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The Impact of Household Saving on Development of Rural Livelihoods:
Evidence from Luang Prabang, Northern Laos

Khensavath SOUKSAVANH



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Evidence from Luang Prabang,
Northern Laos**

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List of Abbreviations

- FFIS : Formal financial institutions
- IFIS : Informal financial institutions

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Abstract

This study examined household saving patterns, its determinants and contribution to the development of rural livelihood in Luang Prabang province. The data of 312 households was collected by structured questionnaires and interviews in 2013 by adopting a simple random technique. Using descriptive statistics, OLS regression and the Likert rating scale, the results show that the majority of rural households tend to save more in forms of cash at home and village savings group than other patterns. Many factors were also found to influence rural household savings. Males and non-farm household heads significantly rise household saving, whereas, household size significantly reduces savings level of households. The study supports the existence of the life cycle hypothesis in savings pattern. Moreover, household saving was found to contribute to the improvement of health status, and agriculture production investment, but is less important to children education and agricultural modernization.

1. Introduction

Lao PDR has achieved significant progress in economic development since the initiation of market-oriented economic reforms in the late 1980s. As a result, the incidence of poverty has declined steadily over the past decades, from 46% in 1992 to 26% in 2010. However, Lao PDR remains one of the poorest countries in the region with an estimated per capita income of US\$1,320 in 2012. The pattern of poverty largely depends on the geographical location. The north of the country continues to lag behind other regions, and has a higher level of poverty head count at 52% in 2011 as compared to 27% and 21% in the central and Southern regions respectively. The 7th five year National Socio-Economic Development Plan (NSEDP) over the period of 2011-2015 targets a graduation from the Least Developed Country status by 2020. The National Program for Rural Development and Poverty Eradication (NPRDPE), which is a key input to the NSEDP, aims to reduce the proportion of people living below the poverty line to less than 10%, and to expand credit to people for income generation activities (GOL, 2011).

According to economic theory, a household's saving is income that is not consumed immediately through the buying goods of good or services. Household income is directly relevant to national savings and influences it significantly, providing a buffer to help people cope in times of financial crisis and insuring against times of shock. Indeed, it is very important in the development of industries, financial system and economic growth. There are several examples from America, China, Germany, Japan and Korea, which have a high savings rate and, hence, achieved a high economic growth. Currently, the national development goal of the Lao government is to liberate the country from the group of least developed Countries (LDCs) by the year 2020. While balancing the economy, in order to ensure an economic growth of 8% per year to support the 7thNSEDP (2011-2015), a huge amount of funding would be required for the total investment. However, current total domestic saving is still very small. Under this situation, household savings are very important to the increase of investment. The current accessibility to credit is also a major problem for Lao people. Only a small percentage of rural households can access loans and saving services from state owned banks, semi-formal structures, project initiatives and the informal sector (GOL, 2011). Informal Financial Institutions (IFIS) are found in all parts of the country

while almost all Formal Financial Institutions (FFIS) are located in urban areas of the districts in the provinces. A wide range of credit facilities is provided by these FFIS. It is important that policy makers should respond to the fundamental question of how to mobilize household savings and turn it into national rural development. Therefore the main objectives of this research is to examine the pattern of household savings in rural areas, determinants of household savings and the contribution of household savings in the development of rural livelihoods, through a case study of Luang Prabang (LPB) province. This province is chosen because it is one of the seven provinces in the northern part of Laos where the majority of households achieved the fastest economic growth in the region as shown in Table 1.

Table 1. Poverty reduction in the northern Laos

Provinces Name	Poverty				Reduction
	Rate %	Rate %	Rate %	Rate %	Rate %
	1992/93	1997/98	2002/03	2007/08	1992-2008
Phongsaly	72.0	57.9	50.8	46.0	26.0
Luangnamtha	40.5	51.1	22.8	30.5	10.0
Oudomxay	45.8	66.1	45.1	33.7	12.1
Borkeo	42.4	38.9	21.1	32.6	9.8
LuangPrabang	58.5	40.8	39.5	27.2	31.3
Hourphanh	71.3	71.3	51.5	50.5	20.8
Xayabouly	22.4	17.7	25.0	15.7	6.7

Source: LECS series (1992/93 to 2007/08)

Pakxuang, Muangkhai, Namtountay, Nayangnuer, Phonthong and Thapho villages were selected from three districts in the province as they are pilot areas based on the provincial development plan (Provincial Socio-Economic Development Plan, 2013). These villages have basic infrastructure with the potential to be developed into small towns or sub-urban areas in the near future. The remaining parts of the paper are structured as follows.

