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Do Internal and International Remittances Matter to Health, Education and Labor of Children? The Case of Vietnam

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Abstract

Using data from Vietnam Household and Living Standard Surveys in 2006 and 2008, the paper estimates the effect of the receipt of international remittances and internal remittances on education, labor and healthcare utilization of children in Vietnam. It shows that there are no statistically significant effects of receipt of remittances on school enrolment of children as well as child labor. However, receiving international remittances helps children increase the number of completed grades by around 2 percent of the average completed grade for children. Both international and internal remittances are positively associated with the number of outpatient health care contacts.

JEL Classification: O15, R23, I32

Key words: remittances, children, education, child labor, healthcare, Vietnam.

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1. Introduction

Migration has been occurring in all the countries. Through mobility, households expect to increase income and reduce the risks of income fluctuation (Stark and Taylor, 1991; Stark, 1999, Adams and Page, 2005). The most direct impact of migration on the home households is to increase income mainly through remittances (McKenzie and Sasin, 2007). Remittances help households relax liquidity constraints, stabilize consumption and invest in production (Taylor, 1992). In addition, migration can have positive effects on human capital through transfers of information and advanced knowledge about production skills and technology (McKenzie and Sasin, 2007; Taylor et al., 1996). However, migration might not lead to higher income and consumption of migrant-sending households, since migration can prevent these households from high-return with labor intensive activities (Taylor and Lopez-Feldman, 2007). In some special cases, remittances can create a moral hazard problem, since recipients can lead to work disincentives (Farrington and Slater, 2006; Sahn and Alderman, 1996).

Remittances can have positive effects on children welfare. Through increasing income and consumption, remittances can improve health as well as education of children. Migration can transfer knowledge and raise awareness of the important role of education as well as child care. Child labor is associated with poverty and income shocks (Guarcello et al., 2003; Dehejia and Gatti, 2005). Remittances can reduce the child labor, since higher and stabilized income can release children from working (Ranjan, 2001; and Shelburne, 2001).

However, migration can lead to negative effects on children. For example, fewer adults at home may have a negative impact on the next generation. With less care from adults, children might have poorer educational attainment and health, and might have to take more housework (Kandel and Kao, 2001; McKenzie and Rapoport 2006; Bansak and Chezum, 2009). Households with remittances can promote household business which can involve children's labor (Alcaraz et al., 2012). In addition, as mentioned, if remittances and migration does not lead to an increase in income, the positive effect of remittances and migration on children through the income channel will be negligible (Azam and Gubert, 2006).

Empirical findings on the sign as well as the magnitude of the impact of migration on household welfare are not consistent. Positive impacts of remittances, especially international remittances, on household welfare and child education were also found in some studies such as Adams (2004, 2006), Taylor et al. (2005), and Acosta et al. (2007). There are several studies which find positive effects or at least positive association between international remittances and education increase and child labor reduction. Edwards and Ureta (2003) and Acosta (2006) found remittances increase school attendance for children in El Salvador. Yang (2008) find remittances can increase education investment for children and reduce children labor in Philippine. Epstein and Kahama (2008) find that the remittances sent by emigrating parents may reduce child labors. Alcaraz et al. (2012) find that a reduction in remittances from the U.S. to Mexican households can cause an increase in child labor and a decrease in school attendance of children. Evidence on that remittances help increase schooling and reduce child labors can also be found in Dimova et al. (2008), Milgan and Bohara (2007), Mansuri (2006), Gonzale-Koning and Wodon (2007), Hanson and Woodruff (2003), Bayot (2007),

Benedictis et al. (2010). However, several studies find negligible effects of remittances on education such as Borraz (2005) and Nguyen and Purnamasari (2011). Negative effects of remittances on education are found in McKenzie and Rapoport (2006), McKenzie (2005), Anderson and Kroeger (2011).

In Vietnam, both internal and international migration have been increasing rapidly. According to the 2009 Population and Housing Census, around 6.5 percent of the population over 5 years old changed their residence during 2004-2009. The urban population share increased from around 24 percent in 2001 to 30 percent in 2009 (Nguyen, 2012). Vietnam is a country with a large number of people living abroad. Around 3.2 million Vietnamese live permanently in other countries. The number of annual exported laborers increased by 136 percent from 36 to 85 thousand during 2001-2007 (Nguyen and Mont, 2010). International remittances have been increasing remarkably over time. During the period 1999-2012 the amount of international remittances increased from 1.2 to 9.6 billion USD.

