



Determinants of the regional poverty incidence in Sri Lanka and the impact of the estate sector population

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Abstract

Plantation areas are the places where the highest levels of extreme poverty and unemployment are focalized in many countries. Sri Lanka's poverty incidence among the population belonging to the estate (plantation) sector has recently surpassed the rural and the urban demographic sectors. Under the present study, regional poverty survey data and other related official socio-economic cross sectional data from four selected provinces (Uva, Sabaragamuwa, Western and North Central) were analyzed to assess the impact of the estate sector population on the poverty headcount ratio at the Divisional Secretariat Division (DSD) level. The OLS regression analysis indicates that improved human capital, regional infrastructure and industrial sector employment is negatively and significantly correlated with the regional poverty incidence. This econometric analysis also indicates that the provincial characteristics have higher contribution to the regional poverty incidence when compared with the impact of the estate sector population. The results emphasize the need for adopting policies for employment generation and developing regional infrastructure which facilitates the improvement of both industrial and agricultural sectors, hence reducing poverty headcount ratio at the DSD level in selected provinces.

Key words: regional poverty incidence, head count ratio, Sri Lanka, estate sector, plantation areas

Introduction

The incidence of poverty is an important indicator of the benefits from economic growth. Reduction of extreme poverty and hunger by 2015 is the first target of the UN-declared Millennium Development Goals (MDGs) and it is the central goal that influences the achievement of other MDGs (UNDP, 2001). Administrators of development programmes often use poverty indicators to assign regional priorities of public welfare, thus understanding the geographic distribution of poverty is important to help target poverty reduction policies (Suryanarayana, 2000; Jolliffe, 2003; World Bank, 2005).

Department of Census & Statistics (DCS) estimated Sri Lanka's official poverty line for 2002 on the basis of the expenditure necessary to maintain a daily intake of 2,030 kilocalories per person and to meet other basic needs. It used the absolute poverty line approach and determined it at Rs. 1,423 (about US\$ 13.5) in terms of real total food consumption expenditure per adult equivalent per month

(DCS, 2004a and 2004b). As per the 2002 official poverty line for Sri Lanka, using the Household Income and Expenditure Survey (HIES) of the DCS, 23% of the population has been identified as poor (Table 1). These poverty statistics show a decline in the aggregate poverty levels during the 1990-2002 period (DCS, 2004a). Even with massive budgetary allocations for national level poverty alleviation and social welfare programmes by successive governments, the urban sector has succeeded in increasing the per capita income and hence reducing the poverty when compared with the rural and estate sectors.¹ Over 88% of the poor are living in the rural sector in 1995/96 but only

¹ All areas administered by Municipal and Urban councils constitute the urban sector. Estate sector consists of all plantations which are 20 acres (0.081 sq. km) or more in extent and with ten or more resident labourers. All areas other than urban and estate comprise the rural sector.

8% and 4% of the poor live in the urban and estate sectors respectively (Gunewardene, 2000).

The trend in the reduction of poverty is clearly evident in the urban sector, while an increasing trend is seen mostly in the estate sector, vulnerability to fluctuations is highest in the rural sector (Gunetilleke, 2000). According to 1990-91 and 2002 HIES (Table 1), the absolute poverty in the urban sector has declined to 6.2% in 2002 but is high in the rural (20.8%) and estate (24.3%) sectors under the headcount index method (DCS, 2004a).

Table 1. Incidence of Poverty (%) by Sector

Sector	1990/91	1995/96	2002
Urban	16	14	08
Rural	29	31	25
Estate	21	38	30
Sri Lanka	26	29	23

Source DCS (2004)

The empirical results suggest that, after controlling for other variables associated with poverty, households residing in the rural or estate sector are significantly (about 40%) more likely to be poor than households in urban areas (World Bank, 2005).

Plantation areas are the places where the highest levels of extreme poverty and unemployment are focalized in many countries. Beckford (1972) and Parke (2003) recognize that poverty and inequality of income distribution in the plantation sector are a global phenomenon. Even today's advanced economies experience socio-economic issues related to poverty and income inequality in the plantation sector as found in the sugarcane plantation in Louisiana (Parke, 2003) and Georgia's cotton plantation belt in the United States (Levernier and White, 1988; Bartley, 1990).

