

# Demographics and Saving Behavior of Households in Rural Areas of Vietnam: An Empirical Analysis

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## **Abstract**

*This paper studies the saving behavior of rural households in Vietnam from two aspects: volume of savings and methods of saving. Two econometric models are conducted, the first one is a panel data model, used to examine the determinants of household saving; and the second one is a multinomial logit model used to investigate how a household chooses the way to save. Both models are based on the life cycle theory of saving and the permanent income hypothesis. We find that the household head's age, education and gender are closely related to their saving behavior. And the impact of these variables takes different patterns between the two models. The results are useful for further research in forecasting household savings as well as in micro finance to find a better way of serving people who live in rural areas.*

**Keywords:** Demographics, saving behavior, households, rural areas, Vietnam.

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## 1. Introduction

Domestic saving, including household saving, plays an important role in economic growth, especially for countries in the process of capital accumulation like Vietnam. In the last two decades, total investment in Vietnam has been continuously rising from 34.2% in 2000 to 42% in 2010 (GSO), and is considered as one of the most important sources of Vietnamese economic growth (Nguyen Ngoc Son and Tran Thanh Tu, 2007). The amount of this capital comes from the savings of both the foreign sector and the domestic sector. Nguyen Ngoc Son and Tran Thanh Tu (2007) showed that savings from domestic households took a considerable proportion, by approximately 35%, of the total savings in the economy.

There are different theories to explain why and how people consume and save, among them, two dominant ones include: the life cycle hypothesis (Modigliani and Brumberg, 1954), and the permanent income hypothesis (Friedman, 1957). According to the both theories, people are optimizing their lifetime utility by smoothing their consumption over time according to their expectation about total lifetime income.

Empirical studies also stress the role of saving as a means for an individual to help him or her self overcome unexpected shocks such as illness, job loss or natural disaster that affects their income (Newman et al, 2006). In developing countries, especially in rural areas, where the micro-finance system and social welfare are still immature, household savings play an even more important role in people's lives, as they have not many choices for financing themselves in difficult times.

Another important aspect of household saving is the method of saving. In Vietnamese rural areas, households often use traditional methods to invest their money, such as private loans, buying gold or foreign currency and keeping them at home. These types of savings are not encouraged in a modern society: While private loans are not protected by laws and that can lead to fraud – in effect this has happened often in the past. Buying gold or foreign currency is a safe channel of saving but it does not contribute the resource to production activities, and hence does not help economic growth.

Based on these arguments, studying saving behavior of households in rural areas has practical meaning and policy implications. On the one hand, it helps to produce a better forecast of household savings, which can be served as an input for making decisions in the micro finance network to absorb the resource. On the other hand, knowing how people save will also help policy makers find out how to improve the operation of the microfinance network so that it can be more attractive to households.

This article is organized as follows: Section 2 presents a literature review on related studies. Section 3 is the empirical part, which provides two econometric models: the panel data analysis models to study the determinants of household savings, and the multinomial logit model to examine which factors affecting the choice of saving method. The final section draws some conclusions and makes some policy recommendations.

## 2. Theoretical foundation and empirical studies about household saving and methods of saving

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Empirical studies about household saving mainly based on two theories: permanent income hypothesis by Friedman (1957), and life cycle hypothesis by Modigliani and Brumberg (1954).

The permanent income hypothesis predicts that a person only changes his consumption pattern when a long-term change in his future income is expected, otherwise he just smooths consumption over time based on his lifetime income. According to this hypothesis, studies about saving and spending behavior can predict people's expectations about their future economic situation.

The life cycle hypothesis (Modigliani and Brumberg, 1954) states that individual saving patterns will change depending on the living stage of that individual. In general, a typical person experiences three stages in his life: young age stage, laboring age stage, and retirement age stage, and he is a net consumer in the first and the last stage, and a net saver in the middle stage.

