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Development and Exclusion: Intergenerational Stickiness in India

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Short Biographical Note

Rajarshi Majumder teaches Economics at the University of Burdwan, West Bengal. Gold-medallist in Graduation and Post-graduation, UGC Research Fellow, and a Doctorate from Centre for the Study of Regional Development, Jawaharlal Nehru University, he has written on issues related to Infrastructure, Regional Development, Labour, and Human Resource. His works have been published in Asia Pacific Development Journal, Journal of the Asia Pacific Economy, South Asia, Indian Economic Review, Indian Journal of Labour Economics, Indian Journal of Quantitative Economics, as also in various edited volumes. He has also authored chapters in several District Human Development Reports of West Bengal, as also in Mizoram and Assam State Human Development Reports and has three books to his credit. Professor Majumder is also a Visiting Professor for the Dialogue of Civilizations program of Northeastern University, Boston, Mass.

Jhilam Ray teaches Economics at the University of Burdwan, West Bengal. He completed his graduation and Post-graduation from Jadavpur University, Kolkata. His doctoral work has been on Intergenerational Mobility in India. He has written on issues related to Social Discrimination, Intergenerational Mobility, and Agricultural Development. His works have been published in Indian Journal of Human Development, Indian Journal of Labour Economics, Environment & Ecology as also in edited volumes. He has also co-authored chapters in several District Human Development Reports in West Bengal.

Development and Exclusion: Intergenerational Stickiness in India

Abstract[@]

Keywords: *Intergenerational Mobility; Social Exclusion; Transition Matrix; Poverty; India*

The concept of *development* has matured from being indicative of aggregative progress to being sensitive to inequality and exclusion within the whole, giving rise to the coinage *Inclusive Development*. This notion speaks of bridging gap between ethnic/social groups within a nation in domains like livelihood, social status, political empowerment, cultural freedom, among others. This would depend on temporal movement of different groups and intergenerational mobility can act as a mechanism to achieve social fluidity and greater inclusion. Present paper explores the role of intergenerational stickiness in perpetuating such disparity across social groups in India. We argue that economic status is intricately linked to what a person does for livelihood, i.e. her occupation, and what remuneration she receives for it, i.e. her wages. In present world system, occupation and wages are also critically determined by the human capital quotient of the individual, marked generally by her educational level. Therefore, the socioeconomic structure of a country and its temporal movement would be shaped by intergenerational mobility in education, occupation and income for different social groups. Higher (upward) mobility for the lagging classes would lead to catching up and convergence while lower mobility for them would lead to widening gaps. It is our contention that persistence of economic inequality across social groups in India is associated with high parental impact and low intergenerational mobility for the historically lagging and excluded social groups. Technically both Transitional Matrix and Regression based econometric techniques are used to estimate parental impact on respondent's status as well as the role of social background in influencing the magnitude of the parental impact itself in Indian context during the last two decades. Aggregate mobility is transformed and decomposed into Structural and Exchange mobilities to facilitate comparability across time using Altham-Ferrie technique. Covering uncharted territory, this paper also looks at possible linkages of stickiness/mobility with several micro- and macro-economic indicators to

[@] This paper draws from the authors' previous and continuing works on Mobility in India. Some of these have been published earlier. See Ray and Majumder (2010, 2013, 2016), and Majumder (2013) for previous works.

comprehend how stickiness acts as barrier to development or how it can be scaled down. This has been supplemented by several case studies to understand how existing policies of livelihood promotion among marginalised social groups are performing in terms of intergenerational mobility. The paper therefore is relevant for shaping policies related to inclusion of marginalised social groups and bringing up a coherent developmental agenda for the country. The study has used the National Sample Survey Office (NSSO) database on employment and unemployment (unit level records) for the 66th Round, pertaining to the year 2009-10 which is the culminating point of two decades of relatively high macroeconomic growth for India. As a contrast we have also presented results for the NSSO 50th round data for the year 1993-94, the beginning of the structural adjustment process in India. Results suggest that moderate educational mobility has been achieved which sadly has not translated to occupational or income mobility. There are significant differences in mobility across social groups with the upper castes benefitting the most while the scheduled tribes are stuck in their parental occupation/income groups. Existing State policies seem to perpetuate traditional family occupations among marginalised groups creating occupational stagnancy and vulnerabilities for them.

Development and Exclusion: Intergenerational Stickiness in India

Rajarshi Majumder¹ and Jhilam Ray^{2@}

INTRODUCTION

The concept of *development* has matured from being indicative of aggregative progress to being sensitive to inequality and exclusion within the whole, giving rise to the coinage *Inclusive Development*. This notion speaks of bridging gap between ethnic/social groups within a nation in domains like livelihood, social status, political empowerment, cultural freedom, among others. Social scientists, especially economists, have focussed primarily on livelihood and economic condition while speaking of inter-group equality and holistic development. If however, a country or society is marked by severe initial disparity among social groups, convergence and catching up would depend on the temporal movement of them over the economic ladder. In this context, intergenerational mobility acts as a mechanism through which social fluidity and equality may be achieved. Conversely, stickiness across generations acts as a barrier to inclusive development by keeping intact the traditional socioeconomic hierarchy characterised by wide chasm between social groups at the top and those at the bottom. Historically, large developing countries were characterised by such unequal social hierarchy and restricted mobility, leading to persistence of inequality and vicious cycle of poverty among large proportion of population. In India too, historically some groups were confined to lower strata of society through economic and social discrimination leading to socioeconomic stagnation. Over the last two decades, with its exceptional growth story and developmental agenda, India has attracted the attention of the world. While India is doing quite well as a macroeconomic entity, increasing inequality and social tension puts up questions regarding nature of its developmental process and whether it has been sufficiently inclusive. Issues like labour market discrimination, (in)effectiveness of policies like reservation in education and employment, and growing inequality in the country have been flagged by several researchers in recent years. Present paper explores the role of

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intergenerational stickiness in perpetuating such disparity across social groups in India. Technically both Transitional Matrix and Regression based econometric techniques are used to estimate parental impact on respondent's status as well as the role of social background in influencing the magnitude of the parental impact itself in Indian context during the last two decades. We argue that economic status is intricately linked to what a person does for livelihood, i.e. her occupation, and what remuneration she receives for it, i.e. her wages. In present world system, occupation and wages are also critically determined by the human capital quotient of the individual, marked generally by her educational level. Therefore, the socioeconomic structure of a country and its temporal movement would be shaped by intergenerational mobility in education, occupation and income for different social groups. Higher (upward) mobility for the lagging classes would lead to catching up and convergence while lower mobility for them would lead to widening gaps. It is our contention that persistence of economic inequality across social groups in India is associated with high parental impact and low intergenerational mobility for the historically lagging and excluded social groups.

Mobility may result from two sources – structural changes in the society or greater social fluidity. In case of former structural changes in the society like economic policy shifts, jump in growth trajectory etc. may lead to transformation across the board resulting in increased share of specific education/occupation/income groups in the society. This will appear as intergenerational mobility in the dataset and is called Structural Mobility. When estimated separately for social groups, it also shows how structural factors have benefitted different social groups in the country. In case of the second factor, there is no significant change in the occupational pattern across the board but people interchange positions due to social fluidity as children of parents in X category moves into category Y and vice versa. This part of the mobility is thus called Exchange mobility and gives a measure of social flux in the country. Since these have completely different policy implications, we decompose the observed mobility into structural and exchange mobility to understand the pattern and source of mobility across generations and social strata.

In addition, recent methodologies suggest that transition matrices (of two time-periods) should be standardized before calculating stickiness/mobility figures to enable comparability and decomposability into structural and fluidity components (Altham and Ferrie, 2007). These have been sometimes called effects of prevalence and association by researchers (see Bourdieu et al, 2006 for example). Equalising marginal frequencies of the two transition matrices and deriving

the Altham Statistics (Altham, 1970) provide us precise and comparable measures of stickiness for the two time periods, and also allow us to examine whether stickiness have changed significantly over time. This technique has also been used in this paper.

While estimates of degree of stickiness/mobility are important, they offer only partial understanding of the socioeconomic process. Unless we look at possible linkages between mobility and both likely causal and impact variables, it would not be possible to comprehend how stickiness acts as barrier to development or how it can be scaled down. Surprisingly, researchers have still not touched this issue adequately. This paper looks at possible linkages of stickiness/mobility with several micro- and macro-economic indicators to bridge this gap in existing research.

The paper thus adds to existing literature on five grounds. First, the paper uses both the Transition Matrix approach as well as the Regression/Odds Ratio approach to estimate mobility across generations – thus combining methods practised by sociologists and economists. Even within the Transition matrix, we estimate and present both the absolute and standardised stickiness/mobility figures and a measure of direction of change in stickiness. Second, to the best of our knowledge, this is the only paper that provides estimates of *upward mobility* – where children have moved into superior category compared to their parents.¹ In our opinion this is a crucial contribution since the direction of mobility is more important from a developmental perspective than simply the quantum of mobility (e.g. a society in distress where large number of current generation workers move into occupations that are inferior to their parents will exhibit high mobility). Third, by estimating both detailed occupational mobility and broad-group mobility and by comparing between them we have provided a snapshot of vertical vis-a-vis horizontal occupational mobility in the country. Fourth, apart from works by the present authors, there are three recent works that explore occupational mobility across generations in India – Motiram and Singh (2012), Hnatkowska et al (2013), and Azam & Bhatt (2014). While the first and the third uses database that does not allow across-time comparisons, the second one has certain methodological drawbacks as discussed in Ray and Majumder (2014). In addition, clubbing of occupations in some cases is also flawed as it has put clerical workers at par with managerial and technical/professional workers. Similarly, it has erroneously put production and construction workers at par with sales & service workers. Last, but not the least, this paper provides interesting linkages between stickiness/mobility and selected socioeconomic variables to understand both the impact of stickiness on individuals and how it can be scaled down. Thus,

our paper improves upon recent works by using a better methodological/conceptual framework and temporally comparable database as also expanding the coverage and framework of examination from merely descriptive to ascriptive.