There are a large number of studies on remittances and migration in Vietnam. Several studies focus on the pattern and determinants of migration (e.g., Dang et al., 1997; Dang, 2001; Dang and Nguyen, 2006). Other examines the effect of migration and remittances on household welfare and poverty and found positive effect of migration and remittance, for example, Brauw and Harigaya (2007), Nguyen (2008), Nguyen (2009), Pfau and Giang (2009), Nguyen et al., (2011). However, other studies do not find the positive effect of remittances on household consumption and poverty (e.g., Nguyen and Mont, 2012; Nguyen et al., 2012).

However, there have been no studies in Vietnam on the impact of internal as well as international remittances on children welfare indicators including education, healthcare and labor. In addition, most studies in other countries focus on international remittances. There are no studies comparing the effect of international and internal remittances on child welfare. Thus, the main objective of the paper is to examine the impact of internal and international remittances on education, health and labor of children aged from 6 to 18 in Vietnam. By doing so, this study is expected to contribute to the literature of migration and remittances economics by examining the effect of both international and internal remittances, and comparing their effects on difference child welfare outcomes including education, labor and healthcare utilization.

The paper is structured into five sections. After this introduction, Section 2 presents the data set and descriptive analysis of remittances and children in Vietnam. Section 3 describes estimation methods. Section 4 presents the estimation of international and internal remittances on education, child labor and health care utilization of children. Finally, the Section 5 concludes.

2. Data set and descriptive analysis

In this study, we measure the effect of internal and international remittances on education, health and labor for children aged from 6 to 14. We use data from two surveys, Vietnam Household Living Standard Surveys (VHLSS) in 2006 and 2008. The VHLSSs were conducted by the General Statistics Office of Vietnam (GSO) with technical support from the World Bank (WB). Each survey covered around 45,945 households. The samples are

representative for the national, rural and urban, and regional levels. The two surveys set up two-period panel sub-samples of 20,685 households. The number of individuals in the panel data is 78,371. In this study, we limit the analysis to the sample of children aged 6-18. The number of children in the panel is 21,232.

The surveys collected information through household and community level questionnaires. Information on households includes basic demography, employment and labor force participation, education, health, income, expenditure, housing, fixed assets and durable goods, participation of households in poverty alleviation programs, and especially information on internal and international remittances that households had received during the 12 months before the interview. The surveys also contain data on children's education, health and labor during the past 12 months.

It should be noted that the remittance data collected in VHLSSs include all moneys and kinds that households receive from anyone. There are no data on remittances sent to households by household members, relatives or friend. Thus, international and internal remittances are defined broadly in this paper, and might be considered as international or internal private transfers to households.

Table 1 presents the receipt of international remittances in 2006 and 2008. Around 6.2 percent of households received international remittances in 2008. International remittances are an important income source for receiving households, accounting for around 30 percent of household income. Urban households are more likely to receive international remittances than rural households. In 2008, the proportion of households receiving remittances was 9.3 percent and 5.0 percent in the urban and rural areas, respectively. The average size of international remittances inflows was also larger in urban

areas, around 28 and 24 million VND for receiving households in urban and rural areas, respectively.

There is also a variation in receiving international remittances by regions. Red River Delta is region with the highest proportion of remittance receipt as well as the largest remittance amount, while North West Mountain and Central Highlands – the poorest regions in Vietnam – are those the lowest proportion of remittance receipt and lowest remittance amount.

