Migration, Income Pooling and Food Deprivation

Gift Dafuleya[1], Department of Economics, University of Venda

Abstract

Income pooling in the context of geographically stretched households, that is, households with migrants who maintain close relations and economic ties with family members left behind, is examined in this article. Focus is also directed at evaluating whether migration assists in reducing food deprivation in the household of origin. A model to generalise the relationship between the migrant and the family left behind is presented and then applied to Bulawayo, the second largest city of Zimbabwe. The analysis is tripartite. First, the determinants of migrant remittances are established; second, tests of income pooling between migrant remittances and income of the household at origin are conducted; and third, the impact of migration on family left behind is examined in the context of food deprivation. Results show that gender is not a determinant of remittances, but it matters for income pooling of remittances with income at the household of origin on frequent and low-cost purchases. The evidence provided challenges the idea that a household is a separate and independent unit composed of co-residents eating from the same pot.

Keywords: Migration; remittances; income pooling; geographically stretched household; food deprivation

Jel-Classification: D13, D64, F24

1 Introduction

Migration is an important coping strategy used by households to overcome income shortages and mitigate food deprivation. When migration takes place, it may not be all members of the household that migrate. In the developing world, those that remain behind typically receive remittances to cope with food deprivation (Kleemans and Magruder 2015). The article attempts to evaluate the characteristics of migrants who remit and assesses how remittances are spent compared to income of those left behind at the household of origin. Furthermore, the impact of migration on food deprivation is examined; where food deprivation is defined as a situation where a household had smaller portions of food, reduced number of meals per day and/or changed diet to cheaper or less preferred food (Khandker et al 2012).

Becker's (1965; 1973; 1974) idea of a unitary household and the household model developed by Singh et al (1986) are employed to investigate whether remittances are used to overcome income shortages and maximise welfare at the household of origin. In the 'Beckerian' sense, household consumption, in an effort to maximise collective welfare, is independent of who actually brings money into the household because the expenditure outcome is the same. In economics, this is referred to as income pooling (Bonke and Browning 2009). However, as Bonke and Browning point out, the use of income pooling in the 'Beckerian' sense is different from the use of income pooling in economic psychology, where income pooling denotes bringing income into the same pot or into one account. Obviously the two concepts can on the one hand deviate in that income pooling as used in the economic psychology (see Bonke and Browning 2009) may result in income being put into the same pot but its use may depend on who is spending it. On the other hand, in the 'Beckerian' sense, it does not matter whether the earned money is kept in the same pot or not, what matters is how it is used. Becker is therefore followed to assess the use of remittances sent by a member of the household who has migrated and has established a geographically separate household. While geographically separate, the migrants and their remittances are a significant part of expenditure outcomes in the household of origin to an extent that some sociologists claim they maintain collective welfare as if they

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lived together under one roof (see Goulbourne et al 2010). If this is accurate, income pooling should be observed on migrants' remittances with income generated by those left behind.

There is no doubt that the test of income pooling as applied in this fashion raises concerns. First is the logic that it cannot be assumed that different members within a household could behave in a unitary manner and if this is not expected at the intra-household level (Browning and Chiappori 1998; Attanasio and Lechene 2002), how much more at a level of geographically stretched households (GSHs)? Second, the absence of income pooling may not necessarily reflect that preferences are different between different members of the household who earn income. Rather it could be that there are delegated responsibilities as to who spends on what components of household consumption. Attempting to test for income pooling in this context is therefore a stringent exercise. As a result, any evidence in favour of income pooling could point to the interdependency of seemingly separate households that maximise collective welfare.

2 A model of GSHs

The model developed here is basically an extension of household models developed by Becker (1965) and Singh et al (1986) necessitated first by the need to capture remittances in the income constraint at the household of origin and second, to account for the synchronised use of money across spatially dispersed households. For analytical purposes I shall distinguish two periods from the point of view of the household, based on migration. The ex-ante migration period depicts the household before migration. Here, the model follows Singh et al with slight deviations. The ex-post migration period depicts the household after migration has taken place.

The crucial assumption made is that the migrant remits to those left behind so that they overcome income shortages and cope in the face of economic stressors. This assumption is rational given the growing number of migrants and remittances, and evidence from empirical studies that support this view (see Bertoli and Marchetta 2014). Conventional household models are hard put to provide explanations for this and have, as a result, sustained an economic view of separate and independent households, which is also at odds with sociological views.

I now consider the following formulations of the model.

Household utility function:

The household of origin ex-ante and ex-post migration has the following utility function:

$$U = u(\boldsymbol{c})$$

where $\boldsymbol{c}$ represents household consumption that emanates from commodities purchased from the market (C_d), commodities from self-production (C_s); and time spent living together as a household (C_h).

The household utility function can therefore be formally represented as:

$$U = u(C_d, C_s, C_h)$$

where the following restrictions apply, $u' > 0,\ \ u'' < 0$.

This household utility is maximised subject to three constraints explained below.

Cash Income Constraint:

$$p_d C_d = \ p_s(Q_s - C_s) + p_h H - p_l L - \ p_v V$$

where p_d, p_s, and p_v are prices of the bundle of commodities purchased from the market, self-produced commodity and variable inputs for entrepreneurial activities respectively. The market wage is p_h, and p_l is the wage paid to hired labour in self-produced commodity Q_s. The household labour hours supplied to conventional labour markets, the hired labour hours in self-produced commodity and the variable input needed in the self-produced commodity is shown by H, L and V, respectively. Most of the labour L committed to self-production would be absorbed in the conventional markets if the formal sector is functional. This is because the market wage p_h is greater than the wage from self-produced commodities p_l. The surplus of the self-produced good supplied to the market is shown by $Q_s - C_s$.

Production Constraint:

$$Q_s = Q(K, L, V)$$

The fixed stock of capital required K required for most self-production is small, and in most cases it is the land required to operate on.

Time Constraint:

$$C_h + H = T$$

The total stock of household time T is split between members spending time together C_h and supplying labour to the market H. When a member is away at work, that time is traded with spending time together. This may not be the case though with household members employed in self-produced activities. Given that these are produced at home, spending time together is not traded off. As a result members employed in the household's self-production activities can be represented in C_h within the total stock of household time context, as they will work from home while deriving benefits of spending time with other members.