Our results suggest that educational stickiness is relatively low in India and is declining over time. This has resulted in substantial intergenerational (upward) mobility, about 65-70 per cent, for all the social classes. Convergence is also evident as marginal social classes have higher mobility than the advanced class. However, a high degree of occupational stickiness is evident in India, remaining stagnant around 67-70 per cent even during the recent period of structural changes and faster economic growth. Stickiness, after standardisation, has increased both at the aggregate and for all social groups. Just about 13 per cent of currently employed adults have *better* occupation compared to their father, which is indicative of the slow occupational transformation and social development of the country. While Scheduled Castes are catching up with the advanced class, Scheduled Tribes have strikingly low upward mobility – about 7 per cent – and are falling behind. Much of this low occupational mobility is horizontal among similar occupations and vertical mobility between Blue-Pink-White collar jobs are further lower. Stickiness in wage income is also high, though has been declining over time. As a result intergenerational mobility in income is increasing, especially for the Scheduled Castes, and is close to 40 per cent. However, much of this mobility is due to immiseration through high downward mobility and less than one-fifth of wage workers are in a better income position than their parents. Mobility in the three dimensions are interlinked both at the micro-household and the macro-regional level. Interlinkages suggest that government expenditure on education and economic growth promotes mobility and brings down stickiness. Poverty is higher (more than double) among people who are stuck in their parental occupation compared to those who have shown upward mobility, bringing out the functional impact of stickiness. It is expected that the results and implications will help in understanding the barriers to development faced by developing countries in general and specific social groups within those countries in particular.

Current Research

Internationally there is a substantial literature on intergenerational mobility, mostly from developed countries [see Solon (1999) for a good review]. Researchers like Halsey et al (1980), Checchi (1997), Gang and Zimmerman (1999), Riphahn (2001), Schnepf (2002), Black et al (2003), Carr and Chen (2004), Dustman (2004), Checchi and Flabbi (2007) have used different methodologies to estimate educational mobility across generations. Becker & Tomes (1979),

Becker (1986), Solon (1992), Bjorklund & Jantti (1997), Buron (1994), Couch & Lillard (1994), Eide & Showalter (1997), Mulligan (1997), Minicozzi (1997) have tried to find out intergenerational income elasticity for USA data [see Mazumder (2001) for a brief review]. Behrman, Gaviria & Szekely (2001) suggests that children of white collar job are much more likely to be white collar themselves than children of parents with blue collar jobs. Occupational mobility in United States was highest among all countries followed by Colombia, Brazil, Peru and Mexico. Though any simplification is difficult, it is observed that mobility is higher in developed countries compared to underdeveloped ones.

Surprisingly, this area has remained under-focussed in Indian economic research, one of the major reasons being absence of pan-generation data on occupation and allied factors. There have been only a handful of studies on intergenerational mobility in occupation in India [Driver (1962), Bhowmik (1992), Kumar et al (2002a, 2002b), Maitra and Sharma (2009), Munshi & Rosenzweig (2006), Barooah, Dubey and Iyer (2007), Deshpande and Palshikar (2008), Majumder (2010, 2013), Ray & Majumder (2010), Motiram & Singh (2012), Hnatkovska et al (2013), and Azam & Bhat (2014)]. The present paper is related to these works and also to those on disparity and discrimination [Atkinson (1998), Takahiro (2007), Madheswaran & Attewell, (2007), Majumder (2010), Mukherjee & Majumder (2011)]. The paper is different from the existing works both in terms of methodology, tools used, coverage and inclusion of structural and exchange mobility in the analysis (as discussed in detail in the earlier section). This is also the first paper that examines possible impacts of stickiness and policies that may scale it down.

DATA AND METHODOLOGY

Database

The study has used the National Sample Survey Office (NSSO) database on employment and unemployment (unit level records) for the 66th Round, pertaining to the year 2009-10 which is the culminating point of two decades of relatively high macroeconomic growth for India. As a contrast we have also presented results for the NSSO 50th round data for the year 1993-94, the beginning of the structural adjustment process in India. Our study therefore provides a comparative view of occupational stickiness at the beginning and at the end of a high growth period of Indian economy. Family records have been superimposed on personal records so as to obtain multi-generational data on occupation. Thereafter, the data has been processed to provide us with the necessary information on intergenerational stickiness for different social classes. Since our database is at household level, this means that we have used only those pairs of data

where both father-child live in the same household. Also, to allow for completion of formal education in Indian system, we have selected only those persons with age greater than 20 years as belonging to ‘*children*’ group. We have also used the occupation of father as the parental occupation since female work participation is quite low in India (one-fourth of the corresponding male figures), especially for the previous generation.

Recently, researchers have used the India Human Development Survey, 2005 (IHDS) dataset to derive intergenerational occupational mobility (Motiram and Singh, 2012; Azam & Bhat, 2014) and claim that the IHDS dataset is superior to the NSSO one. However, we disagree as the IHDS dataset only allows to estimate mobility at a fixed point of time, albeit for different age cohorts. On the contrary our dataset allows us to compute mobility rates at different time points in the development process of the country, separately for age cohorts and social groups, thereby allowing us to understand the connection between economic performance and mobility. This is crucial as the past two decades have been tumultuous in the social and economic history of India with substantial changes in economic and social policies pursued by the State.² Only by using the temporally comparable NSSO database can one capture the interaction between such sweeping socioeconomic transition and intergenerational mobility. Restricting the sample to co-resident father-child creates possibility of sample selection bias but there are conflicting evidences regarding the significance of the selection bias when we ignore the split-off sons. While Thomas et al (2001) have reported in case of Indonesia that the split-off households are statistically different from the co-residents who are left behind, Alderman et al (2001) reports that the bias is non-significant in case of Bolivia, Kenya, and South Africa. We contend that split-off decisions are themselves random and not solely dependent on the characteristics of the children since robustness tests found that demographic/labour-market characteristics of our working sample are not significantly different statistically from the full sample. The final working sample size is also not significantly different for the 2 datasets. While the IHDS dataset has 38294 observations in the final working sample, the NSSO dataset has 30629 observations for 1993 and 28279 observations for 2011. Therefore, using the NSSO database does not result in any significant loss of coverage while allowing us to have temporally comparable estimates.

Technical Methodology

We are interested in examining how children’s education/occupation/income is related to parental occupation. More specifically, we want to quantify the degree of intergenerational stickiness and upward mobility. Stickiness can be measured by the percentage of children

remaining stuck in his/her father's education/occupation/income class. In literature this is done by following the *Transition/Mobility Matrix* approach and the *Regression Approach*. We have applied both the approaches in this paper.

In the Matrix approach, (see Figure 1), each 20+ person can have a ij pair associated with him/her where i refers to his own group and j represents his/her father's level. Cells of mobility table give counts of persons that share each combination of i and j . Thus f_{ij} is number of persons whose father was in i -th group whereas the child is in j -th category. For $i = j$, origin and destination are same and f_{ii} represents persons continuing their parental class and may be considered as static or immobile. When father's groups are placed in rows and child's groups are placed in columns, F_{ij} or the cell frequency as proportion of row total provides conditional probability of the son being in j^{th} quintile given that his father was in the i^{th} quintile. Obviously, the row sums up to one; diagonal elements of the matrix represent stickiness or no change in status across generation, and mobility can be measured by using the Prais-Bibby Index of mobility (Prais, 1955; Bibby, 1975;):

$$M = 1 - \text{trace}[T]/n; \text{ where } T \text{ is the transition Matrix of 'n X n' order.}$$

We can modify this measure slightly to find upward and downward mobility separately. When arranged in order of social hierarchy, sum of upper right portion of off diagonal elements of the Transition Matrix as percentage of total population represents upward mobility ($j > i$), and the lower left part of the matrix represents downward mobility ($j < i$). It may also be noted that the *Transition Matrix* method is crudely simple, but has been extensively used in literature to measure hierarchical mobility. Also to be noted is that the transition matrix is bi-stochastic and, therefore, part of the existence of upward mobility is due to the existence of downward mobility and vice versa.

