returns only at the matriculation and post-graduate

level.

The earlier hypothesis of the high returns to education among the Scheduled Castes because of reservation is further substantiated. Similar high and significant returns to self-employment among Scheduled Castes were not observed. Similarly, while Scheduled Tribes also had significant returns from secondary schooling and higher levels in salaried employment, returns were significant only at graduate or post-graduate level in self-employment.

4. CONCLUSIONS

Households whose major source of income came from salaried jobs had on average the highest average household incomes in all ethnic groups. They were the least likely to be below the poverty line and had the highest educational attainments among men and women. Agricultural households and households self-employed in non-agriculture were also more likely to be above poverty. Across ethnic groups, the Scheduled Castes, Tribes and Muslims were more likely to be poor. The Scheduled Caste households had the lowest average household incomes among salaried and self-employed households.

Mean years of education were the highest in salaried households followed by households self-employed in non-agriculture. Men and women in Christian households had the highest mean years of education with the least gender difference. Even among Christians, salaried and self-employed households in non-agriculture had the highest mean years of education. Mean years of schooling were the lowest among Scheduled Castes in salaried and self-employed households. Muslim men and women had higher mean years of schooling than the Scheduled Castes in salaried and self-employed households, but well below that of Christians and Hindus. Overall, educational investments were maximum in salaried and self-employed households in all ethnic groups. Among them, Christians and Hindu households invested the most in education.

The Probit model of participation in salaried jobs showed that higher levels of education led to better access to such jobs. The threshold level at which entry into these jobs became significant was primary school for Scheduled Tribes and Hindus, middle school for Muslims and Scheduled Castes and completion of matriculation for Christians. Christians probably aspired for and obtained jobs with higher levels of skills and consequently with higher incomes. Education had an inverted U-shaped relationship with access to self-employment in non-agriculture, that is, persons with lower levels of education were more likely to be engaged in it. The size of agricultural land acted as a disincentive to participate in salaried jobs and self-employment in non-agriculture among all ethnic groups. The number of other salaried workers in the household acted as a 'circle of contacts' which eased entry barriers to salaried jobs.

Private returns to education from salaried jobs was uniformly high (8.3 per cent) among Scheduled Castes, Hindus and Christian men. It was 7.5 per cent for men from Scheduled Tribe households. However, the sample size for salaried Christian males was only 218, which may be too small for reliable inferences. The most interesting result was that Muslim men had insignificant returns to education in salaried jobs. Sample selection bias did not appear to be an important source of distortion. While salaried Muslim men did not have significant returns to formal schooling, they had

very high returns to skills. One potential explanation for this could be a greater cultural tendency to follow ancestral/parental occupations that tend to be concentrated in few traditional crafts. These may be manual activities where general school education may not raise productivity.

Though Scheduled Caste households had the lowest average household incomes and lowest mean years of education, they had the highest returns to education. Further, though Muslim men had slightly higher mean years of schooling and average household incomes in salaried households than Scheduled Castes they did not get any significant returns to the education. Similar pattern of differential returns to education by ethnic groups was observed in South Africa (Mwabu and Schultz, 2000). It was noted that as a population approaches high levels of enrolment at the primary level, returns tend to become insignificant. In India, however, another important explanation for these results could be the reservation of government and semi-government jobs for the Scheduled Castes, Tribes and certain backward castes.

The strongest empirically consistent result obtained in these data is that returns to education increase with the level of education in all ethnic groups. Similar increasing returns by level of education was observed earlier for other samples in India (Unni, 1996; Kingdon, 1998; Kingdon and Unni, 1998). It also more or less decreases with the average educational attainment of the ethnic group. Similar results were observed for South Africa (Schultz and Mwabu, 2000). For example, a year of secondary, graduate or post-graduate education yields much higher returns in salaried jobs to the Scheduled Castes compared to Hindus, while Christian males had insignificant returns to all levels of education. The proportion of men with each of these levels of education was the highest among Christians, followed by Hindus and was the least among the Scheduled Castes.

Returns to education from self-employment were much lower than those to salaried non-agricultural jobs among all ethnic groups. Among the self-employed persons, returns to education were about 2.5 per cent among Scheduled Castes and 3.2 per cent among Hindus. Muslim and Christian men did not obtain any significant returns to self-employment either. This again substantiates the hypothesis about reservation policy. Without reservation, Scheduled Castes and Tribes did not have much advantage in self-employed activities. Men from the minority communities were the worst off for not receiving any significant returns to self-employment from their education.

Educational attainment, even at very low levels, was a definite route out of poverty for the Scheduled Castes and Tribe households. Aided by the reservation policy of the government, these communities were able to obtain salaried jobs and reap high returns to education. However, when forced to undertake self-employed activities in non-agriculture they did not fare very well.

Among the minorities, education did not provide significant returns to either salaried or self-employed jobs. Education was not the obvious solution to the low levels of income of Muslims since

it neither guaranteed them a job nor provided significant returns to self-employment. The Christian community had relatively higher levels of education, but did not obtain commensurate incomes from salaried jobs. However, education helped them to obtain salaried jobs. Hindu men had consistent returns to both salaried jobs and self-employment. This might be partly due to the reservation for many backward communities included in this group. Education would help to ameliorate poverty among this majority Hindu community as well.

