WPS4586

POLICY RESEARCH WORKING PAPER   4586

Determinants of Remittances:

Recent Evidence Using Data on Internal Migrants in Vietnam

Yoko Niimi
Thai Hung Pham
Barry Reilly

Abstract

This paper examines the determinants of remittance behavior for Vietnam using data from the 2004 Vietnam Migration Survey on internal migrants. It considers how, among other things, the vulnerability of a migrant's life at the destination, their link to relatives back home, and the time spent at the destination affect remittances. The paper finds that migrants act as risk-averse economic agents and send remittances back to the household of origin as part of an insurance exercise in the face of economic uncertainty. Remittances are also found to be driven by a migrant's labor market earnings level. The paper highlights the important role of remittances in providing an effective means of risk-coping and mutual support within the family.

Determinants of Remittances:

Recent Evidence Using Data on Internal Migrants in Vietnam*

Niimi, Y., T. H. Pham, and B. Reilly

Affiliation

Yoko Niimi: World Bank, Mailing address: DECRG, World Bank Mailstop MC3-303. 1818 H Street, NW. Washington, DC 20433, USA. E-mail: yniimi@worldbank.org.

Thai Hung Pham: Department of Economics, University of Sussex. Mailing address: Department of Economics, University of Sussex, Falmer, Brighton, BN1 9SN, UK. E-mail: T.Pham@sussx.ac.uk.

Barry Reilly: Department of Economics, University of Sussex. Mailing address: Department of Economics, University of Sussex, Falmer, Brighton, BN1 9SN, UK. E-mail: b.m.reilly@sussex.ac.uk.

JEL codes: J61.
Key words: Internal migration, remittances, Vietnam.

Introduction

Migration flows in Vietnam in the past were strictly controlled by a combination of government migration policies and the household registration system (*ho khau*). In order to redress imbalances in population density across the country, urban to rural and intra-rural migration were explicitly encouraged (Dang *et al*., 2003). Until the early 1990s, officially organized migration was the most common form of internal movement observed in Vietnam (Guest, 1998; Dang *et al*., 2003). Since the middle of the 1990s, however, organized migration has been replaced increasingly by a more spontaneous migration phenomenon (Hardy, 2000).

The *doi moi* (renovation) program has been the main driving force behind the apparent shift from organized to spontaneous migration in Vietnam. Dang *et al*. (2003), for example, argue that the *doi moi* policy affected internal migration in three distinct ways: (1) de-collectivization in the agricultural sector rendered farmers less tied to the land (see Fforde and Huan, 2001); (2) the marketization of the economy allowed people, particularly those in the urban sector, to be considerably less dependent on government subsidies and rationing for their daily necessities; and (3) the increased flow of foreign direct investment (FDI) into Vietnam attracted migrant workers to certain regions, that were the main recipients of these investment flows (e.g., the Southeast region). This in turn created regional disparities in labor market earnings that provided incentives for internal migrants. Pham and Reilly (2007), for example, report that the average hourly wage rate in the Southeast region is about 50% higher than the national average.

More generally, the observed increase in internal migration in recent years may also be attributable in part to the emergence of a young and growing population in Vietnam that enjoys greater freedom and a larger array of economic opportunities than earlier generations. As of 2004, over one-fifth of the population was aged less than 15 years, and the four to 19 age-group grew by over 10% between 1989 and 1999. This yielded annually about 1.5 million new entrants for the labor force over this period. During the 1990s, agriculture was central to job creation for the growing labor force. The set of policy initiatives associated with land reform, trade liberalization, and the promotion of the household sector were crucial in providing conditions for robust growth in the agricultural sector, and the resultant improvement in the living standards of rural households (World Bank, 1998; Benjamin and Brandt, 2004). However, the gains from correcting these distortions were not sustainable given the agricultural sector's inability to absorb the growing labor force and sustain the type of poverty reduction witnessed in the early 1990s (Van de Walle and Cratty, 2004; World Bank, 2006). The share of agriculture in total employment declined from more than two-thirds in 1990 to around 58% in 2004. The underemployment rate has also shown a tendency to increase in rural areas with GSO (2006) recording an average rate of 25% in recent years.

In contrast, the emergence of a vibrant private sector, which was given impetus by the introduction of the Enterprise Law of 2000, created new wage employment opportunities in urban areas.[1] During the period 1993-2002, the average real wage rate grew rapidly by an average rate of 12% per annum with the strongest growth observed in urban areas, especially in the Southeast region (Pham and Reilly, 2007).

The foregoing factors resulted in a widening of the urban-rural gap in household living standards over time (Nguyen *et al*., 2007). Although the absolute poverty rate has declined substantially since the introduction of the *doi moi*, poverty continues to be far more pervasive in rural than in urban areas. The incidence of household poverty in urban areas reduced from 25% in 1993 to well under 10% by 2004. Though the rural headcount poverty rate has halved over the same period, it remains stubbornly high and was recorded at 25% in 2004.[2] The increasing disparity in urban-rural welfare provides important incentives that stimulate the rural-urban migration flows in Vietnam.

According to the 1999 Population and Housing Census data, 6.5% of the population over five years of age (about 4.5 million people) changed their place of residence between 1994 and 1999.[3] It is not surprising that provinces with the highest population density (in the Red River Delta) and those with low household incomes in the central regions (the North and South Central Coast) had the highest rate of net outward migration. The country's three largest cities, Hanoi, Da Nang, and Ho Chin Minh City (HCMC), were the main destinations for migrants. For instance, out of a total of nearly one million inward migrants to the Southeast, HCMC received nearly one half of them.[4]

An important implication of the increased internal population movement is the significant amount of remittances repatriated by migrants. Le and Nguyen (1999), using the Vietnam Living Standards Surveys (VLSS) data from 1992/93, report that about one-fifth of households received remittances during the 12 months prior to the survey interview date and these were equivalent to, on average, about 38% of their household expenditures.

Despite the great volume of remittance flows, there has been little empirical work investigating remittance-related issues in Vietnam, presumably due to the limited availability of data. The data constraint is particularly acute for the analysis of remittance behavior among migrants since detailed data on migrants themselves are often absent in conventional Vietnamese household surveys (e.g., the VLSS or the VHLSS).