Figure 1
Transition Matrix and Mobility

Father's occupation	Respondent's Occupation		
	1	2	3
1	a_{11}	a_{12}	a_{13}
2	a_{21}	a_{22}	a_{23}
3	a_{31}	a_{32}	a_{33}

Downward Mobility
Stickiness
Upward Mobility

Source: Authors' drawing

Intergenerational mobility measured by such mobility tables/ transitional matrix are result of two different types of flows or movement. One is *structural movement* and the other is *exchange movement*. *Structural mobility* defines changes in the positions of individuals which take place as a result of difference in proportions of socioeconomic status groups *between two generations* mainly due to overall shifts in the socio-economic situation or increase in opportunity available to all. (Janicka and Furdyna, 1978). Such quantitative and qualitative alteration in socio economic structure is also the result of changing demand for various kinds of education, jobs and skills or qualifications required. *Exchange mobility* on other hand denotes changes in position of individuals through substitution as a result of vacating of positions by those who do not inherit their father's status and filling up of them by others, and is independent of structural change. This can be conceptualised as *switching* and estimated as sum of minimum of each cross pair (f_{ij} and f_{ji}) from a mobility matrix, also called the *matched pair*. Structural movement or structural mobility can then be obtained by deducting the sum of matched pair from total mobility. For obvious reasons, Exchange Upward Mobility (EUM) is half of total Exchange Mobility and Structural Upward Mobility (SUM) is Observed Upward Mobility (OUM) less EUM. At a policy level, one can think of SUM as results of growth of the society and EUM as results of policy interventions and affirmative action. It is to be noted that such decomposition of observed mobility into components of structural changes and exchange of places are done for each time-points separately and estimates sources of mobility across generations.

Similarly, mobility *across two time points* may also vary due to both structural economic changes and increased social fluidity in the society. Economic factors may open up certain avenues of learning/occupation/income while reigning in certain others. Thus, more children in 2009 may be in Technical or Administrative jobs compared to in 1993 simply because there are more such jobs available now. Social factors may push more (less) children into better education level compared to their parents by providing better access, creating incentives, etc. To objectively compare stickiness/mobility figures across time, one should ideally control for the structural changes and look at the trends in mobility figures. In literature this has been done by standardizing the transition matrix of one time period to reflect macro structure of the other period (by equalising marginal frequencies). Once can then compare the stickiness shown by one unstandardised matrix and the other standardised matrix. In this paper we standardise the 1993 matrix to 2009 marginal frequencies for comparison. A summary measure of stickiness is also provided by using the Altham Statistics which calculates a measure of distance of the observed

matrix from one where the rows (children's status) and columns (father's status) are independent. Higher the value of Altham's d-stat, higher is the dependence between row and column and higher is the stickiness (for details on this measure see Altham, 1970 and Altham & Ferrie, 2007).

Educational Classification

We have used 20+ age group population so that the education level can be reached up to a certain level and classified education attainment into seven educational levels – Illiterates, Barely literate but without primary schooling, Primary school passed, Middle school passed, Secondary school passed, Higher secondary passed, and Graduates & beyond. We have also used completed years of schooling as a quantitative variable in the regression based approach.

Occupational Classification

We have used the Indian NCO-1968 classification in our study and workers have been divided into ten occupational classes. Arranged in descending order of hierarchy, social prestige, and average income, these are: Technical and Scientific Personnel, Professionals, Administrative, Clerical, Sales, Service, Farmers, Production-related, Transport, and Labourers not elsewhere classified. Occupational structure and mobility are discussed in terms of this structure. At the second level, we have clubbed similar occupations to form three broad groups – Grade-I (White Collar jobs—Technical and Scientific Personnel, Professionals, and Administrative); Grade-II (Pink Collar jobs—Clerical, Sales, and Service); and Grade-III (Blue Collar jobs— Farmers, Production-related workers, Transport workers, and Labourers not elsewhere classified). This hierarchical structure has also been used in our study. It is however important to note that in Indian context production related jobs include construction jobs also. Both the 1993 and 2011 database have been suitably adjusted using concordance tables to reflect the NCO1968 groups.

Deriving Lifetime Wage Income & Income Classification

In studying intergenerational income mobility, our basic objective is to examine whether current generation of workers are earning more than their parents, after controlling for factors like age, experience, etc. Ideally, we should consider permanent incomes of children and parents, which is very difficult to observe and not possible with the data available to researchers. The solution suggested in literature is to compute some form of *synthetic variable* that proxies for the permanent wage income of parents and children, filtering out the effects of age, experience, stage of life cycle, etc. Hence, in the first stage, proxies for lifetime incomes are estimated separately for parents and children by controlling for age, experience, household size, occupation, etc.

These types of impacts shall vary across occupation – some occupations may provide premium to age/experience (like those engaged in service, administration, technical and professional), others may treat age negatively (manual types of job). So impact isolation must be done separately for each generation and each occupation.

A double isolation method is used here where both father and child's *Isolated Wage Income* is derived after controlling for age, experience and occupation. This is done by using the following wage equation:

$$CW_{ijk} = \alpha + \beta_1 \cdot A_{ijk} + \beta_2 \cdot A_{ijk}^2 + \beta_3 \cdot A_{ijk}^3 + \beta_4 \cdot HS_{ijk} + \beta_5 \cdot D_{ijk} + U_{ijk} \dots\dots\dots(1)$$

where subscripts *ijk* refer to *i*th person of *j*th generation in *k*th occupation, *CW* is current weekly wage income, *A* is age, *HS* is household size and *D* is a dummy, taking value 1 if the individual is currently married and 0 otherwise.

Using the regression results *estimated wage* or *CW(hat)_{ijk}* is calculated. This is the part of current wage dependent on the explanatory variables. Hence, error terms [or *CW_{ijk} – CW(hat)_{ijk}*] provide us a proxy for lifetime income, which we call *Isolated Wage*. We use these isolated wage incomes of father and child to estimate income stickiness using the regression based indirect approach.

Instead of computing synthetic wages as above, we may group the parents and children into quintile classes according to their respective actual/current wage incomes. If the child belongs to a higher quintile group than that of the parent, we conclude that upward income mobility has taken place. This requires construction of the Transition Matrix which cross tabulates children's quintile group membership with that of the parents and provides us a measure of *Relative Income Mobility* as we compare between the relative position of a child within his peers with the relative position of the parent among *their* peers.

Social Hierarchy

To better understand the results, we must understand that traditionally Indian society can be segmented into four broad groups – the Upper castes (mostly Hindus), the Adivasis or aboriginals), the Dalits, and the Shudras or Mahadalits. Historical socioeconomic structure gave birth to severe social disparity with the Hindu Upper castes at the pinnacle and Dalits, Mahadalits, and Adivasis at the bottom (Ambedkar 1936, 1987; Akerlof, 1976; Lal, 1988; Scoville, 1991; Thorat & Newman 2009). Caste system and associated discrimination strengthened during colonial rule due to codification and recording of caste in the decennial population census, and co-option of members from the upper castes into the ruling coalition. As

a result administrative hierarchy mirrored existing social stratification. After independence India tried to reverse the exploitation by giving express recognition to lagging castes and tribes in the First Schedule of its constitution in 1950. These groups came to be known as Scheduled Castes and Scheduled Tribes and various positive discrimination through reservation and quota in elementary education and government jobs were provided to bring them up to a level playing field. In 1993, the shudras or Mahadalits were also brought under the purview of reservation by designating them as Other Backward Castes or OBCs. Such efforts notwithstanding, discrimination still exists in India in the form of ‘hidden apartheid’. Members of upper castes, knowingly or unknowingly as part of social custom, discriminate against and exploit the lagging castes. Since caste is considered hereditary, advantages and disadvantages transmit from one generation to the next, projecting the upper castes to a virtuous self propelling upward spiral while trapping the backward castes in a vicious low level cycle. Thus the social hierarchy at present ranges from the General/Advanced Castes at the top; followed by the Other Backward Castes, Scheduled Castes, and Scheduled Tribes at the bottom. This is mirrored in the education, occupation and income level of the groups as well. Throughout this paper we must keep this hierarchy at the back of our mind. Also, in this paper, we have contrasted the situation of the two most lagging social classes – the SCs and the STs – with the General caste for examining the issue of exclusion and disparity. It is also to be noted that the figures for the General Caste are not strictly comparable across 1993 and 2009 because of the OBCs being separated out in 2009.

