Determinants of Households' Income in Rural Areas: An Empirical Study in Vietnam

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Abstract

The proportion of people living in poverty in Soc Trang is comparatively large. 27,154 households in this province are considered to be poor, which represents 8.4 percent of all households. The gap between rural and urban areas, between farmers and other social classes in this province, tends to increase, and the living standard of people in the countryside remains difficult. This paper aims to investigate the determinant factors of poor households' income in rural areas of Soc Trang province, Vietnam. Data from 120 poor households in Vinh Chau district and Ke Sach district of Soc Trang province collected in the year 2019 is employed to test the proposed hypotheses in this study. By applying the descriptive statistical method and ordinary least squares (OLS) regression, the results show that the factors of production land, number of income generation activities, access to credit, means of transportation, and means of production positively affect the income per capita of poor household in the study area, whereas household size has a negative impact on the household income per capita. Considering the empirical findings, several solutions and recommendations are proposed to improve the income of poor households in Soc Trang province.

Keywords: Vietnam, Poor Households, Households Income, Rural Areas, OLS Regression

JEL Classification Code: D13, G30, G51, N35, Q12

1. Introduction

Poverty reduction is often a significant goal of economic development programs pursued by international development agencies as well as national governments. This attention to poverty can been seen through international initiatives, such as the Millennium Development Goals of the United Nations which aim to halve the proportion of the world's population suffering from extreme poverty (defined as people living on $1 or less a day) between the years 1990 and 2015. While the whole world is on track to meet this goal, Vietnam has recorded great achievements in economic growth and poverty reduction over the past two decades. The proportion of the population living below the poverty line declined dramatically from 58 percent in 1993 to 20 percent in 2004 and then 15 percent in 2010 (Nguyen, 2012). Despite prominent progress in alleviating overall poverty, including a steady decrease in ethnic minority poverty, a large and increasing gap in living standards and poverty rates between the Vietnamese majority and ethnic minorities still exist. The share of minorities among the poor rose from 29 percent in 1998 to 47 percent in 2010. Approximately 66 percent of ethnic minorities still lived below the poverty line and around 37 percent of them lived below the extreme poverty line in 2010. In contrast, the figures for the Vietnamese majority population were only about 13 percent and 3 percent, respectively (World Bank, 2012).

Soc Trang is a coastal province in the Mekong Delta with a total area of natural land of 331,187 hectares, of which agricultural land area is 280,819 hectares, accounting for 84.79 percent. The majority of the population is inhabited by agriculture and 70.82 percent of residents live in rural areas. Agricultural production is the main source of income for most households in the province. Recently, Soc Trang province has implemented many national target programs for new rural development and sustainable poverty reduction to raise rural incomes and productivity and reduce the significant

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socio-economic disparities between rural and urban areas. However, the percentage of Soc Trang's population living in poverty is relatively high. The number of poor households in this province is 27,154 households, making up 8.4 percent of the total number of households. Among the poor, the proportion of Khmer is 47.92 percent. The gap between rural and urban areas, between farmers and other social classes in this province, tends to increase, and the living standard of people in the countryside remains difficult. This has affected the achievement of the poverty reduction goal of Soc Trang province in particular and of Vietnam in general. Therefore, it is necessary to research the determinant factors of poor households' income in rural areas of Soc Trang province in Vietnam.

2. Literature Review

Determinants of household income have become a topic of broad public interest, and numerous researchers as well as policymakers have conducted studies on this topic.

Quyet Thang et al. (2022) investigated the changes in Income distribution during the Covid-19 Pandemic in the case of Vietnam. A person's income depends on several factors, such as educational level, working area, the number of activities creating jobs, the cost of living, investment, etc. This research was based on a survey of 479 workers in Vietnam's service sector, who were evenly distributed across sectors (tourism and aviation) and workplaces (State and private). Based on the collected data, the REM regression model was used to analyze the factors influencing employee income when COVID-19 took place. The research returns show that the COVID-19 pandemic has had a considerable influence on labor incomes, and there are income disparities that exist between workers by work area and by gender. This study indicates that workers' wages in Vietnam decreased by an average of 12.22 million VND per month after the outbreak of COVID-19. In addition, the results also show that the income of workers after COVID-19 differs depending on their position (the average salary of laborers working in the public sector is about 3.946 million VND higher than the average salary of laborers in the private sector); furthermore, the incomes of workers also vary by gender.

