Economics Bulletin

Volume 40, Issue 3

Impact of internal migration on left behind youth's labour force participation in India

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Abstract

This paper investigates the impact of internal migration of the working age male member from a household on the probability of labour force participation of left behind youth. Using the 64th round unit level data on employment, unemployment and migration particulars of individuals, collected by the National Sample Survey Organization (NSSO) of India, we find that almost 19% of the total youth in the sample belongs to the households with one male member internally migrated. The estimation results after controlling for possible sources of endogeneity bias suggest that short-term internal migration of at least one male member from the household considerably reduces the probability of early labour force participation among the youth in both rural and urban area. Long-term migration is associated with rise in the probability. However, such association is found to be significant only in rural area. This result indicates that the intermittent flow from short-term migration can enhance the schooling of youth, discouraging early labour force participation among them. However, the regular flow of financial resources from long term migration appears to be insufficient in exerting any such impact.

Citation: Sweta Lahiri, (2020) "Impact of internal migration on left behind youth's labour force participation in India", *Economics Bulletin*, Volume 40, Issue 3, pages 2165-2178
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Submitted: July 07, 2019. **Published:** August 08, 2020.

Economics Bulletin

Submission Number: EB-19-00615

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This paper investigates the impact of internal migration of the working age male member from household on the probability of labour force participation of left behind youth. Using the 64th round unit level data on employment, unemployment and migration particulars of individuals, collected by the National Sample Survey Organization (NSSO) of India, we find that almost 19% of the total youth in the sample belongs to the households with one male member internally migrated. The estimation results after controlling for possible sources of endogeneity bias suggest that short-term internal migration of at least one male member from the household considerably reduces the probability of early labour force participation among the youth in both rural and urban areas. However, the long-term migration is associated with a rise in such probability. This result has indicated that the intermittent flow from short-term migration can enhance the schooling of youth in the family, discouraging early labour force participation among them. However, the regular flow from long term migration appears to be insufficient in exerting any such impact.

Submitted: July 07, 2019.

1. Introduction

The extent and impact of internal migration in a large diversified society like India is undoubtedly greater compared to that of international migration (UNDP 2009, p.22; Lucas, 1997). This becomes more prevalent with growing inter-regional inequalities in economic opportunities within the country. Along with long-term migration the relevance of temporary migration on the well-being of the family members left behind has been widely recognized in the literature (Behrman, 1997; Banerjee and Duflo, 2007), however, such issues are less interrogated empirically. Migration of the family members for different tenure may have distinguishing impacts on different members of the household especially on the younger one with respect to their educational and labour market activities. The present analysis explores the impact of such migration on the labour force participation choices of young members of the family. The situation of youth in the contemporary Indian labour market is deplorable with most of them lacking employable skill, experience, information and financial resources to start their economic career early (Report on Youth Employment-Unemployment Scenario 2013). In absence of well-functioning capital market and presence of unequal socioeconomic status, they hardly avail themselves of sufficient options but to take up unproductive, low paid, insecure work (Mitra et al. 2013, Global Employment Trends for Youth 2015). Therefore, early labour force participation becomes often a consequence of compulsion rather than choice the youth make to support their families. Under this backdrop the paper studies the implications of the migration of the family member on the left behind youth.

We try to interpret the relation between migration and well-being of non-migrant younger members of the household in a way similar to child labour analysis. There may be three main explanations behind the decision to send youth early at work instead of imparting higher education. These are 1) parents' concern for household survival (Luxury axiom: where youth education is assumed to be luxury) coupled with substitutability in production between youth and adult worker (Substitutability axiom) (Basu and Van, 1998). 2) Poverty combined with absence of well-functioning credit market (Ranjan, 1999). 3) Poverty together with low returns to enhanced schooling (Bacolod and Ranjan, 2008). Amidst financial constraints, time of the family members appears to be one of the primary resources available for allocation to the households. In this context the prevailing studies suggest possibility of the following three states - a good and stable state with all adults working at a higher wage, bad and stable with all youth working at a lower wage instead of completing education, unstable with both of them working at an intermediate wage. In this context, Epstein and Kahana (2008) found migration of the family member for employment purposes as a positive externality having the potential to uplift the existing wage structure and encourage youth education by lowering the likeliness of labour force participation among them. Precisely migration may have the capacity to enhance household's affordability to carry out youth's extended educational attainment by reducing their job market activity. However, empirical studies examine diverse subjects and come up with ambiguous evidences making it hard to draw any unique conclusion on the relationship between migration of adult and labour force participation decision of the youth left behind.

