WORKING PAPER 109/2015

THE INCOME MOBILITY IN RURAL INDIA: EVIDENCE FROM ARIS/ REDS SURVEYS

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June 2015

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WORKING PAPER 109/2015	MADRAS SCHOOL OF ECONOMICS
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Price : Rs. 35	Website: www.mse.ac.in

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Abstract

Economic mobility is a significant consequence of income inequality and growth. In this paper, we have used a unique ARIS/ REDS surveys data set for rural India spanning 3 decades to determine the reasons and magnitude of income mobility. The triggers that have been identified include land ownership, affirmative actions and occupation. There exists wide income diversity among education level, family size, land ownership and different caste groups. The income mobility continues to be low. Further, the land reforms and advantages from affirmative actions have not made significant impact on the income mobility over the periods.

Keywords: Income Mobility, Measurement Error, Poverty and Welfare Analysis, Rural India

JEL Codes: D31, I 32, D73, O12

ACKNOWLEDGEMENT

We are thankful to NCAER, New Delhi and IDRC, Canada for giving us opportunity to involve in IDRC–NCAER research program on 'Building Policy Research Capacity for Rural Governance and Growth in India' and allow us to use the detailed ARIS/REDs primary data for the study. We are also grateful to H. K. Nagarajan, RBI Chair Professor, IRMA and Shashanka Bhide, Director-MIDS, for their support and valuable inputs. The usual disclaimer applies

INTRODUCTION

The last three decades have been a period of considerable economic change in the Indian economy; in particular, the spread of new agricultural technologies in the Green Revolution during the 1970s, the industrial reforms during the 1980s and the extensive structural reforms during the 1990s. The 1990s also witnessed high economic growth about six to seven per cent per annum in average but were accompanied by enlarged disparities in earnings and living standards. These structural changes are likely to have influenced the pattern of livelihood and income. For instance, the New Industrial Policy of 1991 significantly has modified the requirements regarding the location of industries in rural areas. It can be expected to have an impact on employment and occupational patterns within villages that are relatively well-integrated with the wider economy. Similarly, policies promoting rural non-farm employment or agro-based industries either directly or indirectly (e.g., through the liberalization of inter-state and international agricultural trade) would influence household income through their effects on occupation and activity specialization patterns. As a result, we would expect to find a high, and possibly increasing, degree of mobility among households depending on a household's capacity to respond to the changing environment. The inequality and development over the period can also be measured by mobility.

According to *Parker and Rougier, 2001*, mobility is the transition matrix, which describes the probabilities of persons moving from any one state to another state or remaining where they are. Assessment of mobility allows us to have insights about the working of the economic process over time and to understand the causes of poverty of and be able to interpret the different aspects of economic status. It is important to examine mobility in the context of chronic poverty. Mobility is an important indicator of the economy by which we can evaluate the transition of households to exit from poverty or re-entry into poverty.

Therefore, most of the studies have measured mobility using the transition matrix approach. Some of literatures *(Dardanoni (1993), Field and Ok (1996, 1999) and Ding and Wang (2008)* relate mobility measurement to welfare analysis. However, both the transition matrix and welfare analysis approach pay no attention to the measurement error and hence *Glewwe (2005)* identifies to solve the measurement error in the data. There are very few studies on income mobility in Indian context. Hence, the present study tries to evaluate all the approaches to measure the mobility with REDS/ARISE data set for major states of India.

The study extends by characterizing the households with affirmative actions, migrations and *Simpson's index* for income diversity which is based on education level, family size, land ownership and different castes. Also, it analyzes the caste diversity that is based on different sub-castes. It employs three approaches viz. *Shorrock's mobility index (1978)* which is based on transition matrix approach, *Field and Ok (1999)* measurement of welfare and *Glewwe's (2005)* measurement error approach for estimating the mobility of households over the periods. This will make a compact measure for income mobility.

This paper is organized in five sections. Section II provides a review of related literature. Section III presents the methodology and section IV represents the data set for the analysis. Empirical results are evaluated in the section V. Finally, conclusion has been presented in section VI.

REVIEW OF LITERATURE

The literatures on the income mobility have become quite extensive. The earlier literatures thoroughly insight the transition approaches to mobility measure, welfare measurement and measurement error approach to mobility. *Kearl and Pope (1984)* observed interesting immobility in that the pattern of movement from the top deciles is quite different than that

from other positions in the distribution. However, they did not find any individual characteristic to which this relative lack of movement might be attributed except being in particular deciles per se. Rosen (1985) argued that if there is sufficient income mobility; one need not be overly concerned about how unequally incomes are distributed. Thus, an income regime with a higher level of income inequality may well be preferred because it can lay claim to greater income mobility. Slesnick (1986) has shown that in each year society is upwardly mobile relative to the earlier distribution in United States. Atkinson and Bourguignon (1992) viewed the income mobility implies a transition that links an initial distribution to a final distribution and then a mobility index typically describes this transition process. Jarvis and Jenkins (1998) have shown that there is much mobility in household net income from one year to the next in Britain. There is some evidence of greater mobility for those in the tails of the income distribution relative to the middle, and for elderly persons compared to non-elderly persons. Gardiner and Hills (1999) observed the evidence is equivocal, but even if income mobility is now greater than it was at the earlier, albeit for a restricted groups, the size of the increase is not enough to do any more moderate the effects of the rise in cross-sectional inequality. Formby, et. al. (2004) supported that income mobility must also be weighed when comparing incomegenerating regime in different societies. Woolard and Klasen (2004) found that demographic changes and employment changes account for a most of the mobility observed which is related to rapidly shifting household boundaries and a very volatile labour market in an environment of high unemployment. Kapitany and Molnar (2004) found the stagnation of inequality was coupled with decreasing mobility, which may account for the stabilization of inequality. This process may be observed in every income and expenditure deciles. Immobility was particularly strong at the ends of the income and expenditure scales. The poor had less chance to improve their position, and even the commencement of economic growth could not increase their mobility. The richest families were able to stabilize their position permanently.

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Dardanoni (1993) argued that the measurement of mobility should be undertaken by first exploring mobility's implications for social welfare. *Field and Ok (1996)* have shown that mobility due to the transfer of income within a given structure and mobility due to economic growth or contraction. *Fields and Ok (1999)* have shown that there was a broad-based increase in income movement in the United States between the 1970s and 1980s. *Ding and Wang (2008)* have shown that the household income mobility in China remained at a high level from 1989 to 2000, which is due to an exchange process accompanied by high growth.

