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Role of Remittances on Households' Expenditure Pattern in India

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Abstract

Using the unit data from the National Sample Survey (64th round, 2007-08), this paper examines the effect of remittances on the marginal spending behavior of households in India. Majority of the households reported that they spent remittances on food items, clothing bedding and foot wears, healthcare and educating the household members and on durable goods etc. The share of expenditure on different heads with respect to receipts of remittance, however, suggests that households receiving remittances spend 2 per cent less at the margin on food articles compared to households those who do not receive remittances. Further, households receiving remittances spend more at the margin on education (12 per cent), clothing and bedding & foot wears (1.5 per cent) and durable consumer goods (6 per cent), compared to those who do not receive any remittance. These findings support the theoretical argument that remittances help to increase the level of investment in human and physical capital and play an important role in raising the standard of living of the households.

1. Introduction

Remittance includes both monetary and non-monetary flows to the households by migrant workers working outside their usual place of residence (or place of birth). It is the most important linking factor between migrants and their family, which provides sustenance and contributes to the improved livelihood of the receiving households (Hoddinott, 1994; Maitra and Ray, 2003). From the theoretical perspective researchers have different opinions regarding how these remittances are spent by the households and what is their impact on economic development of the households. Some authors argue that remittances are fungible and are spent like income from any other sources, while others claim that receipt of remittances can cause behavioral changes at the household level (Brown, 1994; Alderman, 1996; Adams, 1998; Chami et al., 2003; Osili, 2004; Adams and Cuecuecha, 2010). For example, empirical studies in India have suggested that remittances are mainly spent on subsistence needs (Krishnaiah, 1997; Deshingkar et al., 2006; and Samal, 2006); however, a small proportion of that is used for investment purposes such as education, livestock, farming and small-scale enterprise etc. (Oberai and Singh, 1980; Ratha, 2003; and Mueller and Shariff, 2009). These studies have not investigated whether Indian households spend these remittances like any fungible income or the receipts of remittance really cause any behavioural changes in the household spending patterns. In order to address these questions, in this context, the main objectives of this paper is (i) to study the effect of remittances on the households' marginal spending

behavior, and, (ii) to investigate how these remittances are directed to human and physical investments in India; by estimating households expenditure functions for food and non-food goods using a nationally representative (National Sample Survey, 2007-08) household survey.

The rest of the paper is distributed into four sections. Section two outlines the data and econometric methodology used in the empirical estimation of household expenditure functions. Section three provides an overview of remittance receiving and spending pattern of households in India. Section four provides the empirical estimation household expenditure functions and section five concludes the paper.

2. Data and Econometric Method

This paper uses the unit data of 64th quinquennial survey (schedule 10.2), conducted by the National Sample Survey Organisation (NSSO) in 2007-08. This is the nationally representative and large-scale household level survey that covered 125,578 household (79,091 in rural areas and 46,487 in urban areas) all over the country. It was designed to collect information on employment & unemployment and migration particulars of the household members, which provides quantitative information on migration and remittances. The important characteristics relating to migration include: household migration, migrants, short-term migrants and out-migrants. The information on remittances include: the amount of remittance received during last 365 days and the different heads on which households spend these remittances. In this paper, the households those reported out-migration of their members but did not receive any remittance are recorded as non-remittance households. The household total expenditure is split into five main categories viz., expenditure on food and consumer goods, expenditure clothing, bedding & footwear, expenditure on health care, expenditure on education, and expenditure on consumer durables. The information on food and consumer goods expenditure is collected in a reference period of 30 days, whereas the information on all other categories of expenditures is collected in a reference of 365 days. These values are standardised for a period of 30 days for the sake of comparison.

The household expenditure functions are estimated using an Engel curve framework that allows us to analyse the marginal expenditure patterns of remittance-receiving and non-receiving households. The Working-Leser specification (Working, 1943; and Leser, 1963) is a popular method used in empirical estimation of Engel curve that provides a good statistical fit to a wide range of goods, including food, clothing, health, education and durable goods. This specification also mathematically allows for rising, falling or constant marginal propensities to spend over a broad range of goods and expenditure levels (Adams and Cuenca, 2010). The Working-Leser specification is expressed as:

$$w_{ij} = \alpha_j + \beta_j \ln(X_i) + \varepsilon_{ij} \quad (1)$$

Where w_{ij} is the budget share of good j in household i (i.e., the ratio of expenditure on good j to total household expenditure), X_i is total household expenditure, α_j and β_j are parameters to be estimated and ε_{ij} is stochastic error term. Studies like Deaton (1997), Castaldo and Reilly (2007) and Adams and Cuenca (2010) have included a vector of socioeconomic and locational factors other than expenditure. This is presented as:

$$w_{ij} = \alpha_j + \beta_j \ln(X_i) + \gamma_j z_i + v_{ij} \quad (2)$$

($i = 1, 2, 3, \dots, n$)

here γ_j is an unknown parameter vector to be estimated and relates to household and other characteristics contained in the Z_i vector, and v_{ij} is an error term that captures the unknown variation in the j^{th} budget share for the i^{th} household and for which standard econometric assumptions are made. From equation (2) marginal budget shares for the i^{th} goods (MBS _{i}) can be derived as follow:

$$\frac{d}{dX_i} (w_{ij} \times X_i) = \alpha_j + \beta_j (1 + \ln(X_i)) + \gamma_j z_i + v_{ij} \quad (3)$$

Additional modification of the model (equation 2) is necessary to study household behaviour with respect to receipts of remittance. Since there are three mutually exclusive states (s): (1) receive no remittances; (2) receive internal remittances (from India); and (3) receive international remittances (from rest of the world), and the households have to decide an optimal consumption share choosing particular state. We have a

polychotomous choice model. According to Dubin and McFadden (1984), there is every possibility of containing correlated error components that leads to selection bias. In order to overcome this problem Dubin and McFadden (1984) selection correction method is used. Dubin and McFadden (1984) generalised the Heckman (1979) two-stage method using instrumental variables and nonlinearity in the selection model. This method performs better than other selection methods in Monte Carlo experiments (Bourguignon et al., 2004). Adding a selection term in Equation 2 will provide the following:

$$w_{ij} = \alpha_j + \beta_j \ln(X_i) + \gamma_j z_i + \lambda_j S_{jc} + v_{ij} \quad (4)$$

where S_{jc} represents the selection correction variable related to choice C. The parameter λ_j to be estimated is directly proportional to the correlation between the error terms of the consumption and the choice equations. The effect of remittances on the marginal spending behavior of households is estimated following the multiple treatments literature. Lechner (2002) suggested that the pairwise comparison of treatments is enough to identify Average Treatment Effects on the Treated (ATT). ATT is defined as:

$$ATT_{jc} = E(MBS_i | c = i) - E(MBS_j | c = i) \quad (5)$$

Empirical estimation including the first stage choice equation (using a multinomial logit model), second-stage household expenditure functions (equations 4), and estimated marginal budget share and average treatment effects (equation 5) for non-remittance and remittance receiving households in India are given in section four table 4, 5, 6 and 7 respectively. To find out the impact of remittance on households' expenditures we have estimated the marginal budget shares for these five categories of expenditure for each type of household using the coefficients from tables 5, 6 and 7. The counterfactual marginal budget shares also used in the estimation of the two pairwise Average Treatment Effects on the Treated (ATT). These counterfactuals represent the expenditure that households that chose to receive remittances would have had without the receipt of remittances. It is obtained using the equation for expenditure shares for households that receive no remittances on households that receive remittances, taking into account the selection part that the household receives remittances.

