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# Poverty Transition in Rural Vietnam: The Role of Migration and Remittances

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**ABSTRACT** *This study combines insights of the New Economics of Labour Migration with the asset-based approach to welfare dynamics using panel household data from Vietnam. This method allows us to determine whether poverty transitions induced by remittances are actually structural, that is, based on asset growth and therefore long term, or stochastic, that is, based only on short-term increases in income, which implies a risk of falling back into poverty. To control for endogeneity of remittances, we use household fixed effects and instrumental variables estimation. The paper shows that remittances have a positive impact on asset growth and that the impact differs with welfare status and ethnicity.*

## 1. Introduction

The movement of rural populations out of agriculture in search of jobs in urban centres is a major aspect of the development process, especially in emerging market economies in Asia. Because of the increasing numbers of rural-urban migrants, the influence of migrant remittances on household welfare has come to the fore in policy discussions and research in recent decades. While the importance of remittances for rural households is undisputed, the results regarding their effect on household welfare are ambiguous. Some authors find that migration, particularly migration with remittances, relaxes liquidity constraints, allows poor households to engage in high-return activities, and, in turn, improves asset accumulation (Adams & Cuecuecha, 2010; Taylor, Rozelle, & de Brauw, 2003).

By contrast, other research (for example, de Brauw & Rozelle, 2008) indicates that migration and remittances may not necessarily improve the welfare of rural households for a variety of reasons. First, remittances may influence the behaviour of households, which may use remittances for consumption purposes rather than investment (de Brauw & Rozelle, 2008). Second, migrants from poor rural households are often employed in low-quality urban occupations with poor job security, such as domestic service and informal sector occupations, which results in low and uncertain remittances (Fan & Stark, 2008; McKenzie & Rapoport, 2007; Zhang, 2012). By contrast, wealthier households tend to have more successful migrants with better-paid employment; therefore, migration can increase inequality in the community of origin (Acosta, Calderón, Fajnzylber, & Lopez, 2008; Amare, Hohfeld, Jitsuchon, & Waibel, 2012; Bezu, Barrett, & Holden, 2012). The overall impact of migration and remittances on welfare dynamics at the origin thus remains an empirical question.

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Several studies in various developing countries have focused on the effects of remittances on poverty and inequality based on retrospective assessments of flow variables, such as income and consumption (for example, Adams & Cuecuecha, 2010; Acosta et al., 2008; Amare et al., 2012; Nguyen, Van den Berg, & Lensink, 2011). However, a limitation of such variables is that they do not distinguish between structural and stochastic poverty. Households are structurally poor if they are poor based on both (measured) income and asset poverty lines. They are, however, only stochastically poor if they own assets above the asset poverty line but their income is below the poverty line, for example, due to shocks (Barrett, 2005). Remittances can lead to structural transitions out of poverty if they increase asset accumulation. However, if remittances increase only current income and consumption – and not assets – these transitions may be stochastic, which implies that migrants may fall back into poverty (Barrett, 2005). Moreover, income and consumption data are subject to recall and measurement errors that can inadvertently lead to an overestimation of the impact of remittances on poverty transitions. Measurement of assets does not require recall and can therefore be expected to be more accurate (Barrett, 2005; Sahn & Stifel, 2000).

This paper uses a three-year rural panel data set that contains information at the village and household level on approximately 2200 households in 220 villages in three Vietnamese provinces. The paper contributes to the literature in several respects. First, from a conceptual perspective, our study links two areas in the economics of poverty, the dynamic asset-based approach (Carter & Barrett, 2006) and the New Economics of Labour Migration theory (Stark & Bloom, 1985; Taylor, 1999). Combining these two theories allows us to identify whether and under what conditions remittances lead to long-term structural growth, based on asset growth, or to stochastic growth, based only on short-term growth of measured income and consumption but not on asset growth, which implies a high risk of falling back into poverty (Lybbert, Barrett, Desta, & Layne Coppock, 2004). Second, from an empirical research perspective, our study makes two contributions: (i) it provides evidence on whether remittances ultimately reduce the asset growth gap between poor and non-poor households, and (ii) it examines the impact of remittances on the wellbeing of ethnic minorities who have been lagging relative to individuals who have benefited from the very positive overall poverty reduction occurring in Vietnam (Baulch, Pham, & Reilly, 2012; World Bank, 2012).

From an econometric standpoint, analysis of the welfare implications of remittances may be affected by an endogeneity problem. This paper acknowledges that the differences in welfare outcome variables between remittance recipients and non-recipients could be due to unobserved heterogeneity (for example, skills, ability, motivation, culture, distance, language, the quality of schooling and the spatial pattern of settlements that have either been omitted or cannot be observed easily in household surveys). To address the potential endogeneity problem of remittances receipts, we first employ household-level fixed-effects (FE). Household FE estimates control for the effect of time-invariant unobservable heterogeneities; however, the estimates may suffer from bias due to time-variant unobservable characteristics. We therefore complement FEs with instrumental variable (IV) estimation. In the choice of instruments, we follow McKenzie and Rapoport (2007) and Antman (2011) and use the unemployment rate and GDP per capita in three major migrant destinations<sup>1</sup> to control for time-variant heterogeneities. We argue that that these variables influence the welfare growth only through their effect on household remittance receipts.

## 2. Background and Data Description

### 2.1. Background on Migration in Vietnam

During the *Doi Moi* in the 1980s, the Vietnamese government initiated a transition from a centralised command economy to a more market-oriented economy. Following the reform, the share of agriculture in GDP declined by half, while the manufacturing share of GDP nearly doubled between 1990 and

2010, increasing the demand for labour in urban areas (General Statistical Office of Vietnam [GSO], 2010). Rural migrants satisfied much of this demand.