Fortunately for our purposes, data from the 2004 Vietnam Migration Survey have recently become available. This survey collected detailed information on migrants within Vietnam. The main research aim of this paper is to use these data to examine the key factors that influence the remittance behavior of internal migrants in Vietnam. Given the absence of data on recipients, our focus will be on the remitters. We specifically examine, among other things, how the circumstances of migrants at the destination, their link to relatives left behind, and the time spent at the destination influence their remittance behavior. According to the 2004 Migration Survey, more than one-half of migrants sent money/goods home to their relatives during the 12 months prior to interview. Among those who remit, the total value amounted to, on average, about 17% of migrants' earnings, reflecting the potential importance of remittances to the origin households.

The remainder of the paper is structured as follows. The next section provides a review of the existing theoretical literature on remittance motives and frames some of the research questions of primary interest to this study. A description of the migration survey data used for the empirical analysis is provided in Section 3. Section 4 outlines and justifies the variables used in our empirical model and Section 5 discusses some econometric issues

related to the estimation of the empirical relationship of interest. Section 6 presents the empirical results and Section 7 offers some concluding remarks.

1. Literature Review

There have been a variety of theoretical models adduced to explain the motives underlying remittance behavior, including altruism, exchange or self-interest, and insurance. The altruistic behavior is modeled by allowing the utility of a remitter to be derived from the well-being or consumption level of those recipients left behind (Becker, 1974). This basically implies a negative relationship between the income of the recipient and the amount of remittances. Aggarwal and Horowitz (2002), on the other hand, examine the effect of multiple migrants (as opposed to a single migrant) on the level of remittances. They argue that under pure insurance (or self-interest) motives, the number of other migrants in the family should not affect the amount of per-migrant remittances. However, under altruism, the presence of other remitting migrants will reduce the average size of remittances. Using data for Guyana, Aggarwal and Horowitz (2002) find some support for the presence of altruism.

The exchange motive implies a complex relationship between the recipient's income and the size of remittances. Cox (1987) formalizes a model where private transfers represent payments for services rendered. Under this model, an increase in the remitter's income will be associated with a higher probability of transfers as well as a larger amount because the remitter is willing to pay more for the services provided by the recipient. On the other hand, if the recipient's income rises, the opportunity cost of providing the service will rise, and

the recipient is thus likely to require a higher price for the service provided. As a result, an increase in the recipient's income will reduce the probability of transfer. If the transfer does take place, then the amount of the transfer could rise, fall, or stay the same depending on the remitter's elasticity of demand for the services of the recipient.

The empirical findings of Cox (1987), Cox and Rank (1992) and Cox *et al*. (1998) suggest a positive relationship between the size of transfers and the recipient's pre-transfer income, rejecting the altruism behavior of remitters. It is perhaps questionable whether the Cox (1987) theoretical framework has as much relevance to the Vietnamese context as it does for the case of the United States. However, it is worth noting that Secondi (1997), using data for China, also finds that altruism alone cannot explain the observed transfers and that exchange may indeed be involved. In the context of China, where much of the financial flows appear to be transfers from adult children to their elderly parents, child-care is found to be one of the main services that parents render to their adult children in exchange for money (Secondi, 1997).

The above motives are certainly not mutually exclusive and an individual migrant may have more than one motivation for remitting home at any given point in time. Lucas and Stark (1985), for instance, propose "tempered altruism" or "enlightened self-interest" to refer to transfers motivated by a combination of altruism and self-interest. This is based on the view that remittances are part of a self-enforcing contractual arrangement between a migrant and his or her family, which is of mutual benefit. The migrant adheres to the arrangement as long as it is in their interest to do so (Lucas and Stark, 1985). For example, using data drawn from the National Migration Study of Botswana, their analysis suggests

that transfers are made as a repayment for the cost of the migrant's education and transportation.

In a similar context to the contractual arrangement, Stark (1991) suggests a model incorporating risk-sharing motives. In this model, remittances allow risk-averse households to diversify their income sources and thus minimize the adverse effects of income shocks (Stark, 1991; Gubert, 2002). Amuedo-Dorantes and Pozo (2006) also argue that migrants are likely to behave as risk-averse economic agents and purchase insurance in the face of economic uncertainty. In this way, remittances can be considered as a payment to insure against risky income outcomes in the destination region or country. Based on data for Mexican migrants in the United States, Amuedo-Dorantes and Pozo (2006) find that income risk proxies (e.g., being an undocumented immigrant or not having social networks within the United States) are associated with a higher propensity to remit and with a higher level of remittances.

Quinn (2005), on the other hand, suggests another model of remittance behavior whereby remittances are treated as both a consumption transfer to households and as an alternative saving mechanism for migrants. The model predicts that the migrant's remittance/saving behavior is affected by the relative rate of return on their savings and on the savings of the remittance-receiving household. Using data on Mexican workers in the United States, the author finds that migrants remit more and save less when the remittance-receiving household's rate of return on savings increases (or the migrant's return falls). His findings imply that an improved access to savings and investment mechanisms for recipient households in the home country may increase remittance inflows from migrants.

It is useful to now review the relevance of the existing theories to the current Vietnamese context. As noted in the previous section, one of the main factors for the increased internal migration in recent years is the growing urban-rural gap in living standards. One of the research questions of interest in this paper is to see whether the migrant's remittance behavior is driven by altruism (i.e., to support his/her family members left behind, presumably, in a poorer area with limited economic opportunities). Unfortunately, our data do not allow for the inclusion of the income/consumption level of the recipient household in the estimated remittance equation, which is often used to examine the altruistic motive in the literature. Instead, we use the information on the presence of the migrant's immediate family members at the destination to indirectly inform this issue.

The data do not permit an explicit examination of the exchange motive proposed by Cox (1987). However, it is intended to shed some light on the relevance of the self-enforcing contractual arrangement theory, as popularized by Lucas and Stark (1985), to the case of Vietnam. This will be undertaken through an empirical interrogation of the relationship between the education level of migrants and their remittance behavior.

Another theory, and one perhaps most relevant to the case of Vietnam, relates to the Stark (1991) model of risk-sharing motives. Internal migrants within Vietnam generally face less risk/uncertainty at the destination than international migrants, such as Mexican migrants in the United States (Amuedo-Dorantes and Pozo, 2006). Nevertheless, given the existence of the complex household registration system as described in more detail below, internal migrants in Vietnam have to cope with various problems including their access to basic public services, which is curtailed in the absence of appropriate registration. It would be

interesting, therefore, to investigate whether migrants send money home as an insurance against the vulnerable nature of their position at the destination location.