Migration is often a consequence of household utility maximization decision (Stark and Levhari, 1982), regarded as inter-familial contract (Lucas and Stark, 1985) and remittances appears to be one of the important clauses in it. Whatever be the motivation it is well documented that migration acts as an avenue for capital flow. Migrant sending families rely on remittances to augment consumption and investment. Therefore, adult migration be it temporary or for longer time period, can promote investment in skill formation of youth as per the requirement of the modern economy. Some of the existing studies support this conjecture (Edward and Ureta, 2003; Adams, Richard and Page, 2005) showing that remittances relax credit constraint among recipient families enabling parents to promote enhanced educational activity among their young children. Alternatively, some other studies have highlighted negative effects of such migration (Mckenzie and Rapoport, 2006; Srivastava, 2011). According to these studies both the explicit and implicit costs associated with such migration of the adult member may be higher than financial benefits from it, causing the left behind young family member to join labour market activity to supplement household income instead of completing education. On the other hand, relaxing information and network constraints migration not only reduces the transaction costs but also induces consumption and investment decision with potential spillover effect over the local community. Empirical evidences around the world therefore, depict an ambiguous relationship between migration and schooling and labour force participation outcome of the younger members of the household.

In the context of India internal migration appears to be a complex issue with multiple factors affecting it. In the economy, when there are concerns for economic growth there are also consensus that growth pattern within the

country is very unequal forcing migration of people to other economic sectors and regions. However, there exist very few studies exploring the impacts of such inter-regional disparity of economic opportunities through the channels of migration on the livelihoods of these sending households. In a recent extensive theoretical and empirical study by Nandi and Kar (2015), short-term internal migration has been found to play a significant role in the rural economy in promoting intergenerational mobility across the industries among the working sons (aged between 18-30). Unlike the previous studies, we empirically examine the impact of internal migration, both short-term and long-term by the working age male person of a household on the probability of labour force participation among left behind youth (15-24 years). We confine our analysis to male youth since female labour force participation considerably is a separate issue of concern and may be determined by a non-overlapping set of factors. Using a micro econometric frame-work we find that left behind young male members are less likely to be in the labour force with temporary (short-term) migration of male person from the household. However there exists variation in the marginal effects across the area of residence for long-term and short-term migration. Our result indicates that intermittent flow from the temporary migration can enhance schooling among the youth, while, long term absence of the household member increases the probability of labour force participation by them.

Rest of the paper is organised as follows. The second section presents the source of data and discusses the descriptive statistics. Third and fourth section describes the methodology and the estimation results respectively. Last section concludes the paper.

2. Data and descriptive statistics

We use data from the 64th round survey on employment, unemployment and migration particulars, carried out by the National Sample Survey Organisation (NSSO) during July 2007 to June 2008 in India. The survey collects information on both short-term (temporary) and long-term migration. We consider only the internal migration dividing it broadly in two categories- long-term and short-term. A person is identified as long-term migrant if last usual principal residence (UPR) at any time in the past is different from the present. However instead of having different UPR, if the nature of movement is found to be temporary we consider him as short-term migrant. This short-term migrant also incorporates those, who does not change their UPR but undertake temporary movements and had stayed away from village or town for a duration of one to six months during the last 365 days (for employment or in search of employment).

Since our focus is labour force participation of non-migrant male youth, the sample is restricted to 39,336[1] (68 per cent of total youth in the sample) male individual aged between15-24[2]. For the purpose of our study we divide these youth in two groups 'in labour force' and 'not in labour force'. Almost 53 per cent of them are in the labour force. Rest are mostly at education or enrolled (43 per cent) followed by idle or inactive (4 per cent). Nearly 10 (3,850) and 9 (3,529) per cent of the youth belong to the households with at least one 'working age male individual (aged between15-70)' internally migrated for short term and long term from the household respectively. The average age of all the youth is 19 irrespective of migration status of the working age family member.

Table I shows the percentage distribution of the youth in the labour force with respect to the migration status of the working age male member of the household for their individual (general levels of education) and household characteristics (caste, religion, household asset, consumption expenditure). We have executed a two sample 't' test and have reported whether the mean difference with respect to migration status of the family member is significant or not. We do not show the test statistics for sake of keeping the description simple. A general observation from this description is that, if youth belongs to the household with one male member internally migrated, he is significantly less likely to be in the labour force irrespective of the differences in individual and household characteristics. We find that most of the migrant sending households are systematically different from non-migrant in the context of labour force participation by youth in the household. Rate of labour force participation is noticeably higher in rural areas and more specifically from those households without any migration. The descriptive further unveils that the percentage of labour force participation is almost same in case of both temporary (52 per cent) and long-term migration (53 per cent) in the rural area. In the urban area youth are more likely to be in the labour force if the members are temporarily migrated (44 per cent) than migrated for a longer time period (42 per cent). The inverse association between both type of internal migration and likeliness

[1]Total no. of male youth in the sample is 58, 095. Nearly 45,087 of the total male youth are non-migrant (we have discarded the international migration). In order to compare the probability of labour force participation decision among youth with and without internal migration of one male member we retained the information only for those who live in a household with one member as head hence, our observation is restricted to 39,336 married or unmarried sons of the household.

[2] Following the definition of United Nations.

of labour force participation in the rural area is almost similar and significant. However, in urban area such inverse association is significant in case of long term migration.

The likeliness of labour force participation is found to be inversely associated with successive levels of education irrespective of the migration status of the family member. However, beyond higher secondary education the participation rate slightly increases. The inverse association of successive levels of education and labour force participation is stronger in case of short term compared to long term migration of the household members.

