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The Impact of Migration and Remittances on Household Welfare: Evidence from Vietnam

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Abstract This paper examines the pattern and the impact of migration and remittances on household welfare in Vietnam using fixed-effects regressions and panel data from Vietnam Household Living Standard Surveys 2010 and 2012. Overall, the effect of migration as well as remittances on employment of remaining members of home households is small. People in households with migration and remittances tend to work less than people in other households. The effect of migration on household welfare happens mainly through remittances. If migrants do not send remittances to their home households, there are no effects of migration on welfare of home households. Remittances, especially international remittances, help receiving households increase per capita income and per capita expenditure and reduce poverty.

Keywords Migration · Remittances · Impact evaluation · Household welfare · Poverty · Vietnam

JEL Classification O15 · R23 · I32

Introduction

Migration has been a popular livelihood strategy of people, especially in developing countries. According to the New Economics Theory of Migration, migration is viewed

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as a collective decision of not only individuals but also their families, and the main incentive for migration is high income in the destination areas (Stark and Bloom 1985; Stark and Taylor 1991; Stark 1991). Households can decide to move the whole family or just send individual members for migration. The migration cost of the whole family is often high for migrating households. As a result, households tend to send one or two members for migration.

In addition to impacts on migrants, migration also has different impacts on migrant-sending households. Migration means the absence of labours in the home households, and this can affect the labour supply and consumption pattern of the households. Remaining adult people might spend more time on housework and taking care of dependent members, thereby less time on working. Taylor and López-Feldman (2010) find that migration reduces labour-intensive production of household due to a shortage of labour. A change in household composition due to migration can lead to a change in consumption pattern of remaining members.

Another direct impact of migration on the migrant-sending households is through remittances (Stark and Taylor 1991; Stark 1991; McKenzie and Sasin 2007). Migrants send remittances to their home households for several reasons. Firstly, migration can be a decision of the whole family instead of individual members. Households are expected to have higher income through remittances as they send their members for migrations. Thus, after finding jobs and having income, migrants are expected to send remittances to contribute to the household income. For some households, migration is costly and they have to borrow to pay for migration. Remittances are used to pay for this debt.

Secondly, migrants can send remittance simply because of altruism. According the altruism theories, the utility of a person depends on not only her own consumption but also on the consumption of her/his family, and as a result, sending remittances to family can increase the utility of migrants (Becker 1974; Barro 1974; Cox 1987, 1990). The remittances are expected to increase not only income but also consumption of households.

Thirdly, as interpreted by the theory on exchange motives, migrants can send remittances to home households to get some benefits in return (Cox 1987). For example, migrants can send remittances so that the recipients will take care of their assets or family or invest in activities with high return on capital than in destination areas. Thus, remittances can lead to a change in not only consumption but also labour and production of home households.

The total effect of migration on migrant-sending households is a priori unknown, since there are different channels through which migration can affect the migrant-sending households. Whether migration helps home households improve welfare and reduce poverty is an empirical question. There are a large number of studies on the effects of migration on welfare of migrant-sending households. The findings are mixed. Adams and Page (2005) find a strong effect on poverty reduction of international remittances in developing countries. Positive impacts of remittances on household welfare and child education are found in some studies such as Adams (1991, 2004, 2006), Acosta et al. (2007), Taylor and Lopez-Feldman (2010).

However, several studies do not find positive effects of international remittances on migrant-sending households. For example, using cross-countries data, Cattaneo (2005) does not find any effect of international remittances on poverty reduction. Other studies such as Stahl (1982) and Azam and Gubert (2006) do not find poverty-reducing effects of remittances. In Yang (2004), migration is showed to reduce labour supply and income of remaining household members in the Philippines. In several studies, parental

migration has a negative effect of children's education (e.g., Kiros and White 2004; McKenzie and Rapoport 2006; Antman 2010; Wang 2011).

The existing studies, both theoretical and empirical, show a wide diversity of results of the impact of migration on migrant-sending households. Whether the effect of migration is positive or negative depend on different country context, and this calls for more empirical studies to better understand the economic effects of international migration and remittances. In this study, we will aim to estimate the effect of migration and remittances on labour supply, consumption and poverty of home households in Vietnam.

Vietnam is a transition country with a large flow of internal as well as international migration. According to the 2009 Population and Housing Census, around 8.5% of the Vietnamese population changed their residence during 2004–2009. There are around 3.2 million Vietnamese living abroad (Nguyen and Mont 2012). These people send a large flow of international remittances to Vietnam. In 2014, the total remittances to Vietnam reached 11 billion USD, accounting for around 6% of total GDP (Phuong 2014).

There are several studies looking at the effect of migration and remittances on migrants' origin households. Migration is found to have a positive effect on households' consumption and poverty reduction in several studies including Brauw and Harigaya (2007), Nguyen et al. (2008), Nguyen et al. (2011). Using Vietnam Household Living Standard Surveys (VHLSS) 2002 and 2004, Nguyen (2008) finds that international remittances helped receiving household increase consumption and reduce poverty. However, using VHLSSs 2006 and 2008 Nguyen and Mont (2012) and Nguyen et al. (2013) do not find a poverty-reducing effect of international remittances.

Compared with previous studies on migration and remittances in Vietnam, this study has several different aspects. Firstly, this study uses more updated household surveys (Vietnam Household Living Standard Surveys in 2010 and 2012) to analyse the pattern and impact of migration and remittances. Migration and remittances are dynamic and changing significantly overtime in Vietnam. Secondly, this examines the effect of both migration and remittances, while most previous studies mainly focus on either migration or remittances. Thirdly, this study will look at the impact of migration and remittances on different outcomes of households including labour, income and consumption. By examining the impact on a series of household outcomes, this study is expected to provide an insightful understanding of mechanisms through which migration can affect migrant-sending households.