Section 2 reviews the related literature. Section 3 describes the survey data and the research methodology in the study. Section 4 shows the analysis of the results and discussion. The paper ends with some concluding remarks and recommendations in Section 5

2. Review of Literature

Studies on the saving behavior using urban household information in advanced countries have led to the development of useful theories. In one of the earliest attempts Keynes (1936) postulated that savings depended upon disposable income, this included three other post-Keynesian theories. Duesenberry (1949), through his relative-income hypothesis forwarding the consumption/saving as a function of the ratio of current income to the previous level of income, Friedman (1957) argued that savings was influenced by both permanent and transitory income as well as the present level of wealth. Ando and Modigliani (1963) stated that young people earned less and saved very little, but they saved more during middle age and then started to decline again after retirement.

Furthermore, Deaton (1989) suggested that previous theories might be of limited use in developing countries where households tended to be larger than households in developed countries. The household might have a stationary demographic structure: old people as they died were replaced by younger generations. Such a household has no need for “Hump” or retirement savings, income is inherently uncertain and cyclical although households are myopic for survival, they still have to save for consumption in the near future and also individuals often save small amounts at frequent intervals to smooth over the income flow, rather than accumulate or save for retirement. These four traditional theories and their variants have been extensively used in empirical studies focusing on household savings behavior in developed and developing countries will be reviewed here. Edwards (1996) showed that the proportion of the working population relative to that of retired persons is positively related to savings in Latin America. Malapit (2009) studied the determinants of household pooling within households in Thailand and found that savings had a significant positive increase with age, but tended to decline when the age crosses a certain limit, a finding consistent with the life cycle hypothesis. Chhoedup (2013) examined the determinants of household savings and testing the life cycle hypothesis, where age was considered and found it to be significantly reduced. The results showed the coefficient of age to be significantly positive, as well as age square to be significantly negatively associated with household savings in Bhutan. Chowa et al (2012) found that age had a positive relationship with household savings in Uganda. Burney and Khan (1992), Brata (1999), Abdelkhalek et al (2009), Rehman et al (2010), Gedela (2012) and Teshome et al (2013)

found that their studies supported the life cycle hypothesis, age had positive and age square a negative relationship to household savings, however was insignificant. It explains a non-linear relationship between age and household savings in Pakistan, Morocco, India and Ethiopia respectively. Kelly and Williamson (1968) examined savings behavior within age groups in Indonesia and the result confirmed the aspect of the life cycle hypothesis with exception of the insignificant results in the 40-49 year old cohort, the MPS does indeed increased as households age.

Alessie et al (2005) showed that the child's income share had strong positive effects on the household saving rate from Italy and the Netherlands. Kibet et al (2009) investigated the factors that influenced savings among households of teachers, entrepreneurs and farmers in rural areas of Kenya and found that age had a negative influence on household savings among them. Obayelu (2012) found that the positive relationship between the savings rate and age-squared implied that in the long-run from Kwara state in Nigeria. Sebhatu (2012) identified the determinants of savings behavior of cooperative members from Tigray region in Ethiopia and found that the age of the members had a negative association with savings and Shitu (2012) found that the age of the household head had a negative coefficient, which implied the higher the age the smaller amount of savings in South-Western Nigeria. Household size (Rehman et al, 2010), and the dependency ratio (Unny, 2004; Chhoedup, 2012) showed a negative relationship with household savings. Income (Khan et al, 2009; Abdelkhalek et al, 2009), Sex (Brata, 1999; Kostakis, 2012) and education of the household head (Shitu, 2012; Teshome et al, 2013) found a positive impact on household savings. Particularly, Kelley and Williamson (1968) found that government employees saved more than farmers in Indonesia. However, Kibet et al (2009) argued that entrepreneurs saved more than teachers in rural areas of Kenya. The theories and empirical studies have thus shown mixed results. Therefore, past studies are still open for additional studies and debate

3. Research Methodology

3.1 Data Collection

The data of 312 households was collected by structured questionnaire, interview were conducted in 2013 by adopting a simple random technique. Secondary data was collected from various sources such as annual reports from the selected villages and the provincial department of planning and investment in Luang Prabang province.