3.   Data

The empirical analysis reported in this paper is based on data from the 2004 Vietnam Migration Survey. The survey was undertaken by the General Statistical Office (GSO) of Vietnam with the aim to provide detailed information on internal migration in the post *doi moi* era (GSO, 2005). It was conducted in areas identified with high immigration rates based on the 1999 Population and Housing Census, and the sample was selected using the sampling frame of the Population Census (see GSO, 2005). They included some enumeration areas of Hanoi, the Northeast Economic Zone (Hai Phong, Hai Duong and Quang Ning), the Central Highlands (Gia Lai, Dak Lak, Dak Nong and Lam Dong), Ho Chi Minh City, and the Southeast Industrial Zone (Bing Duong and Dong Nai).

The survey interviewed both migrants and non-migrants in the destination areas, who were in the 15 to 59 age-group category. In this survey we restrict our analysis to migrants, and these are defined as those who had moved from one district to another in the five years prior to interview but not more recently than a month before the interview date. The survey covered a wide range of topics including information on the migration process, socio-economic characteristics of migrants, demographic composition of household members (at the destination), housing conditions, access to public services, and personal history (e.g., migration and employment activity) of migrants.

The survey data are not without some limitations. For example, the survey does not contain any information on the household from which the migrant originated. This implies that we have no information on the potential recipients of migrant remittances or for what purpose the remittances were used. It is also unfortunate that non-migrants are those found in the destination areas only and this essentially prevents any analysis of the process governing the migration decision. Nevertheless, the data do contain detailed information on migrants themselves, and this allows for an investigation of the effects of various factors on migrant remittance behavior.

4.   The Empirical Variables

The empirical model specified in this study is eclectic in nature and guided by some of the theoretical considerations outlined in an earlier section, but also reflects strongly the Vietnamese context within which the analysis is situated. Table 1 reports the dependent variable and the explanatory variables used in our analysis, and contains selected summary statistics.

[TABLE 1 ABOUT HERE]

The key dependent variable is expressed in millions of dong and is defined as the total value of money/goods a migrant sent back home to relatives in the 12 month period prior to the survey interview date.[5] Among those who remit, the average amount of remittances is about two million dong. However, for a large number of individuals in the sample the variable is censored at zero requiring use of a specific econometric approach for the

empirical analysis, which is discussed in the next section. A variety of explanatory variables are used and these are now described in turn in the following sub-sections.[6]

Characteristics of Individual Migrants

A set of individual characteristics capturing the migrant's age, gender and marital status, whether the migrant is the head of the household, and whether the migrant belongs to the Kinh ethnic group, which is the majority ethnic group in Vietnam, are included in the regression analysis. Variables capturing the education level of migrants are also included to inform the theory of contractual arrangement (Lucas and Stark, 1985). We would expect a positive relationship between the amount of remittances and the education level as the migrant's education can be considered as reflecting an earlier household investment requiring future repayment in the form of remittances.

Household-level Characteristics

Variables relating to the structure of the migrant's household at the destination are also included in the analysis. These variables include measures that indicate whether the spouse, school-age children (those aged five to 18 years) or parent(s) are present at the destination, as well as a variable for the total number of household members. The presence of immediate family members at the destination would imply potentially weaker ties to the place of origin and, if altruistic behavior is present, negative effects for these variables are anticipated (see Markova and Reilly, 2007). In addition, variables representing the housing tenure status of a migrant (e.g., whether the migrant owns the accommodation and/or

whether it is of a permanent type) are also included. The expected signs for the estimated effects of these variables are again assumed negative. If the migrant owns the housing and/or lives in a permanent-built dwelling, it may imply that the migrant has a less transient connection with the destination or that the migrant's living condition at the destination is relatively more secure. In either case, the migrant is likely to remit less.

Employment Status of Migrants

We also include a set of variables that capture the labor market earnings of the migrant as well as controls for whether the migrant receives any bonus or housing benefits relating to the job held. We would expect a positive coefficient on both the level of earnings and the dummy variable for receiving a bonus. However, receiving some housing benefits is likely to reduce the insecurity of the migrant at the destination and thus a lower level of remittances may be needed for insurance purposes. A mutually exclusive set of variables designed to capture the type of enterprise in which the migrant works (e.g., government,[7] domestic private sector, foreign invested sector and others) are also included and are taken to reflect the security of the migrant's job in the destination labor market. For instance, if the migrant works for a government organization, their job is likely to be relatively stable in nature and, as a result, the migrant may be less likely, *ceteris paribus*, to remit money home for insurance purposes.

The Migrant's Registration Status

This study also investigates the influence of the Vietnamese migrant registration system on remittance behavior. Vietnam has a complex household registration system delineated across four levels of registration: KT1 (the migrant is registered in the district where the person resides); KT2 (the migrant is not registered in the district where the person resides, but registered at another district or in the same province); KT3 (the migrant has temporary registration for a period of six months or more); KT4 (the migrant has temporary registration for a period of less than six months).

These four categories can be broadly allocated into two groups – permanent registration (KT1 and KT2) and temporary status (KT3 and KT4) at the destination. Given that the migrant's registration status potentially captures whether the move is temporary or permanent, we would expect a positive relationship between the migrant's temporary status and the level of remittances compared to a more permanent registration status. However, if the motive for remittances is altruistic, whether the migrant's move is permanent or temporary should not affect the size of transfer remitted. On the other hand, not having a permanent registration status could also be taken to reflect the vulnerability of the migrant's position at the destination. According to Deshingkar *et al*. (2006), for instance, migrants with KT3 or KT4 status have to secure the most basic services at prices well above average, and some public services may be inaccessible to them. Hence, if we observe a positive coefficient on the variables for KT3 or KT4 (with KT1 providing the base category in estimation), this could be interpreted as evidence supportive of an insurance motive for remittances. It is also worth noting that a relatively small number of migrants (4%) report having no registration at all.

14

Duration of Stay at the Destination

In order to examine the relevance of the remittance decay hypothesis (RDH) for Vietnam (see Liu and Reilly, 2004), we also include the time spent at the destination. Unfortunately, in the survey migrants are defined as those who had moved from one district to another in the five year period prior to the interview date. We are thus unable to fully explore the issue of RDH for the case of Vietnam. Nonetheless, the duration variables should proxy some general tendencies in this regard. The duration variables are splined using the number of months spent at the destination (see table 1 for the nodes used).