Migration within and across Vietnam's borders has increased dramatically over the last two decades. The 1999 census revealed that approximately 4.5 million persons migrated internally during the period from 1995 to 1999, whereas between 2004 and 2009, the level of migration increased to 6.6 million persons (7.7% of the population). The major receiving destinations are Ho Chi Minh City, Binh Duong, Dong Nai in the south and Hanoi in the northern part of the country (GSO, 2010).

Ethnic minorities, who represent all ethnic groups other than the ethnic majority population of Kinh and Hoa, are concentrated in the geographically remote upland areas. Because of their geographic remoteness, lower level of education, and reduced access to information on urban job opportunities, these minority populations are less likely to migrate. According to the 2009 census (GSO, 2010), the Kinh ethnic majority accounted for more than 90 per cent of migration, whereas ethnic minorities were generally engaged in low-return activities in their natal villages.<sup>2</sup>

## 2.2. Data Description

The data used for this study originate from a longitudinal survey designed to assess vulnerability to poverty in Asia (DFG FOR 756 database); it comprises three rounds (2007, 2008 and 2010) of household- and village-level surveys. The survey was conducted in three provinces, Ha Tinh, Thua Tien Hue and Dak Lak, on the north central coast and central highlands in Vietnam. The provinces were deliberately selected because of their peripheral location along the border with Laos or Cambodia and because of a certain degree of variation in agro-ecological conditions between these provinces. A three-stage cluster random sampling procedure was used to obtain a sample representative of the rural populations of the three selected provinces. In the first stage, the communes were sampled according to the population share at the district level. Next, the villages were sampled with a probability proportional to their size based on population. Finally, a systematic random sample with equal probability from household lists ordered by household size was used, resulting in a total sample size of 2200 households and 220 villages (Hardeweg, Klasen, & Waibel, 2013). The data include detailed information on household characteristics such as education level, demographic characteristics, migration experience, assets, income, and consumption of the household and the household members. The village head questionnaire contains information on the infrastructure and basic public goods that could affect the livelihoods of the households. We checked whether villages have any major or significant changes in geographical capital over our study period. We find significance changes in some geographic capital indicators and the results can be found in the Online Appendix, Table 1A.

As the objective of this study is to explore the impact of remittances on asset accumulation, we defined remittance recipients as those migrant households that received remittances (cash or in kind<sup>3</sup>) during the survey year period. Table 1 provides a description of the variables and summary statistics of the pooled sample. On average, the household size was 4.38 members, and adult members had 7.93 years of schooling. More than three-quarters of the sampled household heads were male. More than 85 per cent of the households participated in political or social organisations. About 50 per cent and 25 per cent of the sampled households participated in off-farm and self employment, respectively.

The average annual income<sup>4</sup> per capita, the share of income from remittances, and the proportion of migrant<sup>5</sup> households for the three years are reported in Table 2. The annual income per capita increased from US\$1212 in 2007 to US\$1596 in 2010. Approximately 41 per cent of the sample households were migrant households. The percentage of remittance recipients increased from 22 per cent to 36 per cent between 2007 and 2010. Over all households, average remittances increased from US\$312 per year in 2007 to US\$567 in 2010. For those remittance recipients, remittances represented approximately 27 per cent of total household income.

**Table 1.** Description and summary statistics of panel variables

Variable	Description	
Income per day	Measured income per day and capita (at PPP in US\$)	4.05(6.10)
Human and social capital		
HH size	Total household size	4.38(1.76)
Dependency	Share of children (<15 years) + elderly (>60 years) in HH	0.09(0.22)
Age	Age of the household head	47.43(15.65)
Gender	Gender of the head (male headed = 1, female headed = 0)	0.77
Ethnic	Major ethnic Kinh & Hoa (=1), others (=0)	0.79
Mean education	Mean of adult education in years	7.93(3.50)
Membership	Involved in political/social organisations (yes = 1, no = 0)	0.87
Off-farm	Participated in off-farm wage employment (yes = 1, no = 0)	0.52
Self-employment	Own small- and medium-scale enterprises (yes = 1, no = 0)	0.25
Physical and natural assets (US\$-PPP, 2005, if not specified otherwise)		
Agricultural assets	Value of agricultural assets owned	408(1037)
Transportation assets	Value of transportation assets owned	1064(2916)
Land	Land size owned in hectares	0.78 (1.12)
Livestock	Value of livestock owned	814(2595)
Own house	Value of house owned	10255(15825)
House utilities	Value of household utilities owned	1010(1968)
Geographical capital at village level		
Paved road	The village has paved road (yes = 1, no = 0)	0.55
Mountainous	The village is located in the mountains (yes = 0, no = 1)	0.52
Main transportation	Main transportation is bus or motorcycle (yes = 1, no = 0)	0.57
Violence	There is a violence problem in the village (yes = 0, no = 1)	0.83
Epidemics	The village experienced epidemics (yes = 0, no = 1)	0.89
HHs water supply	Proportion of households with public water supply (%)	23(42)
Irrigation	Year-round irrigation available (yes = 0, no = 1)	0.66
HHs electricity	Proportion of households with electricity (%)	92(23)
HHs sanitation	Proportion of households with sanitation (%)	18(32)
Time to market	Distance to nearest market in minutes	33.12(32.27)
Asset shocks	Asset shock severity: asset lost share of total asset	0.1(0.28)
Employment and income	status of origin and migrant main destination	
Employment origin	Unemployment rate in the migrant origin province	4.12(0.77)
Income level origin	Income per capita in the migrant origin province	730.33(227.28)
Employment destination	Unemployment rate in the migrant destination province	4.01(1.46)
Income level destination	Income per capita in the migrant destination province	2483.71(741.24)
N	Number of observations	6318

Source: DFG Rural Household- and Village-Level Surveys in Vietnam, 2007, 2008 and 2010.

