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DETERMINANTS OF POOR HOUSEHOLD INCOME IN CA MAU PROVINCE, VIETNAM

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ABSTRACT

This paper is aimed to investigate the determinants of poor household income in Ca Mau province of Vietnam. Data used in the paper were of 160 observations gathered from U Minh and Cai Nuoc districts in Ca Mau province. By using the descriptive statistics and ordinary least squares model, the findings illustrated that the income of poor households in Ca Mau province of Vietnam is significantly affected by various variables from the poor households' characteristics as well as economic issues. Such factors are the age of households' head, cultivated land area, and earning activities and the mean of productions. Among given variables, the age of household head is inverse U-shape affecting the income of the poor households.

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1 INTRODUCTION

It is reported that Vietnam has achieved great improvement in economic growth and poverty reduction over the past two decades. The share of population living below the poverty line reduced significantly from 58% in 1993 to 20% in 2004 and 15% in 2010 (Cuong, 2012). This process is presented by a significant growth of income per capita and the poverty reduction (DFID, 2001). At the end of 2014, the poverty rate of Vietnam was 6% according the poverty standard in period 2011-2015 (The Ministry of labor, invalids and Social Affairs, 2014). Within 20 years (1990 – 2010), 30 million Vietnamese were out of poverty. This economic success can be considered as a good achievement in the light of surging inflation and global economic downturn.

Yet, poverty levels remain relatively high in rural areas, with the inequality in development between rural and urban areas still being large. Moreover, the gap between rural and urban incomes is even increasing. Rural economies in Vietnam therefore deserve more attention and support, if rural poverty is to be contained (Fritzen and Brassard, 2005). To increase income and mitigate the poverty, various national programmes were launched. Ca Mau province considered as a poor province in term of income per capita has implemented various programmes to reduce poverty. Such programmes are the national goal of sustainable poverty reduction, employment and vocational training, clean water and rural sanitation. Howerver, an effective programme for the poor households in Ca Mau has not been presented. Therefore, how can the poor households survive as well as how they can generate their incomes is that attracts more attention from not only policy makers but also researchers? Regarding to such issues, investigating the factors affecting on the poor households' income in Ca Mau province is necessary.

2 THEORETICAL FRAMEWORK AND METHODOLOGY

2.1 Households income

It is widely quoted that concept of income developed from economic theory of Hicks (1946) that "it would be seen that we ought to define a man's in-

come as the maximum value which he can consume during a week, and still expect to be as well as off at the end of the week as he was at the beginning". In addition, income is defined as the sum of consumption expenditure and change in net worth in a period (Stiglitz, 1980). Particularly, in the Meeting of Experts in October 2001 (ILO, 2001), household income is defined as consist of receipts in cash, in kind or in services, that are usually recurrent and regular and are received by the household or by individual members of the household at annual or at more frequent intervals. During the reference period when they are received, such receipts are potentially available for current consumption and, as a rule, do not reduce the net worth of the households.

2.2 Previous empirical studies

Studies on determinants of the household income attract more attention the policy makers as well as researchers both in the world and in Vietnam. Talukder (2014) investigated the determinants of income and growth in income of rural households in Bangladesh in the post liberalisation era. Using data mainly from secondary sources, the study applied the ordinary least square (OLS) regression to assess the determinants. The study used both economic and non-economic characteristics simultaneously for considering their joint effects on the income of the households. The OLS regression models revealed that household size was the only non-economic factor that was statistically significant and positive determinant of household income in both 1985-86 and 2005. Household size was the largest positive determinant and small farmer dummy was the largest negative determinant of income in 1985-86. Although rice is the staple food in Bangladesh, the shares of income from rice had negative regression coefficients in both 1985-86 and 2005, suggesting that share of rice income was not a determinant of income.

In addition, Fadipe *et al.* (2014) explored the determinants of income of rural households in Kwara State, Nigeria. The data were collected by a well-structured questionnaire from 90 randomly households. The descriptive statistics and the multiple regression analysis were applied for the study. The findings showed that farm income is the most important source of income structure (57.9%). Level of education of the household head, farm size, electric accessibility and gender of the household head were identified as the major determinants of household income. The study suggested that these income determinants should be carefully integrated in rural development policies in order to improve the rural the purchasing power of the households as well as the income distribution.

Ali *et al.* (2013) studied the determinants of income and income gap between urban and rural Pakistan. By using Household Integrated Economic Survey (HIES) 2010-11 dataset and Ordinary Least Squares (OLS), the findings shown that literacy, education and occupation were as the major determinants of income in Pakistan. In particular, lower levels of education generated high returns in rural areas, whereas higher levels of education gave more returns in urban areas. Agriculture and fishery workers were the least earners. Individual characteristics such as literacy, education, occupation and marital status were found as significant factors of income gap.

