E C O N O M I C S B U L L E T I N

Do Foreign Remittances Matter to Poverty and Inequality? Evidence from Vietnam

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Abstract

Empirical findings on the impacts of international remittances on poverty and inequality have not been consistent. This paper uses fixed-effect regression to estimate the impacts of foreign remittances on income and consumption of remittances-receiving households, and subsequently investigate the impacts of foreign remittances on poverty and inequality in Vietnam. It is found that receiving foreign remittances has increased household income and consumption remarkably, but decreased poverty slightly for the remittance recipients. In addition, foreign remittances have increased inequality, albeit at a small magnitude.

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1. Introduction

Foreign remittances are an important source of income for developing countries. Although it is wide consent that foreign remittances can help receiving households increase income and consumption and cope with socioeconomic shocks, there has been little quantitative research on impacts of foreign remittances on household welfare and poverty. In addition, there are conflicting studies on the impacts of foreign remittances on inequality. For example, Stark et al. (1986), Adam (1989), Portes and Rumbaut (1990) found the adverse impacts of international remittances on income distribution, while Taylor (1992), Adam and Wyatt (1996) found improving effects of foreign remittances on income distribution.

In Vietnam, foreign remittances have been increasing overtime. It is often argued that foreign remittances have contributed to economic development and poverty reduction. However, the question on quantitative impact of foreign remittances in Vietnam remains unanswered. Thus, the objective of the paper is to measure to which extent foreign remittances can affect household welfare, poverty and inequality in Vietnam. By doing so, the paper is expected to contribute empirical findings to debate on relationship between international remittances, poverty and inequality.

The paper is structured in 6 sections. Section 2 briefly introduces the data sets used for this study. Section 3 discusses foreign remittances, poverty and inequality in Vietnam. Section 4 presents the methodology to measure impact of remittances. Next, section 5 analyzes the empirical results. Finally, section 6 concludes.

2. Data Sources

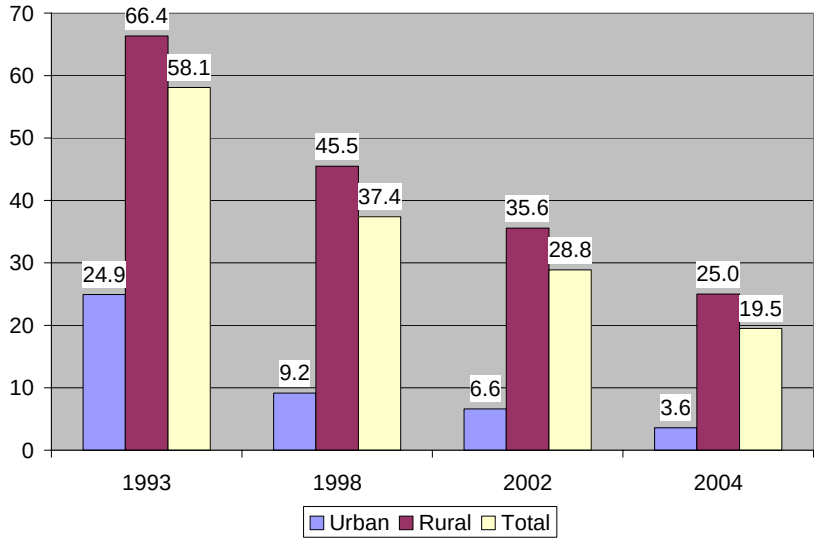
The study relies on data from two Vietnam Household Living Standard Surveys (VHLSS), which were conducted by the General Statistics Office of Vietnam (GSO) with technical support from the World Bank (WB) in the years 2002 and 2004. The 2002 and 2004 VHLSSs covered 30000 and 9000 households, respectively. The samples are representative for the national, rural and urban, and regional levels. The 2002 and 2004 VHLSSs set up a panel of 4008 households, which are representative for the whole country, and for the urban and rural population.

The surveys collected information through household and community level questionnaires. Information on households includes basic demography, employment and labor force participation, education, health, income, expenditure, housing, fixed assets and durable goods, and especially foreign remittances that households had received. Data on expenditure and income were collected using very detailed questionnaires. Information on small and detailed expenditure and income categories was collected and then aggregated into expenditure and income per capita.