In conclusion, one limitation of the Mincerian earnings functions in estimating returns to education needs to be pointed out⁴. These functions are estimated within occupation groups (for example, salaried or self-employed outside agriculture) and would under-estimate true returns to education to the extent they do not capture increased returns associated with improved occupational choices as education increases. In fact, the Probit regressions indicated that education increased the probability of obtaining a salaried job and this is not taken into account in the estimation of 'return to education' within the occupation group. Selectivity corrected estimates alone do not alter this basic problem. This qualification is also relevant to relative rates of return to low levels of education. The earnings functions suggest that the rates of return to low levels of education are not high. However, the Probit regressions do suggest that even primary education significantly raises the probability of obtaining a salaried job. This important effect of education, that is helping occupational and hence upward economic mobility, is not captured in the earnings function estimating intra-occupation returns.

ENDNOTES

¹ A survey of 33,230 rural households selected by a stratified sample drawn from 16 states was conducted between January and May 1994 by the National Council for Applied Economic Research. For details on the NCAER-HDI data see Shariff, 1999.

² See Shariff, 1999, for an explanation of the construction of indices of production assets and the village development index.

³ When the variable formal skill was included in the equation for Muslim self-employed men the regression did not converge. Hence this equation, both with and without selectivity correction, has been estimated without the variable formal skill.

⁴ The author is grateful to Professor Jean Dreze for pointing this out.

Table 1
Demographic Characteristics of Households by Major Source of Income

Major Source of Household Income	% of HHs	HH Size	Age of Head of HHs	Sex Ratio	Female Headed HHs (%)	Children per HH
Agricultural HHs	60.8	5.68	45.6	906	4.8	2.10
Self-Employed	45.5	5.96	46.8	897	3.8	2.18
Wage earners	15.3	4.85	42.3	941	7.6	1.85
Non-Agricultural HHs	39.2	5.77	44.9	900	6.5	2.18
Self-Employed	13.2	5.82	43.8	885	3.8	2.31
Wage earners	9.8	5.40	43.1	916	6.9	2.14
Salaried	12.2	6.10	45.4	886	5.4	2.17
Other Income	4.0	5.54	51.8	963	18.1	1.91
All Households	100.0	5.72	45.4	904	5.5	2.13

Note: HH – household

Table 2
Income and Poverty by Major Source of Household Income

Major source of Household	Total Household Income (Rs)	Per Capita Income	Poverty Groups				Index of Productive Assets
			Below Poverty		Above Poverty		
			LS	US	LS	US	
Agricultural HHs	26483	5015	17.7	18.3	42.3	21.7	2.32
Self-Employed	31725	5875	12.7	15.3	44.3	27.7	2.99
Wage earner	10919	2464	32.7	27.3	36.3	3.8	0.33
Non-Agricultural HHs	24366	4583	13.0	19.5	46.1	21.4	1.45
Self-Employed	21310	3927	12.0	22.8	50.2	15.0	1.36
Wage earners	14214	2874	25.4	29.2	39.3	6.0	0.52
Salaried	36023	6608	4.7	9.0	45.4	40.9	2.21
Other	23829	4770	10.9	16.7	51.4	21.0	1.72
All HHs	25653	4846	15.9	18.8	43.8	21.6	1.98

Note: LS - Lower Segment
US - Upper Segment

Table 3
Size of Land Holding and Property Owned Elsewhere by Major Source of Household Income

	Land Size Groups				Land-less Wage	Land-less Other	Own Property Elsewhere (%)
	Marginal	Small	Medium	Large			
Agricultural HHs	32.8	25.4	13.0	7.8	19.8	1.3	12.1
Self-Employed	36.8	33.4	17.3	10.4	0.6	1.6	14.3
Wage earner	20.9	1.6	0.2	0.0	76.9	0.4	5.6
Non-Agricultural HHs	29.3	6.8	2.3	0.8	18.8	42.0	11.0
Self-Employed	27.7	5.1	1.5	0.6	0.0	65.1	10.3
Wage earner	24.8	2.6	0.7	0.3	71.3	0.3	6.1
Salaried	31.1	11.4	4.1	1.4	0.0	52.0	15.8
Other	40.2	8.9	2.8	1.2	9.7	37.2	11.1
All HHs	31.4	18.1	8.8	5.0	19.4	17.2	11.7

Table 4
Incomes and Poverty by Ethnic Groups

Ethnic Group	% of Households	Total Household Income (Rs)	Per Capita Income	Poverty Groups				Index of Productive Assets
				Below Poverty		Above Poverty		
				LS	VS	LS	VS	
Scheduled Tribes	9.7	19557	3786	20.2	24.3	41.6	14.0	0.94
Scheduled Castes	20.3	17466	3528	22.1	23.6	42.4	12.0	1.10
Hindu	55.6	29787	5554	12.6	15.6	44.8	27.0	2.33
Muslim	9.2	22807	4019	17.5	23.7	42.6	16.3	1.79
Christian	2.3	28861	6133	12.9	11.8	46.7	28.7	0.68
Other Minorities	2.9	30330	5581	18.9	18.0	42.8	20.3	6.69
All	100.0	25653	4846	15.9	18.8	43.8	21.6	1.98