We find that migration benefits home households mainly through remittances. Remittances help households increase per capita income and per capita expenditure, and help the households reduce poverty. Without remittances, the effect of migration on per capita income and per capita expenditure mainly happens though reduction of household size (due the absence of migrants in the households). Although remittances have a positive effect on welfare of home households, remittances are found to reduce working incentives of home households.

This paper is structured in six sections. The second section introduces the data sets used in this study. The third section presents description of the migration and remittance trend in Vietnam. The fourth and fifth sections present the estimation method and empirical results of the impact of migration and remittances, respectively. Finally, the sixth section discusses the main findings and policy recommendations.

Data Set

This study relies on the Vietnam Household Living Standard Surveys in 2010 and 2012. The 2010 and 2012 VHLSSs were also conducted by GSO with technical supports from the World Bank in Vietnam. Each VHLSS covered 9399 households, representative at regional levels. VHLSSs contain panel data on 4157 households.

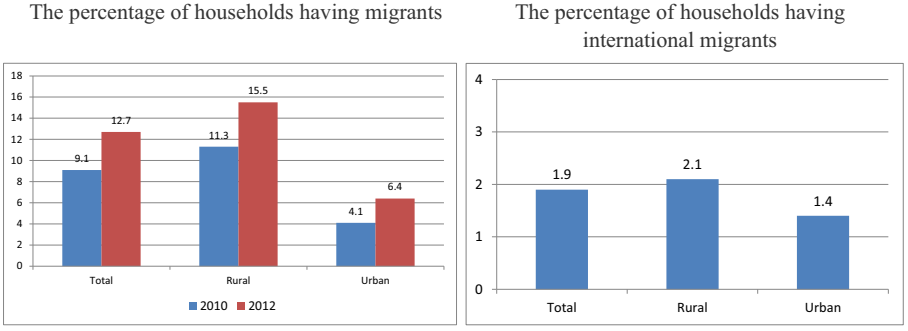
The data set includes detailed data on individuals, households and communes. Individual data consist of information on demographics, education, employment, health and migration. Household data are on durables, assets, production, income and expenditures, and participation in government's programs.

Regarding remittances, all the VHLSSs contain data on remittances, both domestic and foreign, received by households. However, information on migrants is limited in VHLSSs. In all the VHLSSs, there are questions on household members who are working far from home. Information includes gender, age and education of these migrants. However, there is no information on the current location of the migrants. As a result, we are not able to identify whether migrants are living inside or outside Vietnam.

Unlike the 2010 VHLSS and previous VHLSSs, the 2012 VHLSS contains a special module on migration. It asked households about their migrating members: employment and characteristics of migrating members. It also contains data on the current location of migrants so that we can define internal and international migrants.

Migration and Remittances in Vietnam

Figure 1 presents the percentage of household having at least a migrant, either internal or international migrants in 2010 and 2012. The proportion of migrant-sending households in Vietnam increased from 12.1 to 15.4% during 2010–2012. This proportion increased in both rural and urban areas and in all the six regions. Rural households are much more likely to send migrants than urban ones. We also estimate the percentage of households having at least an international migrant using the 2012 VHLSS. As mentioned in previous section, there are no data on the location of migrants in the



Source: authors' estimates from VHLSSs 2010 and 2012

Fig. 1 The percentage of households having migrants. Source: authors' estimates from VHLSSs 2010 and 2012

2010 VHLSS, and as a result, we cannot separate the internal and international migrants in the 2010 VHLSSs. It shows that the proportion of households with international migrant is 1.9%, lowers than the proportion of households with internal migrants.

Table 1 presents the proportion of households with migration and remittances by several characteristics of households. The percentage of households receiving internal and international remittances was 27.4 and 33.3% in 2010 and 2012, respectively. It should be noted that the proportion of households receiving remittances is lower than the proportion of households having migrants, since remittances are sent to households by not only household members but also households' relatives and friends. The proportion of households receiving international remittances was 4.4% in 2010 and 4.6% in 2012. Rural households are more likely to receive internal remittances but less likely to receiving international remittances than urban households.

It should be noted that not all migrant-sending households received remittances. In 2010, 9.5 and 69.3% of migrant-sending households received international and internal remittances, respectively. In 2012, these corresponding figures are 9.6 and 57.6%, respectively.

Table 1 Percentage of households with migrants and remittances by household variables

Household groups	% having migrating members		% receiving internal remittances		% receiving international remittances	
	2010	2012	2010	2012	2010	2012
Total	9.1	12.7	27.4	33.3	4.4	4.6
Urban/rural						
Rural	11.3	15.5	28.5	33.6	3.4	3.7
Urban	4.1	6.4	25.0	32.6	6.7	6.9
Ethnicity						
Kinh/Hoa	9.5	13.4	28.9	34.9	4.8	5.1
Ethnic minorities	5.9	8.1	17.3	22.8	1.4	1.3
Gender of household head						
Female head	10.3	12.6	29.6	37.3	5.7	6.9
Male head	8.7	12.8	26.6	31.9	3.9	3.8
Completed education level of head						
< Primary	9.2	13.2	27.5	33.7	3.4	3.5
Primary	8.8	12.7	26.7	33.1	4.5	4.5
Lower-secondary	11.7	15.1	30.1	34.7	4.1	5.1
Upper-secondary	7.9	10.8	28.8	33.8	5.3	4.9
Technical degree	8.0	12.0	24.8	31.6	6.3	4.7
Post-secondary	3.8	6.3	23.0	29.7	4.7	7.1
Per capita expenditure quintile						
Poorest	5.8	11.0	23.6	32.0	1.0	2.1
Near poorest	11.6	13.8	27.9	33.7	2.0	2.8
Middle	11.7	15.1	30.4	35.1	3.4	3.7
Near richest	10.0	13.9	29.1	35.2	5.9	5.7
Richest	6.3	10.2	25.7	30.7	8.4	8.1

Source: authors' estimates from VHLSSs 2010 and 2012

Kinh households are more likely to have a higher proportion of migration and remittances than ethnic minorities. Households with female heads are more likely to receive more remittances than households with male heads. Possibly, men tend to migrate than women, and without men in home households, women are more likely to become household heads.