3. Poverty, Inequality and Foreign Remittances in Vietnam

In this study, a household is classified as poor if their per capita expenditure is below the poverty line which is set up by WB and GSO. The poverty line is equivalent to the expenditure level that allows for nutritional needs and some essential non-food consumption such as clothing and housing. This poverty line was first estimated in 1993. Poverty lines in the following years are estimated by deflating the 1993 poverty line using the consumer price index.[1] Figure 1 presents the poverty rates over the period 1993-2004.

Figure 1 Poverty rate over the period 1993-2004 (%)



Source: Estimation of VHLSS in 1993, 1998, 2002, and 2004.

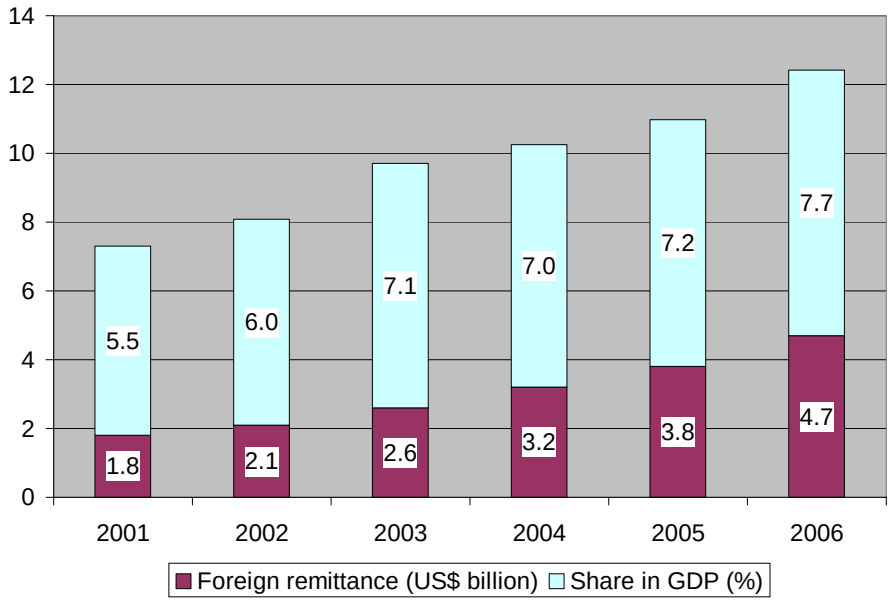
It shows that the proportion of people with per capita expenditure under the poverty line dropped dramatically from 58% in 1993 to 37% in 1998. The poverty rate continued to decrease to 29% and 20% in 2002 and 2004, respectively.[2] However, the poverty rate remains rather high in rural areas, at 25% in 2004. Together with reduction in poverty, inequality has been increasing overtime, albeit at a moderate pace. The Gini index increased from 0.33 in 1993 to 0.37 in 2004.

Higher poverty in rural areas and growing inequality require the government to have to strengthen policies on poverty reduction and income redistribution. Foreign remittances can be an important source for welfare improvement and poverty reduction. The traditional sources of foreign remittances to Vietnam are from the US, Australia, South Korea and Taiwan. In recent years, foreign remittances have become an increasing source of external fund for Vietnam. Figure 2 shows that foreign remittances increased from USD billion 1.8 to 4.7 during the period 2001-2006. Its share in GDP increased from 5.5% to 7.7% during this period.

[1] Regional price differences and monthly price changes over the survey period have been taken into account when the poverty lines are calculated.

[2] The poor are classified based on the expenditure poverty line constructed by WB-GSO. The poverty lines in the years 1993, 1998, 2002, and 2004 are equal to 1160, 1790, 1917, and 2077 thousands VND, respectively.