Ease of Migration Process

In order to examine how the security/stability of the migrant's position at the destination affects remittance behavior, a number of other potentially informative variables are also included. One is a dummy variable for whether the migrant faced any difficulty on arrival in the host destination.[8] If the insurance theory of remittances is valid, a positive sign for the coefficient corresponding to this variable is likely as it captures the vulnerability of the migrant. We also include a variable designed to capture whether the migrant had any relatives in the destination location on arrival to determine whether or not network effects are important. We also include a similar variable for the presence of friends and/or other individuals from their location of origin. Finally, a dummy variable representing whether the migrant has any health insurance at the destination is also included, as this could be taken to capture the migrant's degree of integration at the destination. The coefficients on the network and insurance variables are anticipated to be negative since, if the migrant has

15

a social network and/or any insurance at the destination, reliance on relatives for any assistance is likely to be less, as is the value of repatriated money and/or goods.

Other Variables

There are also a number of other variables contained in our empirical specification. These include the number of visits to relatives that migrants undertook within the 12 month period prior to the interview. The sign of this coefficient is anticipated to be positive as the greater number of visits captures a closer relationship with the relatives left behind and provides a greater opportunity to directly remit money and/or goods. The survey also asked questions on migrants' loans, and we thus include variables capturing the migrant's borrowing behavior. More specifically, we include a set of mutually exclusive dummy variables defined as (1) if the migrant has no loans, (2) if the migrant secured loans from relatives, (3) if the migrant secured loans from a financial institution, and (4) if the migrant secured loans from others. The first provides the base category in estimation. These variables are designed to capture, among other things, whether there is any financial mechanism or capital market operating within the family, and the estimated coefficients will reflect how these variables affect the amount of remittances.

We also include a set of variables that indicate the geographical characteristics of the origin and destination places. The set includes a dummy variable for whether the destination is a large city and for whether or not the migrant comes from a rural area. We are likely to observe a positive relationship between the former of these variables and the level of remittances as such locations are more likely to be characterized by better financial

infrastructures (e.g., banks and post-offices) that facilitate the transfer of goods and money, and better transportation links to the area of origin. In addition, provincial dummies (based on the destination) and seasonal dummies (based on the month of the interview) are also included. The former are designed to capture spatial differences that may be important to remittance behavior, and the latter are included to capture potential seasonal effects in this type of activity.

5.   Econometric Methodology

One of the key issues affecting the estimation of a migrant remittance function is the censored nature of the dependent variable. This occurs because not all migrants remit money in a given year. The application of Ordinary Least Squares (OLS) will generate biased estimates in such a context, with the magnitude of the bias linked to the proportion of non-censored observations in the sample. Conventional linear regression methods are therefore inappropriate for the censored dependent variable as they fail to account for the qualitative difference between censored (zero) observations and uncensored (continuous) observations. When data are censored, an approach that incorporates a discrete element (to generate the zero observations) and a continuous element (to generate the positive observations) is required (Greene, 2003). The most commonly used censored regression model in this context is the tobit model (Tobin, 1958).

This method has been used in various studies in the migrant remittance literature including those by Ahlburg and Brown (1998), Amuedo-Dorantes and Pozo (2006), Brown (1997), Liu and Reilly (2004), and Markova and Reilly (2007). The tobit model offers a simple way

of estimating the determinants of remittances and is employed for the empirical analysis reported in this paper.

The underlying structure of the remittance equation is defined as follows:

(1) $\qquad R_i = R_i^*$ $\qquad$ if $R_i^* > 0$

$\qquad\qquad\quad R_i = 0$ $\qquad$ otherwise

where R_i is the amount of money that the ith individual remits, which is observed if R_i^* is positive. The latter is an unobservable latent dependent variable that captures the ith individual's propensity to remit. It is defined as follows:

(2) $\qquad R_i^* = \mathbf{X_i}\boldsymbol{\beta} + u_i$ $\qquad\qquad\qquad$ where $u_i \sim N(0, \sigma^2)$

where $\mathbf{X}_i$ is a $1 \times k$ vector of independent variables where k is the number of variables including a constant term, $\boldsymbol{\beta}$ is a $k \times 1$ vector of unknown parameters, and u_i is an independently and normally distributed error term with mean zero and constant variance σ^2. This model is regarded as a censored regression model because observations of R_i^* at or below zero are censored. In other words, R_i is either positive ($R_i > 0$) or zero ($R_i = 0$). Based on this information, the likelihood function can be expressed as:

(3) $\qquad L = \prod_{R_i|R_i=0}\left[1 - \Phi\left(\frac{\mathbf{X_i}\boldsymbol{\beta}}{\sigma}\right)\right] \cdot \prod_{R_i|R_i>0}\left[\frac{\phi\left((R_i - \mathbf{X_i}\boldsymbol{\beta})/\sigma\right)}{\sigma}\right]$

18

where $\Phi(\cdot)$ and $\phi(\cdot)$ denote the operators for the cumulative distribution and probability density functions of the standard normal respectively. The first part resembles the likelihood function for a probit model for the event of zero, while the second part is similar to the likelihood function for the conventional OLS model on the sample observations that are continuous (i.e., not censored). It is convenient to log this likelihood function to facilitate estimation and the inverse of the regression model's information matrix provides the asymptotic variance-covariance matrix for the parameter estimates.[9]

6.   Empirical Results

We restrict our sample to working migrants, as the number not working is negligible, and only include those who report labor market earnings.[10] This yields a total sample size of 4,388 migrants. More than half (55%) are reported to have sent some money/goods to their relatives within the 12 month period prior to the interview date. Among those who remit, the average share of remittances in migrant earnings is about 17%. This is comparable to the findings for urban migrants reported in a recent study for China (see Knight *et al*., 1999). Table 2 reports the tobit estimates for the remittance model, translated into marginal and impact effects for the continuous and dummy variables respectively.

[TABLE 2 ABOUT HERE]

19

In general, the individual-level characteristics of migrants such as their age, gender and ethnicity do not appear to affect remittance behavior. In contrast, the education level of migrants has a well defined positive effect on remittances. For instance, if the migrant has primary education, the amount of remittances sent home increases by one million dong compared to a migrant who is illiterate, on average and *ceteris paribus*. The marginal effect rises to 1.4 million dong for those with a college education or better. Given that we are controlling for labor market earnings, the positive coefficients on the education variables appear consistent with the theory suggested by Lucas and Stark (1985), which suggests that remittances can be considered as a repayment for the resources that the migrant's family originally invested in the migrant's education.