3. Remittance receiving and spending pattern of households in India

Discussion begins with table 1 which presents the percentage of households reporting out-migration, receipts of remittance and average annual remittances received. It is observed that about 27 per cent (30.4 percent of rural and 19.3 percent of urban) of the households reported out-migration of their household members during 2007-08. The percentage of households reporting out-migration varies across the states in India. The percentage of households reporting out migration is highest in Kerala (49.1 per cent), followed by Himachal Pradesh (47.5 per cent), Haryana (38.5 per cent), Uttaranchal (35.8 per cent), Uttar Pradesh (35.6 per cent), Rajasthan (35.3 per cent), West Bengal (29 per cent), Maharastra (28.9 per cent), Odisha (26.9 per cent), Gujarat (25.8 per cent), Bihar (24.9 per cent) and Punjab (23 per cent). It may be noted that out-migration is high in both relatively developed and underdeveloped states in India. Migrants from relatively under developed states migrate to other states for employment (Joshi and Joshi, 1976; Dupont, 1992; Gupta, 1993; Bhattacharya, 1998; Srivastava, 1998; Kundu and Gupta, 1996; Vijay, 2005; Mitra, 2006; Deshingkar et al., 2006; Mitra and Murayama, 2008; Deshingkar and Akter, 2009; and Awasthi, 2010), whereas large number of people from Kerala, Tamil Nadu, Andhra Pradesh, Gujarat, and Punjab migrate to other countries (Khadria, 1999, 2001 and 2002; Zachariah et al., 2002; Lal, 2007) . However, percentage of households reporting out migration is lowest in Delhi (6.8 per cent). This may be due to the fact that Delhi is one of the major destination places for internal migrants in India. About 34 per cent of the Indian household reported receipts of remittance out of those were reporting out migration of their family members. The percentage of households reporting remittance is highest in Bihar, followed by Jharkhand, Odisha, Meghalaya, Uttaranchal, Assam, Himachal Pradesh, Jammu & Kashmir, Kerala, Tamil Nadu, and Uttar Pradesh with rural-urban differentials. In most of the states, percentage of households reporting remittance is higher in rural areas as compared to urban areas. The average remittance received (during last 365 days) by Indian households is about Rs. 23989. The remittance received by urban households (Rs. 43589) is much higher than that of rural households (Rs. 20737). It is also observed that there exists huge discrepancy in the average amount remittance receipts across the states in India. Among all, states like

Table 1: Households reporting out-migrants, receipt of remittance and average remittance received by sectors in India, 2007-08

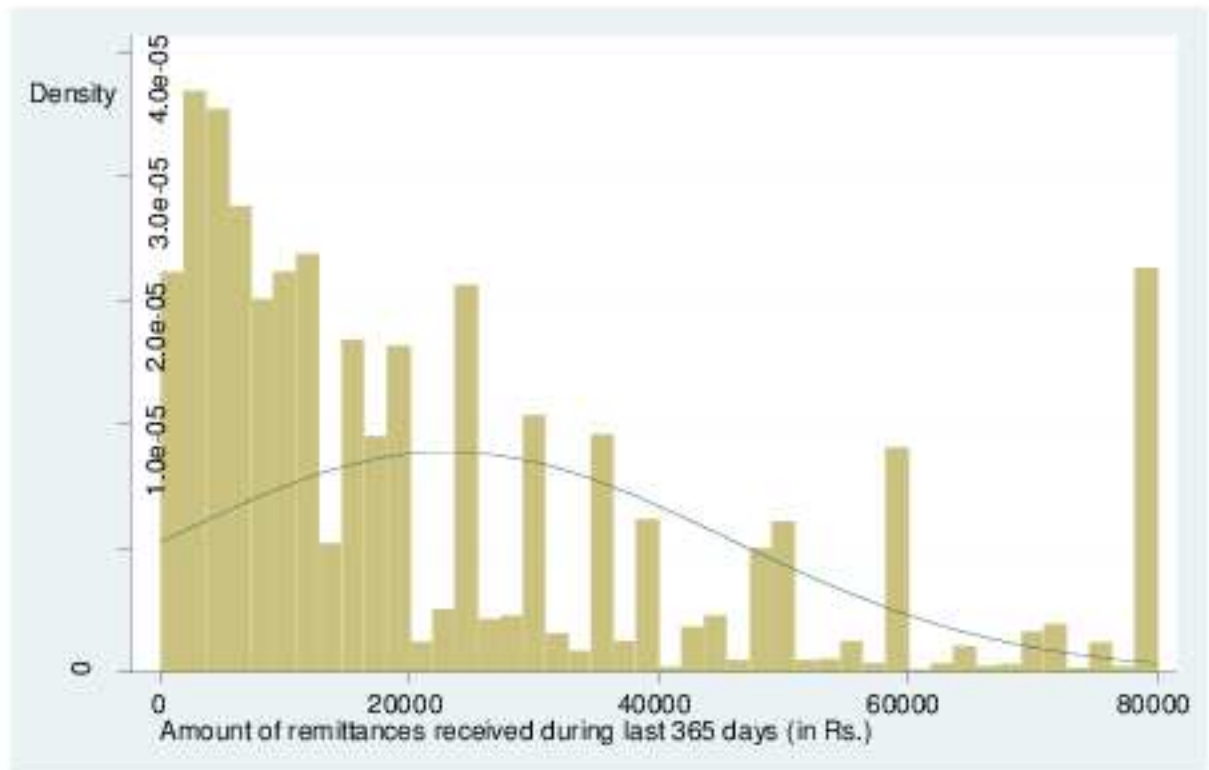
Name of the State	No. of Sample Households	Households Reporting out migration of their family members (%)			Households received remittance among those reporting out-migrant (%)			Average annual household remittance received (in Rs.)		
		Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Jammu & Kashmir	2128	23.6	16.0	22.2	46.2	33.8	44.6	44427	52578	45259
Himachal Pradesh	2228	49.9	27.4	47.5	46.5	21.2	44.9	23163	41091	23689
Punjab	3191	27.4	15.3	23.0	31.1	17.5	27.8	83527	78681	82785
Uttaranchal	1651	40.9	21.4	35.8	51.9	34.9	49.2	18826	44173	21638
Haryana	2384	41.2	32.4	38.5	15.8	11.5	14.7	44454	60277	47551
Delhi	1525	12.4	6.5	6.8	2.4	3.3	3.2	20467	79309	74120
Rajasthan	5494	37.4	28.7	35.3	38.2	21.8	35.0	28059	51328	30890
Uttar Pradesh	12603	39.1	23.6	35.6	43.7	25.1	41.0	14677	26690	15758
Bihar	8785	25.8	16.8	24.9	74.5	61.4	73.6	15148	33350	16163
Arunachal Pradesh	1411	14.6	9.2	13.3	41.9	53.1	43.9	13951	20048	15243
Nagaland	1760	20.5	15.0	19.1	38.7	46.5	40.3	14634	15556	14851
Manipur	2880	14.3	10.7	13.3	43.7	55.2	46.3	31650	45836	35415
Tripura	2880	9.7	10.1	9.8	58.6	57.1	58.3	23128	38924	26252
Meghalaya	1759	9.5	6.0	8.8	47.9	62.6	49.8	27803	47583	30912
Assam	3040	15.6	11.8	15.2	47.1	48.1	47.2	14243	24240	15125
West Bengal	8770	31.1	23.1	29.0	32.5	21.1	30.1	14877	35304	17883
Jharkhand	3082	13.6	12.7	13.4	66.8	58.5	65.3	21961	36075	24233
Odisha	5180	28.5	18.5	26.9	51.8	40.0	50.6	13848	38278	15856
Chhattisgarh	2393	16.0	18.8	16.5	27.7	15.7	25.3	8209	23001	10016
Madhya Pradesh	6908	24.3	16.2	22.3	13.9	16.7	14.4	10084	29383	14081
Gujarat	5157	30.0	19.3	25.8	14.4	9.5	12.9	15147	39900	20492
Maharastra	10044	35.4	20.0	28.9	22.7	13.1	19.9	12127	44151	18262
Andhra Pradesh	8702	26.7	17.3	24.2	16.3	18.1	16.7	19892	55797	27426
Karnataka	5240	27.6	13.3	22.7	24.1	21.2	23.5	13977	47421	20128
Kerala	3515	50.9	43.8	49.1	44.9	40.0	43.8	51212	59617	52933
Tamil Nadu	7089	23.3	15.5	19.9	40.1	42.7	41.0	22505	42411	29536
Others	5779	15.2	12.7	13.9	29.4	39.0	34.2	68640	122945	99403
Total	125578	30.4	19.3	27.2	36.5	24.0	34.0	20737	43589	23989