Household Single Income Constraint:

The three constraints yield the following single constraint:

$$p_d C_d + p_s C_s + p_h C_h = p_h T + p_s Q(K, L, V) - p_l L - p_v V$$

where $p_d C_d$, $p_s C_s$ and $p_h C_h$ show the expenditure on the market-purchased bundle of commodities, the household's purchase of its own output and the purchase of quality time spent living together as a household in the form of opportunity cost of supplying labour in the conventional markets.

The single cash income constraint can be shortened as:

$$\sum_{i=d,s,h} p_i C_i = p_h T + \pi \quad (1)$$

where $\pi = p_s Q(K, L, V) - p_l L - p_v V$ and is a measure of profits from self-produced commodities.

In equation (1), the left hand side shows the total expenditure of the household and the right hand side shows the full income of the household. The right hand side is now expressed as

$$p_h T + \pi = Y_h \quad (2)$$

where Y_h is the income generated in the household before migration takes place.

GSH Income Constraint:

If at least one household member migrates and remits cash to those left behind, then the income constraint at origin is expected to be:

$$(1-\delta)\sum_{i=d,s,h} p_i C_i = p_h T(1-m) + p_s Q(K,L,V) - p_l L - p_v V + \gamma p_m mT \qquad (3)$$

where δ is the proportion of expenditure accountable to a migrant and $1-\delta$ captures the reduction in the total household expenditure on the three consumption items C_d, C_s and C_h after migration has taken place. The proportion of household labour in migration is represented by m and $1-m$ captures the reduction in total stock of household time after migration has taken place. p_m is the price of the labour hours supplied in the foreign (or distant) labour market by the migrant and mT is the total stock of time of the migrant in the country of destination. The variable γ is the special parameter that captures two issues: the number of labour hours supplied in the foreign (or distant) labour market by the migrant and the need to remit. This parameter has the restriction $0 \leq \gamma < 1$.[2] The parameter γ also determines the inter-connection of the migrant and those left behind. Therefore ex-post migration, the household of origin has improved income if $0 < \gamma < 1$ (migrant formally or informally works and remits); if, $\gamma = 0$ then the migrant does not remit and there may be no improvements in income at the household of origin. The remittance into the household of origin is represented by $\gamma mT p_m$.

There is a practical possibility that some migrants may not be earning income in destination labour markets, leading to failure to remit. Theoretically, this need not be the case if households are assumed to be rational and migration is taken to be a well-calculated move for coping. Accordingly, the household's rational decision in favour of migration is given by

$$\gamma p_m mT + \delta \sum_{i=d,s,h} p_i C_i > m(p_h T + \pi),$$

which means that as long as migration is used as a coping strategy for the household and not the individual, relocation of at least one member will only take place if the contributions of the migrant will be sufficiently higher compared to ex-ante migration.[3] Given this rationality, failure to remit is theoretically attributable to the lack of willingness on the part of the migrant more than it is for lack of formal unemployment at the country or place of destination. For instance, Johnson and Whitelaw (1974), Hoddinott (1994), Woodruff and Zenteno (2007), and Naiditch and Vranceanu (2011) indicate that migrants who are not altruistic are the ones who are most likely not to remit.

The Lagrange associated with the constrained maximisation problem of the GSH is:

$$Z = U(\boldsymbol{c}) + \boldsymbol{\lambda}[p_h T(1-m) + p_s Q(K,L,V) - p_l L - p_v V + \gamma p_m mT - (1-\delta)\sum_{i=d,s,h} p_i C_i]$$

The solution of the Lagrange consists of the following first-order conditions:

$$U_i' = (1-\delta)\boldsymbol{\lambda} p_i, \quad i = \{d,s,h\}, \qquad (4a)$$

$$p_s Q_j' = p_j, \qquad j = \{l,v\} \qquad (4b)$$

[2] This restriction is provided to account for the fact that the migrant may not submit all the total stock of time, mT, to work and also that the migrant remits part of his or her wage in the foreign country. The parameter γ is used to capture both of these issues for two reasons. The first is that they are related. A migrant may attempt to increase working hours in the foreign or distant markets in order to increase remittances to members left behind. Two, it is easier to work with few parameters, given that having many parameters does not alter the implications of the model. For instance, a parameter $\mu\rho$ can be substituted by a single parameter σ without losing meaning.

[3] The limitation of the GSH model as developed in this article is that it ignores the costs of migration.

$$(1-\delta)\sum_{i=d,s,h} p_i C_i = p_h T(1-m) + p_s Q(K,L,V) - p_l L - p_v V + \gamma p_m m T \qquad (4c)$$

Equations (4a) and (4b) are consistent with the economic theories of the consumer and producer respectively. For instance, consumer theory stipulates that the ratio of the marginal utilities of different goods should equal their price ratios. This is the case with equations in (4a).[4] Producer theory stipulates that the standard maximisation for conventional firms equates marginal revenue product of inputs to their price. This is also the case with equations in (4b). Equation (4c) provides maximised full income of the GSH (the right hand side of equation 4c) and is now expressed as:

$$p_h T(1-m) + p_s Q(K,L,V) - p_l L - p_v V + \gamma p_m m T = Y_{gsh} \qquad (5)$$

where Y_{gsh} is the income for the household ex-post migration.

Testable Implications of the GSH Model

The intuitive implication of either equation (4c) or equation (5) is that households at origin have higher income ex-post migration, compared to ex-ante migration and/or compared to similar households without migrants. Households with migrants are therefore predicted to have higher welfare, enhancing their capacity to cope with uncertainties and/or shortages of income that lead to food deprivation. However, the model stipulates two falsifiable conditions that, if overlooked, could render this implication and consequently social policy that follows this line of reasoning detrimental.

The first is that migrants must be motivated to remit. Even though the migrants may have elements of self-interest, they are assumed to respond to the plight of other household members left behind. Furthermore, the decision to migrate in the set-up of the model would be, in most cases, based on the fact that higher income is expected.

The second is that the presence of remittances at the household of origin must be used to maximise the welfare of household members at origin. Remittances that are directed for the migrant's personal welfare that is independent from the household of origin would not be incorporated in the income constraints of those left behind. In this case the welfare of the household at origin may become worse off since it would have lost labour and possible unrecovered finances used to bear the cost of relocating the migrant.