Le and Le (2020) examined the factors that drive temporal income diversification in rural areas of the Mekong River Delta in Vietnam, based on a framework that conceptualized diversification as a function of a household's capacity to diversify and incentives (both push and pull factors) to diversify. Drawing from five rounds of the Vietnam Living Standard Measurement Surveys covering 13 years (1993–2006), two-panel datasets made from five cross-sectional samples are used for the analyses. The data are drawn from the Vietnam General Statistics Office. Both the Tobit model and the Ordinary Least Squares model with random and

fixed effects are applied. The main point emerging from the analysis is that income diversification is strongly influenced by household labor capacity. The relationship between household labor capacity and increasing insertion in non-farming wage activities is not driven by unobserved time-invariant factors such as household ability and motivation but is instead driven by the higher labor capacity of households. In terms of the other household capacity variables, the effect of farm size is much larger in terms of retaining households in traditional occupations as compared to pushing them towards non-farm wage employment. Other variables, such as household access to financial capital, do not play an important role.

Talukder (2014) applied the ordinary least square (OLS) regression to investigate the determinants of income and growth in income of rural households in Bangladesh in the post-liberalization era. This study used both economic and non-economic characteristics simultaneously to consider their joint effects on the income of the households. The research results stressed that household size was the only non-economic factor that was statistically significant and a positive determinant of household income in both 1985–1986 and 2005. Besides that, household size was the largest positive determinant, and small farmer dummy was the largest negative determinant of income in 1985–1986. Similarly, household size was the largest positive determinant and the farm-household dummy variable was the largest negative determinant of income in 2005. Although rice is the staple food in Bangladesh, the shares of income from rice had negative regression coefficients in both 1985–1986 and 2005, suggesting that the share of rice income was not a determinant of income. This study also revealed that increased productivity of rice did not influence determining income and growth in income of rural households in the post-liberalization era, implying the requirement for government policy interventions to support farm households for maintaining food security and price stability in the economy.

Fadipe et al. (2014) applied descriptive statistics and multiple regression analysis to explore factors affecting the income of rural households in Kwara State, Nigeria. The data was collected by a well-structured questionnaire from 90 random households. The findings showed that farm income is the most important source of income for rural households (57.9 percent). The educational level of the household head, farm size, electric accessibility, and gender of the household head significantly influenced the household income. This study suggested that these income determinants should be carefully integrated into rural development policies to improve the purchasing power as well as the income distribution of rural households.

Ali et al. (2013) studied the determinants of income and the income gap between urban and rural areas of Pakistan.

By applying Household Integrated Economic Survey (HIES) 2010–11 dataset and Ordinary Least Squares (OLS) regression, the results revealed that literacy, education, and occupation were identified as the major determinants of income in Pakistan. More specifically, 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 in the income gap.

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

In Vietnam, Dang (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, Huynh and Mai (2011) investigated the factors affecting the income of poultry households in the Mekong Delta. The results of the study illustrated information regarding the structure of income, income diversity, and the factors affecting the income of poultry households in the Mekong Delta. Using the method of correlation regression, the results indicated that the income of the households is affected by the 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). The diversity of income sources of the households and determinants of overall household income may lead to several problems. In addition, all dimensions of financial stability simultaneously have a significant influence on economic growth, poverty, income inequality, and financial stability (Ratnawati, 2020). First, sources of income are completely diverse. It is widely accepted that using several 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.

3. Methodology

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

Data used in this research consists of both secondary and primary data. Secondary data are 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 Soc Trang province, and district-level. Primary data are collected from direct interviews of 120 poor households in Soc Trang province by stratified random sample method. The questionnaire is designed to collect data on 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.

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

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + D_5 X_5 + D_6 X_6 + D_7 X_7 + D_8 X_8 + \varepsilon$$

Where: Y is the average income per capita/month (Unit 1.000 VND); X_1, X_2, …, and X_8 are expected factors affecting the income of poor households. The description of these independent variables is presented in Table 2.

Table 1: The Sample Size

Household	District	Village	Observation
Poor with poverty certificate	Vinh Chau	Lai Hoa	30
		Lac Hoa Hoan	30
Near poor household	Ke Sach	Dai Hai	30
		Xuan Hoa	30
Total			**120**

Table 2: Description of Independent Variables in the OLS Model

Variable	Name	Definition	Unit	Expected Sign
X_1	Production land	The size of production land of the household	1,000 m²	+
X_2	Educational level	The educational level of the household head	Years	+
X_3	Income generation	Number of income generation sources of the household	Times	+
X_4	Household size	Total household members	Persons	+
X_5	Access to credit	Whether or not the household accessed formal credit	Dummy variable, yes = 1, no = 0	+
X_6	Means of production	Whether or not the household had sufficient production equipment	Dummy variable, yes = 1, no = 0	+
X_7	Local society	Whether or not the household member participated in a local organization	Dummy variable, yes = 1, no = 0	+
X_8	Means of transportation	Whether or not the means of transportation are convenient in the area in which the household lived	Dummy variable, yes = 1, no = 0	+