Levernier and White (1998) state that while the economic, demographic, and human capital characteristics of an area affect the area's poverty rate, an additional impact is expected by institutionalized cultural characteristics of a certain social group over that area's regular economic, demographic and human capital characteristics that would make it qualified for having a relatively low or relatively high

poverty rate. The objective of this study is to assess the significance of the presence of the estate sector population, as a determinant of the Divisional Secretariat Division (DSD) level poverty incidence notwithstanding other possibly affecting economic, demographic, and human capital characteristics in the DSD using the most recent official data.

Methodology

Although the impact of the share of agricultural households, unemployment and ethnicity on the incidence of Sri Lanka's poverty has been analyzed by many researchers, there is a lack of econometric analyses that have taken into account the impact of the estate sector population on poverty at the regional level. Therefore, the following null hypothesis is postulated for the present study:

H₀: The proportion of the estate sector population has no significant impact on Sri Lanka's regional poverty incidence.

Western province has the highest average income and lowest poverty incidence, and Uva and Sabaragamuwa provinces have the lowest average income and the highest poverty incidence (Weerahewa and Wickramasinghe, 2005). Moreover, the share of the Western Province in the country's GDP rose significantly from around 40% in 1990 to 50% by 2000, even though the province accounted for only 29% of the nation's population. These regional disparities are due to sluggish agricultural growth and related activities, the concentration of free trade zones in the Western province and the regional disparities in infrastructure and other facilities (Central Bank of Sri Lanka, 2004 and World Bank, 2004 quoted in Weerahewa and Wickramasinghe, 2005). Since Sri Lanka's urban population accounts for only about 20% of the total population, the incidence of increasing poverty in the rural and estate sectors has serious policy implications. Moreover, the estate sector's surpassing of the incidence of poverty over the rural sector (DCS, 2004a) also highlights the importance of analyzing the significance of the estate sector population on Sri Lanka's regional poverty incidence.

According to the above literature and survey findings, the following corollary null hypothesis is also postulated:

H_a : Sectoral demographic characteristics are not significant in Sri Lanka's regional poverty incidence compared with provincial characteristics.

Data Source

Secondary data on poverty headcount ratio were drawn from Household Income and Expenditure Survey (HIES) conducted in 2002 by the DCS. Data on employment, literacy, population share in each demographic sector and availability of electricity at the household level are from the results of the 2001 national census of population and housing. Thus, observations from all 122 DSDs in the selected four provinces were used.

Model Specification

Assuming employment, relative volume of agriculture and industrial production, education level, infrastructure development and access to the market as the core determinants of the regional poverty headcount ratio, the special effect of the sectoral distribution of the estate and rural population within a DSD area is taken into account under the present study. Gunatilaka and Chotikapanich (2005) used a similar regression model to analyze inequality trends and determinants in Sri Lanka during the 1980-2002 period. Accordingly, the current approach is to identify the determinants and their significance associated with the regional poverty (H) as a simple model with several variables that describe the incidence of poverty in terms of demographic, geographic, industrial composition, economic activity, infrastructure and human capital characteristics. The basic model is thus illustrated below in which the poverty headcount ratio is a function of several related factors:

$$H = F(\text{DEMOG, GEOG, INDCOMP, ECON, INFRASTR, HUMANK}) \quad (1)$$

The modifications are consistent with several poverty analyses such as by Gunatilaka and Chotikapanich (2005) for Sri Lanka's inequality and the IMF strategy paper for poverty reduction in Bangladesh (IMF, 2005).

When these possible determinants are organized as variables into the following form for Ordinary Least Square (OLS) estimation, it can be shown as a simple linear single-equation regression model:

$$H_i = \alpha_i + \beta_1 \text{RURALSHARE}_i + \beta_2 \text{ESTATESHARE}_i + \beta_3 \text{LIT}_i + \beta_4 \text{UNEMP}_i + \beta_5 \text{AGFISHEMP}_i + \beta_6 \text{INDEMP}_i + \beta_7 \text{ELEC}_i + \beta_8 \text{DSAB}_i + \beta_9 \text{DUVA}_i + \beta_{10} \text{DNC}_i + u_i \quad (2)$$

Here, H_i is the headcount ratio in a Divisional Secretariat Division, as calculated by the DCS (2004a) based on the national poverty line. To achieve the basic research objective in the present study, i.e. to assess the impact of the estate sector, ESTATESHARE is used as the proportion of the estate sector population with respect to the total population. Similarly, the people who live in the rural areas of each DSD area are captured by RURALSHARE. Regional human capital development is given by literacy rates (LIT). Employment or the economic activity of people is reflected by UNEMP (unemployment rate), which is expected to be positively correlated with poverty in the model.