Source: Calculation from NSS Unit data, 2007-08

Punjab, Kerala, Tamil Nadu and Andhra Pradesh have dominated in the average receipts of remittance during 2007-08. Among these four states, Punjab, Kerala and Tamil Nadu have large number of international migrants (Khadria, 1999, 2001 and 2002; Zachariah et al., 2002) and therefore, are expected to receive more international remittance. But the

remittance received by the households in Andhra Pradesh, Bihar, Jharkhand, Odisha, Meghalaya, Uttaranchal, Assam, Himachal Pradesh and Uttar Pradesh are mainly coming from within India, since huge share of out-migrants from these states are found working in other states of India (Mitra, 2006; Deshingkar et al., 2006; Mitra and Murayama, 2008; Deshingkar and Akter, 2009; and Awasthi, 2010). By plotting the distribution of remittances received by the households (Fig 1), it is found that a huge segment of the households received less than Rs. 20,000 per annum. This fact proposes an important research question about the role of remittance in the households spending patterns, particularly, those who belong to the lower quintile of the income distribution in India.

Figure 1: Distribution of remittances received by the households in India.



Source: Based on NSS Unit data, 2007-08

Table 2: Remittances and average households' annual expenditure in India, 2007-08

Name of the State	No. of Sample Households	Remittances as % of Household expenditure	Average annual household expenditure of remittance receiving households (Rs.)	Average annual household expenditure of remittance not receiving households (Rs.)	Difference in average household annual expenditure	
					Difference	t-statistics
Jammu & Kashmir	2128	60.9	82680	62332	20348	9.53***
Himachal Pradesh	2228	50.2	59392	55381	4011	2.21**
Punjab	3191	79.8	91276	70396	20880	9.07***
Uttaranchal	1651	52.1	52778	50777	2001	1.09
Haryana	2384	67.8	76657	66182	10475	3.54***
Delhi	1525	72.0	116291	79226	37065	3.78***
Rajasthan	5494	62.4	55259	51730	3529	3.30***
Uttar Pradesh	12603	42.7	49057	44321	4736	8.06***
Bihar	8785	49.9	38445	35820	2625	5.06***
Arunachal Pradesh	1411	36.0	63071	55051	8020	2.63***
Nagaland	1760	21.5	82122	78162	3960	1.96**
Manipur	2880	80.7	52420	46268	6152	7.42***
Tripura	2880	58.1	51199	43170	8029	7.58***
Meghalaya	1759	57.8	62727	53715	9012	4.96***
Assam	3040	39.8	55388	52036	3352	2.16**
West Bengal	8770	49.5	44487	41463	3024	2.74***
Jharkhand	3082	54.3	51961	39293	12668	10.64***
Odisha	5180	42.4	40625	34851	5774	4.67***
Chhattisgarh	2393	29.1	42412	39428	2984	2.07**
Madhya Pradesh	6908	38.8	46041	41324	4717	5.22***
Gujarat	5157	48.7	51847	57356	-5509	-4.10***
Maharastra	10044	39.1	54085	58449	-4364	-2.90***
Andhra Pradesh	8702	65.4	43887	42759	1128	1.12
Karnataka	5240	44.8	44703	48946	-4243	-3.11***
Kerala	3515	82.1	68728	60100	8628	4.23***
Tamil Nadu	7089	74.8	43007	41752	1255	1.39
Others	5779	63.1	75241	66480	8761	5.66***
Total	125578	53.9	52613	49425	3188	11.61***

Source: Calculation from NSS Unit data, 2007-08

To study role of remittances in economic wellbeing of household, we have computed remittances as percentage of household consumption expenditure, average annual household expenditure of remittance receiving and not receiving households as well as absolute difference in annual household expenditure of remittance receiving and not receiving households. These estimates are presented in table 2, which suggest that

remittances as a percentage of household expenditure (of those who received remittances) is about 54 percent in India. Remittance as a percentage of household expenditure is highest (about 80 percent in Punjab, Kerala and Tamil Nadu) in the states that receipts international remittance. Likewise, remittances constitute about 80 to 45 percent of household expenditure in the major states like Manipur, Andhra Pradesh, Bihar, Jharkhand, Odisha, West Bengal, Meghalaya, Uttaranchal, Assam, Karnataka, Himachal Pradesh and Uttar Pradesh. Apart from Gujarat, Maharashtra and Karnataka the average annual household expenditure of remittance receiving households are greater than that of remittance not receiving households in all other states of India. Apart from Uttaranchal, these differences are statistically significant across the states in India. Given this, now let's find out how the households spend these remittances in order to improve their living standards.

The households those reported remittances were asked to report the uses of remittance in three descending orders. The information on uses of remittance is given in 12 different heads. We have reclassified the remittance use into 10 major categories and presented in table 3. Based on their first preference, majority of the households (about 76 percent of the households) reported that they use remittance for food and other consumer goods expenditure purposes. And there is a state level variation (that ranges from 58 to 89 percent) in the percentage of households those reporting use of remittance on food and other consumer goods expenditure. Since a large percentage of households reporting remittance use on basic necessities, it can be stated (as in Krishnaiah, 1997; Deshingkar et al., 2006; and Samal, 2006) that remittance plays an important role in improving the living standards of the households belonging to the lower economic quintiles in particular. However, it is important to note that about 7 percent of the households (over 10 percent in most of the states) in India spent remittances on health care. Increasing expenditure on health care has an important labour market implication, which increases the labour productivity and hence responsible for initiating economic growth. Furthermore, using remittance in repaying past debts will have positive psychological impacts on the household members by reducing social stress. Spending remittance on

housing improves the living conditions, whereas increasing expenditure on education will have better long term consequences.

