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Do Remittances Increase Household Indebtedness: Evidence from a Cambodian Household Survey

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Abstract

This paper examines the direct impact of remittances on household debt performance and levels of indebtedness using survey data from 422 households in the northern part of Cambodia. We employ the Two-Step Heckman selection model to alleviate concerns regarding the endogeneity issues derived from self-selection bias, reverse causation, and omitted variable bias. The Tobit model is then employed to estimate household debt performance and the indebtedness impact of remittances. We first show that remittances are viewed as transitory incomes tending to decay as a migrant's length of stay outside the household increases. In the second stage of estimation, remittances positively affect household debt performance, particularly in low debt performance households. Remittances are also found to reduce household indebtedness in the recipient households. Because remittances contribute to reducing household indebtedness, which is a critical component in the financial system, policy responses should be targeted toward lowering the actual cost of sending remittances and thereby enabling migrant workers, and their left-behind household the ability to access formal and digitalized platforms in order to sending and receiving remittances.

JEL Classifications

F24, R23, G51, D15

Keywords

Remittances
household indebtedness
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1. Introduction

International remittances- the money sent home by migrant workers abroad, have been embraced as a significant source of external finance fueling the economic engine of recipient economies. Global remittance flows doubled in size between 2009 and 2019, increasing from USD 433 billion to USD 719 billion (World Bank, 2021). Remittance flows to Low and Middle-Income Countries (LMICs) increased from USD 302 billion in 2009 to USD 548 billion in 2019, double the size of remittances flowing into high-income countries (World Bank, 2021). This makes remittance flows into LIMCs the largest external source of finance, larger than foreign direct investment (FDI) and three times the size of official development assistance (World Bank, 2019a). Because remittance flows are such a large and significant source of income for many recipient households in the LMICs, researchers and policymakers often argue that remittance inflows generate a profound impact on development outcomes, particularly among households in LMICs.

A large and growing body of literature in theoretical and empirical research has questioned the motivations to remit and the impact of such remittances.[1] In particular, researchers have debated the link between remittances and financial development (Aggarwal, Demirgüç-Kunt, & Pería, 2011; Ambrosius & Cuecuecha, 2016; Giuliano & Ruiz-Arranz, 2009; Gupta, Pattillo, & Wagh, 2009). For example, remittances reduce liquidity and credit constraints by improving greater access to financial services which in previous studies have suggested a positive impact of remittances on financial development, including the amount of deposit, deposit account per capita, saving account, numbers of bank branches (Aggarwal et al., 2011; Ambrosius & Cuecuecha, 2016). Remittances also serve as collateral, enhancing household access to credit because financial institutions tend to evaluate the creditworthiness of the household's application (Orozco & Fedewa, 2006). In contrast, remittances substitute for borrowings. Remittances, therefore, relax household liquidity and credit constraints and enhance household's financial condition allowing households to invest in production/ business (Woodruff & Zenteno, 2007), and human capital (Cox & Ureta, 2003), and, importantly, respond to health shocks (Ambrosius & Cuecuecha, 2013).

The nexus between remittances and financial development has been clearly established in the literature. However, the link between remittances and household indebtedness is not obvious and this requires exploring the relationship between financial development and household indebtedness. In the literature, indebtedness or over-indebtedness is a subsequent product of a rapid financial inclusion which enables greater access to finance services, particularly borrowings (Ganle, Afriyie, & Segbefia, 2015; Guha & Chowdhury, 2013). A large volume of borrowing tends to amplify the risk of household financial vulnerability and over-indebtedness, causing financial system fragility (Campbell & Hercowitz, 2005; Debelle, 2004; Svirydzenka, 2016). A positive association between debt and financial development is often referred to as a change in the financial market structure, particularly financial deregulation and

liberation that facilitate and lessen complications in the borrowing process and lowering the cost of borrowing (Debelle, 2004; Svirydzenka, 2016). While the determinants of household indebtedness are often emphasized through the life-cycle hypothesis (LCH)[2] and permanent income hypothesis (PIH)[3], Svirydzenka (2016) examined financial development indices and household debt in European countries and suggested that relaxing credit constraints and a shift in financial innovation are highly correlated with an increase in household debt level. Financial deregulation that leads to eased borrowing restrictions can trigger potential debt growth among borrowers as they can take multiple loans (Bylander, 2020; Campbell & Hercowitz, 2005). The relationship between household indebtedness and financial development may also originate from competition between financial institutions. Evidence from India, Bangladesh, and Cambodia suggests borrowers utilize the microfinance institutions' competitiveness within service provision, particularly lending rate and borrowing cost. In doing so, they are taking multiple loans to pay off their debt to another microfinance institution (McIntosh & Wydick, 2005; Srinivasan, 2010; World Bank, 2019b). As a result, this competitive pressure allows borrowers to accumulate more loans and potentially lose the ability to repay the debt.

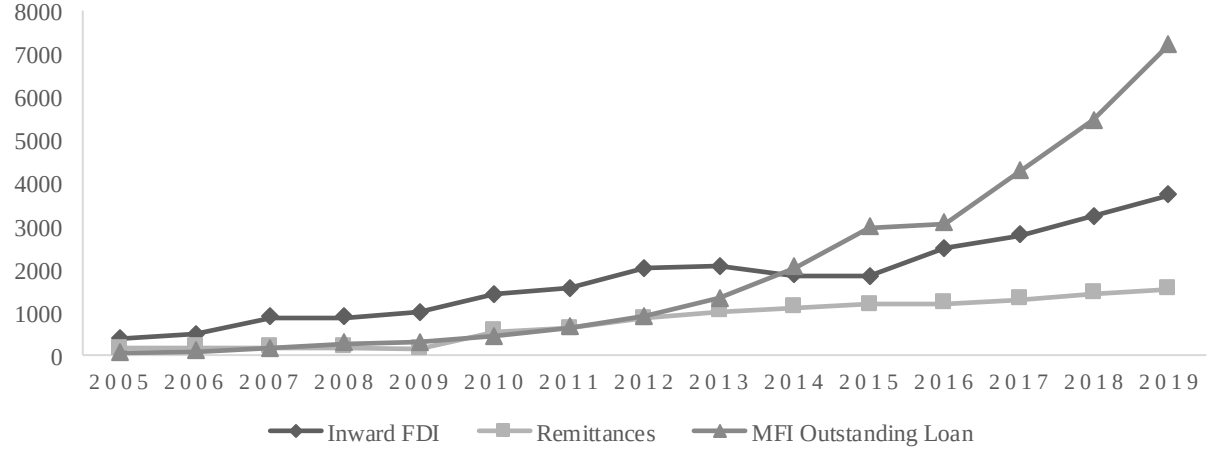
There is a large gap in the literature regarding an understanding of how remittance-sending behaviour responds to household debt. We explore this emerging phenomenon by addressing two important questions. First, what are the determinants of remittances inflows to Cambodian recipient households? And second, to what extend do remittances impact a household's ability to repay debt or debt performance and level of indebtedness? We seek to answer these questions by examining the permanent and transitory remittances income hypotheses (Friedman, 1957).

The permanent income hypothesis (PIH) proposes that remittances sent to households on a relatively regular basis are often considered a stable source of income. Thus, remittances are to be used for consumption because the expected income tends to be regular and permanent, allowing the left-behind families to enjoy consumption for a period of time. Chami, Fullenkamp, and Jahjah (2003) show that when remittance inflow is regular, remittances are not utilized for immediate productive investment but rather for consumption. Moreover, remittances tend to be permanent income when migrants stay and work at the destination for a longer period, so the remittances they send are reliable over time. Lim and Simmons (2015) examined remittance inflow into the Caribbean community and show that remittances do not impact GDP per capita but impact consumption in the long run. Remittances flowing to the Caribbean community tend to be more stable as migrants reside in the United States for an extended period of time and when migrants may earn US citizenship. The left-behind households, therefore, receive a constant flow of remittances and use them for consumption. Based on the PIH, when remittances are primarily used for consumption instead of investment, households opt for borrowings that tends to increase household debt level. Therefore, regular remittances do not enhance household debt performance and may even increase the likelihood of households falling into a vicious debt-trap cycle.

However, the transitory income hypothesis suggests that households would opt to save and invest instead of consuming with the additional source of income. Therefore, remittances are often found to have positive and long-term impacts on human capital development, entrepreneurship and health expenditure (Cox & Ureta, 2003; Kapri & Jha, 2020; Woodruff & Zenteno, 2007). Furthermore, due to temporary and seasonal migration, remittance inflow tends to be irregular and unpredictable (Lucas & Stark, 1985). Therefore, expected remittances sent to the left-behind households may also be a function of the migrant's length of stay at the destination. In such a transitory form of income, remittances would positively affect household income debt performance and reduce the severity of household indebtedness.

In Cambodia, remittance inflows have recently increased, and the credit market has significantly expanded, particularly in the sphere of microfinance offering greater access to borrowings. Over the last decade, the inflows of remittances to Cambodia has increased significantly from USD 142 million in 2009 to USD 1,524 million in 2019, equivalent to 5.6 percent as a share of GDP in 2019 (World Bank, 2020). The largest proportion of incoming overseas remittances in 2020 flowed from Cambodian migrant workers in Thailand (78.18 percent), South Korea (16.31 percent), Japan (3.55 percent), Malaysia (1.84 percent), and others (0.13 percent). The Ministry of Labour and Vocational Training (MoLVT) (2020) indicates that remittances inflow at the end of April 2020 was close to double its size comparing to the previous year, reaching USD 2,809 million. However, a recent study shows that about 72 percent of remittances sent home are facilitated by private agencies and unofficial channels, mainly from Thailand (Hing et al., 2014). The informal transfers may suggest that migrants and left-behind households possess low financial literacy, limiting the use of formal transfer services. Harkins, Lindgren, and Suravoranon (2017) suggest that only one in five migrant workers possesses a bank account. This impedes them from using a formal channel to send remittances home (Harkins et al., 2017; ILO, 2020).