Table 1
Educational Indicators in India

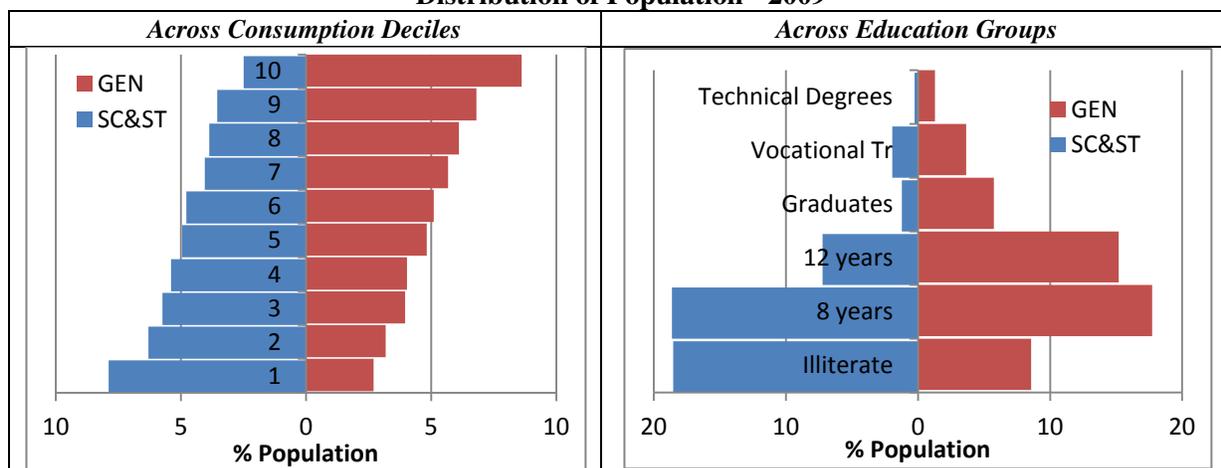
Year	Education						Formal Schooling					
	Literacy (%)				Gap from Gen		High School Passed (%)				Gap from Gen	
	ST	SC	OBC	Gen	ST	SC	ST	SC	OBC	Gen	ST	SC
1983	23.3	27.9	na	45.3	-22.0	-17.4	1.8	2.3	na	8.0	-22.0	-17.4
1987	25.8	29.9	na	48.9	-23.1	-19.0	2.6	2.9	na	9.7	-23.1	-19.0
1993	32.7	36.9	na	55.2	-22.5	-18.3	4.0	4.7	na	13.3	-22.5	-18.3
1999	40.6	44.7	52.4	66.9	-26.3	-22.2	6.2	6.8	10.3	21.7	-26.3	-22.2
2004	46.7	51.1	57.9	71.4	-24.7	-20.3	6.4	8.6	12.7	25.5	-24.7	-20.3
2009	57.4	59.2	65.6	76.1	-18.7	-16.9	11.7	12.8	18.7	31.8	-18.7	-16.9
	Employment						Poverty Situation - HCR					
	Regular Salaried (%)				Gap from Gen		Incidence of Poverty (%)				Gap from Gen	
1983	8.3	9.3	na	21.0	-12.7	-11.7	63.6	58.5	na	40.2	23.4	18.3
1987	8.8	12.5	na	16.9	-8.1	-4.4	57.5	52.6	na	35.7	21.8	16.9
1993	6.8	10.4	na	17.5	-10.7	-7.1	69.5	64.4	na	45.3	24.2	19.1
1999	6.8	10.4	11.6	21.6	-14.8	-11.2	49.9	43.6	33.5	23.8	26.1	19.8
2004	7.6	14.2	13.5	23.4	-15.8	-9.2	60.3	54.8	41.3	27.1	33.2	27.7
2009	8.1	13.9	14.2	25.4	-17.3	-11.5	53.7	45.1	35.0	21.9	31.8	23.2

Source: Authors' Calculations based on NSSO (Various Years).

We start with an empirical background of the condition of the two marginal social classes (the SCs and the STs) vis-a-vis the General Caste in terms of Education, Employment, and Poverty over the last three decades. It appears that the SC/STs have lower educational attainment levels, poorer employment situation, and higher incidence of poverty compared to the General caste (Table 1). The disparity has been persistent over the last three decades, even increasing in most cases for the STs. Also remarkable is that for all three dimensions figures for the marginal social classes in 2009-10 are close to what the general caste had during 1993-94, indicating that they are lagging by almost 20 years from the advanced class!

A quick look at the distribution of population over educational groups and monthly consumption deciles show the skewness of the distribution with the SC/STs being over-represented in the lower levels and under-represented in the upper levels (Figure 2). This indicates that the development process in India has not been as inclusive as it should have been in context of the historical social disparity and recent high economic growth. It is our argument that the answer lies in high stickiness and low upward mobility, especially of the marginalised social classes (read SCs and STs). We examine the empirical evidences in the subsequent sections.

Figure 2
Distribution of Population - 2009



Source: Authors' Calculations based on NSSO (2009).

STICKINESS & MOBILITY: REGRESSION APPROACH

Educational Stickiness

We want to examine how family background and parental educational level influences children's education. To do so, we have considered son's status as the dependent variable while status of father (and mother in some cases) are taken as explanatory variables. Several other socio-economic indicators (explained later) are also considered. Since we hypothesise that the social background in terms of caste status also has a major role on child's achievement, a caste dummy

and its interaction effect with father's status are also included in the model. The complete model looks as follows:

$$CY^{Ch} = f [\beta_F CY^F, \beta_M Edu^M, \theta_{F1} OccDummy1_F, \theta_{F2} OccDummy2_F, \alpha_0 ST_Dummy, \alpha_1 SC_Dummy, \alpha_2 OBC_Dummy, \pi Poverty\ Dummy, \gamma_0 CY^F*ST_Dummy, \gamma_1 CY^F*SC_Dummy, \gamma_2 CY^F*OBC_Dummy]$$

where, CY^{Ch} = Completed Years of Schooling of Child; CY^F = Completed Years of Schooling of Father; CY^M = Completed Years of Schooling of Mother; $OccDummy1_F$ = Occupation Group Dummy (1) of Father [=1 if Father is in Grade-I occupations, = 0 otherwise]; $OccDummy2_F$ = Occupation Group Dummy (1) of Father [=1 if Father is in Grade-II occupations, = 0 otherwise]; ST_Dummy , SC_Dummy , and OBC_Dummy are self-evident; $Poverty\ Dummy$ [=1 if family is Below Poverty Line, =0 otherwise].

Table 2
Regression based Estimates of Stickiness of Child's Education

<i>Dependent variable : son's completed years of schooling</i>		
Independent Variables ↓	1993	2009
(Constant)	3.657** (2870.3)	6.584** (3885.3)
Father's completed years of schooling	0.429** (2338.2)	0.265** (1532.2)
Mother's completed years of schooling	0.309** (1365.8)	0.218** (1627.4)
Poverty Dummy ¹	-1.274** (1185.4)	-1.875** (2198.7)
<i>Father's Occupation²</i>		
Pink Collar	0.628** (456.8)	0.375*** (352.6)
White Collar	0.216** (135.2)	0.372*** (285.7)
<i>Social Group³</i>		
ST dummy	-1.512** (675.6)	-1.053** (524.8)
SC dummy	-1.023** (656.7)	-0.883** (512.7)
OBC dummy		-0.734** (524.8)
<i>Interaction⁴</i>		
Father's completed years of schooling * ST Dummy	0.121** (175.6)	0.062** (246.5)
Father's completed years of schooling * SC Dummy	0.071** (152.7)	0.039** (115.6)
Father's completed years of schooling * OBC Dummy	na	0.071** (365.8)
<i>F Value</i>	<i>42.6X10⁵ **</i>	<i>52.3X10⁵ **</i>
<i>Adj R Sq</i>	<i>0.363</i>	<i>0.352</i>

Note: Figures in parenthesis are t-values; * and ** denotes significance at 10 per cent and 5 per cent levels respectively; 1 – control group Non-poor; 2 – Control Group Blue Collar Jobs; 3, 4 – Control group General/Advanced/Upper Caste.

Source: Author's calculations based on data sources mentioned in the text

The coefficients β_F and β_M represents the impact of father's and mother's status on child's education and is a measure of stickiness. Higher the value of β , higher is the stickiness, and less is the intergenerational mobility. θ_{F1} and θ_{F2} represent the impact of father's occupational status on child's education. $\alpha_0, \alpha_1, \alpha_2$ denote the base level differences between social groups in child's education achievement. The value of the coefficient π represents how being poor affects child's schooling. $\gamma_0, \gamma_1, \gamma_2$ represent the differential impacts of father's status for different social groups.

Table 2 gives us the results of regression analysis for the year 1993 and 2009. The value of β_F , i.e. the impact of father's education on child is 0.433 in 1993 and 0.277 in 2009. Both values are statistically significant indicating significant influence of father's educational background on child's education and existence of stickiness. The strength of such stickiness is also observed to be decreasing over the study period. Among other factors, economic status of the household affects child's years of schooling with base level nearly 30-40 per cent lower for households below poverty line compared to non-poor families. This negative impact of poverty on education has increased over time indicating perhaps increasing cost of education in recent times. Base level schooling is significantly lower for the excluded classes compared to the advanced class. Schooling is also significantly higher for children whose parents are in higher occupational groups (white and pink collar jobs) compared to the lowest occupational group (blue collar jobs). However our main focus is examining difference in intergenerational stickiness across social groups. The interaction coefficients of social group dummies with father's education provide the difference of impact of father's education across social groups. All these interaction coefficients are positive and significant indicating that the parental influence is significantly higher for the excluded classes compared to the advanced group, i.e. stickiness is higher for the backward classes and thus mobility is less for them. It is observed that this additional stickiness for the excluded classes has been declining over time, indicating that mobility rates are coming closer across social classes in recent times. This is surely a welcome trend, but unless mobility rates of excluded classes are higher than the advanced classes, convergence of educational achievement levels will not be possible since the former have started from a much lower level.

An index of intergenerational mobility (computed as the inverse of parental impact coefficient or degree of stickiness) from the regression results in Table 2 is observed to be increasing over the years for all the social classes (Table 3).

Table 3
Derived Mobility Index from Regression based Estimates

<i>Social Groups</i>	<i>1993</i>	<i>2009</i>
Advanced Class	2.3	3.6
OBC	-	2.9
Scheduled Caste	2.0	2.9
Scheduled Tribe	1.8	3.1

Note: Mobility Index are derived as reciprocal of degree of stickiness.