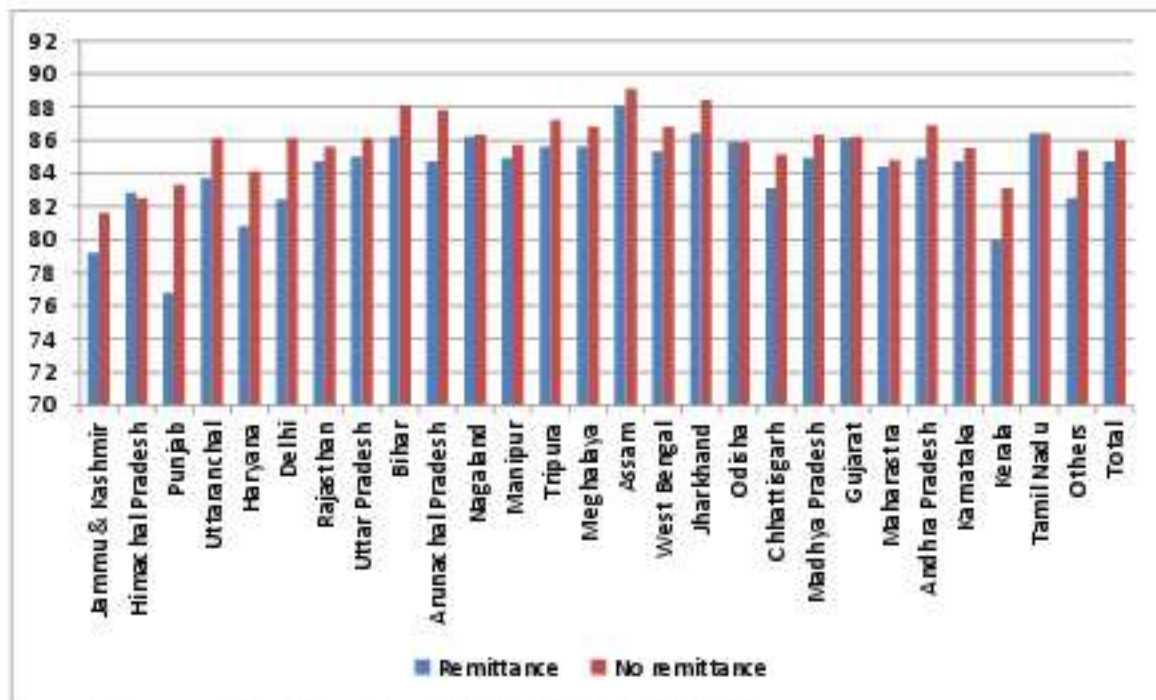
Table 3: Percentage of households reporting the use of remittance on different heads in India, 2007-08

Name of the State	Use of Remittance on Different Heads									
	Food items	Other consumer items	Household durables	Education	Health care	Housing	Marriage & ceremonies	Initiating Business, Saving & Investment	Debt repayment	Others
Jammu & Kashmir	74.0	7.6	0.7	0.9	3.7	8.6	1.7	1.8	0.3	0.6
Himachal Pradesh	83.0	6.4	0.2	1.5	2.8	1.8	1.2	2.6	0.2	0.3
Punjab	56.1	12.4	1.1	1.5	3.7	5.8	4.0	6.1	6.7	2.7
Uttaranchal	82.2	3.8	0.1	1.1	2.5	4.9	1.8	0.6	0.0	3.0
Haryana	64.6	11.3	0.9	2.2	5.7	2.2	1.9	4.3	1.7	5.2
Delhi	84.2	4.3	0.0	2.1	3.0	0.0	0.0	4.3	0.0	2.1
Rajasthan	70.5	10.1	0.2	0.8	1.7	3.6	1.8	1.8	6.9	2.7
Uttar Pradesh	62.6	13.7	0.8	2.7	10.2	2.4	2.8	1.1	2.1	1.6
Bihar	69.3	9.9	0.8	0.4	6.5	3.1	2.3	0.8	0.9	6.0
Arunachal Pradesh	46.6	11.3	0.6	2.5	16.4	4.3	3.5	0.0	2.4	12.4
Nagaland	49.4	18.2	2.7	5.2	7.5	1.8	1.3	2.7	1.8	9.5
Manipur	58.7	14.7	0.0	2.7	3.6	3.6	1.9	3.1	3.9	7.9
Tripura	81.8	4.8	0.3	0.5	5.6	0.5	0.7	0.1	0.8	4.8
Meghalaya	79.9	5.8	0.0	3.5	6.8	0.3	0.0	1.6	0.0	2.0
Assam	66.0	6.8	2.3	0.5	10.4	4.1	2.2	3.0	1.3	3.4
West Bengal	75.7	6.2	0.8	0.9	5.7	4.5	1.6	1.7	1.5	1.4
Jharkhand	71.3	6.7	0.7	1.1	10.1	3.5	1.5	0.9	2.0	2.2
Odisha	65.1	9.3	0.6	0.7	4.1	7.7	2.6	2.0	7.1	0.9
Chhattisgarh	53.5	10.8	1.0	1.1	12.9	6.7	6.1	1.3	1.0	5.6
Madhya Pradesh	64.7	6.8	2.1	1.4	10.4	5.2	2.1	2.0	2.7	2.8
Gujarat	64.2	11.6	1.3	0.4	7.2	3.9	1.2	3.1	1.8	5.2
Maharastra	68.0	9.1	1.3	1.6	11.1	2.4	1.6	2.0	1.2	1.7
Andhra Pradesh	58.0	5.1	0.4	1.1	6.9	4.1	1.0	7.4	13.8	2.2
Karnataka	69.4	8.6	3.0	1.3	5.6	3.8	3.2	1.4	3.3	0.4
Kerala	62.6	6.0	0.5	1.0	9.1	3.5	1.6	2.0	12.3	1.4
Tamil Nadu	64.7	4.2	0.2	1.2	5.9	2.0	0.9	4.7	14.6	1.6
Others	72.4	5.6	0.6	1.9	3.1	2.5	1.8	9.9	1.3	1.0
Total	66.6	9.2	0.8	1.4	7.3	3.5	2.1	2.1	4.5	2.4