Figure 1: **Foreign Direct Investment, Remittances, and microfinance institution (MFI) Outstanding Loans (2005-2019) (USD in millions)**



Source: World Bank (2020), Cambodia Microcredit Association (CMA) (2020), the National Bank of Cambodia (NBC) (2019)

In recent years, Cambodia has experienced rapid growth in credit demand and borrowings, becoming one of the most microcredit-saturated countries among its neighbours such as the Lao Republic and Myanmar (Green, 2020; IOM, 2019). According to the Credit Bureau of Cambodia (CBC) (2019), about two million borrowers accessed MFI in 2019, an increase of more than 1.5 million compared to 2005. The outstanding loans increased from USD 50.13 million in 2005 to USD 7.2 billion in 2019, and about 32 percent increase in loan value in 2019 compared to the outstanding loan value in 2018 (NBC, 2019). The average amount of borrowing per person is about USD 3,415 exceeding the Cambodian GDP per capita in 2019, which was only USD 1,650. Total outstanding loans, including the banking sector and MFI, had reached 103 percent of GDP in 2018, and there was a 28.3 percent increase in credit growth compared to the total outstanding loans in 2018 (NBC, 2019).[4] The household debt-to-income ratio has been growing at a fast rate, increasing from 23 percent in 2013 to 30 percent in 2017 in the Phnom Penh, the capital city, and 46 percent to 49 percent in other urban areas, which is about 24 percent annually (MoP, 2017). Household borrowings were primarily channelled toward consumption rather than productive purposes (MoP, 2017). The proportion of borrowing used for consumption increased from 18.6 percent in 2013 to 55.1 percent in 2017.

Using survey data from 422 households located in three provinces in the northern part of Cambodia, we investigate the impact of remittances on household debt performance and indebtedness. Assessing the impact of remittances can be complicated due to endogeneity issues in self-selection and omitted variable bias. We lessen this concern by using the Two-step Heckman Selection Model and the Two-Stage Least Square regression model. We then use the generated regressor of remittances to estimate the impact on household debt performance and household level of indebtedness with the Tobit model in the second stage.

The findings show that the motive to remit is dominated by altruistic aspiration. Remittances are also found to be transitory incomes that tend to decay over a migrant's length of stay at the destination. Secondly, the impacts of remittances on household debt performance is found positive that a 10 percent increase in remittances leads to a 0.7 percent increase in debt performance in low debt performance households and a 1 percent increase at aggregate household samples. Finally, remittances are found to have a statistically significant negative impact on household-level indebtedness, suggesting a reduction on household's debt severity. Remittances indicate strong and statistically significance in reducing the household level of indebtedness by 1.7 percentage points.

The paper contributes to the literature on the impacts of remittances in a number of ways. First, this paper is one of the pioneering papers examining the effects of remittances on household indebtedness, specifically in Cambodia as most previous studies have used descriptive and qualitative analyses. Secondly, this study overcomes the limitations of previous studies deriving from measurement errors in remittances. In particular, because the balance of payments is often used to account for officially recorded remittances sent through formal

channels, it fails to capture remittances being transferred through informal channels such as friends/ relatives, informal brokers, and informal transferred agencies. Moreover, the majority of Cambodian labour migrants are irregular migrant workers; thus, most of the remittances sent home are processed through private agencies and informal transactions. Finally, we cast light on the evidence regarding motivation to remit and its impact on household debt. Institutions and policymakers can thus utilize our findings to facilitate remittance inflows by reducing the cost of transfer, and introducing sound policies and practices to educate migrant workers and their left-behind households about financial literacy enabling them to use formal transfers and better manage borrowings.

The rest of the paper is organized as follows. Section 2 outlines empirical approaches used in this study and empirical strategies to overcome bias estimation, followed by data and variable description in section 3. Section 4 provide insights and findings from the empirical estimation. The last section forms the conclusion and provides avenues for future research.

2. Empirical Specifications

As an initial exercise, our baseline model to estimate the impact of remittances on household indebtedness and debt performance uses the Ordinary Least Square (OLS) regression.

$$Debt_i = \alpha_0 + \alpha_1 I_i + \alpha_2 X_i + \psi_i + \varepsilon_i \quad (1)$$

Where $Debt_i$ denotes household debt variables. I_i is a binary variable equal to one if households received remittance in the last 12 months and zero otherwise. X_i represents a set of household head and household characteristics associated with household indebtedness and debt performances. ψ_i denotes village characteristics. ε_i is the unobservable term, and α_1, α_2 are the parameters to be estimated.

However, employing OLS to evaluate the impact of remittances on household indebtedness and debt performance potentially yields inconsistent and biased estimates. Previous studies suggest that several empirical challenges are derived from self-selection bias in remittances and an unobservable factor can be poorly performed by OLS estimation. Moreover, OLS is unlikely to account for the differences between censored and uncensored observations (Piracha & Saraogi, 2011). Therefore, the two-step Heckman Selection model can improve the estimation and control for selection bias in household receipt of remittances (Heckman, 1979). This approach provides more robust estimates because it does not depend on the unobservable bivariate distribution. Therefore, we followed Agarwal and Horowitz (2002) by utilizing the two-step Heckman selection model (Heckman, 1979) which can be expressed in equations (2) and (2.1) as follows:

$$Remit_i = \beta_0 + \beta_1 X_i + \psi_i + u_i \quad (2)$$
$$I_i = \gamma_0 + \gamma_1 X_i + \gamma_2 IV_i + \psi_i + \theta_i \quad (2.1)$$

Where $Remit_i$ denotes the logarithm of the total amount of remittances received by a household in the last 12 months. IV_i represents the instrumental variable. It is important to note that admissibility of the instrument depends on two key conditions. First, the instrumental variable should satisfy the exclusion restriction condition, that the instrumental variable affects the amount of remittances a household received only through the dichotomous remittance variable I_i. Secondly, the value of the F statistic should be above 10, suggesting the selected instrumental variable is not a weak instrument. u_i and ε_i are the error terms that follow the normal distribution $N(0,1)$ and $N(0,\sigma_\varepsilon)$. Therefore, the $Cov(u_i,\theta_i)$ is equal to ρ. After estimating equation (2.1) using the Probit Model, the Inverse Mill Ratio (λ_i) is calculated as the ratio of a normal density function $\varphi(\gamma_1 X_i + \gamma_2 IV_i)$ and cumulative density function $\phi(\gamma_1 X_i + \gamma_2 IV_i)$ which can be expressed as follows (Heckman, 1979):

$$\lambda_i = \frac{\varphi(\gamma_1 X_i + \gamma_2 IV_i)}{\phi(\gamma_1 X_i + \gamma_2 IV_i)} \tag{2.2}$$

We substitute the Inverse Mill's Ratio (λ_i) into our structural equation as a second stage estimation. Therefore, it can be estimated as follows:

$$Remit_i = \eta_0 + \eta_1 X_i + \rho\sigma_\varepsilon \lambda_i + \psi_i + u_i \tag{3}$$

Where u_i is the error term and uncorrelated with X_i and λ_i. η_1 and $\rho\sigma_\varepsilon$ are the parameters to be estimated. Then, utilizing the $\widehat{Remit}_i$ predicted value of each household from equation (3), we substitute it into the Tobit Model in equation (4) and (5) in order to estimate the impact of remittances on household indebtedness $(Debt\_I_i)$ and debt performance $(Debt_{P_i})$ using the maximum likelihood method.

(a) Impacts of remittances on household indebtedness:

$$\begin{gathered} Debt\_I_i^* = \alpha_0' + \alpha_1' \widehat{Remit}_i + \alpha_2' X_i + \psi_i + \eta_i \\ Debt\_I_i = 0 \;\; if \; \alpha_0' + \alpha_1' \widehat{Remit}_i + \alpha_2' X_i + \psi_i + \eta_i \;\leq 0 \\ Debt\_I_i = Debt\_I_i^* \;\; if \; \alpha_0' + \alpha_1' \widehat{Remit}_i + \alpha_2' X_i + \psi_i + \eta_i > 0 \end{gathered} \tag{4}$$

(b) Impacts of remittances on household debt performance:

$$\begin{gathered} Debt\_P_i^* = \phi_0' + \phi_1' \widehat{Remit}_i + \phi_2' X_i + \psi_i + \eta_i \\ Debt\_P_i = 0 \;\; if \; \phi_0' + \phi_1' \widehat{Remit}_i + \phi_2' X_i + \psi_i + \eta_i \;\leq 0 \\ Debt\_P_i = Debt\_P_i^* \;\; if \; \phi_0' + \phi_1' \widehat{Remit}_i + \phi_2' X_i + \psi_i + \eta_i \;> 0 \end{gathered} \tag{5}$$

Our dependent variable $Debt\_P_i^*$ and $Debt\_I_i^*$ are continuous latent variables that can be observed when their value is greater than zero, and η_i is the error term with zero mean and constant variance σ^2. Therefore the likelihood function derived from equation (6) and (7) can be expressed as:

$$L = \prod_{Debt\_I_i | Debt_{I_i}=0} \left[1 - \Phi\left(\frac{\alpha_1' \widehat{Remit}_\iota + \alpha_2' X_i}{\sigma}\right)\right] . \prod_{Debt\_I_i | Debt_{I_i}>0} \left[\frac{\phi((\alpha_1' \widehat{Remit}_\iota + \alpha_2' X_i)/\sigma}{\sigma}\right] \quad 4.1$$

$$L = \prod_{Debt\_P_i | Debt\_P_i=0} \left[1 - \Phi\left(\frac{\alpha_1' \widehat{Remit}_\iota + \alpha_2' X_i}{\sigma}\right)\right] . \prod_{Debt\_P_i | Debt\_P_i>0} \left[\frac{\phi((\alpha_1' \widehat{Remit}_\iota + \alpha_2' X_i)/\sigma}{\sigma}\right] \quad 5.1$$

Where $\Phi(.)$ and $\phi(.)$ denote the cumulative distribution and the probability distribution function. From equation (4.1) and (5.1), the first parts of the likelihood function denote the $Debt\_I_i$ and $Debt\_P_i$ which equal zero, using a simple form of the Probit Model. The second parts of the function represent the estimation on the uncensored continuous outcomes. When $Debt\_I_i$ and $Debt\_P_i$ are positive, the OLS is used to estimate the effect of remittances on household indebtedness and debt performance.

