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Shocks and Rural Development Policies: Any Implications for Migrants to Return?

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Abstract

This paper examines the factors affecting the decision of migrants to return home in rural areas and their length of stay in cities with a focus on shocks and rural development policies. We use the unique Thailand Vietnam Socio Economic Panel (TVSEP) data. Our results reveal that the decision to return is positively associated with demographic shocks and negatively associated with social shocks during the time migrants stay in the cities. Meanwhile, economic shocks positively influence migrants' staying period in the cities. Besides, migrants from poor communes with poverty reduction projects are more unlikely to return. This implies that current rural development policies in Vietnam with a goal of poverty reduction might not be attractive enough for migrants to return.

Keywords: Two-step Heckman selection, Shocks; Rural-urban migration, Migrants' behavior, Rural development

JEL: J62, D13, O13, Q12

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Introduction

About thirty-three years after the commencement of the political and economic reforms in 1986 (known as the *Doi Moi*), Vietnam achieved remarkable poverty reduction and economic growth (Nguyen, 2012). The country reached its middle-income status in 2009, attained most of the Millennium Development Goals (MDGs) and immediately adopted the Sustainable Development Goals (SDGs). The economy has transformed from relatively closed and centrally planned to more dynamic, market-oriented, and greatly integrated to the global economy (Do & Park, 2019).

However, the modernization and urbanization process caused by the rapid change of Vietnam's economy are widening unbalanced development between the urban and rural regions. Consequently, rural-urban migration has become an increasing propensity. In the past 10 years, the urban drift process has significantly increase the urban population from about 25.4 million people (equal to 29.6% of the total population) to approximately 33.1 million people (equivalent to 34.4% of the total population) between 2010 and 2019 (GSO, 2019). Determinants for this process are job opportunities as economic motivations (due to a wider income gap between rural and urban regions), higher and better education, and better living conditions in the cities (Ravenstein, 1885; Niimi et al., 2009; Nguyen et al., 2015). In addition, the economic incentives are also playing an important role in distributing migrants (self-selection) to migrate to different destinations (Mazumdar, 1987).

In general, the positive impacts of the rural-urban migration far outweigh the negative ones. On the one side, over migrations might pose a threat to infrastructure, housing, social services such as health care, education, and transportation, and social issues (Agesa & Kim, 2001; UNFPA, 2006). On the other side, the internal migration from rural provinces to cities is a strategy of the rural households to cope with shocks and

livelihood diversification (Dercon, 2002; Nguyen et al., 2015). Besides, migrants also contribute to the target cities by providing labors and remittances sent to rural households are playing an important role in stimulating rural economies and services (UNFPA, 2006; Nguyen et al., 2017a). Therefore, migration holds considerable potential for contributing further to social and economic development.

Nevertheless, drifting to cities might put migrants in a vulnerable position to shocks in the new environments because of lacking experience, perception of coping with these events, and limited support from the government and inadequate access to social services in the urban areas (UNVN, 2010). These unfavorable shocks might raise the level of risk aversion and have direct negative impacts on earnings and well-being (Gloede et al., 2015). In other words, shocks might be a cause of the poverty persistence and the vulnerability to poverty because of their impacts on risk attitude. Consequently, migrants might choose to keep staying in the cities and suffering the shocks or might decide to return to their rural villages. For this reason, studying on determinants of migrants' decision to return is critical to understand their behavior of rural-urban migration in developing countries such as Vietnam with a widening income gap between rural and urban regions.

Thus far, migration researches only focused on identifying factors affecting rural households' decision to migrate, while studies on the reverse process remain nearly untouched. One of the difficulties is that there are not many reliable data sources for researches on migration in developing countries in general and Vietnam in particular. Migration researches must significantly rely on cross-sectional data of migration because longitudinal data is so costly (Mazumdar, 1987) and difficult to trace migrants from year after year. Besides, in the case of Vietnam, the available data might not be reliable for conducting researches on the field of migration due to its failure to capture the migrant

respondents in cities (Pincus & Sender, 2008). Thus, the availability of reliable data for migration researches from the Thailand - Vietnam Socio Economic Panel (TVSEP) funded by the German Research Foundation (DFG) is an important motivational factor for the authors to conduct this research paper in order to examine the above issues to contribute to the literature on migrations and rural/social development in Vietnam and developing countries.

Hence, understanding the determinants influencing the migrants' decision to return and period of living in the cities by taking the impacts of shocks into estimations is critical in the field of literature and for the governments in emerging economies as Vietnam to have appropriate policies to help and protect rural-urban migrants in the cities. This research paper is aimed at addressing following questions: (i) What types of shocks and the other determinants influencing migrants' decision to return and their length of living period in the urban cities? and (ii) Do rural development policies targeted at poverty reduction and living condition improvements motivate migrants to return to their rural villages?.

Literature review

Unsurprisingly, empirical researches on migrations have been conducted widely in the past few decades. These studies mainly focused on people's motivations to migrate, impacts of migrations, and length of migration period. However, there are just a few researches on migrants' behavior, shocks and their impacts on decisions to return of migrants in both international and internal migrations.

Particularly, Stark & Bloom (1985) mentioned that researches on labor migrations emphasized to the role of economic incentives in migrants' decision to migrate. This finding was later confirmed by Mazumdar (1987) concluded that the net impacts of migration was to raise migrants' income and aggregate migrations were sensitive to

income disparities. Besides, some other factors such as distance, available support from relatives and friends in destinations are important to enhance migrations. Later, Agesa & Kim (2001) added that both the pecuniary and non-pecuniary determinants might significantly affect rural households' labor resources to drift to urban areas such as average age (Sjaastad, 1962), family size (Nelson, 1976), skills and educations of migrants. In developing countries, the temporarily migration is a responding strategy of rural households to deal with shocks (Dercon, 2002) and to diversify their livelihood (Nguyen et al., 2015).

Studies on impacts of migrations have shown a number of benefits for both migrants' family and rural villages such as increased education and new skills (Nelson, 1976), technology diffusion to rural areas (Hübler, 2016), and, especially, remittances (Niimi et al., 2009). Recently, Nguyen et al. (2017a) pointed out that migration and remittances offer great opportunities for rural economics by improving infrastructure and health care. However, migrants are also playing a risk-averse role in exercising insurance against economic uncertainty in rural areas and might be sacrificing their zeal (Nelson, 1976) by trading off between economic returns and their health.