These theories are the foundation of studies about saving behavior at the macro level as well as the household level. For instance, Doshi (1994) used data from 129 nations to conduct research about factors that affect saving ratio. The author used an econometric model with the saving ratio as the dependent variable, and a set of independent variables including: percentage of children under 14 years old, elders over 65 years old, average life expectancy, and other control variables such as average GNP or GNP growth. They found that apart from other covariates, age-structure variables are closely related to saving ratio, which is consistent with the life cycle hypothesis.

The same results are also found in other studies, such as by Jeffrey (2011), or Kim (2010) about household saving in the US.

In the case of developing countries that have rapid change in demographics and income, demographics are also considered as an important factor influencing saving ratio. Modigliani and Cao (2004), for example, have conducted a research on saving ratio in China during the period 1954-2000 and found that in addition to income, the ratio of laborers over children plays a significant role in saving behavior as well as explains the high saving ratio since China renovated its economy.

The above studies examine individual saving behavior at the macro level, in which demographic elements can be measured directly and reasonably as the proportion of people at each age in the economy. However, because of measuring at the macro level, the studies cannot examine the role of individual characteristics such as education, gender or personal income. As such, studies at the individual level or household level are called for. Along with this line is included a study by Abhijit Banerjee et al. (2010), in which the authors examine the household saving behavior in China using the 2008 data. In this study, the authors take a household as the unit, and use an econometric model to measure the effect of explanatory variables including demographic variables such as the household head's age, gender, education, and household age structure variables such as number of children, gender of the oldest child, or age of the youngest child. The result is also consistent with the findings at the macro level.

In Vietnam, there are some studies about

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household saving. One was done by Neuman et al. (2010). In this work, the authors use the data from a survey on access to Vietnamese households' resources collected in 12 provinces, in the years 2006, 2008 and 2010. The focus of this work is on the role of social organizations such as the farmers' union and women's union in household saving. The authors classify households into two groups: one that chooses the formal way of saving and the other that chooses the informal way of saving. In this model, they also include the variable "age", however, this variable takes only the form of power of order one. Hence it captures only the monotonic effect of age on saving behavior. This is not consistent with the life cycle hypothesis, in which the age effect is nonlinear: people save nothing at an early age, then save more at working age and save less at old age. Furthermore, although the data from this survey includes useful information, it does not include data on expenditure and the authors have to estimate it indirectly. Thus, the measure of saving in this work may not be precise.

Our study differs from the study of Newman in two points: first, we focus more on the role of the households' age structure, which represents for the life cycle hypothesis, hence the result may be more precise, and second, instead of using two ways of saving, we emphasize four ways of saving: loans, buying gold or foreign currency, banking deposit, and investments. This way of classification will provide a more comprehensive picture of the saving behavior of households. Furthermore, we use the data from VHLSS, which is nationwide. Therefore, we hope that this article will

contribute new insights to the literature of the study on Vietnam household saving.

### **3. Household savings and method of saving – models and estimations.**

In this section we will examine household saving from two aspects: the method of saving, and the volume of savings. We construct one model for each aspect: a multinomial logit model to investigate the issue of how a household chooses the way to save; and a panel data analysis model to examine the determinants of household savings.

Data used in this section come from the Vietnam Household Living Standard Survey (VHLSS) 2008 and 2006. The reason we do not use VHLSS 2010 is that the survey in year 2010 does not provide information that can be merged with data from previous surveys.

#### ***3.1. Descriptive analysis of household savings***

In general, the method of saving in Vietnam may be divided into 4 types: Private loans, Buying gold or foreign currency, Bank deposit, and Investment.