Table 1: International remittances in Vietnam by geographic regions

Regions	2006			2008		
	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income
<i>Rural/urban</i>						
Rural	4.57 (0.19)	20240.13 (1122.37)	33.86 (1.00)	4.99 (0.19)	24197.43 (1272.45)	32.34 (1.19)
Urban	10.31 (0.55)	25748.46 (3273.53)	33.02 (1.29)	9.26 (0.45)	28397.70 (1818.42)	25.59 (0.92)
<i>Regions</i>						
Red River Delta	4.21 (0.27)	25257.55 (3228.16)	38.52 (1.91)	4.96 (0.34)	36042.23 (2969.00)	36.24 (1.51)
East Northern Mountains	3.43 (0.33)	28675.12 (4003.73)	37.74 (2.23)	4.25 (0.36)	23529.99 (2157.92)	33.03 (1.93)
West Northern Mountains	2.96 (0.56)	15949.00 (4083.76)	31.31 (5.43)	2.88 (0.53)	9920.10 (1726.80)	25.96 (3.36)
North Central Coast	5.17 (0.63)	17405.66 (2417.00)	33.39 (2.49)	7.19 (0.63)	18047.14 (1731.94)	31.19 (1.90)
South Central Coast	5.87 (0.60)	12815.73 (1259.98)	25.93 (1.61)	5.49 (0.54)	14947.77 (1663.34)	22.27 (2.04)
Central Highlands	2.77 (0.34)	39897.84 (13738.91)	28.38 (3.10)	2.60 (0.40)	6964.03 (1205.06)	15.90 (2.59)
Southeast	12.57 (0.85)	24682.62 (4395.75)	33.04 (1.74)	10.29 (0.69)	28824.45 (2506.05)	24.21 (1.17)
Mekong Delta	7.07 (0.38)	21438.62 (1702.36)	32.64 (1.39)	6.46 (0.36)	26418.03 (2164.87)	31.89 (2.59)
Total	6.15 (0.21)	22778.67 (1628.77)	33.48 (0.80)	6.19 (0.19)	25958.35 (1068.46)	29.51 (0.81)

Regions	2006			2008		
	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income
Standard errors are in parentheses.						
Remittance values are measured in January 2008 price.						
Source: Authors' estimation from VHLSSs 2006 and 2008.						

Table 2 present the receipt of international remittances over income quintile in 2006 and 2008. It shows that current international remittances are not pro-poor. A possible reason for that received remittances shifted households from the low to the high income quintile. In 2006 and 2008, the percentages of the lowest quintile households receiving remittances were 1.9 and 2.0 percent, respectively. The richest received substantially higher remittances in terms of both percentage as well as the remittance size. The share of international remittances in total income is also higher for the rich than the poor.

Table 2: International remittances in Vietnam by income quintile

Income quintiles	2006			2008		
	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income
Poorest	1.88 (0.18)	3026.32 (367.78)	27.17 (2.93)	2.02 (0.19)	3607.67 (682.99)	27.77 (8.04)
Near poorest	2.77 (0.19)	4692.21 (343.53)	23.11 (1.47)	3.39 (0.22)	6156.94 (501.16)	21.57 (1.29)
Middle	4.08 (0.23)	7594.53 (380.34)	27.18 (1.33)	4.57 (0.25)	9649.78 (516.85)	24.67 (1.19)
Near richest	6.71 (0.34)	12075.07 (523.82)	30.29 (1.24)	6.87 (0.33)	15558.44 (793.96)	27.35 (1.24)
Richest	14.04 (0.58)	36946.42 (3148.97)	39.07 (1.17)	12.67 (0.51)	43589.91 (2049.33)	34.14 (1.02)
Total	6.15 (0.21)	22778.67 (1628.77)	33.48 (0.80)	6.19 (0.19)	25958.35 (1068.46)	29.51 (0.81)

Standard errors are in parentheses.
Remittance values are measured in January 2008 price.
Source: Authors' estimation from VHLSSs 2006 and 2008.

While the proportion of households received international remittances is not large, most households received domestic remittances (or private domestic transfers): around 86 and 85 percent in 2004 and 2006, respectively (Table 3). The amount of internal remittances is smaller than that of international remittances, around 4.2 million VND per receiving household in 2008, account for 10 percent of the total household income. Urban households tend to receive higher amount of internal remittances than rural households. It should be noted that migration mainly takes place from rural to urban areas, and we expected internal remittances per se would be received more likely by rural households. Thus, the internal remittances in this study should be interpreted as private transfers than remittances sent by people to their home households.