People with higher education tend to migrate than those with lower education, since they can find jobs in destination easier (Borjas 2005; Chiquiar and Hanson 2005). However, Table 2 shows only a small association between education of household heads and migration. Households with more educated heads have a lower proportion of sending migrants than households with less educated heads. However, there is a strong association between consumption expenditure and remittances, especially international remittances. Richer households are more likely to receive remittances than poorer households.

Table 2 presents the average remittances received by households in nominal price. This table estimates the remittance amount only for receiving households. The amount of internal remittances increased during 2010–2012, while the amount of internal remittances decreased during this period. Remittances play an important role for households. In 2012,

Table 2 Remittance amount by urban/rural areas and regions

Household groups	Internal remittance amount (thousand VND)		Share of internal remittance in total expenditure (%)		International remittance amount (thousand VND)		Share of international remittance in total expenditure (%)	
	2010	2012	2010	2012	2010	2012	2010	2012
Total	3715.0	4723.3	9.3	8.8	36,261.6	35,349.0	42.1	37.9
Urban/rural								
Rural	3234.7	4167.1	9.4	9.3	31,164.4	37,792.7	47.7	48.5
Urban	4809.2	6021.3	9.1	7.5	42,063.9	32,313.5	35.7	24.8
Ethnicity								
Kinh/Hoa	4064.5	5133.4	13.4	12.6	36,922.6	34,752.9	42.0	36.7
Ethnic minorities	1314.8	1942.2	9.4	9.6	20,237.6	51,515.0	43.4	72.2
Gender of household head								
Female head	5762.1	6104.0	21.5	15.9	37,362.0	33,432.4	44.9	35.8
Male head	2994.5	4234.6	9.8	10.8	35,697.0	36,569.8	40.6	39.3
Completed education level of head								
< Primary	3056.2	4492.8	17.4	16.5	22,644.1	30,303.5	37.1	38.7
Primary	2976.4	4347.7	13.4	12.7	35,150.2	36,398.1	43.0	38.3
Lower-secondary	3061.4	4052.8	11.4	11.2	35,317.5	39,585.5	53.6	48.8
Upper-secondary	4666.3	5496.3	10.5	9.9	35,431.0	28,948.5	32.6	24.8
Technical degree	4167.3	5426.4	10.9	10.3	49,868.8	37,423.8	42.2	36.5
Post-secondary	8646.5	7179.0	10.1	6.3	46,377.2	33,907.3	29.1	20.6
Per capita expenditure quintile								
Poorest	1624.4	2679.8	13.0	14.3	13,354.6	24,285.0	50.4	55.3
Near poorest	2485.7	3098.2	13.7	13.2	20,425.7	25,207.4	44.9	45.2
Middle	3064.6	4455.6	15.0	13.4	21,765.3	28,244.7	46.6	35.8
Near richest	3461.9	5648.7	10.8	12.0	23,459.8	41,194.8	35.6	45.3
Richest	7147.8	7119.6	13.0	9.1	55,101.2	39,771.4	43.3	28.4

Source: authors' estimates from VHLSSs 2010 and 2012

for households receiving remittances, internal remittances and international represent for 8.8 and 37.9% of total household expenditure, respectively.

The average amount of internal remittances received by urban households was higher than the average amount of internal remittances received by rural ones in both years 2010 and 2012. The international remittances were higher for urban households than rural households in 2010. However, in 2012, rural households received a higher amount of international remittances than urban households. This interesting change should be examined in further studies to understand the reasons.

The ratio of remittances in total consumption expenditure is higher for disadvantaged household groups such as ethnic minority households and households with low expenditure and low education heads.

Estimation Methods

In this study, we will estimate the effect of migration and remittances on a number of outcomes including labour supply, income, consumption and poverty status of households. We first estimate the effect of migration, and then the effect of remittances. We assume a similar specification for estimating the effect of migration on household outcomes:

$$\ln(Y_{it}) = \beta_0 + \beta_1 G_t + X_{it}\beta_2 + \beta_3 \text{migration}_{it} + u_i + v_{it}, \quad (1)$$

where $\ln(Y_{it})$ is log of per capita income or log of consumption expenditure of household i in year t; X_{it} is a vector of household variables; migration_{it} is a dummy variable indicating whether the household i has at least a migrant in year t; u_i and v_{it} are unobserved time-invariant and time-variant variables, respectively.

Regarding remittances, we have data on the size of international and internal remittances. We can estimate the impact of both international and internal remittances on household outcomes as follows:

$$\ln(Y_{it}) = \beta_0 + \beta_1 G_t + X_{it}\beta_2 + \beta_3 \ln(\text{international\_re}_{it}) + \beta_4 \ln(\text{internal\_re}_{it}) + u_i + v_{it}, \quad (2)$$

where $\text{international\_re}_{it}$ and internal_re_{it} are amount of international remittances and internal remittances received by household i at time t, respectively. To measure the elasticity of household income (or consumption expenditure) to remittances, we use a double-log function in which both income (or consumption expenditure) and remittances are measured in log. A problem with the logarithm of remittances is that there are households with zero value of remittances. To avoid the dropping of observations without land, we apply the method of Battese (1997) which allows zero values of explanatory variables in the double-log function. According to Battese (1997), the following equation is estimated instead of Eq. (2):

$$\begin{aligned}\ln(Y_{it}) = {} & \beta_0^* + \beta_1 G_t + X_{it}\beta_2 + \beta_3 \ln\left(\text{international\_re}_{it}^*\right) + \beta_4 I\{\text{international\_re}_{it} = 0\} \\ & + \beta_5 \ln\left(\text{internal\_re}_{it}^*\right) + \beta_6 I\{\text{internal\_re}_{it} = 0\} + u_i + v_{it},\end{aligned} \quad (3)$$

where $I\{\text{international\_re}_{it} = 0\}$ is the indicator variable which is equal to one if $\text{international\_re}_{it} = 0$, and zero if $\text{international\_re}_{it} > 0$. $International\_re_{it}^*$ is equal to

international_re$_{it}$ if international_re$_{it} > 0$, and one if international_re$_{it} = 0$. Similarly, variables $I\{\text{international\_re}_{it} = 0\}$ and internal_re$^{*}_{it}$ are defined by the same way.