Glewwe (2005) pointed out that much of the magnitudes presented in mobility estimates could be due to measurement error in income and derived a method to measure mobility while correcting for bias due to measurement error. After applying this method to the Vietnamese data he found that mobility is perhaps over estimated by nearly 15 percentages.

Economic mobility in India has been examined variously by *Swaminathan (1988), Ghia (1988)* and *Ghia and Deolalikar (1993)* find limited wealth mobility in a set of Tamil Nadu villages during the period 1977 to 1985. *Epstein (1973) and Gough (1987)* find little evidence of occupational mobility in these villages. *Pal and Kynch (2000)* examined the nature and characteristics of occupational change and mobility in rural India. They have shown that success in changing occupation depends crucially on socially constructed 'status' – being older, male, from larger farming families or having higher schooling experience. They also have demonstrated the effects of regional diversity, levels of prosperity and different patterns of employment between agricultural and non-agricultural activities. *Mukund, K. (2001)* has explored the dynamics of social mobility in pre-colonial south India. He found that a significant degree of mobility was to be not seen in this society and neither at the individual nor at the corporate level there an acceptance of an immutable

caste system and social ranking. The caste system was highly complex, with many intricate strands which linked the social group with their economic base. The interaction of these factors allowed for a degree of intra- and inter-caste mobility which the static understanding of caste does not accommodate.

Sanjay Kumar and et. al. (2002) have shown that social mobility in India is neither particularly fluid, as evidenced by the large class inequalities, nor showing great signs of becoming more. Mitra, A. (2006) have shown that transfer of labour from the informal to the formal sector does not seem to receive much empirical support, movements within the informal sector are substantial and prove to be beneficial. The downward mobility are much fewer in number than upward mobility. The duration of migration does not seem to have any significant effect on the expenditure per capita, but it shows a positive influence on the probability to save. Rajeswari and Suhas (2008) found that while caste is not strongly associated with occupational mobility in general, it certainly important for upward mobility through extend of mobility is different among different castes. The maratha-kunbis and dalits are the greatest beneficiaries of upward mobility through there are difference in the mode of their journey. The other backward classes lag behind these two and some castes among them even show stagnation as far as mobility is concerned.

METHODOLOGY

Our study begins by examining the Simpson's index to find the socioeconomic diversity among the households. The diversity index has been derived from *Simpson's Index (1949)*. The formula for the Simpson index is:

$$D = \frac{\sum_{i=1}^{S} n_i (n_i - 1)}{N (N - 1)}$$
(1)

Where N, represents the total number of individuals in the groups and n_i , represents the number of individuals in group i. The Index ranges from 0 to 1 with the values near '0' corresponding to highly diverse and values near '1' corresponding to less diverse.

Our attempt is to examine the mobility of households with respect to time-independence, positional movement, and directional income movement using transition matrices. Transition matrices are most intuitive tools to comprehend mobility and are based on *Shorrocks (1978)* measures of mobility. These matrices classify the income units into fixed categories in each time period. In this paper, income units are defined as quintiles. Cross-tabulations of the frequency distribution of households in each quintile with the base-year quintile determine the row. A similar cross tabulation with final-year guintile determines the column. Using this methodology we can determine the movement of a family along the income distribution over time. It also determines the existing immobility if any. We can say that there is a perfect immobility if all households remain in the same quintile in each of these accessible years, i.e., the diagonal elements of the transition matrix. Above triangle of the matrix shows the upward mobility and lower triangle shows the downward mobility. If a significant majority of entries are above the diagonal rather than below we can conclude that upward mobility is greater than downward mobility between the two years examined.

However, transition matrix measurements are based on the quintile of income, which contains information on how people shift among different classes. However, these transition matrices are not useful because (i) incomes are measured with measurement error and (ii) it does not reveal the impact of the change in an individual's income on the total well-being in the long run. Therefore we propose two measures of income mobility that measure the welfare of the households and simultaneously control the measurement error.

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On the other hand, *Fields and Ok (1996, 1999)* measure of income mobility argues that the change in person's income alters his utility and certainly, has an effect on the welfare of the whole society. Therefore, the study uses the mobility of welfare index proposed by *Fields and Ok (1996, 1999),* which is formulated as follows,

$$M (x) = \frac{1}{N} \sum_{i=1}^{N} (\log x_{i}^{1} - \log x_{i}^{0})$$
 (2)

Where N is the number of households in the economy, and x_i^0 and x_i^1 are the initial and final incomes of household i, respectively. This index is the aggregate of the change in each household's income.

In order to control measurement error this paper uses Glewwe's (2005) measure of income mobility, based on measurement error.

Let y_1 be the distribution of income in time period 1 and y_2 be the distribution of income for same households in time period 2.

The simplest mobility measure can be defined as $1-\rho(y_1, y_2)$, where $\rho(y_1, y_2)$ is the correlation coefficient of y_1 and y_2 . This mobility measures based on the correlation coefficient range from 0 (no mobility) to 1 (full mobility). All measures suffer from a serious problem in that they exaggerate the extent of income mobility when the income variable is measured with error. According to *Glewwe (2005)*, virtually, any measure would overestimate the true mobility because fluctuations in calculated income, that are purely due to measurement error, are mistakenly interpreted as actual income fluctuations.

There is a simple way to estimate $\rho(y_1, y_2)$ that avoids measurement error bias. We use instrumental variables that are correlated with y_1 and y_2 but uncorrelated with their error terms. In order to estimate the correlation coefficient ρ between y_1 and y_2 we, first, regress y_1 on y_2 and, y_2 on y_1 and then take square root of the products of the associated coefficients. If we estimate data on y_1 and y_2 without measurement error then the estimate of mobility $\rho(y_1, y_2)$ would be the square root of the product of β_1 and β_2 followed by the following two regressions.

$$y_1 = \alpha_1 + \beta_1 y_2 + \varepsilon_1 \tag{3}$$

$$y_2 = \alpha_2 + \beta_2 y_1 + \varepsilon_2 \tag{4}$$

Where y_1 and y_2 denote observed values and \mathcal{E}_1 and \mathcal{E}_2 are measurement errors.

Now, if there exist measurement error, we have to estimate (3) and (4) using instrumental variables. In this paper we have identified the following instruments or household income. These include dependency ratio, land ownership and land reform. Certainly, land reform is a dummy that captures the effect of implementation of land reforms in the village. The equations for y_1^* and y_2^* are:

$$y_{1}^{*} = \gamma_{1} + \delta_{1} z_{2}^{*} + v_{1}$$
(5)

$$y_{2}^{*} = \gamma_{2} + \delta_{2} z_{1}^{*} + \nu_{2}$$
 (6)

Where z_1 and z_2 denote instrumental variables and v_1 and v_2 are error terms.