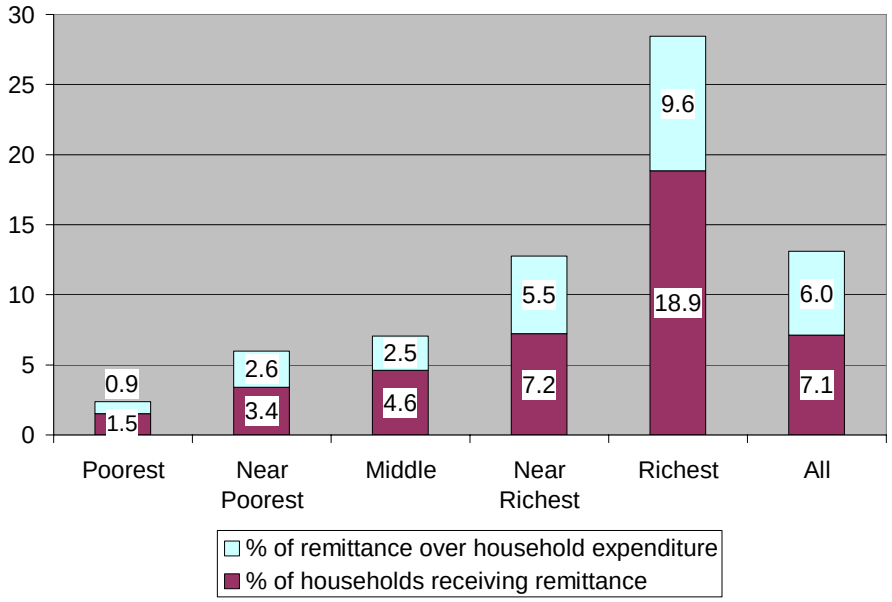
Figure 2: Foreign remittances to Vietnam and its percentage share in GDP



Source: Vietnam Economy (http://www.vneconomy.com.vn)

However, a large proportion of foreign remittances go to big cities. For example, Ho Chi Minh city which is the largest and richest city in Vietnam received around 60% of total remittances in 2006. As a result, recipients of foreign remittances are more likely to be richer than the non-recipients. According to Figure 3, only 1.5% of households in the lowest expenditure quintile received foreign remittances, while this figure is 18.9% for the richest quintile. The share of foreign remittances in expenditure for the poorest is also much lower than that for the richest.

Figure 3: Foreign remittances and household expenditure by expenditure quintile in 2004



Source: Estimation from VHLSS 2004.

Although expenditure data used for quintile classification can be affected by foreign remittances, there might be a question on whether the foreign remittances can reduce poverty and inequality. If most of the households are non-poor or even rich before receiving remittances, remittances can have no effect on poverty, but positive effect on inequality. These issues will be discussed in the next sections.

4. Impact Evaluation Method

4.1. Measurement of remittances impact on household income and expenditure

The direct impact of foreign remittances is to increase household income and consumption. To discuss the impact measurement, denote remittance amount that a household receives by D. Further let Y denote the observed value of outcome, i.e., household income and consumption expenditure in this paper, and let $Y_{(D)}$ denote potential outcome corresponding to the value of D. In this paper, the parameter of interest is Average Treatment Effect on the Treated (ATT), which is the expected impact of remittances on the recipients:[3]

$$ATT = E(Y_{(D)} \mid D > 0) - E(Y_{(D=0)} \mid D > 0). \quad (1)$$

To measure impact of the program, we assume that income or expenditure has the semi-log functional form as follows:

$$\ln(Y_i) = \alpha + X_i\beta + D_i\gamma + D_i X_i\theta + \varepsilon_i, \quad (2)$$

where X and ε are observed and unobserved household variables, respectively.

Once the coefficients of (2) are estimated, ATT can be estimated using the following formula:

$$\hat{ATT} = \hat{E}(Y_{i(D)} \mid D_i > 0) - \hat{E}(\hat{Y}_{i(D=0)} \mid D_i > 0) = \frac{1}{n_r}\sum_{i=1}^{n_p}\left\{Y_i - \exp\left[\ln(Y_i) - D_i\hat{\gamma} - D_i X_i\hat{\theta}\right]\right\}, \quad (3)$$

where n_r is the number of households receiving remittances. The standard error of the estimates can be calculated using the Delta method or bootstrap technique.

A potential problem in estimating coefficients of variables in (2) is the correlation between remittances and the error term. It is possible that households who have advantageous conditions or motivation for higher income are more likely to have members abroad. To solve the endogeneity, I apply the fixed-effect regression to remove time-invariant errors which can be correlated with the receipt of foreign remittances.