3.2 Data Analysis

Data analysis was processed in three steps that include descriptive statistics, multivariate analysis and a Likert rating scale. In the multivariate analysis, the study was based on the life cycle hypothesis postulated by Ando and Modigliani (1963). Multiple Regression for modeling the relationships between two or more variables was employed as a statistical method as Gedela (2012), Sebhatu (2012) and Chhoedup (2013) used Ordinary least squares method to analyze their data.

$$S = \alpha + \beta_1 \text{Age} + \beta_2 \text{Agesq} + \beta_3 \text{Sex} + \beta_4 \text{Edu} + \beta_5 \text{Occu} + \beta_6 \text{Dep} + \beta_7 \text{Hous} + \beta_8 \text{Inc} + \mu$$

Where, α is intercept, β_i 's are vectors of coefficients, μ is stochastic random term and $i = 1, 2, \dots, n$. The variables that influence "S = household saving" are Age = Age of the household head, Age square = Age of the household head over 60 years old, Sex = Sex of the household head, Inc = Total income of the household, Educ = Education level of the household head, Occu = Occupation of the household head, Dep = Dependency ratio and Hous = household size.

Table 2. List of variables used in household saving analysis.

Variables	Description of Variables	Expected Sign
<u>Dependent Variable</u>		
S	A continuous variable used for the household saving in Kip	
<u>Explanatory Variables</u>		
Age	A continuous variable used for Age of the household	Positive

Variables	Description of Variables	Expected Sign
	head in years	
Agesq	A continuous variable used for Age of the household head over 60 years	Negative
Inc	A continuous variable used for total income of the household in Kip	Positive
Educ	A continuous variable used for education of household head in years	Positive
Occu	A dummy variable for occupation of household head Government employees = 1, others = 0	Negative
Sex	A dummy variable used for Sex of household head. Female = 0, Male = 1	Positive
Dep	A continuous variable used for dependency ratio in the household	Negative
Hous	A continuous variable used for household size in person's numbers	Negative

The Multiple linear regression model and a typical five-point Likert rating scale was used in the area of the contribution of household savings in development of rural livelihoods to rate the portable hole on five aspects: (I) education support, (II) health and longevity, (III) agriculture modernization investment, (IV) household business investment, and (V) agriculture production investment. The household heads were asked to rate the score whether or not it was very important (4.21–5.00), important (3.41–4.20), neutral (2.61–3.40), less important (1.81–2.60) and much less important (1.00–1.80).

4. Results and Discussion

4.1 Pattern of Rural Household Saving

Savings can be the accumulation of real assets or financial assets. Real assets are less useful for rural industrial and financial system development. Since it is not liquid, the weakness of savings in real assets is an important reason to introduce financial institutions such as banks that are strategic in order to increase financial savings that can be provided as loans. Interestingly, research findings reveal that the most popular pattern of savings among rural households in the study areas is cash saving at home, the majority (99.04%) kept their money at home as show in Table 3. It is worth noting that it is difficult to identify the exact amount of saving in cash, which is very often mixed with cash for daily consumption. Nevertheless, the research question we are asking is whether or not villagers prefer to save in the form of

cash. Moreover, the finding here are consistent with the previous report by the Asian Development Bank (2006) that almost 90% of rural households held cash savings for emergency reasons.

Secondly, 44.87% of households saved their money in the village savings group as household heads prefer to save at the nearest financial institution which did not limit the amount of savings and had a higher return rate than banks. The least popular pattern of savings found in this study was saving in banks (7.37%). This data shows a minor increase from the findings by the Asian Development Bank (2006) that less than 5% of rural households deposited money in the banks. Why did households in rural areas not save money in the banks? There were multiple reasons for this, including the distance of the financial institution that is far from home; interest rates at banks that are lower; the difficulty of withdrawing money when needed; the low household income and the difficulty to accessing banking services.

Overall the findings here are similar to the current literature. Amu and Amu (2012) found that the most popular form of rural household savings in Ghana was keeping their money at home as it was convenient for any emergency situation and the least popular form of saving was saving in banks because banks were not easily accessible and household had low income. Obayelu (2012) also confirmed that the majority of rural household heads in Nigeria saved within the household while the least saved at banks. Brata (1999) showed that rural households in Bantul save their money in non-banking financial institutions than banking institutions. Newman et al (2008) and Ike and Umuedafe (2013) found that the largest proportion of household heads used informal forms of savings more than formal financial institutions in Vietnam and Nigeria, respectively. Singh (2011) confirmed that rural households in Manipur prefer to save their money in the informal financial sector more than saving at commercial banks, the post office, insurance or government securities. Teshome et al (2013) also found that rural households in Ethiopia saved irrespective of their low-income mainly with informal saving institutions, demonstrating a high potential for using formal saving institutions.