Data

The primary source of data is the Rural Incomes Survey (ARIS)/Rural Economic and Demographic Survey (REDS), National Council of Applied Economic Research (NCAER). NCAER has been conducting periodic surveys of rural households since 1969. The ARIS/REDS datasets, collected in four rounds between 1971 and 2006, form a database on villages and households across India allowing analyses on the micro characteristics of households and their interactions at the village, district, state and national levels. As a panel dataset spanning three decades, the data from the surveys allow in-depth analysis of economic, social and demographic changes in rural India and provide an empirical view of the evolution of policy and its impact on households.

These data have been collected for rural households of the major 17 states in India at six points in time, viz. 1968-69, 1969-70. 1970-71. 1981-82, 1998-99 and 2005-06. The objective of the original rounds in 1968-71 was to determine the performance of cultivators of high-yielding varieties relative to cultivators of traditional varieties of crops and the consequences for income inequality. Approximately two-thirds of the entire samples were selected from villages covered by the Intensive Agricultural Development Programme (IADP) or the Intensive Agricultural Area Programme (IAAP). In order to maintain the panel dimension, the same villages were tracked in subsequent survey rounds in 1981-82, 1998-99 and 2005-06.

Each round has three parts. The first part is the "listing sheet", where information on household income and a few demographic variables is collected. The second part is the "village questionnaire". This is the source of information on village-level characteristics such as agricultural production and land use, irrigation facilities, agricultural wage rates, access to markets, social and political structure, land tenure systems and the level of development (including infrastructure, distance from markets etc). The third part is the "household questionnaire" which is used for collecting data on a range of variables relating to household behavior.

The listing sheets are typically used to select the households to be surveyed. The income data in these listing sheets is based on a single question on total household income from all sources. This data represents a valuable resource in estimating the distribution of household incomes at the village level. In the initial round, we can identify the true income distribution for almost 50 percent of the villages in which all or at least 80 percent of resident households (as reported in the Census) have been listed. For some of the larger villages, only a random sample was listed. By 2001 the proportion of villages with over 80 percent of resident households listed has fallen to about 40 percent.

The nominal annual household income is converted to real income by deflating to 1971 prices. As the listing sheets are accompanied by a village survey we also have detailed information on village-level characteristics that are rare in cross-country analyses. We also combine the listing sheet and village survey data with the other secondary sources such as the National Census and the NCAER rainfall database in order to investigate the rainfall shocks.

The variables used to explain household income are available in the listing sheets. It also includes household demographic information such as schooling of the head, the number of migrants, the number of households that have taken advantages of affirmative actions, household size and the number of earners, household land², occupation categories³ and caste compositions for each of the 242 villages.

EMPIRICAL RESULTS

The number of households that have taken advantages of affirmative action has explained in Table 1. The highest number of seeking employment has been increased in Gujrat. Besides, the lowest number of seeking employment has been taken place in Chhatisgarh. The highest number of seeking admission has been increased in Haryana, Tamilnadu and Andhra Pradesh. The number of seeking admission has been

² The land data was reported in hectares in 1982 and acres in 1999 as well as some local land units (e.g., bigha, cent, kanal, katha) in both years. These were converted to acres using the appropriate conversion factors. Note that the data on house hold land refers to land operated in 1982 and to land owned in 1999.

³ These include four cultivator categories (marginal, small, medium and large farmers), agricultural labour (there is omitted reference category), fishing, animal husbandry, non-agricultural white-collar labour, non-agricultural blue-collar labour, non-agricultural business and transfer income. Marginal farmers cultivate lan up to two acres, small farmers between two to four acres, medium farmers between four and ten acres and large farmers cultivate ten or more acres of land.

increased all the states except Chhatisgarh, Jharkhand and Kerala. The results also find that both the seeking admission and employment have been increased in highest number in Haryana, Rajasthan, Madhya Pradesh, Bihar and Uttar Pradesh. It has been declined in Chhatisgarh, Karnataka, Kerala, Jharkhand and Maharastra. Overall, the affirmative actions program has increased the numbers of seeking employment, admission and both.

STATE	Seek	Emplo	oyment	See	ek adm	ission	Seek an	: Emplo d admi	oyment ssion				
	1999	2006	%	1999	2006	%	1999	2006	%				
	(%)	(%)	Change	(%)	(%)	Change	(%)	(%)	Change				
ANDHRA	2.69	1.67	61.15	2.34	1.48	58.54	0.94	0.78	20				
PRADESH													
BIHAR	9.08	5.89	54.17	3.04	2.31	31.91	1.28	0.34	271.43				
CHHATTISGARH	5.5	10.7	-48.34	2.32	4.28	-45.86	1.29	2.41	-46.67				
GUJARAT	3.99	2.13	87.79	8.41	5.83	44.29	1.04	0.75	39.13				
HARYANA	10.9	7.64	43.02	1.18	0.69	70.97	0.6	0.11	440				
HIMACHAL	6.47	4.32	50	3.6	2.88	25	-	-	-				
PRADESH													
JHARKHAND	9.37	7.76	20.72	4.64	5.13	-9.64	1.92	1.48	29.17				
KARNATAKA	4.16	4.58	-9.32	21.1	18.2	16.04	1.32	1.75	-24.44				
KERALA	19.3	26.7	-27.56	33.7	34.4	-2.09	16.8	24.1	-30.50				
MADHYA	5.69	4.62	23.29	0.63	0.39	60	0.16	0.03	500				
PRADESH													
MAHARASHTRA	5.95	9.86	-39.69	17.6	16.1	9.65	3.1	3.66	-15.28				
ORISSA	3.98	2.81	41.91	8.05	7.78	3.44	1.31	0.99	32.43				
PUNJAB	14.9	10.2	45.49	2.31	1.93	19.57	1.01	0.75	33.33				
RAJASTHAN	25.8	15.2	70.22	16.2	4.42	267	10.9	2.29	375.32				
TAMIL NADU	18	13.6	32.41	26.6	16.3	62.83	8.9	6.23	42.96				
UTTAR PRADESH	10.6	7.61	39.52	4.7	2.01	134	2.19	1.29	70.15				
WEST BENGAL	7.69	6.96	10.55	6.55	5.9	10.95	4.87	4.87	0				

 Table 1: Number of Households that have taken Advantages of

 Affirmative Action

The statewide Simpson's index for income diversity has shown in Table 2. Overall, it shows that the education level of 15-20 years has high-income diversity. The income diversity is lower in illiterate classes.

