

Vulnerability to Poverty and Risk Management of Rural Farm Household in Northeastern of Thailand

Assist.Prof.Dr.Thitiwan Sricharoen

Department of Economics, Faculty of Management Science, Khon Kaen University, Thailand
Email: thitiwans@googlemail.com

Abstract. This research presents a framework to describe and analyze risk and vulnerability to poverty of rural farm household in Northeastern of Thailand. Specific random sampling technique is used in the selection of 415 households, which are divided into 23 districts in Buri Ram province. The result on vulnerability to poverty analysis is done by feasible generalized least squares (FGLS) method. Upon subjecting the data to analysis, the first stage of the OLS reveals that 61.17% of the variation in log consumption (a measure of well-being) can be explained by the following factor: household size, household size square, aged dependency ratio, family member: bachelor education and above, number of children go to school, unemployed household head, monetary assets, tangible asset value, ratio of rent of total expenditure, drought in the future, number of last year risk occurred (2009), prolong sickness of household head (2009), chronic disease of other working family member (2009), flood (2009). The rest, 38.83%, can be attributed to the disturbance term. The results of the regression model by FGLS present the determinants of vulnerability to poverty and variance of consumption. The comparison of the household consumption with Thailand poverty line in the year of 2009, that was at 1,586 Baht per capita per month. The rural headcount ratio in terms of household expected consumption less than poverty line is relatively high at 65.8%. The result indicates two groups of vulnerable households, which are, high and low vulnerable households. The estimates show that about 44.34% of households are vulnerable to poverty. The comparison of observed poverty status based on vulnerability index present that 75.2% of farm households are poor, whereas another 24.8% are non-poor.

Keywords: Livelihood Strategies, Risk Management, Vulnerability to poverty, Farm Household.

1. Introduction

Economists have long used measures of poverty to summarize the well-being of less fortunate households in a population. Typically either income or consumption expenditures are measured over some relatively short period of time (e.g., a year), and these are regarded as some kind of proxy for the material well-being of the household. Policies often explicitly crafted to reduce these poverty measures. At the same time, economists have long recognized that a household's sense of well-being depends not just on its average income or expenditures, but that risk plays an important role in determining welfare, particularly in households with fewer resources. To consider an extreme case, a household with very low expected consumption expenditures but with no chance of starving may be poor, but they still might not wish to trade places with a household having a higher expected consumption but greater consumption risk. It seems desirable to have a measure of household welfare which takes into account both average expenditures as well as the risk households bear (Ethan Ligon and Laura Schechter, 2002).

By all estimates and available definitions, the poverty of household in Northeastern of Thailand is strikingly widespread and pervasive. In Thailand, the poverty line has been utilized for assessing and monitoring the poverty situation. The average for the whole country of Thailand's poverty line in 2009 was 1,586 Baht per capita per month. When comparing poverty situation between regions, it was found that Northeastern of Thailand's the region where contained a great number of the poor higher than other regions from the past to present. This region is the target region to implement poverty reduction policy. This research is undertaken to examine the vulnerability to poverty of rural farm household in Northeastern of Thailand.

Specific random sampling technique is used in the selection of 415 households, which are divided into 23 districts in Buri Ram province. Structured interview schedule is developed to obtain information from the respondents.

2. Individual Risks and Livelihood Strategies

2.1. Individual Risk

There were more than one risk hit households in each period: last 5 years, last year and future. In this paper, last year risks are discussed. The analysis of risks show only the first risk refers most by households. The most occurred risks experienced by households during the last year are natural, physical and financial risks. Human and social risks are also rank in top ten risks as well.

The ranking of main experienced risks of farm household in last year (2009) found that most risks hit households were drought, flood, crop loss from insect and plant disease, low price of production, crop loss from weather or natural disaster, heavy storm, local heavy rainfall, increasing of factor of production price, dread of working family member and unemployment. Most of risks are far beyond the ability of households to control them, for example, drought, and flood, which occurs frequently. Low price of production is as well, which depends on the demand and supply in the market. Production price is low because it is too much production supply in some seasons, high competition from the importing products and the middlemen or traders give the low price. Human and social risks that hit households are dread of working family member and unemployment. Other important risks are also important but those are not range in top ten risks hit household, are self-financed and credit-financed for the loss of crop and livestock, which cause the difficulties in many households. There are some households do nothing when the risks occurred because they do not have the ability to ask for the credit from any financial institution or no collateral assets and some of them fail on managing those risks again and again. Therefore, some households select no risks response.