Table 5
Major Source of Household Income by Ethnic Groups

Major Source of HHs Income	Ethnic Groups					
	ST	SC	Hindu	Muslim	Christian	Minorities
Agricultural HHs	69.5	59.4	61.8	51.1	54.8	57.4
Self-Employed	51.9	31.0	51.3	37.9	36.5	44.0
Wage earners	17.6	28.3	10.5	13.2	18.3	13.4
Non-Agricultural HHs	30.5	40.6	38.2	48.9	45.2	42.6
Self-Employed	7.1	11.0	13.7	23.1	9.4	11.1
Wage earners	10.5	16.2	7.2	9.8	12.9	10.3
Salaried	10.1	9.5	13.4	9.9	18.4	16.4
Other	2.7	3.9	3.9	6.1	4.5	4.7
All HHs	100.0	100.0	100.0	100.0	100.0	100.0

Note: ST - Scheduled Tribe; SC - Scheduled Caste.

Table 6
Annual Household Income by Major Source of Income and Ethnic Groups

Major Source of Income	ST	SC	Hindu	Muslim	Christian	All
Agricultural	18884	16430	31511	22470	29925	26483
Self-Employed	21863	21678	35632	26606	37810	31725
Wage Earners	10119	10681	11359	10559	14156	10919
Non-Agricultural	21092	18981	26993	23159	27570	24366
Self-Employed	21890	18574	22217	20413	23478	21310
Wage Earners	11262	13015	15775	14404	16854	14214
Salaried	31658	29439	38289	36818	38312	36023
Others	17706	19350	25657	25350	22757	23829
All HHs	19557	17466	29787	22807	28861	25653

Table 7
Educational Attainment of Adults (15-60 years)

Major Source of Income	Illiterate	Primary + Middle	High School	Matric + Higher Secondary	Graduate+ P.G. + Professional	Formal Skills
Male						
Agricultural	39.6	23.8	17.2	15.9	3.1	0.5
Self-Employed	34.4	23.5	19.1	18.6	3.8	0.5
Wage earners	58.8	24.7	10.1	5.7	0.5	0.2
Non-Agricultural	28.7	21.9	18.8	23.7	6.1	0.8
Self-Employed	29.0	25.2	21.1	20.4	3.6	0.6
Wage earners	50.8	25.7	13.4	9.4	0.6	0.1
Salaried	13.8	15.9	19.7	36.8	12.5	1.4
Other	30.3	22.8	20.6	20.7	5.1	0.5
All	35.3	23.0	17.9	8.9	4.3	0.6

	Female					
Agricultural	69.4	16.3	8.0	5.7	0.5	0.0
Self-Employed	66.4	17.0	9.1	6.8	0.6	0.0
Wage earners	80.2	13.7	4.1	2.0	0.1	0.0
Non-Agricultural	58.8	18.2	11.4	10.2	1.2	0.2
Self-Employed	58.7	20.5	11.1	8.6	1.0	0.1
Wage earners	77.1	13.9	5.7	3.1	0.2	0.0
Salaried	46.0	18.8	16.0	16.7	2.2	0.3
Other	60.2	18.8	10.1	9.6	1.2	0.2
All	65.3	17.0	9.3	7.5	0.8	0.1

Table 8
Mean Years of Education by Major Sources of Income and Ethnic Groups

Major Source of Income	ST	SC	Hindu	Muslim	Christian	All
Adult Male						
Agricultural	2.9	3.2	5.4	3.8	6.2	4.6
Self-Employed	3.3	4.0	5.8	4.3	6.9	5.2
Wage Earners	1.7	2.2	2.7	2.4	4.7	2.4
Non-Agricultural	5.0	4.5	6.9	4.8	8.0	6.0
Self-Employed	5.5	4.2	6.3	4.3	8.9	5.6
Wage Earners	2.3	3.0	3.6	2.4	5.8	3.2
Salaried	7.3	7.2	8.8	7.8	9.0	8.3
Others	4.9	4.1	6.5	5.0	8.4	5.7
All HHs	3.5	3.7	5.9	4.3	7.0	5.2
Adult Female						
Agricultural	1.0	1.0	2.4	1.6	5.3	2.0
Self-Employed	1.1	1.2	2.6	1.8	6.3	2.3
Wage Earners	0.7	0.8	1.3	0.8	3.3	1.0
Non-Agricultural	2.2	1.6	3.5	2.3	6.5	3.0
Self-Employed	3.1	1.5	3.2	1.9	7.1	2.7
Wage Earners	0.5	0.9	1.7	1.0	4.8	1.4
Salaried	3.4	3.0	4.6	3.6	7.2	4.3
Others	1.9	1.4	3.1	3.3	7.5	2.9
All HHs	1.3	1.3	2.8	2.0	5.8	2.4

Table 9
Investment on Human Capital

Major Source of Income	Percentage of Children Attending School (5-14 Years)			Household Expenditure on Education for Children (5-14 years) (Rs)
	Male	Female	Total	
Agricultural HHs	66.6	53.0	60.2	841
Self-Employed	69.1	55.2	62.5	875
Wage earners	57.7	45.2	51.8	684
Non-Agricultural HHs	69.5	59.1	64.7	687
Self-Employed	67.2	57.8	62.9	712
Wage earners	56.9	39.0	48.5	328
Salaried	81.6	76.2	79.0	937
Others	70.7	57.8	64.8	493
All Households	67.7	55.4	62.0	780

