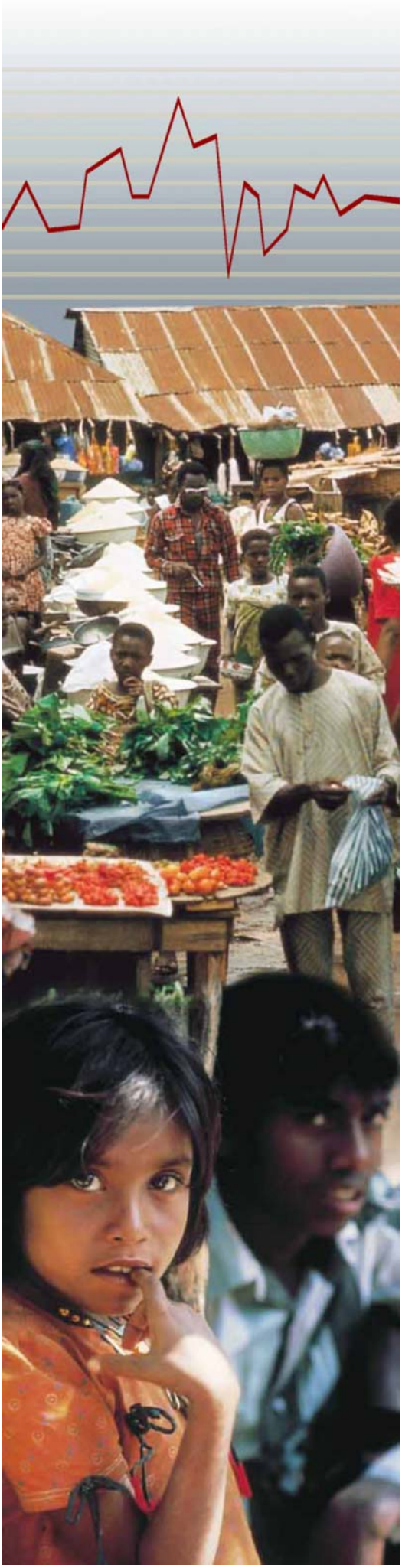

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Identification of the Poor in Sri Lanka: Development of Composite Indicator and Regional Poverty Lines

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Abstract

The identification of the poor and the definition of poverty is rather complex since poverty dimensions are multifaceted. Poverty is not just an inadequacy of income to meet basic needs or the inability to spend. It is largely associated with numerous demographic, socio-economic, cultural, environmental, health and psychological factors. The aim of this study is therefore to compute a composite indicator of multidimensional poverty and regional poverty lines to identify the severity of poverty and regional disparities of poverty. The study was based on the two data sets and the main objectives of the study are: Identification of the poor by using a broader definition of poverty; Measurement of regional differences on poverty using the poverty indices and constructed poverty lines; and Development of a Composite Indicator of Multidimensional Poverty to identify poverty by severity and also to examine regional disparities of poverty.

Keywords: **Inequality, Basic Needs, Living Standards, Quality of Life, Measurement of Poverty, Welfare.**

JEL Codes: **D63, I31, I32, I38, P46**

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1. Introduction

In the South Asian context, Sri Lanka is unique in providing a remarkable package of social welfare measures including free universal education and health care services, subsidized food, income transfer assistance and certain other sectoral subsidies, and also achieving a high human development status since its independence. Nevertheless, the per capita income of the Sri Lankan population still remains under the group of "lower middle income countries" of US $ 860 in 2001, and between one-third and one-fourth of the population remains below the poverty line, depending on the benchmark poverty line used (Kelegama, 2003). As revealed in the Household Income and Expenditure Survey- 2002 of the Department of Census and Statistics, 23.9 per cent of households is identified as poor households whilst 28 per cent of the total population is poor. Moreover, when one US dollar per person per day is considered as the poverty line (adjusted for purchasing power parity), only about 7 per cent of the Sri Lankan population is poor, but when the poverty line is increased to US $ 2 a day, the proportion of poor population increases to 45 per cent (UNDP, 2002). Thus, it is generally accepted that more than one-fourth of the Sri Lankan population receives income inadequate to meet their basic needs. Furthermore, large regional variation in poverty is also an issue in Sri Lanka where national level programmes have not been able to distribute opportunities and resources equitably.

Since its independence, successive governments in Sri Lanka have taken several remedial actions and adopted several policies, such as food stamps, Janasaviya and Samurdhi programmes to alleviate as well as to reduce poverty in Sri Lanka. However, the significant change of the status from being poor to being non-poor has not been clearly effected for several reasons such as management inefficiency, ineffective targeting of poor in these programmes due to the type of selection criterion used, which is based on household income, and the inability to have access to and assess accurate information about household income. This is largely due to two factors. Firstly, most of the poor are employed as casual employees; and secondly, their work is seasonal which leaves these

categories economically vulnerable, only during certain periods of the year. If income assessment takes place at peak labour demand periods, some of the poor will not be captured. Also, due to past experience in obtaining state transfers, some of the non-poor households tend to underestimate their income in order to obtain state assistance. As a result, mis-targetting was common where surveys show that 65 per cent of the last income decile and 5 per cent of the highest income decile received poverty alleviation assistance under the “Samurdhi” programme launched by the state. This benefit accrues also to the deciles in-between who are not entitled to such benefit.

Furthermore, mis-allocation of household transfers through poverty alleviation programmes occur even in the education and health sectors. Although education is provided free, hidden costs such as transport, purchase of stationery, uniforms etc. discourage the poor from continuing school or obtaining other vocational training. Similarly health, although provided free, also has hidden costs when the patients have to purchase certain drugs, injections etc. from private sources, due to shortages of medical supplies etc, in state dispensaries/hospitals.