Policy Implications of the GSH Model

The GSH model also has implications for policy in the country of origin. The first implication is directed at social policy that governs targeting households for development and social relief. Based on this developed model, a hypothetical social policy would prioritise targeting poor non-migrant households compared to poor migrant households. There is evidence of this hypothetical social policy in many rural areas of Zimbabwe where migrant households are excluded from development assistance and social relief (Ellis et al 2009). However, if the two falsifiable conditions stipulated by the model are not met, migrant households could be exposed to food deprivation more than non-migrant households. A blanket social policy that skips migrant households when targeting social assistance in this case would be prejudiced.

[4] That is $\frac{U'_{C_d}}{U'_{C_s}} = \frac{p_d}{p_s}$

The second implication is directed at policy attempts to reduce the flow of migration within and outside country borders. To do this, I start by deriving the optimal number of migrants that maximises income at origin using equation (4c) to give

$$m = \frac{(1-\delta)\sum_{i=d,s,h} p_i C_i - p_h T - \pi}{\gamma T p_m - p_h T} \quad (6)$$

with $\gamma T p_m - p_h T \neq 0$ as a condition necessary for equation (6) to hold.

From equation (6) we get the following inequalities

$$\frac{\partial m}{\partial p_h} < 0 \text{ and } \frac{\partial m}{\partial \pi} < 0 \quad (7)$$

Inequalities (7) state that any marginal increase in local wages p_h and marketed-surplus profits π will decrease the rate of migration m. If this is persistent to an extent that $\gamma T p_m - p_h T < 0$, then out-migration (negative m) may be reversed. The policy implications of the GSH model in this context are therefore clear and obvious: to reduce the migration rate, it is necessary to intervene in local labour markets.

Interventions in labour markets could be complemented by development assistance directed at improving self-production activities. If this is done, the unemployed would be empowered to be entrepreneurial and this would raise the opportunity cost of migration. This way, 'migration and employment at the origin should not be seen as mutually exclusive possibilities, but are in fact often combined' (de Haas 2008 p. 37).

The two policy implications of the GSH model discussed above postulate that research and policy that does not take cognisance of migration and migrants at household of origin may not be able to capture the wider social and economic context of households and their welfare. This view arguably reflects the realities of many countries with millions of migrants who are altruistic towards their families left behind.

Extant Literature Related to GSH Model

There is extent literature in economics that is related to the GSH model, starting with the following intriguing proposal by Lucas and Stark (1985 p. 915):

> (there is need to)[5] extend the recent intergenerational view of the household to a spatial dimension …. Instead of an urban sector and a rural sector, each benefiting from the sectoral-specific speeds of development, the family straddles the two…. This perception is not new to anthropologists but has not previously been integrated with the economics of the household.

While Lucas and Stark (1985) provided the foregoing view for the case of a migrant and the household of origin within a country's borders between the rural and urban sectors, this has become true as well for migration outside country borders. For instance, empirical work by McDowell and de Haan (1997) proves this to be the case. A theoretical analysis directed specifically at dispersed households both within and outside the borders of a country is therefore salient.

There are many other economic studies that advance the theoretical view of analysing migrants and households at origin. Four papers stand out and are here discussed from those that are old to most recent. First is the work by Chami et al (2003) which develops a framework where remittances are used to protect the recipient working family member left behind from income fluctuations. Second is the paper by Azam and Gubert (2005) who model remittances as a risk

[5] Text in parenthesis is not in the original text but is provided for readability purposes.

mitigation strategy for the agricultural produce at the household of origin. The third paper by Naiditch and Vranceanu (2011) examines migrants' income, their remittances and the recipients' labour supply in a game theoretical analysis. Lastly is the model by Melkonyan and Grigorian (2012) which also uses a game theoretical approach with altruism and bequest motive to remit, to examine the interaction between the migrant and the remittance-receiving relatives at the household of origin.

At an empirical level, there are quite a number of economic studies that analyse incentives to remit which are also related to the GSH model, or at minimum show the link between a migrant and the household of origin. For example, work by Sana and Massey (2005) and van Dalen et al (2005) provides evidence that households at origin are supported by migrants. Related to this is work by Hoddinott (1994), Poirine (1997), de la Briere et al (2002), Stark and Wang (2002), Rapoport and Docquier (2005), Woodruff and Zenteno (2007) and Naiditch and Vranceanu (2011). There is therefore no doubt that families and/or households across space do maintain social and financial links with consequences on welfare for the migrant and the household at origin.

3 Data and descriptive statistics

The data for this article comes from a household survey conducted by the author in Bulawayo, the second largest city in Zimbabwe, between March and July 2014.[6] The surveyed covered 298 households from three poor high-density suburbs – Matshobana, Sizinda and Sokusile. The city of Bulawayo has rapidly de-industrialised since the 1990s and as a result migration is not uncommon (Paton 1995). The analysis is based on two units of analysis: the household and the migrant. In the regressions, the unit of observation is the migrant. Table 1 shows that there is an average of at least one migrant per household in Bulawayo.

Table 1: Structure of the Sample

	LOCATION			
Classification	**Matshobana**	**Sizinda**	**Sokusile**	**Total**
Households	98	100	100	298
Migrants	233	192	120	545
Households with self-production	11	15	24	50
Relation to head: Nuclear family*	427	339	375	1141
Relation to head: Extended family**	245	167	134	546
Relation to head: Other***	18	23	52	93

Source: Own survey

*This family group is composed of parents and their children. **This family group is composed of the nuclear family plus relatives such as grandparents and grandchildren, uncles, aunts and cousins. ***The other category is a family that has none of the first two.

Note: these are actual numbers and not averages.

The fact that some households have more than one migrant will introduce bias in regressions; since each observation in the sample will not be independent of other observations. I correct this using a robust standard error estimation strategy (White 1980) in all the regressions performed in this chapter.

There is at least one in every 15 households with self-produced commodities. Disaggregating the data per suburb shows that households with more migrants seem to have less entrepreneurial activities in their backyards. Each household has a substantial number of

[6] A thorough description of the survey and the questionnaire used is available on request. It can also be accessible from my PhD (Dafuleya 2017).

extended family members. These include parents of the head of household (hereafter referred to as the head) or spouse, siblings of the head or spouse, grandchildren of the head or spouse, aunts, uncles and cousins. The nuclear family is that family made up of the head, spouse and their children. Any other person in the household is grouped under the 'other' category.