Labour force participation is generally higher among the reserve castes compared to the General category (GEN). Within the reserve castes participation rate is higher among SC (Schedule Castes) followed by OBCs (Other Backward Class) and STs (Schedule Tribe)[3]. In presence of migrant in the household youth is less likely to be in the labour force irrespective of their castes as well. However, the stated inverse association is found to be significant for temporary migration among SC and OBC household (almost by 10 and 4 percentage points respectively). In presence of long term migrant the rate of participation is significantly lower among all the castes.

For the full sample labour force participation is highest among Muslims followed by Hindus, Other and Christians. Presence of any type of migrant in the household is associated with lower rate of labour force participation among the left behind youth. This difference in the rate of participation with respect to migration status of the family member is significant for all religions except for Christians.

We have also documented labour force participation rate at different household status. Monthly consumption expenditure, land possession and existence of family enterprise are used in this regard, since information on household income is not available in the data. Labour force participation rate in general is inversely related to higher levels of consumption expenditure. In presence of short term migrant in the household youth are significantly less likely to be in the labour force for households with consumption expenditure less than 50 percentile. The difference in the rate of labour force participation with respect to migration status of the family member is not significant for consumption expenditure higher than 50 percentile. Long term migration is significantly associated with rise and fall in the labour force participation for the households with consumption expenditure 25 to 50 percentile and above 75 percentile. Therefore, short term and long term migration in this case has different implications for poorer households. While short term migration potentially can relax the credit constraint, absence of the family member for longer term has a reverse implication especially for the poorer households.

Land possession is originally a categorical variable. We grouped the variable in three categories: lower levels of land possession (no land possession-0.02 hectare), average land possession (from 0.02 hectare to 0.41 hectare) and more than average land possession (with more than 0.41 hectare). A movement from low to average land possession is always associated with considerable fall in the labour force participation among the non-migrant youth. A movement from average to larger land possession is again associated with increase in the labour force participation. The difference in this rate with respect to different migration status of the family members is also significant. This pattern remains same for both temporary and long-term migration of the household members. The likeliness of labour force participation among them remains same as full sample average if the father is self-employed. Considering the short-term and long-term migration separately we find that father's self-employment is associated with lower levels of son's labour force participation in case of lo ng-term migration compared to that in case of short-term.

The extent of the fall in the likeliness of labour force participation is more in rural area with temporary migration. The inverse association between acquired levels of education and labour force participation becomes stronger with migration more specifically if it is temporary. Such migration is again associated with fall in the labour force participation among the poorer household and the households with lower levels of land holding. This descriptive suggests the temporary migration to serve as an effective avenue of providing financial ease to families in promoting educational activity among the young male members instead of pushing them early to the labour market. Therefore, it would be interesting to see how the probability of labour force participation responds with respect to migration of the family members remaining other things same. Hence, we perform an estimation analysis to interpret the effects of all these factors in terms of their average marginal effects.

[3] Broadly there are 4 castes in India. One unreserved or General Caste. Reserved castes are of three types- Schedule Caste (SC), Schedule Tribe (ST) and Other Backward Class (OBC) respectively.

Table I

Youth labour force participation for different migration status of the household members across different attributes

	Full Sample	Short term migration		Long term migration	
Status of migration of the household member		**No migrant in the household**	**Migrant in the household**	**No migrant in the household**	**Migrant in the household**
In labour force	53	54	50	54	46
Area of residence					
Rural	56	57	52	57	53
Urban	45	47	44	48	42
Education					
No fomal education	85	86	81	85	82
Primary	84	85	79	84	82
Secondary	59	60	51	59	55
Higher secondary	36	36	32	37	30
College or more	39	40	35	40	37
Caste					
ST	52	52	50	52	45
SC	60	61	51	60	56
OBC	55	56	52	56	48
GEN	48	48	46	49	41
Religion					
Hindu	55	54	51	54	45
Muslim	60	61	53	61	57
Christian	42	42	39	42	37
Other	49	49	37	50	38
Father self employed	54	54	51	54	48
Land possession					
below average	55	56	51	57	48
at average	50	51	48	51	39
above average	53	54	50	54	44
Monthly percapita consumption expenditure (mpce)					
less than 25 percentile	66	67	55	66	66
25<=mpce<50	59	59	55	58	64
50<=mpce<75	51	51	49	51	50
75<=mpce	41	41	41	43	32
Nuber of observation	20,972	19,041	1,931	19, 358	1,614