Table 10
Definition of Variables Used in the Probit and OLS Functions

Variable	Description
Dependent Variables	
SALARIED	Participation in salaried job as a primary occupation. Yes = 1, No = 0.
LogY _{SAL}	Natural logarithm of the average salary income per salaried worker in the household by primary occupation.
SENA	Participation in self-employed non-agricultural activities, such as trade, services, business or professional activities, as a primary occupation. Yes = 1, No = 2.
LogY _{SENA}	Natural logarithm of the average income from self-employment in non-agriculture per individual engaged in it as a primary occupation.
Independent Variables	
AGE	Age of the individual.
EXPERIENCE	Number of years of experience.
HHSIZE	Number of household members.
EDUYRS	Mean years of schooling.
PRIMARY	Attended primary school (standard 1-4)? Yes = 1, No = 0.
MIDDLE	Attended middle school (standard 5-7)? Yes = 1, No = 0.
HIGH	Attended high school (standard 8-9)? Yes = 1, No = 2.
MATRIC	Completed Matriculation (standard 10)? Yes = 1, No = 0.
SECONDARY	Completed higher secondary school (standard 12)? Yes = 1, No = 0.
GRADUATE	Completed graduation? Yes = 1, No = 0.
POST-GRADUATE	Completed post-graduation, MBBS or BE? Yes = 1, No = 0.
FSKILL	Attended diploma or certificate course in vocational training? Yes = 1, No = 0.
OWNLAND	Size of land owned in acres.
ASSET	Index of productive assets.
FSALWK	Number of other household members engaged in salaried work.
VILINDEX	Index of development of the village.

Table 11
Means and Standard Deviation in the Probit and OLS Equations by Ethnic Groups, Males 15-60 Years

Variable	Scheduled Castes	Scheduled Tribes	Hindus	Muslims	Christians
Dependent Variables					
Salaried	0.088 (0.28)	0.067 (0.25)	0.112 (0.32)	0.080 (0.27)	0.158 (0.36)
LogY _{SAL}	9.288 (2.14) [1058]	9.451 (1.73) [409]	9.313 (2.30) [3464]	9.171 (2.34) [451]	9.395 (2.55) [218]
SENA	0.090 (0.29)	0.049 (0.21)	0.110 (0.31)	0.211 (0.41)	0.144 (0.35)
LogY _{SENA}	8.626 (2.06) [1076]	8.642 (2.03) [298]	8.669 (2.11) [3392]	8.817 (1.81) [1184]	9.102 (1.83) [199]
Independent Variables					
AGE	32.621 (12.96)	33.510 (12.74)	32.650 (12.96)	31.957 (12.94)	33.328 (11.94)
Experience	17.159 (12.91)	17.967 (12.78)	17.522 (13.33)	16.798 (13.00)	18.109 (12.72)
HH Size	6.423 (2.85)	6.568 (3.16)	7.296 (3.73)	7.400 (3.42)	5.689 (2.11)
EDUYRS	3.982 (4.47)	3.297 (4.23)	5.931 (4.70)	4.337 (4.47)	7.657 (4.37)
Primary	0.100 (0.30)	0.114 (0.32)	0.104 (0.31)	0.110 (0.31)	0.076 (0.26)
Middle	0.124 (0.33)	0.109 (0.31)	0.147 (0.35)	0.148 (0.36)	0.156 (0.36)
High	0.155 (0.36)	0.127 (0.33)	0.193 (0.39)	0.168 (0.37)	0.248 (0.43)
Matriculation	0.088 (0.28)	0.072 (0.26)	0.155 (0.36)	0.091 (0.29)	0.193 (0.39)
Secondary	0.040 (0.20)	0.032 (0.18)	0.073 (0.26)	0.039 (0.19)	0.080 (0.27)
Graduate	0.019 (0.14)	0.014 (0.12)	0.039 (0.19)	0.023 (0.15)	0.074 (0.26)
Post-Graduate	0.005 (0.07)	0.004 (0.06)	0.011 (0.10)	0.005 (0.07)	0.012 (0.011)
FSKILL	0.004 (0.06)	0.002 (0.04)	0.007 (0.08)	0.005 (0.07)	0.030 (0.17)
OWN LAND (in acres)	1.942 (4.95)	3.627 (5.67)	5.161 (1.128)	2.478 (8.09)	1.859 (4.46)
ASSET	1.660 (3.77)	1.340 (3.22)	3.331 (5.71)	2.218 (4.58)	0.949 (2.76)
FSALWK	0.118 (0.38)	0.088 (0.34)	0.188 (0.49)	0.128 (0.42)	0.210 (0.55)
VILINDEX	2.02 (0.79)	1.742 (0.75)	2.057 (0.77)	2.010 (0.77)	2.270 (0.72)
N	11988	6084	30795	5617	1380

Note: Figure in parentheses are standard deviations and in brackets are sample size.