Source: Calculation from NSS Unit data, 2007-08

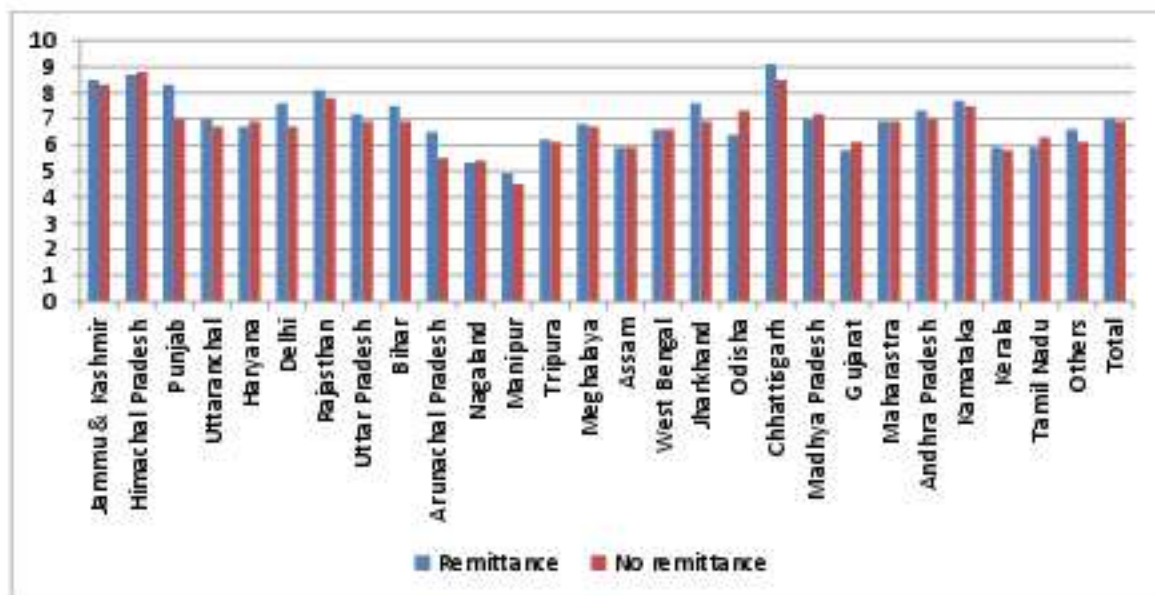
To understand the household spending behaviour with respect to the receipts of remittances we have compared the average budget share of both remittance receiving and not receiving households. The budget shares on food and consumer goods, clothing and bedding, health care, education as well as on durable goods are presented in figure 2, 3, 4, 5 and 6 respectively. It is found that the proportion of spending on food and consumer goods is higher for the non-remittance households as compared to remittance receiving households (see figure 2). The proportion of spending on clothing and bedding (fig 3), health care (fig 4) and durable goods (fig 6), on the other hand, suggest that the shares of expenditure on these goods are positively influenced by the receipts of remittance. The households receiving remittance on the average spend a higher proportion of their expenditure on these goods as compared to their non-remittance counterparts. The share of expenditure on education (fig 5), however, shows an undistinguishable picture. In some states the proportion of spending on education higher for remittance receiving households than the non-remittance households, and for some others, it is the other way round.

Figure 2: Percentage share of households' expenditure on food and consumer goods by receipt of remittance



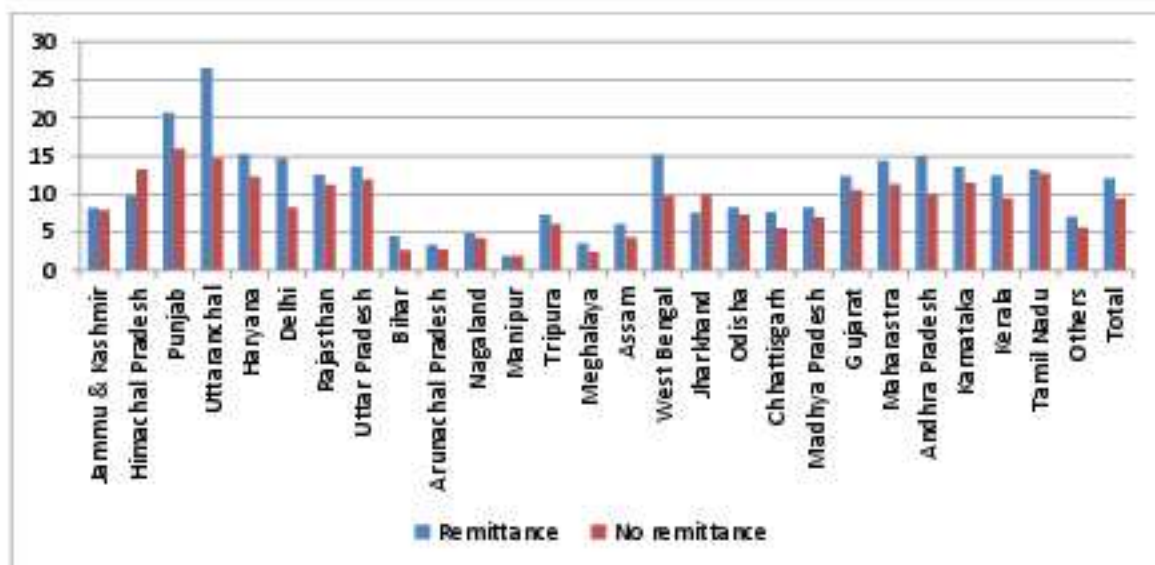
Source: Calculation from NSS Unit data, 2007-08

Figure 3: Percentage share of households' expenditure on clothing and bedding by receipt of remittance



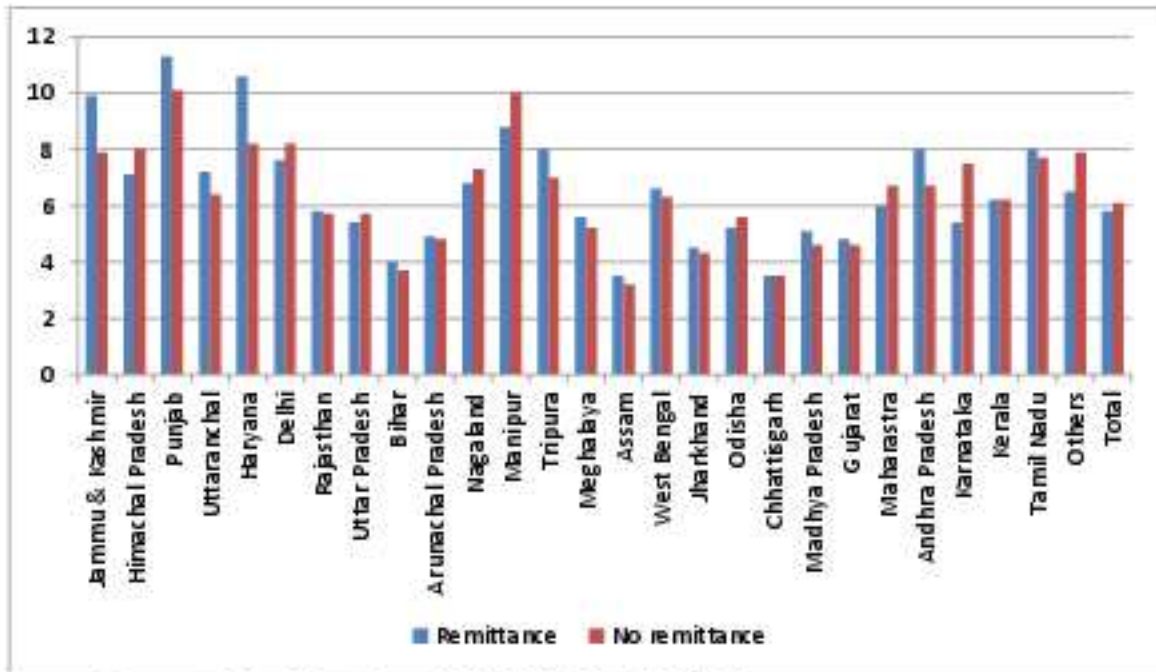
Source: Calculation from NSS Unit data, 2007-08

Figure 4: Percentage share of households' expenditure on health care by receipt of remittance