4.2 Relationship between Age and Household Saving

Results of this study revealed that household heads aged between 25-29 years had low savings. The saving increased between the ages of 30-39 years and reached a peak between

the ages of 40-59 years, then it started to decline again from the age of 60 and over. The highest saving of households were the ages between 40-59 years. Figure 1 below indicates that household heads were able to save more because they were in the economically active age bracket. This is consistent with the Life cycle hypothesis explanation that individuals in their middle ages save more than others while their savings decrease as they attain old age.

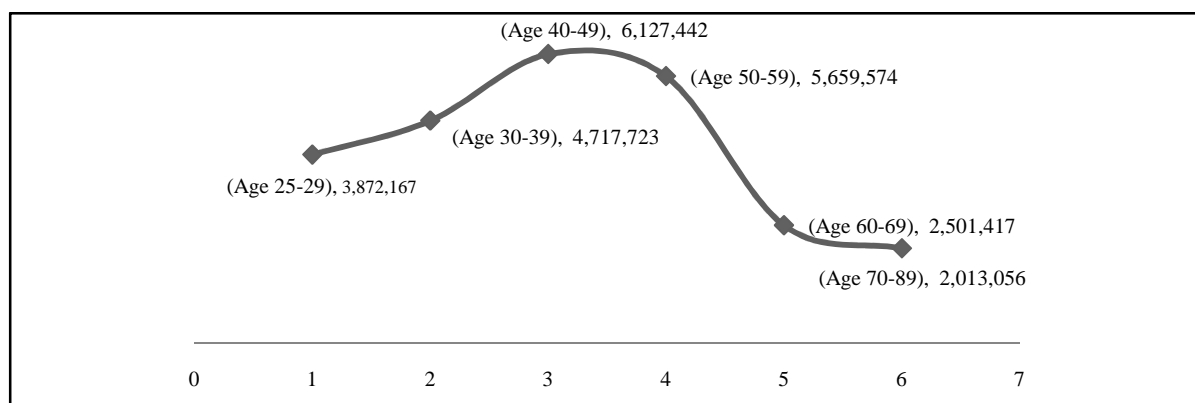


Figure 1. Relationship between age and household saving

Source: Author's field survey, 2013. Note: Average saving is Kip [1 USD = 8,000 Kip]

Table 3. Household Saving Patterns

Saving Patterns	Households	Percentage	Mean	Minimum	Maximum	Saving Amounts
Cash saving at home	309	99.04	1,389,159	50,000	10,000,000	430,450,000
Jewelry	51	16.35	5,003,393	800,000	8,000,000	280,190,000
Property	48	15.38	3,766,667	100,000	10,000,000	158,200,000
Rotating saving	70	22.44	2,747,972	120,000	24,000,000	195,106,000
Loans	24	7.69	5,395,238	300,000	12,000,000	113,300,000
Social insurance	65	20.83	367,692	60,000	2,000,000	23,900,000
Livestock	89	28.83	2,573,407	120,000	12,000,000	234,180,000
Village Saving Group	140	44.87	767,381	60,000	20,000,000	106,666,000
Bank deposit	23	7.37	3,910,400	240,000	20,000,000	97,760,000
Others	23	7.37	1,026,538	35,000	3,000,000	26,690,000

Source: Author's field survey, 2013. Note: Saving in Kip [1 USD = 8,000 Kip].

4.3 Descriptive Statistics of the Independent Variables

Descriptive statistics explain the mean, standard deviation, minimum and maximum of the data series in the pooled surveyed areas namely, Luang Prabang, Nambark and Phonxay districts. Table 4 presents average household saving at 4,879,343 kip, income at 33,300,000 kip, age of household head at approximately 45 years, household size at 5,40 persons, and education attainment of household head at 5,72 years. The dependency ratio is 0.43 while maximum value of saving is 26,000,000 kip, income is 71,800,000 kip, age of household head is 89 years old, household size is 13 persons, education level of household head is 18 years and the dependency ratio is 0.87 with the minimum value of saving of 300,000 kip, income of 8,428,000 kip, age of household head at 25 years, and household size of 1 person. Education of household head and the dependency ratio are 0 respectively in total areas.

Table 4. Descriptive statistics of the independent variables

Total areas	Obs	Mean	Std. Dev.	Min	Max
S	312	4,879,343	3,963,981	300,000	26,000,000
Age	312	45.09936	12.78865	25	89
Hous	312	5.403846	2.17048	1	13
Sex	312	0.9326923	0.2509566	0	1
Edu	312	5.727564	3.670445	0	18
Occu	312	0.0833333	0.2768294	0	1
Dep	312	0.4371693	0.2092704	0	0.875
Inc	312	33,300,000	10,300,000	8,428,000	71,800,000

Source: Field survey, 2013

4.4 Correlation Matrix

The correlation matrix examines the relationship among independent variables, and also indicates the problem of “Multicollinearity”. If the coefficient of correlation between two explanatory variables has an absolute value above or equal to 0.80 that means it has a problem of Multicollinearity (Gujarati, 1995). Our selection of independent variables showed

all values at less than 0.56. Hence, there is no Multicollinearity among the independent variables.