We employed the Tobit model to account for the censored observations and the uncensored continuous outcomes (Greence, 2018; Tobin, 1958). Our survey design aims to capture households' borrowing behaviours and borrowing information before and after their family members migrated. About 36 percent of migrant households reported that they had borrowed from formal or informal moneylenders after their family members migrated, but about 11 percent of the borrowing households reported that they had paid off their debts, and the recorded amount of outstanding loans was zero. Behind this intuition, there are unobservable factors, such as a sudden increase in income expectations or family members' entrepreneurship skills which may affect loan repayment and debt performance. Therefore, it cannot be directly observed from the survey. This unobservable factor triggers us to pay attention and suggests we should be cautious when estimating the impacts of remittances. Moreover, households obtain loans through informal channels, including family or friends (12.28 percent of the borrowing households) do not have an exact maturity date. Thus, loans are commonly repaid through a lump sum amount of the principle and interest when it is feasible. In such case, monthly repayment of the informal borrowing is also reported zero.

2.1. Household Indebtedness and Debt Performance Measurement

We construct household indebtedness levels under the so-called "objective approach" [7] by calculating the differences between the total household monthly debt repayment (sum of formal and informal loans monthly repayment) to the disposable income (Haas, 2006; Keese, 2009). Therefore, the household indebtedness measurement can be expressed:

$$Debt\_I_i = \frac{m_i}{y_i - e_i} \quad (6)$$

Where $Debt\_I_i$ represents the level of indebtedness, m_i denotes as a monthly instalment on the household's debt including all forms of debt, y_i is the monthly household income and household expenditure e_i excluding debt expenses.

We construct household debt performance by taking the ratio of net income after monthly loan repayments on household financial vulnerability level which is a household poverty line multiplied by the number of household members (Keese, 2009). Therefore, debt performance can be expressed as follows:

$$Debt\_P_i = \frac{y_i - m_i}{PV_i \times \sum HH_i} \tag{7}$$

Where $Debt\_P_i$ denotes household debt performance, PV_i refers to the poverty line at household level, and HH_i is the size of household i.

2.2. Endogeneity and Identification

Based on the literature, we follow Murakami, Shimizutani, and Yamada (2021) to construct our instrumental variable (IV), which can be expressed as:

$$IV_i = \ln\left(\frac{\sum_{j\in J(i)} GDPPC_j \times M_{ij}}{\sum_{j\in J(i)} WA_i}\right) \tag{8}$$

Where IV_i denotes the instrumental variables, $GDPPC_j$ is the country of destination's GDP per capita, M_{ij} is the total migrant members from household i who are currently working in country j. WA_i represents the total number of family members who are aged above 15 in household i at the country of origin j. Our rationale for using this instrument variable is that the economic conditions at the host country are less likely to impact the amount of remittances being sent by migrant workers to their households in Cambodia. We test our instrumental variable with the exclusion restriction condition and the F-statistics exceeding the rule-of-thumb value of 10.

Our result shows that F-statistic after the first stage estimation is 17.24 higher than the value of 10 and the adjusted R square of 0.507. The test for weak instruments takes the value of 42.99 with a p-value of 0.000, indicating the validity and strength of our instrumental variable. Importantly, our exclusion restriction test confirms the instrumental variable's admissibility and validity because it affects the outcome variable (the amount of remittances) only through the endogenous variable (binary remittances) (See Table A2 and A3 in the Appendix).

3. Data and Variable Descriptions

3.1. Data

The data consist of 422 households located in three northern provinces of Cambodia (Banteay Menchey, Battambang, and Siem Reap). These three provinces comprise more than 50 percent of the total international migrants from Cambodia and is one of the highest borrowings penetration regions (USD 1.5 billion outstanding loans, and 1.2 million active borrowers) (CBC, 2018; Dickson & Koenig, 2016; MoP, 2015). To determine the study's area, we used multi-stage random sampling, followed by the probability proportional to size (PPS) sampling to determine the sample size in the selected village. Household selection is entirely based on random selection.

The survey data covers household head characteristics and household demographic characteristics such as each household member's education, employment, and income. Data on household assets is later constructed into a household wealth index through the Polychroric PCA; and household experience with adverse shocks such as income shocks and shocks derived from natural disasters.

Table 1: Distribution of Sample Size and Recipient Households of Remittances

Province	Number of Villages	Non-Migrant Households	Migrant Households	Non-Recipient Households	Recipient Households	Total Samples
Banteay Menchey	6	90	52	75	67	142
Battambang	6	96	49	92	53	145
Siem Reap	5	89	46	79	56	135
Total		275	147	246	176	422

Source: Author's fieldwork

The survey also contains information on household remittances, including the amount of remittances and the origin of the sources of international remittances (Thailand, Malaysia, Arab Emirates, USA, and France) during the last 12 months. Our data consists of approximately 42 percent of remittances-recipient households and 58 percent are non-recipient households. It is noteworthy that about 27 percent of the remittance-receiving households did not have international migrants and approximately 13 percent of migrant households did not receive remittances during the last 12 months. Such cases have been mentioned by previous studies which suggests that households may receive remittances from friends or relatives to repay migration loans (Adams, 2011; Amuedo-Dorantes & Pozo, 2010). For households receiving remittances from more than one source, we computed the total remittances by adding all reported remittances regardless of whether they were sent via formal or informal channels, thus reducing measurement error. In addition, the survey obtained data on households' access to formal credit (i.e. banks, microfinance institutions, NGOs, and rural formal credit operators) and informal borrowings (i.e. relatives/friends, informal moneylenders, and pawnshops). The

total amount of outstanding loans, maturity periods, and amount of monthly loan repayment were also captured to construct a household level of both debt performance and indebtedness.

3.2. Description of variables

Four different dependent variables were employed in this study. The first two dependent variables are the binary remittances used in the selection equations (2.1) and the amount of remittances used in the structural equation (2). Both dummy and amount of remittance indicate whether households received remittances from overseas in the last 12 months and the total amount of remittances households received from overseas in the last 12 months. Our survey captures not only remittances sent/received via official channels (banks, MFIs, Money-posts) but also informal channels (family/friend, brokers, sender's visit, or other informal routes). The dependent variables in outcome equations (4) and (5) are household debt performance and household indebtedness. Our explanatory variables consist of the household head's information, household characteristics, and household's adverse effect from shocks.

The household head's characteristics include age, age square, gender, occupation, and education (i.e., no formal education). At the household level, we include whether or not the household is located in a rural or urban area, household members under the age of 15, household members over the age of 65, and the dependency ratio in the regression model (2)-(5). These variables capture the remittances' determinants and the effects on household debt performance and indebtedness. We also check with the Remittance Decay Hypothesis (RDH) by incorporating household income and the length of period migrants stay outside the household into models (2)-(3) (Hunte, 2004; Lucas & Stark, 1985). We derive implications from the RDH to understand whether remittances decrease over time as the migrant's length of stay at the host country increase or vice versa. If the transfers decay, the remittance-receipt households would view remittances are precarious and unstable (Friedman, 1957; Lim & Simmons, 2015). Households are more likely to manoeuvre remittances toward saving and investment, confirming the transitory income hypothesis.

In an examination of whether or not remittances are being sent in the form of altruism or self-interest behaviour (Lucas & Stark, 1985), if the transfers are sent altruistically, we would expect household dependency and household adverse shock dummies, such as whether or not households experienced business shutdown and household members lost wages, have a significant positive effect on the amount of remittances. Household economic conditions, such as household incomes and agricultural land, have negative effects on remittances.

In contrast, if the expected signs of the relationships between the above variables of interest and remittances are opposite the altruism motive, we would expect that the transfers are made based on the migrant's self-interest (Carling, 2008; Vanwey, 2004). Additionally, we included household borrowings from formal and informal sources and numbers of loans to capture how these variables affect the amount of remittances (Poirine, 1997). Village control

variables such as the availability of irrigation systems and poverty rates are included in the estimation models.

The RDH and the motives of remittances are being sent in either form of altruism or self-interest have implications on household debt performance and indebtedness. We would expect that remittances increase household debt performance and reduce the likelihood of being over-indebted if it is an altruistic transfer and transitory income. Otherwise, we would expect negative or no impact on household debt performance or indebtedness and a tendency to increase the level of indebtedness if the transfers received by the receipt households are primarily self-interest and being considered as permanent incomes.

3.3. Descriptive Statistics

Table 2 reports the descriptive statistics of the independent variables by comparing the difference in means across household characteristics by remittance-receiving household status. The simple statistical test of differences in means demonstrates several significant differences between non-recipient and recipient households. The results show that households with a female head, a head without formal education, and elder household heads are more likely to receive remittances. Similarly, households living in rural areas and households with more family members aged below 15 and above 65 are more likely to receive remittances. This finding suggests that the household is more likely to receive a remittance when there are more non-working and elderly family members. Remittances increase when households have a high level of dependency ratio. Furthermore, there is a statistically significant difference at 5 percent level between non-recipient households and recipient households on informal borrowing and numbers of loans. However, there was no difference when households obtained formal loans. Finally, the results show that the longer migrants are absent from the household, the more households are likely to receive remittances.