The four types of savings differ from one another in many aspects including the level of risk, the expected rate of return, liquidity and the matter of convenience. Hence, households make decision on how to save their money depending on their purpose for saving, their attitude toward risk and other household specific characteristics. The Table 1 shows some descriptive statistics of the four types of savings in the sample:

Table 1 shows that savings of an average household increased remarkably from year 2006 to year 2008: it nearly doubled in each

**Table 1: Descriptive statistic of 4 types of savings, in 2006 and 2008**  
(Unit: thousand Vietnam dong)

| 2008                  |          |         |     |                    |     |          |         |
|-----------------------|----------|---------|-----|--------------------|-----|----------|---------|
| Methods               | Mean     | Max     | Min | Standard deviation | No  | Total    | Percent |
| Private loans         | 11071.31 | 1000000 | 30  | 42555.02           | 798 | 8834905  | 15.70   |
| Gold-foreign currency | 14356.54 | 320473  | 100 | 23614.58           | 807 | 11585728 | 20.58   |
| Deposit               | 39022.35 | 900000  | 200 | 89836.77           | 437 | 17052767 | 30.30   |
| Investment            | 47622.06 | 1350000 | 100 | 126671.1           | 395 | 18810714 | 33.42   |
| 2006                  |          |         |     |                    |     |          |         |
| Methods               | Mean     | Max     | Min | Standard deviation | No  | Total    | Percent |
| Private loans         | 4611.477 | 300000  | 20  | 15704.47           | 996 | 4593031  | 15.62   |
| Gold-foreign currency | 9965.118 | 300000  | 100 | 20907.13           | 774 | 7713001  | 26.23   |
| Deposit               | 20302.84 | 300000  | 100 | 33791.06           | 401 | 8141439  | 27.69   |
| Investment            | 23766.2  | 700000  | 100 | 70765.37           | 377 | 8959857  | 30.47   |

type of saving. Looking at the data on income we realize that the increase in savings is nearly the same as the increase in income. It may imply that people expected a dim perspective in the economic situation in the future, and hence they saved nearly all the extra money that they earned in year 2008.

Table 1 also reveals that private loans and

buying gold – foreign currency were the most preferred channels of saving in both year 2006 and 2008: the number of households that chose the former was as much as double the number of households that chose the latter. However, year 2008 observed a shift from informal saving to formal saving in terms of volume of savings as well as the number of households.

**Table 2: Method of saving and age of household head in 2008, (Unit: %)**

| Age groups | Private loans | Buying gold-foreign currency | Deposit | Investment |
|------------|---------------|------------------------------|---------|------------|
| 1          | 40.49         | 32.39                        | 7.69    | 19.43      |
| 2          | 33.49         | 34.19                        | 12.30   | 20.02      |
| 3          | 34.51         | 32.39                        | 16.46   | 16.64      |
| 4          | 37.33         | 33.78                        | 15.56   | 13.33      |

Source: Author's calculation bases on VHLSS

Saving method may also depend on the attitude toward risk, which in turn may be closely related to age. Young people are considered to be more risk tolerant compare to the old (Morin and Suarez, 1983). As a household is taken as the unit of observation, we take the household head's age as the measure of age when making decisions on the method of saving of a household. This is a reasonable assumption as in the rural area the household head is often the decision maker for the household in big issues.

There are some remarkable findings according to Table 2. First, the proportion of investment in group 1 and group 2 are 19.43% and 20.02% respectively, which are higher than group 3 and group 4 (16.64% and 13.33%). It is concluded that younger households prefer to invest their money rather than older households. In contrast, the proportion of households choosing bank deposits in the older groups is higher than in the younger groups. Private loans and buying gold-foreign currency are preferred in all 4 types of saving. It implies that the formal channels of saving money, such as deposits and investment, are not used commonly in rural areas in Vietnam.

Gender may affect the way of saving, as females and males are different in attitude towards risk in which females are found to be

less risk tolerant than males (Booth and Nolen, 2009). The association between the gender of household head and types of saving is reported in Table 3.

The Chi-square test is applied to test the relationship between household's gender and types of saving. With probability  $p = 0.06$ , the results show that there is a connection between gender and types of saving. The data in Table 3 suggests that investing money is more preferred by male households than female households, while female households prefer saving more than male households.