Notes: Standard deviations are presented in parentheses; PPP, Purchasing power parity.

**Table 2.** Average income, migration and remittances

Year	2007	2008	2010	Average
Annual income per capita (US\$-PPP, 2005)	1212	1500	1596	1426
Migrant HHs (%)	37	41	45	41
Migrant HHs with remittances (%)	22	32	36	30
Remittance income per year (US\$-PPP, 2005)	312	481	567	453
Income share of remittances for recipients (%)	29	28	24	27
N	2106	2106	2106	

Source: DFG rural Household- and Village-Level Surveys 2007, 2008, and 2010 in Vietnam.

### 3. Conceptual Framework

In this section, we propose a model that links the New Economics of Labour Migration theory and the asset-based approach to welfare dynamics. Our welfare dynamics model builds on that of Barrett (2005). We express the income of the household as the product of the household's productive asset endowments and the returns on assets:

$$Y_{it} = K_{it}[r_{it} + \mu_{it}] + \varepsilon_{it} \quad (1)$$

where  $Y_{it}$  is the measured income of household  $i$  at time  $t$ ,  $K_{it}$  refers to a vector of human capital and physical assets, and  $r$  is the corresponding vector of expected returns per unit of the asset held. The variable  $\mu$  refers to exogenous shocks, such as production and market shocks;  $\varepsilon$  represents measurement error. We assume that the exogenous stochastic asset returns and measurement error ( $\mu_{it}$  and  $\varepsilon_{it}$ , respectively) have a mean of zero, have constant variance, and are serially independent. Asset-based expected income ( $E[Y_{it}] = A_{it}$ ) – what Carter and Barrett (2006) also refer to as structural income or asset index – is specified as the expectation of income:

$$E[Y_{it}] = A_{it} = K_{it}r_{it} \quad (2)$$

Asset-based expected income can be interpreted to measure the underlying structural wellbeing of a household. The total differentiation of the income Equation (1) yields an expression for a change in income as a function of the change in the asset stock, the change in expected returns on assets, and various sources of shocks:

$$dY_{it} = dK_{it}[r_{it} + \mu_{it}] + K_{it}[dr_{it} + d\mu_{it}] + d\varepsilon_{it} \quad (3)$$

The expectation of Equation (3) determines the asset-based expected income changes of the household:

$$E[dY_{it}] = dA_{it} = dK_{it}r_{it} + K_{it}dr_{it} \quad (4)$$

Equation (4) indicates that a household's asset-based expected income changes depending on the changes in the household's productive asset holdings and the changes in the rates of return on assets. The New Economics of Labour migration theory states that remittances ( $I$ ) can improve asset growth and can offer rural households pathways for structural transitions by enabling them to overcome liquidity and risk constraints (Bezu et al., 2012; Stark & Bloom, 1985; Taylor, 1999). Thus, the first channel through which remittances can increase asset growth is by improving the factor productivity of endowments; we specify a return function of the following form:

$$r_{it} = f(I_{it}, K_{it}, G_{vt}, \mu_{it}, \varepsilon_{it}) \quad (5)$$

The factor productivity of endowments is a function of income from remittances ( $I$ ), human capital and physical assets ( $K$ ), village endowments ( $G$ ). The inclusion of  $K_{it}$  allows for variable returns to scale depending on asset type.  $G_{vt}$  refers to a vector of geographic capital at the village level, such as infrastructure facilities and topography of the village, which may lead to different rates of return across time or space for a given level of assets and remittances.

The second channel through which remittances can improve rural households' standard of living is changes in the asset stocks ( $dK$ ). Thus, asset-based expected income growth can be expressed as a reduced-form function of the initial human capital and physical asset endowments ( $K$ ), remittance income ( $I$ ), initial exogenous conditions at the village level ( $G$ ), and changes in these three factors:

$$dA_{it} = f(K_{it}, dK_{it}, I_{it}, dI_{it}, G_{vt}, dG_{vt}) \quad (6)$$

However, considerable evidence suggests that receiving remittances can also influence natal household consumption and work behaviour such that they use the remittances for consumption purposes and increase the reservation wage at which members of migrant households are willing to engage in non-farm activities (Adams & Cuecuecha, 2010). Additionally, because of the costs and risks associated with migration, better-off households are able to obtain higher-quality urban employment, whereas migrants from poorer households tend to engage in low-return activities with less job security (McKenzie & Rapoport, 2007). Hence, remittances can lead to greater inequality in the community of origin (Amare et al., 2012).

We test the following hypotheses based on the conceptual framework and literature review: (1) remittances accelerate household asset growth in rural areas, (2) remittances facilitate structurally poor households' efforts to exit poverty and to catch up with their better-off neighbours, (3) remittances increase asset growth by improving factor productivity, and (4) ethnic minorities in Vietnam are less likely to benefit from remittances.

## 4. Empirical Models and Identification Strategies

### 4.1. Constructing Asset-Based Expected Income

The purpose of the livelihood regression model is to reliably predict asset-based expected income as the dependent variable for the asset growth equation and subsequent models, which are described in the next sections. We measure household welfare using asset-based expected income for three reasons. First, the asset-based expected income allows us to distinguish between structural and stochastic poverty. Second, the asset-based expected income is also justified precisely because it is a better indicator of non-stochastic welfare. Third, the asset-based expected income reduces measurement error and recalls bias and therefore provides more reliable measures of long-run welfare than observed income measures. To construct our main variable, asset-based expected income from Equation (2), we apply the livelihood regression model developed by Adato, Carter, and May (2006):

$$Y_{it} = \alpha + \sum_{j=1} \beta_j (K_{ijt}) + \sum_{j,k} \beta_{jk} (K_{ijt})(K_{ikt}) + \beta_g G_{vt} + \lambda_{pt} + \gamma_i + \pi_{it} \quad (7)$$