2.2. Livelihood Strategies

The livelihood strategies are classified in adaptive strategies and coping strategies. According to adaptive strategies, most households were not preparing any strategies to manage on last year risk, accounted for 29.88%. Households react not at all on the risk occurred because that risk occurs every year, like drought, and it is beyond their ability to control that situation. Other adaptive strategies, which households prepare are ranked in orderly, which are saving in cash, hygiene and disease prevention, adoption of new production technology, ask for help from social network: relatives and friends, diversification of income sources, shifting cultivation, less risky production system, use of extension service, and saving in kind: live stocks. Saving in cash is most selected because when households have saving, it is a guarantee for their wealth stability and they can run any activities related on their farm work or for any other purposes. Hygiene and disease prevention rank next important, which consistent to last year risk about the crop loss from insect and plant disease. Furthermore, household give the important on the adoption of new production technology because it can reduce time and energy on farm work. For example, the renting of tractors from village headman to harvest production can save the cost of labors and it is faster.

The coping strategies, which most households select to manage risks are reduced food consumption, credit from bank, dis-saving, take children out of school, sale of assets: crop, credit from money lender, pawned good, credit from family/relatives, new/additional work of other adult family member, and public assistance, respectively. Reduced food consumption ranks first because it may easy to do for household. Asking credit from bank, especially, Bank of Agriculture and Cooperatives (BAAC), ranks secondly with 13.73%. Dis-saving ranks third at 13.49%. The next interesting category is take children out of school, account for 12.05%. Some households think that school cost is so high and they want to cut the expenditure. The average education of family member is at primary school. Higher education study must spend a higher budget and most of them expect their children to help to work on farm in the future. Therefore, they think that high education is not needed (Table 1).

Table 1: Livelihood Strategies in 2009

Adaptive strategies	Percent	Coping strategies	Percent
React not at all	29.88	Reduced food consumption	26.51

Saving in cash	12.05	Credit from bank	13.73
Hygiene and disease prevention	11.57	Dis-saving	13.49
Adoption of new production technology	9.40	Take children out of school	12.05
Ask for help from relatives and friends	8.19	Sale of assets: crop	6.02
Diversification of income sources	4.82	Credit from money lender	6.02
Shifting cultivation	4.58	Pawned good	3.61
Less risky production system	4.10	Credit from family/relatives	3.37
Use of extension service	3.37	Additional work of other adult family member	3.13
Saving in kind: livestock	2.65	Public assistance	2.41

Source: Own calculation.

2.3. Qualitative and Quantitative Assessment on Vulnerability to Poverty

In brief of household characteristics, average age of the household heads is at 52 years old. Most of household heads are male at 80.48%. Total populations within the survey of 415 households are 2,047 persons, with an average of 5 persons per household. It is amount of 2.89% of all household has an inability person in family. According to the education of household, most household speak Thai with 56.87%. The rest language uses are Lao and Cambodia with 28.43% and 14.7% respectively. Most household heads graduate primary school accounts for 61.93%. Agriculture is the main occupation of household head, account for 71.08%. The next occupation is general contractor, accounts for 13.25%. The rests are trading, government officer, and state enterprise officer. Each household has an average income 15,252 Baht per month per household. It is 86.54% of income comes from farm work. According to the demand on government assistance, household has the highest demand level on agricultural product price guarantee or crop insurance, following by the financial aid policy, fertilizer price guarantee, job creation policy, irrigation system, village fund and land allocation policy, drug and gamble reduction, and road construction, respectively.