Saving methods could also be influenced by the amount of household savings. Households with a small amount of money, such as 3-5 million VND, often has less incentive to deposit or invest, so they may choose to buy gold or foreign currency. The table 4 shows the distribution of saving methods that are based on the household's amount of money, in which the amount of savings is divided into 4 quintiles (namely q1, q2, q3, and q4), in which quintile 1 indicates 25% smallest amount and quintile 4 25% largest amount of savings.

Table 4 shows that private loans and buying gold or foreign currency are far more preferred by all quintile groups. This is illustrated by the high proportion of private loans and buying gold or foreign currency compared to the other

**Table 3: Method of saving and households' gender, 2008, (Unit: %)**

| <b>Gender</b> | <b>Private loans</b> | <b>Buying gold-foreign currency</b> | <b>Deposit</b> | <b>Investment</b> |
|---------------|----------------------|-------------------------------------|----------------|-------------------|
| Male          | 35.28                | 33.69                               | 12.41          | 18.62             |
| Female        | 34.50                | 31.95                               | 17.89          | 15.65             |

**Table 4: Types of saving and amount of savings (by quintile) (2008)**

| Qsavings | Private loans | Buying gold-foreign currency | Deposit | Investment |
|----------|---------------|------------------------------|---------|------------|
| q1       | 38.25         | 30.88                        | 10.60   | 20.28      |
| q2       | 41.92         | 34.13                        | 10.18   | 13.77      |
| q3       | 31.56         | 37.33                        | 15.11   | 16.00      |
| q4       | 29.00         | 37.36                        | 14.68   | 18.96      |

two types. There also exists differences between quintiles in choosing types of saving in which the poorer households tend to prefer private loans more than the richer households, and do not like buying gold – foreign currency as much as the richer households do.

With that statistical evidence, we now process to an econometric model to quantitatively evaluate the impact of each factor on household’s choice.

### 3.2. Quantitative analysis of household savings

Because the independent variable is the qualitative data with 4 different values, we use the multinomial logit model to examine the impact of factors that affect the saving’s methods of households.

The general form of multinomial logit model:

Assume that a dependent variable y can fall into J groups, and the probability for y to fall into group i can be written as:

$$P(y_i = 1) = \frac{e^{X_i\beta_1}}{\sum_{k=1}^J e^{X_i\beta_k}} ; \dots$$

$$P(y_i = J) = \frac{e^{X_i\beta_J}}{\sum_{k=1}^J e^{X_i\beta_k}}$$

Where:

i : the index of observations

X: vector of explanatory variables.

$\beta_j$ : vector of coefficients in equation j

In the multinomial logit model, the object of interest is the relative risk rate (rrr), which is calculated by the following formula:

$$rrr_{mn} = \frac{P(Y = m)}{P(Y = n)} = \frac{e^{X\beta_m}}{e^{X\beta_n}}$$

The relative risk rate shows the probability of choosing group m compared with the probability of choosing group n at given values of the explanatory variables X (normally at the average values of the X).

In this model, the following variables are used:

*Age*: Age of a household head, a categorical variable, taking values from 1 to 4 for a person from 20-35, 35-50, 50-65 and 65+ year of age, respectively. This variable is included to take into account the fact that young people may be more risk tolerant than old people.



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*Education:* Education of a household head, a categorical variable, taking value from 1 to 3 for a person with primary school education, high school education, and higher than high school education, respectively. This variable is a proxy for cognitive ability. People with better education may have better knowledge about how to use their money.

*Female:* Gender of a household head, taking value of 1 for female and 0 otherwise. This is also to take into account that females may be different from males in attitude toward risk tolerance.

*Formal:* Security status of a household head, taking a value of 1 if the person has social security, 0 if otherwise. An unsecured person may be more risk averse than a secured person, so they may have a different preference over the choice of saving.

*HH savings:* household savings, equal to household disposable income minus consumption, measured in thousands of VND.

*Hhsiz:* The size of households, which is calculated by the number of household's members.

The estimated results are given in the Table 5.