2. Objectives

The main objectives of the study are:

1. Identification of the poor by using a broader definition of poverty, which will take into account a number of indices in defining a poverty line. (Defining such a broad based poverty line requires a closer examination of characteristics and availability of resource to the poor).

2. Measurement of regional differences on poverty using the poverty indices and constructed poverty lines.

3. Development of a Composite Indicator of Multidimensional Poverty to identify poverty by severity[1] and also to examine regional disparities of poverty.

3. Conceptual Issues of Poverty

Identification of the poor or the definition of poverty is rather complex since the dimensions of poverty are multi-faceted. Poverty is not just an inadequacy of income to meet basic needs or the inability to spend. In most cases, it is associated with numerous characteristics like lack of assets, landlessness, unemployment or underemployment, illiteracy, malnutrition, high infant mortality, large family, low productivity, low position in the social hierarchy, less access to publicly provided goods, poor infrastructure facilities and extreme vulnerability to natural calamities, disease and social conflicts.

Poverty can be measured by way of income of the household and aggregate consumption on a per capita basis. However, in view of the inaccuracy of available information on household income or per capita income, consumption-based poverty is believed to be the better measure to identify the poor. Furthermore, the levels and patterns of expenditure on consumption tend to be smooth over time, and are more precise and have fewer fluctuations than income (Kakwani, Sisouphanhthong at el., 2001). As the Asian Development Bank (1999) defines it, poverty is a deprivation of essential assets and opportunities to which every human is entitled. The United Nations (1997:5) defines poverty as the “denial of choices and opportunities which are most basic to human development to lead a long healthy creative life and enjoy a decent standard of living, freedom, self esteem and respect of others”. Though Amartya Sen in the first instances (1976, 1981, 1985, 1987) emphasized that income was the only valuable factor for increasing the ability to overcome the issues of poverty, in the later instances, Sen (1999) highlighted, by the term “capabilities framework”, that poverty is the lack of certain basic capabilities, such as avoiding hunger

[1] At present, the use of one poverty cut off point prevents understanding the variation among the poor that ranges from poverty to severe poverty.

and illiteracy, as much as a lack of adequate income. In the new definition formulated by the World Development Report 2000/2001 of the World Bank (2001[a]), health, education, vulnerability to risk and empowerment are placed alongside economic indicators in the identification of levels and location of poverty. By this method, poverty is better measured in terms of different dimensions, most of which are non-economic dimensions, such as basic education, health care, nutrition, water, sanitation, household amenities, as well as in terms of economic dimensions such as income, consumption, employment and wages. Therefore, a Composite Indicator of Multidimensional Poverty including the above variables is more meaningful than a single based measure like household income or per capita income that is taken into account to capture the magnitude of poverty. In a study of resettlement and health in Sri Lanka, Seneviratne (2003) has indicated that there is a significant relationship between the immediate living environment of the poor and health, which makes the place factor formed by caste and class, an important variable to be considered in poverty studies in Sri Lanka. This study therefore constructs a Composite Indicator of Multidimensional Poverty to capture poverty status in Sri Lanka.

4. Measures of Poverty: Poverty Line

Sri Lanka does not have a poverty line stipulated by the state but what is available as a poverty line is a cut–off point for household income that has been decided, over time, on a relatively ad hoc basis for each household transfer programme. As the mechanism for identification was weak, once selected for the programme, there was no facility available for those placed above the poverty line to be removed or those below the poverty line to be included. Therefore, nearly all households that are initially selected continue to obtain assistance until the programme or project is terminated, which often occurs with the change of the political regime. A more focused welfare programme for the poor will assist in upgrading the quality of life, until benefits from economic growth accrue to them. However, in order to do so, one needs to be able to identify the poor more accurately. This requires a poverty line,

which is not confined to household income alone. Moreover, there are two approaches in defining the minimum level of material well being, which is widely called the poverty line. Based on these two approaches, poverty is identified as absolute poverty and relative poverty. Absolute poverty is most commonly measured in relation to the ability of a household to afford a minimum set of goods and services that are required for consumption. In this approach, the food poverty line is first derived using the cost of a food basket that satisfies a food energy requirement. Then an amount equal to the average non-food consumption of those who can just afford to meet their food energy requirements is added to the cost of food consumption. Relative poverty involves some definition of a ratio of income or consumption relative to the average level for the society. Although both approaches are appropriate for identifying the poverty line, absolute poverty, which is usually used to measure the poverty line in developing countries, is more appropriate for Sri Lanka. Absolute poverty measures are therefore used to determine poverty and regional poverty lines, in this study.

The scope of this study is therefore to identify the poor and develop a better indicator such as a composite indicator of multidimensional poverty and regional poverty lines for future programmes on poverty reduction in Sri Lanka.

5. Data and Methodology

The study is based on an analysis of data from two household surveys in Sri Lanka, viz., Sri Lanka Integrated Survey (SLIS) of 1999/2000 commissioned by the World Bank and the Consumer Finance and Socio Economic Survey (CFSES) of 1996/97 conducted every ten years by the Central Bank of Sri Lanka. Although the latter survey is slightly out-dated and it covers only seven provinces in the country excluding the Northern and Eastern Provinces due to the civil disturbances in those areas, it is better for the task in hand as it includes information on other aspects of the household than income-expenditure.

The World Bank commissioned Sri Lanka Integrated Survey (SLIS) is part of a living standard study covering 7,500 households in 1999/2000 and covers the whole island including

the Northern and Eastern Provinces except Kilinochchi and Mullativu districts. With the exception of the North and East, the sample was designed by the Department of Census and Statistics to draw a multi-stage probability random sample. Sample selection in the North and East was designed to be the number of communities for each district proportional to the square–root of the population in that district. The total number of communities for the North and East was fixed at 50 -- Jaffna 11, Vavuniya 6, Mannar 5, Trincomalee 10, Batticaloa 8 and Ampara 10. In each district, communities were selected at random within each Divisional Secretariat (DS) and the number of communities was proportional to the population in the Grama Niladari Divisions (GND). Finally, fifteen households were selected within each community.