In the study of Smith (2007) on the determinants of Soviet household income, the human capital and demographic factors affected on a household standing in the regional/national income. The findings concluded that a high household income is more likely to have a middle-aged, married, well-educated male with good health and primary earner. In addition, the occupation is found as less important factor for income distribution compared to self-employment for Soviet sample and larger differences in income of household headed by married couples and that of single individuals in the Soviet Union.

In Vietnam, Quan (2012) studied the possible solutions to improve the income of farmers in the turned sweet area of Ca Mau province, Vietnam. The author used the Simpson index (Simpson's Index of Diversity-SID) to measure the degree of diversification of agri-households' occupation and income. The study applied the Logit regression to indicate that there were six factors affecting farmers' income such as household size, land area, labor rates, years of experience, education level of the household head and the ability of farmers. In addition, Xuan and Nam (2011) investigated the factors affecting the income of poultry households in the Mekong Delta. Results of the study illustrated information regarding structure of income, income diversity and the factors affecting the income of poultry households in the Mekong Delta. Using method of correlation regression, the results indicated that the income of the households is affected by land area of the households, income from poultry, other livestock, income from non-agricultural and loans.

There are a surprisingly large number of studies about the determinants of household income using the conditional mean approach (Estudillo *et al.,*

2008). A diversity of income sources of the households and determinants of overall household income may lead several problems. First, sources of income are completely diverse. It is widely accepted that using a number of characteristics of the households may not sufficiently explain the overall income and lead to an "omitted variables" problem, which biases the analysis. Second, there is no clear theoretical guidance as to which variables should be included in the income model. The factors explaining the income of the poor may not be the same.

This paper follows up previous studies on the determinants of household income. In addition, due to the characteristics of the poor households, factors determining household income may vary in sign and magnitude at different points of the income.

2.3 Research methodology

This study investigates the determinants of the poor household income in Ca Mau province of Vietnam. It examines which characteristics of the poor households are associated with the growth in real income. The ordinary least squares (OLS) regression applied to establish relationships between income and various households' characteristics. It considers both economic and non-economic characteristics of poor households to identify determinants of their income.

2.3.1 Data collection

Data used in this research consists of both secondary and primary data. Secondary data were gathered from the nationwide poverty situation - General Statistics Office and the situation of socio-economic development of the province through the report of the provincial people's Committee, the Department of planning and investment, the Statistics Bureau of Ca Mau province and district level. Primary data were collected from direct interviews of 160 farmers in Ca Mau province by stratified random sample method. The questionnaire is designed to collect data on the household characteristics and income generation. It includes questions on household income and a variety of variables used to estimate income. Further, some variables that might be of interest in income equations are available in the data set. The sample size is described in Table 1.

Table 1: Sample size

N0.	Location	Total
1	Khanh Lam Communes, U Minh district	40
2	Nguyen Phich Communes, U Minh district	40
3	Luong The Communes, Cai Nuoc district	40
4	Tan Hung Dong Commune, Cai Nuoc district	40
Total		160

Table 2: Definition of determinants of the poor household income

Variable	Name	Unit	Definition	Expected sign (+/-)
X_1	Age	Years	The age of household head	?
X_1^2	Age squared	Years	The age of household head squared	+/-
X_2	Education	Number of years schooling	Educational level of household's head	+
X_3	Household size	People	Number of members within the household	+
X_4	Area	Ha	Cultivated area	+
X_5	Income	Million dongs /month	The income sources of the household	+
X_6	Tools	The households have used the modern tools (machines, sowing machines,…) in farming or not	Dummy variable for the households using the modern tools with value 1, 0 otherwise.	+
X_7	Credit from the bank	The households access to bank credit or not	Dummy variable for the households accessing to bank credit with value 1, 0 otherwise	+
X_8	Commune involvement	The households' members have a job at the community or not	Dummy variable for the households having a job at community with value 1, 0 otherwise	+

2.3.2 Data analysis

Descriptive statistics was used to describe the reality of family life, and correlation regression method was employed to analyse the factors affecting the poor households' income. The main model is as follows:

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + D_6X_6 + D_7X_7 + D_8X_8 + \varepsilon$

Where:

– Y is the average income per capita/month (Unit 1.000 VND).

– $X_1, X_2, \ldots, X_8$ are expected factors affecting the income of poverty households.

3 EMPIRICAL RESULTS

3.1 Observation overview

Table 3 shows that Male headed households (71.88%) dominate the Female headed households (28.12%) in the study area. In addition, Table 4 illustrates the educational level of household head. Majority of the respondents had secondary and primary education (48.75% and 43.75%, respectively) while 4.38% had no formal education.