3. Methodology

We estimate the impact of migration of working age male member on the labour force participation decision of the youth left behind in the same household. The analysis is done for short and long-term migration for rural and urban areas respectively. This required estimation of four sets of equation. Here the dependent variable 'in labour force participation' is a dichotomous response variable, which takes value 1 if the youth is in the labour force and 0 otherwise. The major explanatory variable is also a binary variable taking value 1 if at least one working male member from the household is internally migrated and 0 otherwise. However, the pool of migrants may not be a random sample. Migrants are often self-selected group in terms of motivation and risk aversion than non-migrants. The challenge is associated with selection of a proper method of estimation and instrument for migration of adult in the household to overcome the problem of endogeneity since the decisions of migration and youth employment choices are often made simultaneously. The presumption that non-migrants' households are systematically different from migrants' in observable (education, household wealth) and un-observable characteristics (motivation, income shocks) complicates identification of the effects of migration using standard probit estimation. In these cases sample selection and omitted variable problem may be present. Adults of the household who care more about the extended education of the younger members may migrate in order to earn income that can be used to finance schooling expenses. It may also be the case that negative labour market shocks (Hanson and Woodruff , 2003) experienced by adult migrant also requires the youth to work instead of continuing education. The observable factors may influence the decision of labour force participation directly as well as indirectly through the decision of the household members to migrate. This scenario leads to a spurious relation between migration and labour market choice. Variety of approaches are applied in the literature to address these issues. Edwards and Ureta (2003) have used a proportional hazard model, Demurger and Xu (2011), Nandi and Kar (2015) have used a recursive bivariate probit model to estimate the effect of migration in the context of Mexico, China and India respectively. Hosts of other studies have adapted an instrumental variable approach in this regard (McKenzie and Rapoport, 2006; Calero et al, 2009). This paper justifies the selection of the bivariate recursive probit model (Greene, 2008) with introduction of a simultaneous equation system.

The two equations to be estimated;

$$Y_{1i} = 1\ (\alpha Y_{2i} + X'_{1i}\beta_1 + \varepsilon_{1i} > 0) \quad (1)$$

$$Y_{2i} = 1(X'_{2i}\beta_2 + \varepsilon_{2i} > 0) \quad (2)$$

Where 1(.) is an indicator function. The dependent variables in the models are Y_1 (labour force participation) and Y_2 (migration of at least one male member of the household). Here the regressor vectors are X_1 and X_2 . They are comprised of the following independent variables x_1(Own education), x_2(Age), x_3(Caste), x_4(Religion), x_5(Father's education), x_6 (Mother's Education) x_7 (Land holding), x_8 (Father's Self-employment), x_9 (Dependency burden) and x_{10} (percentage of migrants from the district). X_1 Comprises of x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9 where as X_2 includes,x_3, x_4,x_7, x_8, x_9 and x_{10} The variable Y_2 is of primary interest in the first equation however it may be potentially endogeneous. Hence the model becomes recursive, simultaneous model. There are several independent variables in our specification like caste, religion and household wealth which directly influence the decision of labour force participation through their involvement in the first equation. Some of these variables also enter in the second equation and therefore, affect probability of migration of the household members. Since migration as most important explanatory variables enters in the labour force participation decision the above stated effect is transmitted back to labour force participation. The endogeneity issue arises when ε_1 and ε_2 are not independent. In order to estimate the coefficient parameters efficiently the dependence between these error terms has to be taken care of. In this context application of a recursive bivariate probit model seems to be appropriate to address all the issues discussed.

Initially the Instrumental Variable (IV) regression is applied to the analysis in order to diagnose the significance of the endogeneity. Though regression is not appropriate methodology for this model with dichotomous dependent variable but regression result never lies. Following the existing literature (Binzel and Assad, 2011; Mendola and Carletto, 2012; Nandi and Kar, 2015) we use share of adult migration in a particular district leaving the adult of the respective household as the instrument for adult migration from the household. This share is representative of migration networks. Based on the post estimation statistics (Durbin (score) and Wu Hausman) we conclude on the exogeneity of migration to the decision of labour force participation and weakness of the instrument. Finally we run a recursive bivariate probit model in order to address the issue of endogeneity in our specific framework. In this model, in addition to outcome equation of the probit model, a second equation estimates the migration decision. The covariance between the error terms of these two equations is considered to

be a measure of strength of unobservable factors in determining both the dependent (labour force participation) and the major explanatory (migration from the household) variable. The Wald test reports the significance of the correlation between the errors of the two simultaneous recursive equation and helps us to conclude about endogeneity issue.

In order to provide robust estimation results we have estimated different specifications of the four probit models progressively incorporating additional variables in the equation of labour force participation. This analysis required eight successive estimations for each group. We reported all of the marginal effects obtained from different specifications of recursive bivariate probit model for rural and urban area for short and long-term migration respectively in Table II (a), Table II (b), Table II(c) and Table II(d). The first column of every table represents the result obtained from the estimation analysis incorporating own education as the initial specification. In the following specifications we have successively incorporated age, caste, religion, father's education, mother's education, existence of household asset and dependency burden. The last three rows of each table reports the post estimation test statistics obtained from IV regression and Recursive probit estimation.

4. Estimation Results

Table II (a) reports the marginal effects obtained from the estimation of rural sample in case of temporary migration. We find the relationship between such migration of the adult and the probability of labour force participation among the youth to be quite stable across the specifications. Looking at the sign and the strength of the marginal effect we say that in the rural area temporary migration of at least one male member of the household significantly reduces the probability of labour force participation among the left behind youth. However, we also observe the magnitude of the marginal effect of such migration to vary across the specifications. In our second and third specification with inclusion of age and caste we find the magnitude of the marginal effect to decline. With inclusion of religion the magnitude increased. Again after inclusion of father's and mothers' successive levels of education as control variables in the fifth and sixth specification the marginal effect is found to decline and rise respectively. In the seventh specification with control for family's land possession the magnitude declines once more. Though the number of dependents in the household appears insignificant but its inclusion in the last specification increased the strength of temporary migration.