A challenge in estimating the impact of migration as well as remittances is the bias caused by omitted variables. Households with migration and remittances can differ from households without migration and remittances in not only observed characteristics but also unobserved characteristics. To deal with bias, a standard econometric method is instrumental variable regression. Finding an instrument which is strongly correlated with migration or remittances but do not affect outcomes directly is very difficult. Thus, in this study, we can use the panel nature of the data to avoid this endogeneity bias. More specifically, we will use household fixed-effects regression, which relies on a main assumption of the method that unobserved variables in the outcome equation that are correlated with both outcome and migration (remittances) remained unchanged during the period 2010–2012. Fixed-effects regression can eliminate the unobserved variables, u_i that are time-invariant during the panel data period. The fixed-effects regression is still biased if the unobserved time-variant variables are correlated with migration and remittances. It is expected that the bias caused by the omitted time-variant variables is small once we control for observed variables and time-invariant observed variables.

It should be noted that we use both household outcomes and individual outcomes. The individual outcomes are school enrolment and employment variables. For individual outcomes, we also use a similar function as Eqs. (1) and (3).

Empirical Results

The Impact of Migration and Remittances on Individual Outcomes

In this section, we present the empirical findings from the impact of migration and remittances on original households of migrants using fixed-effects regression. We first examine the effect on labour supply using individual fixed-effects regression. The control variables include household-level. Individual variables such as age and gender are eliminated in fixed-effects regression. We tend to use more exogenous control variables, which are not affected by migration and remittances (Heckman et al. 1999; Angrist and Pischke 2008). The outcome and explanatory variables are listed in Tables 8 and 9 in Appendix. We also try regressions without explanatory variables. The results are similar to those in regressions with explanatory variables. In this paper, we present the results from regression using the explanatory variables.

Table 3 examines the effect of migration and remittances on the probability of working of household members. Young people aged 15–22 in migrant-sending households are less likely to work than those in other households. To test whether the work-reducing effect happens through education, we run regression of schooling enrolment of people aged 15–22 on migration and found that children in households with migrants are more likely to attend schooling (Table 10 in Appendix). Thus, young people in migrant-sending households are more likely to study, thus less likely to work.

Table 3 Fixed-effects regression of working

Explanatory variables	Sample of people aged 15–22		Sample of people aged 23–60		Sample of people aged from 60	
Having at least a migrant (yes = 1, no = 0)	− 0.0876**		− 0.0108		0.0487	
	(0.0375)		(0.0096)		(0.0334)	
Log of internal remittance		− 0.0157		− 0.0032		0.0019
		(0.0100)		(0.0033)		(0.0124)
Log of international remittance		− 0.0442*		− 0.0252**		− 0.0466
		(0.0261)		(0.0104)		(0.0357)
Not receiving internal remittance (not = 1, yes = 0)		− 0.1322*		− 0.0230		0.0310
		(0.0764)		(0.0227)		(0.1029)
Not receiving international remittance (not = 1, yes = 0)		− 0.3423		− 0.2309**		− 0.3418
		(0.2311)		(0.0959)		(0.3563)
Household size	0.0039	0.0084	0.0017	0.0014	− 0.0246	− 0.0280*
	(0.0120)	(0.0113)	(0.0045)	(0.0043)	(0.0151)	(0.0152)
Proportion of children below 15 in household	0.2031*	0.1748	− 0.0046	− 0.0064	0.2331	0.2451*
	(0.1159)	(0.1117)	(0.0296)	(0.0297)	(0.1516)	(0.1484)
Proportion of elderly above 60 in household	0.1737	0.1450	− 0.0170	− 0.0204	0.1396	0.1362
	(0.1877)	(0.1886)	(0.0431)	(0.0428)	(0.1229)	(0.1222)
Proportion of female members in household	0.1341	0.1067	0.0268	0.0240	0.0642	0.0512
	(0.1145)	(0.1122)	(0.0457)	(0.0452)	(0.1153)	(0.1178)
Sex of household head (male = 1; female = 0)	0.0088	0.0050	0.0095	0.0090	− 0.0185	− 0.0158
	(0.0574)	(0.0540)	(0.0368)	(0.0371)	(0.0818)	(0.0847)
Age of household head	− 0.0228*	− 0.0245**	− 0.0073*	− 0.0074*	− 0.0088	− 0.0078
	(0.0117)	(0.0113)	(0.0044)	(0.0043)	(0.0156)	(0.0154)
Age of household head squared	0.0002**	0.0002**	0.0000	0.0001	0.0001	0.0000
	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0001)
Number of schooling years of household head	− 0.0101	− 0.0096	− 0.0037*	− 0.0037*	0.0069	0.0067
	(0.0080)	(0.0082)	(0.0021)	(0.0021)	(0.0080)	(0.0077)
Dummy year 2012	0.1056***	0.1030***	0.0111**	0.0113***	− 0.070***	− 0.064***
	(0.0121)	(0.0120)	(0.0043)	(0.0042)	(0.0155)	(0.0149)
Constant	0.9918***	1.4976***	1.1441***	1.4013***	0.7149	1.0266*
	(0.3461)	(0.4077)	(0.1304)	(0.1551)	(0.4699)	(0.6017)
Observations	4186	4186	15,406	15,406	2806	2806
Number of individuals	2093	2093	7703	7703	1403	1403
R-squared	0.05	0.05	0.01	0.01	0.04	0.04

Robust standard errors in parentheses. Source: authors' estimates from VHLSSs 2010 and 2012

*Significant at 10%

**Significant at 5%

***Significant at 1%

Receipt of international remittances reduces the probability to work slightly. If the international remittance amount increases by 1%, the probability of working of people aged 23–60 decreases by 0.025 percentage point. This effect is very small.