Table 12
Probit Estimates of Participation in Salaried Jobs by Ethnic Groups, Males 15-60 Years

Variables	SC	ST	Hindus	Muslims	Christians
Intercept	-5.149*** (-27.0)	-6.400*** (-18.16)	-4.909*** (-44.74)	-4.051*** (-16.10)	-6.148*** (-9.86)
Age	0.167*** (16.79)	0.193*** (10.80)	0.156*** (27.20)	0.117*** (8.68)	0.224*** (7.17)
Age sq.	-0.002*** (-14.32)	-0.002*** (-9.29)	-0.002*** (-23.16)	-0.001*** (-7.38)	-0.003*** (-6.49)
HH size	-0.016* (-2.30)	0.006 (0.56)	-0.005 (-1.37)	-0.003 (-0.35)	-0.002 (-0.09)
Primary	0.203** (2.82)	0.716*** (6.80)	0.347*** (7.61)	0.262** (2.56)	-0.019 (-0.07)
Middle	0.639*** 10.70	0.917*** (8.71)	0.454*** (10.94)	0.618*** (7.44)	0.083 (0.37)
High	0.879*** (15.71)	1.369 (13.92)	0.833*** (22.31)	0.608*** (7.31)	0.403** (1.99)
Matriculation	1.195*** (CAPut!'.25)	1.757*** (16.45)	1.177*** (31.82)	0.925*** (10.08)	0.991*** (4.93)
Secondary	1.188*** (14.50)	2.023*** (15.18)	1.256*** (28.30)	1.216*** (9.81)	1.267*** (5.54)
Graduate	1.665*** (17.11)	2.292*** (13.81)	1.561*** (31.61)	1.307*** (9.73)	1.705*** (7.53)
Post-Graduate	1.520*** (8.62)	1.112*** (3.08)	1.873*** (24.30)	1.578*** (6.45)	1.526*** (3.94)
F skill	1.875*** (9.31)	2.594*** (6.05)	1.614*** (16.64)	1.472*** (5.56)	1.378*** (4.67)
OWN LAND	-0.030*** (-5.80)	-0.060*** (-6.10)	-0.023*** (-12.77)	-0.017*** (-2.98)	-0.106*** (-4.24)
Asset	0.004 (0.87)	-0.011 (-1.87)	-0.007*** (-3.20)	-0.009 (-1.38)	0.046*** (2.66)
FSALWK	0.483*** (12.24)	0.470*** (6.80)	0.386*** (20.10)	0.472*** (8.82)	0.394*** (4.60)
VILINDEX	0.031 (1.28)	0.144*** (3.47)	0.014 (1.04)	-0.037 (-1.06)	0.079 (1.07)
Log L	-2876.9	-1042.9	-8760.8	-1332.9	-446.7
Restricted Log L	-3578.25	-1499.1	-10830.0	-1569.9	-602.1
Pseudo R-square	0.20	0.30	0.CAPut!'	0.15	0.26
N	11988	6084	30795	5617	1380

Notes: Figures in parentheses are t-statistics. ***, **, * refers to significance at 1, 5, and 10 per cent level.

Table 13
Probit Estimates of Participation in Self Employment in Non-Agriculture, Males 15-60 Years

Variables	SC	ST	Hindus	Muslims	Christians
Intercept	-3.132*** (-20.36)	-3.597*** (-12.84)	-3.072*** (-33.74)	-2.543*** (-14.89)	-3.748*** (-7.74)
Age	0.084*** (10.32)	0.094*** (6.34)	0.085*** (17.37)	0.089*** (9.68)	0.127*** (5.CAPut!')
Age sq.	-0.001*** (-9.59)	-0.001*** (-5.87)	-0.001*** (-16.31)	-0.001*** (-8.98)	-0.002*** (-4.76)
HH size	0.031*** (5.07)	0.005 (0.54)	0.027*** (9.22)	0.022*** (3.73)	-0.040* (-1.77)
Primary	0.120** (2.11)	0.192* (1.93)	0.258*** (7.15)	0.074 (1.13)	-0.319 (-1.17)
Middle	0.269*** (5.25)	0.405*** (4.29)	0.330*** (10.13)	0.185*** (3.14)	0.117 (0.61)
High	0.189*** (3.74)	0.756*** (9.08)	0.342*** (10.99)	0.137** (2.34)	0.601*** (3.49)
Matriculation	0.169*** (2.72)	0.547*** (5.10)	0.327*** (9.97)	0.058 (0.44)	0.584*** (3.24)
Secondary	0.143*** (1.62)	0.420*** (2.78)	0.221*** (4.99)	-0.094 (-0.85)	0.737*** (3.54)
Graduate	0.077 (0.62)	0.420** (1.95)	0.299*** (5.60)	-0.328** (2.11)	0.380*** (1.73)
Post-Graduate	0.419** (2.01)	1.572*** (5.76)	0.161 (1.61)	0.098 (0.10)	0.891 (2.47)
F skill	0.156 (0.59)	-2.621 (-0.07)	0.035 (0.26)	-0.480 (1.42)	0.621*** (2.CAPut!')
OWN LAND	-0.081*** (-10.43)	-0.058*** (-6.15)	-0.060*** (-23.33)	-0.133*** (-13.34)	-0.028 (-1.81)
Asset	0.005 (0.95)	0.025*** (2.85)	-0.009*** (-4.21)	-0.003 (-0.55)	0.012 (0.69)
VILINDEX	0.068*** (3.14)	0.032 (0.81)	0.099*** (7.53)	0.106** (4.05)	0.084 (1.30)
Log L	-3457.3	-1085.8	-9904.5	-2659.9	-52.1
Restricted Log L	-3620.06	-1189.4	-10680.4	-2892.7	-569.3
Pseudo R square	0.05	0.09	0.07	0.08	0.08
N	11988	6084	30795	5617	1380

Note: Figures in parentheses are t-statistics.