Table 3: Internal remittances in Vietnam by geographic regions

Regions	2006			2008		
	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income
<i>Rural/urban</i>						
Rural	86.48 (0.51)	1739.78 (33.27)	8.47 (0.13)	85.15 (0.51)	3289.32 (72.79)	10.02 (0.15)
Urban	84.06 (1.04)	3210.30 (141.11)	9.04 (0.29)	80.88 (1.09)	6712.03 (456.09)	9.97 (0.29)
<i>Regions</i>						
Red River Delta	87.45 (0.97)	1973.12 (61.65)	9.29 (0.24)	85.91 (0.96)	4511.47 (181.30)	10.68 (0.24)
East Northern Mountains	79.47 (1.43)	1710.64 (77.10)	6.44 (0.23)	75.68 (1.42)	2991.83 (144.17)	7.94 (0.32)
West Northern Mountains	60.76 (2.80)	1273.14 (105.75)	6.03 (0.54)	64.07 (2.59)	2023.34 (189.62)	5.96 (0.48)
North Central Coast	84.66 (1.24)	1836.09 (90.41)	9.23 (0.32)	80.51 (1.28)	2885.48 (162.57)	11.15 (0.42)
South Central Coast	86.39 (1.40)	1604.50 (77.06)	8.32 (0.33)	84.89 (1.32)	3300.36 (242.18)	9.66 (0.42)
Central Highlands	92.70 (1.16)	1116.16 (80.30)	4.28 (0.29)	93.56 (0.92)	1875.72 (153.49)	4.90 (0.32)
Southeast	82.96 (1.57)	3712.91 (236.97)	10.42 (0.46)	80.58 (1.69)	7399.58 (759.12)	10.41 (0.45)

Regions	2006			2008		
	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income
Mekong Delta	91.85 (0.73)	2154.45 (68.68)	8.79 (0.25)	90.94 (0.71)	4110.76 (125.49)	11.17 (0.30)
Total	85.81 (0.47)	2135.92 (47.36)	8.62 (0.12)	83.95 (0.48)	4212.93 (140.19)	10.00 (0.14)

Standard errors are in parentheses.

Remittance values are measured in January 2008 price.

Source: Authors' estimation from VHLSSs 2006 and 2008.

Table 4 shows that the percentage of households receiving internal remittances does not vary across quintiles. However, the remittance amount is larger for the high income quintiles than the low income quintiles.

Table 4: Internal remittances in Vietnam by income quintile

Income quintiles	2006			2008		
	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income	% household receiving remittances	Remittance amount (thousand VND)	Share of remittances in total income
Poorest	85.40 (0.73)	931.59 (21.22)	11.56 (0.31)	82.72 (0.78)	1255.94 (31.18)	11.55 (0.34)
Near poorest	87.12 (0.57)	1356.30 (30.40)	9.07 (0.22)	86.47 (0.56)	2109.30 (45.78)	10.05 (0.23)
Middle	87.31 (0.58)	1725.41 (46.05)	8.05 (0.22)	86.32 (0.61)	2896.89 (64.62)	9.30 (0.21)
Near richest	85.88 (0.66)	2402.10 (64.65)	7.76 (0.21)	84.82 (0.61)	4258.65 (110.78)	9.34 (0.23)
Richest	83.59 (0.88)	4005.80 (165.07)	7.09 (0.23)	79.93 (1.01)	9792.22 (548.74)	10.00 (0.28)
Total	85.81 (0.47)	2135.92 (47.36)	8.62 (0.12)	83.95 (0.48)	4212.93 (140.19)	10.00 (0.14)

Standard errors are in parentheses.

Remittance values are measured in January 2008 price.

Source: Authors' estimation from VHLSSs 2006 and 2008.

We use school enrolment and the highest completed grade of children as the measurement of child education. For child labor, we use the dummy variable indicating whether children had to work for economic activities during the past 12 month, and the

number of annual working hours. Regarding the health indicators, based on the availability of data, we use the number of annual health care contacts for inpatient and outpatient treatments (or the number of times using health care services).

Table 5 shows that children living in households with international remittances are more likely to have higher school enrolment rate and number of completed grades than children in households without international remittances. They have lower proportion of working and number of working hours than children in households without international remittances. Outpatient health care contact is higher for children in households with remittances than those in households without remittances.

Table 5. Children's outcomes by international remittance receipt

Children's outcomes	2006		2008	
	Receiving international remittances	Not receiving international remittances	Receiving international remittances	Not receiving international remittances
Attending school (yes=1)	86.61 (0.79)	81.93 (0.28)	83.92 (0.88)	80.62 (0.32)
The number of completed grades	6.91 (0.07)	6.54 (0.03)	7.15 (0.08)	6.76 (0.03)
Working for economic activities (yes=1)	11.04 (0.76)	18.22 (0.34)	12.49 (0.93)	19.42 (0.40)
Number of working hours per year	140.38 (10.85)	222.30 (4.37)	133.20 (11.57)	222.34 (5.08)
Number of times using outpatient services during 52 weeks	0.75 (0.06)	0.63 (0.02)	0.62 (0.05)	0.58 (0.02)
Number of times using inpatient services during 52 weeks	0.04 (0.01)	0.04 (0.00)	0.04 (0.01)	0.04 (0.00)

Standard errors are in parentheses.
Source: Authors' estimation from VHLSSs 2006 and 2008.