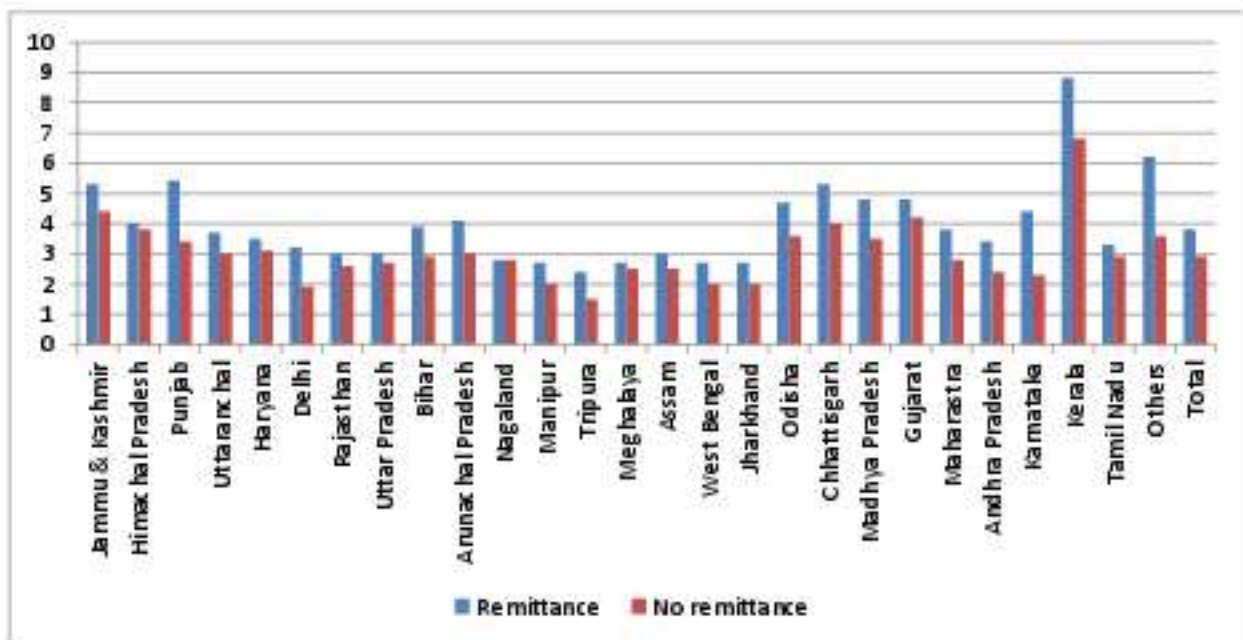
Source: Calculation from NSS Unit data, 2007-08

Figure 5: Percentage share of households' expenditure on Education by receipt of remittance



Source: Calculation from NSS Unit data, 2007-08

Figure 6: Percentage share of households' expenditure on durable goods by receipt of remittance



Source: Calculation from NSS Unit data, 2007-08

4. Estimated Results

The result obtained from the first-stage multinomial logit model is presented in table 4. It is important note that the instrumental variables (viz., monthly per capita expenditure and region dummies) are highly significant. The monthly per capita expenditure dummies are important determinants of both internal and international migration India. The households having better standard of living are able to provide better education to their children. And it is expected that the probability of migration increases with the increase in level of education. That is reflected through the positive coefficients of monthly per capita expenditure dummies in both the equations. The coefficients of region dummies, however, explain the distress and aspiration motives of migration. The migrants belong to the eastern region (states with relatively high level of poverty head counts) are more likely to migrate internally out of income distress. The probability of international migration (mainly to obtained better opportunities) is high in the northern, western and southern regions that consist of high and middle income states in India.

The results of the second-stage equation for each expenditure category and for each type of household are given below. The households with no remittances, households receiving internal remittances and households receiving international remittances are presented in tables 5, 6 and 7 respectively. The most important variable in these three tables is the selection term (λ). In table 5 and 6 these λ variables are significant in most of the expenditure equations, and for households receiving international remittances (table 7) it is significant for food expenditure only. These results suggest that selectivity in unobservable components matters for households receiving internal or international remittances. Hence, estimations ignoring the selectivity part of the model would be biased. The values of R^2 (measure of goodness of fit) are fair enough for cross section data and the F-statistics of all the three equations are highly significant that rejecting the null hypothesis that the joint influence of all explanatory variables on households' expenditure is zero. The coefficient of logarithm of total expenditure is negative in case of food and clothing equations, and positive in health, education and durable goods expenditure equations. This result is as expected, which implies the fact

that higher the standard of living lower is the share of expenditure devoted to necessary goods. This result is consistent with the standard Engel's law.

Table 4: Multinomial logit model using Dubin-McFadden method

Variables	Receive internal remittance (from within India)			Receive international remittance (from outside India)		
	Coefficient	Z-Value	ME	Coefficient	Z-Value	ME
Constant	-4.936	-56.5***	---	-8.216	-32.5***	---
Household size	-0.009	-1.7*	-0.0005	-0.073	-5.7***	-0.0002
Male migrant dummy	5.326	144.3***	0.6527	4.590	50.4***	0.0212
Female migrant dummy	0.246	10***	0.0130	0.058	1.1	0.0001
Household monthly per capita expenditure group dummy (reference category-Quintile1)						
Quintile2	0.064	1.7*	0.0031	0.702	6.3***	0.0025
Quintile3	0.108	2.8***	0.0053	0.991	9.2***	0.0039
Quintile4	0.099	2.5**	0.0048	1.196	11.2***	0.0051
Quintile5	0.164	3.8***	0.0079	1.771	16.6***	0.0093
Household type dummy (reference category-self-employed in non-agriculture)						
self-employed in agriculture	0.313	9***	0.0168	-0.195	-2.3**	-0.0006
Salary earnings	0.010	0.2	0.0005	0.058	0.7	0.0002
Labourer	-0.045	-1.3	-0.0022	-0.440	-4.9***	-0.0011
others	1.100	29.5***	0.0786	0.929	12.7***	0.0033
Social group dummy (reference category-Scheduled tribe)						
Scheduled caste	0.101	2.2**	0.0049	1.008	5.5***	0.0041
Other backward caste	0.036	0.9	0.0016	1.291	7.6***	0.0046
Others	0.021	0.5	0.0008	1.376	8.2***	0.0054
Religion group dummy (reference category-other religion)						
Hindu	0.298	5.1***	0.0141	-1.543	-16.1***	-0.0075
Muslim	0.494	7.2***	0.0292	-0.284	-2.5**	-0.0008
Christian	0.016	0.2	0.0009	-0.841	-6.3***	-0.0017
Landholding dummy (reference category-less than 0.005 hectare)						
0.005-1 hectare	0.091	2.9***	0.0045	0.050	0.7	0.0001
1 to 2 hectares	-0.051	-1.0	-0.0024	-0.397	-3.1***	-0.0010
2 to 4 hectares	-0.095	-1.6	-0.0045	-0.135	-1.0	-0.0003
4 to 8 hectares	-0.273	-2.9***	-0.0120	-0.599	-2.6***	-0.0013
Above 8 hectares	-0.381	-2.9***	-0.0160	-0.137	-0.6	-0.0003
Region dummy (reference category-Eastern Region)						
Western	-0.493	-12.6***	-0.0215	1.019	8.5***	0.0044
Northern	-0.197	-4.2***	-0.0094	1.134	9.0***	0.0054
Southern	-0.423	-11.8***	-0.0194	1.842	16.7***	0.0103
Central	-0.739	-20.8***	-0.0300	-0.366	-2.6***	-0.0009
North Eastern	-0.125	-2.7***	-0.0059	-0.579	-3.2***	-0.0013
Pseudo R ²	0.5494					
LR chi2(54)	80207.77					
Observations (N)	120566					

Source: Author's Estimation

Note: (i) Base category is non-remittance households (ii) For dummy variables marginal effect (ME) implies the discrete change from 0 to 1 and (iii) a *, ** and *** imply 1 per cent, 5 per cent and 10 per cent level of significance respectively.