Table 2: Household Characteristics by Receiving Remittances

	Non-Recipient Households		Recipient households		Diff in Means	
	Mean	SD	Mean	SD		
Household head Characteristics						
HH head age	47.7642	12.4120	55.1591	12.2254	-7.3949	***
Head age Square	2434.8540	1219.93	3191.136	1294.82	-756.28	***
Head Female	0.2724	0.4461	0.4205	0.4950	-0.1481	***
Head Farmer	0.3821	0.4869	0.4545	0.4994	-0.0724	
Head no Education	0.1951	0.3971	0.2955	0.4575	-0.1003	**
Household characteristics						
HH Rural Area	0.6748	0.4694	0.7784	0.4165	-0.1036	**
Log Household Income	5.9053	1.2797	4.6671	2.1622	1.2382	***

	Non-Recipient Households		Recipient households		Diff in Means	
	Mean	SD	Mean	SD		
HH member below 15	1.3740	1.1842	1.9034	1.5989	-0.5294	***
HH member above 65	0.2154	0.4848	0.4205	0.6274	-0.2050	***
HH dependency ratio	224.302	116.711	293.950	173.299	-69.6481	***
HH migrant members	0.1341	0.4805	1.4375	1.0884	-1.3034	***
HH Formal borrowing	0.3049	0.4613	0.2727	0.4466	0.0322	
HH informal borrowing	0.1585	0.3660	0.0852	0.2800	0.0733	**
HH number of loans	0.5122	0.6924	0.3750	0.5412	0.1372	**
Loan financing migration	0.0447	0.2071	0.1080	0.3112	-0.0632	**
Migrant network	0.6341	0.4827	0.8409	0.3668	-0.2068	***
HH agricultural land (hectare)	1.0785	2.3636	1.1715	1.6441	-0.0930	
HH agricultural land Square	6.7268	42.3290	4.0599	9.5976	2.6669	
Average length of migrant stay outside HH	2.2520	11.0225	26.0909	26.3835	-23.8389	***
Household Shocks						
Business shutdown dummy	0.0000	0.0000	0.0057	0.0754	-0.0057	
HH member loss wages dummy	0.0285	0.1666	0.0057	0.0754	0.0228	*
Village fixed effect						
Poverty rate	0.1733	0.1007	0.1530	0.0933	0.0203	***
Irrigation system dummy	0.4146	0.4937	0.3807	0.4869	0.0340	
Provincial Dummy						
Siem Reap	0.3211	0.4679	0.3182	0.4671	0.0030	
Banteay Menchey	0.3049	0.4613	0.3807	0.4869	-0.0758	
Battambang	0.3740	0.4848	0.3011	0.4601	0.0728	

*Note: The Wald test was performed to test the null hypothesis of equal means. *** p<0.01, ** p<0.05, * p<0.1.*

4. Results

This section summarises and discusses the main findings of the paper. First, we analyse and address the self-selection bias and identify factors motivating migrants to remit and the amount of remittances received by recipient households in Table 3. Second, we estimate the impacts of remittances on household debt performance and level of indebtedness, as presented in Tables 4 and 5.

4.1. Motivations to Remit

Table 3 presents the estimated results of the two empirical models, the two-step Heckman selection and the two-stage least square (2SLS) model.

Two issues must be addressed. First, the results from Table 3, columns 1 and 2, show that the Inverse Mill's Ratio (λ_i) is statistically insignificant, suggesting that there is no evidence of self-selection bias issues present in our model. Secondly, the value of rho (ρ) is close to zero, implying that the correlation between the unobservable terms from the selected equation θ_i and the outcome equation u_i is not sufficiently large enough to validate the robustness and consistent estimates of the two-step Heckman selection model.

Therefore, we compare our results with the 2SLS estimation. The results suggest that the 2SLS model performs better than the two-step Heckman selection model as the model is estimated with robust standard errors and the adjusted R-square is 0.92. In addition, the instrumental variables satisfy the exclusion restriction and the statistical test of weak instruments. Therefore, the 2SLS model can be relied upon to assess factors motivating to remit and the amount of remittances household received.

In the 2SLS estimation result, the motivation to remit is driven by altruistic aspiration. Household economic conditions, such as household incomes and agricultural land, household dependency, and household adverse shock dummies have expected signs, statistically significant at 1 percent and 5 percent level. The results from column (4) show that household income has a significant negative effect on a migrant's likelihood to remit, consistent with the finding of Hunte (2004). As household incomes increase, migrants are more likely to reduce their propensity to send remittances. This is due to the fact that the household may not confront liquidity constraints or financial hardship. Household agricultural land and its quadratic term indicate a statistically significant and non-linear relationship with remittances. This result implies that as household agricultural land increases by one hectare, remittances increase by 0.08 percentage points. The agricultural land quadratic term is negative, suggesting the transfer would decline if the household holds a certain threshold size of agricultural land. The household dependency ratio has a significant positive effect on the amount of remittances, showing that households tend to receive more transfers whenever households consist of a large proportion of non-earning family members. The last evidence to support the altruistic motive is the positive effect of household adverse shock on remittances. Migrants would send more remittances when their left-behind households experience or confront the adverse effects. A business shutdown shock was related to a remittance increase of 2.07 percent.

Our empirical results also unravel evidence of the RDH. We gain insight into this with two sets of variables: 1) negative effect of household income and 2) the length of migrant stay outside the households. In column 4, the migrant's length of stay is positive and statistically associated with the amount of remittances. Its quadratic term is statistically significant and

negative, implying a non-linear relationship. This finding may suggest that the longer migrants stay at their destination, the more likely they are to access a stable job and income, and thus they are more likely to send remittances but decline over a period of time (Durand, Kandel, Parrado, & Massey, 1996; Lim & Basnet, 2017).

Based on the above findings confirming the remittance decay hypothesis, the receipt households tend to view remittances as transitory incomes. The evidence of the transitory income is also supported by the fact that Cambodian labour mobility is typically characterized by temporary and seasonal migration. As a result, there is a high likelihood of migrants returning home within a short period. If labour mobility falls into a short-term and seasonal category, remittances sent home can be uncertain and irregular in terms of frequency and amount. The recipient households thus channel remittances toward saving or investment instead of immediate consumption.

Table 3: The Determinants of Remittances

VARIABLES	Heckman Selection		Two-Stage Least Square (2SLS)	
	First Stage	Second Stage	First Stage	Second Stage
	Binary remittances	Log Remittance HH received	Binary remittances	Log Remittance HH received
	(1)	(2)	(3)	(4)
Instrumental Variable (IV)	0.186**		0.0630***	
	(0.0794)		(0.0152)	
Binary Remittances				3.747***
				(0.571)
Household Head's Characteristics				
HH Head age	0.0199	0.0640	0.00634	0.0329
	(0.0515)	(0.0488)	(0.0128)	(0.0216)
Head age Square	-2.34e-05	-0.000636	-0.000032	-0.000318
	(0.000519)	(0.000481)	(0.00013)	(0.000239)
Head Female	0.319	0.189	0.03819	0.154
	(0.207)	(0.166)	(0.0410)	(0.0940)
Head Farmer	0.296	-0.325	0.07069	-0.123
	(0.241)	(0.203)	(0.04388)	(0.0968)
Head No Education	0.230	-0.328*	0.07383	-0.159
	(0.217)	(0.178)	(0.0511)	(0.104)
Household's Characteristics				
HH Rural Area	-0.128	-0.331	-0.0211	-0.0357
	(0.220)	(0.214)	(0.0428)	(0.0833)
Log Household Income	-0.103*	-0.104**	-0.0116	-0.0812***
	(0.0600)	(0.0440)	(0.0129)	(0.0285)
HH member below 15	0.0727	-0.0386	0.0077	0.0109
	(0.0920)	(0.0716)	(0.0153)	(0.0345)
HH member above 65	0.181	-0.170	0.0535	-0.0645
	(0.201)	(0.162)	(0.0499)	(0.0956)
HH Dependency Ratio	0.000970	0.00106	0.00027	0.000593**
	(0.000858)	(0.000692)	(0.0002)	(0.000286)
Number of migrants per HH	0.0117	0.236**	-0.0112	0.252**
	(0.281)	(0.115)	(0.0386)	(0.111)
HH Formal borrowing	-0.108	0.0936	-0.0189	0.00251
	(0.211)	(0.170)	(0.0377)	(0.0884)

Table 3: The Determinants of Remittances

VARIABLES	Heckman Selection		Two-Stage Least Square (2SLS)	
	First Stage	Second Stage	First Stage	Second Stage
	Binary remittances	Log Remittance HH received	Binary remittances	Log Remittance HH received
	(1)	(2)	(3)	(4)
HH Informal borrowing	-0.621**	-0.566**	-0.1166*	-0.329**
	(0.260)	(0.284)	(0.0676)	(0.150)
Loan financing migration	0.0438	0.507**	0.02804	0.230
	(0.337)	(0.241)	(0.04291)	(0.149)
Migration network	0.802***	-0.130	0.1543***	0.0961
	(0.228)	(0.228)	(0.00429)	(0.109)
HH Agricultural Land (Hectare)	0.299**	0.295**	0.0225	0.0815**
	(0.146)	(0.141)	(0.0171)	(0.0332)
HH Agricultural land Square	-0.0332*	-0.0281	-0.00176**	-0.00345**
	(0.0193)	(0.0213)	(0.00071)	(0.00156)
Length of Stay (Months)	0.0251	0.0219*	0.00491	0.0229**
	(0.0188)	(0.0113)	(0.000359)	(0.00959)
Length of Stay Square	-0.000243	-0.000161	-5e-05	-0.000191**
	(0.000188)	(0.000111)	(3.35e-05)	(9.10e-05)
Household Shocks				
Business Shutdown Dummy	6.132	1.996**	0.06364***	2.071***
	(0)	(1.007)	(0.0750)	(0.409)
HH member loss wages Dummy	-1.785*	0.0748	-0.1589*	0.0748
	(1.077)	(1.000)	(0.0913)	(0.164)
Village Effect				
Village Poverty Rate	-1.778	-0.972	-0.3227	-0.122
	(2.056)	(1.823)	(0.4524)	(0.837)
Irrigation System Dummy	-0.0932	0.130	-0.0117	0.0357
	(0.216)	(0.192)	(0.042)	(0.0841)
Household Wealth Dummy	YES	YES	YES	YES
Provincial Dummy	YES	YES	YES	YES
Inverse Mills Ratio (λ_i)		0.0484		
		(0.307)		
Constant	-2.419*	2.840**	-0.215	-0.696
	(1.367)	(1.347)	0.3279	(0.519)
Observations	418	418	418	418
Rho	0.053			
Sigma	0.9023			
R-squared			0.5431	0.929
Prob > Chi2		0.0000	0.0000	0.0000