Long term migration in the rural area is found to exert a significant positive impact on the probability of labour force participation (Table II (b)). Strength of the long term migration of the household members in explaining the likeliness of labour force participation falls after incorporation of age. However the magnitude increases with inclusion of caste, religion, father's and mother's education in successive specifications. After incorporation of land holding of the household the magnitude of the marginal effect of long term migration decreases noticeably. The results suggest if at least one family member is migrated from the household for long term the probability of labour force participation significantly increases among the young male members of the family.

In case of the other determinants of labour force participation we find almost a similar pattern in case of both temporary and long term migration. Most of the variables under consideration show consistent pattern with their expected signs. With consecutive higher levels of education youth in the rural area are significantly less likely to be in the labour force. Older youth are significantly less likely to be in the labour force participation. It is STs and Christians who are significantly more and less likely to be in the labour force respectively. Sons with the higher educated fathers are often less likely to be in the labour force. The association is reverse in case of mothers' education. Initially with increase in the land size probability of labour force participation decreases at a larger extent compared to the large land holding.

Based on the post estimation statistics - Durbin (score) obtained from the estimation of the IV regression we reject of the null hypothesis that migration is exogenous to the decision of labour force participation for both temporary and long term migration. Besides the Wu Hausman test for weak instrument suggests that the instrument for migration is not a weak one. Finally the covariance between the error terms of the two equations of the recursive model as a measure of strength of unobservable factors in determining both the dependent (labour force participation) and the major explanatory (migration from the household) variable is statistically significant for each specification (Wald statistics is significant).

Table II (a)								
Recursive biprobit estimation results (Marginal effects)								
Area of Residence	**Rural**							
	Short term Migration							
Specifications	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Migration of the hosehold member	-0.502***	-0.327***	-0.323***	-0.364***	-0.357***	-0.375***	-0.345***	-0.347***
	(0.06)	(0.08)	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Own education								
Primary	0.010	0.081*	0.080*	0.081*	0.070*	0.072*	0.073*	0.073*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
Secondary	-0.290***	-0.222***	-0.220***	-0.216***	-0.196***	-0.199***	-0.196***	-0.196***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Higher Secondary (HS)	-0.498***	-0.565***	-0.559***	-0.551***	-0.524***	-0.524***	-0.521***	-0.521***
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
More than HS	-0.487***	-0.796***	-0.787***	-0.778***	-0.729***	-0.733***	-0.731***	-0.731***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age		0.138***	0.138***	0.138***	0.141***	0.142***	0.142***	0.142***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Caste								
ST			0.082***	0.101***	0.067***	0.063**	0.063**	0.063**
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
SC			0.056***	0.065***	0.034*	0.029	0.021	0.021
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
OBC			0.038**	0.040**	0.018	0.016	0.016	0.015
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Religion								
Muslim				0.034*	0.028	0.026	0.022	0.021
				(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Christian				-0.136***	-0.094*	-0.093*	-0.094*	-0.093*
				(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Others				-0.046	-0.039	-0.042	-0.046	-0.046
				(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Father's education								
Primary					-0.016	-0.012	-0.010	-0.009
					(0.02)	(0.02)	(0.02)	(0.02)
Secondary					-0.071***	-0.067***	-0.066***	-0.066***
					(0.01)	(0.01)	(0.01)	(0.01)
Higher Secondary (HS)					-0.133***	-0.119***	-0.116***	-0.116***
					(0.02)	(0.02)	(0.02)	(0.02)
More than HS					-0.225***	-0.216***	-0.213***	-0.213***
					(0.03)	(0.03)	(0.03)	(0.03)
Mother's education								
Primary						-0.009	-0.010	-0.010
						(0.02)	(0.02)	(0.02)
Secondary						-0.013	-0.014	-0.014
						(0.02)	(0.02)	(0.02)
Higher Secondary (HS)						-0.099*	-0.101*	-0.101*
						(0.04)	(0.04)	(0.04)
More than HS						0.046	0.046	0.046
						(0.06)	(0.06)	(0.06)
Land Possession								
at average							-0.062***	-0.062***
							(0.02)	(0.02)
above average							-0.042**	-0.042**
							(0.01)	(0.01)
Dependency Burden								0.000
								(0.00)
Wald test for Rho Chi2(1)	25.9371***	6.583**	6.394**	11.032***	9.840***	11.817***	8.39***	8.58**
Durbin (score) chi2(1)	12.4085***	0.277	0.706	2.107	3.127*	5.384**	5.14**	5.07**
Wu-Hausman F(1,20711)	12.4113***	0.277	0.706	2.107	3.125*	5.38**	5.14**	5.06**
Observation	24654	24654	24654	24654	21474	20735	20735	20735
*', '**' and '***' stands for significance at 10, 5 and 1 per cent level respectively								

Table II(b)

Recursive biprobit estimation results (Marginal effects)