***, **, * refer to significance at 1, 5 and 10 per cent levels.

Table 14
OLS Earnings Functions of Salaried Males by Ethnic Groups

Variables	Scheduled Castes	Scheduled Tribes	Hindus	Muslims	Christians
Intercept	7.832*** (28.81)	8.637*** (28.82)	8.099*** (50.22)	8.315*** (22.75)	9.374*** (15.20)
Experience	0.064** (2.81)	0.009 (0.39)	0.029*** (2.48)	0.081** (2.37)	-0.110* (2.02)
Experience Square	-0.001 (-1.81)	0.000 (0.08)	-0.001 (0.95)	-0.002** (-2.26)	0.003** (2.20)
Years of Education	0.083*** (5.95)	0.075*** (5.87)	0.083*** (9.12)	0.021 (0.98)	0.084*** (2.67)
Breusch Pagan Chi Square (D.F.)	50.8 (3)	23.1 (3)	47.6 (3)	10.1 (3)	22.4 (3)
Adjusted R ²	0.041	0.022	0.024	0.009	0.015
N	1058	409	3464	451	218

Notes: Figures in parentheses are White-t statistics corrected for heteroskedasticity.
***, **, * refers to significance at 1, 5 and 10 per cent.

Table 15
OLS Earnings Functions with Education Splines of Salaried Males by Ethnic Groups

Variables	SC	ST	Hindus	Muslims	Christians
Intercept	7.898*** (20.24)	9.007*** (25.42)	8.397*** (35.16)	8.37*** (17.18)	10.858*** (10.70)
Experience	0.072*** (3.17)	0.009 (0.41)	0.038*** (3.14)	0.081** (2.30)	-0.056 (-0.96)
Experience squares	-0.001** (-2.18)	-0.000 (-0.03)	-0.000 (-1.54)	-0.002** (-2.08)	0.001 (1.13)
HH size	-0.019 (-0.91)	-0.005 (-0.31)	-0.012 (-1.15)	-0.010 (-0.37)	-0.129 (-1.22)
Primary	0.481* (1.93)	0.050 (0.32)	-0.006 (-0.03)	-0.401 (-0.77)	-0.116 (-0.26)
Middle	0.054 (0.21)	-0.112 (-0.45)	-0.060 (-0.29)	-0.713* (-1.88)	0.226 (0.70)
High	0.409* (1.84)	-0.507 (-1.57)	0.078 (0.29)	-0.101 (-0.29)	-0.909 (-1.46)
Matriculation	0.731** (3.08)	-0.461 (-1.99)	0.333* (1.99)	-0.032 (-0.10)	-0.738 (-1.34)
Secondary	1.005*** (3.76)	0.924** (5.67)	0.817** (4.78)	0.089 (0.23)	-0.213 (0.35)
Graduate	1.330*** (5.21)	1.003*** (5.87)	1.072*** (6.17)	-0.444 (-0.81)	0.536 (1.18)
Post-Graduate	1.748*** (7.27)	1.396*** (7.35)	1.270*** (6.58)	0.994*** (13.16)	0.978* (2.53)
F skill (1.CAPut!')	0.675*** (1.93)	-0.360 (-0.75)	0.824*** (2.80)	0.657*** (2.12)	0.264 (0.72)
VILINDEX	0.002 (0.02)	0.036 (0.31)	0.028 (0.55)	0.163 (1.08)	-0.083 (-0.32)
Breusch Pagan Chi Square (D.F.)	94.8 (12)	218.0 (12)	140.5 (12)	63.62 (12)	63.71 (12)
Adjusted R ²	0.042	0.061	0.030	0.015	0.023
N	1058	409	3464	451	218

Notes: Same as Table 14.

Table 16
OLS Earnings Function of Self-Employed Males in Non-Agricultural Activity by Ethnic Groups

Variables	Scheduled Castes	Scheduled Tribes	Hindus	Muslims	Christians
Intercept	7.792*** (32.69)	7.216*** (17.02)	7.743*** (59.65)	8.418*** (67.91)	6.344*** (5.52)
Experience	0.076*** (3.64)	0.112** (2.94)	0.069*** (6.31)	0.037*** (3.02)	0.194** (2.67)
Experience Square	-0.001*** (-3.34)	-0.002*** (-2.63)	-0.001*** (-5.13)	-0.001*** (-2.55)	-0.004** (-2.69)
Years of Education	0.025*** (1.64)	0.039* (1.93)	0.032*** (3.74)	0.088 (0.64)	0.083 (1.43)
Breusch Pagan Chi Square (D.F.)	24.6 (3)	30.7 (3)	127.3 (3)	13.2 (3)	82.8 (3)
Adjusted R ²	0.015	0.031	0.017	0.005	0.098
N	1076	298	3392	1184	199

Notes: Same as in Table 14.

