IOSR Journal of Economics and Finance (IOSR-JEF)
e-ISSN: 2321-5933, p-ISSN: 2321-5925.Volume 7, Issue 3. Ver. II (May. - Jun. 2016), PP 09-12
www.iosrjournals.org

Determinants of Factors That Affect Poverty among Coastal Fishermen Community in Malaysia

Ali Mohamed Omar Rhoumah (Gs41128)
Supervisory CommitteeChairman: Prof. Dr. Ismail AbdLatif

Abstract:*This study investigated the determinants of poverty among Coastal fishermen in East Coast Peninsular Malaysia. In this study was used several measurements to measure poverty and the logistic regression model used to estimate the effect of socioeconomic factors on poverty among fishing households. The result shows high incidence of poverty among fishing households. The size of household, income, education, and marital status are the major determinants of poverty among fisher's households.*
Keywords:*Poverty, Fishermen, Logistic Regression, Household, and Malaysia*

I. Introduction

Fisheries are an important source of employment and food for millions of people in the world. In 2004, an estimated 41 million worked as fishers and fish farms as full or part time. The majority of fisheries and fish farms found are small scale, artisanal fishers earning a living from coastal and inland fishery resources. Majority of these vast were from Africa, Asia and Latin America, with close to 88% from Asia (FAO, 2007). Fisheries sector in Malaysia is an important source of food, employment and foreign exchange. Many households in Malaysia depend on fishing as the main source of income. In 2013 contribution of fisheries sector to GDP was 1.37% and to agriculture sector was about 11%.In Malaysia the total catch of fish increased from 16,000 tons in 2002 to 120,000 tons by 2010.About 80% of the total catch from coastal fishers.Eventhough, the fisheries sector contribute significantly to GDP, the fishermen in Malaysia still have a high incidence of poverty.This study was conducted to fulfill this gap.

II. Material And Methods

This section will present and examine the specific objective of the study, and also discuss the study area and sampling technique and sample size. The study area was in East Coast Malaysia, which includes states of Terengganu and Kelantan. The sample size was 315from Terengganu and 347 from Kelantan. Stratified random sample technique was used to collect data from study area. The data collected randomly from fishermenbetween March and August 2015. The study also discussed the poverty measurements and socioeconomic factors affecting povertyto examine specific objective. It has two parts of analysis firstly; poverty measures. Secondly, logistic regression was used to analyze the relationship between poverty and socio-economic variables.

Poverty measurement

1. The headcount index (P_0) used to measure the proportion of population that is counted as poor. $P_0 = \frac{N_P}{N}$
   Where N_P number of poor people and N is the total population or sample size.
2. The poverty gap indexP_1 used to measure the extent to which individuals fall below poverty line (Poverty gaps) as proportion of poverty line. That means how far on average poor people fall below poverty line.G=Z-Y then $P_1 = \frac{1}{N}\sum_{i=1}^{n}\frac{G}{Z}$
   Where, (G) is poverty gaps and (Z) poverty line and (Y) income or expenditure under poverty line.
3. The squared poverty gaps (poverty severity) index (P_2) averages the squares of poverty gaps relative to the poverty line. This index used to measure severity poverty; on the other way the gap between poor themselves. $P_2 = \frac{1}{N}\sum_{i=1}^{N}(\frac{G}{Z})^2$Also we can compute the poverty severity by taken square of poverty gaps

4. The Watts index

The first distribution poverty measure was proposed in 1968 by Watts (See Sheng 1993). Its form:$W = \frac{Ln(Z)-Ln(Y)}{N}$

Where (Z) is poverty line, (Y) consumption expenditure falls below poverty line and (N) is the sample size. We can compute the Watts index by dividing the poverty line by income or expenditure of individuals, taking the logs and finding the average over the poor. Most researcher use Watts index because satisfies all theoretical properties so it is a good measure for poverty

5. Time to exit poverty

According to the Watts theory, we can predict after how many years poor people could pass poverty line. After measure the Watts index we can compute time taken to exit poverty by dividing Watts respect to economic growth rate. Watts assumed the economic growth rate continue over years at same level.

T= $\frac{W}{g}$Where (W) Watts index and (g) economic growth rate.

6. Gini Coefficient index

The gini coefficient is used to measure inequality of a distribution. It is defined as ratio with values between 0 and 1: the numerator is the area between the Lorenz curve of the distribution and the uniform distribution line; the denominator is the area under the uniform distribution line. It was developed by Italian statistician CorradoGini and published in his 1912 paper 'Variabilita and Mutabilita'. The gini index is gini coefficient expressed as percentage, and equal to gini coefficient multiplied by 100. Then the gini coefficient is often used to measure income inequality distribution. G=$\frac{A}{A+B} * 100$, Where A the area between equality line and Lorenz curve; B the area under Lorenz curve.