The result on vulnerability to poverty analysis is done by feasible generalized least squares (FGLS) method. It is employed to determine how log consumption impacts the welfare status of households in the research area. It is recognized that one of the basic assumptions of ordinary least square (OLS) is that the error term must have a mean zero and constant variance, and that once this constant variance assumption is violated, there is bound to be heteroscedasticity (Chaudhuri, 2000). The relaxation of the constant variance assumption is a method of determining how the variance of the error term (i.e., now a measure of log consumption) impacts overall well-being (proxies by expenditure on food and non-food items) (Oluwatayo, 2004).

Upon subjecting the data to the analysis, the first stage of the OLS reveals that 61.17% of the variation in log consumption (a measure of well-being) can be explained by the following factors: household size, household size square, aged dependency ratio, family member: bachelor education and above, number of children attend the school, unemployed household head, monetary assets, tangible asset value, ratio of rent of total expenditure, drought in the future, number of last year risk occurred (2009), prolong sickness of household head (2009), chronic disease of other working family member (2009), flood (2009). The rest, 38.83%, can be attributed to the disturbance term. The results of the regression model by FGLS are presents the determinants of vulnerability to poverty and variance of consumption. The signs of the coefficients indicate that number of last year risk has a positive impact on log consumption but a negative impact on variance of consumption. Household size square, aged dependency ratio, ratio of rent of total expenditure, drought in the future, flood in 2009 have a negative impact on log consumption, as well as on variance of consumption (Table 2).

The comparison of the household consumption with Thailand poverty line in the year of 2009, that was at 1,586 Baht per capita per month. The rural headcount ratio in terms of household expected consumption less than poverty line is relatively high at 65.8% (Table 3).

The main causes of poverty were the lack of land ownership, lack of capital, education and skills, debts, irregular employment, large families, aging and sickness and uncontrollable outside forces. This could be a result of chronic condition (e.g. low level of assets and endowments) or a transient situation (e.g. a temporary setback due to shocks). In term of vulnerability, the main causes are low expected consumption and high

variance of consumption. In order to provide policy advice, the literature of (e.g. Bidani and Richter, 2001) should be followed: the pool of vulnerable households are divided in two mutually-exclusive groups namely (1) those who are vulnerable due to the high volatility of their consumption or the HV vulnerable, and (2) those who are vulnerable due to their low expected mean consumption or the LM vulnerable (Alayande, 2004). The result of this study shows two groups of vulnerable households, which are, high and low vulnerable households. The estimates show that about 44.34% of households were vulnerable to poverty (Table 4).

Table 2: Model for Estimation Vulnerability to Poverty by FGLS

Variable	Total FGLS			
	log (ctn)	P> z	Var (ctn)	P> t
Household size	0.707661 (0.098726)	0.000	0.262593 (0.008102)	0.000
Household size square	-0.063512 (0.008401)	0.000	-0.022223 (0.000689)	0.000
Aged dependency ratio	-0.001221 (0.001034)	0.238	-0.000154 (0.000085)	0.071
Family member: Bachelor education and above	0.061702 (0.077329)	0.425	0.006041 (0.006346)	0.342
Number of children attend the school	0.096084 (0.057324)	0.094	0.018449 (0.004704)	0.000
Unemployed household head	7.420422 (0.278756)	0.000	3.747898 (0.022875)	0.000
Monetary assets	0.000001 (0.000000)	0.000	0.000000 (0.000000)	0.000
Tangible asset value	0.000000 (0.000000)	0.101	0.000000 (0.000000)	0.000
Ratio of rent of total expenditure	-0.010106 (0.003860)	0.009	-0.001995 (0.000317)	0.000
Drought, future	-0.940989 (0.276061)	0.001	-0.207496 (0.022654)	0.000
Number of last year risk occurrence	0.004459 (0.037552)	0.905	-0.003816 (0.003082)	0.216
Prolong sickness of household head (2009)	0.723257 (0.461045)	0.117	0.143186 (0.037834)	0.000
Chronic disease of other working family member (2009)	1.357033 (0.293216)	0.000	0.300028 (0.024062)	0.000
Flood (2009)	-1.164853 (0.520251)	0.025	-0.242564 (0.042693)	0.000
Constant	No constant		No constant	
Observation	415		415	
R-squared			0.9996	
Prob (F)	0.000	0.000	0.000	0.000

Source: Own calculation.