Table 17
OLS Earnings Functions with Education Splines of Self-Employed Males in Non-Agriculture by Ethnic Groups

Variables	SC	ST	Hindus	Muslims	Christians
Intercept	7.891*** (24.51)	7.839*** (13.98)	7.848*** (43.20)	8.356*** (36.45)	6.109*** (4.25)
Experience	0.078*** (3.75)	0.125*** (3.52)	0.070*** (6.34)	0.043*** (3.56)	0.219*** (3.11)
Experience squares	-0.001*** (-3.49)	-0.002*** (-3.7)	-0.001*** (-5.24)	-0.007*** (2.94)	-0.004*** (3.15)
HH size	-0.034 (-1.27)	-0.045 (-1.63)	-0.026** (-2.28)	-0.007 (-0.60)	-0.005 (-0.08)
Primary	0.182 (1.09)	-0.006 (-0.02)	0.032 (0.27)	-0.012 (-0.07)	0.399 (0.56)
Middle	-0.096 (-0.49)	0.037 (0.11)	0.069 (0.60)	-0.323* (-1.94)	-0.306 (-0.43)
Matric	0.199 (0.74)	0.321 (0.69)	0.339** (2.81)	0.398*** (2.78)	0.513 (0.8-)
High	0.181 (1.01)	-0.155 (-0.50)	0.127 (1.15)	-0.074 (-0.51)	-0.073 (-0.13)
Secondary	0.754** (2.97)	0.043 (0.06)	0.281 (1.48)	0.196 (0.61)	0.124 (0.14)
Graduate	0.601 (1.24)	0.850** (2.31)	0.582*** (2.69)	0.284 (0.42)	1.550* (2.09)
Post-Graduate	0.047 (0.047)	2.051*** (7.52)	0.874* (1.89)	1.151*** (3.52)	-0.028 (-0.01)
F skill	-0.056 (1.52)	-	0.350 (-0.46)	-0.948 (-0.68)	1.137 (1.45)
VILINDEX	0.556 (0.78)	-0.162 (-0.84)	0.056 (1.13)	0.055 (0.73)	0.212 (1.29)
Breusch Pagan Chi Square (D.F.)	91.9 (12)	59.9 (11)	170.9 (12)	182.0 (12)	154.0 (12)
Adjusted R ²	0.015	0.043	0.019	0.013	0.115
N	1076	298	3392	1184	199

Note: Same as Table 14.

Appendix

Table A.1
Selectivity Corrected Earnings Function of Salaried Males by Ethnic Group

Variables	Scheduled Castes	Scheduled Tribes	Hindus	Muslims	Christians
Intercept	8.776*** (15.59)	7.460*** (10.98)	9.071 (21.12)	7.808*** (7.84)	8.638*** (7.01)
Experience	0.045*** (2.04)	0.035 (1.35)	-0.012 (-0.97)	0.088 (2.44)	-0.092* (1.59)
Experience Square	-0.001 (-1.21)	-0.000 (-0.77)	0.000 (0.09)	-0.002 (-2.35)	0.002** (1.73)
Years of Education	0.051** (2.32)	0.120*** (4.46)	0.051** (3.03)	0.037 (1.04)	0.111*** (2.41)
Lambda	-0.330 (-1.58)	0.362 (2.13)	-0.345* (-2.22)	0.203 (0.54)	0.243 (0.57)
Breusch Pagan Chi Square (D.F.)	69.4 (4)	25.0 (4)	112.5 (4)	10.4 (4)	26.4 (4)
Adjusted R ²	0.041	0.025	0.025	0.007	0.012
N	1058	409	3464	451	218

Note: Same as Table 14.

Table A.2
Selectivity Corrected Earnings Functions with Education Splines of Salaried Males by Ethnic Groups

