Migration, Remittance and Poverty Dynamics in Rural India: Evidence from Longitudinal Survey

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Abstract

As rural poverty continues to pose fundamental challenges in the development process, this study aims to examine the role of remittance in influencing poverty dynamics among rural households. For this, we employed instrumental variable technique and utilized longitudinal data of India Human Development Survey. After correcting for endogeneity bias results obtained from our econometric analysis reinforce the urgent need to focus on poverty transition in rural households and highlight the positive and significant role of the amount and frequency of remittances in alleviating poverty. Additionally, access to credit, government subsidies, and educational attainment substantially improves rural households' economic condition and helps them to escape poverty. Education can be a magical tool to deal with poverty, so there is need to restore the quality of education in rural areas. Thus, in order to achieve poverty elimination goal, there is a need to integrate migration and poverty while considering policy measures. Given the importance of amount and frequency of remittances in poor households, it is imperative from policy perspective to focus upon the channels of smoothing the flow of external finance and make it more sustainable.

Keywords: *Migration; Remittances; Poverty transition; Rural households; India.*

1. Introduction

Internal migration is an essential and integral livelihood strategy for rural households in developing countries. It acts as an insurance against potential risks such as crop failure, major illness, job loss etc., thereby saving the poor from falling into the trap of poverty. Developing societies such as India are experiencing a massive surge in internal migration. Official statistics from Indian Census and National Sample Survey (NSS) confirm this unprecedented growth rate in India's internal migration (Choithani, 2021). Some recent estimates based on National Sample Survey and India Human Development Survey (IHDS) also suggest that India's internal labour migrants have exploded from 15 to 200 million during the year 2007 to 2012 (Nayyar and Kim, 2018).

An interdisciplinary community of researchers has established the understanding of many connections between migration and development, with remittance inflow as a central mechanism (Adam and Page, 2005; Atamanov and Berg, 2012; De and Ratha, 2012; Nguyen et al. 2011; Brauw and Harigaya, 2007; Nguyen et al. 2013; Cuong and Linh, 2018). Whether migration improves household welfare and reduces poverty at the origin

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is an empirical question. Plenty of literature has investigated the welfare impact of migration and remittances on migrant-sending households. They focused on various indicators to show poverty–reducing effect of remittances on households and findings are mixed. For instance, Kannan and Hari (2002); Dey (2014) found Income and consumption smoothing effect of remittances. Remittances could have positive impact on healthcare and nutritional status (Yang 2003): access to better education (Edwards and Ureta 2001; De and Ratha, 2012): employment and wages in source area (Khan, 2021): Food (in)security (Rahman, 2021) of households. However, Azam and Gubert (2006) observed that remittances do not have poverty-reducing effect on migrants or their households. Children's education gets affected negatively by parental migration (Kiros and White 2004; Antman 2010; Wang 2011; McKenzie and Rapoport 2006). Whether migration has a positive or negative impact depends on the country and regional context, and more empirical research is needed to better understand the economic impact of remittances. A substantial portion of the Indian population have made their way out of poverty in recent decades (Thorat et al., 2018). Given the rise in internal migration and remittance inflow alongside decline in poverty over the period of time, it is imperative to study the migration, remittance and poverty nexus.

Despite the large body of literature on the effect of remittances on various indicators, there is limited evidence that have explicitly addressed the poverty reducing effect of remittances (Adams and Page 2005; Adams 2009). Some of exceptional work focused explicitly on effect of remittances on poverty reduction. Study by Adams and Page (2005) and Adams (2009) found strong effect of international remittances on poverty reduction in developing countries. Studies based in India, employing the 64th round of NSSO (2007-2008), depicted a higher economic status of migrants compared to non-migrants (e.g. Mahapatro et al. 2015; Parida et al. 2015; Dey, 2014; Mohanty et al. 2014). Earnings generated through migration are major source and share of household income (Tumbe, 2012; Narain et al. 2008).

With regard to the impact of remittance on poverty status of household left behind, Bertoli and Marchetta (2014) found that the remittance inflow reduces the incidence of poverty among migrant households in Ecuador. By applying propensity score matching technique Jimenez-Soto and Brown (2012) concluded remittance reduces incidence and depth of poverty in Tonga. Adam and Page (2005) is one of the first study which addressed the endogeneity of remittance at country level and concluded the positive impact of remittances on poverty severity in developing countries. Another recent study by Bang et al. (2016) found that receiving remittances increases expenditure for households and confirm equalizing effect of remittances.

