Is there Educational Mobility in India?

An IV-2SLS Estimation of Intergenerational Effects of Parental Education on Child Education

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Abstract

Analysis of intergenerational relations focusses on the extent to which economic and social status of children is influenced by that of their parents. Intergenerational effects may reflect mere selection, parents with higher ability having higher ability children, or a causal effect, parental social and economic characteristics affect child outcomes. Persistence of intergenerational relations show transmission, whereas intergenerational mobility relates to the progress occurring from one generation to the next. Among various aspects of intergenerational social and economic relations, income, occupation and education mobility are the basic intergenerational effects that determine the progress of a society. This paper estimates the intergenerational educational mobility in India using the IHDS-II (2011–2012) data. To overcome the endogeneity issue, parental education correlated with ability, this paper uses an instrumental variables approach. The instrument used is the New Scheme of Elementary Education (NSEE) introduced in 1953 which made schooling compulsory. The IV-2SLS estimates show a high degree of intergenerational persistence in education. The Indian society seems to be less mobile educationally, and especially, mother-child educational relations reflect intergenerational educational transmission.

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Introduction

In every society, every generation moves ahead of its predecessors, only to be overtaken by its subsequent generations, almost in every respect of life, importantly in social and economic spheres. This intergenerational mobility of individuals as well as society is not only a much desirable attribute but also is a measure of quality of life improvements, equality of opportunity, progress, development and freedom. Although, such social and economic mobility concerns differ in their meaning and nature between developed and developing countries, and between different strata within the society, every change is taken to be a positive progress. Also, country, education, income and social mobility form the cornerstone for the provision of opportunity for development as well as change. The extent to which the economic status is transmitted from one generation to the next has long been the interest of social scientists. Economists are interested in intergenerational relationship and its effects on individual mobility, equality of opportunity, economic progress, and income distribution. Persistence of intergenerational transmission in economic status is an important mechanism in retarding intergenerational mobility that also perpetuates inequality of opportunities in a society. Such persistence of intergenerational effects may differ across groups of people in a society typically by race, community, gender and religion, implying differential access to opportunities for different groups.

It is well known that the aim of free public education in most of the societies is to increase the equality in opportunity. The education system has always been considered as the most effective and equalising process for individuals to improve one's economic and social status. It is widespread knowledge that there is a strong correlation between education and increasing one's economic mobility. Despite the increasing availability of education for all, family background plays a huge role in determining the economic success of generations.

Education is a very important aspect of every human life. In almost all countries worldwide, school level education is generally compulsory and provided free by the public sector. Even in the private sector, it is almost free or heavily subsidised. In India, education is recognised as a fundamental right by the Constitution of India. It is provided to every child in the age of 6 to 14 years and has been made compulsory and free in government schools. According to the Right to Education Act, 25 per cent seats in private schools are reserved for the weaker sections of the society. The ratio of public and private schools is 7:5. In India, a person aged seven years and above who can both read and write with understanding in any language has been taken as literate. The adult literacy rate has shown

an upward trend for females as well as males. As per the 2011 Census of India, it has increased from 61 per cent to 69.3 per cent during the period 2001–2011. As per the NSS 71st round findings, adult literacy rate stands at 70.5 per cent for the year 2014 (Education Statistics at a Glance, 2016). This indicator is generally considered as the stock of human capital of an economy.

It is widely known that more educated parents have more resources, via higher returns to higher education, to provide a better environment for their children to do well in school. The parents' education level has a greater impact than their income level on the probability of young people pursuing and completing graduation. Better educated parents also provide their children with better environment that is more conducive to the child's cognitive development from birth, and this becomes apparent in various ways, including higher grades. Educated parents have higher educational aspirations for their children and are more likely to transmit them to children.

Most studies on intergenerational mobility focus on developed countries. Income and occupational mobility are the common topics of analysis, whereas educational mobility has also been receiving serious attention in developed countries in recent years. The studies on intergenerational mobility are rather scanty in developing countries, limited by lack of data availability. India is particularly a relevant laboratory for the study of intergenerational mobility because of its diversity, variations, caste, religion and culture. In India, the society is deeply stratified by caste which has historically been associated with poor outcomes and very low mobility (Borkotoky et al., 2015). Further, the rigid caste structure is coupled with unity in diversity. In recent decades, India has also experienced rapid economic transformation and is one of the fastest growing economies in the world. However, how far these contrasting features of India contribute to the social and economic mobility of its diverse populations is not yet known clearly, making India an intriguing case study. Mobility analysis by social group shows that scheduled castes (SC) and scheduled tribes (ST)—'historically socially deprived communities—have done much better than others in attaining intergenerational educational mobility (Azam and Bhatt, 2015). Of the SC/ST children who were born to parents with no formal education, the proportion of those who cleared secondary school rose from 8 per cent to 20 per cent between the two generations. In other words, SC/ ST children from less educated families witnessed 12 per cent point rise in their upward mobility. The corresponding increase in mobility for non-SC/ST children has been only 4 per cent point.