Children in households with internal remittances and those in households without internal remittances are not different in education and labor. However, children in households with internal remittances have higher outpatient healthcare contacts than children in households without internal remittances.

Table 6. Children's outcomes by internal remittance receipt

Children's outcomes	2006		2008	
	Receiving international remittances	Not receiving international remittances	Receiving international remittances	Not receiving international remittances
Attending school (yes=1)	82.16 (0.30)	82.28 (0.59)	80.73 (0.33)	81.20 (0.62)
The number of completed grades	6.56 (0.03)	6.57 (0.06)	6.77 (0.03)	6.86 (0.06)
Working for economic activities (yes=1)	213.44 (4.44)	243.28 (10.57)	214.33 (5.12)	231.92 (11.59)
Number of working hours per year	17.74 (0.35)	18.34 (0.70)	18.91 (0.40)	19.61 (0.86)
Number of times using outpatient services during 52 weeks	0.67 (0.02)	0.46 (0.04)	0.60 (0.02)	0.49 (0.04)
Number of times using inpatient services during 52 weeks	0.04 (0.00)	0.04 (0.00)	0.04 (0.00)	0.04 (0.00)

Standard errors are in parentheses.
Source: Authors' estimation from VHLSSs 2006 and 2008.

3. Estimation method

We assume a similar specification for estimating the effect of the internal and international remittances on education, health and labor of children:

$$Y_{ijt} = \beta_0 + G_t\beta_1 + X_{ijt}\beta_2 + DR_{jt}\beta_3 + IR_{jt}\beta_4 + H_{jt}\beta_5 + u_{ij} + v_j + \varepsilon_{ijt}, \quad (1)$$

where Y is a vector including education, health status, and labor of children. The outcome variables are presented in Table 5 and 6 above. The subscripts i, j and t refer to child i in household j at time t , respectively. G_t is a year dummy, with a one for 2006; This dummy is included to allow the intercept to differ between the two periods. This variable enables to control for common macroeconomic effects. X is a vector of children's characteristics

such as age and gender. DR and IR are per capita domestic (internal) remittances and international remittances, respectively. H is a vector of control variables with household characteristics.; u_{ij} and v_j are unobserved time-invariant children and households characteristics, respectively. ε_{ijt} is an error term. β_0 is a constant.

The main problem in estimating equation (1) is the endogeneity of remittances. Unobserved characteristics of remittances-receiving households can be different from those of households not receiving remittances. Failure to control for such unobserved factors leads to biased estimates of the impact of remittances. A standard method to deal with the endogeneity problem is instrumental variable regressions. However, finding valid instrumental variables is very difficult. Using invalid instruments can result in larger bias in the impact estimates.

In this study, we use the panel nature of the data to avoid this endogeneity bias. A main assumption of the method used is that unobserved variables in the outcome equation that are correlated with both outcome and remittances remained unchanged during the period 2006-2008. In the fixed effects estimator, the constant is allowed to differ per child, i.e. $\beta_0 = \beta_{0ij}$. If the fixed effects estimator is used, the time invariant children and household characteristics are removed. In that case, $u_{ij} + v_j$ will drop out of the model.

The marginal impact of internal and international remittances is measured by β_2 and β_3 , respectively.

4. Empirical results

Tables 7 and 8 present fixed-effects regressions of child outcomes on remittances. For comparison, we also present OLS regressions, but we put the results in Appendix, since we will use the fixed-effects regression results for interpretation. In Table 7, the remittance variables are two dummy variables indicating whether households received international and internal remittances during the past 12 months. It shows that there are no statistically significant effects of receipt of remittances on school enrolment of children as well as child labor. However, international remittances help children increase the number of completed grades by 0.11, just around 2 percent of the average completed grade for children.

Since the annual contacts are positive and discrete, we applied Poisson regressions. Both international and internal remittances are positively associated with the number of outpatient health care contact. Receipt of international and internal remittances each increase the number of outpatient health care contacts by around 14 percent. Receipt of international remittances has a strong effect on inpatient health care contacts. It should be noted that the endogeneity of the estimation of the impact of remittances on health can be more serious than the estimation of the impact on education and child labor. There can be a reverse causality, since households with sick children can receive transfers from relatives and friend for health treatment of children.