Remarkably, there are just a few researches on the length of migration period, behaviors of migrants towards their decision to return, especially in the context of new environment in the cities. Nelson (1976) indicated that migrants in Africa and some parts of Asia tend to return to their home place compared with those in Latin America. In this case, migration is just a short or long-term sojourn in the urban regions. However, the causes and consequences of this migration pattern is vital and remain significantly unexplored.

Many researchers pointed out that there are negative and positive determinants affecting the decision to return and period of migrants' staying. On the one hand,

migrants' characteristics such as age and educational levels (Steiner & Velling, 1994; Borodak & Tichit, 2013, Nguyen et al., 2017b), household's size (Demurger & Xu, 2013), having a social network in arrival destinations (Constant & Massey, 2003), and emigrating from agriculture-based rural villages (Chen & Wang, 2019) could exert positive influences on returning decisions. Besides, male migrants have a higher probability of coming back to their departing locations than females (Sander, 2007; Cela & Bettin, 2018). On the other hand, having family (spouse and children) in their home places (Steiner & Velling, 1994; Sander, 2007; Borodak & Tichit, 2013; Demurger & Xu, 2013), higher costs of living (Thet & Pholphirul, 2016) could have negative influences upon migrants' duration of stay.

Another important factor is remittances that could play a vital role in encouraging rural people to migrate. According to Steiner & Velling (1994), migrants from neighboring European countries tend to have a shorter expected staying duration, if they have a higher amount of remittances sending back to their country. This behavior might signify the attached relationship of migrants and their original locations that would consequently affect the intention of migrants to return in future (Kaufmann, 2007).

Although the impact of shocks is a popular topic in the academic literature (Dearcon, 2004; Gloede et al., 2015, Do et al., 2019, Nguyen et al., 2020), the relationship between shocks and migrations is rather a new field with a few relevant researches on this issue. For instance, Waner & Afifi (2014) stated that resilient rural households use migrations to further diversify livelihood, build skills, and enhance resilience, while vulnerable households who have a fewer adaptation options to climatic shocks use migrations as a part of "climate survival strategies. Nevertheless, Entwisle et al. (2016) employed an agent-based model including effects of extreme climate scenarios to analyze the impacts of climate shocks on migration in rural areas. The paper concluded that effects

of weather shocks are just modest on rural households' migration to respond these adverse events and economic shocks (in the form of income losses due to decrease of agricultural products and increase of inputs) exert a strong influence upon migrations in rural areas of Thailand. In the case of our paper, shocks categories are grouped into for main types of shocks including (i) rural households' shocks, (ii) demographic shocks, (iii) social shocks, and economic shocks that have been mentioned by Gloede et al. (2015)(see Table 5 in the appendix for detailed types of shocks and their components). Thus, studying the relationships between these shocks and migrants' return decision would provide a scientific evidence of their reaction to shocks in the new environment in the cities.

Relevantly, Nguyen et al. (2017b) applied a random-effect Tobit I model to examine migrants' decision to return and an Ordinary Least Square (OLS) estimation to identify determinants of the Index of Migration Intensity proposed by Kaufmann (2007). The authors generally indicated that migrants tend to shorten their time when they experience shocks in the cities. At the rural household level, those households who suffer demographic shocks and social shocks would tend to lengthen the migration duration of their members, while those experiencing agricultural shocks and economic shocks had a reverse effect.

In summary, we came up with some focal points that need to be examined further to narrow the gap in the literature field. First, Behaviors of migrants towards shocks are worthy to study to understand their reflection on external unexpected events. This would significantly contribute to the literature field of migration research. Second, many scholars proposed that rural development policies on reducing poverty (Agesa & Kim, 2001), improving infrastructure (Nguyen et al., 2017b), and stimulating investments in rural areas (Chen & Wang, 2019) would help, to some extent, decrease the rural-urban migration. However, there is not available scientific evidence to confirm if rural

development policies might affect migrants' motivation to stay longer in the cities because these policies might help increase incomes and improve living conditions in rural areas, but they could not outweigh economic incentives and opportunities in the cities. Third, gender and migration purposes are unlikely to be taken into examinations as motivations of migrations. The current literature are lacking of scientific evidence to support the impacts. Hence, this research would take the above critical points into examination for justification. Besides, this paper will be the first trial of research on determinants including shocks influencing migrants' decision to return and staying duration in the cities with an empirical analysis from the unique TVSEP data.

Data and Methodology

Research Areas and Data

This research paper relies on the data from the Thailand – Vietnam Socio-Economic Panel (TVSEP) or the “Poverty dynamics and sustainable development: A long-term panel project in Thailand and Vietnam” funded by the German Research Foundation (Deutsche Forschungsgemeinschaft - DFG). Up to date, the TVSEP database consists of seven household waves collected in the period of 2007 – 2017 and 2 migrant tracking surveys in 2010 and 2018. The rural household surveys followed a three-stage random sampling method (Nguyen et al, 2019) from commune, village, and household levels.

The migrant tracking survey is a unique characteristic that is the only available database in Thailand and Vietnam for this kind of migration research. Based on the information from the rural household survey newly collected in 2017, the migrant survey tracked the rural households' members staying in the urban cities and surrounding industrialised provinces across the country (see Figure 1 for the geographical locations of successful interviews in Vietnam under the TVSEP's migrant tracking survey). This

migrant data is a reliable source for researches on migrations (Nguyen et al., 2015; Hübler, 2016; Nguyen et al., 2017b; Sharma & Grote, 2018).