Source: Author's calculations based on Table 2

Occupational Stickiness

While Multinomial Logit Regression Models are best suited to estimate probabilities of Child entering into different occupation groups and expected changes in probability for changes in explanatory variables, we have used a simpler approach here [Results from the Multinomial models are similar to ones reported here and can be obtained from the authors on request]. We have provided scores to the occupational groups in a scale of 1 to 10, depending on social hierarchy and status. Thus the Technical occupations are given a value 10, followed by Professional, Administrative, Clerical, Sales, Services, Production, Transport, and Farming. Workers in non-specified activities are given a score of 1. Intergenerational stickiness can then be estimated by considering child's occupation score as a dependent variable and occupation score of father as one of several explanatory variables. Other causal variables generally used in such studies and also included here are Age of child, Completed years of schooling of child, Completed years of schooling of father. We have also used interaction between father's occupation and social class dummy to understand difference in stickiness across social groups. The model therefore looks as follows:

$$Occ^{Ch} = f[Age^{Ch}, CY^{Ch}, CY^F, Occ^F, Occ^F*ST_Dummy, Occ^F*SC_Dummy, Occ^F*OBC_Dummy]$$

where, Occ^{Ch} = Occupational Score of Child; Age^{Ch} = Age of Child; CY^{Ch} = Completed Years of Schooling of Child; CY^F = Completed Years of Schooling of Father; Occ^F = Occupation Score of Father; ST_Dummy , SC_Dummy , and OBC_Dummy are self-evident.

Results indicate that with increase in completed years of schooling there is a substantial increase in occupational score, indicating that probability of being in Grade-I occupations (Administration, Technical, and Professionals) increases with education while probability of being in Grade-III occupations decrease (Table 4). Occupational score increases with increase in completed years of schooling of father also.

However, the highest impact is of Parental Occupation Score. This indicates substantial stickiness between father's occupation group and child's occupation group, confirming lack of occupational mobility across generations in India. To determine whether parental influence is

different across social groups we look at the coefficients of interaction terms. It is observed that for the marginal social classes the coefficients are positive, indicating that impact of parental occupational score is higher for them compared to the advanced class. Thus probability of being in the *higher* occupations increases if father is also in these occupations. Similarly, probability of being in *lower* occupations also increases if father is in these occupations.

While the impact of education has increased marginally over the years, that of parental occupation has shown a substantial rise.

Table 4
Regression based Estimates of Stickiness of Child's Occupation Score
Dependent variable : Son's Occupational Score

Independent Variables ↓	1993	2009
(Constant)	2.030** (1514.3)	0.986** (889.7)
Age of Child	0.015** (344.0)	0.012** (361.6)
Child's completed years of schooling	0.070** (1137.1)	0.102** (1877.9)
Father's completed years of schooling	0.024** (289.1)	0.032** (554.2)
Father's Occupation Score	0.359** (2002.8)	0.516** (3885.2)
Father's occupation score * ST Dummy [@]	0.008** (41.6)	0.029** (162.4)
Father's occupation score * SC Dummy [@]	0.011** (71.6)	0.051** (362.5)
Father's occupation score * OBC Dummy [@]	na	0.028** (375.1)
F Value	1.6X10 ⁵ **	5.1X10 ⁵ **
Adj R Sq	0.224	0.377

Note: Figures in parenthesis are t-values; * and ** denotes significance at 10 per cent and 5 per cent levels respectively; @ – Control group General/Advanced/Upper Caste.

Source: Author's calculations based on data sources mentioned in the text

These regression results can be used to derive mobility indices as the inverse of parental impact coefficient or degree of stickiness from the regression results in Table 4. This index is observed to be decreasing over the years for all the social classes (Table 5).

Table 5
Derived Mobility Index from Regression based Estimates

Social Groups	1993	2009
Advanced Class	2.79	1.94
OBC	-	1.84
Scheduled Caste	2.70	1.76
Scheduled Tribe	2.72	1.83

Note: Mobility Index are derived as reciprocal of degree of stickiness.

Source: Author's calculations based on Table 4

Income Stickiness

In the Regression or elasticity based approach, estimating stickiness between child's wage income and that of the parent requires computing a wage function with (log of) child's income as the dependent variable and (log of) parent's income as the independent, along with other causal variables like parental education, location, regional and social class dummies, etc. Our model is:

$$IWC_i = \alpha + \beta_1.IWF_i + \theta_1.D_{1i} + \theta_2.D_{2i} + \theta_3.D_{3i} + \pi.EDU_i + \varphi_1.D_{1i}.IWF_i + \varphi_2.D_{2i}.IWF_i + \varphi_3.D_{3i}.IWF_i \dots\dots\dots(2)$$

where subscript 'i' refers to ith person, IWC is *Isolated Wage Income* of Child, IWF is *Isolated Wage Income* of his father, D₁, D₂, D₃ are social group dummies taking values 1 for ST, SC, and OBC respectively (Upper castes being the control group), and EDU is education parameter of child in completed years of formal education [for computation of IWC and IWF see previous methodological section].

Table 6
Results of Income Stickiness Estimation – Regression Output

<i>Dependent Variable: Ln_isolated_wage_child</i>	1993	2009
(Constant)	4.338 (773.2)	4.313 (1632.9)
Education	0.051** (278.5)	0.021** (182.4)
ST_dummy[@]	-2.725** (134.3)	-0.339** (146.8)
SC_dummy[@]	-1.482** (144.9)	-0.277** (168.6)
OBC_dummy[@]		-0.223** (154.1)
ln_isolated_wage_father	0.418** (583.3)	0.371** (710.5)
Wage_father*ST dummy[@]	0.288** (120.8)	0.126** (190.6)
Wage_father*SC dummy[@]	0.152** (129.6)	-0.118** (127.5)
Wage_father*OBC dummy[@]		-0.035** (156.1)
Adj R-square	0.40	0.38
Sample Size	11178	

Source: Author's calculations;

Note: Figures in parenthesis are t-ratios; ** denotes significance at 1 per cent level; @ – Control group is General Caste.

The coefficient β_1 represents impact of father's wage income on that of the child. A higher value for the coefficient implies stronger parental effect on the children, higher intergenerational stickiness and, therefore, less mobility. θ -s denotes base level differences between social groups regarding weekly wage income. Estimates of φ will provide us measures of differential parental impact for different social groups. A positive φ will indicate higher parental impact for the

specified groups and, hence, lower mobility for them vis-à-vis the control group or the general caste observations. The regression results are provided in Table 6 and the derived *Persistence* and *Mobility Rates* are provided in Table 7.

Results show that education has a positive effect on wage income, and marginal social classes earn less than the general castes on average. There is substantial stickiness and impact of father's wage income on child's wage income is high. In 1993, all the marginal social classes had higher stickiness compared to the general castes. There has been a decline in stickiness over time, sharpest for the Scheduled Castes, as a result of which in 2009 only the STs had higher stickiness than the general castes. As a result mobility index increased during this period, more so for the SCs.

Table 7
Derived Income Mobility Index

<i>Social Group</i>	<i>All HH</i>	<i>Poor HH</i>
General Caste	2.4	2.7
OBC	na	3.0
Scheduled Castes	1.8	4.0
Scheduled Tribes	1.4	2.0

Source: Author's calculations based on Table 6

It is this rising income mobility, among the marginalised classes in particular, that has been termed by contemporary researchers as convergence among social classes and rising up the ladder of the marginalised groups.

We however beg to differ on two counts. First point to note is that almost all the increase in mobility among the marginalised classes (and hence so called convergence) is due to high mobility among the SCs in recent years, while the tribals continue to have significantly lower mobility than the general castes households. This phenomenon, that has been missing in the existing literature and brought out clearly here, has serious policy implications and needs to be underlined. Second, regression based measure does not indicate whether the mobility is dominated by upward or downward movements. It may well happen that higher mobility is because of downward shifts and is an indicator of deteriorating living conditions rather than improving. There may be lots of movements no doubt, but we have to examine whether improvements are dominating or deteriorations! Otherwise, increased social fluidity may often be misjudged as development and progress while all we have is pauperisation of a large section of the masses. The answer to this will come up in next section when we use the Transaction Matrix approach to derive Upward Mobility.

INTERGENERATIONAL MOBILITY: TRANSITION MATRIX APPROACH

We are more interested in examining to what extent children's status (educational / occupational / income) has improved over parental standards. More specifically, we want to quantify the degree of intergenerational upward mobility. This would be given by the percentage of children moving to a higher educational/occupational/income class as compared to their parents.

Upward Educational Mobility

It has been observed that substantial upward mobility is present in terms of educational attainment levels. Absolute stickiness, given in the first column shows that just about one-fourth adults are stuck in their parental educational level in 2009. Absolute stickiness has declined substantially during 1993-2009 period, though stickiness, after controlling for changes in occupational distribution over time, provided in second column, show that the decline is only marginal. This is true for all the social groups indicating a decline in educational stickiness across the social spectrum during these two decades.

Table 8
Educational Mobility in India: Summary Measures

	<i>Year</i>	<i>Stickiness</i>	<i>Stickiness (std)</i>	<i>Upward Mobility</i>	<i>Upward Mobility (std)</i>
Scheduled Tribes	2009	28.9		60.8	
	1993	55.5	32.4	35.2	59.6
Scheduled Castes	2009	28.7		61.8	
	1993	48.1	29.7	42.3	60.4
General/Advanced Castes	2009	25.4		62.2	
	1993	34.6	27.1	51.3	61.1
Aggregate	2009	26.2		62.0	
	1993	38.2	27.9	48.8	60.9

Source: Author's calculation based on NSSO (1993, 2009)

Note: Stickiness (std) and Upward Mobility (std) are Stickiness and Upward Mobility as derived from the standardized transition matrix after converting 1993 matrix to 2009 marginal frequencies.