In Table 4, we regress the number of working hours per month on migration and remittances. It shows that migration and remittances reduce the working hours of people aged from 15 to 60. There are no significant effects of migration as well remittances on working hours of the elderly.

Table 4 Fixed-effects regression of the number of working hours per month

Explanatory variables	Sample of people aged 15–22		Sample of people aged 23–60		Sample of people aged from 60	
Having at least a migrant (yes = 1, no = 0)	− 21.84***		− 7.21**		− 1.70	
	(8.14)		(3.60)		(6.26)	
Log of internal remittance		− 1.82		− 3.19**		− 1.59
		(2.22)		(1.29)		(1.77)
Log of international remittance		− 8.96**		− 6.42**		− 3.34
		(4.15)		(2.89)		(5.29)
Not receiving internal remittance (not = 1, yes = 0)		− 9.63		− 27.07***		− 8.15
		(17.22)		(10.20)		(13.73)
Not receiving international remittance (not = 1, yes = 0)		− 70.19*		− 51.68*		− 10.36
		(36.00)		(26.81)		(52.37)
Household size	− 2.25	− 1.01	− 0.26	− 0.23	− 4.52	− 4.93*
	(2.95)	(2.95)	(1.56)	(1.50)	(2.83)	(2.88)
Proportion of children below 15 in household	49.16**	41.35*	− 4.73	− 5.59	25.20	25.47
	(23.96)	(24.02)	(12.62)	(12.53)	(28.19)	(27.55)
Proportion of elderly above 60 in household	27.43	20.33	− 1.09	− 2.91	11.42	10.32
	(42.75)	(43.26)	(13.66)	(13.55)	(23.62)	(22.77)
Proportion of female members in household	77.83***	71.24***	17.81	17.03	1.00	− 0.09
	(26.71)	(26.56)	(18.02)	(17.65)	(16.69)	(16.94)
Sex of household head (male = 1; female = 0)	8.96	7.09	16.95	16.41	2.60	4.83
	(12.84)	(12.56)	(15.52)	(15.65)	(9.62)	(10.09)
Age of household head	− 2.47	− 2.75	1.47	1.45	1.88	1.82
	(3.86)	(3.86)	(1.86)	(1.87)	(2.66)	(2.64)
Age of household head squared	0.03	0.03	− 0.01	− 0.01	− 0.02	− 0.02
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Number of schooling years of household head	− 3.86**	− 3.63**	− 0.40	− 0.50	− 0.83	− 0.86
	(1.58)	(1.62)	(0.94)	(0.95)	(1.35)	(1.29)
Dummy year 2012	29.40***	28.80***	− 4.92***	− 4.88***	− 8.07***	− 7.38***
	(2.82)	(2.87)	(1.67)	(1.66)	(2.34)	(2.29)
Constant	114.56	198.28*	119.74**	198.82***	24.48	46.29
	(111.36)	(118.03)	(55.09)	(62.44)	(84.50)	(102.38)
Observations	4186	4186	15,406	15,406	2806	2806
Number of individuals	2093	2093	7703	7703	1403	1403
R-squared	0.09	0.09	0.01	0.01	0.02	0.03

Robust standard errors in parentheses. Source: authors' estimates from VHLSSs 2010 and 2012

*Significant at 10%

**Significant at 5%

***Significant at 1%

Table 5 shows that migration tends to decrease the labour participation of household members. Young people aged 15 to 22 in migrant-sending

Table 5 Fixed-effects regression of having wage jobs

Explanatory variables	Sample of people aged 15–22		Sample of people aged 23–60		Sample of people aged from 60	
Having at least a migrant (yes = 1, no = 0)	−0.0604*		−0.0297*		−0.0016	
	(0.0343)		(0.0160)		(0.0186)	
Log of internal remittance		−0.0149		−0.0010		−0.0074
		(0.0111)		(0.0047)		(0.0058)
Log of international remittance		−0.0411**		−0.0188		−0.0050
		(0.0182)		(0.0138)		(0.0043)
Not receiving internal remittance (not = 1, yes = 0)		−0.0858		−0.0116		−0.0500
		(0.0857)		(0.0373)		(0.0445)
Not receiving international remittance (not = 1, yes = 0)		−0.3037*		−0.1692		−0.0349
		(0.1599)		(0.1281)		(0.0496)
Household size	0.0104	0.0122	0.0064	0.0078	−0.0017	−0.0028
	(0.0135)	(0.0130)	(0.0052)	(0.0050)	(0.0092)	(0.0093)
Proportion of children below 15 in household	0.0267	0.0136	−0.0298	−0.0397	−0.0333	−0.0288
	(0.1120)	(0.1113)	(0.0482)	(0.0476)	(0.0764)	(0.0753)
Proportion of elderly above 60 in household	0.2734	0.2544	−0.0809*	−0.0865*	0.0295	0.0302
	(0.1838)	(0.1837)	(0.0480)	(0.0483)	(0.0565)	(0.0567)
Proportion of female members in household	0.1384	0.1268	0.1361**	0.1274**	−0.1088	−0.1095
	(0.1377)	(0.1348)	(0.0618)	(0.0619)	(0.0880)	(0.0885)
Sex of household head (male = 1; female = 0)	0.0069	0.0023	−0.0216	−0.0226	−0.0069	−0.0031
	(0.0445)	(0.0449)	(0.0441)	(0.0440)	(0.0155)	(0.0168)
Age of household head	−0.0203	−0.0212	0.0138*	0.0137*	0.0020	0.0017
	(0.0191)	(0.0192)	(0.0074)	(0.0074)	(0.0020)	(0.0019)
Age of household head squared	0.0002	0.0002	−0.0001**	−0.0001**	−0.0000	−0.0000
	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0000)	(0.0000)
Number of schooling years of household head	−0.0082	−0.0073	−0.0015	−0.0017	−0.0035	−0.0036
	(0.0081)	(0.0081)	(0.0036)	(0.0037)	(0.0031)	(0.0031)
Dummy year 2012	0.1140***	0.1137***	−0.0097	−0.0105*	−0.0071	−0.0054
	(0.0126)	(0.0124)	(0.0063)	(0.0063)	(0.0059)	(0.0060)
Constant	0.5966	1.0065*	0.0422	0.2248	0.1054	0.2015
	(0.5514)	(0.5768)	(0.2236)	(0.2555)	(0.0938)	(0.1312)
Observations	4186	4186	15,406	15,406	2806	2806
Number of individuals	2093	2093	7703	7703	1403	1403
R-squared	0.07	0.08	0.01	0.01	0.01	0.01