Table 3: The Distribution of the Observation by Gender

Gender of Household Head	Frequency (Households)	Proportion (%)
Male	79	65.83
Female	41	34.17
Total	**120**	**100.00**

Table 4: The Distribution of the Observation by Education Level

Education Level	Frequency (Households)	Proportion (%)
No formal education	10	8.33
Primary education	56	46.67
Lower secondary education	44	36.67
Upper secondary education	6	5.00
Higher education	4	3.33
Total	**120**	**100.00**
Maximum education level (years)	14	
Minimum education level (years)	0	
Average education level (years)	4.64	

4. Results and Discussion

4.1. The Households' Characteristics

Table 3 shows that male-headed households (65.83 percent) dominate female-headed households (34.17 percent) in the study area. Additionally, Table 4 illustrates the educational level of the household head. The majority of the respondents had primary and secondary education (46.67 percent and 36.67 percent, respectively) while 8.33 percent had no formal education. Besides that, the size of households is also presented in Table 5. In the research sample, the average number of individuals living together in a household is 4 people. The number of four- to six-person households accounts for about 62 percent of the total households in the sample, while the number of households with more than seven persons is only five, which makes up 4.17% of the total number of households (see Table 5).

4.2. The Other Resources for the Households' Income Generation

Production land plays a significant role in the rural household's income generation. Different types of land include rice paddy fields, vegetable plantation land, perennial plantation land, and other types of production land. Table 6 represents the size of production land of the poor households in the study areas. Most of the poor households have no land with 44.17 percent, whereas the rest of them have just sufficient land for cultivation to generate income. The number of households with a size of production land between 0 and 3,000 m² accounts for 30.83 percent of total observations while the households with more than 3,000 m² comprise almost a quarter of the total 120 surveyed households.

Soc Trang province in general and the two surveyed districts Vinh Chau, and Ke Sach in particular have a river

Table 5: Household Size in the Sample

Household Size	Frequency (Households)	Proportion (%)
Less than 4 persons	41	34.16
From 4 to 6 persons	74	61.67
Above 7 persons	5	4.17
Total	**120**	**100.00**
Maximum household size (persons)	11	
Minimum household size (persons)	1	
Average household size (persons)	4	

Table 6: The Production Land of the Poor Households in the Study Area

The Size of Production Land	Frequency (Households)	Proportion (%)
No land	53	44.17
Less than 3,000m^2	37	30.83
From 3.000m^2 to 5,000m^2	19	15.83
More than 5,000 m^2	11	9.17
Total	**120**	**100.00**
Maximum Production land (m^2)	8.000	
Minimum Production land (m^2)	0.000	
Average Production land (m^2)	1.618	

Figure 1: Transportation of the Surveyed Location

Source: Surveyed by authors in 2019

Financial resources, which is a lever to promote other resources, is an important factor to ensure proactive resources for production as well as in limiting the bargaining power or price squeezing of the buyer in commodity consumption. The finding shows that the borrowing situation of the poor households in the study areas is as follows: 47.50 percent of poor households, who lacked the capital to invest in production, borrowed from Vietnam bank for social policies, Vietnam bank for agriculture and rural development, Vietnam women's union, and other funds to cover their expenses. The capital requirement for buying seed, livestock, raw materials, and production equipment is large, however, most poor households do not have sufficient capital and lands for their production, therefore, these households need to borrow money from banks or other financial institutions to maintain their production activities.

In addition, the households also need support from social organizations to accurately and timely update new scientific knowledge, and information about the market and product to improve productivity, and quality of products as well as to seek employment opportunities to enhance income, and improve family living. Hence, participating in social organizations play an active support role. The research results reveal that 73 over 120 surveyed households take part in social organizations and unions, which accounts for more than 60 percent of the total. The structure of the local organization attended by 73 households in the sample is illustrated in Figure 2 below.