In table 2, the household descriptive statistics are split into migrant and non-migrant households. The average monthly wage for the migrant and non-migrant households are significantly different. For migrant households, the monthly wage, and even with entrepreneurial income added, is insufficient to cover monthly consumption expenditures. In direct comparison, non-migrant households are able to cover their consumption expenditures from their monthly wage. They also have a higher return from entrepreneurial income compared to migrant households, though the difference between the two is not significant. In essence, they are able to save or direct all their entrepreneurial income and the surplus from wages to other uses. This buffer could be one of the reasons why these households do not use migration as a coping strategy.

To collect data regarding food deprivation, the study solicited information from households concerning the year, between 2009 and 2013, which they reflected as the worst in terms of household consumption and why. I consider a household that reports to have had smaller portions of food, reduced number of meals per day and/or changed diet to cheaper or less preferred food in the study period as having gone through food deprivation. The percentage distribution of households that went through food deprivation is significantly lower for households with at least one migrant compared to those without a migrant. This is despite the fact that migrant households have lower incomes than non-migrant households. This could, without checking causality (which is done later), be an indication that migration is assisting in overcoming income shortages at household of origin.

Table 2: Household Descriptive Statistics

Classification	Household with Migrants	Household without Migrants	t-test for difference in means
Household size (excluding migrated members)	5.18	4.83	$p < 0.05$
	(3.36)	(3.31)	
Monthly wage	$174.25	$221.60	$p < 0.01$
	(224.78)	(254.82)	
Monthly consumption	$200.01	$201.71	$p > 0.10$
	(87.77)	(88.24)	
Entrepreneurial income	$17.22	$19.84	$p > 0.10$
	(91.39)	(96.05)	
Food deprivation* (=1 if yes)	0.81	0.85	$p < 0.05$
	(0.29)	(0.21)	
N	226	72	

Source: Own survey

Note: these are averages, s.d. are in parenthesis

*****A household is coded 1 if it has experienced food deprivation, for instance, if it has had smaller portions of food, reduced number of meals per day and/or changed diet to cheaper or less preferred food and 0 otherwise. The average provided in the table is a result of adding these codes assigned to households and dividing by the number of households.

The detailed data needed for migrant characteristics was drawn from household members at origin as shown in table 3. There are more females in migration compared to males, and half of the migrants have a child in the household of origin. There are different destinations for

migrants, but South Africa is the most common destination. It absorbs over half of all migrants reported in the survey. These are the migrants that usually send both cash and non-cash remittances through informal couriers known as *Omalayisha*, which is a common means of transport between South Africa and Zimbabwe. Slightly more than 50 per cent of migrants do not remit. Given that each household has almost two migrants, this means that on average there is one migrant who remits in each and every household.

Table 3: Migrant Descriptive Statistics

Send cash and non-cash remittances		46.5%
Send cash remittances only		40.5%
Send non-cash remittances only		10.5%
Monthly cash remittances*		$127.93 ($278.86)
Monthly non-cash remittances*		$93.22 ($184.22)
Gender (male/female)**		0.807
Child in migrant-sending household (yes/no)		0.504
Education level:	Did not complete secondary	17.26%
	Completed secondary	62.70%
	Completed college/university	20.04%
Type of job:	General (unskilled worker tasked with a variety of jobs)	36.75%
	Skilled with accredited certificate	33.33%
	Other (not belonging to the above two categories)	29.91%
Destination of migrants:	Elsewhere in Zimbabwe	39.75%
	South Africa	53.83%
	Other neighbouring countries	3.92%
	West	2.49%

Source: Own survey
Note: these are averages, s.d. are in parenthesis. *The monthly cash and non-cash remittances are also averages, not actual. **Presents the number of male migrants divided by the number of female migrants.

4 Determinants of remitting

An empirical assessment of determining the characteristics of migrants that remit is challenging mainly for the reason that migrants may fail to remit because they are unemployed, not because they do not want to remit. The data generally show that most unemployed migrants are engaged in petty trade while they await an opportunity to be gainfully employed formally. These migrants also do remit such that it can be claimed that even if the person is not conventionally employed, there is evidence of remittances at the household of origin. Coupled with issues of rationality developed in the GSH model, it can be argued that the money generating capacity of the migrant who is unemployed at destination is better than the case of being unemployed in their place of origin.

Empirical Implementation

The sampled households were asked the following questions: did the migrant send money in the past year? Did the migrant send non-cash remittances? The answers to these questions were coded '1' if the migrant sent remittances and '0' if the migrant did not. Because of the binary response nature embedded within these questions, a logistic regression is used to estimate the characteristics of migrants who remit, which is expressed as follows:

$$p(send = 1|migrant\ characteristics) = G(z) = \exp(z)/[1 + \exp(z)] \qquad (8)$$

and is between zero and one for all real numbers. In this equation G is the cumulative distribution function for a standard logistic random variable (Wooldridge 2010). The migrant characteristics include gender, relation to household head, place of residence[7], type of job and education level of migrant, and migrant having a child (or not) in the household of origin. Household and suburb-level variables are controlled for.

Results

The results from estimating equation (8) are presented in table 4 and are based on the full model, and restricted models (a) and (b), which are models restricted to migrants within and outside Zimbabwe respectively. In the full model (shown in columns 1 and 2 in table 4), I present results of all migrants regardless of migration destination. In the first part of the restricted model (shown in columns 3 and 4), I present migrants whose destination is within country borders. The second part of the model (shown in columns 4 and 5) presents migrants whose destination is out of Zimbabwe. In each regression model, I estimate separately the migrants who remit cash and goods.