Statistical Analysis

This study will follow logistic regression for binary response variables used to describe the population proportions of occurrence of an event. The population proportions of successes the probability $P(Y = 1)$ for poverty level. This probability varies according to explanatory variables. Models for binary data which dichotomous bin nature assume a binomial distribution which well described in Hollander & Wolfe (9/1973;Pp15); Whittle, (1976); Gujarati (2004; Pp583) for dependent variable let represent a dichotomous random variable, and the binary variable Y has categories denoted by 1and 0. That dependent variable can take value 1 with probability of success or the value of o with probability of failure.

Logistic Regression Model:

Y=$B_0 + B_1(X_1)+B_2(X_2) + B_3(X_3) + B_4(X_4) + B_5(X_5) + B_6(X_6)$

Model specification

Y where is the expenditure consumption (Y=0 if expenditure <poverty line and Y=1 if expenditure >poverty line)

X_1= Age of fishermen per years

X_2= Education level per years

X_3= Fishing experience per years

X_4= Household size per numbers

X_5= Marital Status equal 0 if single and 1 if married

X_6 = Fishing Income

III. Results And Discussion

1. Poverty measurement

The head-count ratio (HC), is one of the simplest and the widely used measures of poverty. The head-count ratio is basically the proportion of total population whose income falls below the specified poverty line. The head-count ratio shows that the overall poverty incidence among respondents is 28.10 % for extreme poverty where line is RM460 while it is 81.57 % for normal poverty where poverty line is RM700.

As shows in Table1, 28.10% of the sample households are unable to fulfill the minimum amount of consumption expenditure per adult equivalent per year and they live under absolute poverty. Besides, a poverty gap (p=1) of 5.96% implies the amount of income transfer needed to close up the average gap or distance separating the poor from the poverty line. Finally the poverty severity index (P=2) in the consumption expenditure reveals a 1.4 % fall below the threshold line.

Table 1: Poverty measures

	Extreme Poverty					**Normal Poverty**				
Category	HC	PGI	Severity	WI	Time	HC	PGI	Severity	WI	Time
Overall	28.10	0.0496	0.014	0.061	1.52	81.57	0.2481	0.091	0.3161	7.90
Kelantan	38.91	0.0699	0.0177	0.081	2.03	91.07	0.3035	0.1169	0.3877	9.69
Terengganu	16.20	0.0273	0.0099	0.039	0.96	71.11	0.1870	0.0622	0.2363	5.91

Similarly, for normal poverty, 81.57% of the sample respondents are unable to fulfill the minimum amount of consumption, health and education per aadult equivalent per year and they live under normal poverty. While poverty gap of 24.81% shows that income transfer, require to finish the average gap separating the normal poor from poverty linewhile severity index shows that 9.1% fall below the threshold line of normal

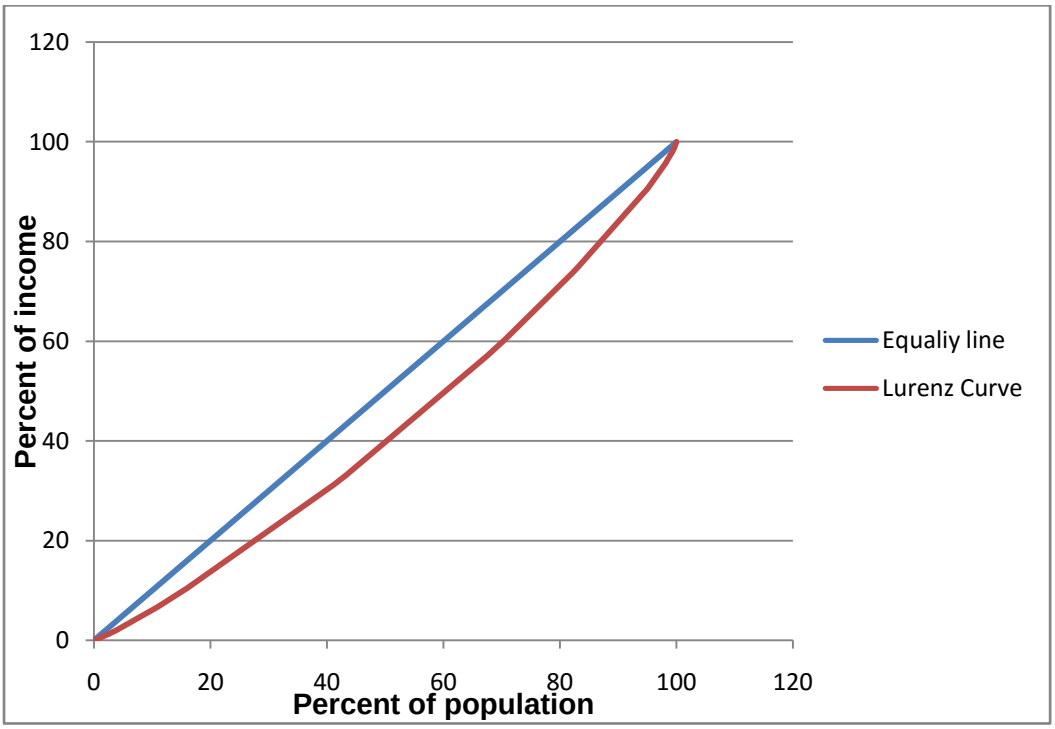
poverty.An appealing and more useful indicator for policy discussions may be the average exit time amongst the poor than the average exit of all sample households because otherwise policy makers might conclude that poverty can be quickly eliminated, neglecting to remember that many people are already non-poor.Using the consumption per capita growth rate of the region, the average time needed for poor households to exit poverty was estimated assuming that this growth rate is continues and registers a positive result each year.Under 4% of growth rate time takes to exit from absolute poverty is 1.52 years, while for normal poverty it is 7.90 years.
Extreme poverty in Terengganu is 16.20 percent as compared to 38.91 per cent in Kelantan while poverty gap index 2.73 percent 6.99 percent in both regions, respectively, which shows that poverty, is very disperse between two regions. However, poverty severity index is about one percent and 1.77 percent in Terengganu and Kelantan, respectively.