Table 5: Household Expenditure Estimates for the Households receiving no remittances using Dubin-McFadden method (selection corrected)

Variables	Food & Consumer goods		Clothing, bedding & foot wear		Health care		Education		Household durables	
	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value
Constant	1.343	281***	0.128	72.4***	-0.461	-29.4***	-0.224	-46.3***	-0.133	-47.9***
Log(mpce)	-0.062	-99.9***	-0.009	-39.0***	0.072	35.5***	0.039	62.8***	0.023	61.9***
Household size	-0.011	-78.4***	0.0003	6.2***	0.004	8.3***	0.002	12.9***	0.001	17.2***
Household type dummy (reference category-self-employed in non-agriculture)										
self-employed in agriculture	0.003	2.6***	-0.001	-2.5**	0.014	4.0***	0.005	4.4***	-0.002	-3.0***
Salary earnings	0.005	5.0***	0.001	3.5***	-0.008	-2.4**	-0.005	-5.2***	-0.002	-3.2***
Labourer	0.001	0.6	-0.001	-3.8***	0.021	7.0***	-0.001	-1.4	0.001	1.1
Others	-0.014	-13.1***	0.001	1.7*	0.004	1.1	0.024	22.2***	-0.003	-3.8***
Social group dummy (reference category-Scheduled tribe)										
Scheduled caste	-0.001	-1.3	-0.002	-4.4***	0.041	10.3***	0.008	6.6***	-0.003	-4.0***
Other backward caste	-0.001	-1.1	-0.002	-5.4***	0.023	6.7***	0.008	7.8***	-0.002	-3.2***
Others	-0.002	-2.0**	-0.001	-3.3***	0.015	4.4***	0.010	9.7***	-0.003	-5.4***
Religion group dummy (reference category-other religion)										
Hindu	-0.007	-4.6***	-0.002	-3.3***	0.027	5.9***	-0.002	-1.4	0.007	8.1***
Muslim	-0.0002	-0.1	-0.001	-1.2	0.030	5.6***	-0.010	-6.1***	0.008	8.5***
Christian	0.003	1.4	-0.005	-7.1***	-0.012	-2.3**	0.001	0.4	-0.001	-0.7
Landholding dummy (reference category-less than 0.005 hectare)										
0.005-1 hectare	-0.010	-14.9***	0.003	10.5***	-0.016	-6.6***	-0.003	-3.5***	0.005	13.0***
1 to 2 hectares	-0.013	-10.3***	0.007	15.3***	-0.023	-5.2***	-0.005	-4.2***	0.008	10.6***
2 to 4 hectares	-0.017	-9.8***	0.009	14.4***	-0.017	-3.1***	-0.006	-3.7***	0.010	11.0***
4 to 8 hectares	-0.013	-4.2***	0.010	8.8***	-0.022	-2.5**	-0.010	-3.5***	0.010	6.1***
Above 8 hectares	-0.017	-3.7***	0.013	7.8***	-0.007	-0.5	-0.009	-2.2**	0.010	4.0***
Sector dummy (reference category-Rural area)										
Urban area	0.004	4.7***	-0.001	-2.9***	-0.020	-7.0***	0.011	12.7***	-0.006	-13.0***
Lambda 1	0.002	2.5**	0.0003	1.0	0.002	0.7	-0.005	-7.4***	0.001	3.6***
Lambda 2	-0.016	-3.5***	-0.003	-1.8*	0.053	4.7***	-0.025	-5.7***	0.015	5.5***
Adjusted R ²	0.16		0.0415		0.146		0.149		0.066	
F-statistics	886.28		201.82		96.03		531.08		266.73	
Observations (N)	92925		92694		11118		60573		74926	

Source: Author's Estimation

Note:

1. *, ** and *** imply 1 per cent, 5 per cent and 10 per cent level of significance respectively.
2. MPCE- monthly per capita consumption expenditure.

Table 6: Household Expenditure Estimates for the Households receiving internal remittances using Dubin-McFadden method (selection corrected)

Variables	Food & Consumer goods		Clothing, Bedding & foot wear		Health care		Education		Household durables	
	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value
Constant	1.388	140***	0.133	38.6***	-0.522	-17.5***	-0.181	-18.6***	-0.162	-25.5***
Log(mpce)	-0.071	-55.2***	-0.009	-20***	0.088	23.1***	0.034	26.8***	0.028	34***
Household size	-0.011	-42.0***	0.0006	6.2***	0.001	0.7	0.002	8.6***	0.001	5.5***
Household type dummy (reference category-self-employed in non-agriculture)										
self-employed in agriculture	-0.006	-2.7***	0.001	1.5	0.028	4.3***	0.007	3.6***	0.000	-0.3
Salary earnings	-0.002	-0.9	0.003	3.2***	-0.025	-3.3***	0.001	0.4	0.002	1.2
Labourer	-0.007	-3.2***	0.000	0.2	0.028	4.3***	-0.001	-0.3	0.001	1.0
others	-0.014	-5.8***	0.000	-0.5	0.026	3.3***	0.025	11.1***	-0.005	-3.7***
Social group dummy (reference category-Scheduled tribe)										
Scheduled caste	-0.003	-1.4	-0.002	-3.0***	0.032	4.2***	0.007	2.8***	0.001	0.5
Other backward caste	0.003	1.3	-0.003	-4.2***	0.010	1.5	0.007	3.3***	-0.001	-1.0
Others	0.003	1.4	-0.002	-2.3**	0.015	2.4**	0.007	3.2***	-0.003	-2.5**
Religion group dummy (reference category-other religion)										
Hindu	-0.004	-1.2	-0.004	-4.2***	0.047	5.5***	-0.005	-1.7*	0.003	1.8*
Muslim	0.0038	1.1	-0.006	-4.8***	0.050	4.9***	-0.015	-4.4***	0.005	2.1**
Christian	0.013	3.5***	-0.010	-7.9***	-0.001	-0.1	-0.008	-2.3**	-0.006	-2.5**
Landholding dummy (reference category-less than 0.005 hectare)										
0.005-1 hectare	-0.009	-5.6***	0.004	7.1***	-0.009	-1.6	-0.004	-2.2**	0.005	4.8***
1 to 2 hectares	-0.007	-2.8***	0.007	7.5***	-0.020	-2.4***	-0.008	-3.2***	0.006	3.5***
2 to 4 hectares	-0.002	-0.6	0.007	6.3***	-0.017	-1.7*	-0.014	-4.5***	0.007	3.6***
4 to 8 hectares	-0.004	-0.8	0.007	4.0***	-0.023	-1.6	-0.016	-3.2***	0.014	4.2***
Above 8 hectares	0.002	0.3	0.009	3.5***	-0.037	-1.6	-0.019	-2.6***	0.019	4.2***
Sector dummy (reference category-Rural area)										
Urban area	0.009	5.6***	-0.002	-3.9***	-0.026	-4.9***	0.006	3.6***	-0.009	-8.8***
Lambda 1	0.004	2.3**	-0.0016	-2.7***	-0.033	-5.6***	-0.002	-1.1	0.000	0.2
Lambda 2	-0.032	-9.7***	0.004	3.3***	0.033	3.5***	0.004	1.5	0.016	7.5***
Adjusted R2	0.1734		0.0490		0.2080		0.1147		0.0799	
F-statistics	276.82		68.48		48.52		109.08		94.95	
Observations (N)	26301		26208		3620		16680		21652	

Source: Author's Estimation

Note:

1. *, ** and *** imply 1 per cent, 5 per cent and 10 per cent level of significance respectively.
2. MPCE- monthly per capita consumption expenditure.