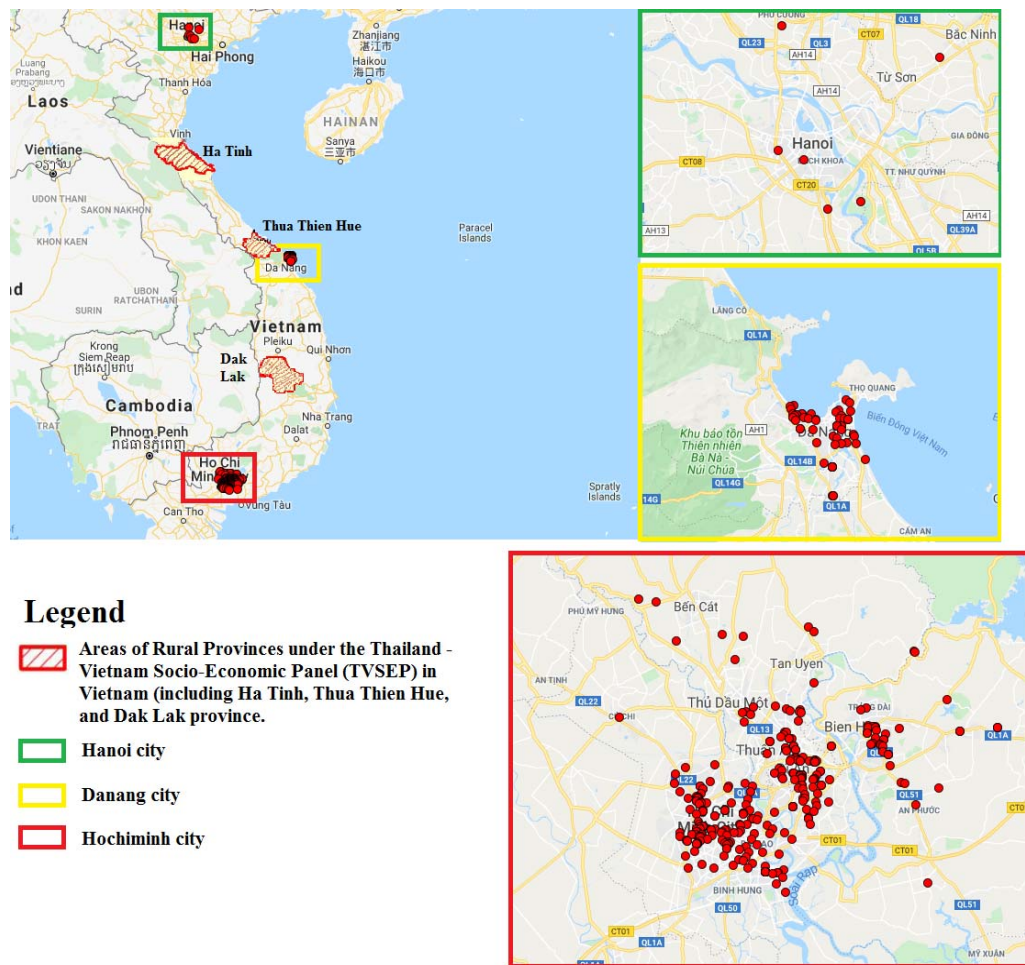


Figure 1. Geographical locations of successful interviews in Vietnam under the migrant tracking survey of the TVSEP project.

In this survey, migrants were defined as those who (i) were a member of the rural households; (ii) were at least 13 years of age at the time of the interview; (iii) were living in the targeted cities at the time of the interview; (iv) had left the rural household for at least one month in the reference period; and (v) were not facing with any type of jail sentences (Sharma & Grote, 2018).

In Vietnam, the 2018 migrant tracking survey successfully collected information from 372 migrants originally from Dak Lak, Thua Thien Hue, and Ha Tinh provinces who are currently living in three metro cities including Hanoi, Danang, and Hochiminh city. The interviews were conducted by well-trained enumerators at the migrants’ home or workplace using tablet-based questionnaires on the World Bank’s Survey Solutions software. Successful interviews were carefully checked by Data Checking Assistants and confirmed by the enumerators within 24-hour after uploaded on the server to maintain the data quality. (see (TVSEP, 2018; TVSEP 2019) for more details).

Table 1. Subjective decisions of migrants to return or stay permanently

	Freq.	Percent
Do you plan to return to your home village one day?		
1 - Yes	209	69.67
0 - No	91	30.33
When do you want to return?		
Less than one year	23	11.00
In one year	6	2.87
In five years	40	19.14
In ten years	56	26.79
When I am old (aged at 60)*	84	40.19

* The age of 60 was based to calculate the migration period for those who would return with the “When I am old” answer (Hoi et al., 2011).

Source: own construction from TVSEP data

For the final estimation, there are only 300 adequate observations for the analysis. The other 72 migrants would be eliminated due to missing data, not-decided to return or stay yet, or unclear about their return plan. Among these 300 migrants, 209 migrants subjectively planned to return in future, while the other 91 migrants were decisive to stay in the cities. In this case, returning/staying should be understood as permanently come back to their rural hometowns/permanently live in the cities. (see Table 1 for the summary of subjective decisions of migrants to return or stay).

Besides, the authors would use the data from the General Statistics Office of Vietnam in 2018 for the two important variables at commune levels namely having new

rural development standard and poverty reduction projects. The new rural development standard (NRD) is among the most important policies of Vietnam's government to stimulate rural development by enhancing investments in rural regions with the ultimate goal of increasing incomes of rural households (Do & Park, 2018). These variables were critical to justify whether rural development policies could exert an impact on migrants' staying duration in the cities as mentioned in the literature review section.

Methodology

Theoretically, the interviewed migrants from the TVSEP survey were tracked from their rural households that might result in a sample selection bias and a systematic disparity of migrants' behavior might cause another sample bias. In this case, the Heckman two-stage estimation might rectify these sample biases (Puhani, 2000) and could mitigate impacts of heteroscedasticity (Tauchmann, 2010). Hence, the Heckman selection model would be employed in this research to examine impacts of shocks and the other factors on migrants' decision to return (at the selections stage) and their staying period on the urban cities (at the outcome stage). At the first stage, a Probit regression would be carried out to estimate determinants affecting migrants' decision to return. In the second stage, an Ordinary Least Squares (OLS) regression would be conducted to show if the predictor variables have a negative or positive impact and their extent on the dependent variable constrained by the outcome of the Probit estimation in the first stage (Heckman, 1976, 1979).

The Heckman selection models have been a main research method of many empirical studies widely applied in economics (Heckman, 1990; Puhani, 2000; Peng, 2013), assessment of public policies (Jang, 2006; Park et al., 2014; Do & Park, 2019), and, especially, social sciences (Bushway et al., 2007; Waibel et al., 2018). Particularly in the field of migration, the selection models play an important role in explaining migrants' decision to migrate (Tsegai, 2007; De Grip et al., 2010; Hausmann &

Nedelkoska, 2018). However, there have not many applications of selection models in examining migrants' behavior and decision to return. This could be mainly due to the data' availability for this kind of research.

According to Certo et al. (2016), the number of researches applying the Heckman Selection model has increased notably in the last few decades with a main focus of addressing the problems of sample selection biases. Nevertheless, there are some critical notes from the literature of the accuracy of selection model's application. Particularly, Lennox et al. (2012) pointed out that researches with selection models should put more emphasis on solving multi-collinearity and robustness. If the problems of collinearity is absent, the two-step method of Heckman model is firmly adequate (Puhani, 2000).