The Consumer Finance and Socio Economic Survey of 1996/1997 was conducted on the basis of a multi-stage probability stratified random sample covering a sample of 8,631 households and 9,351 spending units in the seven provinces. Data was collected only from the persons living in households and therefore persons living in commercially run boarding houses, hotels, defence services camps and police barracks were not represented in the sample. The response rate in the coverage of sampled household was 99.3 per cent.

Although strict comparison may not be possible due to differences in sampling and coverage, the data from both sets of surveys can be used to verify the reliability of the poverty characteristics/indices identified. Apart from identifying common characteristics of the poor in order to define a poverty line, analysing both sets of data at different points of time (i.e., 1996/97 and 1999/2000) will also permit the observation of any shift in characteristics of the poor over time and, if so, how the indices selected need to be updated for the future. Moreover these two surveys provide comprehensive information on the poor and non-poor for this study. As Martin Ravallion (1994) has correctly pointed out “Household surveys are a source of data for monitoring the relations between the determinants and the living standards in a society”.

The quality of data collected, particularly in the SLIS, however, is a limitation that must be kept in mind. Cleaning of data in the SLIS seems not to have been done for some

variables where missing data is taken into account. On the other hand, the completeness of the collection of data in both cleared and uncleared areas of the North and Eastern Provinces is doubtful due to the prevailing civil disturbances and displacement of population.

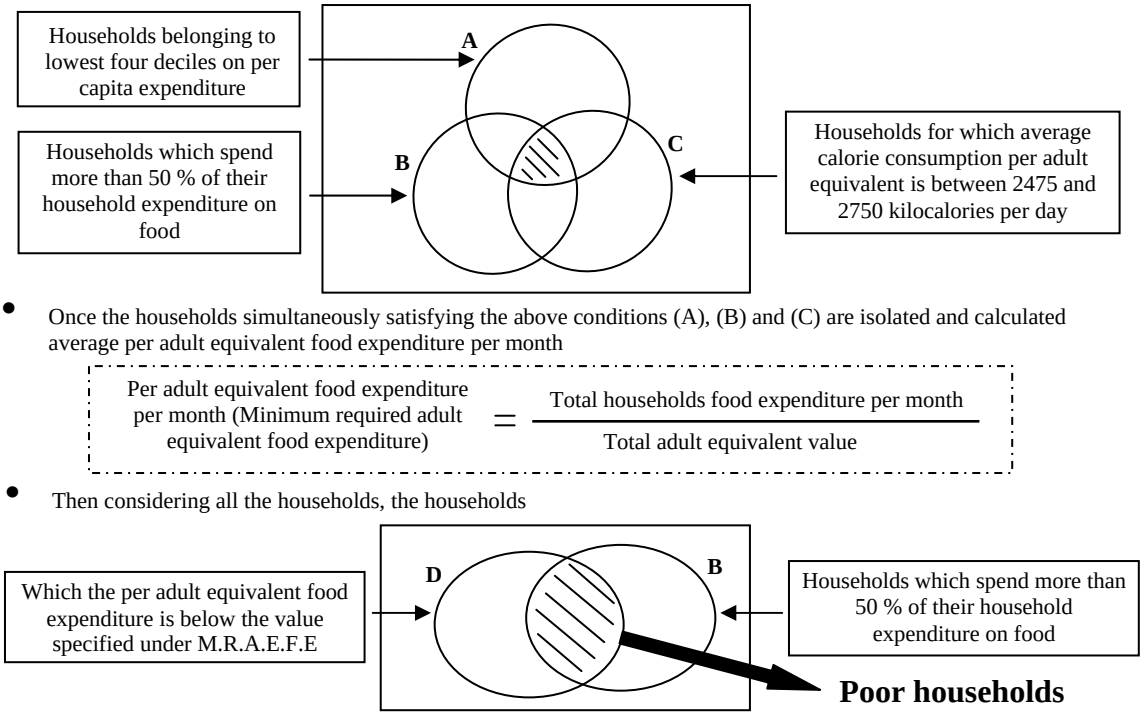
5.1 Methodology

5.1.1 Derivation of poverty lines and measures of poverty

The analysis of poverty and the construction of poverty lines for regions were based on consumption/expenditure-based poverty, and begin with the establishment of a poverty line. The poor households and the population under poverty were measured using per capita ***Minimum Required Adult Equivalent Food Expenditure*** **(M.R.A.E.F.E.)** (Department of Census and Statistics, 2003) taking the poverty line of SLIS and CFS for the two data sets.

In order to calculate M.R.A.E.F.E., firstly, the number of households belonging to the lowest four deciles of per capita expenditure was selected. Secondly, from those selected, the households that spend more than 50 per cent of their expenditure on food were filtered. Thirdly, from the households already filtered, the households for which equivalent calorie consumption per adult is between 2,475 and 2,750 kilocalories were sorted out and average expenditure per adult on food computed for those households. This average value is called M.R.A.E.F.E. Finally, the poor households were defined upon the conditions of the households that spend over 50 per cent of their household expenditure on food and for which the per adult equivalent food expenditure is below the value specified under M.R.A.E.F.E. The construction of this poverty line based on M.R.A.E.F.E is clearly illustrated by the following diagram (Figure 1). All the other households are defined as non-poor households, and their people are the non-poor population in this study. However, as the food expenditure or the cost of the food basket is different in each region (sector/province/district), separate poverty lines using M.R.A.E.F.E for different regions were calculated to identify the poor households. The minimum needs approach usually defines needs on a per capita basis and therefore per capita expenditure is a more appropriate measure to determine the poor.