Food availability and food access have a direct impact on poverty (Benson, 2003; Woldemariam and Mohammed, 2003). Therefore, the level of primary food and agricultural output is taken into consideration under the variable AGFISHEMP, i.e. the proportion of employment in the agriculture and fisheries sectors to the total number of employed people in the DSD. This variable also serves as a proxy for the overall food output as well as the opportunity to meet required calorie intake, which would be either above or below the poverty line. Increasing industrial output of a region is positively correlated with increased income and negatively correlated with poverty incidence (Dunham and Kelegama, 1997; GOSL, 2002; Khan, 2005). The variable INDEMP is the proportion of employment in all industrial sectors within the DSD with respect to the total number of employed people. This serves as a proxy for the overall industrialization level of the region because value addition to the primary commodities through industrial activity helps generate employment and better income opportunities.

The level of infrastructure development decreases with increasing distance to the nearest town of any region. The proportion of houses that use electricity as the main source of lighting (ELEC) is therefore used as a proxy for the infrastructure development and the development of regional markets in urbanized localities. Provincial dummies are used to differentiate the geographic variation of the study area including provincial characteristics as well as the distance from the capital city.

Western province includes the country's capital city (Colombo) and has the lowest poverty headcount ratio with the highest share of urban population as well as a very low percentage of estate sector population. Therefore it was used as the base for provincial dummies, which capture the difference of geographic location. The other three provinces were selected due to their significant features with respect to the incidence of poverty and the sectoral population ratio (Table 2).

Table 2. Poverty Headcount Ratio and Relative Sectoral Distribution of Population in Selected Provinces (2002)

Province	Poverty Incidence (H)	Relative proportion of total population		
		Urban	Rural	Estate
		%	%	%
Uva	35	4.5	81.3	14.0
Sabaragamuwa	37	4.0	87.0	9.0
North Central	25	5.0	95.0	0.0
Western	11	31.0	68.0	1.0

Source DCS (2004)

Estimation and Fitness of the Model

Cross sectional data for 2001-2002 time period are used for the estimation using STATA software. The summarized results of regression analysis are provided in Table 3. High R² and adjusted R² (0.82 and 0.81 respectively) for the Model indicate the statistical fitness of the model used to analyze the regional poverty incidence in Sri Lanka.

Empirical results

The null hypothesis (H₀) cannot be rejected at the 5% significance level for the given data

set. The level of significance for the variable ESTATESHARE is positive but not significant. Therefore, it can be concluded that Sri Lanka's estate sector population does not possess different institutionalized cultural characteristics, whose poverty levels do not have an additional influence over the regional (DSD) level poverty incidence compared with other determinants of poverty. It is also found that the rural share is more relevant to regional poverty incidence than the estate share for the present data set, confirming several studies such as Gunewardene (2000), Kelegama (2001) and World Bank (2005).

Table 3. Regression Results of the Model

Dependent variable: HI	
Explanatory Variable	
(a) RURALSHARE	0.0491** (0.028)
(b) ESTATESHARE	0.0914 (0.067)
(c) LIT	- 0.110** (0.054)
(d) UNEMP	0.633** (0.285)
(e) AGEMP	0.012 (0.056)
(f) INDEMP	- 0.210*** (0.076)
(g) ELEC	- 0.266*** (0.050)
(h) DNC	- 6.788*** (2.088)
(i) DUVA	1.763 (2.230)
(j) DSAB	5.379*** (1.603)
(k) Const	42.097 (7.393)
Prob > F	0.0000
R ²	0.825
Adjusted R ²	0.809
* = at 10%, ** = at 5%, *** = at 1% level	
No. of observations = 122	

Moreover, the corollary null hypothesis (H_a) also cannot be rejected at the 5% significance level for the given data set. Accordingly, we can conclude that Sri Lanka's regional poverty headcount ratio (P₀) is more

explained by provincial characteristics than the demographic sector of peoples' residence.