Besides, Bushway et al. (2007) concluded that scholars should pay more attention to some critical problems for the applications of the Heckman selection models including dichotomy of dependent variables, collinearity between independent variables and correction terms, and mis-estimation of standard errors. Therefore, the two-step Heckman selection model would be employed to estimate the decision of migrants to return in the selection stage and their duration of staying in the cities in the outcome stage because the two-step models would be generally more stable if the data set is more problematic (STATA, 2015) (see Figure 2 for the analytical framework).

Identifying Determinants Influencing on Migrants' Decision to Return and Migration Period in the Urban Cities

At the selection stage, the Probit regression would consist of the dependent variable of migrants' decision to return to their rural villages and 14 independent variables grouped under five key categories of migrants' personal characteristics, rural development policies, economic incentives, urban-related factors, and, especially, shocks. There is a critical note that we would apply two shocks variables in the selection

stage as instrumental variables and would be excluded in the outcome stage (see Table 6 in the appendix for the results of instruments' identification). In the outcome stage, this research paper would examine the impacts of the major factors encompassing the same 5 key categories with 14 variables on the migration periods of the migrants who subjectively planned to come back their rural villages in future permanently (see Table 7 in the appendix for the name and definitions of variables). These factors were carefully considered in an accordance with the results of the literature review, availability of the data, and authors' research concern about external factors such as shocks and rural development policies to identify determinants of migrants' behavior to make the decision to come back. The results from Collinearity tests show that there is no signs of multicollinearity (see Table 9 and 10 in the appendix for the Collinearity tests of both the selection and outcome models).

Regarding the personal characteristics of migrants, many scholars have researched on age and educational levels, but a few of them took gender, migrants' age at their first migration, and their first migration for educational purpose into estimations to assess the impacts of these variables on migrants' decision. These personal factors are crucial for understanding migrants' behaviors with different genders, generations, and migration purposes. Therefore, we expected that migrants' age and gender (1 = male) would have positive impacts on migrants' decision to return (or more likely to return), while age at their first time leaving their house and educational purposes of the first migration would have negative impacts (or more unlikely to return). (See Table 2 for the details of the expected impacts of dependent variables on migrants' decision and migration period).

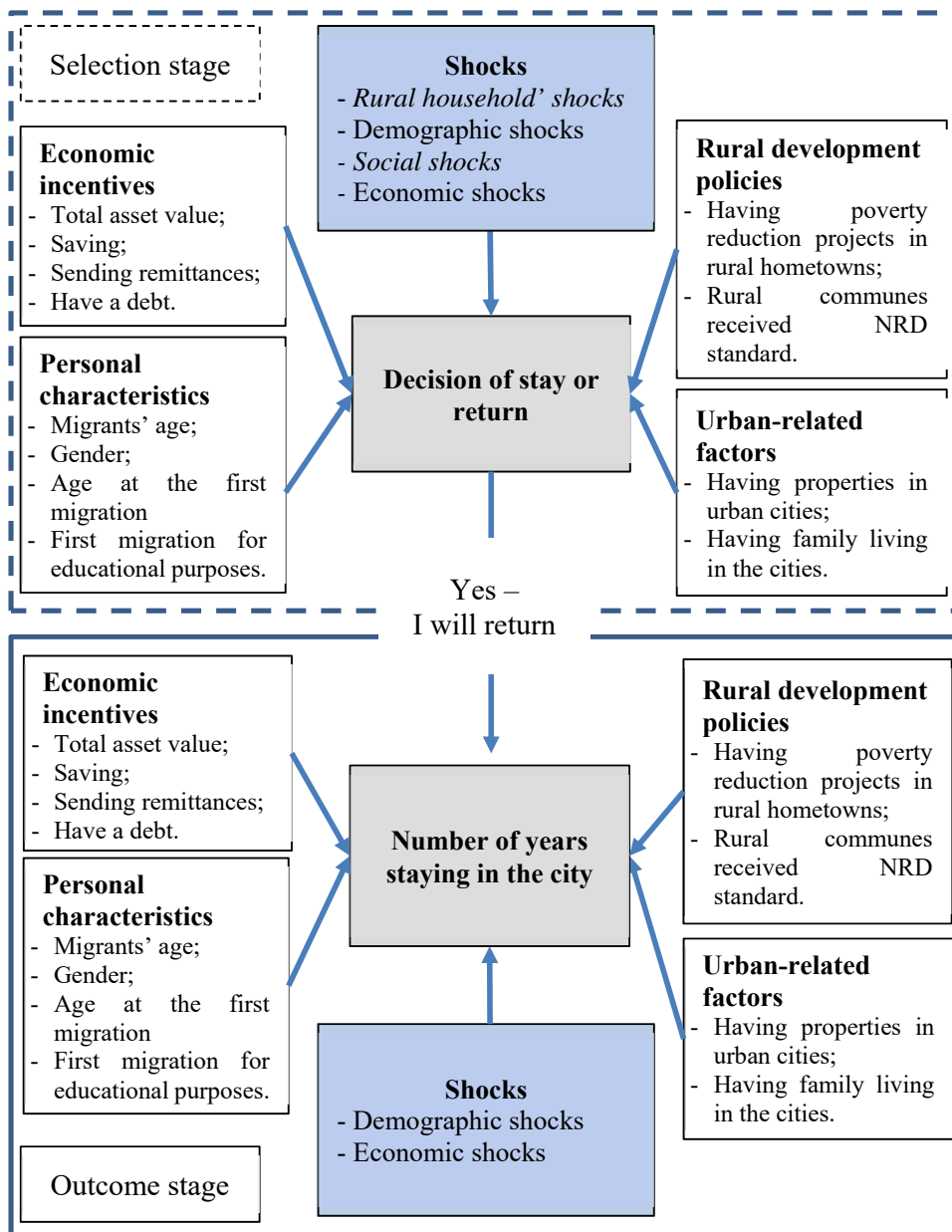


Figure 2. Analytical framework

In the case of factors related to rural development policies and their rural villages, we would take two variables representing rural development policies namely “Having poverty reduction projects in rural hometowns” and “Rural communes received NRD standard” to investigate if these interventions actually help to attract migrants from the urban metros to return their rural villages. Findings from this analysis might support previous researches on migration as a scientific evidence. Thus, these variables would be

expected to have positive impacts on migrants' decision and negatively affect their staying duration in the cities.