Table 7. Fixed-effects regression and fixed-effects Poisson regressions of child outcomes on the dummy variables of remittance receipts

Explanatory variables	Dependent variables					
	Attending school (yes=1)	The number of completed grades	Working for economic activities (yes=1)	Number of working hours per year	Number of times using outpatient services during 52 weeks	Number of times using inpatient services during 52 weeks
Households receiving international remittances (yes=1)	0.0007 (0.0124)	0.1080* (0.0502)	0.0156 (0.0128)	0.773 (19.664)	0.1437** (0.0539)	0.6369** (0.2467)
Households receiving internal remittances (yes=1)	0.0046 (0.0066)	-0.0418 (0.0267)	0.0058 (0.0068)	-4.343 (10.457)	0.1484** (0.0340)	-0.1136 (0.1177)
Household size	0.0224** (0.0032)	-0.1332** (0.0129)	-0.0252** (0.0033)	-32.066** (5.036)	-0.1149** (0.0163)	0.0106 (0.0528)
Proportion of children below 15 in households	0.4776** (0.0199)	-5.3812** (0.0811)	-0.4761** (0.0207)	-603.837** (31.730)	0.6617** (0.0951)	0.4899 (0.3425)
Proportion of children above 60 in households	-0.0869 (0.0552)	-0.1902 (0.2246)	0.0621 (0.0574)	126.269 (87.917)	-0.4341 (0.2570)	-0.0530 (0.9349)
Household having crop land (yes=1)	0.0081 (0.0377)	-0.5131** (0.1533)	0.0122 (0.0392)	-7.079 (59.985)	0.1652 (0.1783)	0.0741 (0.6821)
Log of crop land size	0.0016 (0.0047)	0.0467* (0.0190)	-0.0004 (0.0049)	-0.136 (7.426)	-0.0216 (0.0221)	-0.0600 (0.0837)
Constant	0.5150** (0.0197)	9.5113** (0.0800)	0.4778** (0.0204)	616.087** (31.301)		
Observations	42011	42011	42011	42011	15180	2620
R-squared	0.03	0.19	0.03	0.02		
Number of children	21232	21232	21232	21232	7590	1310

Number of households

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%.

Source: Authors' estimation from VHLSSs 2006 and 2008.

In Table 8, we limit the sample to households with positive values of remittances, and use the size of remittances instead of the dummy receipt of remittances. Almost all the estimates of remittance amount are not statistically significant. Only the amount of internal remittances are positively correlated with the number of completed grade of children.

Table 8. Fixed-effects regression and fixed-effects Poisson regressions of child outcomes on the amount of remittances

Explanatory variables	Dependent variables					
	Attending school (yes=1)	The number of completed grades	Working for economic activities (yes=1)	Number of working hours per year	Number of times using outpatient services during 52 weeks	Number of times using inpatient services during 52 weeks
Amount of international remittances (million VND)	0.0002 (0.0006)	0.0014 (0.0024)	-0.0002 (0.0005)	-0.209 (0.825)	-0.0003 (0.0026)	0.0385 (0.0380)
Amount of internal remittances (million VND)	-0.0005 (0.0014)	0.0193** (0.0057)	0.0005 (0.0013)	1.316 (1.956)	-0.0143 (0.0104)	0.1166 (0.1024)
Household size	-0.0071 (0.0256)	-0.2390* (0.1045)	-0.0184 (0.0230)	5.066 (35.680)	-0.0731 (0.1284)	1.4100 (1.4696)
Proportion of children below 15 in households	0.3554* (0.1526)	-6.0921** (0.6242)	-0.5317** (0.1371)	-392.898 (213.082)	2.1842** (0.8121)	6.9608 (4.9416)
Proportion of children above 60 in households	-0.1308 (0.3021)	-2.4559* (1.2356)	0.1152 (0.2713)	462.534 (421.813)	0.6838 (1.5166)	69.83 (94.77)
Household having crop land (yes=1)	-0.1536 (0.3588)	-1.7746 (1.4673)	0.2805 (0.3222)	-147.715 (500.911)	1.3887 (1.6743)	35.78 (55.36)
Log of crop land size	0.0081 (0.0481)	0.2411 (0.1966)	-0.0246 (0.0432)	34.589 (67.126)	-0.2109 (0.2061)	-2.8980 (2.098)
Constant	0.8150** (0.1419)	10.419** (0.5803)	0.3452** (0.1274)	168.183 (198.122)		
Observations	1442	1442	1442	1442	234	38
R-squared	0.03	0.32	0.07	0.02		
Number of children	1158	1158	1158	1158	117	19

Number of households

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%.