Table 2: Simpson's Index for Income Diversity

			Educa	tion		
STATE	Illiterate	Upto5	5-10	10-15	15-20	20-25
		years	years	years	years	years
ANDHRA	0.912	0.923	0.913	0.906	0.945	1.000
PRADESH						
BIHAR	0.754	0.670	0.661	0.654	0.752	-
CHHATTISHGARH	0.676	0.640	0.667	0.656	0.708	-
GUJARAT	-	0.912	0.918	0.908	0.927	0.913
HARYANA	0.703	0.729	0.722	0.748	0.733	-
HIMACHAL	0.563	0.549	0.626	0.733	0.585	-
PRADESH						
JHARKHAND	0.679	0.674	0.674	0.758	0.803	-
KARNATAKA	0.746	0.721	0.714	0.723	0.677	0.389
KERALA	0.883	0.904	0.893	0.895	0.849	0.870
MADHYA	0.705	0.670	0.681	0.707	0.641	-
PRADESH						
MAHARASTRA	0.779	0.757	0.754	0.752	0.750	0.513
ORISSA	0.851	0.829	0.801	0.801	0.739	-
PUNJAB	0.741	0.719	0.729	0.741	0.637	-
RAJASHTAN	0.716	0.757	0.784	0.832	0.823	-
TAMILNADU	0.946	0.904	0.910	0.891	0.885	-
UTTARAPRADESH	0.646	0.637	0.638	0.635	0.600	0.560
WESTBENGAL	0.859	0.825	0.802	0.784	0.785	0.835

The statewide Simpson's index for income diversity, which is based on family size, has presented in Table 3. The results found that the small family size with low-income diversity and large family size with high-income diversity. The family size inversely related with the income diversity.

STATE			Family	Size		
-	2	2 to 4	4 to 6	6 to 8	8 to 10	>10
ANDHRA	0.942	0.924	0.899	0.840	0.773	0.699
PRADESH						
BIHAR	0.814	0.752	0.714	0.687	0.663	0.565
CHHATTISHGARH	0.710	0.684	0.656	0.632	0.640	0.646
GUJARAT	0.957	0.932	0.907	0.891	0.881	0.839
HARYANA	0.763	0.744	0.728	0.681	0.630	0.616
HIMACHAL	0.710	0.672	0.557	0.499	0.478	0.488
PRADESH						
JHARKHAND	0.738	0.703	0.701	0.677	0.632	0.578
KARNATAKA	0.764	0.730	0.733	0.720	0.701	0.664
KERALA	0.916	0.905	0.887	0.858	0.855	0.793
MADHYA	0.772	0.721	0.679	0.675	0.612	0.558
PRADESH						
MAHARASTRA	0.823	0.783	0.745	0.712	0.680	0.607
ORISSA	0.859	0.860	0.822	0.793	0.769	0.733
PUNJAB	0.776	0.760	0.737	0.700	0.642	0.653
RAJASHTAN	0.827	0.802	0.770	0.714	0.675	0.630
TAMILNADU	0.938	0.918	0.903	0.880	0.841	0.834
UTTARAPRADESH	0.752	0.683	0.650	0.612	0.584	0.558
WESTBENGAL	0.878	0.845	0.818	0.784	0.759	0.764

Table 3: Simpson's Index for Income Diversity

The statewide Simpson's index for income diversity, based on land ownership has given in Table 4. The results have shown the income diversity of landless is lower than the marginal, small, medium and large farmers. There is high-income diversity among marginal, small and medium farmers.

The state-wise Simpson's index for income diversity on basis of different caste groups has presented in Table 5. It is shown that the income diversity of SC has less than other caste groups. There is high-income diversity among ST, OBC and other castes.

		Land	d Owners	ship	
STATE	Landless	Marginal	Small	Medium	Large
		Farmers	Farmers	Farmers	Farmers
ANDHRA PRADESH	0.952	0.745	0.839	0.832	0.847
BIHAR	0.875	0.576	0.508	0.501	0.372
CHHATTISHGARH	0.832	0.582	0.539	0.616	0.750
GUJARAT	0.960	0.815	0.853	0.876	0.868
HARYANA	0.826	0.590	0.559	0.616	0.722
HIMACHAL PRADESH	0.822	0.571	0.447	0.743	-
JHARKHAND	0.841	0.602	0.540	0.582	0.741
KARNATAKA	0.883	0.508	0.545	0.622	0.694
KERALA	0.939	0.715	0.710	0.693	0.715
MADHYA PRADESH	0.881	0.560	0.532	0.634	0.716
MAHARASTRA	0.946	0.642	0.674	0.669	0.721
ORISSA	0.913	0.709	0.766	0.759	0.736
PUNJAB	0.809	0.610	0.584	0.638	0.736
RAJASHTAN	0.916	0.623	0.581	0.578	0.633
TAMILNADU	0.969	0.778	0.756	0.691	0.620
UTTARAPRADESH	0.825	0.565	0.567	0.591	0.581
WESTBENGAL	0.932	0.700	0.736	0.733	0.681

 Table 4: Simpson's Index for Income Diversity

STATE	Di	fferent Ca	ste Group	s
-	SC	ST	OBC	OC
ANDHRA PRADESH	0.920	0.846	0.900	0.932
BIHAR	0.769	0.732	0.712	0.566
CHHATTISHGARH	0.652	0.654	0.666	0.665
GUJARAT	0.965	0.850	0.923	0.926
HARYANA	0.803	0.531	0.721	0.665
HIMACHAL PRADESH	0.566	-	0.643	0.614
JHARKHAND	0.813	0.612	0.667	0.706
KARNATAKA	0.752	0.723	0.727	0.721
KERALA	0.930	0.921	0.903	0.875
MADHYA PRADESH	0.755	0.672	0.690	0.695
MAHARASTRA	0.822	0.770	0.759	0.732
ORISSA	0.870	0.849	0.797	0.803
PUNJAB	0.793	-	0.768	0.664
RAJASHTAN	0.802	0.661	0.725	0.798
TAMILNADU	0.945	1.000	0.902	0.927
UTTARAPRADESH	0.686	0.798	0.615	0.654
WESTBENGAL	0.865	0.785	0.734	0.848

 Table 5: Simpson's Index for Income Diversity

The correlation matrices between income diversity, education, household size and land ownership has presented in Table 6. The results revealed the positively significant correlation between income diversity and education levels of the households. The income diversity is negatively correlated with family size and land ownership of the households.