Table 2. Expected impacts of dependent variables on migrants' decision (selection stage) and migration period (outcome stage)

Categories	Variables	Expected Impact on	
		Migrants' decision	Staying period
Shocks	Rural household' shocks	+	
	Social shocks	+	
	Demographic shocks	+	-
	Economic shocks	+	-
Personal characteristics	Migrants' age	+	-
	Gender	+	-
	Age at the first migration	-	+
	First migration for educational purposes	-	+
Economic incentives	Total asset values	-	+
	Total saving	-	+
	Sending remittances	-	+
	Have a debt	-	+
Rural development policies	Having poverty reduction projects in rural hometowns	+	-
	Rural hometowns received new rural development standard	+	-
Urban-related factors	Having properties in urban cities;	-	+
	Having family living in the cities.	-	+

Note: -: negative impact; +: positive impact.

Remarkably, this paper would be the first trial to take variables of shocks that affecting migrants in the urban metros into estimations to examine the likelihood of return decision caused by these shocks. Apparently, shocks might have negative effects on migrants' mental and physical health, or ultimately force them to return. Hence, they would be expected to have negative impacts on migrants' decision and positively affect their staying period in urban areas. Among the four categories of shocks, there are rural household shocks and social shocks would be employed as instrumental variables in the models. The evidence-based identifications of these instrumental have been mentioned in the previous section.

To assess the migrants' decision to return, we apply the other two urban-related factors to the model namely "having properties" and "having family" in the cities. These variables have been mentioned in the literature review that would be negatively affect the return decision of migrants. Moreover, these variables also imply that migrants would tend to not return if they own a house or land and move their spouse and children to the cities to settle down in a longer term. Therefore, we expect that these variables would have negative impacts on the decision of the migrants to return.

Finally, this paper would take some economic incentives such as total asset values, total saving, remittances, and debts to estimate their impacts on migrants' likelihood to return. Fundamentally, economic incentives are classical factors in stimulating people to migrate that have been mentioned by the vast majority of scholars in migration researches. Therefore, we expected that these variables would have negative impacts on migrants' decision to return and positive impacts on the staying duration of migrants in urban towns.

Model specification and estimation method

Based on the Heckman selection model (Heckman, 1976, 1979), the decision of migrants to return might be determined by:

$$\text{Migrants' Decision} = \gamma_0 + \gamma_i(\text{Independent variables})_i + u_i \quad (1)$$

When

$$\text{Migrants' Decision} = \begin{cases} 1, \text{If Migrants decided to return in future} > 0 \\ 0, \text{If Migrants decided NOT to return in future} = 0 \end{cases}$$

In this case, the decision is a latent variable to estimate if the migrants decide to return to their rural villages in future and the estimation of their migration period (the outcome stage) would only be observed if:

$$\gamma_0 + \gamma_1(\text{Independent variables})_i + u_i > 0$$

For those migrants, who subjectively decided to return, their duration of staying in the urban cities could be demonstrated as following:

$$\text{Migration period} = \beta_0 + \beta_i(\text{dependent variables})_i + \varepsilon_i \quad (2)$$

Constrained by

$$\text{Migrants' Decision} = \begin{cases} \beta_0 + \beta_i(\text{dependent variables})_i + \varepsilon_i, & \text{if Migrants decided to return} = 1 \\ \text{Not observed, if Migrants decided NOT to return} = 0 \end{cases}$$

When ε_i and u_i have correlation ρ , the log likelihood for observation i ,

$\ln L_i = l_i$, could be written as following (STATA, 2015):

$$l_i = \begin{cases} w_i \ln \Phi \left\{ \frac{z_i \gamma + (y_i - x_i \beta) \rho / \sigma}{\sqrt{1 - \rho^2}} \right\} - \frac{w_i}{2} \left\{ \frac{y_i - x_i \beta}{\sigma} \right\}^2 - w_i \ln(\sqrt{2\pi}\sigma) & y_i \text{ observed} \\ w_i \ln \Phi(-z_i \gamma) & y_i \text{ not observed} \end{cases}$$

Where Φ and w_i are the standard cumulative normal and optional weight for observation i . When we conduct the two-step estimates using the procedure of Heckman's (1979), the selection equation would obtain the Probit estimates through:

$$\Pr(y_i \text{ observed} | z_i) = \Phi(z_i \gamma)$$

Then, from these estimates, the ratio of inverse Mills (mi) for each observation i would be computed as following:

$$m_i = \frac{\phi(z_i \hat{\gamma})}{\Phi(z_i \hat{\gamma})}$$

Where ϕ is the normal density which we would define as: $\delta_i = m_i(m_i + \hat{\gamma} z_i)$

Next, the two-step parameter estimates of β are obtained by augmenting the regression equation with the non-selection hazard m . Thus the regressors would become $[\mathbf{X} \ \mathbf{m}]$, and the additional parameter estimate β_m on the variable consisting of the non-selection hazard would be obtained. Finally, the consistent estimate of the regression disturbance variance would be attained using the residuals from the augmented regression and the parameter estimate on the non-selection hazard as following:

$$\hat{\sigma}^2 = \frac{e'e + \beta_m^2 \sum_{i=1}^N \delta_i}{N}$$

The two-step estimate of ρ is computed as: $\hat{\rho} = \frac{\beta_m}{\hat{\sigma}}$

The two-step Heckman model would attain consistent estimates of the coefficient covariance on the fundamental augmented regression (STATA, 2015). Hence, in terms

of this paper, the two-step Heckman model would be employed to estimate the decision of migrants to return in the selection stage and their duration of staying in the cities in the outcome stage. The selection stage would assess the likelihood of migrants to make a decision to return to their rural villages and the outcome stage would examine the change in years of staying in the city of these migrants. Besides, the model would be clustered by rural villages as the data sampled at rural village levels and the estimation would be implemented with 2000-replication bootstrap to have an adequate estimation of robust standard error and bias-corrected confidence intervals (Efron & Tibshirani, 1994).

Results and Discussion

Characteristics of Migrants in Vietnam

The descriptive statistics on Table 3 show the differences between the migrants who subjectively decide to return to their home villages with those who would not return. Generally, all of the migrants are young, balanced gender, and the vast majority sending remittances. The average ages of migrants at the date of the interviews and the time of their first migration are about 26 and 19 respectively. Besides, these migrants experienced more social and demographic shocks than economic and rural households-related shocks.