Table 3: Distribution of the observation by gender

N0.	Gender	Frequency	Percentage (%)
1	Male	115	71.88
2	Female	45	28.12
Total		160	100

Table 4: Educational level of household head

Educational level	Frequency	Percentage (%)
Illiteracy	7	4.38
Primary school	70	43.75
Secondary school	78	48.75
High School	4	2.50
College/ University	1	0.62
Total	160	100.00
Highest educational level	14	
Lowest educational level	0	
Average educational level	5.56	

3.2 Income structure and factors affecting the poor household income

3.2.1 Income structure

Table 5 represents income sources of the respondents. The result indicates that total household income, which is a combination income from crop and livestock incomes, contributes 83.1% to total household income in the study area. There are 23.1% of the sample household accessing to the off-farm income that includes wage from agricultural labor services, wage from self-employment income and income from remittances. Income from other sources accounts for 3.8% of the sample household. This shows that farm income remains the main source of income for the poor households.

Table 5: Income sources of the poor households in Ca Mau province

Income sources	Frequency	Percentage (%)
Crop income	45	28.1
Crop and Livestock incomes	72	45.0
Remittance, non-farm and Off-farm incomes	37	23.1
Others	6	3.8
Total	160	100.0

3.2.2 Determinants of average income per capita of the poor households in Ca Mau

Table 6 illustrates the factors affecting on the average income per capita of the poor household in Ca Mau province.

The final estimation (Table 6) employs the data to examine specially the household income effect of standard human capital factors, particularly experience as proxies by age and education. The estimators include only age (and the square of age), educational level of household head, controls for certain household demographic factors, and when available, geographic controls.

With respect to age, Table 6 presents results of shallow Age-Income profiles. The findings illustrate that the poor household receives considerably higher gains to work experience in inverse U shape. However, the evidence indicates that relationship between Age and Income of the households are inverse U shape. It means that the income of household's head can reach at certain age, then it tends to bottom at a later age. In terms of practical importance and particularly statistical strength, the results present that relative youth is considerably more likely to lead to higher income distribution, and higher age significantly declines one's chance to move down the income distribution. The Age-Income results are contrast to the studies by Smith (2001), Brainerd (1998) and Krueger and Pischke (1992).

Table 6: Results of linear regression analysis

Variable	Unit	Coefficient	Beta coefficient	Sig-Value	VIF
Constant		361.460		0.000	
Age of household head	**X_1**	**1.424**	**0.254**	**0.001**	**1.304**
Age of household head squared	**X_1^2**	**-1.234**	**-0.089**	**0.001**	**1.452**
Educational level of household head	X_2	0.580	0.020	0.797	1.247
Household size	**X_3**	2.057	0.038	0.602	1.119
Production land areas	**X_4**	**0.006**	**0.209**	**0.014**	**1.539**
Income sources	**X_5**	**46.411**	**0.290**	**0.000**	**1.100**
Modern Production tools	**X_6**	**15.791**	**0.161**	**0.052**	**1.451**
Access to credit	**X_7**	6.277	0.039	0.583	1.068
Commune involvement	**X_8**	10.773	0.065	0.384	1.181
Sig-value.					0.000
R^2					0.302
Adjusted R^2					0.265

In addition, the parameter of production land areas is significant at 5% and positively correlated with the poor household income because the production land can create a single significant source of income in rural farm production. This is proved by Olomola (1988) and Quan (2012) that farmers have higher returns due to better economics of scale from their large fields, good management and capital investment.

Furthermore, using modern tools in farming activities significantly affect the income of the poor household at 10% significant level. This result confirms the expectation of the study and that if the poor households having more production tools can actively conduct the production process and control production expenses. As a result, the household's income can be increased. Finally, yet importantly, the sources of income have affected the income of the poor households meaning that the households with more income sources have more ability to increase their income. This finding confirms for the studies by Quan (2012), Nghi *et al*. (2011).

4 CONCLUSIONS AND IMPLICATIONS

4.1 Conclusions

This paper investigates the determinants of the poor household income in the Ca Mau province of Vietnam. The household income comes from various sources such as hired income, cultivation, animal husbandry, aquatic products and non-agricultural service activities. Particularly, hired income accounts for 66.48% while the rice cultivation and shrimp culture are 8.22% and 16.49%, respectively.

By using the OLS model, the findings indicate that the land area of production, the sources of income-generating activities and modern production tools affect the poor household income significantly. In addition, the age of the household head has an inverse U shape impact on their income. In order to improve the household income, the appropriate solutions are proposed such as (1) Job Creation programmes for rural areas for Vietnam in general and for Ca Mau province in particular, and (2) Income sources can be diversified by the poor households.

4.2 Implications

It is necessary to investigate and to classify the poverty levels of the households in order to grand the proper support solutions. Possible implications are as follows.

Farm and non-farm economic activities should be encouraged poor households to accelerate income improvement.

The Vietnamese government should invest more in education and training in rural areas to equip young people with the knowledge and skills to improve livelihoods and alleviate poverty. In addition, the government should provide physical support such as land production areas for rent and modern tools in production because it would increase overall employment in the farm sector and this could lead to income growth of poor households.

Poor households should be offered on the opportunities in off-farm economy.

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