Area of Residence	**Rural**							
	Long term Migration							
Specifications	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Migration of the hosehold member	0.542***	0.260***	0.282***	0.306***	0.300***	0.301***	0.248***	0.247***
	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
Own education								
Primary	0.004	0.076*	0.074*	0.076*	0.064	0.068	0.070	0.070
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
Secondary	-0.275***	-0.223***	-0.220***	-0.215***	-0.194***	-0.195***	-0.194***	-0.194***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Higher Secondary (HS)	-0.485***	-0.567***	-0.560***	-0.551***	-0.524***	-0.523***	-0.522***	-0.522***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
More than HS	-0.467***	-0.798***	-0.786***	-0.776***	-0.727***	-0.730***	-0.732***	-0.731***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Age		0.139***	0.139***	0.139***	0.141***	0.143***	0.143***	0.143***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Caste								
ST			0.084***	0.103***	0.071***	0.066**	0.065**	0.065**
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
SC			0.061***	0.070***	0.039*	0.033	0.027	0.027
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
OBC			0.042***	0.045***	0.024	0.021	0.021	0.021
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Religion								
Muslim				0.033*	0.028	0.026	0.023	0.023
				(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Christian				-0.146***	-0.106**	-0.107**	-0.103*	-0.103*
				(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Others				-0.034	-0.027	-0.030	-0.034	-0.034
				(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Father's education								
Primary					-0.020	-0.017	-0.015	-0.015
					(0.02)	(0.02)	(0.02)	(0.02)
Secondary					-0.075***	-0.071***	-0.070***	-0.070***
					(0.01)	(0.01)	(0.01)	(0.01)
Higher Secondary (HS)					-0.131***	-0.117***	-0.115***	-0.115***
					(0.02)	(0.02)	(0.02)	(0.02)
More than HS					-0.231***	-0.222***	-0.220***	-0.220***
					(0.03)	(0.03)	(0.03)	(0.03)
Mother's education								
Primary						-0.009	-0.010	-0.010
						(0.02)	(0.02)	(0.02)
Secondary						-0.019	-0.019	-0.019
						(0.02)	(0.02)	(0.02)
Higher Secondary (HS)						-0.091*	-0.091*	-0.091*
						(0.04)	(0.04)	(0.04)
More than HS						0.044	0.046	0.046
						(0.06)	(0.06)	(0.06)
Land Possession								
at average							-0.060***	-0.060***
							(0.02)	(0.02)
above average							-0.033*	-0.034*
							(0.01)	(0.01)
Dependency Burden								0.000
								(0.00)
Wald test for Rho Chi2(1)	53.92***	32.12***	45.25***	61.23***	45.75***	41.72***	27.75***	27.73***
Durbin (score) chi2(1)	98.29***	48.75***	47.16***	42.09***	23.50***	23.69***	19.77***	19.80***
Wu-Hausman F	98.68***	48.84***	47.23***	42.14***	23.51***	23.70***	19.76***	19.79***
Observation	22793	22793	22793	22793	19738	19002	19002	19002

*', '**' and '***' stands for significance at 10, 5 and 1 per cent level respectively

We find considerable variation in urban area while estimating the impact of both temporary and long term migration. Existence of a short term migrant is significantly associated with a fall in the probability of labour force participation (Table II(c)). The marginal effect is also lower compared to that in rural area. With incorporation of age such significance of migration is lost. The strength of this factor increases to significant level only after controlling the entire analysis for mother's education. Existence of any enterprise with the household does not have any significant association with the probability of labour force participation. So holds good for family's dependency burden. However, incorporation of these two factors is associated with a fall and rise in the marginal strength of the long term migration in explaining the dependent variable. However, in the urban area we do not observe any such significant association between long term migration and labour force participation among the left behind youth for any of the specifications discussed above (Table II (d)).

Similar to the analysis of the rural area in urban area we find expected signs for all the control variables to be consistent for the specifications. Higher education exerts a similar impact upon the probability of labour force participation as in case of the rural area. One observable difference with the rural area in this case is that mothers' educational level have a strong association with fall in the likeliness of the son's labour force participation. The sons with post-secondary educated mothers are significantly less likely to be in the labour force. Therefore, mother's education is found to be more decisive compared to fathers' in urban area as compared to rural area in this regard. Existence of any enterprise with the household does not have any significant association with the probability of labour force participation. So holds good for family's dependency burden.

The significant Durbin (score) statistics leads to the rejection of the null hypothesis that migration is exogenous to the decision of labour force participation. Wu-Hausman F statistics indicates the instrument is not weak. However, the covariance between the errors of the equations obtained from the recursive bivariate probit model is statistically insignificant for our each specification suggesting that the issue of endogeneity is not significant.