Table 5. Correlation among independent variables

Variables	S	Age	Hous	Sex	Edu	Occu	Dep	Inc
S	1							
Age	-0.1603	1						
Hous	-0.0412	0.1182	1					
Sex	0.1555	-0.2073	0.1091	1				
Edu	0.3199	-0.2856	-0.1577	0.2034	1			
Occu	0.1656	-0.144	-0.1097	0.081	0.4401	1		
Dep	0.0158	-0.2762	0.4172	0.0319	-0.0054	0.0285	1	
Inc	0.566	0.0097	0.5046	0.1216	0.1704	0.0199	0.2721	1

Source: Field survey, 2013

4.5 The Determinants of Rural Household Saving

The relationship between savings and its determinants was estimated using OLS. The results of the F-test are significant at 1% in all areas, meaning that the model specifications can explain the determinants of household savings as shown in Table 6. This study revealed that there was a positive relationship between age and household savings in all models; however, they were not significant. This finding shows that the Life Cycle hypothesis observed in the previous section may not be a very strong phenomenon in the surveyed areas. Age squared was significant at a 5% negative effect in Nambark and total areas, and there was less insignificant to household saving which explains a non-linear relationship between age and household savings. When age of the household head increased by 1 year, the amount of savings increased by 19,227 Kip, 40,381 Kip and 6,914 Kip in Luang Prabang, Nambark, Phonxay respectively and 12,592 Kip in total areas, and then declined around -26,249 Kip in Nambark, -38,702 Kip in Luang Prabang, -22,127 Kip in Phonxay and -25,973 Kip in total areas per year. As the household head became older (the threshold level of age was calculated at 60 years and over), his experience increased year by year, earned more income and ultimately saved more. At the same time, when the head's children have grown up to the head's own age, they are able to work and earn together, but after the age of 60 years most household heads will be retiring. For this reason, the saving level ultimately declined due to a

decrease in economic participation of one household member. Similarly, Burney and Khan (1992), Brata (1999), Malapit (2009), Rehman et al (2010), Gedela (2012) and Chhoedup (2013) found that the age structure was positively related to household savings.

Table 6. Regression estimates for determinants of rural household saving

Variable	Total Areas	Luang Prabang	Nambark	Phonxay
Age	12591.69 (0.65)	19226.7 (0.35)	40381.39 (1.47)	6913.641 (0.23)
Agesq	-25973.33* (-2.6)	-38701.52 (-1.62)	-26248.54* (-1.91)	-22127.24 (-1.29)
Hous	-789870.7*** (-7.76)	-310007.2 (-1.1)	-1029870*** (-6.94)	-875093.3*** (-4.12)
Sex	990175.8* (1.95)	1633567 (1.54)	770317.5 (1.05)	613213 (0.83)
Edu	22496.25 (0.42)	270234.5* (2.67)	-97256.84 (-1.3)	77005.16 (0.72)
Occu	1346323* (1.92)	-333569.2 (-0.22)	1444665 (0.91)	244106.5 (0.21)
Dep	-1327768 (-1.54)	-3060489 (-1.6)	-934720.6 (-0.81)	-1095167 (-0.69)
Inc	0.2858406*** (10.28)	0.198642*** (4.62)	0.3334464*** (8.76)	0.3124946*** (4.97)
Constants	-1300401 (-1.18)	-2316015 (-0.77)	-2730902* (-1.71)	-295995.5 (-0.19)
F-test	26.46***	11.96***	12.78***	18.62***
Observations	312	66	165	81

Source: Author's field survey, 2013. Note: Heteroskedasticity-Robust Standard Error is applied in equations.

T-statistics in parentheses. * 10%, ** 5% and *** 1% indicates significant level.

The sign of income (Inc) coefficients for all regressions confirmed directly the relationship between household savings and income. It is significantly positive at 1% in all areas, showing that the income variable is the most important in saving decision making in all areas. The marginal propensity to save (MPS) ranges from 19.86%, 33.34% and 31.25% in Nambark, Luang Prabang, Phonxay and the total areas is 28.58% proportion of the total income saved per year. This indicates that a large and rapid increase in income tends to raise the rate of household savings because household capacity to save increases with household income. This finding lends support to the results of Khan et al (2009), Abid and Afridi (2010), Issahaku (2011), and Shitu (2012) which found that an increase in income tends to raise savings.