Intergenerational relations is a term that describes the relationship

between two or more generations in a society. The term was coined as a social movement within or between social classes and occupations, the change occurring from one generation to the next generation. Intergenerational relations describe a wide range of patterns of interaction among individuals in different generations of a family: for example, between those in older generations, such as parents and grandparents, aunt, uncle, and those in younger generations, such as children and grandchildren, nieces and nephews. Intergenerational mobility is when the background, resources, income, occupation, education, ethnicity, culture, place of residence, etc., of one generation determine the social and economic status of the future generation. The term is also frequently used to describe behaviours involving older and younger people in society at large, even if they are unrelated to one another. Such intergenerational relations comprise two mutually exclusive components the intergenerational relations may simply transmit or deviate. The former is generally described intergenerational transmission and the latter is called as intergenerational mobility. For example, genetic characteristics simply transmit from one generation to another and intergenerational mobility brings positive changes between the generations.

Intergenerational educational mobility analysis focuses on the causal relationship between the education of parents and their children. It concentrates on how children's education correlates with the education of their parents. There is not much empirical evidence available, especially in developing countries, that too in India. It is only recently that empirical studies in developed countries have begun to focus on disentangling the intergenerational relations in education, either mobility or transmission, that is differentiating causal relationship from mere selection in which better educated parents have better educated children. The few available empirical studies on intergenerational effects of education produce conflicting findings. There is dearth of empirical evidence on the exact role of parental education in the educational attainment of children.

Therefore, this paper tries to disentangle the intergenerational links between educational outcomes using educational attainment of parents and their children. Specifically, this paper tests the mobility or transmission aspects of intergenerational educational relationship in India, focusing on the relationship between parents' and children's education. Using the nationwide Indian Human Development Survey (IHDS-II 2011–2012), and the Instrumental Variable-Two Stage Least Squares (IV-2SLS) method, the paper examines the impact of parental education on child education to assess the nature of intergenerational relations in education in the state of Tamil Nadu in India.

Brief Review of Recent Studies

Literature on intergenerational economic mobility in developed countries mostly focuses on intergenerational correlation between father-son incomes (Solon, 1999; Black and Devereux, 2011). The early intergenerational relations research concentrated on estimating the intergenerational regression and correlation coefficients, and later refining the estimation methods. Hertz et al., (2008) review the trends in intergenerational transmission of education for a sample of 42 countries. They document large regional differences in educational persistence, with Latin America displaying the highest intergenerational correlations, and the Nordic countries, the lowest. The correlation coefficient is about 0.60 in South America; about 0.40 in Western Europe, 0.46 in the US, and 0.20 in Nordic countries. They estimate the global average correlation between parents' and child's schooling to be around 0.420 for the fifty years under review. Interestingly, they also find a 30-point reduction in the estimated mean regression coefficient over the 60 years, from 0.80 in 1920 to 0.50 in 1980.

Some studies focus on intergenerational mobility in education. Results from the US and UK suggest intergenerational education elasticity between 0.20 and 0.45 (Deardon et al., 1997; Mulligan, 1999; Corak, 2013). Most studies find that parental education has at least a small impact on children's schooling. In order to deal with endogeneity of parental education, another group of studies use instrumental variable estimates. The instrumental variable approach provides exogenous variations and permits causal effects of parental education across generations without affecting parental innate abilities or their endowments. This way enables the estimation of the causal effect of increase in parental education on children's education. Oreopoulos et al., (2006) consider IV estimation with historical changes in compulsory schooling legislation in the US as an instrument for parental educational attainment and find that an increase in the schooling of either parent reduces the probability that a child repeats a grade and that 15–16 years old will drop out of school.