Meanwhile, only a handful of studies based in India focused on effect of remittances on poverty status of households. For example, in their study, Kundu and Sarangi (2007) examined employment, poverty, and migration and found that fewer migrants than non-migrants suffered poverty. According to Bhagat (2010), there was a weak but positive correlation between the out-migration rate and poverty level (at the state level). According to Deshingkar and Akter (2009), migration can benefit those in need by helping them to make profitable investments, and keep them out of poverty.

Given this background, above studies arguing the poverty reducing effect of migration and remittance in India are silent about the transitory nature of poverty. This is because of their static measure of poverty using cross sectional data. In this study, we move beyond the static approach of investigating poverty. We employed two rounds of IHDS longitudinal data to show the poverty transition effect of remittance among rural households. Additionally, the endogeneity of remittance is addressed through instrumental variable technique. Putting it together, we tried to answer: Does receipt of remittance help poor households to get out of poverty?

This is how the remainder of the paper is arranged: Section 2 presents the methodology and data. In Section 3, an empirical strategy is presented. Section 4 discusses the findings. The conclusion and implications are presented in Section 5.

2. Data and Methodology

2.1   Data for the present study

The data used in the present study derived from India Human Development Survey conducted jointly by the University of Maryland, USA and NCAER, New Delhi in 2004-05 and 2011-12. By adopting a stratified random sampling technique, IHDS drew nationally representative sample from 384 districts, 1420 villages, and 1042 urban blocks spread over 33 states and Union territories of India. It has two waves, in the first round (IHDS-I, 2004-05), it drew 41,554 households using stratified random sampling technique, while this number has been increased in the second wave (IHDS-II, 2011-12) by covering 41,152 households (Desai, Vanneman, and NCEAR, 2012). IHDS, the first large-scale household survey in India, provides detailed information on various socio-economic variables.

In order to investigate the impact of remittances in poverty dynamics of rural households we employed panel data from two rounds (2005 and 2012) of IHDS. Along with socio-economic and migration details of households, both round of survey also collected information on remittance inflow in households. This database, having the longitudinal two rounds of survey of traceable households provides an opportunity to analyse the role of remittances in context of escaping the poverty. Households are considered to escape poverty (poverty transition), if they were poor in 2005 and non-poor in 2012 (see Table 1). Therefore, this analysis will provide dynamic understanding of poverty in rural households, particularly for those receiving remittances.

Table 1: Distribution of poverty transition (escaping and falling) from 2005 to 2012.

	Poor 2012	Non-poor 2012
Poor 2005	2,955 (7%)	6,114 (15%) =Escape
Non-poor 2005	3,759 (9%)	27,121 (68%)

Source: Authors' own

Table 2 compares the characteristics and endowments of rural poor and non-poor households. The percentage of receiving remittances is higher in non-poor households than in poor households.

Table 2: Information on households by their poverty status (Mean or percentage)

Variables	Rural non-poor households	Rural poor households	Significant level of difference[3]
	Mean/Percentage	Mean/Percentage	
Remittance status			
Yes	28%	20%	***
No	72%	80%	
Dependent child	1.3	2.3	***
Adults	2.2	2.4	***

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[3] In order to get difference of mean for continuous variable we used t-test and for categorical variable chi-square test.

Teen male	.29	.27	**
Teen female	.29	.33	***
Elders	.27	.30	***
Debt	47872.74	13815.36	***
Income per capita	25508.93	10177.83	***
Household head years of education	2	1	***
Own livestock			
Yes	59%	58%	*
No	41%	43%	
Own land			
Yes	64%	57%	***
No	36%	43%	
Major illness			
Yes	29%	19%	***
No	71%	81%	
Crop loss			
Yes	24%	22%	***
No	76%	78%	
Caste category			
Brahmin	5%	2%	
Forward caste	22%	12%	***
Other Backward Class	42%	35%	
Schedule Caste and Schedule Tribe	32%	51%	
Irrigated land possession			
No holding	68%	79%	
Small holding	31%	21%	***
Large holding	1%	0%	

Note: *p < .10; **p < .05; and ***p < .01

Source: Authors calculations based on IHDS-II, 2011 data set

Even though the dependency ratio is higher in poor rural households than non-poor households, the average number of working-age adults was only marginally higher in poor households. Poor households are characterized by lower per capita income and debt than non-poor households. The percentage of irrigated landholdings and livestock possession in non-poor households is higher. Land, which is a major economic asset, shows skewed distribution. About 79% of poor households are landless, implying fewer economic opportunities for this group. A significant percentage of poor households face heavy expenditure mostly due to illness. We expect such shocks to make poor households relatively vulnerable and compulsive in sending out migrant(s). Relatively more poor households belong to the historically disadvantaged groups of Schedule Caste and

Schedule Tribe. The poor households, therefore, are economically distressed group and need particular attention while considering migration and development nexus.