About 62 per cent of adult males had higher educational levels as compared to those of their fathers in 2009 (Table 9). Mobility in absolute terms has consistently improved during the 1993-2009 period. Moreover, social disparity in educational mobility is noticeably changing over the period. Upward mobility in absolute terms was quite lower for the excluded classes as compared to the advanced classes in 1993 and among them mobility of the SCs was further lower. In 2009 the gap between excluded classes and advanced class has become almost negligible, which is remarkable. This indicates that for new entrants, the probability of reaching a higher educational standard than that of their fathers is almost equal for the advanced and excluded classes, which surely is a welcome trend. However, after standardisation, the changes are neither spectacular nor lead to changes in social pattern, indicating that the changes are more a result of structural transformation in the economy rather than social fluidity.

Noteworthy is the fact that for the OBCs, the 20-40 years age cohort exhibit upward mobility higher than the advanced class though the 40+ age cohort shows a significantly lower mobility. This is perhaps a direct fall out of the post-1990 reservation policy.

Table 9
Upward Educational Mobility of Different Age-Cohorts in India - (%)

Social Groups	All Age Group		20-40 age group		40+ age group	
	1993@	2009	1993@	2009	1993@	2009
Scheduled Tribe	59.6	60.8	60.1	61.0	54.4	60.8
Scheduled Caste	60.4	61.7	53.6	62.4	42.4	43.8
Other Backward Classes		62.5		62.7		58.5
General/Advanced Class	61.1	61.8	61.3	61.6	57.4	65.6
Aggregate	60.8	62.0	61.1	62.1	54.4	59.8

Source: Author's calculations based on Data Sources mentioned in the text.

Note: @ - Upward Mobility for 1993 is derived from the standardized transition matrix after converting 1993 matrix to 2009 marginal frequencies.

Another interesting feature emerges if we look at the age-cohorts. For the advanced classes, mobility is higher for the older age-cohorts compared to the 20-40 years age cohort. On the contrary, for the excluded classes mobility is higher among the younger age cohort. This indicates that the improvement in educational levels among the advanced classes had taken place during the pre-1990 period and hence the younger age cohort has a lower mobility levels compared to the older ones. But the excluded classes have been late-starters and educational improvement among them have taken place mainly in the post-1990 period making the younger age cohort more upwardly mobile than the older ones. The time lag between the two classes is also noteworthy as it indicates the presence of two countries within one – one country, that of the socially excluded classes, living 20 years behind that of the other dominated by the advanced classes.

Upward Occupational Mobility – Detailed Occupational Groups

Occupational mobility figures using detail occupational classification have been summarized in Table 10. Absolute stickiness, given in the first column shows that 70 per cent of working adults are continuing in their father's footsteps and are stuck in the family occupation in 2009. A marginal decline in absolute stickiness, by roughly 2 percentage points, is observed during 1993-2009 period. Stickiness, after controlling for changes in occupational distribution over time, provided in second column, show that rather than declining, stickiness has in fact increased during the 1993-2009 period from 67.9 per cent to 70.0 per cent in aggregate. Similar trend is observed for all the social groups indicating a decline in mobility across the social spectrum during these two decades.

Table 10
Occupational Mobility in India: Summary Measures

	<i>Year</i>	<i>Stickiness</i>	<i>Stickiness (std)</i>	<i>Upward Mobility</i>	<i>Upward Mobility (std)</i>
Scheduled Tribes	2009	77.7		7.0	
	1993	81.2	76.6	7.6	7.4
Scheduled Castes	2009	69.3		12.0	
	1993	71.0	66.9	13.5	13.6
General/Advanced Castes	2009	69.1		14.2	
	1993	71.0	67.0	13.6	15.7
Aggregate	2009	70.0		13.1	
	1993	72.0	67.9	15.3	15.1

Source: Author's calculation based on NSSO (1993, 2009)

Note: Stickiness (std) and Upward Mobility (std) are Stickiness and Upward Mobility as derived from the standardized transition matrix after converting 1993 matrix to 2009 marginal frequencies.

Rather than aggregate mobility, *inclusive development* is more related to *upward mobility* – proportion of working adults who have better occupation compared to their parents. Figures indicate just about 13 per cent of working adults had better occupational status compared to their fathers in 2009, declining from 15 per cent in 1993.

It is observed that highest upward mobility has been shown by the General/Advanced castes while the STs have the lowest upward mobility in both 1993 and 2009. Upward mobility in absolute terms has decreased for both STs and SCs and though appears to have increased for advanced castes, it has actually decreased when we control for changes in occupational distribution during these two periods. Gap between the lagging social groups and advanced groups has remained mostly stagnant during this period. It is thus evident that development process in India in recent times has not been inclusive and the alarmingly low upward mobility for the STs is a testimony to that.

Upward mobility is observed to be higher among older age cohort for the advanced castes and for the younger age cohort for the lagging social groups (Tables 11). This indicates that increased fluidity among the lagging classes is a recent phenomenon – a possible fall out of expanded job reservation policies since 1990s.

Table 11
Upward Occupational Mobility of Different Age-Cohorts in India - (%)

Social Groups	All Age Group		20-40 age group		40+ age group	
	1993[@]	2009	1993[@]	2009	1993[@]	2009
Scheduled Tribe	7.4	7.0	7.2	7.1	7.8	6.7
Scheduled Caste	13.6	12.0	13.4	12.1	18.5	8.8
Other Backward Classes	-	12.5	-	12.3	-	18.3
General/Advanced Class	15.7	16.6	13.5	16.5	18.3	18.3
Aggregate	15.1	13.1	12.9	13.0	17.1	16.4

Source: Author's calculations based on Data Sources mentioned in the text.

Note: @ - Upward Mobility for 1993 is derived from the standardized transition matrix after converting 1993 matrix to 2009 marginal frequencies.

Upward Occupational Mobility: Broad Occupational Groups

Mobility among occupational groups that are pretty close in terms of social hierarchy and possible income often gives a false sense of fluidity. To explore that we have also looked at mobility across broad occupational classifications (White Collar, Pink Collar and Blue Collar, discussed earlier). Results indicate that only about one-tenth of working adults had better occupational grades compared to their fathers in both the time points, mobility of advanced group is higher than the excluded classes and the gap between SCs and advanced groups, which was quite high in 1993, has reduced significantly (Table 12). What is more interesting is that grade level upward occupational mobility is lower than the earlier estimated detailed occupational level mobility, indicating that most of the mobility across generations are lateral movements among related occupations while vertical movements are low.

Table 12
Upward Broad Occupational Group Mobility of Different Age-Cohorts in India - (%)

Social Groups	All Age Group		20-40 age group		40+ age group	
	1993 [@]	2009	1993 [@]	2009	1993 [@]	2009
Scheduled Tribe	4.5	5.4	4.5	5.5	3.8	1.8
Scheduled Caste	8.3	8.1	8.2	8.1	8.7	14.4
Other Backward Classes	9.7		9.5		17.9	
General/Advanced Class	11.6	10.5	11.5	10.3	17.0	16.9
Aggregate	9.5	9.6	9.4	9.5	15.5	15.6

Source: Author's calculations based on Data Sources mentioned in the text.

Note: @ - Upward Mobility for 1993 is derived from the standardized transition matrix after converting 1993 matrix to 2009 marginal frequencies.

Another striking point is that mobility for the STs has come down substantially in 2009, being almost half of what it was in 1993, increasing their distance from the advanced castes. Therefore it would not be too wide to comment that the occupational transformation supposedly evident in India in recent times is more apparent than real at the micro level and does not appear to be improving the condition of the households en masse. This stickiness is a substantial barrier to inclusive and sustainable development.

Income Mobility

As mentioned earlier, we have also tried to estimate relative wage income mobility – indicating how current generation fares among their peers compared to the position of their father among *their* peers. For that, we have computed quintile membership of fathers and sons with respect to *actual wage income*. Cross tabulation of quintile groups of father and child gives us the *Transitional Mobility Matrix* for Income.

Table 13
Relative Upward & Downward Income Mobility in India

<i>Social Group</i>	Proportion of sons being in HIGHER income quintile compared to father		Proportion of sons being in LOWER income quintile compared to father	
	<i>1993</i> [@]	<i>2009</i>	<i>1993</i> [@]	<i>2009</i>
Scheduled Tribes	18.8	14.3	14.8	14.2
Scheduled Castes	19.3	18.1	22.7	19.5
OBC	na	19.2	na	24.2
General Caste	19.6	18.0	26.8	24.8
Aggregate	19.4	18.0	24.5	22.1

Source: Author's calculations;

Note: @ - Upward Mobility for 1993 is derived from quintile groups and does not need standardisation.

It is observed that this (relative) Upward Income mobility was 19.4 per cent in 1993, but has marginally decreased to 18 per cent in 2009 (Table 13). Compared to this, about 22 per cent of workers report a decline in relative income position compared to their fathers. While in 1993 relative mobility was almost similar across caste groups, by 2009 a significant gap has emerged between the STs and the remaining groups with just 14.3 per cent of current generation STs being in a relatively higher income quintile compared to their parents.

Thus, the greater social fluidity and convergence, as indicated by the regression approach discussed earlier and as claimed by contemporary researchers is caused more by *downward* movement where majority of adult male wage workers have lower income than their parents at comparable position in their life cycle rather than enjoying improvements in income situation over generations. The sense of development and progress is therefore largely a mirage, hiding more than revealing the truth.