Black et al., (2005) using a Norwegian education system reform as IV for parental education, estimate the casual link between parents' and children's education in Norway. The census data from Norway Statistics provides little evidence of a causal relationship between fathers' education and children's education, despite significant and large OLS relationships. There is a small but significant causal relationship between a mother's education and her son's education but no causal relationship between a mother's and a daughter's education. Thus, studies find conflicting statistical intergenerational educational

relations when IV estimation is employed.

The issue of intergenerational mobility in India has recently started to receive attention in India (Jalan and Murgai, 2007; Maitra and Sharma, 2009; Majumder, 2010; Hnatkovska et al., 2013; Azam and Bhatt, 2015; Borkotoky et al., 2015; Kishan, 2018). The issues analysed ranges over mobility in income, occupation, education, and mobility differentials across social groups. Jalan and Murgai (2008) investigate the educational mobility of the age group 15–19, using 1992–1993 and 1998–1999 National Family Health Survey (NFHS) data. They found that educational mobility for age group 15–19 has increased significantly between 1992–1993 and 1999–2000, and that education gaps between backward and forward castes are not that large once other attributes are controlled for. However, in the NFHS data, parental outcomes are not directly known for child-parent pairs living in the same household. As a result, they only focus on children aged 15–19 years who are more likely to be living with their parents.

Sinha (2018) examines the differential effect of economic development in India on the educational and occupational attainment of caste groups over the period 1983 and 2009–2010. Using the six rounds of NSS data, the educational and occupational outcomes of co-resident father-son pairs of social groups of SC/ST and non-SC/ST are compared. The results show that the intergenerational educational mobility gap is closing. Though the gap is converging at the no education level of father, a large absolute gap exists at the higher level of father education.

Some studies use the India Human Development Survey data that directly identifies the children-parent pairs residing in the same household. Maitra and Sharma (2009) use the India Human Development Survey 2004–2005 (IHDS-I) to explore the effect of parental education (both father and mother) on years of schooling of children among the parent-child pairs residing in the same household. They find that the average intergenerational correlation in educational attainment in India is 0.52, significantly higher than the global average of 0.42, reported by Hertz et al., (2008). Hnatkovska et al., (2013) use five rounds of NSS surveys (1983, 1987–1988, 1993–1994, 1999–2000, and 2004–2005), and aggregate occupations in three groups (white collar, blue collar and agriculture) to study occupation mobility in India. Based on occupation switches (son's occupation being different than father's occupation), they find that the overall probability of an occupation switch by next generation relative to the household head has steadily increased from 32 per cent in 1983 to 41 per cent in 2004–2005. For non SC/STs, the switch probability increased from 33 per cent to 42 per cent, while

for SC/STs it has gone from 30 to 39 per cent. They conclude that the difference in intergenerational occupational mobility between SC/STs and non SC/STs has not changed over this period. Majumder (2010) also uses NSS data to study trends in educational and occupational mobility gaps over time among social groups.

Borkotoky *et al.* (2015) use a district level household survey conducted in 2007–2008 to estimate the process of partner selection and differential fertility with the intergenerational transmission of education. The educational attainment of children was estimated by fitting the estimated marriage probabilities and children ever born in the intergenerational transmission model. To estimate this intergenerational transmission model, they use logit, probit and ordered probit for their analysis. The paper considers both direct and indirect pathways that might influence education attainment of women, their age at marriage, age at first birth and choice of marriage partner in estimating distribution of children's education. The study concludes that the intergenerational transmission model of education is appropriate in India. Women having higher education will marry late, marry well-educated and employed men, and have fewer children. Their findings suggest that children are getting higher education than their parents, and better educated mothers do not show partiality in providing higher education among the children.

In short, studies find that the global average correlation between parental and child schooling is around 0.42, the intergenerational elasticity ranges between 0.20 in US and 0.45 in UK, and the average intergenerational correlation in educational attainment in India is about 0.52. Studies also find a significant relationship between parent's and child education when the IV estimation is employed. Some studies find that children are getting higher education than their parents which suggests intergenerational transmission. The present study is unaware of any other study that has examined the impact of parental education on child education in Tamil Nadu.