Robust standard errors in parentheses. Source: authors' estimates from VHLSSs 2010 and 2012

*Significant at 10%

**Significant at 5%

***Significant at 1%

households tend to attend school, and as a result, they are less likely to work. However, for people aged 23 to 60, having a migrant in their families reduces the probability of having a wage job by 0.03.[1] Possibly, because of the absence of migrants, the remaining adult members have to spend more time on housework and take care of other dependents, and they are less likely to participate into labour market.

The Impact of Migration and Remittances on Individual Outcomes

In Tables 6 and 7, we examine the impact of migration on household-level outcomes. For each outcome variable, we present two modes. Model 1 includes explanatory variables, but not household size. Model 2 includes explanatory variables as in model 2 and plus household size. Migration means a decrease in the household size. Comparing two models allows us to investigate whether the effect of migration and remittances on per capita income and consumption of home households is through the reduction in household size.

Two models produce similar estimates of the effect of migration on log of per capita income. It shows that per capita income of migrant-sending households is not statistically significantly higher than per capita income of households not sending migrants. Possibly, migration leads to an increase in remittances but a reduction in income earned by migrants if they had not migrated. As a result, the total effect of migration is not large.

The next two columns present the effect of migration and remittances on log of per capita consumption expenditure. When household size is not controlled, the effect of migration on per capita expenditure is positive. Because of the positive effect of expenditure, the effect on expenditure poverty is negative and significant.

However, the effects of migration on expenditure and poverty are smaller and not significant when household size is controlled for. So the effect of migration on per capita expenditure is mainly through the household economies of scale. As the household size decreases, the per capita expenditure increases. This finding is consistent with the finding that there are no significant effects of migration on per capita income.

The receipt of remittances, especially international remittances, helps households increase their income significantly. According to model 2, a 1% increase in internal remittances or international remittances results in a 0.055 or 0.16% increase in per capita income. The dependent variable is measured by per capita. Since the household size at mean is around 4, a 1% increase in internal remittances or international remittances results in a 0.22 or 0.64% increase in per capita income, respectively. The elasticity is less than one. It implies that although migrant-sending households increase their income by remittances, they also experience a reduction in income due to the absence of migrants in their households.

[1] The proportion of people aged 23–60 having wage jobs is around 34% for households with migrants and 42% for households without migrants.

Table 6 Household fixed-effects regression of household outcomes on migration

Explanatory variables	Log of per capita income		Log of per capita expenditure		Poverty status (poor = 1, non-poor = 0)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Having at least a migrant (yes = 1, no = 0)	0.0415	0.0048	0.0639***	0.0138	− 0.0298*	− 0.0136
	(0.0263)	(0.0262)	(0.0195)	(0.0187)	(0.0170)	(0.0167)
Household size		− 0.0795***		− 0.1086***		0.0350***
		(0.0100)		(0.0087)		(0.0066)
Proportion of children below 15 in household	− 0.5022***	− 0.2717***	− 0.6188***	− 0.3039***	0.1810***	0.0796
	(0.0797)	(0.0820)	(0.0661)	(0.0650)	(0.0569)	(0.0599)
Proportion of elderly above 60 in household	− 0.0317	− 0.1983***	0.1228*	− 0.1049	− 0.0077	0.0657
	(0.0728)	(0.0754)	(0.0734)	(0.0733)	(0.0465)	(0.0482)
Proportion of female members in household	0.0317	0.0581	− 0.0595	− 0.0235	− 0.0280	− 0.0396
	(0.0874)	(0.0836)	(0.0763)	(0.0701)	(0.0531)	(0.0528)
Sex of household head (male = 1; female = 0)	− 0.0736	− 0.0346	− 0.1643***	− 0.1110*	0.0326	0.0155
	(0.0668)	(0.0671)	(0.0599)	(0.0601)	(0.0407)	(0.0404)
Age of household head	0.0223	0.0255*	0.0098	0.0141	− 0.0207***	− 0.0221***
	(0.0146)	(0.0155)	(0.0107)	(0.0109)	(0.0078)	(0.0079)
Age of household head squared	− 0.0002*	− 0.0002*	− 0.0001	− 0.0001	0.0002***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Number of schooling years of household head	− 0.0008	− 0.0004	0.0067	0.0073	− 0.0044	− 0.0046
	(0.0058)	(0.0059)	(0.0053)	(0.0054)	(0.0038)	(0.0038)
Dummy year 2012	0.4140***	0.4148***	0.3681***	0.3693***	− 0.0423***	− 0.0427***
	(0.0122)	(0.0123)	(0.0102)	(0.0099)	(0.0067)	(0.0067)
Constant	9.1541***	9.2743***	9.5642***	9.7284***	0.6634***	0.6105***
	(0.4166)	(0.4390)	(0.2833)	(0.2828)	(0.2113)	(0.2135)
Observations	8314	8314	8314	8314	8314	8314
Number of households	4157	4157	4157	4157	4157	4157
R-squared	0.40	0.41	0.47	0.50	0.02	0.03