Interestingly, migrants who did not plan to return are wealthier than those who subjectively decide to come back in terms of higher values of asset and saving. Moreover, these migrants are more likely to have houses or land and currently living with their spouse and children in the cities. One of the reasons is that there have approximately 38% of the migrants coming from a poor commune.

Table 3. Descriptive statistics between the return and not-return groups

Variables	Decision to return Yes (n = 209)		Decision to return No (n = 91)		Statistic tests
	Mean	Std. Dev.	Mean	Std. Dev.	
<i>Shocks</i>					
Rural_HH_shocks	0.158	0.426	0.011	0.105	-3.243***a
Social_shocks	0.407	0.688	0.549	0.834	1.547
Demo_shocks	0.397	0.555	0.220	0.442	-2.698*** a
Economic_shocks	0.062	0.261	0.022	0.147	-1.376
<i>Personal characteristics</i>					
Age	26.067	6.258	26.473	5.586	0.533
Age_at_migration	19.785	5.027	18.956	3.961	-1.395
Gender	0.612	0.488	0.473	0.502	-2.246**b
Edu_purpose	0.378	0.486	0.495	0.503	1.881*b
<i>Economic incentives</i>					
ln_asset	6.838	1.336	7.255	1.501	2.394**a
ln_saving	3.757	3.740	4.664	3.993	1.892*a
Sending_remittance	0.837	0.370	0.934	0.250	2.262**b
Have_debt	0.172	0.026	0.132	0.340	-0.876
<i>Rural development policies</i>					
Poor_commune	0.344	0.476	0.473	0.502	2.093**b
Commune_NRD	0.426	0.496	0.495	0.503	1.098
<i>Urban-related factors</i>					
Property_city	0.091	0.288	0.165	0.373	1.854*b
family_city	0.215	0.412	0.330	0.473	2.099**b

Note: *, **, *** significant at 10%, 5%, and 1% respectively. a: Two-sample t test;
b: Wilcoxon rank-sum (Mann-Whitney) test

There is a striking feature that there are about 40% of the migrants left their house for education purpose in their first emigration. Besides, nearly 90% of the migrants are sending remittances. This might support the findings from the literature that education and economic incentives are among the driven-factors pushing people to emigrate.

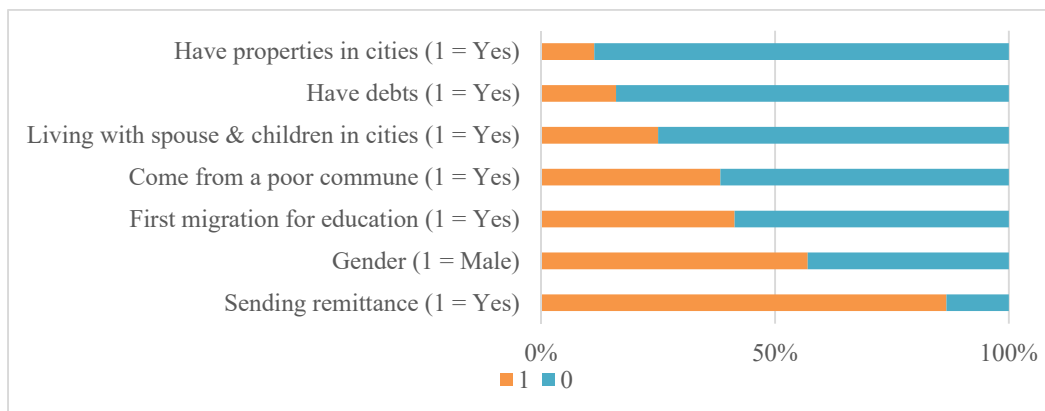


Figure 3. Characteristics of migrants by some specific binomial variables.

What Types of Shocks and Other Determinants Are Driving Migrants to Return and Shortening Their Staying Period in the Metros?

The estimation results on Table 4 indicate that there is a sign of selection bias with the ratio of inverse Mills is significant at 10% level. This confirms the appropriateness of the two-step Heckman selection in conducting the model. Overall, the two-step estimates of the model with 2000 replications and clustered at rural village levels is apparently significant at 1% level. In the two stages, there are five variables are significant in each stage at (or) less than 10% level.

In the decision stages, the results indicate that social shocks and demographic shocks significantly influence migrants' decision to return. However, they have two different directions of impacts. Particularly, the demographic shocks that consist of serious illness and death of family members/relatives/close friends positively affect migrants' decision to return. This finding supports the conclusion of Gloede et al. (2015) that demographic shocks that are an idiosyncratic nature seem to be more critical in Vietnam. On the other hand, social shocks that include 13 types of events affecting the migrants during the time in the cities are negatively affect their decision to return. This could be explained that these kind shocks influenced migrants, but their tolerance (to stay

in the urban areas to earn money) outweighed the impacts. In other words, they are scarifying themselves for the family or a better life in future.

There is a striking feature that male migrants tend to return to their rural villages more than the females at 1% significant level. This could be explained by the role of male labours in agriculture in rural regions that they have to go back for taking over the farming activities, while the females might get married and settle down in the cities.

Table 4. Empirical results from the two-step Heckman estimation.

Heckman selection model -- two-step estimates	Number of obs.	=	300
(regression model with sample selection)	Selected	=	209
	Nonselected	=	91
	Wald chi2(14)	=	69.070
	Prob. > chi2	=	0.000
(Bootstrap 2000 replications based on 70 clusters in rural_village)			
	Observed	Bootstrap	
	Coef.	Std. Err.	
<hr/>			
Outcome stage: Migration_period			
Demo_shocks	-2.907	2.099	
Economic_shocks	6.873*	4.047	
Age	0.956***	0.193	
Gender	1.943	2.306	
Age_at_migration	-1.234***	0.229	
Edu_purpose	5.958*	2.598	
ln_asset	-1.483*	0.907	
ln_saving	-0.216	0.281	
Sending_remittance	1.903	3.774	
Have_debt	-1.300	2.471	
Poor_commune	1.808	2.497	
Commune_NRD	2.283	2.304	
Property_city	5.346	3.767	
Family_city	0.318	2.262	
cons	23.419***	6.767	
<hr/>			
Decision stage: Return_decision			
Rural_HH_shocks	1.072	8.396	
Social_shocks	-0.244**	0.119	
Demo_shocks	0.491*	0.251	
Economic_shocks	0.493	2.979	
Age	-0.004	0.022	
Gender	0.473***	0.176	
Age_at_migration	0.027	0.032	
Edu_purpose	-0.301	0.223	
ln_asset	-0.130*	0.070	
ln_saving	-0.004	0.022	
Sending_remittance	-0.812	0.768	
Have_debt	0.300	0.288	
Poor_commune	-0.406**	0.203	
Commune_NRD	-0.318	0.244	
Property_city	-0.095	0.282	
Family_city	-0.388	0.255	
cons	1.888*	1.005	
<hr/>			
/mills			
	lambda	10.308*	6.070
	rho	0.714	
	sigma	14.430	
<hr/>			

Note: *, **, *** significant at 10%, 5%, and 1% respectively.