Table 4: Logit Estimates on the Determinants of Remittances

Dependent variable is Remit (= 1 if yes and = 0 if no)	**Full Model:** *All Migrants*		**Restricted Model (a)**: *Migrants Within Zimbabwe*		**Restricted Model (b)**: *Migrants Outside Zimbabwe*	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Remit cash	Remit goods	Remit cash	Remit goods	Remit cash	Remit goods
Residence of migrant: South Africa	0.849**	0.673				
	(0.332)	(0.427)				
Residence of migrant: Other neighbouring countries	1.141*	1.141				
	(0.626)	(0.715)				
Residence of migrant: West	1.583	-0.860				
	(1.051)	(0.988)				
Household size	-0.025	0.096**	0.086	0.240**	-0.040	0.071
	(0.039)	(0.042)	(0.081)	(0.102)	(0.043)	(0.046)
Total Income at Household of origin	6.39e-05	0.0003	0.0005	-0.001	-7.57e-05	3.18e-05
	(0.0005)	(0.0005)	(0.0009)	(0.001)	(0.0007)	(0.0006)
Migrant age	0.244***	0.050	0.459***	-0.017	0.159**	0.119
	(0.068)	(0.067)	(0.131)	(0.128)	(0.075)	(0.107)
Migrant age squared	-0.003***	-0.0004	-0.006***	-4.22e-05	-0.002**	-0.001
	(0.0008)	(0.0008)	(0.001)	(0.001)	(0.0009)	(0.001)
Relation to head: Nuclear family	-0.600	0.231	0.885	-0.928	-2.323	0.592
	(0.651)	(0.665)	(1.075)	(1.697)	(1.418)	(0.728)
Relation to head: Extended family	-1.164*	-0.136	0.392	0.694	-3.060**	0.080
	(0.660)	(0.718)	(1.078)	(1.427)	(1.434)	(0.767)
Relation to head: Other	-0.471	1.312			-2.259	2.033*
	(0.965)	(0.984)			(1.641)	(1.083)
Male (= 1)	-0.227	0.185	0.242	0.551	-0.359	0.008
	(0.267)	(0.304)	(0.592)	(0.805)	(0.294)	(0.322)
Education: Completed Secondary	0.564	1.609***	0.085	2.971**	0.798	1.139*
	(0.423)	(0.593)	(0.837)	(1.421)	(0.519)	(0.673)
Education: Completed College/University	1.799***	2.122***	1.494	2.600*	1.589**	1.857**
	(0.526)	(0.675)	(0.986)	(1.486)	(0.663)	(0.798)
Type of job: Skilled with accredited certificate	0.202	0.367	0.303	20.02***	0.307	0.118
	(0.332)	(0.369)	(0.738)	(4.512)	(0.370)	(0.419)
Type of job: Other	-0.796**	0.081	-0.578	19.77***	-1.027**	-0.147

[7] Place of residence is a proxy to distance, which can be influential in determining the frequency of visits of the migrant to the household of origin.

	(0.361)	(0.480)	(0.646)	(4.501)	(0.484)	(0.547)
Has a child in household of origin (= 1)	1.529***	1.218***	0.921*	1.381	1.731***	1.180***
	(0.275)	(0.323)	(0.553)	(0.998)	(0.315)	(0.347)
Neighbourhood: Sokusile	0.478	1.553***	1.574*	2.483*	-0.001	1.420***
	(0.356)	(0.391)	(0.808)	(1.336)	(0.363)	(0.385)
Neighbourhood: Sizinda	-0.0453	-0.035	0.556	0.845	-0.387	-0.409
	(0.293)	(0.397)	(0.550)	(0.893)	(0.393)	(0.504)
Constant	-4.933***	-6.614***	-12.05***	-26.03	-0.553	-6.468***
	(1.482)	(1.665)	(3.274)	(0)	(1.804)	(2.030)
Observations	431	380	156	129	299	267
Pseudo R-squared	0.27	0.22	0.33	0.23	0.21	0.19

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

But before turning to this discussion, several general observations need to be communicated in relation to all regression models. First, the logit performs quite well in predicting who remits in that most signs of the estimated parameters are consistent with expectations. Second, estimating equation (8) using a probit regression generated comparable results (not shown here). Third, the chi-squared statistic is significant at the level of one per cent, meaning that we strongly reject the null hypothesis that all of the regression coefficients are simultaneously equal to zero.

As shown in table 3, with an increase in the household size, the probability of remitting goods increases but declines for cash remittances for all migrants, though it is not significant for the latter. The older the migrant is, the more the chances are that they will remit cash. The age-squared variable is included to capture the non-linear nature of the relationship between age and remitting and shows that as migrants get older the effect of age on remitting cash is lessened. This consideration is strongly reflected by the results in all three regression models.

It can be argued that altruistic migrants act to maximise utility of those remaining behind (Agarwal and Horowitz 2002). The relations between household members are likely to influence the level of altruism among them. For instance, parents are unselfish towards their children. Relations to the household head are thus considered in the regressions. All relatives are less likely to remit compared to the head of household (used as base category). This is significant for extended family members in the case of migrants outside Zimbabwe. The other relation of particular interest is whether a migrant has a child in the household of origin. Its estimated coefficient is positive and significant at one per cent for migrants outside Zimbabwe who remit goods or cash. However, for migrants within the borders of Zimbabwe, having a child in the household of origin is only significant for migrants remitting cash but not goods.

In the logit regressions, are used as a base category in the analysis. Those who completed both secondary and college or university are highly likely to remit both cash and goods compared to migrants who did not complete secondary education or less (the base category). Migrants in jobs that require certified skills are likely to remit more than the migrants in the general jobs (the base category), but this is only significant for migrants within Zimbabwe. The destination and residence of the migrant matters. All migrants outside the country are more likely to remit compared to internal migrants (base category). Migrants in South Africa have a particularly strong effect. These migrants do visit Zimbabwe frequently as well (Paton 1995; Crush et al 2015) and this probably explains this result.

5 Income pooling

The second condition stipulated by the GSH model is that remittances should be used to help the household of origin to overcome income shortages. While this is difficult to establish, the idea of employing income pooling as an empirical approach to determine this is appealing for two reasons. One, from the data, I am able to track the monetary contribution of the migrant and those of the family left behind. Two, once the remittances have arrived in the household of origin, the migrant is able to stipulate and influence their use no matter who receives them in the household of origin. The will of the migrant is therefore reflected in the use of the remittances.

Empirical Implementation

The empirical estimation builds from the theoretical formulations that resulted in equation (4c), where remittances $\gamma p_m mT$ are modelled to be an integral part of the income in the household of origin. Here, the approach is to employ these remittances in an income pooling set-up to test if they are used in the same way (or provide the same preferences) as the rest of the income from members in the household of origin.

Equations (2) and (5) provide the full income of the household before and after migration, respectively. Based on these equations, changes in income $\Delta Y = Y_{gsh} - Y_h$ as a result of migration must not lead to changes in maximised household utility or preferences if income pooling holds.

Incomes from the household of origin and the remittances from the migrant in equation 5 can be shortened as:

$$p_h T(1-m) + p_s Q(K, L, V) - p_l L - p_v V = Y_h, \text{ and}$$

$$\gamma p_m mT = Y_m$$

where Y_m is the shortened parameter that is used to capture remittances in the income constraint of the household of origin.