Source: Authors' estimation from VHLSSs 2006 and 2008.

The effect of remittances can vary across different groups. For example, many studies found a higher effect of remittances on education for girls than for boy, for example Mansuri (2006), Gonzale-Koning and Wodon (2007), Yang (2008). In Table 9, we interact the gender of children with the receipt of remittances and examine to examine the gender difference in the impact of remittances. We do not find significant gender difference in the effect of remittances on child education. However, we find that the reducing-effect of remittances on child labor is larger for boy than for girls.

Table 9. Fixed-effects regression and fixed-effects Poisson regressions of child outcomes on the dummy variables of remittance receipts with interaction with child gender

Explanatory variables	Dependent variables					
	Attending school (yes=1)	The number of completed grades	Working for economic activities (yes=1)	Number of working hours per year	Number of times using outpatient services during 52 weeks	Number of times using inpatient services during 52 weeks
Households receiving international remittances (yes=1)	0.0004 (0.0176)	0.0874 (0.0714)	0.0022 (0.0183)	7.213 (27.956)	0.1982* (0.0801)	1.1609** (0.3685)
Households receiving internal remittances (yes=1)	0.0073 (0.0095)	-0.0397 (0.0387)	0.0064 (0.0099)	18.934 (15.154)	0.0634 (0.0499)	-0.1855 (0.1673)
Households receiving international remittances * Child gender (boy=1, girl=0)	0.0008 (0.0247)	0.0408 (0.1004)	0.0266 (0.0257)	-11.924 (39.293)	-0.0955 (0.1083)	-1.0618* (0.5038)
Households receiving internal remittances * Child gender (boy=1, girl=0)	-0.0051 (0.0131)	-0.0042 (0.0535)	-0.0013 (0.0137)	-44.415* (20.933)	0.1578* (0.0683)	0.1404 (0.2352)
Household size	0.0224** (0.0032)	-0.1332** (0.0129)	-0.0252** (0.0033)	-32.117** (5.036)	-0.1149** (0.0163)	0.0169 (0.0531)
Proportion of children below 15 in households	0.4776** (0.0199)	-5.3810** (0.0811)	-0.4760** (0.0207)	-603.598** (31.729)	0.6648** (0.0952)	0.5166 (0.3429)
Proportion of children above 60 in households	-0.0869 (0.0552)	-0.1909 (0.2246)	0.0617 (0.0574)	126.232 (87.913)	-0.4093 (0.2573)	-0.0495 (0.9356)
Household having crop land (yes=1)	0.0083 (0.0377)	-0.5129** (0.1533)	0.0123 (0.0392)	-6.084 (59.983)	0.1647 (0.1784)	0.0502 (0.6828)
Log of crop land size	0.0015 (0.0047)	0.0467* (0.0190)	-0.0004 (0.0049)	-0.250 (7.426)	-0.0220 (0.0221)	-0.0595 (0.0838)
Constant	0.5150** (0.0197)	9.5113** (0.0800)	0.4777** (0.0204)	616.051** (31.299)		
Observations	42011	42011	42011	42011	15180	2620
R-squared	21232	21232	21232	21232	7590	1310
Number of children	0.03	0.19	0.03	0.02		

Number of households

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%.

Source: Authors' estimation from VHLSSs 2006 and 2008.

5. Conclusion

Vietnam is a developing country with increasing internal and international migration. There are a large number of studies on remittances and migration in Vietnam. However, there have been no studies in Vietnam on the impact of internal as well as international remittances on children welfare indicators including education, healthcare and labor. This paper examines the impact of internal and international remittances on education, health and labor of children aged from 6 to 18 in Vietnam using data from the VHLSSs and fixed-effects regressions.

We find that the receipt of remittances, both international and internal, does not have significant effects on school enrolment of children as well as child labor. However, the receipt of international remittances help children increase the number of completed grades by around 2 percent. We do not find significant gender difference in the effect of remittances on child education. Regarding healthcare, both international and internal remittances are positively associated with the number of outpatient health care contact. The receipt of international and internal remittances each increases the number of outpatient health care contacts by around 14 percent. The receipt of international remittances is also strongly correlated with inpatient health care contacts.