For normal poverty similar trend can be seen in Table 1. Poverty is 71.11 percent in Terengganu as compared to 91.07 percent in Kelantan where poverty gap is 18.70 percent and 30.35 percent in Terengganu and Kelantan, respectively. However, poverty severity is 6.33 percent in Terengganu and 11.69 percent in Kelantan.

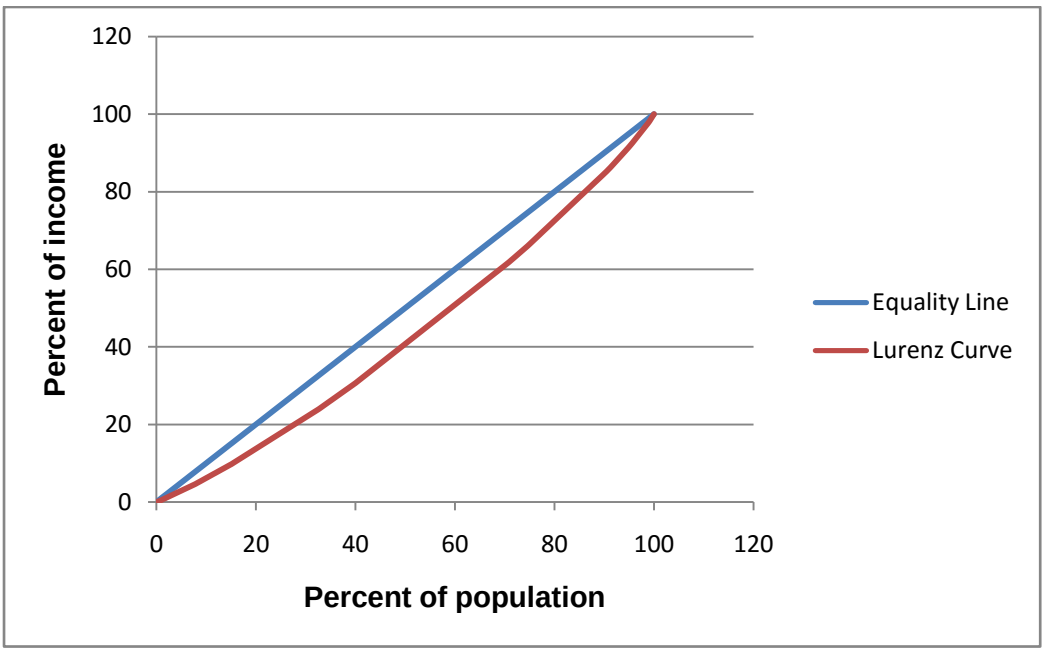
2. Gini coefficient

Gini coefficient for 0.582 Kelantan and Terengganu are 0.51 and area (A) equal 0.291which is area between Lorenz curves and equality line.). GiniIndex for the Kelantan state found to be 0.582. That was more towards total inequality. This result of Ginicoefficient indicates that there is income inequality among the fisherman of Kelantan State of Malaysia. This also shows that there is gap between rich and poor fisherman, which need to be further be taken into consideration through effective government policies. Below figure1 shows the Lorenz curve that is known as standard traditional approach to determine the size of inequality in Fisherman of Kelantan and Terengganu State of Malaysia. Lorenz curve and Gini coefficient explains the gap between the rich and poor fisherman.