Let  $Y_{it}$  be defined as household  $i$ 's measured monthly income per capita divided by the rural poverty line.<sup>6</sup> A value of  $Y_{it}$  below one denotes households with income below the poverty line, and a value above one identifies non-poor households. In this model, a vector of assets likely to shape a household's future wellbeing is utilised.  $K_{ijt}$  is a vector of asset items  $j$  including human, social, physical, and natural capital owned by household ( $i$ ) at time  $t$ . All items  $j$  are interacted with each other ( $k$ ) to allow the marginal return of assets to vary with the levels of other assets.  $\beta$  represents vectors of the coefficients of current household assets.  $G_{vt}$  refers to a vector of geographic capital at the village ( $V$ ) level.  $\gamma_i$  denotes household FEs, which control for a variety of fixed factors that shape a household's wellbeing. Province-year dummies ( $\lambda_{pt}$ ) were added to control for shocks common to the entire province. The brackets indicate that the marginal contribution of assets depends on all of household  $i$ 's assets and characteristics at time  $t$ .

The literature suggests that a wide range of human, social, physical, natural, and geographic capital factors likely shape a household's future wellbeing (Naschold, 2012; Radeny, van den Berg, & Schipper, 2012). Accordingly, we include various proxies for human capital, such as the average number of years of schooling of household members, the proportions of adults and dependents in the household, and the gender and age of the household head. As proxies for social assets, we use memberships in local social and political organisations and the migration status of the household. Asset (for example, agricultural and transportation equipment, household utilities, and livestock) values are measured in US\$ (PPP) adjusted prices. Land is measured in hectares. To capture geographic location and natural topographic conditions, social problems in the villages, infrastructure, and basic public goods are included. The squared terms of several variables are included to account for



**Table 3.** Descriptive statistics of households by remittances status

	Recipients	Non-recipients	Difference test
Welfare indicators			
Asset-based expected income per capita	1690 (937)	1380 (1052)	***
Structurally poor (%)	8	20	***
Human and social capital			
HH size	4.02 (1.55)	4.45 (1.79)	***
Dependency	0.20 (0.19)	0.37 (0.26)	***
Mean education	9.34 (2.45)	7.68 (3.60)	***
Gender	0.80	0.76	*
Ethnic	0.95	0.76	***
Membership	0.94	0.86	***
Geographical capital at village level			
Paved road	0.69	0.52	**
Mountainous	0.35	0.50	***
Violence	0.13	0.18	**
Epidemics	0.06	0.12	**
Water supply	0.2 (0.42)	0.23(0.42)	
Irrigation	0.68 (0.46)	0.67(0.47)	
HHs electricity	93.9 (20.88)	91.98(22.99)	
No. enterprise	0.22(1.95)	0.16(1.58)	*
HHs sanitation	24.69(34.86)	16.97(30.70)	**
Time to market	18.95(20.07)	23.25(25.04)	
Shock severity			
Asset shocks	0.05(0.15)	0.09(0.20)	**
N	997	5321	

Source: DFG Rural Household- and Village-Level Surveys 2007, 2008, and 2010 in Vietnam.

Notes: The significance tests between recipients and non-recipients are the t-test for continuous variables and the Pearson chi2 test for categorical variables. Standard deviations are presented in parentheses. \*\*\*  $p < 0.01$ . \*\*  $p < 0.05$ . \*  $p < 0.10$ .

potential diminishing returns on assets. A complete list of the variables and their definitions are provided in Table 1.

We estimate a livelihood regression model in Equation (7) using household-level FEs. The asset-based expected income is constructed from the fitted values of livelihood regression Equation (7):

$$A_{it} = \hat{Y}_{it} + \alpha + \sum_{j=1} \beta_j (K_{ijt}) + \sum_{j,k} \beta_{jk} (K_{ijt}) (K_{ikt}) + \beta_g G_{vt} \quad (8)$$

We derive the asset-based expected income using an FE model because our test indicated that endogeneity problems due to unobserved characteristics did not support the random effects model. The full estimation results using household FEs are reported in the Online Appendix, Table 3A. We then use the asset-based expected income ( $A_{it}$ ) to distinguish between structurally poor and non-poor households. A household is *structurally poor* if its asset-based expected income is below the poverty line. A household is identified as *structurally non-poor* if asset-based expected income is above the poverty line.

#### 4.2. Asset Growth Equation

Following our conceptual framework in Section 3 and using the data set described above, we estimate three models to examine the impact of migration and remittances on household asset growth. The dependent variable is the asset-based expected income constructed with livelihood regression as described in the previous section. First, we estimate the impact of receiving remittances (dummy variable) on asset growth by using a function of the following form:



$$\Delta A_{it} = \gamma_1 Z_{it-1} + \gamma_2 A_{vt-1} + \gamma_3 W_{it-1} + \gamma_4 \mu_{it} + \gamma_5 G_{vt-1} + \eta_{it} \quad (9)$$

where  $\Delta A_{it}$  refers to the growth in an asset between  $t$  and  $t - 1$ .  $Z_{it-1}$  represents a vector of levels of household characteristics for the lagged period. The village mean of initial household asset-based expected income ( $A_{vt-1}$ ) is included in the growth regression to control for the initial level of assets in the community. The effect of interest is captured by the coefficients on  $W_{it-1}$ , which is an indicator equal to one if the migrant household received remittances and zero otherwise. To explore the impact of shocks ( $\mu_{it}$ ) on asset growth, we include information on the severity of shocks on assets recorded by each household. The severity of shocks on assets is measured as the share of assets lost from total initial assets. We also include village-level assets ( $G_{vt-1}$ ) such as topography, social problem categories, infrastructure and basic public goods, for the case period to address the heterogeneities across villages in explaining household asset growth.