Note: Log (ctn) = Log of consumption.
Var (ctn) = Variance of consumption.
Standard errors are in parenthesis.

Table 3: Comparison of Expected Consumption and Poverty Line

Expected consumption	Frequency	Percentage
Country poverty line in 2009 (1,586 Baht per month per capita)		
Expected consumption less than poverty line	273	65.80%
Expected consumption more than poverty line	142	34.20%
Northeastern poverty line in 2009 (1,473 Baht per month per capita)		
Expected consumption less than poverty line	263	63.40%
Expected consumption more than poverty line	152	36.60%
Total	415	100

Source: Own calculation.

Table 4: Vulnerability to Poverty Household

Vulnerability households	Frequency	Percentage
High vulnerability > 0.5	184	44.34%
Low vulnerability < 0.5	231	55.66%
Total	415	100

Source: Own calculation.

The comparison of observed poverty status based on vulnerability index present that 75.2% of farm households are poor, whereas another 24.8% are non-poor. The comparison of vulnerability to poverty and household characteristics classified by non-vulnerable and vulnerable households, the result depicts Prakhonchai district contain the highest percentage of vulnerable households, while Muang district has the highest percentage of non vulnerable households (Table 5).

Table 5: Comparison of Observed Poverty Status based on Vulnerability Index

Poverty status	Frequency	Percentage
Poor	312	75.2%
Non-Poor	103	24.8%
Total	415	100

Source: Own calculation.

Note: Poor = Chronic poor + frequently poor + infrequently poor.

Chronic poor = Chronic poor.

Transient poor = Frequently poor + infrequently poor.

Note to the demand on government assistance, it indicates that household has high demand level on all policy. The highest demand is the price guarantee on agricultural product. The next is demand on financial aid or funding for their farm work. Demand on fertilizer price guarantee rank third category with the mean of 3.85. Water supply for agriculture is also important. The next demand is the demand on funding circulates in village. Furthermore, farmers want agricultural land allocation. Drugs and gambler reduction policy is the next ranking. Finally, households have demand on road construction.

In conclusion, poverty is one of the chronic social problems of Thailand. Government should set different strategies to eradicate it. It needs to undertake various interventions to strengthen the grassroots economy to reduce the incidence of poverty. Therefore, the poverty reduction policy is very important. The policymakers should concentrate on the target group both poverty group and vulnerability group. At the same time, households should try to find out their own strategies to manage on risks as well.

3. Acknowledgements

First and foremost, I would like to express a special thank to Prof. Dr. Gertrud Buchenrieder who is encouraging me to continue this research. Furthermore, I would like to give many thanks to Faculty of Management Science, Khon Kaen University, which was generous to provide the necessary funding for the empirical research in Thailand.

4. References

- [1] B.Alayande, and O. Alayande. 2004. A Quantitative and Qualitative Assessment of Vulnerability to Poverty in Nigeria. Paper prepared for CSAE conference on poverty reduction, growth and human development in Africa.
- [2] B.Bidani, and K. Richter. Household vulnerability and the Asian crisis: The case of Thailand. Washington D.C., USA: The World Bank. 2001.
- [3] B. Oluwatayo. Income Risk and Welfare Status of Rural Households in Nigeria. Helsinki, Finland: United Nations University, World Institute for Development Economics Research (WIDER). 2004, WIDER Research Paper No. 2004/61.
- [4] E. Ligon, and L. Schechter. Measuring Vulnerability. Paper Prepared for Royal Economic Society Annual Conference 2002. 128, Royal Economic society. 2002.
- [5] S. Chaudhuri. Empirical Methods for Assessing Household Vulnerability to Poverty. New York, USA: Columbia University. 2000.
- [6] S.Dercon. Income Risk, Coping Strategies and Safety Nets. Helsinki, Finland: United Nations University, World Institute for Development Economics Research (WIDER). 2002. WIDER Discussion Paper No. 22.