Data and Methodology

The India Human Development Survey–II (2011–2012) is a nationally representative multi-level household survey, a collaborative project by the National Council of Applied Economic Research (NCAER) and the University of Maryland. It consists of 42,152 households in 1,420 villages and 971 urban neighbourhoods across India. The 2011–2012 data are mostly re-interviews of 83 per cent households that were interviewed for IHDS-I in 2004–2005. There are two distinct advantages of using the IHDS data for the analysis of intergenerational educational mobility, over the larger

and commonly used household surveys of India such as National Sample Survey (NSS) and National Family Health Survey (NFHS). First, the IHDS contains additional questions which are not asked in the NSS or NFHS. These questions allow the identification of parental education for the adult population (in the age group 15–24), including parent-child pairs who do not co-reside. The 'ID of father' column in the household roster helps linking individuals to their fathers in the IHDS data set. Second, although the primary goal of the IHDS was the collection of data on income and education of each household, questions on educational history were asked about all household members. These questions allow the calculation of the number of years of schooling for every individual in the sample. An added advantage is that the IHDS contain data on actual years of schooling rather than levels of schooling completed which is generally reported in the NSS data. This avoids the discontinuities in schooling distribution as a result of the attribution of years of schooling from the categorical variable containing level of schooling completed. Moreover, the IHDS collects direct information on household consumption expenditures or household income. Besides, the IHDS also includes the standard data on household characteristics (caste, religion and demographics), characteristics of the household's dwelling, ownership of various assets, information on health, employment, education, social status, employment, marriage, fertility, wage, etc., and even panchayat composition. For this study, the IHDS-II data pertaining to Tamil Nadu state of India has been used. The sample size is 678 households.

Figure 1 shows the mean years of education of children by parental age. The figure shows that older parents have children who pursue

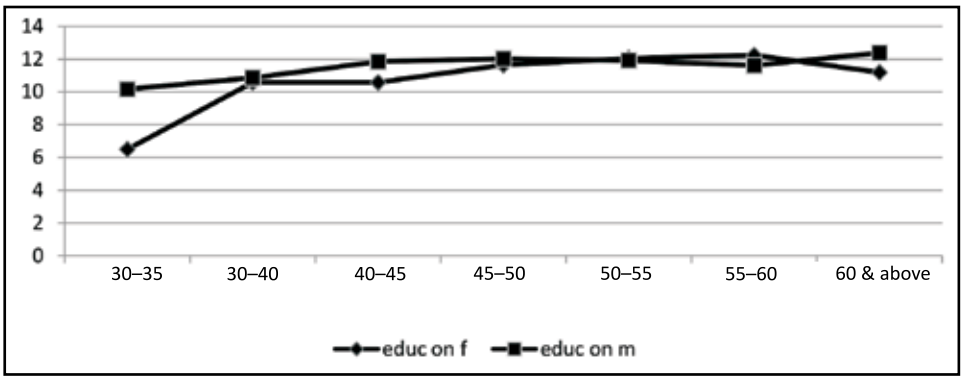

Figure 1. Mean Years of Child Education by Parent's Age

higher education. Figures 2 and 3 compare the educational attainment of children with that of the mother's and father's educational attainment. Illiterate parents have higher proportion of children with secondary education as well as higher education. The proportion of children with high school and above is higher for parents with secondary level education. In fact, percentage of children with high school education and above is higher for fathers with high school education than that of mothers.