Table 5 consists of three panels, presenting the estimated results for option “*private loan*”, “*buying gold-foreign currency*”, and “*investment*” respectively. These results are to compare with the base option - “*bank deposit*”- which is left out. We consider “*bank deposit*” as the safest option and make it the base option to compare with other options<sup>2</sup>. The first column titled “*rrr*” indicates the marginal impact of each factor to the relative risk rate. The next

column presents the t-ratio of  $\beta_j$ , the reason for this data to be presented in this column is this: the coefficient in column “*rrr*” always take positive values, hence it does not tell us the direction of impact so we need to look at the numbers in column “*t*”.

From Table 5, we can draw some remarks as follows:

*Age1:* The coefficients on variable *age1* are negative and significant in all three panels. It means that there exist differences in choosing types of saving among households with a different household head's age. More concrete, panel 1 tells us that compared with group *age\_1*, the *rrr* of choosing “*private loans*” over “*bank deposit*” by group *age\_2* is lower by 0.38 (calculated by the average value of other variables in the model). Similarly, the *rrr* by group *age\_3* and group *age\_4* are lower than group *age\_1* by 0.30 and 0.34, respectively. The same tendency can be seen in panel 2 and panel 3 which show the impact of age groups on the *rrr* of choosing “*by gold-foreign currency*” and “*investment*” over “*bank deposit*”. Overall, it can be said that households with a young household head are more likely to choose “*bank deposit*” over other types of saving than the households with an older household head. At first glance, this result may indicate that young people are more risk averse, but it may reflect the fact that young people prefer a formal way of saving and choose to put money into the bank.

*Gender:* Table 5 shows that the coefficient on variable “*female*” is negative and statistically significant with the option “*buying gold-foreign currency*”, and insignificant with the other two options. It implies that females tend



**Table 5: The estimated results for option “private loan”, “buying gold-foreign currency”, and “investment”**

| <b>Variable</b>                       | <b>rrr</b> | <b>t<sup>1</sup></b> | <b>p</b> |
|---------------------------------------|------------|----------------------|----------|
| <i>Private loans</i>                  |            |                      |          |
| age_2                                 | 0.38       | -2.51                | 0.01     |
| age_3                                 | 0.30       | -3.05                | 0.00     |
| age_4                                 | 0.34       | -2.12                | 0.03     |
| Female                                | 0.72       | -1.24                | 0.22     |
| Edu_2                                 | 0.93       | -0.30                | 0.76     |
| Edu_3                                 | 1.15       | 0.23                 | 0.82     |
| Hhsavings                             | 1.00       | -0.46                | 0.65     |
| Formal                                | 0.61       | -2.15                | 0.03     |
| Hhsize                                | 1.08       | 1.10                 | 0.27     |
| cons                                  | 6.17       | 3.77                 | 0.00     |
| <i>Buying gold – foreign currency</i> |            |                      |          |
| age_2                                 | 0.47       | -1.90                | 0.06     |
| age_3                                 | 0.31       | -2.89                | 0.00     |
| age_4                                 | 0.35       | -2.00                | 0.05     |
| Female                                | 0.52       | -2.28                | 0.02     |
| Edu_2                                 | 0.59       | -2.29                | 0.02     |
| Edu_3                                 | 0.89       | -0.19                | 0.85     |
| hhsavings                             | 1.00       | -0.70                | 0.49     |
| Formal                                | 0.62       | -2.03                | 0.04     |
| Hhsize                                | 1.14       | 1.85                 | 0.06     |
| cons                                  | 5.19       | 3.36                 | 0.00     |
| <i>Investment</i>                     |            |                      |          |
| age_2                                 | 0.43       | -2.03                | 0.04     |
| age_3                                 | 0.22       | -3.45                | 0.00     |
| age_4                                 | 0.36       | -1.83                | 0.07     |
| Female                                | 0.67       | -1.27                | 0.20     |
| Edu_2                                 | 0.59       | -2.13                | 0.03     |
| Edu_3                                 | 0.49       | -0.98                | 0.33     |
| hhsavings                             | 1.00       | -0.70                | 0.49     |
| Formal                                | 0.81       | -0.80                | 0.42     |
| Hhsize                                | 1.27       | 3.15                 | 0.00     |
| cons                                  | 2.09       | 1.43                 | 0.15     |

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to choose “bank deposit” over “buying gold-foreign currency” more likely than males.