It should be noted that equation (2) includes interaction between observed household variables and foreign remittances to capture the heterogeneous impact of remittances across the

[3] There are other parameters such as average treatment effect (ATE), local average treatment effect, marginal treatment effect, or even effect of "non-treatment on non-treated" which measures what impact the program would have on the non-participants if they had participated in the program, etc.

household variables. In this paper, I used two models with different interactions between remittances and explanatory variables to examine the sensitivity of impact estimates to interaction terms. In Model 1, I introduced interactions between remittances and most of explanatory variables. In Model 2, interaction terms that are not statistically significant at the 10% level in Model 1 were dropped. The regression results of Model 1 are presented in Tables A.1 in the Appendix.[4]

4.2. Measurement of remittances impact on household income and expenditure

In this paper, poverty and inequality are analyzed based on consumption expenditure. If the remittances can have impact on expenditure, it can also have impact on poverty and inequality. Poverty is often measured by three Foster-Greer-Thorbecke poverty indexes which can all be calculated using the following formula (Foster, Greer and Thorbecke, 1984):

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left[\frac{z - Y_i}{z}\right]^\alpha , \tag{4}$$

where Y_i is a welfare indicator (consumption expenditure per capita in this paper) for person i, z is the poverty line, n is the number of people in the sample population, q is the number of poor people, and α can be interpreted as a measure of inequality aversion.

When $\alpha = 0$, we have the headcount index H which measures the proportion of people below the poverty line. When $\alpha = 1$ and $\alpha = 2$, we have the poverty gap PG which measures the depth of poverty, and the squared poverty gap P_2 which measures the severity of poverty, respectively.

To measure the inequality, we use three common measures of inequality: the Gini coefficient, Theil's L index of inequality, and Theil's T index of inequality. The Gini index can be calculated from the individual expenditure in the population as follows:

$$G = \frac{1}{2n(n-1)\overline{Y}}\sum_{i=1}^{n}\sum_{j=1}^{n}\left|Y_i - Y_j\right| \tag{5}$$

where $\overline{Y}$ is the average per capita expenditure.

The value of the Gini coefficient varies from 0 when everyone has the same expenditure to 1 when one person has everything. The closer a Gini coefficient is to one, the more unequal is the expenditure distribution.

The Theil L index of inequality is calculated as follows:

$$Theil\_L = \frac{1}{n}\sum_{i=1}^{n}\ln\left(\frac{\overline{Y}}{Y_i}\right), \tag{6}$$

[4] Regression results of Model 2 are not reported in this paper, but readers who are interested in those can contact the author.

The Theil L index ranges from 0 to infinity, and the higher the value of Theil L, the higher the inequality is.

The Theil T index of inequality is calculated as:

$$Theil\_T = \frac{1}{n}\sum_{i=1}^{n}\frac{Y_i}{\overline{Y}}\ln\left(\frac{Y_i}{\overline{Y}}\right) \tag{7}$$

The Theil T index ranges from 0 (lowest inequality) to ln(N) (highest inequality).

Impact of the program on an index of poverty of the participants is expressed as follows:

$$\Delta_P = P(D>0,Y) - P(D>0,Y_{(D=0)}), \tag{8}$$

where the first term in the left-hand side of (8) is the measure of poverty in the presence of remittances. This term is observed and can be estimated directly from the sample data. However, the second term in the left-hand side of (8) is the counterfactual measure of poverty, *i.e.*, poverty indexes of the remittances recipients if they had not received the remittances. This term is not observed directly, and it is estimated using predicted expenditure from the fixed-effect regression.

Regarding to inequality, we measure the impact of remittances on inequality of the whole population. The impact on an inequality index is expressed:

$$\Delta_I = I(Y) - I(Y_{(D=0)}) \tag{9}$$

where $I(Y)$ is observed inequality which is calculated using the observed expenditure data. $I(Y_{(D=0)})$ is inequality in the absence of foreign remittances, which is estimated using predicted counterfactual expenditure in the absence of foreign remittances.

5. Empirical Results

Table 1 presents estimation results of the impacts of foreign remittances. It shows that foreign remittances have strong and positive impacts on both expenditure and income of the receiving households. According to Model 2, foreign remittances increased per capita expenditure and income of the recipients by around 12% and 31%, respectively.[5] Impact of remittances on income is much higher than on expenditure. The point estimates as well as standard errors are rather similar for the two models, indicating that the estimates are not very sensitive to inclusion of interaction terms between remittances and household characteristics.