STRUCTURAL & EXCHANGE MOBILITY

As mentioned earlier, Intergenerational mobility measured by mobility tables/ transitional matrix are result of two different types of flows or movement – structural movement and exchange movement. *Structural mobility* defines changes in the positions of individuals which take place as a result of differences in proportions of members in hierarchical groups between two generations. It results from overall shifts in the economy status or increase in the opportunity available to all and is thus a result of structural changes that has affected the society in general over time. *Exchange mobility* denotes changes in position of individuals consisting of substitution as a result of vacating of position in specific groups by those who do not inherit their father's position. Exchange mobility is defined as that portion of total change in status between two generations that is independent of structural change. High exchange mobility is a sign of social fluidity but keeps the aggregate socioeconomic situation almost stagnant. On the other hand Structural Upward Mobility indicates net increase in number of persons with higher

educational /occupational /income levels compared to their parents and therefore high level of this type of mobility indicates improvement of the society and would be desirable. Let us now explore the results briefly.

It is observed that most of the upward educational mobility observed in India came from structural mobility and over the period its contribution is increasing whereas the contribution of exchange mobility is low and is declining (Table 14). This is perhaps a fallout of substantial expansion of educational infrastructure in recent decades through the Sarva Sikhsa Mission.

On the contrary occupational mobility is fuelled more by exchange and less by structural mobility. However, the share of structural mobility in this case too is increasing over time.

Most of the upward income mobility is due to exchange mobility and lesser can be attributed to structural mobility. While in 1993 about 87 per cent of the upward income mobility was due to exchange, by 2009 the contribution further increased to almost 90 per cent. It, thus, appears that the income levels did not scale up and the movement was more a social churning rather than structural improvement of the economy.

Table 14
Contribution of Structural to Estimated Mobility in India

<i>Social Group</i>	<i>Educational Mobility</i>		<i>Occupational Mobility</i>		<i>Income Mobility</i>	
	<i>1993[®]</i>	<i>2009</i>	<i>1993[®]</i>	<i>2009</i>	<i>1993[®]</i>	<i>2009</i>
Scheduled Tribes	88.2	91.1	33.6	40.9	20.0	17.0
Scheduled Castes	89.9	89.7	17.8	42.4	15.0	11.0
OBC	-	86.7	-	43.1	-	9.5
General Caste	85.3	85.2	30.5	44.7	10.0	8.0

Source: Author's calculations;

INTERLINKING THE THREE MOBILITY DIMENSIONS

The previous sections presented us with details regarding intergenerational mobility in India across three spectrums - Education, Occupation and Income. It has been observed that moderate to high educational mobility has resulted in only marginal occupational shifts and income mobility has been generally low. In addition, the conditions of backward classes have been quite different from that of the advanced classes. Let us now try to examine whether mobility in the three spheres are interlinked and what macro variables may have had impact on them. This can be examined from several angles. First we may check whether individuals experiencing one type of mobility have the other two types of mobility as well. This is essentially a micro interlinkage and works at the household level through reciprocity and complementarity of factors. Second, we may examine whether regions having higher mobility in one sphere also have higher mobility in terms of the other two. This is a macro view where regional macro characteristics like state's

effort at educational expansion or economic factors like per capita net state domestic product (PCNSDP), growth, poverty etc. may have impact on the mobility situation. Let us now examine these issues one by one.

Micro-issue: Interlinkage at Household Level

Simplest way to examine the interlinkage at the household level would be to cross tabulate individuals according to their mobility groups across education-occupation, occupation-income and education-income pairs and look at chi-square and likelihood ratio tests of association. These chi squares and likelihood ratios were observed to be significant, prompting us to look deeper. If we look at conditional probabilities (Table 15), it is observed that conditional probability of upward occupational mobility is highest for the group with upward educational mobility. The same is true for education–income pair as well. Only for the occupation-income pair we find that the conditional probability of upward income mobility is higher for the static occupation group – again perhaps signalling that continuation of family occupation is remunerative while shift of occupation is mainly under duress and a sign of labour market distress rather than dynamism.

If we now look at social groups, it is observed that the conditional probabilities are lowest for the STs and highest for the OBCs - indicating that the interlinked probability of upward mobility is highest for this group, perhaps helped by the reservation policy of the past two decades.

Table 15
Conditional Probability of Upward Mobility

<i>Conditional Upon</i>		<i>Upward Occupational Mobility</i>					<i>Upward Income Mobility</i>				
		<i>ST</i>	<i>SC</i>	<i>OBC</i>	<i>GEN</i>	<i>ALL</i>	<i>ST</i>	<i>SC</i>	<i>OBC</i>	<i>GEN</i>	<i>ALL</i>
Educational Mobility	Downward	0.8	5.8	5.1	6.7	5.2	5.8	15.0	15.8	22.8	16.9
	Static	1.0	4.8	7.1	10.3	6.9	30.6	30.1	18.8	23.0	23.8
	Upward	6.7	9.8	11.2	12.8	11.0	19.5	24.4	26.4	19.2	23.4
Occupational Mobility	Downward						0.9	1.0	8.8	10.9	7.6
	Static						23.3	26.2	23.8	20.3	23.6
	Upward						10.9	29.4	30.6	27.0	28.7

Source: Author’s Calculation

The proportion of population with matching mobility groups across a pair of dimensions would also provide us a measure of how one mobility type overlaps with another and is useful in this respect (Table 16). It is observed that the overlap between educational mobility and occupational mobility is strongest, followed by that between education and income, while that between occupation and income is weakest. This partly reflects our earlier inferences where we commented that occupational mobility has weak reflection on income mobility. The issue of occupational shifts under distress to low income jobs is also a possibility reaffirmed by such results.

If the trios of mobility dimensions are considered in unison, it is observed that just 4 per cent of current generation wage earners have upward educational, occupation and income mobility simultaneously. These are the charmed group in this atmosphere of general gloom. This proportion is highest for the advanced class, about 7 per cent and lowest for the STs – just 1.5 per cent - bringing to the fore once again the substantial disparity among social classes.

Table 16
Proportion of population with Matched Mobility Groups

	ST	SC	OBC	GEN	ALL
Education-Occupation	32.1	31.7	28.5	29.6	29.8
Occupation-Income	10.1	9.9	16.1	18.5	14.4
Education-Income	20.5	22.6	26.1	19.2	22.8
Education-Occupation-Income	1.5	3.3	3.4	7.0	4.0

Source :Author's Calculation

Macro Issue: Interlinkage at Regional Level

There are vast regional disparities in terms of intergenerational educational and occupational mobility in India. Such disparities are evident at the aggregate levels of mobility, differential mobilities for the excluded and advanced classes, and their time trends. If we concentrate on the 2009 data to look at the interlinkage between income mobility on one hand and educational and occupational mobility on other, several issues emerge (Table 17).

Table 17
Mobility Matrix at Regional Level 2009

		Occupational Mobility		Income Mobility	
		HIGH	LOW	HIGH	LOW
Educational Mobility	HIGH	<u>Kerala, Tamil Nadu, Punjab, Maharashtra Himachal Pr.</u>	Andhra Pr, Chattisgarh, Karnataka, Assam	<u>Kerala, Andhra Pr, Tamil Nadu, Punjab, Himachal Pr, Karnataka</u>	Maharashtra, Chattisgarh, Assam
	LOW	Jammu & Kashmir, Uttaranchal, WBengal	<u>Bihar, Uttar Pr, Madhya Pr, Gujarat, Rajasthan Jharkhand, Meghalaya</u>	Rajasthan, Jharkhand, Jammu & Kashmir	<u>Bihar, Uttar Pr, Madhya Pr, Gujarat, Meghalaya, WBengal, Uttaranchal</u>
Occupational Mobility	HIGH			<u>Kerala, Tamil Nadu, Jammu & Kashmir, Haryana, Punjab, Himachal Pr</u>	WBengal, Maharashtra, Uttaranchal
	LOW			Rajasthan, Jharkhand, Karnataka, Arunachal Pr, Andhra Pr	Assam, <u>Bihar, Madhya Pr, Uttar Pr, Meghalaya, Chattisgarh, Gujarat</u>
		HIGH	LOW	HIGH	LOW
		Occupational Mobility		Income Mobility	

Source :Author's Calculation

It seems that Kerala, Himachal Pradesh, Tamil Nadu and Punjab are enjoying high educational, occupational and income mobility. These states are therefore successful in transforming

livelihood through educational expansion and occupational shift. At the other end of the spectrum lies Bihar, Madhya Pradesh, Uttar Pradesh, Gujarat and Meghalaya - where we see overlap of low educational mobility, low occupational mobility and low income mobility. Together these five states account for about three-fourth of India's population and thereby underline the strong interlinkage between the three spheres of mobility examined by us. There are several layers in between also. Andhra Pradesh and Assam have high educational mobility but could not transform this rising human capital potential to occupational or income mobility perhaps because of low economic base of the states. Maharashtra had high educational and occupational mobility but could not achieve much income mobility – perhaps because the state had already achieved a high income base. Uttaranchal and West Bengal did not have much educational mobility or income mobility though experiencing occupational mobility indicating perhaps that, much of such occupational shifts were distress in nature. Rajasthan, Jharkhand and Karnataka could not achieve educational or occupational mobility but could achieve relatively higher income mobility - signalling perhaps faster growth of returns from existing activities in these states. Rank correlation between states in terms of mobility rates also confirm that mobility across these three dimensions are interlinked (Table 18).