*Education:* the coefficients on variable “edu” show the same tendency for the whole three panels: it is significantly negative with *edu\_1* and insignificant with *edu\_2*. It implies that people with an education of level 0 and people with an education of level 2 have the same preference toward saving types, while people with an education of level 1 tend to prefer “bank deposit” to the other three types.

*Social Security:* the result shows that the insurance status of the household head is associated with the choice of saving. The coefficient on the variable “formal” is negative and significant in the first and the second panel, and insignificant in the third panel. It implies that households headed by an insured person are more likely to prefer “bank deposit” over “private loan” or “buying gold-foreign currency”.

The coefficient on “hhsavings” is insignificant in all three panels, and that on “hhsizes” is positive and significant in the last two panels. It may imply that the way a household chooses to invest does not depend on the total amount of their savings, but savings per head.

To evaluate the impact of factors on the households’ saving, we use the following model:

$$\text{Consumption}_{it} = \beta_1 = \beta_2 \text{Age}_{it} + \beta_3 \text{pt}_{1it} + \beta_4 \text{pt}_{2it} + \beta_5 \text{pt}_{3it} + \beta_6 \text{income}_{it} + \beta_7 \text{income2}_{it} + \beta_8 \text{Edu}_{it} + \beta_9 \text{Inflation}_{it} + \beta_{10} \text{hhsizes}_{it} + c_i + u_{it}$$

The use of consumption as the dependent variable instead of savings is just for convenience of explanation.

Where *i* and *t* are the index of household

and time, other variables are defined as follows:

*Consumption:* (unit: thousand VND/ year) household consumption

*Age:* Age group of a household head, a dummy variable which takes a value of 1 for the age from 20 to 35, a value of 2 with the age from 35 to 50, a value of 3 with the age from 50-65, and a value of 4 when the age is greater than 65.

*Other variables of age groups:*

*Pt1:* number of dependents in a household under five years old.

*Pt2:* number of dependents in a household aged from 5 to 15

*Pt3:* number of dependents in a household aged above 65

*Working age:* number of people aged from 16 to 65, which is the base group, so is dropped from the model.

*Hhsizes:* size of households, which is calculated by the number of household’s members.

*hhincome:* household disposable income, unit: thousand VND

*hhincome2* = *hhincome*<sup>2</sup>: this variable is included in the model to control the nonlinearity between income and saving. According to the saving theory, the saving rate generally is U-shaped, in which very rich households or very poor households often have a low saving rate, while the middle households may have a higher savings rate.

*Edu:* Education of a household head, a dummy variable taking the value of 1 for people who have a primary degree or lower, value of 2 for people who have a high school degree,

**Table 6: Hausman test for fixed effect model versus random effect model**

|           | (b)<br>fe | (B)<br>. | (b-B)<br>Difference | sqrt(diag(V_b-V_B))<br>S.E. |
|-----------|-----------|----------|---------------------|-----------------------------|
| age_2     | -1145.1   | -458.9   | -686.2              | 1079.9                      |
| age_3     | 94.2      | 637.3    | -543.1              | 1419.8                      |
| age_4     | -1038.8   | 1649.0   | -2687.8             | 1902.7                      |
| pt1       | -2388.2   | -3072.2  | 684.0               | 672.8                       |
| pt2       | -1299.1   | -2314.3  | 1015.2              | 508.6                       |
| pt3       | 1685.3    | -690.0   | 2375.3              | 1022.5                      |
| hhszise   | 3885.4    | 3153.2   | 732.2               | 310.0                       |
| hhincome  | 0.1       | 0.2      | -0.1                | 0.0                         |
| hhincome2 | 0.0       | 0.0      | 0.0                 | 0.0                         |
| edu2      | 85.2      | 948.4    | -863.2              | 453.8                       |
| edu3      | 2567.9    | 3265.9   | -698.0              | 1431.2                      |
| inflation | 154.4     | 162.0    | -7.6                | 37.8                        |

Test: Ho: difference in coefficients not systematic

$$\chi^2(10) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 32.66$$

$$\text{Prob}>\chi^2 = 0.0003$$

and value of 3 for people who have a degree higher than high school.