The presence of a migrant's immediate family members at the destination is estimated to reduce remittances. Markova and Reilly (2007) provide comparable evidence for a sample of Bulgarian migrants in Spain. The effect for Vietnamese migrants is particularly pronounced for those with school-age children and parents present. The amount of their remittances is lower compared to those without such dependents by 0.2 and 0.6 million dong respectively, on average and *ceteris paribus*. The closer the ties that the migrant has with those left behind, captured by the number of his or her return visits to the location of origin, the greater the level of remittances sent home.[11] These findings seem to render some support for an altruistic motive with respect to remittance behavior but are also potentially consistent with migrants retaining links to ensure favorable treatment in the context of family inheritance.

The labor market earnings of migrants exert an expected positive effect on remittances. According to the marginal effect, if monthly earnings increase by one million dong, this raises annual remittances by 0.6 million dong. The remittance-earnings elasticity, computed at the overall sample means, is estimated to be 0.53, which is on the low side compared to the existing literature.[12] However, a direct comparison with the literature is fraught with difficulty given differences in both empirical specifications used and geographical contexts. Nevertheless, this finding suggests that the flow of remittances in Vietnam is fairly insensitive to labor market conditions, as captured by earnings, in the destination location. Bonus payments on the job also impact positively on remittances, with those in receipt of such a job-related benefit remitting 0.15 million more dong, on average, than those who do not.

As for the sector of the enterprise where migrants work, compared with working in a private domestically-owned enterprise, which could be situated within the informal sector, a migrant who works for the government is likely to repatriate less money home. The opposite is the case for those working in the foreign-invested sector. This may reflect the stability of jobs in a particular sector which possibly influences the degree of a migrant's reliance on their family in the originating household, and thus reduces the co-insurance motive for remitting. For instance, jobs in the government sector are likely to be more stable and more permanent, and migrants working in this sector thus rely less on their family at home to insure against labor market risk. Moreover, the positive coefficient on the foreign-sector dummy seems to indicate that the benefits of FDI may not be restricted to urban workers, with trickle-down effects to rural areas through the process of remittances evident in these estimates.

In regard to registration, a migrant possessing the most temporary form of registration status (K4), on average and *ceteris paribus*, sends a greater volume of remittances home than a comparable migrant with permanent residential status (K1). Hence the fragile nature of the migrant's residential status appears to matter in Vietnam and is resonant of the finding reported by Liu and Reilly (2004) for rural migrants in Jinan (China). The temporary and uncertain nature of the status encourages migrants to retain strong links with the origin household to insure against the risk of expulsion. Similarly, if migrants own their housing, or if they live in permanent accommodation, they are found to remit less. This again supports the view that if the nature of the migration is permanent and/or stable, migrants tend to send less money home, providing some support for the co-insurance theory.

We find a positive relationship between the number of months at the destination and the level of remittances. This is particularly the case for the initial year. However, after the third year the relationship becomes negative and consistent with the remittance decay hypothesis. This seems to suggest that over time migrants acquire a greater level of location specific human capital in the destination thus reducing the risk of failure and, assuming a co-insurance motive underlying remittances, require less support from home. This manifests itself in a tendency to reduce the amount of money and goods remitted home by the migrant.

As far as network effects are concerned, having relatives at the destination on arrival exerts a positive effect on the level of remittances suggesting that such networks assist migrants to

settle in more smoothly at the new location thus reducing settlement costs. We found no significant effect for the network based around non-relatives. In contrast, if the migrant encountered any difficulty on arrival, less money is sent back. However, whether the migrant possesses a health insurance card does not seem to exert a significant impact on remittance behavior.

Having a loan from relatives negatively impacts on the level of remittances. We could interpret the negative sign as reflecting the fact that relatives may be more relaxed about the time profile for loan repayment. In contrast, it is revealing that those who obtained loans from financial institutions, presumably in their location of origin, do remit more than those without loans. This may reflect the fact that they are required to service such loans in a more timely fashion and within a shorter time frame than that tolerated by relatives.

Finally, compared to those migrants located in Hanoi, those residing in Quang Ninth (in the Northeast Economic Zone) and Ho Chi Minh City remit a larger amount of transfers. This could be taken to suggest that migrants are selectively choosing destinations with a view to servicing the requirements of their origin household. The greater the requirements, the more likely migrants are to re-locate to the more buoyant labor markets in Vietnam. Finally, migrants who reside in a large urban city remit relatively more than those who do not, and this may simply reflect the fact that the large cities possess the financial and other infrastructures that more easily allow and facilitate the transfer of money and goods.

7. **Concluding Remarks**

This paper has empirically examined the key determinants of migrant remittances at the individual level using a recently conducted survey on internal migration within Vietnam. Our empirical model incorporated, in an eclectic manner, variables assumed to capture some of the underlying motives for remitting suggested by existing theories. The paper also tried to uncover some factors unique to Vietnam that determine remittance behavior in that country.

The empirical analysis yielded a number of key findings and suggests that no one theory is likely to be sufficient to explain the remittance phenomenon in Vietnam. The study found that the education of migrants has a well-defined positive effect on the level of remittances. This seems to provide some support for the theory of contractual arrangement (Lucas and Stark, 1985), where remittances are seen as a repayment for the money and resources that the migrant's family originally invested in the migrant's education. The negative coefficient on the variable for the presence of the migrant's parents at the destination also provides some support for this notion. However, the negative coefficient can also be seen as supportive of altruistic motives (Becker, 1974). Unfortunately, given the absence of any information regarding the recipient household, such as the origin household's income or assets, we are unable to interrogate empirically this issue in a more systematic fashion. On the other hand, the observed negative coefficient relating to the presence of school age children at the destination suggests that remittances can also be seen as an investment in the education of the migrant's family.