*Note: Instrumental variable: log[(Destination GDPPC*number of migrants)/(Total adults in household)]. An instrumental variable admissibility satisfies the Exclusion Restriction condition. Heckman selection model: Selected case: 174 and non-selected case: 244. Two stage least square First Stage F-test= 17.24, p-value=0.000; Household sampling weight applied based on Deaton (1987). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

However, this finding contrasts to Chea and Wongboonsin (2019), who examined how remittances impact education in Cambodia. They suggest that remittance-recipient households view remittances as permanent income since migrant households utilize remittances for consumption instead of investment. There is a key reason to explain the differences. Chea and

Wongboonsin (2019) used the Cambodian socio-economic survey data from 2009, when labour migration and remittances sent from Thailand were stable. Thailand's immigration policy shift in 2014 and 2017 were significant turning points contributing to the change of Cambodian labour migration and remittances behaviour afterward. The Thai authorities launched a policy to crackdown on illegal migrants working in 2014 and 2017, leading to a mass movement of migrant workers while Cambodian irregular migrants were detained and deported. Doing so profoundly created uncertainty among Cambodian migrant workers. As a result, recipient household's expectation on remittances tends to change toward transitory income. Bodvarsson and Van den Berg (2013) suggested that a shift in immigration policy at the destination country will not only impact migration decisions- in terms of migration channel and period of time but also the benefits a migrant receives and remittances sent home. Therefore, post-2014 immigration policy shift increases the volatility of remittances sending home and labour mobility became more difficult afterwards, particularly for illegal migrant workers.

Finally, migration networks remains a vital determinant explaining the motivation to remit, a finding that is consistent with Anzoategui, Demirgüç-Kunt, and Martínez Pería (2014). However, there is no evidence suggesting that the amount of remittances migrants sent from abroad increases with the migration networks that household have. There was no significant relationship between remittances and formal household borrowings after a family member migrated. Households with informal borrowings, however, are less likely to receive remittances.

4.2. Debt Performance Impacts of Remittances

Table 4 presents the estimation results for the impact of remittances on household debt performance, categorized as low, medium, and high debt performance. The predicted value of remittances from equation (3) is substituted into equations (4) and (5). The results show that remittances positively and significantly impact household debt performances across various estimated models in columns 2–4 and 7 in Table 4.

Estimated models in columns 2–3 in Table 4 show consistent results across covariates including household characteristics and household experiences with adverse shock events. The estimation results show that the estimated coefficients on remittances are positive and statistically significant at 1 percent level, suggesting that increasing remittances by 10 percent would lead to a 1 percent increase in household debt performance. As remittances tend to be transitory income commonly sent by temporary labour migrants (Lucas & Stark, 1985; Modigliani & Ando, 1957), remittances are commonly invested in productive assets to generate income. Even though we are limited to investigating the effect of remittances on financial deepening and inclusion, the transitory remittances we observed allow us to conclude that remittances enhance household saving and investment, which could indirectly enhance the household's ability to access financial services. Therefore, remittances have a significant effect on enhancing household debt performance.

The natural logarithm of household income effect indicates positive and statistically significant at 1 percent level, suggesting that households with sufficient and stable income can secure their loan repayments and ensure their consumption level exceeds the sustainable level. Additionally, it appears to allow households to achieve better debt performance. Results from columns 2 and 3 in Table 4 also suggest that having household family members aged below 15 and above 65 is likely to hamper debt performance because they often do not contribute to household income. Households with a higher number of working-age adults (aged 15–65) had a higher likelihood of decreasing in debt performance. This result is consistent with the life-cycle hypothesis which predicts that in the early stages of working life, households take out more loans to smooth consumption (Modigliani, 1966). This hypothesis is also confirmed by the number of loans households took out. On average, the addition of one loan per household decreased household debt performance by 0.161 percent and 0.159 percent. This finding is consistent with prior research such as Guha and Chowdhury (2013) who suggested that multiple loans represent inefficient use of credit and a predominance of loan utilization for consumption. This subsequently leads to over-indebtedness and reduces the ability to repay debts.

Table 4: Impacts of Remittances on Household Debt Performance

VARIABLES	Model	Model	Model	Low Debt Performance	Medium Debt Performance	High Debt Performance	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\widehat{Remittances}$	0.0242	0.102***	0.102***	0.0728***	-0.00231	-0.00231	0.103***
	(0.0155)	(0.0107)	(0.0112)	(0.0140)	(0.00745)	(0.00745)	(0.0121)
HH Head Characteristics							
HH Head age	0.0227			-0.0197	0.00978	0.00978	-0.00339
	(0.0185)			(0.0162)	(0.00711)	(0.00711)	(0.0170)
Head age Square	-0.000262			0.000188	-0.000102	-0.000102	4.55e-05
	(0.000190)			(0.000158)	(7.58e-05)	(7.58e-05)	(0.000186)
Head Female	-0.0677			-0.00506	0.0271	0.0271	0.0229
	(0.0921)			(0.0609)	(0.0318)	(0.0318)	(0.0664)
Head Farmer	-0.188*			-0.0238	-0.0263	-0.0263	-0.117*
	(0.0969)			(0.0625)	(0.0319)	(0.0319)	(0.0632)
Head No Education	0.00516			-0.101	-0.0173	-0.0173	-0.179***
	(0.0762)			(0.0740)	(0.0312)	(0.0312)	(0.0616)
Household Characteristics							
HH Rural Area		0.134***	0.133**	0.0777	0.0212	0.0212	0.161***
		(0.0496)	(0.0548)	(0.0780)	(0.0259)	(0.0259)	(0.0548)
Log Household Income		0.299***	0.299***	0.133***	0.0462***	0.0462***	0.295***
		(0.0245)	(0.0248)	(0.0240)	(0.0121)	(0.0121)	(0.0243)
HH Poor ID		-0.0631	-0.0623	-0.0493	0.0447	0.0447	-0.0545
		(0.0582)	(0.0589)	(0.0646)	(0.0301)	(0.0301)	(0.0578)
HH members below 15		-0.0855***	-0.0854***	-0.00154	-0.00188	-0.00188	-0.0821***
		(0.0200)	(0.0201)	(0.0230)	(0.0116)	(0.0116)	(0.0201)
HH members above 65		-0.0941**	-0.0931**	-0.0629	0.0301	0.0301	-0.112*
		(0.0428)	(0.0437)	(0.0707)	(0.0301)	(0.0301)	(0.0638)
HH members 15–65		-0.109***	-0.109***	0.00579	-0.0255**	-0.0255**	-0.105***
		(0.0188)	(0.0189)	(0.0231)	(0.0102)	(0.0102)	(0.0192)
HH Dependency Ratio		-0.000315	-0.000316	6.62e-05	-0.000135	-0.000135	-0.000445**
		(0.000195)	(0.000196)	(0.000184)	(0.000134)	(0.000134)	(0.000203)
Numbers of Loans per HH		-0.161***	-0.159***	-0.157***	0.00936	0.00936	-0.157***
		0.0469)	(0.0480)	(0.0468)	(0.0227)	(0.0227)	(0.0472)

Table 4: Impacts of Remittances on Household Debt Performance

VARIABLES	Model	Model	Model	Low Debt Performance	Medium Debt Performance	High Debt Performance	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Agricultural Land (Hectare)		-0.0343	-0.0340	-0.0168	0.00188	0.00188	-0.00602
		(0.0217)	(0.0223)	(0.0694)	(0.0153)	(0.0153)	(0.0232)
Agricultural Land (Square)		0.00245***	0.00244***	-0.00527	-0.00102	-0.00102	0.00164*
		(0.000911)	(0.000936)	(0.0117)	(0.00131)	(0.00131)	(0.000972)
Village Fixed Effect							
Irrigation System Dummy			0.00990	0.0489	-0.00257	-0.00257	0.0159
			(0.0585)	(0.0595)	(0.0288)	(0.0288)	(0.0577)
Village Poverty Rate			0.0370	0.687	0.0285	0.0285	-0.105
			(0.582)	(0.686)	(0.309)	(0.309)	(0.578)
Household Shock After Members Migrate							
Crop failure			0.00559	0.113	0.0692	0.0692	0.0268
			(0.106)	(0.144)	(0.0582)	(0.0582)	(0.106)
Crop damage due to flood			-0.123	0.0615	-0.162***	-0.162***	-0.0949
			(0.145)	(0.143)	(0.0462)	(0.0462)	(0.172)
Business shutdown			-0.0264	-	-	-	0.0664
			(0.0955)				(0.104)
Provincial dummies	YES	YES	YES	YES	YES	YES	YES
var(e.lndd1)	0.438***	0.224***	0.224***	0.0892***	0.0154***	0.0154***	0.217***
	(0.0399)	(0.0241)	(0.0241)	(0.0142)	(0.00129)	(0.00129)	(0.0240)
Constant	1.056**	0.203	0.190	0.449	1.066***	1.066***	0.350
	(0.428)	(0.143)	(0.220)	(0.428)	(0.189)	(0.189)	(0.410)
Observations	418	418	418	153	136	136	418

*Note: Low Debt Performance: 0 to less 2.5; Medium Debt Performance: 2.5 to less than 4.5; and High Debt Performance: 4.5 and Above. Household sampling weight applied based on Deaton (1987) Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1*

Although the estimation results do not provide strong evidence of how household agricultural landholdings impact on household debt performance, the agricultural land's quadratic term suggests a non-linear relationship between remittances and agricultural land a household possesses. The agricultural land may be used, initially, as collateral to obtain loans that could deter household debt performance. However, as the agricultural land quadratic term suggest, this relationship becomes positive, implying that more land leads to higher outputs generating household income which can then be used to repay debts.