Regarding the economic incentive variables, there is only the asset variable negatively affects the migrants' decision to return at 10% significant level. This implies that those migrants having more assets would be more unlikely to return. The reason could be the wealthier the migrants, the more they prefer to stay in the cities with better living conditions.

In the outcome stage of migration period, there are five variables namely economic shocks, migrants' age, their ages at the first emigration, migration purposes, and asset values are significant at (or less than) 10% level. Among the shock variables, the estimation results illustrate that economic shocks such as losses of money, job losses, and problems with debts etc. positively influence migrants' staying period in the cities. The extent is relatively strong when each economic shock might raise about 7 years more of migrants' staying period. Fundamentally, they emigrated from rural villages to urban cities because of economic motivations, so they would have to stay longer to earn money.

Surprisingly, the asset variable has a negative impact on migrants' staying period in the cities. In the decision stage, this variable also negatively influences on migrants' decision to return. This could be interpret that for those who had higher value of assets and decided to return will tend to stay less in the cities. The reason is that these rural-oriented migrants would return to their village as soon as they have accumulated enough financial resources.

There is an interesting finding of the migrants' characteristics that the younger the migrants at the time they first left their village would have a shorter migration period. This could be because of their tradition of coming back to their home after they stay long enough in the cities. In addition, the current variable of migrants' current age show a positive impact on the migration period. The older the migrants at presence, the longer the period they subjectively tend to stay.

Strikingly, those migrants emigrating for education purposes would have a longer staying period in the cities than the others. This reflects a tendency that those migrants who study in the cities would be keen to stay a longer time for better job opportunities after their education because it would be much better than return to their village where they could have a narrow range of jobs.

Could Rural Development Policies Help to Reverse the Rural-Urban Drift?

To investigate the impacts of rural development policies in helping attract migrants to return to their home villages, we employed the two variables of “Having poverty reduction projects in rural hometowns” and “Rural communes received NRD standard” to investigate if these interventions actually help to attract migrants from the urban metros to return their rural villages.

The results from the estimation show that they have positive impacts on the migrants’ staying period, but not statistically significant at 10% level. However, in the decision stage, the variable of “Having poverty reduction projects in rural hometowns” has a negative influence on migrants’ decision to return at less than 5% significant level. It indicates that migrants from poor communes with poverty reduction projects are more unlikely to return. This implies that current rural development policies in Vietnam with a goal of poverty reduction might not be attractive or efficient enough to fill the gap between the rural and urban regions. Therefore, they could not be a driven-factor of migrants to return at present. However, we strongly recommend further researches at rural village levels with these interventions to investigate their impacts on migrations.

Conclusion

The research paper employed the two-step Heckman selection model to examine the impacts of shocks, rural development policies, and other factors on rural-urban migrants' decision to return to their rural villages in Vietnam mainly using the data from TVSEP migrant tracking survey in 2018. The results from the model showed its appropriateness in the terms of estimation methodology and partly answer the two research questions:

(i) What types of shocks and the other determinants influencing migrants' decision to return and their length of living period in the cities?

In the decision stages, the results indicate that social shocks and demographic shocks significantly influence migrants' decision to return. Particularly, the demographic shocks would positively affect migrants' decision to return. On the other hand, social shocks affecting the migrants during the time in the cities are negatively affect their decision to return. This could be explained that these kind shocks influenced migrants, but their tolerance (to stay in the urban areas to earn money) outweighed the impacts. In other words, they are scarifying themselves for the family or a better life in future. This implies that the government should have some responses to protect migrants from being affected by social unexpected events such as accidents, theft, burglary, robbery, and vandalism.

In the outcome stage of migration period, the estimation results illustrate that economic shocks positively influence migrants' staying period in the cities. The extent is relatively strong when each economic shock might raise about 7 years more of migrants' staying period. Fundamentally, they emigrated from rural villages to urban cities because of economic motivations, so they would have to stay longer to earn money.

(ii) Do rural development polices targeted at poverty reduction and living condition improvement motivate migrants to return to their rural villages?

In the decision stage, the variable of “Having poverty reduction projects in rural hometowns” has a negative influence on migrants’ decision to return at less than 5% significant level. It indicates that migrants from poor communes with poverty reduction projects are more unlikely to return. This implies that current rural development policies in Vietnam with a goal of poverty reduction might not be attractive or efficient enough to fill the gap between the rural and urban regions. Therefore, they could not be a driven-factor of migrants to return at present.

Besides, there are some striking features from the findings. First, we found that male migrants tend to return to their rural villages more than the females. This could be explained by the role of male labours in agriculture in rural regions that they have to go back for taking over the farming activities, while the females might get married and settle down in the cities. Second, those migrants emigrating for education purposes would have a longer staying period in the cities than the others. This reflects a tendency that those migrants who study in the cities would be keen to stay a longer time for better job opportunities after their education because it would be much better than return to their village where they could have a narrow range of jobs. Third, regarding the economic incentive variables, the asset variable negatively affects the migrants’ decision to return and their staying period in the cities. This could be explained that the wealthier the migrants, the more they prefer to stay in the cities with better living conditions. However, when they decide to return due to their rural-oriented characteristics, they would tend to turn to their village as soon as they have accumulated enough financial resources.

In conclusion, the results could again confirm the quality of the TVSEP data for migration researches. The authors strongly recommend further researches at rural village levels with rural development interventions to investigate their impacts on migrations.

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Appendix

Table 5. Types of shocks and their components.