*Inflation:* The inflation rate in 2008, it was very high at around 20%, this may affect household saving.

There are other variables which are included into the model, such as gender or security status of household head. However, these variables are not statistically significant and are dropped out.

We estimate three models for three cases: households with a male head, households with a female head, and the full data set. The Hausman test indicates that the fixed effect model is more appropriate, which is expected

as it is more likely that there exist some household specific characteristics that may affect household consumption but are unobserved such as the habit of consumption or risk aversion attitude. The result is presented in Table 6.

The estimated results of fixed effects model are shown in Table 7.

From Table 7 it can be seen that:

*Age:* The coefficients on the variable “age” are statistically insignificant in the three models with the exception of age\_4 in the model with a female head. It may imply that consumption depends mostly on the need of the whole household and not the gender of the head. This is consistent with the normal prac-

**Table 7: Households consumption and its determinants**

| Variable | female1   | male1    | full1    | Variable  | female1  | male1    | full1    |
|----------|-----------|----------|----------|-----------|----------|----------|----------|
| Age_2    | -1367.690 | -1238.54 | -1145.14 | Income    | 0.092    | 0.107    | 0.132    |
|          | 0.734     | 0.246    | 0.313    |           | 0.393    | 0.000    | 0.000    |
| Age_3    | -2963.580 | 119.172  | 94.206   | Income2   | 1.45e-06 | -5.7e-08 | -6.9e-08 |
|          | 0.546     | 0.932    | 0.948    |           | 0.015    | 0.000    | 0.000    |
| Age_4    | -12676.80 | 2209.375 | -1038.77 | Edu_2     | -3071.6  | 729.037  | 85.160   |
|          | 0.034     | 0.252    | 0.598    |           | 0.122    | 0.174    | 0.881    |
| Pt1      | -2434.601 | -2822.10 | -2388.21 | Edu_3     | 8759.729 | -224.773 | 2567.935 |
|          | 0.329     | 0.000    | 0.001    |           | 0.035    | 0.877    | 0.077    |
| Pt2      | -4997.972 | -928.381 | -1299.11 | Inflation | 350.064  | 72.998   | 154.403  |
|          | 0.012     | 0.060    | 0.014    |           | 0.001    | 0.059    | 0.000    |
| Pt3      | 13545.078 | -2104.65 | 1685.259 | Cons      | -42708   | -4728    | -17099   |
|          | 0.000     | 0.037    | 0.107    |           | 0.004    | 0.380    | 0.001    |
| Hhsize   | 5055.092  | 3693.304 | 3885.429 | N         | 946      | 3995     | 4941     |
|          | 0.000     | 0.000    | 0.000    |           |          |          |          |

tice in the Vietnamese rural area in which a female adult may take care of the daily consumption for the whole family, and this person may be or may be not the household head. Among households that have a female head, who is likely to take care of the household consumption, it can be seen that the household head's age may have an effect on consumption and hence saving: a household with an older head consumes less and saves more, conditional on other variables in the model.

*Dependency ratio:*

The coefficient of variable  $Pt_{kit}$  ( $k=1,2,3$ ) indicates the change in household consumption if the household has one more person in age group  $k$  and one person less of working age. The coefficients on  $Pt_{1it}$ ,  $Pt_{2it}$  and  $Pt_{3it}$

are all statistically significant in the three models, with some exceptions. It means that the age-structure of a household has an effect on household savings.