3. Empirical strategy

The monetary value and frequency of remittance inflow primarily determine poverty dynamics in migrant-sending households (Adams et al., 2009). Taking this into account we define the household poverty transition function as follows:

$$Y_i = \alpha_1 + \beta_1 R_i + \beta_2 X_i + \varepsilon_i \qquad (1)$$

Where, $R_i = \delta_1 + \gamma_1 Z_i + \omega_1 X_i + v_{1i}$ (2)

Y_i represents escape from poverty of rural households, i.e. it is a binary outcome variable that takes value 0 if the rural household remain poor in both survey year (2005 and 2012) and value 1 if the rural household was poor in year 2005 but not in 2012 (see Table 1). R_i represents remittance receiving status ('amount of remittances' and 'remittance persistence'). X_i is a vector of controls in Equation (1) affecting the transition of poverty, and in Equation (2) affecting R_i. Z_i is a vector of instruments. ε_i and v_{1i} are error of Equations respectively.

Due to the potential endogeneity of the remittance variable, which may be correlated to the error term, the estimates from Equation (1) may be biased. This problem emanates from the selectivity of migration and the endogeneity of remittance flows. This is because poverty transition may have an impact on the decision to send remittances. The IV technique has been the most often used method of solving the endogeneity problem (see Khan, 2021; Nandy et al., 2021; Rivera and Gameren, 2021; Nupur and Dutta, 2023). The following instrumental variables are used in our analysis to assess for endogeneity:

1.   Number of households in village with at least one migrants (migration network)- Migration network is captured by prevailing migration rate in the village, and is justified due to the reason that households in areas with high rates of out-migration will be more likely to migrate. In other words, such households are more likely to develop network (with those already migrated) that could influence their own migration. Migration network are an important driver of migration as it reduces cost by sharing information at source region (Mckenzie and Rapoport, 2007; 2011; Munshi and Rosenzweig, 2016). For instance, widespread migrant networks may inform prospective migrants on the costs, challenges, and employment opportunities at probable destinations. Larger migratory networks may be able to provide general material support and aid, such as access to finances, housing, and employment upon arrival (Mishra et al., 2022). Since the variables utilized for migration and remittances are the same across all studies as both are determined simultaneously (Khan, 2021; Amuedo-Dorantes and Pozo, 2011).

2.   Member of self-help group (social network)- Self-help group[4] membership is one type of social network (Kumar et al., 2019). Any household member or a person close to the household can become a member. By being a member of the self-help group, individual can influence remittance inflow in the household by furnishing financial information related to cost and risk associated with it. The significant role of networks in migration has been underlined in large body of literature (Dolfin and Genicot, 2010; McKenzie and Rapoport, 2007; Giulietti et al., 2018;) and has been employed as instruments for migration and remittance behaviour (Wang et al., 2021; Das, 2015).

We quickly discuss the reliability and validity of the instruments used before discussing the findings and the implications of the model estimated. A linear form to the categorical

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[4] SHGs are "membership-based organisations" whose members support their fellow members while working towards both individual and collective goals through community action and access to savings and loans (Bouman, 1995; Shah et al., 2007; Tankha, 2002).

variable is assumed since there is no approach that can model a categorical outcome variable with a categorical endogenous variable (Angrist et al., 2010; Bhattacharya, 2019; Khan, 2021; Rivera and Gameren, 2021; Nandy et al., 2021). Hence, we use the IV/2SLS model and to obtain the estimates.