As a second model, we estimate the impact of the level of remittances on rural household asset growth by using the following regression function:

$$\Delta A_{it} = \alpha_1 Z_{it-1} + \alpha_2 A_{vt-1} + \alpha_3 I_{it-1} + \alpha_4 \mu_{it} + \alpha_5 G_{vt-1} + \omega_{it} \quad (10)$$

where  $I_{it-1}$  refers to level of remittances<sup>7</sup> measured as a natural logarithm in the case period. Finally, we separately estimate the asset growth model (Equation (9)) by welfare status and ethnicity to control for heterogeneity in the impact of remittances. In particular, we examine whether remittances affect structurally poor households (asset-based expected income below the poverty line) differently than structurally non-poor households and whether ethnic minorities are less likely to benefit from migration than the Kinh and Hoa ethnic majority.

Remittance receipts could be endogenous elements of the rural household asset growth equation because a household typically makes a migration decision based on its level of information, level of human capital and physical assets and unobserved heterogeneities. To account for this type of endogeneity, we use household fixed effect and to control for the effect of time-invariant unobservable heterogeneities we complement the household FE estimates with an IV regression. To control for time-variant heterogeneities, we require a set of instruments that influence welfare growth only through their effect on the household's remittance receipt for this regression. We construct the instruments by matching our panel household data with the longitudinal yearly unemployment rate and per capita income of three migrant destination provinces with data from the General Statistics Office (GSO, 2010) of Vietnam. The main destinations from our sample provinces are Ho Chi Minh City for migrants from Dak Lak (84 per cent of migrants from Dak Lak go to Ho Chi Minh City), Binh Dong for migrants from Hue (67 per cent) and Hanoi for migrants from Ha Tinh (75 per cent), based on our data.

Our justification for using these instruments is that employment and economic conditions in the recent past in destination provinces influence the flow of remittances without directly influencing the welfare growth in the village. A potential concern with regard to the validity of the instrument is that the employment and economic conditions of the destination provinces may be correlated with the village's economic activities. Thus, the employment and economic conditions of the destination may directly affect households' welfare growth outcomes. To circumvent this problem, first, we include the employment and economic conditions of the three origin provinces and a wide range of village-level characteristics as control variables in the identification strategies. Second, instead of using observed income, we use asset-based expected income as an outcome variable, which controls for measurement and stochastic errors. To further mitigate the concern, we use lagged remittance levels to help ensure that remittances are affected by subsequent changes in asset growth.

#### 4.3. Asset Growth Decomposition

After identifying the drivers of asset growth, we employ Blinder–Oaxaca decomposition analysis (Blinder, 1973; Oaxaca, 1973) to explore the channel through which remittances affect household asset growth. To do so, we identify the difference in asset growth between recipients and non-recipients

that is due to differences in asset productivity (productivity effect) and/or asset endowment (endowment effect). We rewrite the asset growth equation separately for recipients and non-recipients and compute the growth differential. The asset growth equation for recipients is  $\Delta A_i^w = \alpha_o^M + \sum_{i=1}^n r_j^w K_{ji}^w + \mu_i^w$ . The asset growth equation for non-recipients is  $\Delta A_i^M = \alpha_o^M + \sum_{i=1}^n r_j^M K_{ji}^M + \mu_i^M$ .  $K$  describes the household endowments including human capital, physical and natural assets,<sup>8</sup> and  $r$  describes the returns for the asset endowment. Thus, the asset growth gap between recipients and non-recipients is given by:

$$\Delta \bar{A}^w - \Delta \bar{A}^M = \underbrace{\sum \alpha_j^w (\bar{K}_j^w - K_j^M)}_E + \underbrace{\sum \bar{K}_j^w (r_j^w - r_j^M)}_P + \underbrace{(\alpha_o^w - \alpha_o^M)}_U \quad (11)$$

where  $E$  refers to growth differences due to recipients having larger endowments (endowment effect), and  $P$  refers to growth differences due to recipients having higher productivity (productivity effect).  $U$  refers to any unexplained effect.

## 5. Results and Discussion

### 5.1. Welfare Dynamics and Migration

In this section, we derive an asset-based expected income using the livelihood regression model. The purpose of the livelihood regression model is to reliably predict the realised level of asset-based expected income as a dependent variable for the asset growth equation and subsequent models.<sup>9</sup> We use household-level FEs to derive the asset-based expected income; the results can be found in the Online Appendix, Table 2A.

Table 3 presents summary statistics for the households in our sample by remittance status. Remittance recipients have higher wealth and significantly higher asset levels than non-recipients. Recipients also tend to be better educated, have significantly greater labour endowments, and have a lower dependency ratio than non-recipients. For example, adults among recipients have on average 9.34 years of schooling, whereas non-recipients have approximately 1.6 fewer years of schooling. We also find that belonging to the Kinh and Hoa ethnic majority and having a household member who participates in social networks are positively correlated with remittances. Recipients come from villages with better public infrastructure, lower levels of violence and epidemics, and locations in the plains.

Table 4 reports the asset poverty and the asset-based expected income and by remittance status for three years. In total, the asset-based expected income per capita increased from US\$1284 in 2007 to US\$1560 in 2010. The asset growth rates were 28 per cent and 20 per cent over the 2007–2010 period for recipients and non-recipients. In the same period, there was a significant decline in structural

**Table 4.** Asset-based expected income and asset poverty by year and remittance status

	Recipients		Non-Recipients	
	Asset-based expected income (US\$-PPP, 2005)	Asset Poverty (%)	Asset-based expected income (US\$-PPP, 2005)	Asset Poverty (%)
Year				
2007	1405	13	1254	26
2008	1771	8	1382	18
2010	1803	5	1513	17
Average	1690	8	1380	20
Asset growth: 2007–2010 (%)	28		20	

Source: DFG Rural Household- and Village-Level Surveys 2007, 2008, and 2010 in Vietnam.

poverty for both recipients and non-recipients, with structural poverty decreasing by 8 per cent and 9 per cent in 2010, respectively. We examined whether structurally poor migrants remit more than structurally non-poor migrants and the results can be found in the Online Appendix, [Table 3A](#).