Table 6: Correlation between Income Diversity, Education, Household Size and land ownership											
Education Household size Land											
			Ownership								
Diversity Index	0.0294*	-0.2425*	-0.0210*								

Note: * denotes 5 percent level of significance

The state-wise Simpson's index for caste diversity has presented in the Table 7. It is clearly shown that there is high caste diversity among the OBC and low caste diversity among ST.

	Grou	ps		
STATE	SC	ST	OBC	OC
ANDHRA PRADESH	0.106	0.0034	0.0019	0.0108
BIHAR	0.0067	0.0069	0.0071	0.0784
CHHATTISHGARH	0.05	0.0092	0.0147	0.0027
GUJARAT	-	-	-	-
HARYANA	0.0073	-	0.0027	0.0062
HIMACHAL PRADESH	0.0302	-	1	0.0087
JHARKHAND	0.0072	0.0065	0.0209	0.0097
KARNATAKA	0.0053	0.0819	0.0013	0.0852
KERALA	-	-	-	-
MADHYA PRADESH	0.0008	0.0016	0.00008	0.0015
MAHARASTRA	0.0217	0.0082	0.0013	0.4073
ORISSA	0.0015	0.0167	0.0028	0.0027
PUNJAB	0.0219	-	0.0019	0.0005
RAJASHTAN	0.0018	0.0485	0.0006	0.0018
TAMILNADU	0.0117	0.1288	0.0004	0.0044
UTTARAPRADESH	0.0269	0.0049	0.0013	0.0004
WESTBENGAL	0.0008	0.0036	0.0665	0.1064

 Table 7: Simpson's Index for Caste Diversity on Different Caste

The mobility index of Shorrock (1978) has explained in terms of income, poor vs. non-poor, land holdings, affirmative actions over the periods. The transition matrices of households' incomes have shown in Table 8. It shows that the households of 1971-1982 have less mobility than other periods. It also showed that there is no significant income mobility over the periods for households. Using transition matrices, we derived immobility, upward and downward mobility, which has given in Table 9. The results found that there is a downward mobility over the time periods.

				19	71 ag	ainst 1	982				
	1	2	3	4	5	6	7	8	9	10	Total
1	0.19	0.16	0.13	0.11	0.10	0.08	0.11	0.04	0.05	0.03	4,001
2	0.16	0.14	0.15	0.12	0.09	0.09	0.12	0.05	0.05	0.03	3,655
3	0.15	0.13	0.12	0.14	0.09	0.09	0.12	0.05	0.07	0.04	4,381
4	0.15	0.10	0.09	0.12	0.09	0.10	0.16	0.06	0.07	0.06	3,473
5	0.12	0.11	0.10	0.13	0.10	0.11	0.15	0.05	0.07	0.06	3,966
6	0.12	0.09	0.06	0.11	0.09	0.12	0.17	0.06	0.09	0.07	3,714
7	0.09	0.09	0.06	0.10	0.09	0.12	0.17	0.06	0.11	0.10	4,851
8	0.10	0.08	0.05	0.10	0.08	0.11	0.17	0.06	0.13	0.12	3,029
9	0.07	0.05	0.03	0.07	0.06	0.10	0.18	0.07	0.18	0.19	4,415
10	0.03	0.03	0.02	0.05	0.04	0.07	0.15	0.07	0.22	0.32	3,810
Total	4,546	3,897	3,193	4,111	3,256	3,965	5,940	2,203	4,133	4,051	39,295

Table 8: Transition Matrices, Based on Income of Households

Shorrock's Measure: M(P)=0.943

				19	82 ag	ainst 1	L 999				
	1	2	3	4	5	6	7	8	9	10	Total
1	0.15	0.12	0.12	0.21	0.06	0.10	0.11	0.04	0.06	0.03	4,459
2	0.11	0.12	0.11	0.21	0.07	0.10	0.12	0.06	0.06	0.04	4,173
3	0.13	0.11	0.10	0.19	0.08	0.08	0.12	0.07	0.07	0.05	3,352
4	0.09	0.10	0.10	0.19	0.07	0.08	0.14	0.09	0.09	0.06	4,228
5	0.11	0.11	0.08	0.19	0.06	0.07	0.13	0.08	0.10	0.07	3,428
6	0.07	0.12	0.09	0.17	0.06	0.07	0.12	0.09	0.12	0.09	4,123
7	0.07	0.10	0.07	0.14	0.05	0.08	0.14	0.08	0.13	0.13	6,037
8	0.07	0.09	0.06	0.12	0.04	0.08	0.14	0.11	0.15	0.15	2,319
9	0.05	0.07	0.06	0.13	0.05	0.07	0.14	0.09	0.17	0.17	4,257
10	0.04	0.04	0.05	0.10	0.04	0.07	0.14	0.10	0.17	0.25	4,376
Total	3,575	3,927	3,361	6,714	2,383	3,260	5,261	3,325	4,655	4,291	40,752
Charr	ock'a l	Maadu	KOL M	(D) = 0	06						

				19	99 ag	ainst 2	2006				
	1	2	3	4	5	6	7	8	9	10	Total
1	0.13	0.13	0.12	0.13	0.12	0.11	0.09	0.08	0.06	0.04	4,784
2	0.13	0.13	0.12	0.13	0.10	0.10	0.08	0.07	0.07	0.05	4,296
3	0.12	0.13	0.11	0.12	0.11	0.11	0.10	0.09	0.07	0.05	4,218
4	0.11	0.11	0.10	0.12	0.10	0.11	0.10	0.10	0.09	0.06	7,632
5	0.11	0.09	0.10	0.10	0.10	0.13	0.10	0.10	0.10	0.07	2,678
6	0.08	0.08	0.09	0.10	0.10	0.12	0.11	0.12	0.10	0.09	3,520
7	0.06	0.07	0.08	0.10	0.10	0.12	0.10	0.12	0.13	0.12	5,576
8	0.05	0.05	0.07	0.10	0.09	0.11	0.11	0.14	0.14	0.14	4,076
9	0.03	0.04	0.06	0.07	0.08	0.11	0.11	0.14	0.17	0.20	4,957
10	0.03	0.03	0.04	0.05	0.06	0.10	0.08	0.13	0.19	0.30	4,685
Total	4,009	3,999	4,000	4,648	4,451	5,126	4,629	5,061	5,255	5,244	46,422