Therefore equation (5) can be rewritten as

$$Y_h + Y_m = Y_{gsh} \tag{9}$$

The remittances from the migrant, which acts as additional income at origin, in equation (9) can further be examined based on the characteristics of the migrant as:

$$Y_h + Y_m^i = Y_{gsh}$$

where $i \in$ migrant member = male, female, has a child or does not have a child in the household of origin.

This examination can determine the characteristics of migrants who pool income with the household of origin to maximise utility. But utility is abstract and not easily observable. The observable variables that may provide an estimate of household utility in the survey are household sustenance consumption, sc (composed of items such as food, electricity, water and telephone bills and cleaning materials), clothing, cl, and education, ed, expenditures.

The empirically testable estimation procedure for income pooling becomes

$$\frac{\partial E_z}{\partial Y_m^i} = \frac{\partial E_z}{\partial Y_h}; \quad z = sc, cl, ed \tag{10}$$

Equation (10) postulates that if income pooling holds, the partial derivative of household expenditures E_z, with respect to remittances should be the same as that with respect to the household income at origin. Basically, this is the income pooling hypothesis.

The econometric model consistent with this estimation is specified as follows:

$$E_{zh} = \alpha_{0,zh} + \vartheta_{1,zh} Y_m^i + \vartheta_{2,zh} Y_h + \vartheta_{3,zh} \boldsymbol{D}_h + \boldsymbol{\varepsilon_{ih}} \quad (11)$$

where z indexes the expenditure categories being examined in household h. As such equation (11) estimates regression equations for food consumption, clothing and education expenses.

The coefficients on Y_m^i and Y_h are the marginal propensities to spend on sustenance consumption, clothing and education in the household of origin, and represent the partial derivatives derived from running equation (11). The F test is used to test the equality of the coefficients of income or remittances from migrants and income generated from the household of origin as postulated in equation (10). If the partial derivatives of remittances and income derived in the household of origin are equal, then income pooling holds. The variable $\boldsymbol{D}$ controls for relevant household and suburb level factors.

Results

Tables 5 provides the F test results from testing the equality of the coefficients got from running equation (11). The control variables used are exactly the same as those used in table 4. The only difference is that gender and having a child is not controlled for as they are now of particular interest.

Table 5: Tests of Income Pooling

	All	**Migrant without children**		**Migrant with children**		**Gendered**	
Expenditures	**Migrants**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sustenance Consumption	F(1, 206) = 3.01 Prob > F = 0.0845* [224 obs]	F(1, 33) = 5.07 Prob > F = 0.0311** [49 obs]	F(1, 52) = 3.54 Prob > F = 0.0655* [69 obs]	F(1, 25) = 14.4 Prob > F = 0.0006*** [42 obs]	F(1, 47) = 0.03 Prob > F = 0.8740 [64 obs]	F(1, 73) = 3.74 Prob > F = 0.0571* [91 obs]	F(1, 113) = 0.16 Prob > F = 0.6893 [131 obs]
Clothing	F(1, 206) = 0.00 Prob > F = 0.9755 [224 obs]	F(1, 33) = 0.01 Prob > F = 0.9202 [49 obs]	F(1, 52) = 1.93 Prob > F = 0.1702 [69 obs]	F(1, 25) = 0.70 Prob > F = 0.4119 [42 obs]	F(1, 47) = 2.16 Prob > F = 0.1485 [64 obs]	F(1, 73) = 0.06 Prob > F = 0.8011 [91 obs]	F(1, 113) = 0.01 Prob > F = 0.9178 [131 obs]
Education	F(1, 185) = 1.81 Prob > F = 0.1805 [203 obs]	F(1, 32) = 0.00 Prob > F = 0.9708 [48 obs]	F(1, 42) = 0.20 Prob > F = 0.6572 [59 obs]	F(1, 21) = 0.75 Prob > F = 0.3954 [38 obs]	F(1, 41) = 0.00 Prob > F = 0.9909 [58 obs]	F(1, 68) = 0.58 Prob > F = 0.4491 [86 obs]	F(1, 97) = 0.55 Prob > F = 0.4591 [115 obs]

*** p<0.01, ** p<0.05, * p<0.1
Note: obs = number of observations

The F test results reject the income pooling hypothesis for sustenance consumption for all migrants. At this aggregated level, remittances are used differently from the income generated at the household of origin regarding sustenance consumption expenditures. Columns (2) to (7)

of table 5 provide a disaggregated analysis. The first two of these columns relate to migrants without children in the household of origin and each provides a presentation of results on a different gender. For both males and females without children, income pooling is rejected, meaning that remittances are not used in the same way as income generated at the household of origin. Assessing migrants with children left behind gives a different result for females but not for males in testing for income pooling on sustenance consumption. On females with children at the household of origin, there is failure to reject the income pooling hypothesis. The last two columns present results based on the gender of the migrants. Again there is failure to reject income pooling on sustenance consumption for females but not for males. The F test fails to reject the income pooling hypothesis for all migrants (the aggregated level) and for male or female migrants with and without children (at the disaggregated level) in the case of clothing and education expenditures.

A similar analysis of income pooling using sustenance consumption, clothing and education expenditures is considered first by restricting the regressions to migrants outside Zimbabwe and then secondly to migrants within Zimbabwe. For the former, I find that income pooling results are similar to table 5.[8] This is, however, not the case with the regression model restricted to migrants within Zimbabwe, which is presented in table 6.

Table 6: Income Pooling with Estimate Restricted to Migrants within Zimbabwe

	Sustenance Consumption		**Clothing**		**Education**	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	All migrants	All female migrants	All migrants	All female migrants	All migrants	All female migrants
Test of income pooling	F(1, 37) = 1.85 Prob > F = 0.1819	F(1, 19) = 1.71 Prob > F = 0.2061	F(1, 37) = 0.47 Prob > F = 0.4988	F(1, 19) = 0.47 Prob > F = 0.3404	F(1, 35) = 0.16 Prob > F = 0.6940	F(1, 37) = 0.17 Prob > F = 0.6861
Observations	51	33	51	33	49	31

Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In this restricted model, disaggregation of migrants into males, males with and without children at the household of origin, and females with and without children at the household of origin are dropped because their observations were less than 30. I fail to reject income pooling for all categories of expenditures and migrants. Perhaps the fact that these migrants are closer to their household of origin compared to the migrants outside the country explains this synchronised use of income between the migrant and the household of origin.