Table 7 presents the number of income generation sources of poor households in the research areas. As can be seen from Table 7, the research results show that diversification in the income-generating activities of poor farmers is very limited. More specifically, 45.83 percent of the respondents have only one income-generation source and 41.67 percent of the households have two income-generating activities, whereas only 12.50 percent of households can earn money from 3 income-generating activities.

system, favorable for waterway transport. However, in recent years, due to the implementation of sub-regional water supply projects to serve production, water transportation has encountered several obstacles. The infrastructure is the most important factor for the household's living and production. The survey indicates the conditions for local transport infrastructure as follows:

Figure 1 illustrates that 61.67 percent of households responded that the condition of transportation is good and convenient, whilst 38.33 percent of the respondents stated that the condition of transportation in their area is poor and inconvenient. This finding implies that the development of transport infrastructure in this location needs to be considered in the local economic development strategy in the upcoming years.
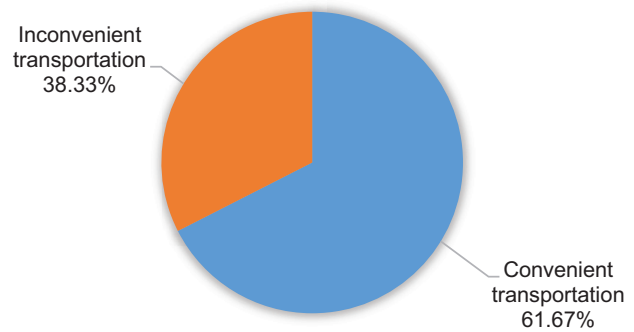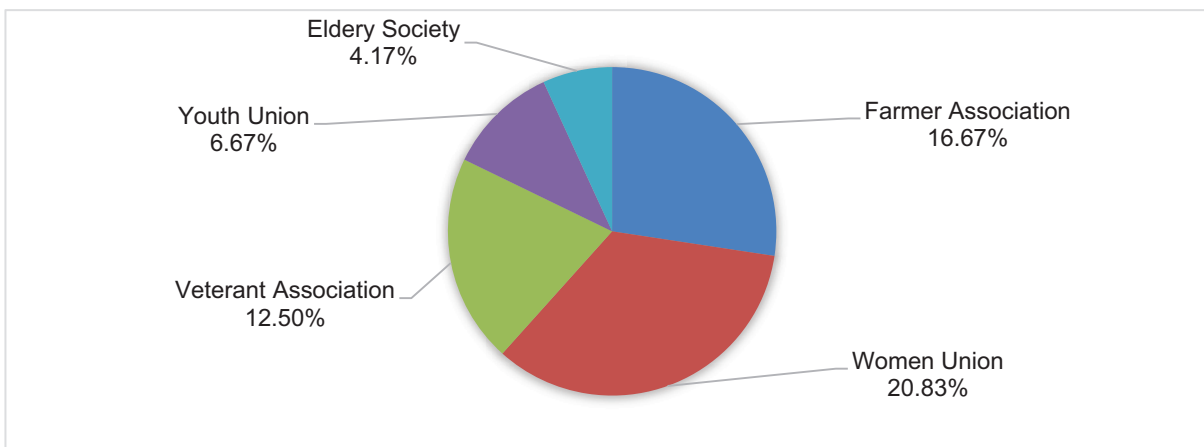
Figure 2: Structure of Local Organization Attended by the Poor Households

Source: Surveyed by authors in 2019

Table 7: Number of Income Generation Sources of the Poor Households

Activities	Frequency (Households)	Proportion (%)
One income source	55	45.83
Two income sources	50	41.67
Three income sources	15	12.50
Total	**120**	**100.00**

4.3. Determinants of Poor Households' Income in Rural Areas of Soc Trang Province in Vietnam

Examining the factors impacting the rural household income per capita is one of the key steps to propose solutions to improve income and stabilize lives for households in rural areas. By using the Ordinary Least Square (OLS) regression, the study finds that the income of poor households is significantly affected by the following factors. Table 8 presents the estimation results by using OLS regression.

Based on the results of the regression model in Table 8, it can be seen that production land, income generation sources, access to credit, means of transportation, means of production, and household size have statistically significant effects (P-value < 5 percent) on the poor households' income in the Soc Trang province. The influences of these six independent variables on the income of poor households can be explained as follows:

Firstly, as expected, the estimated coefficient of production land is statistically significant at 5 percent and positively correlated with 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 Dang (2012) that farmers have higher returns due to better economies of scale from their large fields, good management, and capital investment. This finding is also consistent with previous studies (Tran & Vu, 2014; Van de Walle & Cratty, 2004) which found a positive relationship between farmland holding and household income in Vietnam's rural and peri-urban areas.

Secondly, the number of income-generating activities has a positive impact on poor household income per capita. This can be seen from the results in Table 8, income generation variable has a positive correlation at the significance level of 1 percent (β_3 = 121162.8; p < 0.01). This implies that the poor and the near-poor households with more income sources have more ability to enhance their income. This empirical result confirms our expectations and the prior study of Nguyen et al. (2011), and Nguyen and Bui (2011). These authors also stated that income-generating activities are one of the key factors affecting the average income per capita of households in rural areas of Vinh Long province.