Figure 1: The Calculation of Consumption Based Poverty Line



The basic unit of analysis of poverty is at household level in this study. However, in order to identify some characteristics of the poor, the population who resided in those households was considered. A household, as defined in the Sri Lanka Integrated Survey as well as the Consumer Finance and Socio Economic Survey, refers to a person or a group of persons who usually live in the same housing unit and have a common arrangement for the preparation and consumption of food. The purpose of the study based on the detailed information on expenditure on food and other characteristics is to look at expenditure based poverty, the spending unit within the household which represents the sampled population in the Consumer Finance and Socio Economic Survey (CFS).

This study used several measurements to identify the status of the poor, the depth and severity of poverty, the dispersion of income distribution and variations amongst the poor. These measurements also provide insights into understanding the incidence and severity of poverty with the multidimensional composite poverty index which is computed at the end of the study. Moreover, the importance of the multidimensional composite poverty index could be justified when the conventional measurements are considered. These measurements are

the Headcount Index, Poverty Gap Index based on the calculation of the *Foster-Greer-Thorbecke Index* (FGT Index, 1984), *Gini Index* and the *Lorenz Curve* which are described in the following section.

The study elaborates the construction of a Composite Poverty Index, which was based on seven factors that poor persons are in deprivation of, such as nutrition, primary education, health care, sanitation, safe water, household factors and income. These factors were scaled and weighted using Principal Component based Factor Analysis (PCFA). Sanitation and drinking water are constructed as two indices based on the type of latrine and sources of drinking water. Further, the required calorie consumption, expenditure on food, level of education and per capita household monthly income are also used as multidimensional factors in the calculation of the composite poverty indicator. The household factors which are based on several household variables such as floor type, wall type and source of lighting are utilized. The eigen values[2] in the PCFA have been taken to weigh and rescale these variables. Thus, composite indices are constructed for the regions considering the status of the above factors in the region. Developing a Composite Poverty Index could be used to define a poverty line and this identifies the poor more accurately and can be easily made operational at regional level. A poverty line thus developed will also be able to encompass the severity of poverty and regional differences in poverty that will guide efficient allocation of resources to the poor.

For the above, all computations were made by using the different software packages such as SPSS 10.0 (Statistical Package for the Social Sciences), STATA 8.0, and DAD 4.3 (Distributive Analysis/Analyze Distributive).The maps were drawn using GIS (Geographical Information System) techniques. The incidences of poverty, the gap of poverty, the severity of poverty and income inequality among the poor are measured by the following indices.

2 The eigen values are the variances extracted by the factors.

5.1.2 The Forster-Greer-Thorbecke Index (FGT)

FGT measure has been used in capturing the number of the poor and the depth and severity of poverty. The **Foster-Greer-Thorbecke (FGT)** Index is defined as:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)^{\alpha}$$

Where:

n = total population

z = poverty line

y_i = income or expenditure of the i^{th} individual

q = the number of persons with income below the poverty line

α= measure of sensitivity of the index to poverty

If α = 0, the **FGT Index** reduces to the **Headcount Index (HI)**. When α = 1, the index is the **Poverty Gap Index (PGI)** and if α = 2, the index reduces to the **Squared Poverty Gap Index (SPGI) (**Foster, Greer and Thorbecke, 1984).

Headcount Index – HI (α = 0)

This indicator is a measure of the incidence of poverty and the simplest measure of poverty. The Headcount Index (also called poverty rate or headcount rate) is the proportion of the population for whom per capita income (or other measures of living standard) is less than the poverty line. Using the same notation as above, HI can be derived as;

$$P_0 = \text{HI} = \frac{1}{n} \sum_{i=1}^{q} 1 = \frac{q}{n}$$

Although HI is simple to construct and easy to understand, it disregards differences in the quality of life of different poor households as it assumes that all poor are in the same situation and it does not take the intensity of poverty into account. Further, this index does not account for changes over time, if individuals below the poverty line become poorer or richer, as long as they remain below the poverty line (World Bank, 2001[b]).

Poverty Gap Index - PGI (α = 1)

Depth of poverty is measured by the Poverty Gap Index, also called the Foster-Greer-Thorbecke (FGT) P1 measure. This indicates how much income is to be transferred to poor individuals in order to allow them to reach the poverty line. That means this indicator measures the magnitude of poverty, considering both the number of poor people and how poor they are. The Poverty Gap (PG) is the average among all people, of the gaps between poor people's living standards and the poverty line. It indicates the average extent to which individuals fall below the poverty line (if they do).The Poverty Gap Index (PGI) is defined as the ratio of the PG to the poverty line. It is the poverty gap expressed as a percentage of the line. Using the same notation as presented before, PGI can be denoted as:

$$P_1 = \text{PGI} = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)$$

However, the PG and PGI complement the HI; they do not capture differences in the severity of the poverty amongst the poor and ignore "inequality among the poor" (World Bank, 2001[b]).

Squared Poverty Gap Index – SPGI (α = 2)

Squared Poverty Gap Index is an indicator which is used to measure the severity of poverty. This index takes inequality among the poor into account. This means that a transfer of any measure of the standard of living from poor to even poorer would reduce the index or a transfer of the same from very poor to less poor would increase the index. Therefore, the index in itself is difficult to interpret the poverty gap of the poor. Using the previous notations noted under section 5.1.2, SPGI can be denoted as:

$$P_2 = \text{SPGI} = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z - y_i}{z} \right)^2$$

Further, it is the average value of the square of depth of poverty for each individual. Poorest people contribute relatively more to the index (also called the Foster-Greer-Thorbecke (P2)). The poverty severity index provides a weight to the poverty gap. Larger

values of the parameter indicate that a greater weight is attached to the poverty gap of the poorest unit. The SPGI is defined as the average of the square relative to the poverty gap of the poor.