Table 18
Association between Regional Mobility Dimensions

<i>Rank Correlation between mobility measures</i>	Social Group				
	ST	SC	OBC	GEN	ALL
Education-Occupation	0.50**	0.02	0.26*	0.33*	0.55**
Occupation-Income	0.28**	0.30**	0.14	0.17*	0.41**
Education-Income	0.37**	0.01	0.15*	0.15*	0.33**

Source: Author's Calculation

Note: * and ** indicate significant at 5% and 1% levels respectively

The interdependence is particularly strong for the STs, signalling the need for a rounded policy intervention for this group, where benefits or (lacunae) from one sphere will percolate to the other spheres as well.

Whatever way we look at it, there seems to be close association between the extent of mobility achieved in the three spheres. Are there macro variables that support mobility? Three factors were examined in this context - State's effort at expanding education (measured as per capita plan expenditure on education), economic performance (measured as Per Capita Net State Domestic Product (PCNSDP) level and Per Capita Income Growth Rates) and Livelihood conditions (measured by poverty level). The results are discussed below (Table 19).

Table 19
Association of Mobility Indices with Possible Correlates

<i>Dimension</i>	<i>Per Capita Plan Expenditure on Education</i>	<i>Per Capita NSDP</i>	<i>Growth in PCNSDP</i>	<i>Poverty Ratio HCR (%)</i>
Educational Mobility	0.557** (0.01)	0.669** (0.002)	0.501* (0.03)	-0.581** (0.008)
Occupational Mobility	0.710*** (0.01)	0.739** (0.000)	0.691** (0.001)	-0.650** (0.003)
Income Mobility	0.338 (0.15)	0.411* (0.081)	0.154 (0.529)	-0.536* (0.018)

Source: Author's Calculation

Note: * and ** indicate significant at 5% and 1% levels respectively. Figures in parenthesis are significance levels.

Per Capita Plan Expenditure on education by different states is one of the major indicators of state intervention that may affect mobility, especially educational mobility to a great extent. We have considered 10 years annual average per capita expenditure by the states as a measure of state intervention in this context. It is observed that there is strong association between both educational and occupational mobility and Per Capita Plan Expenditure on education. But there is no evidence of any systematic relationship between income mobility and Per Capita Plan Expenditure on education.

Economic performance of the state is a major influencing factor behind social upliftment. We have considered Per Capita Net State Domestic Product (PCNSDP) as a measure of economic performance of the state. It is found that there is significant positive correlation between PCNSDP and both educational and occupational mobility indicating that those states which perform well in economic frontier have higher educational and occupational mobility. The positive association between economic performance and educational and occupational mobility is also supported by looking at the relation between per capita NSDP growth and mobility. Income mobility, as before, is not observed to have significant association with either PCNSDP or its growth.

We have tried to link mobility with livelihood outcome of the people. Higher mobility is supposed to lead to progress and lowering of poverty. On the other, the regions which suffer from lack of basic entitlement may create impediment towards further development and such cycle reduces intergenerational mobility. To examine this interrelationship we use Poverty Head Count Ratio (HCR) as a (inverse) measure of livelihood situation. It is observed that there exists negative association between incidence of poverty (HCR) and educational, occupational and income mobility. It suggests that states with lower mobility on all three fronts are also the states with higher incidence of poverty. It is quite likely that there exists bi-directional causality

between mobility and poverty as lack of mobility reinforces poverty and poverty binds people within parental levels, not allowing them to move up the ladder.

SUMMARY AND POLICY INTERLINKAGES

We find evidence of interlinkage between the three dimensions of educational, occupational and income mobility both at the micro (or household) level and at the macro (regional) level. The magnitudes of the associations are not too large, but provides important pointers for policy purpose. It would not be wrong to comment that mobility from one dimension do transmit to the other two, though the strength of such transmission is weak for the Income level. This calls in for integrated policy where educational upliftment, occupational transformation and income improvements are targetted in a holistic manner so that complementarity between them can be tapped for overall development of the lagging sections of the society, especially the tribals. At the same time we find evidence of the role played by causal factors like expansion of educational infrastructure and state's economic performance in accentuating upward mobility. This would imply another set of complementary policies – where the state develops the skeleton of facilities for human capital formation and market forces capitalise on that to expand occupational and income opportunities. While we accept that the relationships between the three dimensions analysed by us and the proximate determinants are intricate and complex, we have at least brought out the complementarity between them.

In this regard integrated policies to target all three dimensions of education, occupation and income can be helpful. One can mention some of the field experiences in this context. Several visits were made in three districts of West Bengal during this study to understand the process of mobility and stagnancy of backward social classes and the role of state interventions. We observed substantial educational progress in the region with lesser number of illiterates and more school pass outs among the present generation compare to the parental generation. However, the relative position of the backward classes is still behind that of the upper castes. Various government schemes are operational for supporting the members of SC and ST communities in livelihood promotion. To understand the role played by the State, we visited households that have benefitted from such schemes and examined whether state support have played any role in intergenerational mobility among them. State support in terms of financial grants for livelihood promotion among the backward classes seems to have a great role to play in this regard. In most of the cases where communities/households have obtained such support, the occupational stability has helped the present generation to achieve higher educational standards compared to

their parents. Thus the vicious cycle of (low) parental occupation-parental education leading to low current education & occupation could be broken and intergenerational mobility was achieved. However the household members were reluctant to diversify from traditional family occupations and this created occupational stagnancy and vulnerabilities for them. Only in some cases the state interventions were able to initiate occupational shifts through providing information, technical knowhow, financial capital and marketing support (for example promoting sericulture among tribals in Purulia district, animal husbandry in Burdwan district and handloom in Hoogly district).

These successful cases were the ones where the local officials took the pains to educate and support the tribals in search for a better livelihood. Such cases need to be upscaled while preserving flexibility at the ground level to bring a comprehensive improvement in the lives of the people, especially those from the backward classes so that intergenerational upward mobility becomes a reality and not a dream or cosmetic change for them.

A broader regional comparison shows that earning mobility in India is higher than China, Japan, Bangladesh and Malaysia, but lower than most of the countries in Asia-Pacific region for which such estimates are available. What lesson does it hold for policy makers in India? It is evident from regional international experience that the dominant channel of transmission of intergenerational persistence of earning level is education. However, education plays a dual and divergent role in shaping persistence and mobility. High earning parents are able to invest more in their children's education, resulting in relatively superior earning capability for these children when they grow up. This channel is strengthened when education is mostly privately financed, e.g. in Japan, Malaysia and Bangladesh or centrally politically determined as in China. In New Zealand and Taiwan too relatively lower mobility, as compared to other developed countries, has been attributed to better education levels of children of high income parents. The opposite role that education plays is through expansion of the human capital base and broadening the capability domain, thereby increasing earning opportunity. This has been the case in Australia, Singapore, Philippines and more remarkably in Indonesia (Hertz and Jayasundera, 2007). It has been observed in these country studies that public funded education, especially primary and tertiary education, leads to greater income mobility by disassociating the process of capability formation from parental income and affordability levels. India's standing somewhere in the middle of the regional range stems from the fact that education has been mostly funded by the State leading to substantial educational mobility across generations (Majumder, 2013). But

contrary to Philippines, this has not resulted in earning mobility of comparable magnitude. Key to this seeming paradox may lie in the abysmally poor quality of public education in India – India ranked second last among 73 countries that participated in the Programme for International Student Assessment 2013, conducted annually to evaluate education systems worldwide by the OECD Secretariat and none of the Indian institutes of higher learning feature in the top 100 institutions list published by annual Times Higher Education magazine's 2014 World Reputation Rankings.

It would imply that the current generation is no better endowed than their parents in terms of skill and capability even though the average years of formal education are higher. This makes their occupational pattern and earnings similar to their parents resulting in lower mobility. Another channel of transmission, as evident from regional experience, has been through occupation – industrialisation and occupational shifts facilitating income mobility in South Korea, Singapore, Philippines and occupational stagnancy thwarting income mobility in China. In India too, occupational continuity across generations has been observed (Ray and Majumder, 2011). Educational mobility is not being translated to occupational mobility and caste-based discrimination in labour market affects both occupational choice and wages. The policy options that one can suggest against this backdrop should necessarily be multipronged. While the current thrust to expand public education system (through Right to Education legislation and infrastructural provisioning) should be continued, focus should now shift to enhancing quality of education and market-ready skill formation. Employability should be the guiding factor to assess success of educational programs rather than the sheer volume of students that enrol or pass out with degrees. This may bring about greater occupational mobility in the labour market and improve the income mobility situation as well. A policy regime that crosses between Singapore's economic growth and competitive skill formation, Indonesia's primary education expansion, Australia's thrust on easy, but quality higher education, non-farm sector growth of Philippines and South Korea's industrialisation drive would be ideal to facilitate higher income mobility in India. Policy makers should immediately look into these issues and take steps so that economic growth translates into a more visible and inclusive improvement of the lives of the working mass. In absence of perceptible improvements, social disparity may spiral out of control, sporadic discontent may well give way to mass uprising and Indian spring may transform into a summer of discontent, ripping apart the fabric of Indian society, polity and economy.

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