The table also presents the estimates of the impact on poverty of the remittance recipients and inequality of the population. It shows that foreign remittances decreased poverty. The estimates are rather small but statistically significant. Due to foreign remittances, the headcount of poverty for the recipients was reduced by around 2 percentage points. Similarly, the program decreased the poverty-gap and poverty-severity indexes for the remittance recipients.

[5] 12 ≈ 100*770/6480; and 31 ≈ 100*2419/7821

However, the program did increase inequality, albeit at the very small magnitude. With the foreign remittances, Gini, Theil T and Theil L are all significantly higher than without the remittances. This is not a very surprising result, since the non-poor households tend to receive larger foreign remittances than the poor.

Table 1: Impact of foreign remittances

Outcome	Model 1			Model 2		
	With remittances	Without remittances	Effect of remittances	With remittances	Without remittances	Effect of remittances
Household welfare (VND thousand)						
Per capita expenditure	7250***	6480***	770***	7250***	6626***	624***
	[398]	[341]	[260]	[398]	[327]	[236]
Per capita income	10241***	7821***	2419***	10241***	7729***	2511***
	[471]	[712]	[684]	[471]	[458]	[379]
Poverty						
P0	0.0749***	0.1001***	-0.0252*	0.0749***	0.0960***	-0.0211*
	[0.0217]	[0.0254]	[0.0145]	[0.0217]	[0.0237]	[0.0127]
P1	0.0160***	0.0249***	-0.0089*	0.0160***	0.0244***	-0.0084**
	[0.0060]	[0.0072]	[0.0047]	[0.0060]	[0.0071]	[0.0042]
P2	0.0058***	0.0094***	-0.0037**	0.0058***	0.0089***	-0.0031*
	[0.0026]	[0.0030]	[0.0019]	[0.0026]	[0.0031]	[0.0017]
Inequality						
Gini	0.3531***	0.3482***	0.0049**	0.3531***	0.3493***	0.0038**
	[0.0053]	[0.0052]	[0.0019]	[0.0053]	[0.0049]	[0.0019]
Theil L	0.2036***	0.1994***	0.0042**	0.2036***	0.2003***	0.0033*
	[0.0061]	[0.0057]	[0.0022]	[0.0061]	[0.0056]	[0.0019]
Theil T	0.2191***	0.2121***	0.0069**	0.2191***	0.2135***	0.0056*
	[0.0076]	[0.0069]	[0.0034]	[0.0076]	[0.0067]	[0.0033]

* significant at 10%; ** significant at 5%; *** significant at 1%
Figures in parentheses are standard errors.
Standard errors are corrected for sampling weights and estimated using bootstrap (non-parametric) with 200 replications.
Outcome with foreign remittances are calculated using observed expenditure and income. Outcome without foreign remittances are estimates of counterfactual expenditure and income.

6. Conclusions

This paper investigates impact of foreign remittances on household welfare, poverty and inequality in Vietnam using Vietnam Household Living Standard Survey 2002-2004. It is found that the better-off households received a large proportion of foreign remittances. As a result, although foreign remittances increased remarkably income and consumption of the remittance-receiving households, their impact on poverty was rather small. My computations indicate that foreign remittances decreased the head count of poverty for the recipients by around 2 percentage points. Remittances also helped to decrease the poverty gap index and the poverty-severity index for the recipients, albeit at the very small magnitude. However, foreign remittances increased the inequality slightly, regardless of inequality measurements.

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Appendix

Table A.1: Fixed-effect regressions on per capita expenditure and income (Model 1)