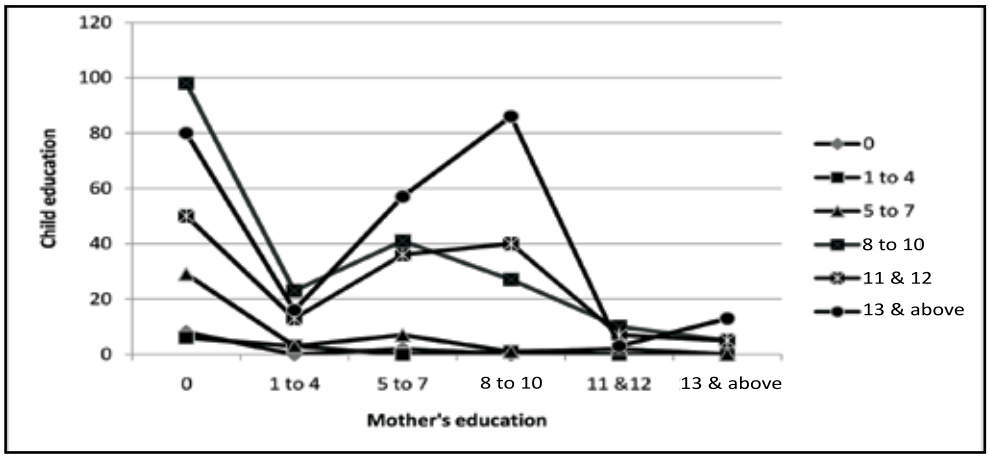

Figure 2. Child Education by Mother's Education

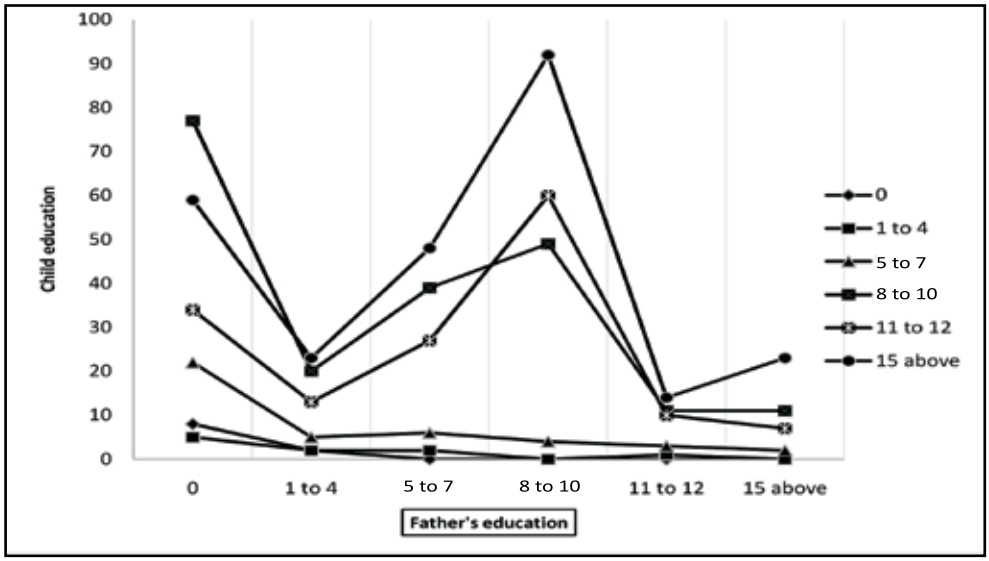

Figure 3. Child Education by Father's Education

Instrumental Variable Estimation Method

The high intergenerational relations between parental education and child schooling may simply be a correlation or there may be a causation. Even if there is causation, there may also be the problem of endogeneity. Higher educated parents may choose to give higher education for their children. Therefore, child schooling is influenced by parental ability, and hence father's education and mother's education are endogenous variable. To identify the causal effects of parent's education on child's education, it is useful to have variation in parent's education that is exogenous to parental ability and other factors. Therefore, an instrumental variables (IV) approach is used in this paper to overcome the problem posed by endogeneity. The choice of instrumental variable is the New Scheme of Elementary Education (NSEE) introduced in 1953 which made schooling compulsory. Parental education is highly influenced by this scheme while child schooling is not correlated with this. Therefore, parental education is instrumented by the NSEE.

Consider a structural equation,

$$y_1 = \beta_0 + \beta_1 y_2 + \beta_2 z_1 + u_1 \quad (1)$$

where the y variables are endogenous; the z variable is exogenous. With endogeneity, the OLS point estimates will be biased and inconsistent, since the error term will be correlated with y_2. Therefore, y_2 need to be replaced with an instrumental variable (z_2) such that the IV is correlated with y_2, but not correlated with the error term, u_1. Rewriting the endogenous explanatory variable in terms of the exogenous variable, including the instrument, z_2,

$$y_2 = \pi_0 + \pi_1 z_1 + \pi_2 z_2 + v_1 \quad (2)$$

The key identification condition is that $\pi_2 \neq 0$; that is, after partialing out z_1, y_2 and z_2 are still meaningfully correlated. Under the assumption that $\text{cov}(z_2, v_1) = 0$, the instrumental variable estimator of equation (1) is derived by writing down the normal equations for the least squares and solving them for the point estimates.

Two Stage Least Squares Estimation Method

Consider the structural model with two exogenous variables, z_2 and z_3, excluded from equation (1), and, under the assumption of exclusion restrictions, are uncorrelated with the error term u_1. If z_2 and z_3 are both correlated with y_2, then each variable could be used as an IV. However, there will be two IV estimators, and neither of these would, in general, be efficient. As a way out, any linear combination of the exogenous variable can be a valid IV, since each of z_1, z_2 and z_3 is uncorrelated with u_1. The best linear combination IV is the one that is most highly correlated with y_2. This is given by the reduced form equation for y_2. Therefore,

$$y_2 = \pi_0 + \pi_1 z_1 + \pi_2 z_2 + \pi_3 z_3 + v_2 \quad (3)$$

where $E(v_2) = 0$, cov $(z_1, v_2) = 0$, cov $(z_2, v_2) = 0$, cov $(z_3, v_2) = 0$.