## 5.2. The Impact of Remittances on Asset Growth

In this section of the paper, we explore the impact of remittances on asset growth. The results of the first equation that is used in the later IV analysis to explain asset growth are reported in the Online Appendix, [Table 4A](#). Both instruments (employment and income status) are individually and jointly significant at the 5 per cent level in the first-stage regression, suggesting that the employment and economic conditions of migrant destinations are crucial factors driving remittance receipt.

We estimate the model for asset growth<sup>10</sup> with both FE and IV-FE estimation; the results are reported in [Table 5](#). In general, the FE and IV-FE estimates for remittances are similar in sign and magnitude; the results obtained from both models confirm that remittance receipts and the level of remittances have significant, positive effects on asset growth. However, the IV-FE estimates for the key variables of interest are much larger than the FE estimates, implying that correcting for sample selection affects the results. We

**Table 5.** Household FE and IV-FE regression estimates of asset growth

	FE		IV-FE		FE		IV-FE	
	1		2		3		4	
	Coef	Se	Coef	Se	Coef	Se	Coef	Se
Remittances								
Receiving remittances	0.411***	0.028	1.543***	0.360				
Level of remittances					0.030***	0.006	0.470***	0.102
Human and social capital								
HH size	-0.239***	0.032	-0.591***	0.080	-0.304***	0.028	-0.493***	0.057
Dependency	0.031***	0.003	0.134	0.103	-0.255***	0.032	-0.097*	0.056
Mean education	0.041**	0.019	0.035***	0.004	0.030***	0.003	0.028***	0.004
Gender	0.041	0.026	0.097***	0.034	0.041**	0.019	0.100***	0.032
Membership	0.622*	0.423	0.055	0.034	0.041	0.026	0.059	0.051
Asset-based expected income (vill. mean)	-0.100**	0.049	-0.693***	0.034	-0.621***	0.023	-0.672***	0.030
Geographical capital at village level								
Paved road	0.025	0.046	0.176***	0.053	0.097**	0.049	0.134***	0.046
Violence	0.002	0.057	0.021	0.040	0.025	0.047	0.026	0.036
Epidemics	0.071	0.060	-0.026	0.051	0.003	0.057	-0.016	0.045
Public water supply	-0.003***	0.000	0.062	0.055	0.072	0.060	0.078	0.047
Irrigated land	0.001	0.001	0.003***	0.000	0.003***	0.000	0.003***	0.000
HHs electricity	0.066***	0.013	0.001	0.001	0.001	0.001	0.001	0.001
No. enterprises	0.004***	0.001	0.051***	0.009	0.066***	0.013	0.058***	0.007
HHs sanitation	0.000	0.001	0.004***	0.001	0.004***	0.001	0.004***	0.001
Time to market	-0.001	0.001	-0.062**	0.027	-0.001	0.001	-0.011**	0.001
Asset shocks	0.000***	0.000	-0.044	0.027	-0.062**	0.026	-0.047**	0.022
Employment and income level at province level								
Employment origin	0.212***	0.038	0.000	0.000	0.000***	0.000	-0.000	0.000
Income level origin	0.100***	0.019	0.101**	0.046	0.212***	0.038	0.100**	0.041
No. observations	4212		4212		4212		4212	
No. FEs	2106		2106		2106		2106	
Over identification test p value			0.413				0.176	
First-Stage F Stat on Excluded IVs			9.131				26.612	

Source: DFG Rural Household- and Village-Level Surveys 2007, 2008, and 2010 in Vietnam.

Notes: All variables, except the severity of shocks, refer to the base period value. The regression included a dummy for provinces. \*\*\*  $p < 0.01$ . \*\*  $p < 0.05$ . \*  $p < 0.10$ .

use Hansen-J statistics to test for over-identification in both regressions; the correct exclusion of instruments cannot be rejected. The last two rows of Table 5 report the results of these tests. Therefore, our subsequent discussion focuses on the two-stage IV-FE model estimates.

The results for the IV-FE estimations to examine the impact of remittances on asset growth are reported in column (2) of Table 5. Migration with remittances increases the asset growth of natal households; these households have 1.5 per cent greater asset growth than households that do not receive remittances. The results of the IV-FE estimation to examine the impact of the level of remittances on household asset growth are reported in column (4) of Table 5. The results reveal that remittances have a positive, significant impact on asset growth. Controlling for other factors, we find that a 10 per cent increase in the level of remittances in the previous year tends to increase asset growth by 4.7 per cent on average. This result supports the hypothesis that remittances can facilitate asset growth by enabling households to overcome liquidity constraints and therefore by stimulating productivity enhancing investments in higher-return activities. This finding is in line with the findings of Adams and Cuecuecha (2010) for Guatemala and McCarthy, Carletto, Kilic, and Davis (2009) for Albania, who show that migrant households tend to spend remittances on investments, including human capital and physical asset investments.

Households with large family sizes experience a significantly lower asset growth. Controlling for other factors, we find that female-headed households exhibit higher asset growth than their male-headed counterparts. More important, we find that access to public infrastructure, such as a public water supply, sanitation, and electricity, plays a significant role in improving asset growth. These results indicate that asset growth rates at the household level are significantly higher in generally accessible areas. For example, the effect of road quality is particularly strong; asset growth differs by 13 per cent between households in villages with a paved road and households in villages with a dirt road. Additionally, households in villages with good market access and favourable agro-ecological endowments are more likely to accumulate assets at the household level. We also find that asset and income shocks have a negative, statistically significant impact on asset growth – a 10 per cent increase in the severity of asset shocks decreases asset growth by 4.7 per cent on average.