One interesting point that can be made is that the priority of consumption changes in households with female heads and that with male heads: while female heads put more priority on the elderly (coefficient on  $pt3$  is positive), the male heads put more priority on working people (coefficients on  $pt1$ ,  $pt2$  and  $pt3$  are all negative).

*Income:* The coefficient of a variable income is significant in the last two models and is significant in the first model. This could be the consequence of multicollinearity between income and income2 (the correlation

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coefficient between two variables is 0.8). The coefficient on Income2 is positive and significant in all three models, meaning that the marginal propensity of consumption is not decreasing but increasing. It is consistent with the fact that the standard of living in rural areas is still low, and people in general are still in need of consuming much more.

*Education:* The results show that for households with a female head, a higher education leads to more consumption and hence less savings, *ceteris paribus*. For households with a male head, the relationship is not significant.

#### 4. Conclusions and recommendations

This paper studies the saving behavior of rural households in Vietnam from two aspects: how much and by which method they save.

We find that people in rural areas still far prefer informal ways of saving, include private loans and storing of gold – foreign currency over formal ways such as bank deposit or

investment. As these informal ways of saving are not encouraged, a better micro finance system is indeed called for.

The results also show that the way people save is not random but closely associated with different characteristics of the household head and age structure of the household. So policy makers should take this into account when forming policies related to the micro finance network in order to encourage people to use the formal way of saving.

The empirical part of this paper on determinants of saving, shows that household saving depends on its age-structure, apart from other social-economic factors. And the impact of young dependents may be different from that of old dependents. The paper gives a significant policy implications to make forecasts about household savings in the future which is an important factor to plan the policies for sustainable growth, especially when the age-structure in Vietnam is changing quite fast.

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#### Notes:

1. The value in column t is the estimated results of , thus their signs may be not same with the value in column rrr.
2. The choice of base option is a matter of convenience only and has no effect on results.

#### References

- Banerjee, A, Nancy Qian (2010), *The life cycle model and household savings: micro evidence from Rural China*, Mimeo Yale University.
- Booth, A. L., & Nolen, P. J., (2009), 'Gender Differences in Risk Behavior: Does Nurture Matter? IZA', Discussion Paper No 4026.
- Carol Newman, Finn Tarp, Katleen Van Den Broeck (2012), 'Social Capital, Network Effects and Savings in Rural Vietnam', Working Paper No. 2012/39, United Nation University.

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- Doshi, K (1994), 'Determinants of saving ratios, international comparison', *Contemporary Economics Policy*, 12-37, n0 45.
- Friedman, M. (1957), *A Theory of the Consumption Function*, Princeton: Princeton University.
- Jeffrey M. Gough (2011), 'Determinants of the U.S. Household Saving Rate: An Econometric Analysis', *Issues in Political Economy*, Vol 20, 2011, 28-44.
- Kim Myong Hoan (2010), 'The determinants of personal savings in the US', *Journal of Applied Economic Research*, 26(5).
- Modigliani, F., and Cao, S.L (2004), 'The Chinese Saving Puzzle and the Life-Cycle Hypothesis', *Journal of Economic Literature*, Vol. XLII (March 2004), pp. 145–170.
- Modigliani, Franco, and Richard H. Brumberg, (1954), 'Utility analysis and the consumption function: an interpretation of cross-section data', in Kenneth K. Kurihara, ed., *Post-Keynesian Economics*, New Brunswick, NJ. Rutgers University Press, Pp. 388–436.
- Morin, R. A. and A. Fernandez Suarez (1983), 'Risk Aversion Revisited', *The Journal of Finance*, 38(4), 1201-1216.
- Newman, C., et al (2006), 'Household savings in Vietnam: insights from a rural 2006 survey', *Vietnam Economic Management Review*, vol3, n01, pp. 34-40.
- Nguyen Ngoc Son and Tran Thanh Tu (2007), *Domestic and foreign financing for economic growth in Vietnam*, Report, Vietnam Development Forum.