Shorrock's Measure: M(P)=0.953

				19	71 ag	ainst 2	2006				
	1	2	3	4	5	6	7	8	9	10	Total
1	0.12	0.13	0.11	0.12	0.11	0.11	0.09	0.08	0.08	0.05	1,752
2	0.14	0.11	0.11	0.12	0.11	0.09	0.09	0.09	0.07	0.06	1,933
3	0.14	0.13	0.10	0.11	0.11	0.10	0.09	0.09	0.08	0.06	2,471
4	0.10	0.10	0.10	0.11	0.10	0.11	0.10	0.10	0.10	0.07	1,923
5	0.10	0.13	0.15	0.12	0.09	0.09	0.09	0.08	0.10	0.07	2,717
6	0.08	0.08	0.08	0.11	0.09	0.12	0.10	0.13	0.11	0.11	2,358
7	0.07	0.08	0.07	0.09	0.09	0.11	0.12	0.12	0.11	0.13	2,789
8	0.07	0.08	0.07	0.08	0.08	0.11	0.10	0.11	0.14	0.16	1,720
9	0.05	0.05	0.06	0.08	0.07	0.09	0.11	0.13	0.17	0.20	2,688
10	0.03	0.03	0.03	0.05	0.06	0.07	0.08	0.13	0.19	0.33	2,402
Total	2,000	2,042	1,996	2,218	2,031	2,282	2,202	2,428	2,656	2,898	22,753
Charr	ock'a l	Maadu	M	(D)_0	06						

	Income				
	1971-82 1982-99 1999-06 1971-0				
Immobility ratio	0.169	0.151	0.158	0.153	
Upward mobility	0.466	0.499	0.509	0.509	
Downward mobility	0.473	0.462	0.449	0.454	

 Table 9: Summary Measures of Income Mobility

The transition matrices for poor vs. non-poor⁴ have shown in Table 10. In the periods 1982-1999, 1999-2006 and 1971-2006, the sum of probabilities of households remaining poor and becoming poor (the first column) is less than the sum of the probabilities of households becoming non-poor and remaining non-poor (the second column). The results suggest that the number of households below the poverty line decline over the periods. The measurement of mobility found that the mobility for poor vs. non-poor has increased over the periods.

Table 10: Transition Matrices, Poor vs. Non-Poor

1971 against 1982				
	Poor	Non poor	Total	
Poor	0.76	0.24	34,580	
Non poor	0.46	0.54	4,715	
Total	28,542	10,753	39,295	
Chause alda Manayusay				

Shorrock's Measure: M(P)=0.70

1982 against 1999					
	Poor	Non poor	Total		
Poor	0.58	0.42	30,293		
Non poor	0.37	0.63	10,459		
Total	21,637	19,115	40,752		
	M(D) 0.70				

⁴ The poor vs. non-poor have defined on the basis of state level poverty line in the corresponding periods.

1999 against 2006				
	Poor	Non poor	Total	
Poor	0.32	0.68	24,900	
Non poor	0.18	0.82	21,522	
Total	11,844	34,578	46,422	
Charmady's Manauman				

Shorrock's Measure: M(P)=0.85

1971 against 2006					
	Poor	Non poor	Total		
Poor	0.30	0.70	20,048		
Non poor	0.14	0.86	2,705		
Total	6,308	16,445	22,753		

Shorrock's Measure: M(P)=0.85

In the Table 11, the transition matrices for land holdings have explained. The maximum landless farmers are immobile over the periods, which can be seen in Table 12. Also, it has shown that the probability of becoming marginal farmers is more in 2006 and the probability of becoming large farmers is less over the periods. The mobility measure has revealed a significant downward mobility over the periods. The mobility in the period 1999-2006 is very lower than other periods.

Table 11: Transition Matrices, Based on Land Holdings

1982 against 1999						
	Landless	Marginal	Small	Medium	Large	Total
Landless	0.73	0.19	0.04	0.03	0.01	10,434
Marginal	0.40	0.49	0.07	0.03	0.01	5,852
Small	0.32	0.46	0.13	0.07	0.02	4,194
Medium	0.27	0.43	0.14	0.12	0.04	5,458
Large	0.23	0.41	0.10	0.15	0.11	3,091
Total	13,477	10,410	2,478	1,870	794	29,029

1999 against 2006						
	Landless	Marginal	Small	Medium	Large	Total
Landless	0.85	0.12	0.02	0.01	0.00	23,203
Marginal	0.01	0.96	0.02	0.01	0.00	15,914
Small	0.01	0.10	0.87	0.03	0.00	3,669
Medium	0.01	0.05	0.06	0.88	0.01	2,624
Large	0.00	0.04	0.10	0.15	0.70	1,012
Total	19,833	18,689	4,202	2,876	822	46,422
Shorrock's	Measure:	M(P)=0.18	3			

1982 against 2006						
	Landless	Marginal	Small	Medium	Large	Total
Landless	0.69	0.23	0.05	0.03	0.01	10,532
Marginal	0.30	0.59	0.07	0.03	0.01	5,902
Small	0.23	0.54	0.15	0.08	0.01	4,235
Medium	0.17	0.50	0.16	0.13	0.04	5,519
Large	0.11	0.48	0.13	0.18	0.10	3,109
Total	11,309	12,390	2,873	2,093	632	29,297

Shorrock's Measure: M(P)=0.83

Table 12: Summary Measures of Mobility on land holdings

	Land holdings					
	1982-99 1999-06 1982-06					
Immobility ratio	0.395	0.980	0.415			
Upward mobility	0.128	0.055	0.140			
Downward mobility	0.728	0.133	0.693			

Table 13 explains the transition matrices for seeking employment, admission and both i.e. intersection of employment and admission over the periods simultaneously. The results of mobility measurement have shown that there is a significant immobility ratio over the periods.