Rural households' shocks	Demographic shocks	Social shocks	Economic shocks
34 - Any other rural household shocks	1 - Serious illness	2 - Work accident	4 - Job loss / Collapse of business
	26 - Death of person (e.g. Close friend)	3 - Traffic accident	12 - Lose money in gambling
		5 - Fight / Conflict (Job/Business)	13 - Rise in cost of transportation /
		6 - Fight / Conflict (Private)	15 - Problem with debt
		7 - Problem with police / Law suit	16 - Relatives / friends stopped sending remittances
		17 - Expenditure on family ceremony (e	22 - Flooding of home / shop or strong
		20 - Problem with rent / Housing contract	24 - Water shortage
		21 - Strike / Protest	
		27 - Theft of transportation (e.g. Car, motorbike...)	
		31 - Burglary	
		32 - Robbery	
		33 - Vandalism	
		35 - Friend / Relative asked for support	

Table 6. Regression results of instruments' identification.

	Probit – return_decision		OLS – migration_period	
	Coef.	Std. Err.	Coef.	Std. Err.
rural_HH_shocks	1.072**	0.497	-1.234	2.306
social_shocks	-0.244**	0.117	0.291	1.414
demo_shocks	0.491*	0.183	-4.753***	1.790
economic_shocks	0.493	0.420	5.195	3.697
age	-0.004	0.023	0.985***	0.245
gender	0.473***	0.180	-0.213	2.004
Age_at_migration	0.027	0.027	-1.344***	0.278
edu_purpose	-0.301*	0.181	7.173***	2.207
ln_asset	-0.130**	0.065	-0.838	0.769
ln_saving	-0.004	0.023	-0.244	0.273
sending_remittance	-0.812***	0.308	4.941*	2.824
have_debt	0.300	0.256	-2.491	2.701
poor_commune	-0.406**	0.179	3.567*	2.082
Commune_NRD	-0.318*	0.179	3.557*	2.030
property_city	-0.095	0.289	6.213	3.966
family_city	-0.388*	0.229	1.513	2.877
_cons	1.888***	0.675	22.765***	6.835

Note: *, **, *** significant at 10%, 5%, and 1% respectively.

Table 7. Name and definitions of variables.

Name	Measurement	Definition
Dependents		
<i>Decision stage</i>		
Return_decision	Binominal; Yes = 1; otherwise = 0	Subjective plan of migrants to return
<i>Outcome stage</i>		
Migration_period	Number of years	Migration duration of the migrants since their first migration until the time they plan to return
Independents		
<i>Shocks</i>		
Rural_HH_shocks	Number of shocks	Number of shocks that related to migrants' rural households in villages between 7/2015 and 6/2018
Demo_shocks	Number of shocks	Number of demographic shocks that the migrants experienced between 7/2015 and 6/2018
Social_shocks	Number of shocks	Number of social shocks that the migrants experienced between 7/2015 and 6/2018
Economic_shocks	Number of shocks	Number of economic shocks that the migrants experienced between 7/2015 and 6/2018
<i>Personal characteristics</i>		
Age	Years old	Age of migrants
Age_at_migration	Years old	Age of migrants at the time they first migrated from their rural villages
Gender	Binominal; Male = 1; Female = 0	Gender of migrants
Edu_purpose	Binominal; Yes = 1; otherwise = 0	If the migrants first migrated from their rural villages for education purposes
<i>Economic incentives</i>		
Total asset values	PPP\$	Logarithms of total current asset values that the migrants owned between 7/2017 and 06/2018
Saving	PPP\$	Logarithm of total saving of the migrants between 7/2017 and 06/2018
Sending_remittance	Binominal; Yes = 1; otherwise = 0	If the migrants were sending remittances between 7/2017 and 06/2018
Debt	Binominal; Yes = 1; otherwise = 0	If the migrants had a debt between 7/2017 and 06/2018
<i>Rural development policies</i>		
Poor_commune	Binominal; Yes = 1; otherwise = 0	If the migrants' commune belonged to poverty communes that receive support from the government in a poverty reduction program.
Commune_NRD	Binominal; Yes = 1; otherwise = 0	If the migrants' commune achieved the standard of new rural development program.
<i>Urban-related variables</i>		
Property_city	Binominal; Yes = 1; otherwise = 0	If the migrants and their spouse owned lands or houses in the cities
Family_city	Binominal; Yes = 1; otherwise = 0	If the migrants have their spouse and children living with them in the cities

Table 8. Data's descriptive statistics of the whole samples.

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variables					
<i>Decision stage</i>					
Return_decision	300	0.697	0.460	0	1
<i>Outcome stage</i>					
Migration_period	209	23.478	15.286	1	49
Independent variables					
<i>Shocks</i>					
Rural_HH_shocks	300	0.113	0.366	0	2
Demo_shocks	300	0.450	0.737	0	4
Social_shocks	300	0.343	0.529	0	2
Economic_shocks					
<i>Personal characteristics</i>					
Age	300	26.190	6.056	14	54
Age_at_migration	300	0.570	0.496	0	1
Gender	300	19.533	4.737	9	53
Edu_purpose	300	0.413	0.493	0	1
<i>Economic incentives</i>					
Total asset value	300	2340	6318	0	77116
Saving	300	2453	7033	0	59780
Sending_remittance	300	0.867	0.341	0	1
Have_debt	300	0.160	0.367	0	1
<i>Rural development policies</i>					
Poor_commune	300	0.383	0.487	0	1
Commune_NRD	300	0.447	0.498	0	1
<i>Urban-related factors</i>					
Property_city	300	0.113	0.318	0	1
Family_city	300	0.250	0.434	0	1

Table 9. Collinearity test of the selection stage.

Variable	VIF	1/VIF
age	2.640	0.379
Age_at_migration	2.070	0.484
family_city	1.520	0.657
property_city	1.410	0.708
edu_purpose	1.220	0.821
ln_saving	1.220	0.822
ln_asset	1.210	0.826
sending_remittance	1.200	0.836
have_debt	1.140	0.873
Commune_NRD	1.130	0.881
poor_commune	1.130	0.888
demo_shocks	1.120	0.895
gender	1.110	0.897
rural_HH_shocks	1.110	0.903
social_shocks	1.070	0.938
economic_shocks	1.050	0.953
Mean VIF	1.330	

Table 10. Collinearity test of the outcome stage.

Variable	VIF	1/VIF
age	2.680	0.373
Age_at_migration	2.170	0.461
family_city	1.580	0.632
property_city	1.480	0.677
edu_purpose	1.310	0.762
sending_remittance	1.250	0.799
ln_asset	1.210	0.829
have_debt	1.190	0.843
ln_saving	1.160	0.862
Commune_NRD	1.140	0.875
poor_commune	1.130	0.888
demo_shocks	1.110	0.899
gender	1.100	0.910
economic_shocks	1.050	0.952
Mean VIF	1.400	