We divided the level of household debt performance into low, medium, and high and assessed how remittances affected debt performance at different clusters. Doing so allows us to understand how remittances impact different subsets of household debt performance. Results from columns 4–7 in Table 4 show that remittances appear to significantly affect only low debt performance. Households with low debt performance tend to have a high debt burden (0–2.5 level of debt performance), slightly above the sustainable level compared to their household counterparts. On average, a percentage point increase in remittances leads to a 0.072 percent increase in debt performance among low debt performance households, but there is no significant effect of remittances on medium and high debt performance households. This implies that remittances play an important role in reducing household financial burden from being indebted and reduce the likelihood of being over-indebtedness.

We find a consistent effect of household income across all different levels of household debt performance, suggesting that higher income levels positively enhance household debt performance. The household dependency ratio is negatively associated with household debt performance, suggesting that the high number of non-generating household incomes may increase the severity of household debt and trigger a debt trap. Additionally, households with a higher number of loans have lower debt performance. This analysis shows that on average, each additional loan taken by a household causes a 0.157 percent decline in its debt performance. The effect of a household's agricultural land area appears to be statistically insignificant, yet its quadratic term indicates a strongly positive association.

4.3. Household Indebtedness Impacts of Remittances

Finally, Table 5 presents the estimation results of remittances impact on household indebtedness. Our empirical estimations show that remittances are positive and significantly and consistently impact household indebtedness in all models from columns 1 to 4. The results show that 1 percent increases in remittances received by a household, there is 0.104–0.175 percent reduction in household indebtedness reduction, respectively. As expected, the result shows that households are less likely to be prone to a higher level of indebtedness when household income increases.

Table 5: Impacts of Remittances on Household Indebtedness

VARIABLES	Model (1)	Model (2)	Model (3)	Full Samples (4)
$\widehat{Remittances}$	-0.104**	-0.147***	-0.145***	-0.175***
	(0.0408)	(0.0447)	(0.0496)	(0.0532)
HH Head Characteristics				
HH Head age	0.0236			0.0861
	(0.0477)			(0.0530)
Head age Square	-8.88e-05			-0.000743
	(0.000488)			(0.000556)
Head Female	0.507**			0.257
	(0.232)			(0.201)
Head Farmer	0.266			0.221
	(0.236)			(0.218)
Head No Education	0.235			0.238
	(0.191)			(0.246)
Household Characteristics				
HH Rural Area		-0.0927	-0.113	-0.194
		(0.204)	(0.191)	(0.187)
Log Household Income		-0.334***	-0.335***	-0.281***
		(0.0780)	(0.0793)	(0.0746)
HH Poor ID		0.171	0.184	0.0419
		(0.207)	(0.207)	(0.200)
HH members below 15		-0.00866	-0.000771	0.0431
		(0.0655)	(0.0678)	(0.0666)
HH members above 65		0.156	0.155	0.122
		(0.177)	(0.180)	(0.215)
HH members 15-65		-0.0830*	-0.0823*	-0.130**
		(0.0498)	(0.0492)	(0.0515)
Numbers of Loans per HH		0.238**	0.231**	0.179
		(0.112)	(0.115)	(0.109)
Dependency Ratio		0.000181	9.65e-05	-0.000128
		(0.000911)	(0.000941)	(0.000912)
Agricultural Land (Hectare)		-0.107	-0.104	-0.133
		(0.101)	(0.110)	(0.146)
Agricultural Land (Square)		0.0345**	0.0337**	0.0339*
		(0.0145)	(0.0151)	(0.0196)
Village Characteristics				
Irrigation System Dummy			-0.00594	0.00634
			(0.210)	(0.212)
Village Poverty Rate			0.682	0.291
			(2.045)	(2.120)
Household Shock After Members Migrate				
Crop failure			0.219	0.0867
			(0.375)	(0.342)
Crop damage due to flood			-0.300	-0.445
			(0.442)	(0.543)
Business shutdown			0.228	0.0924
			(0.333)	(0.400)
Provincial dummies	YES	YES	YES	YES
var(e.lndd3)	1.174***	0.950***	0.949***	0.884***

Table 5: Impacts of Remittances on Household Indebtedness

VARIABLES	Model (1)	Model (2)	Model (3)	Full Samples (4)
	(0.248)	(0.193)	(0.194)	(0.176)
Constant	-0.594	2.536***	2.352**	0.0438
	(1.045)	(0.654)	(0.961)	(1.359)
Observations	169	169	169	169

*Note: Household sampling weight applied based on Deaton (1987) Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1*

We continue to find that the number of working-age members of households is essential in lowering in household indebtedness as they generate household income, as the life-cycle hypothesis predicted. Column 5 shows that when household increases by one working-age member (15-65) who generates income, the level of household indebtedness declines by 0.13 percent, holding other factors constant. The number of loans taken by households remains a crucial determinant in increasing household level of indebtedness.

Although a household's agricultural land area indicates an insignificant negative effect on indebtedness, its quadratic term of the size of agricultural land is positive and a significant effect across all models in Table 5. This result may intimate that households could first possess a sufficient size of agricultural land that yielding sufficient outputs and income with which to repay loans. As households obtain a greater size of agricultural land, a household would choose to use their land as collateral to secure borrowings; therefore, as debt accumulates, households increase their level of indebtedness. Finally, there is no evidence suggesting that village characteristics and household adverse events influence the household level of indebtedness.

5. Conclusions

The impact of remittances on development outcomes in recipient economies has received attention from many researchers and policymakers. In developing countries, however, household indebtedness remains problematic, requiring attention since it could amplify financial fragility. Unlike previous studies on remittance, we explore the effect of remittances on household indebtedness and debt performance. Two critical questions are asked in this paper. First, what are the determinants of remittance inflows to Cambodian recipient households? Second, to what extent do remittances impact on household debt performance and level of indebtedness? To answer these questions, we first employ the Two-Step Heckman Selection Model and the Two-Stage Least Square regression to determine the motivation to remit. After instrumenting, the Tobit model is then used to estimate the impact of remittances on household debt performance and level of household indebtedness.

The estimated results show that remittance inflows are motivated by the altruistic aspiration that links the left-behind household economic conditions. Notably, Cambodia labour migration tends to be temporary and seasonal. The evidence suggests that remittance-receiving

households view remittances as transitory income that may decay over time as a migrant's length of stay outside the household increases. After instrumenting, remittances are found to have a positive and statistically significant effect on enhancing household debt performance. The estimation remains consistent at the aggregate household level. It shows that a 10 percent increase in remittance inflows to the recipient household leads to a 1 percent improvement in household debt performance. Similarly, a 10 percent increase in remittance inflows to the recipient household reduces the household level of indebtedness by 1.7 percent.

Our empirical results have policy implications and are suggestive of further research. As an external source of income, remittances enhance household welfare and reduce the severity of household indebtedness. It is important to note that remittances sent to left-behind households are not always sufficiently large, reducing the transaction fee and can therefore be used to leverage household benefits from remittances. Reducing remittance transfer fees should be endorsed by policymakers, financial institutions, and money transfer operators in sending and receiving countries. Moreover, promoting financial literacy and regulating informal service providers should be considered as policy priorities since it would expand migrants and the left-behind households' access to formal and digital services in sending and receiving remittances. However, more research is needed to determine mechanisms that could induce household technology adaptation, financial literacy, and remittances, particularly in the global south migration.

Notes

(1) From a standard approach, the New Economic of Labour Migration (NELM) theoretical model is often used as a benchmark theoretical model to answer motivation to remit. Remittances being transmitted to households come in various forms such as (1) the pure altruism, (2) the pure self-interest, and (3) the tempered altruism or enlightened self-interest including risk sharing, loan repayment, and exchange behaviour (Carling, 2008; Lucas & Stark, 1985; Vanwey, 2004). Other motivations include as loan repayment (Poirine, 1997; Rapoport & Docquier, 2006), risk-sharing (Yang & Choi, 2007), and exchange behaviours (Rapoport & Docquier, 2006).

(2) According to Modigliani and Ando (1957), the LCH explains that households maximize their utility function over the life-cycle. Households thus smooth their consumption pattern based on their lifetime income expectation. As in the early periods, households would decide to smooth their consumption from debt, and then households pay off their debt as income increases in the later period.

(3) The PIH is embedded in the LCH of consumption (Friedman, 1957). This hypothesis suggests that current household consumption is based on future and permanent income levels as borrowing and saving levels may change throughout time.

(4) The total share of household debt to GDP in Thailand is 69 percent, Malaysia 68 percent, Singapore 57 percent, and Indonesia 17% (Chantarat, Lamsam, Samphantharak, & Tangsawasdirat, 2020).

(5) According to Liv (2013, p. 11-12), the objective measure determines the "a borrower to be over-indebtedness when his/her debt service is higher than his/her net income during a defined timeframe.

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APPENDIX

Household Sampling Weight

We constructed the household weight W_i^h based on Deaton (1987):

$$W_i^h = \frac{W_i^v}{H_i^s \sum_{i=1}^{n} W_i^v}$$

Where W_i^v denotes the gross weight for the village while H_i^s is the total number of surveyed households in village i. W_i^v is calculated as:

$$W_i^v = \frac{T_i^v}{H_i^s} \cdot \frac{\sum_{j=1}^{n} T_i^v}{\sum_{i=1}^{n} H_i^S}$$

Where T_i^v denotes the total number of households located in the village i and H_i^s is the number of households from which information has been collected information in village i. Household weights are standardized sum to one.