Table 13a: Transition Matrices of Households that have taken Advantages of Affirmative Action Program for Seeking

Employment						
Seeking	Seeking Employment (2006)					
Employment (1999)	Yes	No	Total			
Yes	0.327152	0.672848	9,222			
No	0.029265	0.970735	150,420			
Total	7,419	152,223	159,642			

Shorrock's Measure: M(P) = 0.702112

Table 13b: Transition Matrices of Households that have taken Advantages of Affirmative Action Program for Seeking Admission

Seeking Admission	Seekin	Seeking Admission (2006)		
(1999)	Yes	Total		
Yes	0.402871	0.597129	9,405	
No	0.018804	0.981196	150,237	
Total	6,614	153,028	159,642	
Channe al /a Maaan M				

Shorrock's Measure: M(P) = 0.615933

Table 13c: Transition Matrices of Households that have taken Advantages of Affirmative Action Program for Seeking Employment and Admission

Both Seeking Employment and	Both SeekingEmployment and Admission (2006)YesNoTotal				
Admission (1999)					
Yes	0.398498	0.601502	3,596		
No	0.008087	0.991913	156,046		
Total	2,695	156,947	159,642		

Shorrock's Measure: M(P) = 0.609589

Table 14 indicates the household income mobility (Fields and Ok, 1999) which is also known as measurement of welfare among the households over the periods. It measured the income mobility in the long term (i.e. 1971-2006) and the short term (i.e. 1972-82, 1982-1999 and 1999-2006). From the results, the analysis concluded the long term

income mobility is more than short term income mobility i.e. the welfare of the households has increased in the long term.

Table 14: Measure of Mobility (Fields and Ok)						
STATE	1971-82	1982-99	1999-	1971-		
			2006	2006		
ANDHRA PRADESH	0.0154	-0.0057	0.0218	0.0223		
BIHAR	-0.0032	0.013	0.0046	0.0106		
CHHATTISGARH			0.0301			
GUJARAT	-0.0269	0.0371	0.0353	0.0481		
HARYANA	-0.007	0.0054	0.0444	0.0726		
HIMACHAL PRADESH	0.0049	0.0007	0.0031	0.0133		
JHARKHAND	-0.0034	0.0154	0.0063	0.023		
KARNATAKA	-0.0287	0.0155	0.0133	0.0035		
KERALA	0.0152	0.0292	-0.0142	0.0213		
MADHYA PRADESH	-	-	0.0285	-		
MAHARASHTRA	-	-0.0131	0.0372	-		
ORISSA	-0.0093	0.018	0.0146	0.0399		
PUNJAB	-0.0038	0.0243	0.0138	0.0481		
RAJASTHAN	0.0165	0.1116	-0.0284	0.1215		
TAMIL NADU	0.0242	0.0271	0.0195	0.0415		
UTTAR PRADESH	-0.0236	0.0588	0.0706	0.0971		
WEST BENGAL	0.0176	0.009	-0.0021	0.0347		

This paper attempts Glewwe (2005) measured income mobility using correlation coefficients with ignoring measurement error. The income mobility is 0.725, 0.753 and 0.738 over the selected periods in the Table 15a. Both the correlation based mobility measure and the Shorrock's mobility index have revealed the high income mobility of households over the periods. It almost certainly overestimated the income mobility because it ignores measurement error. Before analyzing the measurement error, it is needed to demonstrate the regression approach is in fact an alternative way to estimate the correlation coefficient. In the Table 15b, the regression based mobility has presented. The regression based estimated mobility with ignoring measurement error overestimated the income mobility.

	Measurement Error	, e
Sample periods	Glewwe's Mobility Index: [1- P(ln(x),ln(y)]	Shorrock's mobility index
1982 against 1999	0.725	0.96
1982 against 2006	0.753	-
1999 against 2006	0.738	0.953

Table 15a: Estimated Mobility in Household Income, Ignoring

Table 15b: Regression Based Estimates of Mobility, Ignoring Measurement Frror

			-	
Sample Periods	β1	β2	$\sqrt{oldsymbol{eta}_1}oldsymbol{eta}_2$	m(x,y)
1982 against 1999	0.15169	0.279301	0.205833	0.794167
	(0.00326)	(0.0060)		
1982 against 2006	0.189772	0.328096	0.249527	0.750473
	(0.0037)	(0.00635)		
1999 against 2006	0.295244	0.246877	0.269979	0.730021
	(0.0047)	(0.0039)		

Glewwe (2005) corrected for measurement error usina instrumental variables. We attempt to select suitable instrumental variables for estimating corrected income mobility. This study have used the non-policy instruments (dependency ratio⁵ and land ownership) and policy instruments (land reforms, affirmative actions and rainfall shocks)⁶, which reduces the possibility that random errors in the income of the households over the periods. The combination of policy and non-policy instrumental variables have used for regressing income of the households. The instrumental variables are likely to be measured with random error as well, but as long as those errors are unrelated to the errors in the income variables. The results are reported in the Table 16a...16h. Overall, the results showed the 1 percentage income mobility

⁵ The dependency ratio (DR) calculated for each family as: DR=(Family Size/Number of earners).

⁶ The land reforms dummy has defined as 1 for who are benefited and 0 for who are not benefited. The dummy for affirmative action has defined as 1 for who have taken advantages and 0 for who have not taken advantages. The dummy for positive/negative rainfall shocks is 1 and 0 simultaneously.

of households in 2006. These findings suggest that the earlier measured mobility is spurious, which overestimates the true mobility of households over the periods.

Table 16a: Regression Based Estimates of Mobility, Using Instrumental Variable as Dependency Ratio						
Sample Periods	β1	β2	$\sqrt{oldsymbol{eta}_1}oldsymbol{eta}_2$	m(x,y)		
1982 against 1999	0.957878	1.014944	0.98599834	0.014002		
	(0.00099)	(0.00119)				
1982 against 2006	0.898503	1.074334	0.98249308	0.017507		
	(0.00065)	(0.00116)				
1999 against 2006	0.918403	1.064492	0.98875297	0.011247		
	(0.00072)	(0.00109)				

Table 16b: Regression Based Estimates of Mobility, Using Instrumental Variable as Land Ownership

Sample Periods	β1	β2	$\sqrt{oldsymbol{eta}_1}oldsymbol{eta}_2$	m(x,y)		
1982 against 1999	0.952979	1.006482	0.979365	0.020635		
-	(0.00234)	(0.00093)				
1982 against 2006	0.856006	1.062619	0.953734	0.046266		
	(0.00382)	(0.00089)				
1999 against 2006	0.89318	1.095701	0.989271	0.010729		
	(0.00462)	(0.00659)				

Table 16c: R	egression	Based	Estimates	of I	Mobility, 🛛	Using
Inst	trumental	Variab	le as Land	Re	forms	

Sample Periods	β1	β2	$\sqrt{oldsymbol{eta}_1}oldsymbol{eta}_2$	m(x,y)
1982 against 1999	0.875362	1.092385	0.9778712	0.022129
	(0.004059)	(0.00529)		
1982 against 2006	0.896549	1.05388	0.9720365	0.027964
	(0.00278)	(0.00346)		
1999 against 2006	0.96874	1.011389	0.9898345	0.010165
	(0.00269)	(0.00275)		