5.1.3 Gini Index and Lorenz Curve

One of the most commonly used measures of a welfare improvement indicator is the *Gini Coefficient* whilst the *Lorenz Curve* is used to measure changes in the income distribution. The Gini Coefficient is usually measured as follows:

$$\text{Gini Coefficient} = \frac{1}{2\,n^2\,\overline{y}} \sum_{i=1}^{n} \sum_{j=1}^{n} |\, y_i - y_j \,|$$

Where:

n = total number of population

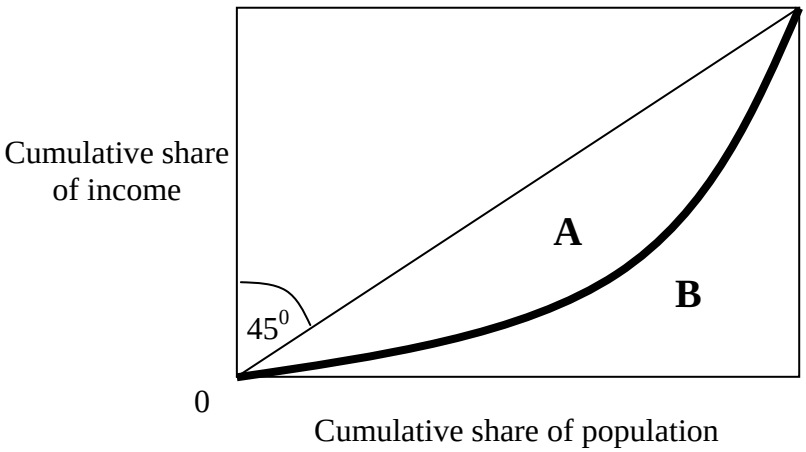
$\overline{y}$ = mean income of the total population

y_i and y_j represent income assigned to individuals i and j

The value of the Gini Coefficient is bound between zero and one --zero indicates the case of full equality where the Lorenz curve coincides with the 45-degree straight line, and one indicates the case where there is complete inequality and all income accrues to a single individual. Hence, low values of the Gini are associated with more equal distribution of income.

The Lorenz curve illustrates the cumulative income share on the vertical axis against the cumulative share of population on the horizontal axis (Figure 2). If each individual had the same income, the income distribution curve would be a straight line and the more bowed downward the Lorenz curve is, the more unequal is the distribution of income in the graph.

Figure 2: Lorenz Curve



The Gini Coefficient can also be calculated as the ratio of the area under the egalitarian triangle (the sum of the areas A and B) and the area between the Lorenz curve and the forty-five degree line (A).

$$\text{Gini Coefficient} = \frac{A}{A + B}$$

If A = 0 the Gini Coefficient becomes 0 which means perfect equality, whereas if B = 0 the Gini coefficient becomes 1, which means complete inequality. It is important to note, however, that the Gini Coefficient represents less information than the full Lorenz Curve; different Lorenz Curves may possess the same Gini Coefficient.

5.1.4 Construction of Composite Indicator of Multidimensional Poverty

As income or expenditure based measures alone do not provide a comprehensive profile of poverty status in Sri Lanka, a Composite Indicator of Multidimensional Poverty was constructed to combine the important dimensions such as nutrition, primary education, primary health care, sanitation, safe water, housing facilities and income/expenditure which indicates capabilities of individuals, households and communities to meet their basic needs (Asselin, 2002). Thus, multidimensional poverty, per se, is a richer concept than the traditional income approach (Asselin, 2002).

In order to develop the composite indicator of multidimensional poverty, this study used the Weighted Principal Component (PC) based Factor Analysis. In comparison with the Generalized Canonical Analysis (GCA) and Multiple Correspondence Analysis (MCA), which are also used to develop a composite indicator, the Principal Component Analysis based Factor Analysis is more efficient in sequentially capturing significant factors out of multiple variables in developing a composite indicator (Meulman, 1992; Anderson, 1984).

The methodological procedure of the construction of a composite indicator of multidimensional poverty is by using the PC based Factor analysis in different steps. Firstly, Factor Analysis is used for all variables to identify the significant factors (all with an eigen

value [λ] greater than 1) and variance structure or covariance matrix (Σ). Secondly, using a covariance matrix, the original variables (X_i) are rescaled by dividing by their respective standard deviations (σ_i) and assigned specified weights (ω_i) into the factor structure of the model using eigen values.

$$X_i^* = \frac{X_i}{\sigma_i \omega_i}$$

Where:

X_i^* = rescaled variable

$\omega_k = 1/\sqrt{\lambda_{1k}}$

(k = 1, 2,…..p)

Thirdly, Factor Analysis is used for rescaled variables and extracted factor scores. Finally, based on these factor scores and the relevant eigen values (all greater than 1) the factors are finally weighted and those weighted factor scores are used as the final measure of the composite indicator (for further discussion of the methodological procedure, see Garcia del and Puetra, 1997; De Silva, Thattil and Samita, 2000).

Based on the ultimate composite poverty indicator, all districts are ranked in order to understand the poverty status in Sri Lanka. The selected districts with negative values on the composite indicator are identified as districts with severe poverty. The negative values are the result of the lower values of the variables, representing low status of living standards. Thus, the districts with negative values are divided into two equal groups: the districts with high negative composite poverty indicator values are considered as *highly-severe poor districts* in Sri Lanka and the other districts with negative values as *moderately-severe poor districts*. The remaining districts with positive composite indicator values represent the *relatively-low poor districts* because the positive values, per se, indicate a fair standard of living (i.e., relatively better housing facilities, water and sanitation).