To sum up, the estimation results show in rural area the bivariate approach diagnoses the issue of endogeneity and also takes care of it. However, in the urban area the insignificance of the covariance suggests that the problem of endogeneity is not severe. The explanatory power of temporary migration in both rural and urban area is sufficiently large, significant and negative in magnitude. This implies that short-term migration decreases the probability of labour force participation significantly (almost by 34% and 42% in rural and urban areas respectively). This is in line with our descriptive statistics. The long term migration appeared to be associated with a significant rise in labour force participation however, such significant association observed only in rural area. The difference in the impact of short and long term migration may owe its support from the fact that the absence of the adult for a longer time period among the rural households necessitates the household's survival and substitution of young members' education by participation in the labour force participation. It may also be the case that negative labour market shocks (Woodruff and Hanson-2003) experienced by adult migration also requires the youth to work instead of continuing education. This fact is also in line with our descriptive statistics. The level of general education among youth increases the likeliness of advanced educational activity. This association is even stronger in the rural area. However, there is no difference in the marginal effects of successive levels of education on labour force participation for short-term and long-term migration. Among different castes STs are significantly more and less likely to be in the labour force in rural and urban area respectively. Religion does not exert any significance in the urban area. It is only the Christians who are significantly less likely to be in the labour force in the rural area.

Higher levels of parental education which is often considered as a proxy for permanent income of the household potentially increases the probability of youth's choice for educational activities and in turn reduces labour market activity among them. Sons with higher educated fathers are significantly less likely to be in labour force in both the areas. However, mothers' education is significant in urban area. This may be backed by several reasons. The number of sons with mothers having higher education is comparatively less in the rural areas[4]. Sons with mothers having at least formal education is most likely to be found in urban area. Therefore, it is quite possible that we may not find a significant impact of mother's higher education on the probability of the son's labour force participation in rural area. Another fact worth mentioning here is the difference in the nature of jobs available in both urban and rural

[4] In our sample for non-migrant young sons nearly 68 per cent belongs to household with mothers having no education in rural area while this percentage in the urban area is almost 40. Adding to this we also observe mothers' higher education is a phenomenon mostly associated with urban area with 23 per cent of the sons belonging to the mothers having educational qualification beyond secondary. However, this percentage is only 4 for the rural area.

Table II (c)

Recursive biprobit estimation results (Marginal effects)

Area of Residence	**Urban**							
	Short term Migration							
Specifications	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Migration of the hosehold member	-0.570**	-0.090	-0.122	-0.298	-0.359	-0.423*	-0.419*	-0.429*
	(0.19)	(0.19)	(0.19)	(0.24)	(0.24)	(0.20)	(0.21)	(0.20)
Own education								
Primary	-0.011	0.021	0.018	0.024	0.061	0.058	0.057	0.054
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Secondary	-0.278***	-0.250***	-0.243***	-0.226***	-0.173**	-0.159**	-0.159**	-0.158**
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Higher Secondary (HS)	-0.562***	-0.647***	-0.638***	-0.613***	-0.519***	-0.495***	-0.497***	-0.495***
	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
More than HS	-0.522***	-0.983***	-0.970***	-0.936***	-0.796***	-0.760***	-0.762***	-0.760***
	(0.05)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Age		0.153***	0.154***	0.154***	0.154***	0.154***	0.154***	0.154***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Caste								
ST			-0.069	-0.049	-0.097	-0.139*	-0.144**	-0.145**
			(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
SC			0.066	0.098**	0.032	0.000	-0.004	-0.003
			(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
OBC			0.089***	0.094***	0.038	0.027	0.027	0.027
			(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
Religion								
Muslim				0.090***	0.040	0.024	0.025	0.024
				(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Christian				0.051	0.072	0.094	0.091	0.092
				(0.08)	(0.09)	(0.08)	(0.08)	(0.08)
Others				-0.052	-0.067	-0.053	-0.052	-0.051
				(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Father's education								
Primary					-0.071	-0.052	-0.052	-0.051
					(0.05)	(0.05)	(0.05)	(0.05)
Secondary					-0.084*	-0.046	-0.046	-0.045
					(0.03)	(0.04)	(0.04)	(0.04)
Higher Secondary (HS)					-0.194***	-0.146***	-0.145***	-0.145***
					(0.04)	(0.04)	(0.04)	(0.04)
More than HS					-0.345***	-0.266***	-0.267***	-0.267***
					(0.04)	(0.05)	(0.05)	(0.05)
Mother's education								
Primary						-0.107**	-0.107**	-0.105**
						(0.04)	(0.04)	(0.04)
Secondary						-0.077*	-0.078*	-0.076*
						(0.03)	(0.03)	(0.03)
Higher Secondary (HS)						-0.179***	-0.178***	-0.176***
						(0.04)	(0.04)	(0.04)
More than HS						-0.162**	-0.162**	-0.159**
						(0.05)	(0.05)	(0.05)
Father's Self employm							-0.022	-0.023
							(0.02)	(0.02)
Dependency Burden								0.001
								(0.00)
Wald test for Rho Chi2(	1.71	0.059	0.181	1.74	0.96	1.37	0.793	0.703
Durbin (score) chi2(1)	2	0.031	47	2.13	5.35**	7.12**	7.08**	7.13**
Wu-Hausman F	2	0.031	0.47	2.13	5.34**	7.12**	7.08**	7.13**
Observations	9176	9176	9176	9176	9176	8900	8900	8900

*', '**' and '***' stands for significance at 10, 5 and 1 per cent level respectively

Table II (d)

Recursive biprobit estimation results (Marginal effects)