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Appendix

Table A.1. OLS and Poisson regressions of child outcome

Explanatory variables	Dependent variables					
	Attending school (yes=1)	The number of completed grades	Working for economic activities (yes=1)	Number of working hours per year	Number of times using outpatient services during 52 weeks	Number of times using inpatient services during 52 weeks
Households receiving international remittances (yes=1)	0.0407** (0.0109)	0.4460** (0.0772)	-0.0395** (0.0111)	-81.154** (17.390)	0.1647 (0.0841)	0.0891 (0.1890)
Households receiving internal remittances (yes=1)	-0.0007 (0.0079)	-0.0718 (0.0539)	-0.0098 (0.0091)	-19.111 (14.757)	0.4472** (0.0719)	0.0003 (0.1087)
Household size	-0.0310** (0.0022)	-0.0495** (0.0154)	0.0275** (0.0023)	47.459** (3.774)	-0.1713** (0.0177)	-0.0536 (0.0307)
Proportion of children below 15 in households	0.6025** (0.0157)	-8.8607** (0.0956)	-0.4720** (0.0166)	-765.665** (27.777)	0.9557** (0.1044)	0.5139** (0.1837)
Proportion of children above 60 in households	0.2132** (0.0293)	-2.8029** (0.1961)	-0.1990** (0.0293)	-307.531** (46.146)	0.4593* (0.2157)	-0.2682 (0.3684)
Household having crop land (yes=1)	0.0731* (0.0316)	1.3232** (0.2271)	-0.1284** (0.0395)	-128.544* (56.855)	-1.8602** (0.2569)	-0.4816 (0.3639)
Log of crop land size	-0.0087* (0.0038)	-0.1327** (0.0279)	0.0260** (0.0049)	18.716** (7.005)	0.2098** (0.0303)	0.0425 (0.0427)
Constant	0.7616** (0.0140)	10.0475** (0.0912)	0.1634** (0.0147)	258.291** (23.444)	-0.3475** (0.1125)	-2.9917** (0.1831)
Observations	42011	42011	42011	42011	42011	42011
R-squared	0.09	0.32	0.07	0.06		

Number of households

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%.

Source: Authors' estimation from VHLSSs 2006 and 2008.

Table A.2. OLS and Poisson regressions of child outcome

Explanatory variables	Dependent variables					
	Attending school (yes=1)	The number of completed grades	Working for economic activities (yes=1)	Number of working hours per year	Number of times using outpatient services during 52 weeks	Number of times using inpatient services during 52 weeks
Amount of international remittances (million VND)	0.0002 (0.0002)	0.0017 (0.0017)	-0.0004 (0.0002)	-0.623* (0.314)	-0.0015 (0.0021)	-0.0033 (0.0041)
Amount of internal remittances (million VND)	0.0010** (0.0003)	0.0039 (0.0041)	-0.0006 (0.0003)	-0.625 (0.457)	0.0075 (0.0044)	0.0118 (0.0062)
Household size	-0.0121 (0.0078)	-0.0700 (0.0581)	0.0064 (0.0080)	24.757 (12.797)	-0.2170** (0.0568)	-0.2824** (0.0947)
Proportion of children below 15 in households	0.4955** (0.0611)	-8.6910** (0.3803)	-0.3577** (0.0571)	-473.928** (93.610)	0.8239* (0.3365)	0.0552 (1.2407)
Proportion of children above 60 in households	0.2345* (0.0956)	-3.3202** (0.8305)	-0.1421 (0.1066)	-259.936 (150.735)	1.4410 (0.8392)	-2.1918 (1.7600)
Household having crop land (yes=1)	0.0102 (0.1143)	1.9401 (0.9966)	0.1524 (0.1524)	-61.055 (237.224)	-3.8014** (0.9936)	-0.4218 (3.1863)
Log of crop land size	0.0006 (0.0142)	-0.2319 (0.1187)	-0.0079 (0.0184)	12.055 (29.232)	0.4758** (0.1152)	0.0359 (0.4119)
Constant	0.7256** (0.0462)	10.5532** (0.2923)	0.1850** (0.0419)	197.454** (66.044)	0.1946 (0.2775)	-1.6078* (0.7387)
Observations	1442	1442	1442	1442	1442	1442
R-squared	0.08	0.31	0.06	0.04		

Number of households

Robust standard errors in parentheses

* significant at 5%; ** significant at 1%.

Source: Authors' estimation from VHLSSs 2006 and 2008.