Explanatory variables	Log of per capita expenditure		Log of per capita income	
	Coef.	Std. Err.	Coef.	Std. Err.
Foreign remittances (VND thousand)	0.0000592	0.0000152	0.0000404	0.0000221
Head professionals/technicians	0.0784880	0.0407328	0.1313401	0.0472936
Head clerks/service workers	0.0282887	0.0274306	0.1072074	0.0407773
Ratio of members younger than 16	-0.2389005	0.0555856	-0.4250840	0.0670287
Ratio of members who older than 60	-0.1579040	0.0692137	-0.1907282	0.0813516
Household size	-0.1262952	0.0207264	-0.1324134	0.0239301
Household size squared	0.0047243	0.0017371	0.0046869	0.0019543
Ratio of members with lower secondary school	0.1930682	0.0402861	0.1954359	0.0457773
Ratio of members with upper secondary school	0.4418969	0.0630874	0.3163194	0.0712603
Ratio of members with technical degree	0.6073417	0.0584631	0.5567661	0.0683317
Ratio of members with post secondary school	0.6388743	0.1060027	0.4791959	0.1159429
Household have working members	0.0743174	0.0726612	0.0917675	0.0805517
Ratio of members working in agriculture	-0.1300686	0.0295637	-0.2957267	0.0345704
Ratio of members working in industry	0.0082516	0.0318596	0.0810186	0.0351924
Ratio of working members	-0.0239665	0.0346049	0.2294380	0.0448323
Log of living areas (log of m2)	0.0831289	0.0168153	0.0910944	0.0199009
Living in semi-permanent house	-0.0391522	0.0195997	-0.0497047	0.0250483
Living in temporary house	-0.0908319	0.0257557	-0.1369227	0.0329807
Area of annual crop land (m2)	0.0000050	0.0000014	0.0000115	0.0000017
Area of perennial crop land (m2)	0.0000015	0.0000012	0.0000050	0.0000026
Area of aquaculture water surface (m2)	0.0000090	0.0000042	0.0000164	0.0000057
Area of forest crop land (m2)	0.0000011	0.0000008	0.0000024	0.0000014
Domestic remittances (VND thousand)	0.0000199	0.0000020	0.0000265	0.0000017
Pension (VND thousand)	0.0000131	0.0000031	0.0000285	0.0000034
Insurance (VND thousand)	0.0000634	0.0000156	0.0000732	0.0000166
Social allowance (VND thousand)	0.0000197	0.0000081	0.0000563	0.0000114
Foreign remittances * Head clerks/service workers	0.0000027	0.0000051	0.0000120	0.0000066
Foreign remittances * Ratio of members younger than 16	-0.0000153	0.0000062	-0.0000160	0.0000073
Foreign remittances * Ratio of members who older than 60	-0.0000160	0.0000068	-0.0000167	0.0000078
Foreign remittances * Household size	-0.0000084	0.0000021	0.0000046	0.0000026
Foreign remittances * Household size squared	0.0000008	0.0000002	-0.0000004	0.0000003
Foreign remittances * Ratio of members with lower secondary school	-0.0000116	0.0000057	-0.0000108	0.0000069
Foreign remittances * Ratio of members with upper secondary school	-0.0000207	0.0000083	-0.0000139	0.0000081
Foreign remittances * Ratio of members with technical degree	-0.0000190	0.0000074	-0.0000198	0.0000088
Foreign remittances * Ratio of members with post secondary school	0.0000112	0.0000178	-0.0000679	0.0000272
Foreign remittances * Ratio of members working in agriculture	0.0000020	0.0000021	0.0000092	0.0000030
Foreign remittances * Ratio of members working in industry	0.0000051	0.0000038	-0.0000059	0.0000057
Foreign remittances * Ratio of working members	-0.0000135	0.0000055	-0.0000087	0.0000058
Foreign remittances * Household have working members	-0.0000065	0.0000097	-0.0000229	0.0000090
Foreign remittances * Log of living areas	-0.0000014	0.0000021	-0.0000001	0.0000041
Foreign remittances * Living in semi-permanent house	-0.0000054	0.0000025	0.0000036	0.0000039
Foreign remittances * Living in temporary house	0.0000012	0.0000066	0.0000201	0.0000081

Explanatory variables	Log of per capita expenditure		Log of per capita income	
	Coef.	Std. Err.	Coef.	Std. Err.
Foreign remittances * Social allowance	1.52E-09	1.50E-09	1.48E-09	1.21E-09
Foreign remittances * Pension	-1.36E-10	6.70E-10	1.35E-09	8.10E-10
Foreign remittances * Area of annual crop land	3.58E-10	2.22E-10	-3.67E-10	2.43E-10
Foreign remittances * Area of annual crop land	-3.19E-10	1.42E-10	-3.46E-10	2.16E-10
_cons	8.1807350	0.0973316	8.2612820	0.1105689
Number of observation		8006		8006

Note: E-x means "multiplied by 10^{-x}", e.g. $-3.19\text{E}-10 = \frac{-3.19}{10^{10}}$.

The number of households in the panel data is 4003.

Source: Estimation from VHLSS 2002-2004.