Table A.1 : The Polychoric PCA

	Appropriateness of the Polychoric PCA
The determinant of the Correlation Matrix	0.367
Bartlett test of sphericity	
Chi-square	415.74
Degree of freedom	105
P-value	0.000
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy	0.633

Note: The Bartlett test of Sphericity indicates a small p-value suggesting a correlation matrix is suitable for factor analysis. The KMO test of sampling adequacy shows the statistical value is 0.633, which is above the threshold of 0.5, underlying a valid evidence to proceed with the factor analysis and suggest appropriateness to construct household wealth index with Polychoric PCA.
Source: Author's calculation

Table A.2: Weak Instrumental Variable Robust Test

Test	Statistics		P-Value	Conf. Level	Confidence interval	
AR	Chi2(1)	9.18	0.0024	95%	2.36665	4.9915
Wald	Chi2(1)	42.99	0.0000	95%	2.62681	4.867004

Note: This test uses the Lagrange Multiplier approach based on Kleibergen–Paap Test for weak instruments (Pflueger & Wang, 2015). The null hypothesis suggests that our instrumental variable is weak. Table A2 shows that AR and Wald tests indicate the chi-square statistics are 9.18 (AR test) and 42.99 (Wald rest) and the P-values are statistically significantly different from zero. Therefore, we cannot accept the null hypothesis; we do not have enough evidence suggesting our selected instrument is weak.
Source: Author's calculation

Table A.3: The Test of Exclusion Restrictions

VARIABLES	(1) Binary Remittances	(2) Binary Remittances	(3) Binary Remittances	(4) Amount of Remittances
Binary Remittances				**4.287*** **
				(0.173)
Instrumental Variable	**0.0769*** **	**0.0634*** **	**0.0632*** **	**-0.0351**
	(0.00451)	**(0.0152)**	**(0.0152)**	**(0.0386)**
HH Head age	-0.00239		0.00672	0.0303
	(0.0117)		(0.0128)	(0.0213)
Head age Square	7.21e-05		-3.42e-05	-0.000305
	(0.000121)		(0.000138)	(0.000236)
Head Female	0.0414		0.0309	0.131
	(0.0401)		(0.0407)	(0.0834)
Head Farmer	0.107***		0.0751*	-0.137
	(0.0382)		(0.0439)	(0.0929)
Head No Education	0.0284		0.0699	-0.202*
	(0.0488)		(0.0510)	(0.106)
HH Rural Area		-0.00713	-0.0212	-0.0139
		(0.0427)	(0.0426)	(0.0876)
Log Household Income		-0.0188	-0.0120	-0.0753***
		(0.0128)	(0.0129)	(0.0256)
HH member below 15		0.00205	0.00764	0.00525
		(0.0159)	(0.0153)	(0.0349)
HH member above 65		0.0861**	0.0538	-0.0814
		(0.0351)	(0.0499)	(0.0948)
HH Dependency Ratio		0.000272	0.000292	0.000503
		(0.000200)	(0.000200)	(0.000317)
Number of migrants per HH		-0.00798	-0.0156	0.257**
		(0.0381)	(0.0386)	(0.119)
HH Formal borrowing		-0.0166	-0.0133	0.0329
		(0.0385)	(0.0379)	(0.0874)
HH Informal borrowing		-0.120*	-0.118*	-0.265**
		(0.0687)	(0.0673)	(0.130)
Loan financing migration		0.0217	0.0277	0.207
		(0.0815)	(0.0774)	(0.129)
Network effect		0.143***	0.156***	0.0139
		(0.0434)	(0.0426)	(0.0793)
HH Agricultural Land (Hectare)		0.0325**	0.0225	0.0668**
		(0.0163)	(0.0171)	(0.0305)
HH Agricultural land Square		-0.00204***	-0.00177**	-0.00248*
		(0.000721)	(0.000713)	(0.00126)
Length of Stay (Months)		0.00508	0.00516	0.0200***

VARIABLES	(1) Binary Remittances	(2) Binary Remittances	(3) Binary Remittances	(4) Amount of Remittances
		(0.00346)	(0.00356)	(0.00768)
Length of Stay Square		-4.74e-05	-5.13e-05	-0.000162**
		(3.30e-05)	(3.33e-05)	(7.24e-05)
Poverty rate		-0.393	-0.373	0.0339
		(0.457)	(0.449)	(0.845)
Irrigation System		-0.0186	-0.0125	0.0362
		(0.0425)	(0.0419)	(0.0819)
Household Wealth Dummy		YES	YES	YES
Provincial Dummy		YES	YES	YES
Constant	0.0121	0.0960	-0.220	-0.608
	(0.278)	(0.188)	(0.326)	(0.554)
Observations	422	418	418	418
R-squared	0.490	0.522	0.538	0.932

*Note: Household sampling weight was applied based on Deaton (1987). Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*

Table A.4 : Determinants of Remittances (Binary Endogenous Treatment Effects)

VARIABLES	Maximum Likelihood Estimation First Stage (1)	Maximum Likelihood Estimation Second Stage (2)	Two-Step Estimation First Stage (3)	Two-Step Estimation Second Stage (4)
	Binary Remittances	Amount Remittances	Binary Remittances	Amount Remittances
Instrumental Variable	**0.207*** **		**0.187** **	
	(0.0727)		**(0.0785)**	
Remittances		**4.222*** **		**4.104*** **
		(0.181)		**(0.313)**
HH Head age	0.0361	0.0313	0.0198	0.0293
	(0.0529)	(0.0204)	(0.0512)	(0.0198)
Head age Square	-0.000197	-0.000313	-1.35e-05	-0.000290
	(0.000550)	(0.000227)	(0.000516)	(0.000204)
Head Female	0.223	0.137	0.265	0.126
	(0.193)	(0.0837)	(0.204)	(0.0772)
Head Farmer	0.341	-0.133	0.315	-0.132
	(0.221)	(0.0902)	(0.237)	(0.0901)
Head No Education	0.283	**-0.200** **	0.199	**-0.180** **
	(0.234)	**(0.102)**	(0.216)	**(0.0862)**
HH Rural Area	-0.0902	-0.0136	-0.133	-0.0197
	(0.204)	(0.0842)	(0.219)	(0.0834)
Log Household Income	-0.0809	**-0.0709*** **	**-0.102***	**-0.0708*** **
	(0.0595)	**(0.0237)**	**(0.0598)**	**(0.0230)**

VARIABLES	Maximum Likelihood Estimation		Two-Step Estimation	
	First Stage	Second Stage	First Stage	Second Stage
	(1)	(2)	(3)	(4)
	Binary Remittances	Amount Remittances	Binary Remittances	Amount Remittances
HH member below 15	0.0518	0.00913	0.0687	0.00546
	(0.0729)	(0.0359)	(0.0915)	(0.0333)
HH member above 65	0.174	-0.0745	0.147	-0.0931
	(0.198)	(0.0902)	(0.197)	(0.0808)
HH Dependency Ratio	0.00122	**0.000515***	**0.00101**	**0.000596***
	(0.000858)	**(0.000301)**	**(0.000844)**	**(0.000334)**
Number of migrants per HH	-0.0379	**0.173****	**-0.0144**	**0.179****
	(0.205)	**(0.0706)**	**(0.278)**	**(0.0704)**
HH Formal borrowing	-0.0195	0.0275	-0.0669	0.0363
	(0.193)	(0.0879)	(0.206)	(0.0756)
HH Informal borrowing	**-0.499***	**-0.284****	**-0.608****	**-0.258****
	(0.282)	**(0.133)**	**(0.257)**	**(0.109)**
Loan financing migration	0.0638	0.199	0.0556	**0.218***
	(0.314)	(0.125)	(0.334)	**(0.131)**
Network effect	**0.791*****	0.0230	**0.800*****	0.0263
	(0.226)	(0.0741)	**(0.225)**	(0.0948)
HH Agricultural Land (Hectare)	**0.279****	**0.0697****	**0.304****	**0.0773****
	(0.133)	**(0.0297)**	**(0.145)**	**(0.0346)**
HH Agricultural land Square	**-0.0331****	**-0.00264****	**-0.0340***	-0.00304
	(0.0158)	**(0.00122)**	**(0.0193)**	(0.00193)
Length of Stay (Months)	0.0223	0.0164**	0.0267	**0.0216*****
	(0.0183)	(0.00648)	(0.0188)	**(0.00693)**
Length of Stay Square	-0.000231	**-0.000133****	-0.000255	**-0.000182*****
	(0.000165)	**(6.30e-05)**	(0.000186)	**(6.95e-05)**
Village Poverty Rate	-1.967	0.0962	-1.843	-0.262
	(1.967)	(0.808)	(2.033)	(0.811)
Irrigation System Dummy	-0.132	0.0368	-0.114	0.0170
	(0.200)	(0.0800)	(0.214)	(0.0813)
Household Wealth Dummies	YES	YES	YES	YES
Provincial Dummies	YES	YES	YES	YES
Constant	-2.925**	-0.698	-2.392*	
	(1.476)	(0.519)	(1.363)	
Observations	418	418	418	418
athrho		0.0365		
		(0.0729)		
lnsigma		**-0.441*****		

VARIABLES	Maximum Likelihood Estimation		Two-Step Estimation	
	First Stage	Second Stage	First Stage	Second Stage
	(1)	(2)	(3)	(4)
	Binary Remittances	Amount Remittances	Binary Remittances	Amount Remittances
		(0.0729)		
lambda				0.0715
				(0.181)
Wald Chi2		7648.23		4007.95
Prob > Chi2		0.0000		0.0000

*Note: Household sampling weight was applied based on Deaton (1987) in Columns 1 and 2. Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*

Table A.5 : Impacts of Remittances on Housheold Debt Performances (IVTOBIT)

