References

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Determinants of Poverty in Sri Lanka

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Abstract

Combating poverty is a problem in Sri Lanka as the pockets of severe deprivations are widely acknowledged. In this research, the prime objective was to find determinants of poverty. For this purpose, 2002 Household Income and Expenditure survey (HIES) data of fifteen poorest Divisional Secretariat (DS) divisions are used. Binary logistic modeling was used to find the determinants of poverty and to quantify effects. Principal Component Analysis and Factor Analysis were used for visualization of multidimensional data. The logistic regression model results show that, the household size, highest education level, total household income, number of income receivers and age of the household head are influential factors to being poor. Factor analysis and principal component analysis, resulted in the variables extracted into clearly defined and interpretable four factors (economic, household factors, household head characteristics and number of income receivers) to identify the status of poverty

1. Introduction

In general, poverty can be expressed as deprivation in well-being. In Sri Lanka poverty incidence has declined from 26.1 in 1990/91 to 15.2 in 2006/07, although in some areas pockets of poverty are present. Thus it is required to understand the root of poverty for successful policy making to launch poverty alleviation programmes.

In this research, the fifteen poorest DS divisions were extracted from the list [1] created by DCS on the results of poverty indices in 2002. The HIES -2002 data were used and logistic regression model, Principal Component and Factor Analysis utilized to identify key determinants of poverty in Sri Lanka. The response variable was poor/non-poor household and the explanatory variables used were household size, education level of the most educated, total income , number of income earners, age of head and per capita income.

2. Methodology

A logistic regression model [2] was fitted using the real per capita expenditure as cut off point corresponding to Sri Lanka Official Poverty Line (OPL) Rs.1423 in 2002. A factor analysis [3] was carried out using principal component methods with Varimax rotation. Interpretable factors were identified through the factor loading >0.4

3. Results and Discussion

The results from the logistic regression model are shown in Table 1. The Pearson goodness of fit statistics and deviance statistic both indicate that the logistic model fits the data well. The results revealed that the household size is the most important determinant of being poor (that is larger the size more likely of being poor). The variables education, income, number of income receivers and age of household head show the significant negative relationship with poverty status.

Table1: Logistic regression model

Predictor	Odds Ratio	95% C.I. of Odds Ratio's	
		Lower	Upper
Constant			
hsize	2.59	2.21	3.04
Hieducat			
Year6-8 vs <year5	0.43	0.23	0.80
Year9-O/L vs <year5	0.34	0.19	0.59
>A/L vs < year5	0.21	0.10	0.42
Cattotin			
3000-5000 vs <3000	0.48	0.27	0.82
5000-70003 vs <3000	0.16	0.09	0.29
7000-9000 vs <3000	0.09	0.04	0.18
>9000 vs <3000	0.03	0.01	0.06
Numirsca			
2_persons vs 1_person	1.16	0.77	1.75
3_persons vs 1_person	1.76	0.87	3.57
>=4_persons vs 1_person	0.27	0.09	0.82
Hage	0.98	0.97	0.99

Goodness of fit test				
	Value/ DF	Pr>Chi -Sq		
Deviance	0.9348	0.8901		
Pearson	0.9538	0.8049		

The results of the adjusted odds ratios found that education significantly reduces the risk of poverty One other important aspect of the odd ratio result is that the level of household income has strong negative impact on poverty status. It is observed that when the level of income is higher the household has less odds of being poor.

The principal components factor analysis was performed using Varimax rotation. The scree plot is given in Figure 1. This shows the proportions of variance explained by each factor and indicate the first four components sufficiently explain (80% of variance) the data. The four factors were labeled as Economic factor (F1), Household factor (F2), Household head characteristics (F3) and number of income receivers (F4). The factor loading matrix for the final results is shown in Table 2.The strong loading is reported from F1. All variables were well represented by the four chosen factors given that the

corresponding communalities are generally high. For example, 93.3% of the variability in per capita income is explained by the four factors.
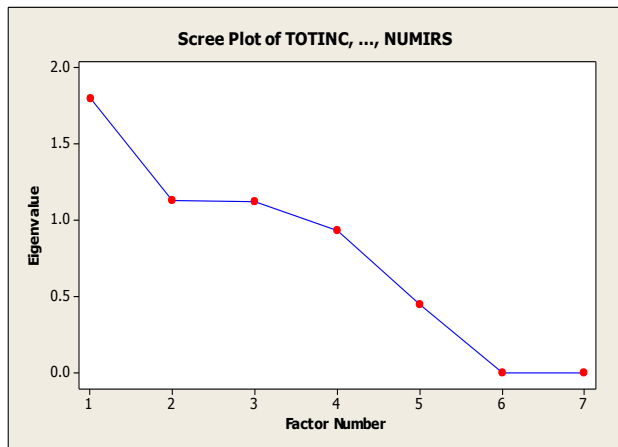

Figure 1: Scree plot

The factor scores were created for each factor. When considering factor scores, it will represent a weighted aggregate of variable loading on the factor. Therefore this assists to identify the households which contribute less/ high to that factor by sorting the scores. This may be a good criterion to use in poverty reduction programs and for selecting suitable recipients to advice

Table2: Factor loading and communities based on Factor analysis

Variable	F1	F2	F3	F4	Communality
Pcincome	0.94				0.93
Totinc	0.89				0.87
Hsize		0.87			0.81
Hieducat		0.68			0.74
Hage			0.77		0.65
Heducat			-0.74		0.73
Numirs				0.94	0.88
Variance	1.878	1.38	1.323	1.023	5.61
% Var	0.268	0.198	0.189	0.146	0.80

Regression analysis was done using simple factor scores as independent variables using the results in Table 2. The log of average total household expenditure was used as dependent variable. (Poverty line based on expenditure) The results are shown in Table 3.The results indicate that except FC3 and FC4 all other variables are significant at 5%

significance level and the model R-square is 55.4 %. Even F4 is significant at 20 %. In general the regression model fits the data well and residual analysis indicates it.

Table3: Factor scores regression analysis result (R-Sq = 55.4%).

Variables	Coefficient	P
Constant	3.797	0.000
FC1	0.0758	0.000
FC2	0.07936	0.000
FC3	-0.00197	0.634*
FC4	0.008013	0.192*

Among four factors the most important factor for poverty is the economic factor and second is household factor.

4. Conclusion

This study shows that the most influential determinants for poverty are; Household size, highest education level, total income, number of income receivers and age of household head. The results indicate that large families are more prone to poverty and other variables are negatively related to poverty. The results are helpful for government policy formulation especially in relation to poverty reduction.

References

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