Area of Residence	**Urban**							
	Long term Migration							
Specifications	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Migration of the hosehold member	-0.011	-0.091	-0.042	0.018	0.016	0.023	0.009	0.004
	(0.06)	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)
Own education								
Primary	-0.027	0.016	0.013	0.024	0.065	0.065	0.064	0.063
	(0.07)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Secondary	-0.307***	-0.266***	-0.262***	-0.242***	-0.180**	-0.162**	-0.162**	-0.160**
	(0.04)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)
Higher Secondary (HS)	-0.580***	-0.662***	-0.654***	-0.625***	-0.515***	-0.485***	-0.487***	-0.484***
	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
More than HS	-0.535***	-1.005***	-0.993***	-0.953***	-0.793***	-0.752***	-0.753***	-0.751***
	(0.05)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Age		0.158***	0.159***	0.158***	0.158***	0.157***	0.157***	0.157***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Caste								
ST			-0.048	-0.020	-0.081	-0.120*	-0.125*	-0.126*
			(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
SC			0.091**	0.122***	0.049	0.020	0.017	0.017
			(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
OBC			0.086***	0.095***	0.036	0.024	0.023	0.023
			(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Religion								
Muslim				0.105***	0.045	0.031	0.030	0.029
				(0.02)	(0.03)	(0.03)	(0.03)	(0.03)
Christian				0.039	0.060	0.086	0.085	0.086
				(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Others				-0.012	-0.022	-0.013	-0.012	-0.010
				(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Father's education								
Primary					-0.048	-0.033	-0.034	-0.033
					(0.05)	(0.05)	(0.05)	(0.05)
Secondary					-0.097**	-0.063	-0.063	-0.063
					(0.03)	(0.03)	(0.03)	(0.03)
Higher Secondary (HS)					-0.204***	-0.154***	-0.154***	-0.154***
					(0.04)	(0.04)	(0.04)	(0.04)
More than HS					-0.386***	-0.300***	-0.302***	-0.301***
					(0.04)	(0.04)	(0.04)	(0.04)
Mother's education								
Primary						-0.086*	-0.085*	-0.084*
						(0.04)	(0.04)	(0.04)
Secondary						-0.079**	-0.079**	-0.078**
						(0.03)	(0.03)	(0.03)
Higher Secondary (HS)						-0.173***	-0.172***	-0.170***
						(0.04)	(0.04)	(0.04)
More than HS						-0.180***	-0.179***	-0.177***
						(0.05)	(0.05)	(0.05)
Father's Self employm							-0.013	-0.014
							(0.02)	(0.02)
Dependency Burden								0.001
								(0.00)
Wald test for Rho Chi2(1	4.31***	0.001	0.036	0.663	0.9043	1.8	1.746	1.96
Durbin (score) chi2(1)	2	0.031	0.474	2.13	5.35*	7.12**	7.08**	7.13***
Wu-Hausman F	2	0.031	0.473	2.13	5.34*	7.11**	7.07**	7.11***
Observations	10740	10740	10740	10740	10740	10397	10397	10397

*', '**' and '***' stands for significance at 10, 5 and 1 per cent level respectively

areas. In urban area the jobs are often not in proximity to home and are mostly associated with monetary returns however, this may not be case for rural area. Therefore, one educated mother in urban area is more likely to work and earn more than one educated mothers does in rural area. This not only eases the credit constraint but also has clear indication towards more flexibility in the financial resource allocation decision with educated mothers in the urban households compared to the rural households. The impact of existence of land possession (land possession) in the rural area is significant in this context of both types of migration. With a movement from small to larger land possession probability of labour force participation decreases significantly. Comparing the marginal effects we find that decrease in the labour force participation is larger with a movement toward average land possession compared to that toward more than average land possession.

4. Conclusion

This paper studies the diverse effect of internal migration of working age family member in determining the labour market choice of the left behind youth from the same household using a simple empirical framework after controlling for all possible sources of variation. We find that the short-term and long-term internal migration to exert differential impact on the probability of labour force participation by the left behind young male member. Short-term internal migration by the male member of the household significantly decreases such probability in both the areas while long-term absence of the working age member makes the youth more likely to be in the labour force. The result also demonstrates the significance of own as well as parental education in this regard. Though percentage of such internal migration out of total population is small, it has strong implications for the financial constraints and inter-regional inequality that the households are exposed to. Our results help to resolve the ambiguity in the relationship between migration and wellbeing of family members left behind that observed at the beginning of our study. In India the intermittent flow from the temporary migration has the potential to ease the credit constraint on the part of migrant sending households. However, this also indicates strong inter-regional inequality of the economic opportunity youth are indirectly victims of. Adding to this the significant rise in the labour force participation among the left behind youth for long-term migration of the male member from the household is alarming in the sense that such migration fails to bridge the financial gap. The disparity of economic opportunities along with the long-term absence of the family member from the household may make the youth's labour market condition even deplorable. Further analysis should aim to assess the inter-regional disparity in analyzing the impact of such migration in the context of labour market opportunities accessed in the local economy and impact of employment guarantee schemes undertaken by the government on this.

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