The empirical estimates also provide support for the co-insurance theory (Amuedo-Dorantes and Pozo, 2006; Stark, 1991). For instance, we have found that having a family

24

network at the destination increases the level of remittances. Moreover, the sector of the enterprise where the migrant works, which we take to reflect the security or otherwise of the migrant's job, also impacts migrant remittance behavior. Given that these variables capture the vulnerability of the migrant's position at the destination and/or the ease of the process of settling into a new location, our findings appear consistent with the insurance motive where the migrant sends remittances as a payment to insure against labor market uncertainty at the destination.

Another key finding of this paper is that temporary migrants tend to remit more as revealed by the significant positive effect corresponding to the variable for temporary registration status (K4). This can be interpreted as evidence for the co-insurance motive as this registration status indicates the relatively insecure position of migrants in the destination area. On the other hand, the coefficients for the time spent at the destination provide support for the remittance decay hypothesis. A significant positive relationship between the number of months and the level of remittances is found for the initial year, but the estimated relationship becomes negative by the third year.

The negative coefficients on the variables for the presence of the migrant's immediate family members at the destination provide evidence for the altruistic behavior of migrants. However, given data constraints, we could not examine the validity of the altruism hypothesis in a direct way. On the other hand, our findings reveal that altruism is unlikely to provide a sufficient explanation for the motivation to remit. [13] On balance, our econometric findings are not inconsistent with migrants acting as risk-averse economic

agents sending remittances as part of an insurance strategy in the face of economic uncertainty.

We believe our analysis sheds some important light on the role remittances perform in terms of risk-coping and mutual support within the family. However, the fact that we are unable to control explicitly for origin household characteristics in our analysis suggests the need for some interpretational caution. It may be the case that the introduction of controls capturing the socio-economic status of families at the place of origin, if they were available to us, could weaken some of the estimated relationships uncovered. In addition, it should be borne in mind that if such omitted variables were highly correlated with key variables included in the estimated regression model, this may introduce bias in some of the estimated effects reported. Unfortunately, neither of these are issues for which the current data allow further investigation. Nevertheless, we do believe that the empirical evidence presented emphasizes the need for policy-makers, when formulating migration-related policies, to be aware of the fact that many migrants retain strong economic links to those left behind. A more thorough investigation of how migrant remittances are actually used in the origin household is required before definitive conclusions can be offered on the effect such remittances exert on vulnerability and poverty within the origin households in Vietnam. This analysis should clearly comprise part of an important agenda for future research for Vietnam.

References

Aggarwal, R. and A. W. Horowitz (2002). "Are International Remittances Altruism or Insurance? Evidence from Guyana Using Multiple-Migrant Households", *World Development*, Vol.30, No.11, pp.2033-2044.

Ahlburg, D. A. and R. P. C. Brown (1998). "Migrants' Intentions to Return Home and Capital Transfers: A Study of Tongans and Samoans in Australia", *Journal of Development Studies*, Vol.35, No.2, pp.125-151.

Amuelo-Donantes, C. ana S. Pozo (2006). "Remittances as Insurance: Evidence from Mexican Immigrants", *Journal of Population Economics*, Vol.19, NO.227-254.

Benjamin, D. and L. Brandt (2004). "Agriculture and Income Distribution in Rural Vietnam under Economic Reforms: A Tale of Two Regions", in Glewwe *et al*. (eds), *Economic Growth, Poverty, and Household Welfare in Vietnam, Regional and Sectoral Studies*, Washington, D.C.:World Bank.

Becker, G. (1974). "A Theory of Social Interactions", *Journal of Political Economy*, Vol.82, pp.1063-1093.

Brown, R. P. C. (1997) "Estimating Remittance Functions for Pacific Island Migrants", *World Development*, Vol.25, No.4, pp.613-626.

Cox, D. (1987) "Motives for Private Income Transfer", *Journal of Political Economy*, Vol.96, pp.675-700.

Cox, D., Z. Seer, and E. Jimenez (1998). "Motives for Private Transfers over the Life Cycle: An Analytical Framework and Evidence fro Peru", *Journal of Development Economics*, Vol.55, pp.57-80.

Cox, D. and M. Rank (1992). "Inter-vivo Transfers and Inter-generational Exchange", *Review of Economics and Statistics*, Vol.74, pp.305-314.

Dang, N. A., C. Tackle and X. T. Hoang (2003). "Migration in Vietnam: A review of Information on Current Trends and Patterns, and their Policy Implications", Paper presented at the Regional Conference on Migration, Development and Pro-Poor Policy Choices in Asia, on 22-24 June 2003 in Dhaka, Bangladesh, organized by the Refugee and Migratory Movements Research Unit, Bangladesh, and the Department for International Development (DFID), UK.

Deshingkar, P., A. Winkles, S. Alter and T. C. Thing (2006) *The Quality of Life of Migrants in Vietnam*, report prepared for the United Nations Development Fund.

Frodo, A. and N. D. Huan (2001). "Vietnamese Rural Society and its Institutions: Results of a Study of Cooperative Groups and Cooperatives in Three Provinces", final research report to Ministry of Agriculture and Rural Development of Vietnam.

Greene, W. H. (2003) *Econometric Analysis*, 5th ed., New Jersey: Person Education.

General Statistical Office (GSO) (2005). *The 2004 Migration Survey: Major Findings*, Hanoi: Statistical Publishing House.

GSO (2006). *Statistical Yearbook 2005*, Hanoi: Statistical Publishing House.

Gubert, F. (2002). "Do Migrants Insure Those who Stay Behind? Evidence from the Keyes Area (Western Mali)", *Oxford Development Studies*, Vol.30, No.3, pp.267-287.

Guest, P. (1998). "The Dynamics of Internal Migration in Viet Nam", *UNDP Discussion Paper*, No. 1, Hanoi: UNDP.

Hardy, A. (2000). "Agricultural Colonization in Lam Dong Province, Vietnam" Asia Pacific Viewpoint, *Vol.*41, *No.*1, pp.23-34.

Knight, J., L. Song, and J. Husain (1999). "Chinese Rural Migrants in Urban Enterprises: Three Perspectives", *Journal of Development Studies*, Vol.35, pp.73-104.

Le, M. T. and D.V. Nguyen (1999) "Remittances and the Distribution of Income" in D. Haughton *et al*. (ends) *Health and Wealth in Vietnam: An Analysis of Households Living Standard*, Singapore: Institute of Southeast Asian Studies.

Liu, Q. and B. Reilly (2004). "Income Transfers of Chinese Rural Migrants: Some Empirical Evidence from Jinan", *Applied Economics*, Vol.36, pp.1295-1313.