Household size (Hous) in the study has a strong significant impact on household savings at the 1% level, except in Luang Prabang where it is insignificant. The coefficient of the variable presents a negative sign. It can be interpreted that the rise of one household member is associated with a decline in household savings of about -875,093 Kip, -1,029,870 Kip, -320,007 Kip and -789,871 Kip in Phonxay, Nambark, Luang Prabang and total areas. This essentially means that in the case where one person is responsible for all household expenses in a larger size of household, such a household cannot save much as compared to smaller sized of households. This result is consistent to the findings of Rehman et al (2011), Sehatu (2012), Obayelu (2012) and Chhoedup (2013) that with larger household size, the higher expenditure tends to reduce the amount of saving by that household.

Sex of household heads showed that the male headed households can save more than female headed households. Male headed households had a positive significance at 10% in total areas, the coefficient ranges from 1,633,567 Kip; 770,317.5 Kip; 613,213 Kip in Luang Prabang, Nambark, Phonxay and 990,176 Kip in total study areas. This indicates that female headed households seemed to spend much of their money on cosmetics, jewelry, clothes and crockery etc., and for this reason, they cannot save. This is consistent with the studies by Ahmud and Asghar (1999), Gedela (2012) and Kostakis (2012) which found that the male headed household saved more than female headed households.

Education is expected to have a positive impact on household savings. This study revealed that highly educated household heads are more likely to save, with the exception of Nambark, as a higher level of education enables a household to earn more and have more access to information, understand the benefit of savings and more educated people are likely to earn

more money. Aikaeli (2010) confirmed that education led to proficient household management, and crucially improved economic performance of the household as educated people were more likely to have skills and opportunities to successfully diversify into other, more lucrative and better income-generating activities. One more year of education attained by the household head can increase household savings range from 77,005 Kip in Phonxay, 270,235 Kip in Lunag Prabang and 22,496 Kip per year in total areas. However, it is significant at the 10% level only in Luang Prabang. Similar results were found by Brata (1999), Kibet et al (2009), Gedela (2012) and Chhoedup (2013) that education had a direct impact on raising household savings. But the coefficient in Nambark is -97,257 Kip. However, it is insignificant. It is suspected that educated household heads perhaps, spend more on their children's education and their higher studies and in this way, they spend more and save less.

The dependency ratio (Dep) was found to be insignificant in all areas, however, the coefficient gives the true sign, the estimation here ranges from -1,095,167 Kip; -934,721 Kip; -3,060,489 Kip in Phonxay, Nambark, LuangPrabang and -1,327,768 Kip in total areas. An increased dependency ratio is bound to cause a decline in savings. A higher dependency ratio implies a greater burden of consumption expenditure, and hence the higher allocation of the household budget towards consumption expenditure leading to lower household savings. This is consistent with the studies by Unny (2004) and Kibet et al (2009).

The occupation of the household head is also significant at 10% level, which explains the saving levels of all households in total areas, and has a positive influence on the savings in all areas except in Luang Prabang. Most household heads work as government employees, they save less, about -333,569 lower than other households. There are also other exogenous impacts on household income, for instance, flooding, they therefore spend more and save less, consistent with conclusions made by Kibet et al (2009) that showed that entrepreneurs were likely to save more than teachers in rural areas. However, two other studies? showed very little impact as household heads had secondary sources of income such as feeding animals, growing vegetables, fishing, animal hunting etc, therefore, they could still save. This result is consistent with Kelley and Williamson's study (1968) which found that governmental officials seemed to be able to more than farmer household heads.