6. Results

The results of both surveys are discussed in the following sections: sample distribution and identifying the poor households and poor population based on poverty lines, regional disparities of poverty using indices and identification of poverty status by using the constructed Composite Indicator of Multidimensional Poverty.

6.1 Sample Distribution

The size of the sample and distribution of population in both surveys are presented in Table 1. The surveyed sample size and the household population covered in the Consumer Finance Survey (CFS) are higher than that of the Sri Lanka Integrated Survey (SLIS) though SLIS had national coverage. The SLIS in 1999/2000 surveyed 7,500 households and 34,330 household populations, whereas CFS in 1996/97 covered 8,663 households and 39,928 household populations.

The distribution of sample by sector reveals that 76.4% 5,730) of surveyed households was from the rural sector whereas in CFS 82.4 per cent of households (7,137) was from the rural sector. The coverage of the size of the urban sample (19.0% or 1,425 households) and surveyed urban population (19.5% or 6,700 population) in SLIS exceeded those in CFS (12.2% or 1,055 households and 12.9% or 5,163 population) and in contrast, the coverage of estate sample and their population in the CFS has been more than those in the SLIS (Table 1). It is noted that in both surveys the definition of urban and rural is the same as the definition used by the Department of Census in 1994 – all areas under Municipal and Urban Council are considered as urban whilst the area under “Pradesiyasabha” is rural.

As seen in Table 1, the coverage of sample size and the surveyed population in both surveys are mostly similar. The highest number of households (18% or 1,350 households) and the highest surveyed population (17.3% or 5,945) for the SLIS were from the Western Province whilst the lowest sample size (6.8% or 510) and the surveyed population (6.8% or 2,344) were from the North Central Province. It is noteworthy that a considerable size of

sampled households and population were covered in the Northern (11% or 825) and Eastern (14% or 1,050) Provinces in the SLIS. The highest sample size and recorded population were also from the Western Province in the CFS whilst the lowest was also recorded in the North Central Province (Table 1). All apparent differences of the sample distribution in the two surveys are due to their different sample frame and coverage used.

Table 1: Distribution of Household and Population by Sector and Province

Province	SLIS				CFS			
	Households		Population		Households		Population	
	No.	%	No.	%	No.	%	No.	%
Sample Size	7500	100.0	34330	100.0	8663	100.0	39928	100.0
Sector								
Urban	1425	19.0	6700	19.5	1055	12.2	5163	12.9
Rural	5730	76.4	26045	75.9	7137	82.4	32533	81.5
Estate	345	4.6	1585	4.6	471	5.4	2232	5.6
Province								
Western	1350	18.0	5945	17.3	2659	30.7	12392	31.0
Central	930	12.4	4354	12.7	1318	15.2	6140	15.4
Southern	930	12.4	4315	13.2	1256	14.5	5939	14.9
Northern	825	11.0	4151	12.1	-	-	-	-
Eastern	1050	14.0	4554	13.3	8	0.1	37	0.1
North Western	705	9.4	3086	9.0	1172	13.5	5119	12.8
North Central	510	6.8	2344	6.8	603	7.0	2703	6.8
Uva	540	7.2	2521	7.3	652	7.5	3066	7.7
Sabaragamuwa	660	8.8	2860	8.3	995	11.5	4532	11.4

Source: Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

The distribution of sampled population by socio demographic characteristics is given in Table 2. The age distribution is almost identical in both surveys. There is a considerable proportion of surveyed population under 10 years in both surveys (17% in CFS and 15% in SLIS). Further, over 50 per cent of the population is in the age group 10-39 and above 9 per cent of the population is aged 60 years and above. The mean age and median age of the surveyed population are 30 and 27 years respectively.

In both surveyed populations, females outnumbered males as seen in recent surveys in Sri Lanka. This sex composition of the surveyed population in favor of females is mostly evident in the CFS. Average household size in both surveys is about 4.5 persons.

As revealed from Table 2, a considerable proportion of the surveyed population (51.1%) is in the "never married" category in the CFS, whilst half of the surveyed population in the SLIS is in the "married" category. Ethnic distribution of the surveyed population in both surveys indicates that the majority are Sinhalese.

Table 2: Main Characteristics of the Sampled Population and Household Size

Characteristics	SLIS %	CFS %
Age Distribution		
Less than 10	14.8	16.6
10 – 19	21.4	21.8
20 – 29	18.6	15.6
30 – 39	14.0	14.1
40 – 49	12.8	12.7
50 – 59	9.2	8.5
60 +	9.2	10.7
Total (N)	34,330	39,928
Mean Age	30.1 (SD = 19.5)	30.2 (SD = 20.5)
Median Age	27.0	27.0
Sex		
Male	49.6	48.4
Female	50.4	51.6
Total (N)	34,330	39,928
Marital Status		
Never Married	42.9	51.1
Married	49.9	42.6
Widowed	6.4	5.4
Separate/ Divorced	0.9	0.8
Total (N)	29,241*	39,928
Ethnicity**		
Sinhalese	67.5	86.6
Sri Lankan Tamil	20.6	2.7
Indian Tamil	1.9	4.7
Sri Lankan Moor	9.4	5.6
Other (Malay + Burgher + Other)	0.6	0.3
Total (N)	34,330	39,928
Household Size		
1	2.1	1.4
2 – 3	24.4	27.1
4 – 5	48.4	48.8
>5	25.1	22.6
Total (N)	7,499	8,663
Average household size	**4.58**	**4.45**

Note: * System missing 5089.

** Ethnic distribution for the sampled population was calculated based on head of household records.

Source: Consumer Finance & Socio Economic Survey 1996/1997.