Then, the best IV for y_2 is the linear combination of the zs, which can be written as y_2^* given by,

$$y_2^* = \pi_0 + \pi_1 z_1 + \pi_2 z_2 + \pi_3 z_3 \quad (4)$$

For this IV not to be perfectly correlated with z_1 need at least one of π_2 or π_3 to be different from zero, which is a key identification assumption, once all zs are assumed to be exogenous. The structural equation is not identified if $\pi_2 \neq 0$ and $\pi_3 \neq 0$, which can tested with an F-statistic. The variable y_2 into two components: the first component is y_2^*, the part of y_2 that is uncorrelated with the error term u_1; the second component is v_2, which is possibly correlated with the error term with u_1, thus making y_2 possibly endogenous.

Given data on the zs, y_2^* can be computed for each observation, provided the population parameters π's are known. As the population parameters are not known in practice, the reduced form equation may be estimated by OLS. Using the sample, y_2 is regressed on z_1, z_2 and z_3 to yield the fitted values,

$$\hat{y}_2 = \hat{\pi}_0 + \hat{\pi}_1 z_1 + \hat{\pi}_2 z_2 + \hat{\pi}_3 z_3 \quad (5)$$

The estimated $\hat{y}_2$ can then be used as an IV for y_2,

$$\sum_{i=1}^{n} (y_{i1} - \hat{\beta}_0 - \hat{\beta}_1 y_{i2} - \hat{\beta}_2 z_{i1}) = 0 \quad (6)$$

$$\sum_{i=1}^{n} [z_{i1}(y_{i1} - \hat{\beta}_0 - \hat{\beta}_i y_{i2} - \hat{\beta}_2 z_{i1})] = 0$$

$$\sum_{i=1}^{n} \{z_{i2}(y_{i1} - \hat{\beta}_0 - \hat{\beta}_i y_{i2} - \hat{\beta}_2 z_{i1})\} = 0$$

The three equations for estimating β_0, β_1, and β_2 are the first two equations with the third replaced by,

$$\sum_{i=1}^{n} [y_{i2}(y_{i2} - \hat{\beta}_0 - \hat{\beta}_i y_{i2} - \hat{\beta}_2 z_{i1})] = 0 \quad (7)$$

Solving the three equations in three unknowns gives the IV estimators.

Empirical Analysis

The estimating empirical specifications are,

$$Ed_C = \beta_0 + \beta_1 Ed_P + \beta_2 \ln(HINC) + \beta_3 \ln(OINC) + \beta_4 SG + u_i \quad (8)$$

$$Ed_P = \alpha_0 + \alpha_1 NSEE_P + \alpha_2 \ln(HINC) + \alpha_3 \ln(OINC) + \alpha_4 SG + v_i \quad (9)$$

where Ed_C is years of education of child, Ed_P (p = father, mother) is years of education of parents, ln(HINC) is log of total household earned income, ln(OINC) is log of income of the household from other sources like interest income, rent, etc., and SG is social group, i.e., community to which the household belongs. The instrumental variable NSEE equals 1 if the parent has gone through the New Scheme of Elementary Education, and 0 otherwise. That is, the variable NSEE essentially captures whether the parents went to school before or after 1953 when the scheme was introduced. The equations are estimated by the IV-2SLS method so that equation (9) is the first stage and NSEE serves as an instrumental variable for parental education. Social categories are included as in India, caste is an important socio-economic factor that plays a crucial role in determining education,

occupation, and earnings. The coefficients β_1 and β_2 which relate the education level of the child with that of parents and their income are the measures of intergenerational mobility. A higher value for the coefficients implies that parental education has stronger effects on the schooling of their children, and therefore less mobility, that is there is intergenerational transmission. The extent to which these coefficients are less than unity describe how fast differences in education tend to systematically lessen across generations.

Table 1 presents the proportion of individuals whose distribution of education prior to NSEE introduction in 1953 and after the scheme. It can be observed from the table that while the proportion of fathers who were illiterates before the introduction of NSEE in 1953 has declined drastically, there has been only moderate improvement in the case of mothers. However, proportion of mothers with primary and secondary education has increased substantially. Further, the proportion of both fathers and mothers in post secondary education has declined, perhaps due to the location and distance to higher education institutions.