Table 3: Tests of endogeneity and identification

	Log of remittance amount	Remittance Persistence
Under-identification test (Anderson canon. Corr. LM statistic)	54.006	55.704
	(0.00)	(0.00)
Null: Model is under-identified		
Weak-identification test (Cragg-Donald Wald F statistic)	27.19	28.051
Null: Equation is weakly identified		
Stock-Yono weak ID test critical values: 10% maximal IV size	19.93	19.93
15% maximal IV size	11.59	11.59
20% maximal IV size	8.75	8.75
25% maximal IV size	7.25	7.25
Over-identification test (Sargan-Hansen statistic)	1.475	0.972
	(0.225)	(0.324)
Null: Instruments are valid		
Endogeneity test for endogenous regressors	3.80	4.94
	(0.05)	(0.02)
Null: Endogenous regressor is treated as exogenous		

Source: Author's own

Table 3 shows the results of the instrument validity tests. Using the Wald test of exogeneity, we first examine the remittance variable's endogeneity. The endogeneity test's p-value of 0.05 indicates that the null hypothesis—that receiving remittance is exogenous—is rejected. The equation is under identified, which is the null hypothesis for the Anderson canon Corr. LM test is conducted. At 1%, the null hypothesis is rejected. The Cragg-Donald Wald F-statistic is used to determine if the equation is weakly identifiable or not. According to the "rule of thumb" developed by Staiger and Stock (1997), the F-statistic for the weak instrument problem must be at least 10. Since our weak identification F-statistics are higher than 10, our model's weak instrument hypothesis is rejected. Furthermore, the Sargan-Hansen joint null hypothesis is used to verify the validity of the instruments. The instruments and the error terms are uncorrelated, according to the first hypothesis; the omitted instruments are accurately excluded, according to the second. Because of the high p values, we are unable to reject the joint null hypothesis, indicating the validity of the instruments. Thus we conclude that the stated IVs are valid and IV results are worth reporting here.

4. Result and Discussions

Table 4 gives the estimates of the likelihood of escaping poverty in the survey year two (2012), for those who were poor in first survey (2005). The regression results, shown in

Table 4, is based on the binary variable- whether a household is able to escape poverty or not between the two survey period. The association between household poverty escape and amount of receiving remittances is positive and highly significant. This implies that amount of remittance plays crucial role for households in escaping poverty. It is also possible that the frequency of remittance may affect the poverty transition of rural poor households. The result indicates that households receiving remittance only in initial wave (2005) do not play very significant role in alleviating poverty. This part can be explained as the studied households started as poor (i.e. household is poor in initial year (2005)) and very less percentage of households were already receiving remittances. Therefore, receiving remittance only in initial survey year does not have any impact on reducing poverty. On the other hand, as households started receiving remittance during this transition period (between wave one and two), they are more likely to get out of poverty. Moreover, we also found that household receiving remittance in both the year are significant and exert positive impact on poverty transition. This indicates the importance of regular flow of income in escaping poverty, i.e. households with a regular and sustainable finance have greater chances of escaping poverty. This new estimate may act as robustness check for estimated result with amount of remittances. The estimated result from IV probit[5] (3 & 4 model) also corroborates the finding that remittance is very crucial capital inflow in poor households and have capacity to break the vicious cycle of poverty in rural households. Given the importance of amount and frequency of remittances in poor households, it is imperative from policy perspective to focus upon the channels of smoothing the flow of external finance and make it more sustainable.

Table 4: The estimates of likelihood of escaping poverty

Variables	Probit Model		IV probit Model	
	(1)	(2)	(3)	(4)
Log of remittance amount	.026***		.131***	
	(.005)		(.049)	
Remittance persistence (Ref: Not received)				
Only in 2005		.009		
		(.105)		.717***
Only in 2011		.194***		(.252)
		(.056)		
Both (2005 & 2011)		.265**		
		(.116)		
Social groups (Ref: Forward caste)				
OBC	-.259***	-.259***		
	(.053)	(.053)	-.223***	-.216***

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[5] There is no available methodology that can model a categorical dependent variable with a categorical endogenous variable therefore it is advisable to consider it as continuous (Angrist et al., 2010; Bhattacharya, 2019; Nandy et al., 2021)