Robust standard errors in parentheses. Source: authors' estimates from VHLSSs 2010 and 2012

*Significant at 10%

**Significant at 5%

***Significant at 1%

It should be noted that the coefficient of two dummy variables "Not receiving internal remittances" and "Not receiving international remittances" are positive. It means that without any remittance households who received remittances have lower per capita income than households who did not receive remittances.

Table 7 Household fixed-effects regression of household outcomes on remittances

Explanatory variables	Log of per capita income		Log of per capita expenditure		Poverty status (poor = 1, non-poor = 0)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Log of internal remittance	0.0584***	0.0526***	0.0384***	0.0296***	− 0.0151**	− 0.0122**
	(0.0082)	(0.0083)	(0.0069)	(0.0065)	(0.0061)	(0.0060)
Log of international remittance	0.1690***	0.1592***	0.0613***	0.0462***	− 0.0151	− 0.0101
	(0.0235)	(0.0238)	(0.0174)	(0.0165)	(0.0094)	(0.0097)
Not receiving internal remittance (not = 1, yes = 0)	0.4139***	0.3775***	0.2799***	0.2243***	− 0.1193**	− 0.1010**
	(0.0648)	(0.0648)	(0.0559)	(0.0534)	(0.0496)	(0.0492)
Not receiving international remittance (not = 1, yes = 0)	1.4070***	1.3249***	0.5079***	0.3824***	− 0.1239	− 0.0826
	(0.2163)	(0.2188)	(0.1526)	(0.1455)	(0.0909)	(0.0934)
Household size		− 0.0686***		− 0.1049***		0.0345***
		(0.0098)		(0.0084)		(0.0067)
Proportion of children below 15 in household	− 0.5107***	− 0.3161***	− 0.6164***	− 0.3189***	0.1782***	0.0804
	(0.0766)	(0.0795)	(0.0657)	(0.0647)	(0.0569)	(0.0600)
Proportion of elderly above 60 in household	− 0.0483	− 0.1949***	0.1201*	− 0.1040	− 0.0095	0.0642
	(0.0714)	(0.0736)	(0.0721)	(0.0725)	(0.0466)	(0.0483)
Proportion of female members in household	0.0218	0.0415	− 0.0602	− 0.0301	− 0.0286	− 0.0385
	(0.0842)	(0.0814)	(0.0745)	(0.0689)	(0.0528)	(0.0525)
Sex of household head (male = 1; female = 0)	− 0.0685	− 0.0332	− 0.1676***	− 0.1136*	0.0357	0.0179
	(0.0657)	(0.0663)	(0.0589)	(0.0598)	(0.0401)	(0.0401)
Age of household head	0.0270*	0.0294*	0.0122	0.0159	− 0.0214***	− 0.0227***
	(0.0147)	(0.0155)	(0.0105)	(0.0107)	(0.0078)	(0.0079)
Age of household head squared	− 0.0003**	− 0.0003**	− 0.0001	− 0.0002	0.0002***	0.0002***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Number of schooling years of household head	− 0.0007	− 0.0003	0.0069	0.0076	− 0.0047	− 0.0049
	(0.0058)	(0.0059)	(0.0054)	(0.0055)	(0.0038)	(0.0038)
Dummy year 2012	0.4052***	0.4058***	0.3648***	0.3658***	− 0.0418***	− 0.0422***
	(0.0119)	(0.0119)	(0.0102)	(0.0100)	(0.0066)	(0.0067)
Constant	7.2269***	7.4543***	8.7272***	9.0749***	0.9187***	0.8044***
	(0.4917)	(0.5133)	(0.3287)	(0.3289)	(0.2427)	(0.2489)
Observations	8314	8314	8314	8314	8314	8314
Number of households	4157	4157	4157	4157	4157	4157
R-squared	0.42	0.43	0.47	0.51	0.03	0.04

Robust standard errors in parentheses. Source: authors' estimates from VHLSSs 2010 and 2012

*Significant at 10%

**Significant at 5%

***Significant at 1%

The effect of remittances on expenditure is positive and significant in models either with or without household size. According to model 3, a 1% increase in internal remittances or international remittances results in a 0.03 or 0.05% increase in per capita income, respectively. The effect of remittances on expenditure is smaller than the effect on income. It means that remittances are also used for saving or buying household assets.

Regarding the effect on poverty, only internal remittances have significant and negative effects on poverty. This is because internal remittances cover a larger proportion of households than international remittances. However, the magnitude of the effect of internal remittance on poverty is very small. According to model 2, if the internal remittances increase by 1%, the probability of being poor decreased by only 0.00012.

Conclusions

This paper examines the pattern and the impact of migration and remittances on household welfare in Vietnam using fixed-effects regressions and panel data from Vietnam Household Living Standard Surveys 2010 and 2012. Overall, the effect of migration as well as remittances on employment of remaining members on home households is small. People at the working age in households with migration and remittances are less likely to work than people in other households. They are also less likely to participate in labour market. Possibly, because of the absence of migrants, the remaining members have to spend more time on housework and take care of other dependents.