4.6 Household Saving in Development of Rural Livelihoods

By increasing access to financial services, including savings and credit, rural livelihood can be improved as a quick access to small amounts of credit or accumulated saving, rural households can thus defer selling or pre-selling their harvest when prices are higher and they can have better choices on health and education as well investment in income generation activities. This study revealed that the amount of household saving is very important (rating 4.64) towards household members' health care and longevity as shown in Table 7.1. Savings influenced the 25-29 year old cohort more than other cohorts; perhaps they are in the early working age cohort and need to have good feedback from their performance at work. In this sense, health is an asset with an intrinsic and instrumental value. Good health leads to household economic growth as it increases adult productivity through improved nutrition as confirmed by Lustig (2004), which demonstrated a powerful link between health and economic growth. It is also important for agriculture production investment (rating 3.43). The amount of savings is shown to be more needed for the younger age cohort (25-29) than others. Particularly, in the oldest age cohort (60-89), it indicated that older persons have less potential to work or manage their agricultural investment than younger age cohorts. However this explains that the amount of household savings increased due to the sufficient supply of agriculture seeds, equipment maintenance, extended agriculture productivity and enhanced labor productivity for agriculture employment, etc. Johnson and Mellor (1961) listed that the role for agriculture in the process of development is to enhance an increase of food supplies which has an inter-connection to a higher household income. Hence, household economic growth can be stimulated and increased, and is largely confirmed by our study result that household heads have spent their money for their children's education and wish to provide even higher education. Thus, household heads spend more on their children's education, including books, tuition fees, stationary items, school uniforms, transportation, accommodation etc. For these reason, the rating of 3.29 mean that household savings is a neutral indicator on household member's support for education and depends on the household age cohort, as amount of savings is needed more in the 25-29 year old cohort than others, perhaps they understand more the positive consequences of education. Dahlin (2002) postulated that workforce education is a key component of human capital and has a positive impact on the household's economic growth. There is a direct effect of education such as an increase of individual wages because education results in learning that increases work

productivity. But investment in technological equipment appears to be less important in this case (rating 1.42) but also depends on the age of the cohort, funds provided from savings, for example, is more necessary for the 50-59 year old cohort compared to the youngest age cohort (25-29). It is shown that older persons have more opportunities to acquire new technological equipment for their performance at a time when saving accumulation is longer. However, it also indicates that rural households have a low potential to afford technological equipment for their agriculture production activities or perhaps the advertisement of technology equipment sellers did not reach these rural areas. In any case, technology still plays a vital role in development of rural livelihoods, as the empirical studies by Romer (1990), Grossman and Helpman (1991) and Aghion and Howwitt (1992) confirmed that an increase in the level of resources spent on the utilization of technologies in agricultural production activities leads to household's economic growth.

Table 7.1. Household saving and development level

Indicators	Total Average	Age 25-29	Age 30-39	Age 40-49	Age 50-59	Age 60-89
Health and longevity	4.64	4.88	4.64	4.69	4.67	4.36
Agriculture production investment	3.43	3.92	3.37	3.31	3.69	3.17
Education support	3.29	2.83	3.42	3.58	3.28	2.67
Household business investment	1.81	1.54	1.80	1.91	1.89	1.67
Agriculture modernization investment	1.42	1.29	1.32	1.48	1.63	1.31
Observations	312	24	101	81	64	42

Source: Author's field survey, 2013

The study also strongly confirmed from the regression model which showed that household savings have a positive relationship to rural livelihood development. Findings in table 7.2 bellow shows that, when savings increased by 1% the household's health care and longevity (Health's care) tends to rise by 0.007 %, education support (Ed Support) increased by 0.011

%, investment on agriculture modernization (Agri Modern) increased by 0.001 %, and 0.002% rise in household business investment (H b invest) as well as increase in agriculture investment (Agri Invest) by 0.015%. These results confirmed that households saving are necessary and important for rural livelihood development. Especially, adding the value on agricultural production and household business activities. This is consistent with findings from Fasoranti (2007), Oloyede (2008), and Phan (2010) which found that rural household saving mobilization is an important factor in the economic development of rural areas.

Table 7.2. Household saving into development of rural livelihoods

Variables	Ed Support	Health's care	Agri Modern	H b invest	Agri Invest
s	0.0010587 (0.95)	0.0007305 (1.22)	0.0001324 (0.17)	0.0001631 (0.12)	0.0014716 (1.07)
age	0.0000352 (0.55)	-0.0000759 (-1.87)*	0.0000661 (1.47)	-0.00000126 (-0.02)	-0.0001143 (-1.47)
edu	-0.0021126 (-1.46)	-0.0005904 (-0.68)	-0.0009236 (-0.75)	0.0007635 (0.42)	-0.0100585 (-5.11)***
dep	0.0192476 (4.63)***	0.000889 (0.38)	0.0009574 (0.3)	-0.0024816 (-0.54)	-0.0016378 (-0.33)
gen	0.0066781 (2.27)*	-0.0013671 (-0.86)	0.0044672 (4.6)***	-0.0003602 (-0.1)	0.0056407 (1.63)
hous	-0.0004024 (-0.94)	0.0007546 (3.19)**	-0.0003418 (-0.94)	-0.0001556 (-0.28)	0.0027461 (4.79)***
inc	0.0093076 (2.72)**	-0.0016124 (-0.85)	0.0070069 (2.58)*	0.0089854 (2.21)*	-0.0166895 (-3.6)***
_cons	-0.1572256 (-3.34)**	0.0636876 (2.25)*	-0.1142444 (-2.92)**	-0.1374788 (-2.4)*	0.2894789 (4.44)***
F-test	10.95***	2.35*	6.55***	1.79*	14.26***
Obs	312	312	312	312	312

Source: Author's field survey, 2013. Note: Heteroskedasticity-Robust Standard Error is applied in equations.