### 5.3. Heterogeneous Impact of Remittances

We examine whether the magnitude of the coefficient of migration with remittances and level of remittances varies by initial asset holdings by estimating the growth model separately for structurally poor and non-poor households. The results (Table 6) indicate that remittances have a significant impact on asset growth for both structurally poor and structurally non-poor households. However, when we

**Table 6.** Household IV-FE regression estimates of asset growth by welfare status

	Structurally poor				Structurally non-poor			
	1		2		3		4	
	Coef	Se	Coef	Se	Coef	Se	Coef	Se
Remittances								
Receiving remittances	1.364***	0.418			0.350***	0.082		
Level of remittances			0.694***	0.243			0.164***	0.036
No. observations	826		826		3,364		3,364	
No. FEs	413		413		1682		1682	
Over-identification test p value	0.606		0.678		0.837		0.683	
First-stage F stat on excluded IVs	34.364		20.806		28.675		35.371	

Source: DFG Rural Household- and Village-Level Surveys 2007, 2008, and 2010 in Vietnam.

Notes: The regression, omitted from the table, controls for human and social capital, geographical capital, and shock severity. \*\*\*  $p < 0.01$ . \*\*  $p < 0.05$ . \*  $p < 0.10$ .

**Table 7.** Household IV-FE regression estimates of asset growth by ethnicity

	Ethnic minority				Ethnic majorities			
	1		2		3		4	
	Coef	Se	Coef	Se	Coef	Se	Coef	Se
Remittances								
Receiving remittances	0.864	1.104			1.295***	0.311		
Level-remittances			0.366	0.681			0.510***	0.090
No. observations	868		868		3,344		3,344	
No. of FEs	434		434		1672		1672	
Over-identification test p value	0.870		0.369		0.585		0.131	
First-stage F stat on excluded IVs	6.252		5.112		27.382		36.63	

Source: DFG Rural Household- and Village-Level Surveys 2007, 2008, and 2010 in Vietnam.

Notes: The regression, omitted from the table, controls for human and social capital, geographical capital, and shock severity. \*\*\*  $p < 0.01$ . \*\*  $p < 0.05$ . \*  $p < 0.10$ .

compare structurally non-poor with structurally poor households, the coefficient for remittances is approximately four times higher for the latter. In column (2), controlling for other factors, we find that a 10 per cent increase in remittances increases asset growth by 6.9 per cent on average for structurally poor households. This finding is in line with the findings of Garip (2014) for Thailand, who show that poor households with a remitting migrant tend to accumulate assets. This result supports the New Economics of Labour Migration hypothesis that remittances facilitate structural poverty transitions of rural households by allowing them to overcome liquidity constraints and by enabling them to engage in higher-return activities (Taylor & Lopez-Feldman, 2010).

We further allow for heterogeneity in the impact of remittances by ethnicity. In the first and second columns of Table 7, the results show that remittances have no significant impact on asset growth for ethnic minorities, whereas remittances improve asset growth for the Kinh and Hoa ethnic majority, as seen in the third and fourth column of Table 8. There are two possible explanations for this result. First, the relationship between remittances and welfare growth may not be significant for ethnic minorities because minorities are concentrated in geographically remote upland areas and are generally less informed about urban labour conditions; hence, they are less likely to migrate. In our sample of approximately 2000 households, 39 per cent of all households include migrants, but only 14 per cent of those are ethnic minority households, and only 6 per cent of ethnic minority households with migrants received remittances during the 2007–2010 period. Second, ethnic minorities may not migrate because of language barriers; migrants from ethnic minorities may also have integration barriers in destination areas, or face discrimination.

#### 5.4. Decomposition Analysis

The regression results discussed above confirm the significant impact of remittances on asset growth. Now, we use the Blinder-Oaxaca decomposition to identify the channels through which remittances affect rural welfare growth. Additionally, decomposition analysis allows us to determine the share of the observed difference in asset growth that is attributable to household endowments and/or asset productivity between remittance recipients and households that did not receive remittances. We also identify the contribution of covariates to these effects. The results of the decomposition analysis are reported in Table 8.

Remittance recipients enjoy 9.2 per cent higher total growth in assets than households that did not receive remittances. We decompose this growth into the endowment and productivity effects, and the results reveal that 2 per cent of this growth is attributable to differences in endowments, whereas 57 per cent is due to differences in asset productivity. In other words, the explained difference in growth

**Table 8.** Blinder–Oaxaca decomposition of growth difference by remittance status (%)

	Endowments effect (E)	Productivity effect (P)	Total explained (E + P)
Human and social capital	−0.5	21.6	21.1
Mean education	0.1	15.3	15.35
Dependency	−0.1	11.0	10.9
Age	0.1	0.2	0.3
Membership	−0.1	3.0	2.9
Ethnicity	−0.5	−7.9	−8.4
Natural and physical assets	0.7	40.9	41.6
Land	−0.2	−5.1	−5.3
Agricultural tools	0.8	47.5	48.3
Livestock	0.4	6.2	6.6
Own house	0.1	−7.3	−7.2
House utilities	−0.3	−2.7	−3
Transportation equipment	−0.1	2.3	2.2
Geographical capital	1.9	−7.3	−5.4
Total	2.1	55.2	57.3
Summary of decomposition results			
Total growth differential (E + P + U)			9.2
Endowment & productivity effect (E + P)			57.3
Unexplained effect (U)			−48
Productivity effect as per cent of total explained difference [E/(E + P)]			96

Source: DFG Rural Household- and Village-Level Surveys 2007, 2008, and 2010 in Vietnam.