6 Impact of migration on food deprivation

Given the economic crisis in Zimbabwe in the past two decades, it could be that households with low income were susceptible to migrate for coping purposes more than the households with high income. This can mean that food deprivation may drive migration, making it difficult to determine the direction of causality between migration and food deprivation. Moreover, having a migrant does not necessarily mean that there would be remittances (the descriptive section of the results actually proves this). Related to the foregoing issue is that the migration process may have a selection bias on the type of member a household sends into migration, which may also be likely to determine food deprivation in a household.

[8] These results are available on request from the author.

In these circumstances, using a logit regression to analyse if migration reduces food deprivation would most likely produce biased estimates. As a result, I detail below the empirical strategy used to control for endogeneity and selection bias.

Empirical Implementation

To assess if migration reduces food deprivation, the maximum likelihood estimation of endogenous switching regressions model as provided by Maddala (1983) and Lokshin and Sajaia (2004) is used. In this model, a switching equation sorts sampled households into migrant households ($m_i = 1$) and non-migrant households ($m_i = 0$)[9] in mitigating food deprivation fd as follows:

$$fd_{1i} = \beta_1 X_i + \epsilon_1, \text{ when } (m_i = 1) \quad (12)$$

$$fd_{0i} = \beta_0 X_i + \epsilon_0, \text{ when } (m_i = 0) \quad (13)$$

$$I_i^* = \alpha(fd_{1i} - fd_{0i}) + \acute{c} Z_i + \mu_i \quad (14)$$

In the equations (12) and (13), $fd_{1i} = 1$ ($fd_{oi} = 1$) if the migrant (non-migrant) household has been deprived of food consumption in the study period and zero otherwise. β_0 and β_1 are vectors of parameters, and ϵ_0 and ϵ_1 are error terms. X_i is a vector of household characteristics that is thought to influence food deprivation and these are total income at the household of origin and the household size. The total household income is selected because it is expected that the higher a household's income the lower its exposure is to food deprivation. The household size is also included because it has implications on food deprivation. Its effect is however ambiguous. If there are many household members, there could be more labour capacity leading to higher chances of putting food on the table. However, food may not be enough for many household members, leading to food deprivation.

The inclusion of these household characteristics is further justified by the correlations from the data. Total household income is negatively correlated (-0.42) with food deprivation and this correlation is highly significant. The household size is positively correlated (+0.11) with food deprivation and this correlation is highly significant too.

Equation (14) has I_i, which is a latent variable that determines the migration status of a household and takes the following form:

$$I_i = 1 \qquad \text{if } I_i^* > 0^{10}$$

$$I_i = 0 \qquad \text{otherwise} \quad (15)$$

In equation (14), Z_i is a vector of characteristics that influence the decision to migrate and remit. It includes household characteristics that are in X_i and adds the 'number of migrants' variable to improve identification, which is an equivalent of an instrumental variable. This variable assists in identifying a migrant household, yet it does not necessarily guarantee remittances which may in turn affect food deprivation. $\acute{c}$ is a vector of parameters and μ is the error term.

[9] m_i takes the value of 1 if the household has a migrant and the value of zero if the household does not have a migrant. Equations (19) and (20) therefore provide the food deprivation status of a migrant household separately from the food deprivation status of a non-migrant household. Consequently, $m_i = 1$ is matched with fd_{1i} and $m_i = 0$ is matched with fd_{0i}.

[10] I_i is basically a criterion function that determines which classification (migrant or non-migrant) the household belongs to. If it takes the value that is more than zero, then the household is a migrant household; otherwise it is a non-migrant.

After estimating the model's parameters, the following conditional expectations can be calculated:

$$E(fd_{1i}|I_i = 1, X_i) = \beta_1 X_i + \sigma_1 \rho_1 \emptyset(c'Z_i)/\phi(c'Z_i) \quad (16)$$

$$E(fd_{0i}|I_i = 1, X_i) = \beta_0 X_i + \sigma_0 \rho_0 \emptyset(c'Z_i)/\phi(c'Z_i) \quad (17)$$

$$E(fd_{1i}|I_i = 0, X_i) = \beta_1 X_i - \sigma_1 \rho_1 \emptyset(c'Z_i)/[1 - \phi(c'Z_i)] \quad (18)$$

$$E(fd_{0i}|I_i = 0, X_i) = \beta_0 X_i - \sigma_0 \rho_0 \emptyset(c'Z_i)/[1 - \phi(c'Z_i)] \quad (19)$$

In equations (16) to (19) $\emptyset$ and ϕ represent the normal density distribution function and the cumulative distribution function, respectively. Equation (16) gives the expected outcome of a migrant household. Equation (17) is the counterfactual equation to (16) and provides the expected outcome of a migrant household had it not had a migrant. Equation (18) is the counterfactual equation to (19) and provides the expected outcome of a non-migrant household had it had a migrant. Equation (19) is the expected outcome of a non-migrant household.

The conditional expectations in equations (16) to (19) are then used to construct the migration impacts on food deprivation as follows:

$$Change\ in\ fd\ outcome\ of\ migrant\ household\ due\ to\ migration$$

$$= \Delta O_{1i} = \ E(fd_{1i}|I_i = 1, X_i) - E(fd_{0i}|I_i = 1, X_i) \quad (20)$$

$$Change\ in\ fd\ outcome\ of\ nonmigrant\ household\ due\ to\ migration\ had\ it\ had\ a\ migrant$$

$$= \ \Delta O_{0i} = E(fd_{1i}|I_i = 1, X_i) - E(fd_{0i}|I_i = 1, X_i) \quad (21)$$

Using equations (20) and (21), the expected outcome of migrant households due to migration can be compared to expected outcomes of non-migrant households due to migration had it had a migrant as follows:

$$\Delta O_i = \Delta O_{1i} - \Delta O_{0i} \quad (22)$$

Results

The results of the switching regression model are presented in table 7. The first and second columns of table 7 provide results of the food deprivation regression in migrant households and in non-migrant households respectively. The results of the food deprivation equation with an additional variable, 'number of migrants' is provided in column three. In all cases, the total household income significantly lowers the probability of food deprivation. The Wald chi-square statistic indicates that the overall fit of the switching regression model cannot be rejected at 5 per cent level of significance, meaning that we reject the null hypothesis that all of the regression coefficients are simultaneously equal to zero.