Sri Lanka Integrated Survey 1999/2000.

6.2 Identifying the Poor Households and Poor Population Based on Poverty Line

The identification and differentiation of poor households and poor population from those of non-poor categories are presented using the poverty line. The Minimum Required Adult Equivalent Food Expenditure (M.R.A.E.F.E- computed as described in Figure 1) which equals Rs. 1,206 per month for the SLIS and Rs. 883 per month for the CFS are used as the National Poverty Lines for the two surveys respectively. Also, the analysis of the distribution of the poor and the non-poor by sector and province which is presented in this section is based on these National Poverty Lines. In order to identify regional disparities of poverty incidence, the computed different regional poverty lines are used and presented in the last section.

Under the poverty line in the CFS, 22.4 per cent of the households are identified as the poor households whilst 25.8 per cent of the population are identified as poor. According to the poverty lines of the SLIS, 25.2 per cent of the households are identified as poor households whilst 25.3 per cent of population are poor (Table 3). Apparently, the higher percentage of poor households recorded in the SLIS is due to its coverage of national samples.

As evident from Table 4 and Figure 3, poverty in Sri Lanka is predominantly a rural phenomenon (more than 80% in both surveys) and the lowest poverty is recorded in the estate sector. Several studies have shown that poor households are more likely to be found in the rural than in urban areas due to working members being employed in agriculture and other primary production activities (Datt and Gunewardena, 1995). Further, there is a decreased of the proportion of poor households and poor population, in the rural sector whilst a significant increase is apparent in the urban sector though the data in the two relevant surveys are not comparable. During the corresponding period, the proportion of poor households and poor persons also slightly increased in the estate sector (Table 4).

Figure 3: Distribution of the Poor and the Non-Poor Households by Sector – SLIS & CFS

The level of poverty is highest in the Eastern Province (over 16%) followed by the Western Province (nearly 15%) in the SLIS. In the CFS, the highest poverty level recorded is in Southern Province (nearly 18%). The lowest poverty level is recorded in the North Central Province in both SLIS and CFS. Further, as seen in Table 4, this provincial distribution of the poor is different from that of the non-poor and the difference is significant at p<. 05 level.

Table 3: Distribution of Poor and Non-Poor Household and Population by Sector and Province

Province	SLIS				CFS			
	Households %		Population %		Households %		Population %	
	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor	Non-Poor
Poor and non-poor status	25.2	74.8	25.3	74.7	22.4	77.6	25.8	74.2
Sector								
Urban	13.5	20.9	14.3	21.3	4.9	14.3	5.8	15.4
Rural	81.1	74.8	79.9	74.5	90.9	79.9	90.0	78.5
Estate	5.4	4.3	5.8	4.2	4.2	5.8	4.3	6.1
Province								
Western	14.8	19.1	14.9	18.1	15.7	35.0	16.1	36.2
Central	13.0	12.2	12.8	12.6	17.4	14.6	17.9	14.5
Southern	13.6	12.0	13.7	13.0	18.3	13.4	18.8	13.5
Northern	7.3	12.3	8.0	13.5	0	0	-	-
Eastern	16.3	13.2	16.6	12.1	0.2	0.1	0.2	0.1
North Western	9.7	9.3	9.0	9.0	15.0	13.1	14.1	12.4
North Central	7.2	6.7	7.5	6.6	7.8	6.7	7.7	6.5
Uva	7.8	7.0	8.0	7.1	11.9	6.3	11.8	6.2
Sabaragamuwa	10.4	8.3	9.4	8.0	13.7	10.8	13.5	10.6
Total (N)	1889	5611	8677	25653	1937	6726	10285	29643

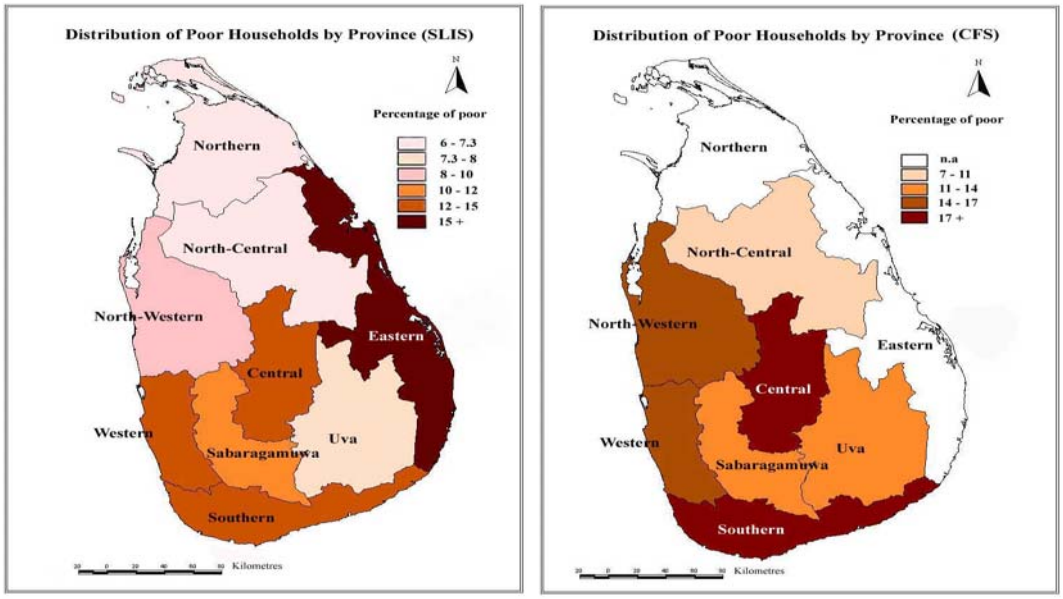
Source: Consumer Finance & Socio Economic Survey 1996/1997.