The summary statistics of the variables in empirical analysis are presented in Table 2. It can be noted from the table that the mean years of education of the child are higher than the education of parents. From the correlation matrix presented in Table 3, it is also to be noted that mother's education has more statistically significant correlation than father's education. Similarly, other income of mother has significant positive correlation with child education, whereas father's other income has no statistically significant correlation with the schooling of the child. Household income also has a positive

Table 1
Percentage Distribution of Education Before and After NSEE

Education level	Father		Mother	
	Before NSEE	After NSEE	Before NSEE	After NSEE
0	33.83	21.85	43.24	41.65
1–4	12.03	8.51	2.70	8.26
5–7	14.28	18.70	18.92	22.81
8–10	23.30	31.85	16.22	21.82
11–12	10.52	4.63	2.70	3.14
13–15	5.26	3.89	8.11	2.31
> 16	1.50	2.78	5.41	0.83

correlation with years of education of the child. Social group of the household has a negative relation with the educational attainment of children belonging to the backward and deprived community.

Table 2
Descriptive Statistics of Variables

Variable	Child	Father	Mother
Age	22.68 (6.12)	51.78 (7.81)	45.13 (7.43)
Education	11.88 (3.56)	5.70 (4.73)	4.43 (4.39)
ln (HINC)	–	11.77 (0.80)	–
ln (OINC)	–	9.44 (3.82)	11.45 (1.39)
No. of Obs.	678		

Table 3
Correlation Matrix

Variable	Edu_c	SG	Ed_f	ln(HINC)	$ln(OINC_f)$	Ed_m	$ln(OINC_m)$
Edu_c	1.00						
SG	-0.10 (0.12)	1.00					
Ed_f	0.23* (0.00)	-0.01 (0.84)	1.00				
ln(HINC)	0.11** (0.09)	0.02 (0.75)	0.30* (0.00)	1.00			
$ln(OINC_f)$	0.04 (0.52)	0.05 (0.39)	-0.15* (0.02)	0.156* (0.01)	1.00		
Ed_m	0.25* (0.00)	-0.003 (0.95)	0.62* (0.00)	0.347* (0.00)	-0.11** (0.07)	1.00	
$ln(OINC_m)$	0.12* (0.05)	0.10 (0.12)	0.05 (0.41)	0.44* (0.00)	0.08 (0.19)	0.15* (0.01)	1.00

Notes: t-values in parentheses
**significance at 5 per cent level*
***significance at 10 per cent level*

Table 4
OLS Estimates of Intergenerational Mobility

Dependent Variable: Years of Education of Child					
Variable	***Spec.1***	***Spec.2***	***Spec.3***	***Spec.4***	***Spec.5***
Ed_f	0.172* (0.00)	–	0.121* (0.00)	0.081* (0.01)	0.098* (0.00)
Ed_m	–	0.200* (0.00)	0.191* (0.00)	0.129* (0.00)	0.130* (0.00)
ln(HINC)	–	–	–	0.234 (0.15)	0.071 (0.72)
$ln(OINC_f)$	–	–	–	–	0.056** (0.093)
$ln(OINC_m)$	–	–	–	–	0.213* (0.042)
SG (SC/ST)	–	–	–	-0.529* (0.035)	-0.56* (0.024)
Constant	10.57* (0.00)	10.64* (0.00)	9.48* (0.00)	7.97* (0.00)	8.99* (0.00)
R-square	0.209	0.226	0.433	0.383	0.459
F-statistic	30.12	35.36	50.38	46.63	55.30

Notes: Absolute t-values in parentheses
**significance at 5 per cent level*
***significance at 10 per cent level*

Table 4 presents the OLS estimates of intergenerational education mobility. The years of education of parents, Ed_f, and Ed_m, has a positive and statistically significant effect on the years of education of child. Though the effect of household income on child schooling is positive, it is not statistically significant. However, non-earned income of parents is significantly and positively related to educational of child. Note that the effect of both mothers, education and non-labour income on child education is higher than that of the father. Clearly, education of women has a strong influence on children, not only on child education but also on health and behaviour, as has been documented in numerous studies. It is also to be observed that the social group (SC/ST) has a significant negative effect on the education of children belonging to the deprived communities.