Lucas, R. E. and O. Stark (1985). "Motivations to Remit: Evidence from Botswana", *Journal of Political Economy*, Vol.93, pp.901-918.

Markova, E. and B. Reilly (2007). "Bulgarian Migrant Remittances and Legal Status: Some Micro-level Evidence from Madrid", *South-Eastern Europe Journal of Economics* Vol. 5, No.1 (Spring), pp.55-69.

McGarry, K. and R. Schooner (1995). "Transfer Behaviour in the Health and Retirement Study: Measurement and Redistribution of Resources within the Family", *Journal of Human Resources*, Vol.30 (supplement), pp.S184-S226.

Nguyen, B. T., J. W. Albrecht, S. B.Vroman and M. D. Westbrook (2007). "A Quantile Regression Decomposition of Urban-Rural Inequality in Vietnam", *Journal of Development Economics*, Vol.83, pp.466-490.

Pham, T. H. and B. Reilly (2007). "Gender Pay Gap in Vietnam: A Quintile Regression Approach", *Journal of Asian Economics*, Vol.18, pp.775-808.

Quinn, M. A. (2005). "Remittances, Savings, and Relative Rates of Return", *Journal of Development Areas*, Vol.38, No.2, pp.1-23.

Secondi, G. (1997). "Private Monetary Transfers in Rural China: Are Families Altruistic?", *Journal of Development Studies*, Vol.33, pp.487-511.

Smith, R. and R. Blundell (1986). "An Erogeneity Test for a Simultaneous Equation Tobit Model with an Application to Labour Supply, *Econometrical*, Vol.54, No.679-685.

Stark, O. (1991) *The Migration of Labor*, Oxford: Basil Blackwell.

Tobin, J. (1958). "Estimation of Relationships for Limited Dependent Variables", *Econometrical*, Vol.26, pp.24-36.

Van de Walle, D. and D. Cratty (2004). "Is the Emerging Non-Farm Market Economy the Route Out of Poverty in Vietnam?", *Economics of Transition*, Vol.12, pp. 237-274.

World Bank (1998). *Vietnam: Advancing Rural Development From Vision to Action, a Report for the Consultative Group Meeting for Vietnam*, Hanoi: World Bank Vietnam Office.

World Bank (2005). *Vietnam Development Report 2006: Business*, Hanoi: World Bank Vietnam Office.

World Bank (2006). *Accelerating Vietnam's Rural Development: Growth, Equity and Diversification. Volume 2: Three Pillars of Rural Developments*, Hanoi: World Bank Vietnam Office.

List of Tables

Table 1: Description of Variables

	Description	Mean
Remittances (million dong)	Total value of money/goods a migrant sent back to relatives in the 12 month period prior to the survey interview date.	1.078
Age	Age expressed in years	28.659
Household head	Dummy variable for being household head	0.541
Kinh (majority ethnic group in Vietnam)	Dummy variable for being Kinh	0.900
Female	Dummy variable for being female	0.557
Married	Dummy variable for being married	0.574
Presence of spouse	Dummy variable for spouse living with migrant	0.412
Presence of school age children	Dummy variable for school age (5-18) children living with migrant	0.244
Presence of parents	Dummy variable for parent(s) living with migrant	0.136
Household size	Total number of household members living with migrant (at the destination)	3.546
Education:		
Illiterate	Dummy variable for being illiterate	0.029
Primary	Dummy variable for having primary education	0.104
Lower secondary	Dummy variable for having lower secondary education	0.487
Upper secondary	Dummy variable for having upper secondary education	0.309
College+	Dummy variable for having a college degree or higher	0.072
Earnings (million dong)	Monthly labor market earnings	0.908
Receive bonus	Dummy variable for receiving any bonus at work	0.351
Receive housing benefits	Dummy variable for receiving any housing benefits at work	0.011
Sector of Organization:		
Government	Dummy variable for working for government organization	0.131
Private	Dummy variable for working for private organization	0.653
Foreign invested	Dummy variable for working for foreign invested organization	0.208
Others	Dummy variable for working for other type of organization	0.008
Reside in a large city	Dummy variable for living in a large city	0.386
Coming from the countryside	Dummy variable for originating from a rural area	0.785
Live in own house	Dummy variable for living in a house that migrant owns	0.317
Live in permanent dwelling	Dummy variable for living in a dwelling of a permanent type	0.159
Registration status:		
Not registered	Dummy variable for not being registered at the destination	0.041
K1 (permanent)	Dummy variable for having K1 registration status	0.116
K2 (permanent)	Dummy variable for having K2 registration status	0.063
K3 (temporary)	Dummy variable for having K3 registration status	0.316
K4 (temporary)	Dummy variable for having K4 registration status	0.464
Duration in destination		
12 months or less	Spine for 1-12 months	10.785
13-24 months	Spine for 13-24 months	7.395
25-48 months	Spine for 25-48 months	8.314
Had relatives at destination on arrival	Dummy variable for having had some relatives at the destination at arrival	0.599

	Description	Mean
Had friends at destination on arrival	Dummy variable for having had some friends/countrymen at the destination at arrival	0.330
Faced difficulty at arrival	Dummy variable for having faced some difficulty at arrival	0.461
Have a health insurance card	Dummy variable for having an insurance card	0.369
Loans:		
No loans	Dummy variable for having no loans	0.776
Loans from relatives	Dummy variable for having loans from relatives	0.084
Loans from financial inst.	Dummy variable for having loans from financial institution	0.040
Loans from others	Dummy variable for having loans from others	0.100
No. of visits to relatives	Number of visits paid to relatives during the last 12 months prior to the interview	2.548
Province (current place of residence):		
Hanoi	Dummy variable for living in Hanoi	0.193
Hai Phong (Than phi)	Dummy variable for living in Hai Phong (Than phi)	0.044
Hai Phong (Tin)	Dummy variable for living in Hai Phong	0.052
Quang Ninth	Dummy variable for living in Quang Ninth	0.095
Gia Lai	Dummy variable for living in Gia Lai	0.053
Dace Lac	Dummy variable for living in Dace Lac	0.054
Dak Nong	Dummy variable for living in Dak Nong	0.054
Lam Dong	Dummy variable for living in Lam Dong	0.050
Ho Chi Minh	Dummy variable for living in Ho Chi Minh City	0.199
Bing Duong	Dummy variable for living in Bing Duong	0.098
Dong Nai	Dummy variable for living in Dong Nai	0.108
Month of interview		
Jan, Feb, March, April	Dummy variable for being interviewed between January and April 2004	0.009
September	Dummy variable for being interviewed in September 2004	0.165
October	Dummy variable for being interviewed in October 2004	0.498
November	Dummy variable for being interviewed in November 2004	0.229
December	Dummy variable for being interviewed in December 2004	0.100

Source: The 2004 Vietnam Migration Survey.