	(1)	(2)	(3)	(4)
			(.058)	(.058)
Dalit	-.323***	-.323***	-.264***	-.231***
	(.055)	(.055)	(.066)	(.071)
Adivasi	-.803***	-.806***	-.658***	-.631***
	(.057)	(.057)	(.109)	(.113)
Household head education (Ref: None)				
Primary (1-4)	.049	.050	.003	.033
	(.061)	(.061)	(.064)	(.059)
Secondary (5-8)	.171***	.171***	.019***	.153***
	(.042)	(.042)	(.049)	(.042)
Metric (9-10)	.390***	.384***	.434***	.393***
	(.070)	(.070)	(.068)	(.068)
Higher secondary (11-12)	.311***	.264***	.367***	.275***
	(.082)	(.082)	(.087)	(.078)
College and above (>10)	.634***	.629***	.700***	.641***
	(.109)	(.109)	(.106)	(.106)
Occupation (Ref: Cultivators)				
Agriculture wage labour	-.126**	-.119**	-.061	-.055
	(.058)	(.058)	(.064)	(.064)
Non-agriculture wage labour	-.121**	-.095*	-.068	-.057
	(.051)	(.051)	(.052)	(.052)
Business	.202**	.202**	.216**	.211**
	(.087)	(.087)	(.085)	(.084)
Salary	.143*	.143*	.054	.080
	(.088)	(.088)	(.097)	(.091)
Others	.050	.071	-.401*	-.321*
	(.103)	(.103)	(.235)	(.199)
Household Size	-.166***	-.145***	-.141***	-.137***
	(.008)	(.008)	(.010)	(.011)

Dependency ratio	-.009***	.009***	-.008***	-.009***
	(.000)	(.000)	(.000)	(.000)
Log of amount of welfare benefits	9.93e-06*	9.67e-06	.00001**	.00001*
	(6.83e-06)	(6.83e-06)	(6.86e-06)	(6.86e-06)
Log of land owned	.074***	.047**	.032*	.043**
	(.021)	(.019)	(.021)	(.019)
Debt (Ref: No) Yes	.134***	.113***	.068*	.076**
	(.036)	(.036)	(.042)	(.040)
State Dummy	Yes	Yes	Yes	Yes
Constant	1.71***	1.78***	1.45***	1.45***
	(.138)	(.084)	(.228)	(.218)
LR chi-square	1164.95***	938.23***		
Wald Chi-square			1017.49***	1043.09***
Log likelihood	-3433.617	-3559.739	-19630.178	-9227.843
Pseudo R2	0.145	0.116		
Observations	6142	6168	6168	6168

Note: *p < .10, **p < .05 and ***p < .01. Robust standard errors are indicated in parentheses.

Source: Author's calculation based on the IHDS dataset.

The association between household poverty escape and the control explanatory variables are consistent with previous studies. Among caste groups Dalit and Adivasis were disadvantaged, they had less chance to get out of poverty. The likelihood of escaping poverty is lower for OBCs than forward caste. This is because of their endowment of lower resources than forward caste.

Education is an essential human capital credential and provides consistent support against poverty. As the educational attainment in the household increases, the likelihood of escaping poverty also increases. Graduate households are 0.63 times more likely to escape poverty than households with no education. Except primary level, all subsequent level of education helps household to get out of poverty. Education is most crucial policy intervention in reducing this age-old lacuna.

Households dependent upon wage labour are less likely to get out of poverty than cultivators. Wage labour households are more likely to hold constant and subsistence earning, since they were poor in 2005, with constant income they are less likely to escape poverty. Among cultivators, larger landowners is found to be better off because of their asset stability. Larger the land owned by households, greater the chances of escaping poverty. Receiving government benefits help them to get out of poverty. If households have taken loan it increases their likelihood to escape poverty. This implies that access to credit plays crucial role in poverty transition of households. This can be explained as access to credit help them to start any business or opens up earning opportunities.

Large size of households have less chances of escaping poverty, as more number of member implies lesser flexibility in resource allocation, less per capita income and

consumption. Similarly, higher dependency ratio (i.e. fewer household member who work) dampens the chances of escaping poverty.

5. Conclusion

This paper relied on nationally representative India Human Development Survey data of Indian households to learn about the poverty alleviation impact of remittances on rural poor households. Despite a significant study on migration in India, the poor household in particular received less attention. Moreover, poverty research has long history. Poverty is misfortune and still require attention, but we need to move beyond the static investigation. In this study we moved beyond the static to dynamics investigation of exit from poverty. We investigated the role of remittances on poverty transition in rural poor households over the two survey years. The results from our econometric analysis highlighted the positive and significant role of amount and frequency of remittances in alleviating poverty from rural households in India. Education can be a magical tool to deal with poverty, so there is need to restore the quality of education in rural areas. Given the importance of amount and frequency of remittances in poor households, it is imperative from policy perspective to focus upon the channels of smoothing the flow of external finance and make it more sustainable.

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