As has been pointed out earlier, in order to overcome the endogeneity issue of OLS estimation, the intergenerational education mobility model has been estimated by IV-2SLS method instrumenting parental education with the New Elementary School Education Scheme of 1953. In the IV-2SLS estimation, the first stage equation (9) is first estimated for father education and mother

education separately by regressing on all other exogenous variables and the excluded instrument to obtain predicted values. In the second stage estimation, child education (equation 8) is regressed on the predicted values from the first stage. Table 5 presents the 2SLS results, where the instrument NSEE is the indicator variable whether father and mother attended school before or after 1953. The 2SLS results show that only mother's education and community are statistically significant, while father's education and incomes have no significant effect on child education. While mother's education has a strong positive effect on years of education of child, the negative effect of SC/ST community on child schooling is even stronger in IV-2SLS estimates. Thus, the IV-2SLS estimates show that there is no intergenerational mobility, but there may be some intergenerational transmission of mother's education.

Table 6 presents the OLS and IV results of intergenerational mobility among the pairs of parent-child households. It can be clearly observed that mother's education is more influencing than the fathers in both parent-son and parent-daughter pairs. Further, only mother's education is positive and statistically significant in the IV estimates, whereas father's education is insignificant in parent-child educational relationship. This result is similar to Black et al., (2005) who observes that the IV estimates, compared to OLS estimates, of mother's education has significant influence on children's education than the father's education.

Table 5
OLS and IV Estimates of Intergenerational Mobility

Dependent Variable: Years of Education of Child		
Variable	***OLS***	***IV-2SLS***
$NSEE_f$	-0.415 (0.66)	0.047 (0.99)
$NSEE_m$	0.437* (0.00)	0.604* (0.00)
ln(HINC)	0.515 (0.64)	0.879 (0.78)
$ln(OINC_f)$	0.074 (0.97)	0.749 (0.77)
$ln(OINC_m)$	0.054 (0.86)	0.438 (0.75)
SG (SC/ST)	-0.578* (0.00)	-0.828** (0.08)
Constant	5.71* (0.00)	6.38* (0.00)
R-square	0.228	0.357
Wald-Chi 2(6)	51.32	14.37

Notes : Absolute t-values in parentheses
**significance at 5 per cent level*
***significance at 10 per cent level*

Table 6
Relationship between Parent and Children Education

Variable	OLS	IV
Mother-all	0.191* (0.00)	0.600* (0.05)
Mother-son	0.213* (0.00)	0.638** (0.08)
Mother-daughter	0.173* (0.00)	0.611** (0.08)
Father-all	0.121* (0.00)	0.3942 (0.66)
Father-son	0.184* (0.000)	-0.382 (0.80)
Father-daughter	0.124* (0.000)	-0.345 (0.68)

Conclusion

Education is a primary determinant of long term economic success and a key mechanism of social mobility, capable of lifting the disadvantaged children and improving their chances for success. Also, people who are well educated are likely to have children who are also well educated. The converse holds for people who have low education. The parent-child educational outcomes may simply reflect intergenerational transmission or there may be intergenerational mobility. Thus, there is a strong intergenerational association between parental education and education of their children. This intergenerational mobility is a measure of the change in social status which occurs from parent's to the children's generation. Intergenerational mobility studies concentrate on how children's income or education correlates with the income, occupation or education of their parents. This paper analyses the intergenerational educational relations in India between parental education and educational attainments of their children using the Indian Human Development Survey 2011–12 (IHDS-II) data pertaining to the 678 households in the state of Tamil Nadu.

As there may be endogeneity problem in econometric estimation of intergenerational educational mobility in that parental ability may be correlated with parental education, this paper employs an instrumental variable two stage least squares (IV-2SLS) method for estimation. The instrument chosen is the New Scheme of Elementary Education implemented in Tamil Nadu in 1953, making primary education compulsory. The NSEE provides for variation in parental education that is exogenous to parental ability, and hence NSEE is IV for parental education.

Initial OLS estimation results show that there is some significant positive impact of parent's education on child's education, suggesting intergenerational mobility. Also, mother's education has a stronger influence than father's education on

the educational outcomes of children. The IV-2SLS estimates show that mother's education positively and statistically significantly influences child's schooling. The results are reinforced by the IV estimates of the parent-child pairs of both sons and daughters. Thus, both OLS and IV-2SLS estimates exhibit the strong relevance of mother's education relative to father's education on their child education. Overall, there is intergenerational educational relationship in India, which is positively influenced by female education. With strong intergenerational educational persistence, the Indian society seems to be less mobile intergenerationally, and there is significant intergenerational transmission of education.

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