Table 7: Switching Regression Estimates of Food Deprivation

VARIABLES	**Food deprivation**		**Food Deprivation**
	Household with migrants	Household without migrants	*All migrants*
Total household income	-0.0003**	-0.0002***	-0.001***
	(0.0001)	(3.78e-05)	(0.0002)
Household size	-0.01	0.004	0.018
	(0.008)	(0.004)	(0.019)
Number of migrants			-5.22e-09

				(9.49e-06)
Constant	1.059***		1.015***	0.073
	(0.124)		(0.0346)	(0.171)
Wald chi-square (2)		7.01**		
Log likelihood		29.375		
σ_1		0.4***		
		(0.054)		
σ_0		0.203***		
		(0.009)		
ρ_1		-1		
		(5.62e-13)		
ρ_0		1		
		(2.04e-12)		
Likelihood ratio test of independence of equations		Chi-square (1)= -385.05		
Observations		286		286

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7 presents ρ_1 and ρ_0, which are the correlation coefficients between ϵ_1 and μ_i and ϵ_0 and μ_i respectively. As has already been discussed, if these are both positive, it indicates that selectivity bias for migrating is cancelled out by selectivity bias for not migrating. This way, the selection bias is less serious. If the signs are opposite, it indicates serious self-selection problem on migration and remittances, which is the case with the data used here. Estimates of ρ_1 and ρ_0 are bounded between -1 and 1 to stabilise the regression as done for most switching models (Lokshin and Sajaia 2004).

Table 7 also presents σ_1 and σ_0, which are the square roots of variances of the error terms and are ancillary parameters used in the maximum likelihood procedure. Finally, table 7 shows that the likelihood ratio test of independence of equations is not significant, indicating that we cannot reject the null hypothesis of no correlation in equations (12) to (14). This provides evidence that regressing logit (and probit) equations to assess if migration determines food deprivation would have produced biased estimates.[11]

Based on the outputs presented in table 7, the impacts of migration on food deprivation are presented in table 8. In this table, the results attempt to show (a) the expected outcome of a migrant household; (b) the expected outcome of a migrant household had it not had a migrant; (c) the expected outcome of a non-migrant household had it had a migrant; (d) the expected outcome of a non-migrant household. The results from (a) and (b) above are expected to provide the change in food deprivation of migrant households attributable to migration. The results from (c) and (d) are expected to provide a change in food deprivation of non-migrant household due to migration had the household had a migrant.

As a result of migration, the food deprivation for migrant households declines by about 45 percentage points. The impact of migration in this case shows clearly in migrant households for reversing the increase in food deprivation that would have taken place if they had no migrant. Non-migrant households are able to reduce food deprivation by 8.9 percentage points which means that the total income of the households is playing a role in socially protecting non-migrant households. However, these households would have done much better in reducing food deprivation if they had a migrant. This is shown by the fact that food deprivation would

[11] Put differently, if the likelihood ratio test of independence of the three equations used in the switching regressions is significant, then the hypothesis of no correlation in the equations will be rejected and this would indicate the possibility of using probit and logit regression to assess the impact of migration on food deprivation.

have instead declined by almost 56 percentage points. Overall, migrant households reduce food deprivation better than non-migrant households. However, this would have not been the case if non-migrant households had migrants as well. The indication in table 8 is that non-migrant households would have been better by 2.5 percentage points at reducing food deprivation compared to migrant households.

Table 8: Impact of Migration on Food Deprivation

Food Deprivation Outcomes						
Migrant Household			**Non-migrant Household**			ΔO_i
Expected outcome of migrant household			*Expected outcome of non-migrant household had it had a migrant*			
$\{E(fd_{1i}\|I_i = 1, X_i)\}$	=	-0.431** (0.001)	$\{E(fd_{1i}\|I_i = 0, X_i)\}$	=	-0.559** (0.009)	
Expected outcome of migrant household had it not had a migrant			*Expected outcome of non-migrant household*			
$\{E(fd_{0i}\|I_i = 1, X_i)\}$	=	0.014** (0.007)	$\{(fd_{0i}\|I_i = 0, X_i)\}$	=	-0.089** (0.002)	
Change in outcome of migrant household due to migration			*Change in outcome of non-migrant household due to migration*			
$\{\Delta O_{1i}\}$	=	-0.445** (0.001)	$\{\Delta O_{0i}\}$	=	-0.470** (0.001)	
						0.025** (0.001)

Figures in parenthesis are robust standard errors. ** indicates a significance level of 5 per cent or better
Note: ΔO_i is the difference between the expected outcome of migrant households due to migration and non-migrant households due to migration had it had a migrant.

7 Conclusions

The model presented here provides a framework for analysing seemingly separate households, that is, a migrant and those left behind, but synchronise use of remittances and income generated at the household of origin in order to overcome income shortages and mitigate food deprivation at origin. The intuitive implication of the model is that migrant households at origin have higher income due to the remittance component and therefore cope better compared to similar non-migrant households in reducing food deprivation. However the two falsifiability conditions for which this could be realised are that the migrant must remit and their remittances must be used to maximise utility for the family left behind. It has been seen that migrant households are relatively poorer compared to non-migrant households. Migrants that do not remit therefore cause the household of origin to be worse off with serious consequences on social policy that excludes migrant households from receiving development assistance and social relief. Though this model makes a contribution to existing literature by extending the standard households model, it has several limitations that weaken its applicability in many settings. For instance, the model does not incorporate costs of migration.

While remittances seem to be flowing to most of the households with migrants in Zimbabwe, it has been shown that the age, education, and having a child at the household of origin of the migrant, mainly matters for remittances to be realised. Though the gender of the migrant does not determine whether a migrant remits or not, it does matter for income pooling of remittances with income at the household of origin on frequent and low-cost purchases that characterise the food consumption patterns of poor households. It has also been shown that income pooling for high value and infrequent purchases holds for all types of characteristics of migrants and

the household at origin. This provides evidence to the GSH model and challenges the concept of a household being a neat separate unit made up of co-residents who share a budget and eat from the same pot.

Migrant households with migrants who are educated, are older than 30 years, and have children at the household of origin generally reduce food deprivation more than non-migrant households. Migrant households with female migrants who possess these three characteristics particularly have a stronger effect in reducing food deprivation.

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