VARIABLES	Model (1)		Model (2)		Model (3)		Model (4)	
	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage
Remittances		**0.0401**		**0.597*** **		**0.602*** **		**0.606*** **
		(0.111)		**(0.0807)**		**(0.0834)**		**(0.0898)**
HH Rural Area			0.00290	0.131**	0.0175	0.122**	0.00470	0.154***
			(0.0381)	(0.0511)	(0.0410)	(0.0567)	(0.0405)	(0.0563)
Log Household Income			-0.00806	0.298***	-0.00952	0.298***	-0.00274	0.292***
			(0.0128)	(0.0239)	(0.0132)	(0.0241)	(0.0136)	(0.0238)
HH PoorID			0.0673	-0.0804	0.0691	-0.0793	0.0616	-0.0702
			(0.0478)	(0.0597)	(0.0473)	(0.0603)	(0.0482)	(0.0589)
HH members below 15			0.00789	-0.0862***	0.00710	-0.0857***	0.0103	-0.0821***
			(0.0146)	(0.0211)	(0.0145)	(0.0212)	(0.0144)	(0.0211)
HH members above 65			0.0966***	-0.121***	0.0940***	-0.120***	0.0675	-0.130**
			(0.0353)	(0.0443)	(0.0354)	(0.0453)	(0.0496)	(0.0639)
HH members 15-65			-0.0382	-0.163***	-0.0378	-0.163***	-0.0333	-0.161***
			(0.0248)	(0.0483)	(0.0248)	(0.0492)	(0.0243)	(0.0477)
Dependency Ratio			-0.00804	-0.106***	-0.00590	-0.106***	-0.0110	-0.100***
			(0.0138)	(0.0191)	(0.0141)	(0.0192)	(0.0140)	(0.0196)
Numbers of Loans per HH			0.000212	-0.000293	0.000207	-0.000300	0.000248	-0.000449**
			(0.000199)	(0.000210)	(0.000197)	(0.000211)	(0.000198)	(0.000217)
Agricultural Land (Hectare)			0.0520***	-0.0355	0.0495***	-0.0347	0.0323**	-0.00161
			(0.0141)	(0.0225)	(0.0148)	(0.0230)	(0.0157)	(0.0236)
Agricultural Land (Square)			-0.00270***	0.00261***	-0.0025***	0.00257***	-0.00194***	0.00164*
			(0.000664)	(0.000960)	(0.000678)	(0.000985)	(0.000665)	(0.000996)
HH Head age	-0.00239	0.0240					0.00770	-0.00204
	(0.0116)	(0.0186)					(0.0135)	(0.0168)
Head age Square	7.21e-05	-0.000268					-4.66e-05	2.66e-05
	(0.000120)	(0.000192)					(0.000144)	(0.000182)
Head Female	0.0414	-0.0561					0.0320	0.0376

VARIABLES	Model (1)		Model (2)		Model (3)		Model (4)	
	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage
	(0.0397)	(0.0920)					(0.0394)	(0.0663)
Head Farmer	0.0284	-0.191**					0.0266	-0.149**
	(0.0483)	(0.0958)					(0.0482)	(0.0631)
Head No Education	0.107***	0.0113					0.0949**	-0.207***
	(0.0379)	(0.0760)					(0.0417)	(0.0647)
Irrigation System					-0.0115	0.0200	-0.00928	0.0277
					(0.0408)	(0.0600)	(0.0403)	(0.0589)
Poverty					-0.538	0.257	-0.558	0.0823
					(0.435)	(0.607)	(0.426)	(0.599)
HH Crop Fail					-0.0821	0.0288	-0.0898	0.0532
					(0.0800)	(0.109)	(0.0761)	(0.108)
HH Crop damage due to flood					0.197	-0.178	0.172	-0.138
					(0.301)	(0.182)	(0.269)	(0.194)
Business Shutdown					0.764***	0.0530	0.680***	0.168
					(0.0615)	(0.0966)	(0.0692)	(0.105)
Instrumental Variable	0.0769***		0.0756***		0.0753***		0.0734***	
	(0.00446)		(0.00505)		(0.00520)		(0.00530)	
Provincial Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Constant	0.00295	1.028**	0.0623	0.167	0.205	0.0960	-0.0991	0.260
	(0.265)	(0.430)	(0.104)	(0.141)	(0.169)	(0.223)	(0.320)	(0.412)
athrho2_1	0.120		-0.196***		-0.198***		-0.189***	
	(0.0751)		(0.0701)		(0.0708)		(0.0719)	
lnsigma1	-0.417***		-0.725***		-0.725***		-0.746***	
	(0.0457)		(0.0550)		(0.0553)		(0.0577)	
lnsigma2	-1.055***		-1.065***		-1.075***		-1.088***	
	(0.0465)		(0.0466)		(0.0469)		(0.0458)	
F- Statistics		279.29		224.22		209.64		191.60
Observations	422	422	418	418	418	418		

*Note: Household sampling weight applied based on Deaton (1987). Robust standard errors in parentheses, Instrumental variable: log[(Destination GDPPC*number of migrants)/(Total adults in the household)]. *** p<0.01 ** p<0.05, * p<0.1*

Table A.6: Impacts of Remittances on Household Indebtedness (IVTOBIT)

VARIABLES	Model (1)		Model (2)		Model (3)		Model (4)	
	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage
Remittance		**-0.518**		**-1.153*** **		**-1.157*** **		**-1.288*** **
		(0.328)		**(0.397)**		**(0.422)**		**(0.421)**
HH Head age	-0.0149	0.0159					0.00293	0.0820
	(0.0164)	(0.0467)					(0.0199)	(0.0556)
HH Head age Square	0.000215	-1.46e-05					1.83e-05	-0.000681
	(0.000164)	(0.000473)					(0.000212)	(0.000578)
Head Female	0.151**	0.495**					0.168***	0.318
	(0.0660)	(0.235)					(0.0617)	(0.200)
Head No Education	-0.0109	0.300					-0.0330	0.283
	(0.0785)	(0.238)					(0.0777)	(0.230)
Head Farmer	0.173***	0.227					0.0781	0.308
	(0.0630)	(0.189)					(0.0789)	(0.251)
HH Rural Area			-0.0417	-0.0797	-0.0141	-0.0606	-0.0175	-0.156
			(0.0626)	(0.203)	(0.0654)	(0.197)	(0.0687)	(0.196)
Log Household Income			-0.0204	-0.358***	-0.0228	-0.359***	0.00307	-0.285***
			(0.0227)	(0.0822)	(0.0223)	(0.0839)	(0.0250)	(0.0741)
HH PoorID			0.115	0.273	0.105	0.271	0.0670	0.104
			(0.0764)	(0.223)	(0.0754)	(0.218)	(0.0767)	(0.199)
HH members below 15			0.0140	-0.0126	0.0142	-0.00834	0.0232	0.0385
			(0.0244)	(0.0697)	(0.0234)	(0.0724)	(0.0239)	(0.0714)
HH members above 65			0.108*	0.254	0.101*	0.255	0.0588	0.190
			(0.0611)	(0.183)	(0.0599)	(0.185)	(0.0803)	(0.229)
HH members 15-65			-0.0149	0.242**	-0.0115	0.236*	-0.0196	0.170
			(0.0284)	(0.123)	(0.0286)	(0.125)	(0.0329)	(0.119)
Dependency Ratio			-0.0174	-0.0914*	-0.0136	-0.0905*	-0.0195	-0.143**
			(0.0209)	(0.0523)	(0.0210)	(0.0518)	(0.0211)	(0.0566)
Numbers of Loans per HH			6.79e-05	0.000285	2.66e-05	0.000238	-8.47e-07	-1.93e-05
			(0.000347)	(0.000895)	(0.000330)	(0.000939)	(0.000314)	(0.000908)

VARIABLES	Model (1)		Model (2)		Model (3)		Model (4)	
	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage	First Stage	Second Stage
Agricultural Land (Hectare)			0.135***	-0.0441	0.111**	-0.0484	0.0936*	-0.0951
			(0.0429)	(0.113)	(0.0450)	(0.123)	(0.0504)	(0.154)
Agricultural Land (Square)			-0.0138**	0.0277*	-0.0114**	0.0274*	-0.0105*	0.0286
			(0.00543)	(0.0148)	(0.00546)	(0.0157)	(0.00579)	(0.0202)
Irrigation System					-0.0654	-0.0743	-0.0444	-0.0591
					(0.0724)	(0.215)	(0.0728)	(0.217)
Poverty rate					-1.220	-0.508	-1.332*	-0.854
					(0.751)	(2.146)	(0.756)	(2.234)
HH Crop Fail					0.000982	0.149	-0.0212	0.0123
					(0.141)	(0.378)	(0.146)	(0.354)
HH Crop damage due to flood					0.126	-0.257	0.121	-0.412
					(0.297)	(0.293)	(0.233)	(0.427)
Business shutdown					0.726***	0.207	0.672***	0.00906
					(0.108)	(0.355)	(0.104)	(0.392)
Provincial Dummies	YES	YES	YES	YES	YES	YES	YES	YES
Instrumental Variable	0.0653***		0.0650***		0.0648***		0.0639***	
	(0.00785)		(0.00902)		(0.00904)		(0.00895)	
Constant	0.183	-0.406	0.151	2.715***	0.497*	2.866***	0.174	0.487
	(0.388)	(1.026)	(0.211)	(0.651)	(0.301)	(0.993)	(0.466)	(1.355)
athrho2_1	-0.0481		0.232		0.235		0.245*	
	(0.115)		(0.143)		(0.145)		(0.141)	
lnsigma1	0.0690		-0.00949		-0.0101		-0.0420	
	(0.105)		(0.107)		(0.108)		(0.104)	
lnsigma2	-1.046***		-1.043***		-1.067***		-1.100***	
	(0.0656)		(0.0659)		(0.0681)		(0.0664)	
F- Statistics		69.25		51.85		51.37		50.87
Observations	171	171	169	169	169	169	169	169

*Note: Household sampling weight was applied based on Deaton (1987). Robust standard errors in parentheses, Instrumental variable: log[(Destination GDPPC*number of migrants)/(Total adults in the household)]. *** p<0.01 ** p<0.05, * p<0.1*