Table 2: Maximum Likelihood Estimates for Tobit Model

	Marginal & Impact Effects	Asymptotic Standard Errors
Age	0.025	[0.018]
Age squared	-3.16E-04	[2.61E-4]
Household head	0.079*	[0.047]
Female	0.055	[0.046]
Kinh (majority ethnic group in Vietnam)	0.115	[0.104]
Married	0.065	[0.065]
Presence of spouse	-0.001	[0.062]
Presence of school age children	-0.167**	[0.067]
Presence of parents	-0.556***	[0.076]
Household size	0.021*	[0.012]
Education:		
Illiterate	†	
Primary	1.002***	[0.244]
Lower secondary	1.033***	[0.239]
Upper secondary	1.040***	[0.241]
College+	1.248***	[0.257]
Earnings	0.624***	[0.043]
Received bonus	0.146***	[0.054]
Received housing benefits	0.097	[0.188]
Sector of Organization:		
Government	-0.221***	[0.076]
Private	†	
Foreign invested	0.194***	[0.068]
Others	0.113	[0.215]
Reside in a large city	0.210*	[0.114]
Coming from rural area	0.123**	[0.052]
Live in self-owned housing	-0.157**	[0.071]
Live in a dwelling of permanent type	-0.113*	[0.063]
Registration Status:		
Not registered	0.260**	[0.132]
K1 (permanent)	†	
K2 (permanent)	-0.059	[0.127]
K3 (temporary)	0.224***	[0.084]
K4 (temporary)	0.580***	[0.098]
Splines for duration in destination:		
12 months or less	0.058***	[0.009]
13-24 months	0.010**	[0.005]
25-48 months	-0.005*	[0.003]
Had relatives at destination on arrival	0.209***	[0.043]
Had friends at destination on arrival	0.005	[0.044]
Faced difficulty at arrival	-0.115**	[0.045]

	Marginal & Impact Effects	Asymptotic Standard Errors
Have a health insurance card	0.043	[0.060]
Loans:		
No loans	†	
Loans with relatives	-0.143*	[0.078]
Loans with financial institution	0.286**	[0.116]
Loans with others	0.031	[0.082]
No. of visits home to relatives	0.096***	[0.006]
Province (current place of residence):		
Hanoi	†	
Hai Phong (Than phi)	-0.237**	[0.116]
Hai Phong (Tin)	0.167	[0.150]
Quang Ninth	0.751***	[0.127]
Gia Lai	-0.279	[0.178]
Dace Lac	-0.038	[0.181]
Dak Nong	0.011	[0.165]
Lam Dong	0.160	[0.157]
Ho Chi Minh	0.206**	[0.097]
Bing Duong	0.089	[0.130]
Dong Nai	-0.074	[0.129]

No. of observations	4,388
No. of censored observations	1,987
σ	2.387 [0.036]
Pseudo Adjsuted-R^2	0.311
Log likelihood Value	-6549.12

Source: Calculations based on the 2004 Vietnam Migration Survey data.

Notes:

(a) ***, ** and * denote statistical significance at the 0.01, 0.05 and 0.1 levels respectively.

(b) The exogeneity of earnings was investigated using the test of Smith and Blundell (1986) and upheld by the data.

(c) † denotes category omitted in estimation.

(d) Dummies capturing the months when the interview occurred were also included in the regression model.

(e) The marginal effects are evaluated at the means of the independent variables for the unconditional expected values of the dependent variable. For the binary variables, we report the discrete change from 0 to 1.

Endnotes

[1] It is estimated that there were about 20,000 new establishments formed per annum after the introduction of the Enterprise Law in 2000 (see World Bank, 2005).

[2] These are based on the authors' calculations using the Vietnam Living Standards Survey (VLSS) 1992/93 and the Vietnam Household Living Standards Survey (VHLSS) 2004.

[3] This does not include short-term, unregistered movement or movement in the six months preceding the census date.

[4] See endnote 1.

[5] It should be noted that in this paper we define a remitter as a migrant who sent any money/goods home to their relatives and/or gave any money/goods to the relatives during their visits. The data do not allow us to make a distinction between the two types of activity. Hence the value of remittances is the total value of the money/goods that the migrant sent/gave to his or her relatives during the 12 months prior to the interview.

[6] We investigated the magnitude of the correlations between the explanatory variables as a prelude to our regression analysis. In general, the correlations were modest in nature with the average correlation coefficient about 0.09 in magnitude. The overwhelming majority of estimated correlation coefficients were found to be less than 0.3. Thus, we do not believe that multicollinearity represents a serious issue for the econometric analysis undertaken here. In addition, the role of this particular phenomenon is likely to be attenuated by the large sample size used in estimation.

[7] Unfortunately, the data do not allow us to distinguish whether the migrant works for the government or in a manufacturing state-owned enterprise.

[8] Among those migrants who faced some difficulties, the main ones are reported in rank order to be housing problems, having no income source, and, related to this, not being able to find a job.

[9] The estimation of the migrant remittance function using cross-sectional data, as in this study, may be affected by the presence of heteroscedasticity. In the context of the tobit model this has implications for both parameter consistency and efficiency. As the estimated tobit model is not the subject of a rigorous diagnostic testing in this respect, a degree of caution is perhaps required. Unfortunately, sandwich estimators for the variance-covariance matrix, conventionally used for limited dependent variable models to correct for the presence of heteroscedasticity and other model assumption violations, are not feasible for the censored tobit model.

[10] We have also excluded from our analysis a small number of observations with implausibly large remittance and labor market earnings values.

[11] We do not have sufficient information to control explicitly for the distance of the origin from the destination location. This may influence the number of trips and visits a migrant makes home in any 12 month period.

[12] See Liu and Reilly (2004) for a survey of estimates.

[13] It should be stressed that this is somewhat speculative given that we have not formally tested the predictions of altruism theory in this study.