Table 7: Household expenditure estimates for the households receiving international remittances using Dubin-McFadden method (selection corrected)

Variables	Food & Consumer goods		Clothing, Bedding & foot wear		Health care		Education		Household durables	
	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value	Coeff.	t-Value
Constant	1.537	27.0***	0.156	10.1***	-0.237	-1.6	-0.109	-2.3**	-0.352	-8.2***
Log(mpce)	-0.091	-13.8***	-0.011	-5.9***	0.060	3.9***	0.019	3.6***	0.054	10.6***
Household size	-0.014	-8.7***	0.0000	-0.1	0.004	0.9	0.005	3.7***	0.002	1.6
Household type dummy (reference category-self-employed in non-agriculture)										
self-employed in agriculture	-0.007	-0.5	-0.003	-0.8	0.026	0.7	0.010	0.9	-0.010	-1.0
Salary earnings	-0.016	-1.3	-0.002	-0.7	0.030	1.0	0.013	1.3	-0.007	-0.7
Labourer	-0.015	-1.1	-0.001	-0.3	0.003	0.1	0.011	0.9	0.002	0.2
others	-0.010	-0.7	-0.011	-2.7***	0.012	0.3	0.025	1.9*	-0.003	-0.3
Social group dummy (reference category-Scheduled tribe)										
Scheduled caste	-0.015	-0.6	-0.001	-0.2	0.071	1.0	0.026	1.3	-0.007	-0.4
Other backward caste	-0.034	-1.5	-0.001	-0.1	-0.036	-0.6	0.039	2.2**	0.008	0.5
Others	-0.010	-0.5	-0.001	-0.2	-0.044	-0.7	0.034	1.9*	0.001	0.1
Religion group dummy (reference category-other religion)										
Hindu	0.020	1.7*	-0.019	-5.7***	0.003	0.1	-0.018	-1.8*	0.015	1.7
Muslim	0.011	0.8	-0.012	-3.2***	0.001	0.0	-0.021	-1.8*	0.016	1.5
Christian	0.007	0.5	-0.026	-6.6***	-0.045	-1.2	-0.015	-1.2	0.026	2.3**
Landholding dummy (reference category-less than 0.005 hectare)										
0.005-1 hectare	-0.011	-1.2	0.001	0.3	-0.055	-1.8*	-0.015	-1.9*	0.014	2.0**
1 to 2 hectares	0.016	0.9	0.005	0.9	-0.048	-0.9	-0.038	-2.2**	0.016	1.2
2 to 4 hectares	0.006	0.3	0.006	1.2	-0.108	-2.0**	-0.016	-1.0	0.020	1.4
4 to 8 hectares	0.006	0.2	0.005	0.6	-0.067	-0.9	-0.023	-0.8	0.004	0.2
Above 8 hectares	0.045	1.4	0.016	1.6	-0.140	-1.6	-0.042	-1.5	-0.002	-0.1
Sector dummy (reference category-Rural area)										
Urban area	0.037	4.0***	-0.002	-0.6	-0.013	-0.6	0.003	0.4	-0.029	-4.0***
Lambda 1	0.008	0.7	0.0052	1.6	-0.022	-0.6	-0.002	-0.1	-0.009	-0.9
Lambda 2	-0.023	-2.0**	0.003	0.9	0.007	0.2	0.008	0.9	0.012	1.4
Adjusted R ²	0.1896		0.1108		0.0886		0.0445		0.1522	
F-statistics	16.62		9.43		2.13		3.39		10.37	
Observations (N)	1336		1354		233		1025		1045	

Source: Author's Estimation

Note:

1. *, ** and *** imply 1 per cent, 5 per cent and 10 per cent level of significance respectively.
2. MPCE- monthly per capita consumption expenditure.

Table 8 shows the estimated the marginal budget shares for these five categories of expenditure for each type of household using the coefficients from tables 5, 6 and 7. The counterfactual marginal budget shares also used in the estimation of the two pairwise Average Treatment Effects on the Treated (ATT). It is important to note that households receiving internal remittances spend less at the margin on food items compared to what they would have spent without the receipt of remittances. At the mean, households with internal remittances spend 2 per cent less at the margin on food that what they would have spent on food items without the receipt of remittances. This result is consistent with the findings of Adams (2005), Taylor and Mora (2006) and Castaldo and Reilly (2007) who found that, at the margin, households which receive remittances spend considerably less on food than those do not receive any such remittance. On the other hand, households receiving internal remittances spend more at the margin on important investment goods like clothing & bedding, education and household durables. At the mean, households receiving internal remittances spend 1.5 per cent, 12 per cent and 6 per cent more at the margin, on clothing & bedding, education and consumer durables respectively, than what they would have spent on these goods without the receipt of remittances. This large marginal increase in spending on education is important because it can help in raising the level of human capital in India. And the marginal increase in spending on clothing & bedding and household durables shows the improving in standard of living of due to the receipts of remittance.

Table 8: Marginal Budget shares and Average treatment effects (ATT) for non-remittance and remittance receiving households in India, 2007-08

Expenditure category	Non-remittance Households	Households receiving internal remittances			Households receiving international remittances		
	Estimated Marginal Budget share	Estimated Marginal Budget share	Counterfactual Marginal Budget share	Average treatment effects (t-value)	Estimated Marginal Budget share	Counterfactual Marginal Budget share	Average treatment effects (t-value)
Food & Consumer goods	0.861	0.8481	0.8581	-0.01 (-6.86***)	0.813	0.801	0.012 (1.43)
Clothing, Bedding & footwear	0.068	0.0689	0.0679	0.001 (2.07**)	0.066	0.063	0.003 (1.07)
Health care	0.0818	0.0995	0.0955	0.004 (-0.87)	0.1204	0.1424	-0.022 (-1.09)
Education	0.0598	0.0656	0.0586	0.007 (4.44***)	0.0763	0.0713	0.005 (1.03)
Household durables	0.0302	0.0366	0.0346	0.002 (2.18**)	0.0543	0.0503	0.004 (-1.11)
Total	1.1008	1.1187	1.1147	---	1.13	1.128	---

Source: Author's Estimation

Note: *, ** and *** imply 1 per cent, 5 per cent and 10 per cent level of significance respectively.

5. Conclusion

To sum up, it can be stated that average monthly household expenditures of the remittance receiving households (both internal and international) is greater than that of remittance not receiving households. Household receiving remittances, on the average, spend a large share of remittance money for food expenditure in both rural and urban India. Majority of the households reported that they spent remittances on food items, clothing bedding and foot wears, healthcare, educating the household members, for the purchase of consumer durables, improving housing condition, saving/investment as well as debt repayments. The share of expenditure on difference heads with respect to receipts of remittance suggests that households receiving remittances spend 2 per cent less at the margin on food articles compared to households those who do not receive remittances. Further, households receiving remittances spend more at the margin on education (12 per cent), clothing and bedding & foot wears (1.5 per cent) and durable consumer goods (6 per cent), compared to those who do not receive any remittance. This implies that remittances do provide a scope for investment on human capital as well as accumulation of wealth and asset creation for households in addition to providing basic consumption

needs. The effect of remittance on households' expenditure implies a reduction of the budget share allocated to food expenditure, and increasing the share allocated to consumer durables and education expenditure. This may ultimately exert an impact on the local economy through human capital formation, savings and enhanced investment in small businesses etc.

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