Table 16d: Regression Based Estimates of Mobility, Using Instrumental Variable as Affirmative Actions					
Sample Periods	β1	β2	$\sqrt{oldsymbol{eta}_1}oldsymbol{eta}_2$	m(x,y)	
1999 against 2006	0.963497 (0.00199)	1.019123 (0.00219)	0.99092	0.00908	

Table 16e: Regression Based Estimates of Mobility, Using Instrumental Variable as Rainfall Shocks

Sample Periods	β1	β2	$\sqrt{oldsymbol{eta}_1}oldsymbol{eta}_2$	m(x,y)
1982 against 1999	0.976854	1.016581	0.99652	0.00348
	(0.00116)	(0.0009)		
1982 against 2006	0.91437	1.073725	0.990849	0.009151
	(0.00096)	(0.00082)		
1999 against 2006	0.915978	1.080797	0.99498	0.00502
	(0.0012)	(0.00125)		

Notes: 1. All results set F (x)=ln (x), so the mobility index is $1-\rho(\ln x)$, ln (y)).

2. Numbers in parentheses are standard errors.

CONCLUSION

From the above discussion it is very clear that the Glewwe's (2005) income mobility is much lower than correlation based income mobility and Shorrock's (1978) mobility measure. It also demonstrates the mobility measure on Field and Ok (1999), that based on welfare of the society and empirically concluded the percentage of welfare of the households have been increased very less over the periods. The Simpson's index for income diversity, which is based on education level, family size, land ownership and different caste groups have different among the selected groups shows that there is widely diversity in all the states. The result explains that the land reforms and advantages from affirmative actions have not made any significant impact on the income mobility over the periods. Results significantly claimed that the process of financial inclusion so far couldn't generate optimistic outcome in terms of income mobility for the rural poor. It is because of lack of efficiency in implementation process of poverty eradication program and

incompetence in monitoring of the delivery mechanism so that it can effectively generate upward income mobility through effective participation in implemented program by targeted vulnerable population of the society. Since the outcomes from different indices are wide and the vary across different direction different ranking of the states it is clear that a single unique measure of income mobility can't be sufficient for state wise analysis. Policy level analysis should be based on a proper disaggregated estimation of income mobility, state wise disparity. It should through examine the sustainability of the program before taking any unique policy level decision regarding poverty eradication program in India.

REFERENCES

- Atkinson, A.B., F. Bourguignon and C. Morrison (1992), "Empirical Studies of Earnings Mobility", Harwood Academic Publishers, Chur.
- Dardanoni, V. (1993), "On Measuring Social Mobility", *Journal of Economic Theory*, 61, 372–394.
- Ding, N. and Y. Wang (2008), "Household Income Mobility in China and its Decomposition", China Economic Review, 19, 373-380.
- Epstein, S. (1973), "South India: Yesterday, Today, and Tomorrow. Mysore Villages Revisited", (London: Macmillan).
- Fields, G. S. and E. A. Ok (1996), "The Meaning and Measurement of Income Mobility", *Journal of Economic Theory*, 71, 349–377.
- Fields, G. S. and E.A. Ok (1999), "Measuring Movement of Income", *Economica*, 66, 455–471.
- Formby, J.P., W.J. Smith and B. Zheng (2004), "Mobility Measurement, Transition Matrices and Statistical Inference", *Journal of Econometrics*, 120, 181-205.
- Gardiner, K. and J. Hills (1999), "Policy Implications of New Data on Income Mobility", *The Economic Journal*, 109 (453), 91-111.
- Ghia, R. (1988), "Income Mobility in Rural India", *Economic Development* and Cultural Change, 36 (2), 279-302.
- Gaiha, R. and A. Deolalikar (1993), "Persistent, Expected and Innate Poverty: Estimates for Semi-Arid Rural India, 1974-1984", *Cambridge Journal of Economics*, 17(4).
- Gough, Kathleen (1987), "Socio-Economic Change in Southeast India, 1950s to 1980s", *Journal of Contemporary Asia*, 17 (3).
- Glewwe, P. (2005), "How Much of Observed Economic Mobility is Measurement Error? A Method to Reduce Measurement Error Bias, with an Application to Vietnam", University of Minnesota and the World Bank, 1-48.

- Jarvis, S. and S. Jenkins (1998), "How much Income Mobility is there in Britain?", *Economic Journal*, 108, 428–443.
- Kapitany, Z. and G. Molnar (2004), "Inequality and Income Mobility in Hungary, 1993-1998", Europe-Asia Studies, 56, 8, 1109-1129.
- Kearl, J.R. and C.L. Pope (1984), "Mobility and Distribution", *The Review* of *Economics and Statistics*, 66 (2), 192-199.
- Mitra, A. (2006), "Labour Market Mobility of Low Income Households", *Economic and Political Weekly*, May 27, 2123-2130.
- Mukund, K. (2001), "The Dynamics of Social Mobility in Pre-Colonial South India: Some Reflections", *Review of Development and Change*, VI/I, January-June, 17-27.
- Pal, S. and J. Kynch (2000), "Determinants of Occupational Change and Mobility in Rural India", *Applied Economics*, 32, 1559-1573.
- Parker, S.C. and J. Rougier (2001), "Measuring Social Mobility as Unpredictability", *Economica*, New Series, 68 (269), 63-76.
- Rajeswari, D. and P. Suhas (2008), "Occupational Mobility: How much Does Caste Matter?", *Economic and Political Weekly*, August 23, 61-70.
- Rosen, H.S. (1985), Public Finance, Irwin, Homewood, IL.
- Sanjay Kumar, H. Antony and H. Oliver (2006), "Changing Patterns of Social Mobility", *Economic and Political Weekly*, October 5, 4091-4096.
- Shorrocks, A. F. (1978), "The Measurement of Mobility", *Econometrica*, 46, 1013–1024.

Simpson, E. H. (1949), "Measurement of Diversity", Nature, 163-688.

Slesnick, D. T. (1986), "Welfare Distributional Change and the Measurement of Social Mobility", *The Review of Economics and Statistics*, 68 (4), 586-593.

- Swaminathan, M. (1988), "Growth and Polarization: Changes in Wealth Inequality in a Tamil Nadu Village", *Economic and Political Weekly*, October 22.
- Woolard, I. and S. Klasen (2004), "Determinants of Income Mobility and Household Poverty Dynamics in South Africa", IZA Discussion Paper, No. 1030, 1-37.

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