The results show that unemployment, employment in the industrial sector, level of infrastructure and educational level are more significant than the sectoral impact on regional poverty incidence (Table 3).

The major finding of the regression analysis is the significant contribution of the increasing rural population and the agriculture sector employment for increasing the incidence of poverty, though the latter is not statistically significant. When comparing the relative contribution of demographic sectors for the poverty incidence at the DSD level, it is found that the contribution of the estate sector is less significant with respect to that of the rural sector in selected four provinces.

The industrial sector helps to reduce poverty through employment generation; however, agriculture, which is expected to reduce poverty, does not seem to be effective according to the results from the four selected provinces. Possible reasons are the high ratio of wage labourers in the agriculture sector in Uva and Sabaragamuwa compared with North Central province, where the proportion of farm ownership is higher and the low value addition and smaller farm size in the former two provinces when compared with the latter are other contributing factors. Although the coefficient of the provincial dummy for Uva is positive as expected, it is not significant even at the 10% level.

It was expected that the longer the distance from the country's capital, the higher the incidence of poverty would be at the DSD level. However, this is the opposite in the case of North Central Province. This may be due to the fact that its remote geographic location tends to help to reduce poverty through the low cost of living, better access to basic food (rice) and better employment opportunities in the agriculture sector, with improved irrigation infrastructure. However, the geographic location of Sabaragamuwa positively and very significantly (significant even at the 1% level) contributes to a higher poverty incidence, although it borders the most developed Western Province. The coefficient for Sabaragamuwa dummy is greater than that of Uva. These

findings are also consistent with findings of Narayan and Yoshida (2005).

Discussion and concluding remarks

Though halving poverty incidence by 2015 is a great challenge, with its supportive human development environment Sri Lanka has many opportunities as per the findings of the present study. Similar to the fact that there are many causes of poverty incidence, reducing poverty also results in multiple and cumulative benefits.

The results highlight the importance of infrastructure development at the grassroots level. Through improved infrastructure, agriculture and industries tend to be strengthened, providing more employment opportunities and reducing poverty incidence. Providing entrepreneurial opportunities though microfinance assistance would strengthen the sources of income rather than mere cash transfer for consumption under the government's poverty alleviation welfare programmes. Taking adequate measures for technology transfer as suggested by Weerahewa (2002) is also necessary to deviate from poor income opportunities.

Provincial characteristics are emphasized over sectoral characteristics; thus, it would be prudent for the government to consider an administrative area (DSD) as a whole rather than focusing on rural, estate or urban populations separately in its development initiatives.

The majority of the estate sector population belongs to a minor ethnic group, i.e. Indian Tamil. Cultural integration policies to merge them with rural regions, which are predominantly Sinhalese, helps them gain access to better infrastructure such as schools and employment opportunities outside the lethargic plantation sector.

Since it has been found that the agriculture sector does not significantly contribute to poverty reduction, promoting agriculture value addition would enhance both income level and calorie intake of those who are vulnerable to poverty

Unplanned urbanization can also result in poor living conditions, a high cost of living, increased unemployment as well as higher crime rate. Therefore, strengthening human

capabilities at the regional level would also prevent people of rural and estate sectors from moving to the urban sector, which is always seen as an attractive place with better living conditions.

The findings of Levernier and White (1998) seem not to be very relevant in the Sri Lankan context because the plantation areas are relatively smaller in size compared with countries such as the USA and China. The present study used data from conventional demographic categorization of the DCS, which considers people living in plantation areas larger than 20 acres (0.081 sq. km). Therefore, under representation of those who live in the plantation areas smaller than this specified extent may have caused the insignificance of the estate sector having institutionalized cultural characteristics, which differently affect an area's poverty rate.

Only tea and rubber plantation are common in the provinces selected for this study; large coconut plantation are not included. Testing the model with data from the North Western Province, in which coconut plantations are common, and Central Province, with several large areas of tea plantation and high estate sector population may give a different result.

Acknowledgments

The author would like to thank the research supervisor, Professor K. Kalirajan of the National Graduate Institute for Policy Studies (GRIPS), for his guidance.

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