Lorenz curve is an instrument to analyze personal income statistics. In constructing a Lorenz curve, the numbers of income recipients are plotted on the horizontal axis, not in absolute terms but in cumulative percentages. The vertical axis shows the share of total income received by each percentage of population. It also is cumulative up to 100%, meaning that both axes are equally long. The entire figure is enclosed in a square and a diagonal line is drawn from the lower left corner (the origin) of the square to the upper right corner.



Lurenz Curve for Terengganu



Lorenz curve for Kelantan

3. Logistic Regression Results

The result of determines of poverty among fishermen households is presented in Table 2. TheX^2 statistics test the null hypothesis of all estimated coefficients taken together being equal to zero. The value of the X^2 statistics for the model is 195.63 and is significant at 1%confidence level.

Age of the household has positive sign while it is significant slightly near 10%level of significant. Firstly, as person gets older, he has more experience in fishing and earn more income and hence, chance of getting poor becomes less, Secondly, as household head gets older, the energy begin depreciate and output and income also decline which increase chance of the household falling into poverty.Education level of sample response expected sign with 5% level of significant. It means that as the person move from illiteracy to higher education probability of respondent for getting out of poverty increase by 23.51% while keeping the other variables constant.

Experience of respondents showed the expected sign but significant. It means that as the person gets experience the probability of person to exit out poverty increase.Household size also has expected sign and significant at one percent level of confidence. It showed that as household members increase by one unit the chance of getting poor increase by 28.51%as more members add in expenditure.

Marital status is significant at one percent level of confidence. Thus marriage and benefits it accrues has a positive effect in reducing poverty among fishing households. The result shows that as the person married the chance of getting poor will decrease by 72.70%.Income from fishing activities is positive related to the poverty status of the household and significant at one percent. This shows that as the income from fishing activities increase by one Ringgit (RM1), the probability of being poor decease by 0.52%.

Table2:

Category	Coefficient	SE	Z-Statistics	Odd Ratio
Age	0.0145	0.0093	1.55	1.015
Education	0.2351	0.105	2.23**	1.265
Experience	0.0104	0.009	1.12	1.011
Household Size	0.2851	0.044	6.42*	1.329
Marital Status	0.7270	0.208	3.50*	2.068
Fishing Income	0.0052	0.0007	7.22*	1.005
Constant	-6.1518	0.729	-8.44*	
No. of obs	662			
LR Chi2 (5)	195.63			
Prob> Chi2	0.000			
Pseudo	0.2175			

Log Likelihood	-351.86			

IV. Conclusion

This study examined poverty and determinants of poverty among coastal fishermen of Malaysia. Poverty measurement was twofold; extreme and normal poverty. Overall extreme and normal poverty among Malaysian fishermen was found28.10%, and 81.57% respectively. It was estimated that one year require exiting from extreme poverty if Malaysian growth rate would be 4% while it is about 7 years for normal poverty.The determine poverty includes socio-economic characteristics of household such as age, household size and marital status and managerial characteristics such as education and experience. All determinants were found significant except age and experience for extreme poverty under Logistic regression model.

References

[1]. Abdul-Hakim, R., & Che-Mat, S. H. (2011). Non-Farm Activities and Time to Exit Poverty : A Case Study in Kedah, Malaysia. World Review of Business Research, 1(2), 113–124.
[2]. Ahmed, N. U. (1999). A Study on Socio-economic Aspect of Coastal Fishermen in Bangladesh, MS Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh.
[3]. Ahmed, N., Rahman, S., Bunting, S. W., & Brugere, C. (2013). Socio-economic and ecological challenges of small-scale fishing and strategies for its sustainable management : A case study of the Old Brahmaputra River , Bangladesh, *34*, 86–102. doi:10.1111/sjtg.12015
[4]. Abu Talib Ahmad1, Tan Geik Hong2 and Abd. Hamid Yasin2. "Overview of the National Fisheries Situation with Emphasis on the Demersal Fisheries off the." n.d.
[5]. Cameron A.C., Trivedi P.K. (2005). Microeconometrics – Methods and Applications, Cambridge University Press, New York.
[6]. Devi, N. B. L., Ngangbam, A. K., Immanuel, S., & Ananthan, P. S. (2014). Study of fishers' socioeconomic and cultural profile around the Loktak lake of Manipur, India. Journal of agriculture and veterinary science, 1(5), 48-56.
[7]. Diana, N., Idris, M., & Siwar, C. (2015). From poverty reduction to poverty relief : Impact of non-farm income in Integrated Agriculture Development Area (IADA) Samarahan, Sarawak, Malaysia. Malaysian Journal of Society and Space, 1(11), 32–41.
[8]. Dudek, H., & Lisicka, I. (2013). Determinants of Poverty – Binary Logit Model With Interaction Terms Approach. Ekonometria Econometrics, 3(41).
[9]. Evgjeni Xhafaj. "DETERMINATION OF THE KEY FACTORS." *European Scientific Journal*, August 2014.