Note: Comparison of remittance recipients and non-recipients. Positive values indicate a difference in favour of remittance-receiving households.

between remittance receiving and non-recipients is approximately 96 per cent, and this result is primarily due to the higher estimated productivity of remittances recipients. The results thus indicate that the main channel through which remittances affect asset growth is by increasing the productivity of household assets, for example, through investment in new technology and previously inaccessible opportunities.

Remittance recipients have 22 per cent and 41 per cent higher productivity from human and social capital and from physical and natural assets, respectively, than households that did not receive remittances. Specifically, remittance recipients have higher returns to education and a higher dependency ratio, indicating that remittances allow these households to pay for their children's education and thereby to increase the accumulation of human capital. Moreover, remittance recipients enjoy higher returns on social assets, specifically those from the age of the household head and membership in social and political organisations. A potential explanation for this finding is that seniority and participation in social and political networks in the natal village may help migrants to reduce job search costs and living expenses and thereby to increase the flow of remittances. Remittance recipients also have higher returns on their agricultural tools, livestock, and transport equipment. The higher returns on physical assets in farming might arise because remittances may protect assets during shocks and may relax household liquidity constraints. Thus, remittances may allow recipients to purchase complementary inputs and thereby improve the productivity of their assets.

## 6. Conclusions and Policy Implications

This study combines insights of the New Economics of Labour Migration with the asset-based approach to welfare dynamics. The contribution of the paper is twofold. First, from a conceptual perspective, our study links the New Economics of Labour Migration theory and the asset-based approach of welfare dynamics. Combining these two theories allows us to differentiate whether poverty transitions induced by

remittances are actually structural, that is, based on long-term asset growth, or stochastic, that is, based only on short-term increases in income or consumption, which implies a risk of individuals falling back into poverty. The analysis is based on a unique panel data set over a period of four years from three provinces in rural Vietnam. Second, we provide evidence of the heterogeneous impact of remittances on welfare dynamics due to initial welfare status and ethnicity. In particular, we analyse whether remittances facilitate structural poverty transitions for rural households in Vietnam and investigate whether ethnic minorities are less likely than the Kinh and Hoa ethnic majority to benefit from migration.

The results support our hypotheses and confirm empirical findings for other developing countries. To control for the endogeneity of remittances, we use household FE and IV-FE models. First, the results indicate that migration that leads to remittances has a positive effect on asset growth and therefore on structural poverty transitions, which confirms our first hypothesis. Second, we find that structurally poor migrant remittance recipients experienced greater asset growth than non-poor households, indicating that remittances allow poor households to structurally escape poverty. This result corroborates our second hypothesis and previous empirical results (for example, Adams & Cuecuecha, 2010; de Brauw & Harigaya, 2007; McCarthy et al., 2009; Taylor & Fletcher, 2007). Third, remittances improve the asset growth of ethnic majorities, but they have no impact on the asset growth of ethnic minorities, who are the poorest of the poor in rural Vietnam. This finding suggests that the enormous welfare gap that exists between ethnic minorities and the Kinh majority in Vietnam cannot be overcome by rural-urban migration. There are two possible reasons for this result: first, ethnic minorities are concentrated in the geographically remote upland areas and are therefore less likely to migrate. Second, ethnic minority households that have migrants typically find it more difficult to obtain stable and decent employment, and they ultimately accept low-return, risky, urban employment. Finally, the Blinder–Oaxaca decomposition confirms our third hypothesis that remittances accelerate asset growth and that remittances offer rural households pathways for structural transitions by increasing the returns on poor household resources. In an imperfect credit and insurance market setting such as that in rural Vietnam, many poor rural households are unable to optimise their investments in physical assets and human capital, owing to liquidity constraints. Remittances foster long-term welfare by enabling liquidity-constrained households to exploit previously inaccessible opportunities that improve the factor productivity of their assets (Rozelle, Taylor, & de Brauw, 1999; Taylor & Lopez-Feldman, 2010).

From a policy perspective, our results suggest that existing public support schemes for ethnic minorities should be reconsidered. Consumption support in case of shocks does not solve the basic problems of ethnic minorities – a lack of infrastructure and a low level of human capital. We also suggest that policy makers review migration policies and regulations. For example, measures that reduce long registration procedures for migrants in urban areas and that provide better social protection will enhance the welfare of migrants and natal households and will strengthen rural-urban integration.

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## Notes

1. The household survey includes information about the place of destination of a migrant and the remittances received from the absent household member.
2. More than two-thirds of ethnic minorities, primarily those living in mountainous and remote villages, remained poor in 2010, whereas only 13 per cent of the Kinh majority remained poor. In addition, the income gap between the two groups increased by 14.6 per cent between 1995 and 2004, despite long periods of economic growth (Baulch et al., 2012).
3. In kind remittances include items the migrant bought in the city and sent back or brought back while visiting. This might include clothes, electronics like fan or mobile phones, or even a motorbike.
4. Household income and other asset values are measured in \$US PPP-adjusted prices, with 2005 as the base period to permit comparisons in real terms across waves.
5. We defined migrant as a household member who has lived outside the district for at least one month.
6. The poverty line employed in the paper is the income poverty line calculated by the GSO for rural areas at PPP \$US1.73 per capita per day throughout all provinces (GSO, 2010).
7. Because some households have zero remittances, we use remittances plus one ( $\log(\text{remittances} + 1)$ ) during the logarithmic transformation.
8. K includes the geographical capital at the village level (G) here.
9. The results are not included here because we are interested not in the coefficients but in the robustness of the prediction. However, the results are available on request.
10. We also estimate asset growth with pooled ordinary least squares (OLS) and pooled IV-OLS models. The models estimated for our variables of interest (remittances) are similar in sign. However, the estimates for our variables of interest in both models are smaller than the IV-FE estimates, implying that correcting for unobserved heterogeneity affects the results. The results are available on request.

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