The results show that remittances, especially international remittances, help receiving households increase per capita income and per capita expenditure. The effect of remittances on expenditure is smaller than the effect on income. It implies that receiving households use remittances on not only consumption but also saving and buying household assets.

Since remittances have a positive effect on per capita expenditure, they are expected to reduce expenditure poverty. Internal remittances cover a larger proportion of households than international remittances, and as a result only internal remittances have a small effect on poverty reduction. The effect of international remittances on poverty is small, since international remittances are mainly received by the rich households.

The total effect of migration on per capita income of migrant-sending households is small and not statistically significantly. Although migration leads to an increase in remittances, it also leads to a reduction in income earned by migrants if they had not migrated. In addition, not all migrant-sending households receive remittances. Around one third of migrant-sending households did not receive remittances. As a result, the total effect of migration on household income is small. There are no significant effects of migration on total consumption expenditure of migrant-sending households. However, per capita consumption expenditure of migrant-sending households increases because of a reduction in household size.

Appendix

Table 8 Outcome variables of households with and without migrants

Variables	2010		2012	
	With migrants	Without migrants	With migrants	Without migrants
Household outcomes				
Per capita income (thousand VND))	15,998	17,326	23,701	25,164
Per capita expenditure (thousand VND))	15,189	16,949	22,664	23,451
Expenditure poor (poor = 1; non-poor = 0)	13.0	21.4	11.4	18.2
Individual outcomes				
People aged 15–22				
Attending school (yes = 1, no = 0)	50.7	47.6	51.4	50.8
Working in the last month (yes = 1, no = 0)	47.0	50.3	48.1	49.1
Number of working hours per month	74.0	84.3	82.1	82.9
Having nonfarm work in the last month (yes = 1, no = 0)	7.0	9.0	9.4	7.6
Having wage job in the last month (yes = 1, no = 0)	21.4	22.8	26.1	24.1
People aged 23–60				
Working in the last month (yes = 1, no = 0)	90.2	92.1	91.9	92.4
Number of working hours per month	164.8	175.8	161.6	173.9
Having nonfarm work in the last month (yes = 1, no = 0)	26.5	30.2	24.9	28.6
Having wage job in the last month (yes = 1, no = 0)	34.4	42.2	34.2	42.8
People aged 61+				
Working in the last month (yes = 1, no = 0)	51.2	43.4	59.0	41.3
Number of working hours per month	55.5	48.4	64.6	45.8
Having nonfarm work in the last month (yes = 1, no = 0)	9.2	10.5	10.0	8.7
Having wage job in the last month (yes = 1, no = 0)	4.0	4.7	7.3	4.7

Source: authors' estimates from VHLSSs 2010 and 2012

Table 9 Household-level explanatory variables

Household-level variable	2010		2012	
	Mean	Std. dev.	Mean	Std. dev.
Household size	3.964	1.566	3.935	1.576
Proportion of children below 15 in household	0.205	0.207	0.196	0.205
Proportion of elderly above 60 in household	0.131	0.263	0.146	0.278
Proportion of female members in household	0.520	0.203	0.522	0.201
Sex of household head (male = 1; female = 0)	0.753	0.432	0.743	0.437
Age of household head	49.47	14.05	51.00	13.96
Number of schooling years of household head	7.288	3.711	7.368	3.667
Number of observations	4157		4157	

Source: authors' estimates from VHLSSs 2010 and 2012

Table 10 Fixed-effects regression of school enrolment

Explanatory variables	Sample of children aged 6–14		Sample of people aged 15–22	
Having at least a migrant (yes = 1, no = 0)	− 0.0389		0.0794**	
	(0.0246)		(0.0385)	
Log of internal remittance		0.0060		0.0088
		(0.0068)		(0.0117)
Log of international remittance		0.0131*		0.0171
		(0.0072)		(0.0253)
Receiving internal remittance (yes = 1, no = 0)		0.0404		0.0536
		(0.0567)		(0.0873)
Receiving international remittance (yes = 1, no = 0)		0.1175*		0.0745
		(0.0708)		(0.2132)
Household size	0.0036	0.0075	0.0010	− 0.0036
	(0.0087)	(0.0085)	(0.0097)	(0.0092)
Proportion of children below 15 in household	0.3487***	0.3349***	− 0.0005	0.0276
	(0.0586)	(0.0581)	(0.1136)	(0.1134)
Proportion of elderly above 60 in household	0.0201	− 0.0101	− 0.1757	− 0.1433
	(0.1066)	(0.1053)	(0.1611)	(0.1614)
Proportion of female members in household	− 0.0909	− 0.1035	− 0.1533	− 0.1267
	(0.1133)	(0.1124)	(0.1212)	(0.1192)
Sex of household head (male = 1; female = 0)	0.0078	0.0185	− 0.0933**	− 0.0857**
	(0.0473)	(0.0463)	(0.0395)	(0.0395)
Age of household head	0.0212***	0.0228***	0.0151	0.0161
	(0.0065)	(0.0064)	(0.0124)	(0.0124)
Age of household head squared	− 0.0002***	− 0.0002***	− 0.0001	− 0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Number of schooling years of household head	− 0.0020	− 0.0023	− 0.0001	− 0.0010
	(0.0034)	(0.0033)	(0.0078)	(0.0081)
Dummy year 2012	− 0.0280***	− 0.0306***	− 0.1237***	− 0.1207***
	(0.0069)	(0.0072)	(0.0126)	(0.0129)
Constant	0.2973*	0.0839	0.3165	0.1666
	(0.1693)	(0.1907)	(0.3410)	(0.4129)
Observations	4726	4726	4186	4186
Number of individuals	2363	2363	2093	2093
R-squared	0.05	0.05	0.07	0.07

Robust standard errors in parentheses. Source: authors' estimates from VHLSSs 2010 and 2012

*Significant at 10%

**Significant at 5%

***Significant at 1%

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