Thirdly, household size has a negative correlation with poor household income with the negatively estimated coefficient (β_4 = –62271.12; p < 0.01) at the significance level of 1 percent. This indicates that assuming that all other variables remain constant, when the size of the poor household increases by 1 person, the average income per capita of the poor household will reduce by 62,271. This finding is contrary to the original assumption and the study conducted by Lanjouw and Ravallion (1995).

Fourthly, the estimated result in Table 8 points out that access to credit positively affects poor household income with the positive estimated coefficient (β_5 = 99824.44) at

Table 8: Estimated Results of the OLS Regression Model

Variables	β coefficient	P-value	VIF
Production land	32720.64**	0.015	2.80
Educational level	−398.9313	0.931	1.15
Income generation	121162.8***	0.002	2.98
Household size	−62271.12***	0.000	1.10
Access to credit	99824.44***	0.008	1.53
Means of production	125295.1***	0.001	1.39
Local society	19349.27	0.553	1.14
Means of transportation	82866.55**	0.017	1.24
Constant	534509.300	0.000	
Prob > F	0.0000		
R²	0.7156		
Adjusted R²	0.6951		

Note: *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

the significance level of 1 percent, which means that when households have access to loans, the average income of the borrowers will be higher than that of non-borrowers. This result is in accordance with the original hypothesis and is perfectly suited to the fact that if a household qualifies for the loan and gets a loan from a bank or other financial institutions, this household will be more active in the production process since this household will have the sufficient financial resource to purchase a vehicle, raw materials, production equipment, to fill gaps in the pre-harvest season as well as to avoid selling products immediately after harvesting at low prices.

Furthermore, the estimates result in Table 8 shows that the application of modern farming tools has a great influence on the income of the poor household at the significance level of 1 percent. This result is in line with the expectation of the study and the empirical findings of previous studies such as Dang (2012), and Nguyen et al. (2011). If poor households have more production tools, they can actively conduct the production process and control production expenses. As a result, the households' income can be boosted.

Last but not least, as expected, there is a positive relationship between means of transportation and the income of poor households. This is clearly shown through the research results in Table 8 that the estimated coefficient is positive (β_8 = 82866.55) at the significance level of 5 percent. This indicates that the average income per capita of the poor households who live in good transportation areas is likely higher than that of those who live in the unfavorable transportation location, ceteris paribus. This result is

perfectly suited to the fact that if there are favorable roads, purchasing and transporting goods will be faster and easier, thus reducing the cost of transportation when harvesting products.

However, the study has not found the significant impacts of the educational level of household heads and participation in the local society on the income per capita of poor households. Since the P-value for each coefficient of these variables is quite high, it can be concluded that these factors are not decisive in determining the income of households in the study area of Soc Trang province.

5. Conclusion and Recommendations

5.1. Conclusion

This paper investigates the determinants of poor households' income in Soc Trang province of Vietnam. Data are collected from direct surveys of 120 poor and near-poor households in the given location. By employing the OLS regression model, this study finds that six factors significantly affect the income per capita/month of poor households, including production land, the number of income generation activities, household size, access to credit, means of transportation, and means of production. The remaining variables consisting of the educational level of the household head and participation in the local society have no considerable effect on the income of the households in the sample. Based on the empirical findings, several solutions and recommendations are proposed to boost the poor household's income.

5.2. Recommendations

Firstly, to enhance the poor households' income in Soc Trang province, it is important to have a land delivery mechanism and land lease incentive policy for poor households who have a viable production scheme, or schemes relating to the development of cooperatives, and traditional handicraft villages.

Secondly, it is necessary to diversify the types of credit for poor households such as the funding model from the enterprises to the poor households and the repayment from households by directly selling agricultural products to these enterprises. To successfully implement this model, the local authority should provide support by encouraging the qualified poor household to participate, and giving advice on the choice of type, method, and location of repayment of product between parties. In addition, the grant of credit to poor households should be based on the feasibility of capital use and the loan purpose. Besides that, the lending procedure should be simplified, and the term of the loan should be more flexible.

Thirdly, it is essential to recover and make traditional occupations attractive for people to take up as well as to establish cooperatives to create more opportunities for poor households to generate more income in the given study area.

Lastly, the government should enact subsidy policies that can attract firms investing in the high-priority issues of the local authority. These legal policies create good conditions for enterprises to expand investment, production, and business, especially in rural areas, thus creating more jobs for the local people as well as boosting the purchasing and consumption of products.

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