Variables	S.C.	S.T.	Hindus	Muslims	Christians
Intercept	9.128 (13.10)	6.722*** (7.69)	9.156*** (17.46)	8.095*** (6.55)	8.932*** (6.48)
Experience	0.049*** (2.33)	0.053** (2.17)	0.025 (1.86)	0.084** (2.16)	-0.008 (-0.13)
Experience squares	-0.001** (1.52)	-0.001 (-1.57)	-0.000 (-0.74)	-0.002** (-2.02)	0.001 (-0.33)
HH size	-0.021 (-0.99)	0.002 (0.13)	-0.014 (-1.30)	-0.009 (-0.24)	-0.107 (-1.03)
Primary	0.453* (1.84)	0.431** (2.21)	-0.053 (-0.23)	-0.383 (-0.70)	-0.320 (-0.70)
Middle	-0.125 (-0.46)	0.364 (1.29)	-0.130 (-0.61)	-0.664 (-1.60)	0.205 (0.57)
High	0.157 (0.59)	0.156 (0.45)	-0.078 (-0.38)	-0.060 (-0.14)	-0.821 (-1.33)
Matric	0.356 (1.26)	1.315*** (3.59)	0.098 (0.44)	0.043 (0.09)	-0.336 (-0.56)
Secondary	0.621* (1.91)	1.969*** (4.77)	0.544** (2.92)	0.181 (0.31)	0.779 (1.22)
Graduate	0.78**** (2.14)	2.720*** (4.82)	0.730** (2.67)	-0.331 (-0.46)	1.350** (2.18)
Post-Graduate	1.21*** (3.62)	2.121*** (5.91)	0.863*** (2.73)	1.124 (1.75)	1.723*** (2.68)
F skill	0.091 (0.14)	1.424** (1.42)	0.495 (1.38)	0.792 (1.18)	0.903 (1.58)
VILINDEX (-0.CAPut!')	-0.019 (-0.02)	0.127 (1.03)	0.018 (0.34)	0.159 (1.02)	-0.001 (-0.02)
Lambda	-0.384 (-1.69)	0.600*** (2.82)	-0.265* (-1.60)	0.102 (0.23)	0.610 (1.36)
Breusch Pagan Chi Square (D.F.)	126.30 (13)	229.3 (13)	205.7 (13)	65.7 (13)	67.22 (13)
Adjusted R ²	0.043	0.069	0.030	0.012	0.021
N	1058	409	3464	451	218

Notes: Same as Table 14.

Table A.3
Selectivity Corrected Earnings Function of Self-Employed Males in Non-Agricultural Activity by Ethnic Group

Variables	Scheduled Castes	Scheduled Tribes	Hindus	Muslims	Christians
Intercept	7.981*** (14.15)	6.986*** (6.19)	7.860*** (19.58)	8.804*** (24.09)	45.674*** (2.13)
Experience	0.072*** (3.27)	0.115*** (2.80)	0.067*** (5.10)	0.029** (2.11)	0.213** (2.02)
Experience Square	-0.001*** (-3.08)	-0.002*** (-2.51)	-0.001*** (-4.20)	-0.001* (1.77)	-0.004* (-1.94)
Years of Education	0.023** (1.51)	0.044* (1.43)	0.031*** (3.47)	0.008 (0.62)	0.096 1.53
Lambda	-0.008 (-0.38)	0.847 (0.22)	-0.056 (-0.30)	-0.247 (-1.06)	0.262 (0.27)
Breusch Pagan Chi Square (D.F.)	33.1 (4)	33.9 (4)	164.0 (4)	130.8 (4)	86.4 (4)
Adjusted R ²	0.015	0.028	0.017	0.005	0.093
N	1076	298	3392	1184	199

Notes: Same as Table 14.

Table A.4
Selectivity Corrected Earnings Function with Education Splines of Self-Employed Males in Non-Agriculture by Ethnic Groups

Variables	S. C.	S. T.	Hindus	Muslims	Christians
Intercept	8.367*** (12.42)	6.958*** (6.11)	7.922*** (14.60)	9.021*** (6.60)	13.980* (1.78)
Experience	0.071*** (3.16)	0.138*** (3.64)	0.069*** (5.16)	0.032*** (2.30)	0.084 (0.56)
Experience squares	-0.001*** (-2.99)	-0.002*** (-3.43)	-0.001*** (-4.30)	-0.001* (-1.84)	0.001 (0.53)
HH size	-0.036 (-1.33)	-0.457 (-1.64)	-0.026** (-2.27)	-0.009 (-0.76)	0.072 (0.76)
Primary	0.175 (1.05)	0.029 (0.08)	0.026 (0.21)	0.002 (0.01)	0.863 (0.93)
Middle	-0.125 (-0.62)	0.143 (0.41)	0.062 (0.49)	-0.354* (-2.05)	-0.514 (-0.67)
High	0.162 (0.89)	-0.020 (0.05)	0.120 (1.00)	-0.087 (-0.59)	-1.215 (-0.87)
Matric	0.180 (0.66)	0.460 (0.94)	0.331*** (2.60)	0.402*** (2.78)	-0.665 (-0.46)
Secondary	0.730*** (2.87)	0.204 (0.26)	0.277*** (1.46)	0.223*** (0.57)	-1.432 (-0.67)
Graduate	0.575*** (1.18)	1.005*** (2.41)	0.575** (2.66)	0.463 (0.65)	0.422 (0.29)
Post-Graduate	-0.024 (-0.02)	2.500*** (4.06)	0.875*** (1.89)	1.140*** (3.20)	-2.249 (-0.79)
F skill	0.543 (1.50)	-	-0.347 (0.45)	-1.843 (-0.65)	0.342 (0.23)
VILINDEX	0.042 (0.60)	-0.151 (-0.78)	0.053 (0.97)	0.011 (0.13)	0.065 (0.23)
Lambda	-0.203 (-0.80)	0.331 (0.83)	-0.032 (-0.15)	-0.36 (-1.32)	-2.341 (-0.92)
Breusch Pagan Chi Square (D.F.)	93.6 (13)	63.57 (12)	195.3 (13)	243.4 (13)	186.1 (13)
Adjusted R ²	0.015	0.040	0.018	0.014	0.121
N	1076	298	3392	1184	199

Note: Same as Table 14.

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