T-statistics in parentheses. * 10%, ** 5% and *** 1% indicate significant level.

5. Conclusions and Recommendation

5.1. Conclusion

This study examines rural household savings in Luang Prabang province. The author found that rural household tends to save more in forms of cash at home rather than saving in banks as the distance to banks is far from home. The significant determinant explanatory variables of rural household savings in the study areas showed that household income has positive impacts towards increasing household savings. However, the dependency ratio has a negative impact towards household savings. Indeed, the study also supports the life cycle hypothesis that age has a positive relationship and age squared is negatively related to household savings. In addition, household savings is important in its contribution to the development of household agriculture production investment and household business activities.

5.2. Recommendation

- The government should encourage both private and public banks to establish branches in rural areas to reduce the distance that would help to improve rural savings.
- Since income is highly significant to raising savings, creating more income earning opportunities whereby households can work fulltime and part time is essential.
- The observed life cycle hypothesis suggests that providing basic health and nutrition facilities in rural areas is needed to enable rural people to work in a healthier environment up to older ages and to reduce the potential drop in savings during old age.
- Savings is found to contribute to investment in agriculture production. Thus, a supportive policy is needed to raise savings in rural areas which is very important improving agricultural efficiency and breakdown the poverty trap in rural Lao PDR.

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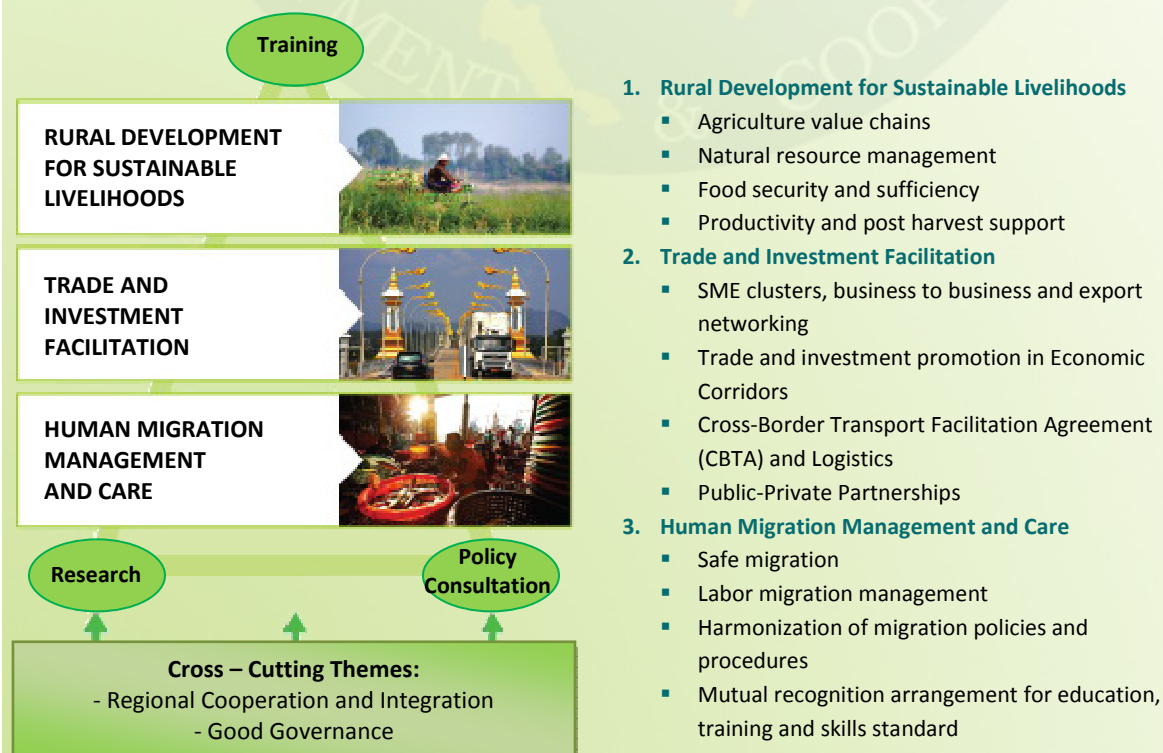
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