Sri Lanka Integrated Survey 1999/2000.

6.3 Regional Distribution of the Poor Households

In this study, the term “Region” refers to the provinces or districts which are demarcated for administrative purposes in Sri Lanka. The regional distribution of the poor households identified is based on the country poverty line, which was described in the methodology section. As shown in Figure 4, in the SLIS it is recorded that the highest percentage of the poor households are in the Eastern Province (16.3%) followed by Western Province (14.8%) whilst the lowest percentage is recorded in the North Central Province (7.2%). However, in relation to seven provinces, which were covered in the CFS, the highest proportion of poor households was recorded in the Southern Province (18.3%) followed by the Central Province (17.4%) whilst the lowest recorded was in the North Central Province (7.8%) in spite of the harsh climatic conditions in that province. The distribution of the proportion of the poor also shows a similar regional pattern. Thus in both surveys, the Eastern, Southern, Central, and Western Provinces have experienced a relatively high proportion of poverty (Figure 4). However, this configuration would be changed when regional poverty lines are considered. The regional differences using a single consumption based poverty line certainly do not provide a clear portrait of poverty differentials by region because the basket of food consumption is different from region to region. This is reflected in certain districts like Polonnaruwa and Anuradhapura in the North Central Province where the percentages of poor households and population are considerably high (Tables 4 and 5).

Figure 4: Regional Disparities of Proportion of Poor – SLIS & CFS



Source: Consumer Finance & Socio Economic Survey 1996/1997.

Sri Lanka Integrated Survey 1999/2000

As described, the methodologies for the estimation of the poverty line, and the regional food consumption baskets are considered separately in constructing the regional poverty lines. Sectors, provinces and districts are considered as regions for the analysis of poverty. The sample weights for each stratum and province are used to avoid the unequal variations among the regions. Most of the poverty estimates discussed in this study are anchored on these poverty lines as cut off points to identify the poor. The minimum requirements of calorie intake together with a consumption based poverty line, were not apparently developed for regions in Sri Lanka, though a national poverty line has been developed in a few studies using either expenditure or income measures (Gunaratne, 1985; Bhalla and Glewwe, 1986; Datt and Gunawardena, 1995; Vidyaratne and Tilakaratne, 2003).

Tables 4A and 4B show the regional poverty lines for each sector, province and district as well as the percentage of poor households and poor population on the basis of these poverty lines. However, the small sample size of the SLIS has prevented regional differentials in the minimum required adult equivalent food expenditure and therefore the district regional poverty lines were not constructed using the SLIS. The district-wise proportions of the poor households and the poor population were identified using province poverty lines.

In the SLIS, the highest poverty line of Rs. 1,391 was recorded in the urban sector followed by the rural (Rs. 1,190) and the lowest was in the estate sector (Rs. 1,067). Based on these poverty lines, the highest proportion of poor households (26.1%) is recorded in the rural sector followed by the urban sector (22%) (Table 4A). This finding suggests that even using separate poverty lines by sectors, the rural phenomenon of poverty has become a salient feature in Sri Lanka. The distribution of the sectoral poverty lines and the poverty status by sector in the CFS are also the same as in the SLIS (Table 4B). Thus, the findings of predominant rural poverty in Sri Lanka confirm the previous studies. (Bhalla and Glewwe, 1986; Datt and Gunawardena,1995; Vidyaratne and Tilakaratne, 2003).

Analysis of poverty lines by province depicts that the highest poverty line is in the Sabaragamuwa Province (Rs. 1,401) followed by Western (Rs. 1,258) Northern (Rs. 1,244) and Eastern Provinces (Rs. 1,227) in the SLIS. The lowest is in the Central Province (Table 4B). According to these poverty lines, the highest percentages of poor households and poor population (37% and 34.7% respectively) are identified in Sabaragamuwa Province followed by Eastern (30% and 32%) and Uva (28.3% and 28.5%) Provinces (Table 4B). These findings would substantially vary when the CFS poverty lines are taken into account. The highest proportion of poor households is in the Southern (30.6%) and the lowest in the North Western (24.7%) Provinces. However, these two instances cannot be strictly compared due to their sample designs, as discussed above.

As CFS had enough cases to capture the minimum required adult equivalent food expenditure, the study developed the district regional poverty lines. According to Table 4B, Colombo (Rs. 1,110) was recorded as the district with the highest poverty line followed by Gampaha (Rs. 1,006) whilst Moneragala (Rs. 683) recorded the lowest poverty line. Nuwara-Eliya (Rs. 784), Matale (Rs. 798) and Badulla (Rs.807) were also noticed as the districts which had low poverty lines. However, as in a case like Hambantota, there is a contrast in the proportion of poor households and poor population in the two surveys as shown in Tables 4A

(14.9% and 14.4% respectively) and 3B (40.1% and 44.3% respectively) due to the different basis of calculation of poverty lines used in the two surveys as discussed above.

Table 4A: Regional Poverty Lines with Percentage of Poor Households and Population – SLIS

Area	Poverty line	Percentage of poor households	Percentage of poor population	No. of poor households	No. of poor population	Total No. of households	Total No. of population
Sri Lanka	**1206.04**	**25.2**	**25.3**	**1889**	**8677**	**7500**	**34330**
Sector							
Urban	1391.46	22.0	22.5	314	1507	1425	6700
Rural	1189.56	26.1	26.0	1493	6770	5730	26045
Estate	1067.54	21.4	23.6	74	374	345	1585
Province							
Western	1258.45	22.4	23.4	303	1394	1350	5945
Central	1065.86	21.4	20.6	199	897	930	4354
Southern	1071.02	24.3	23.8	226	1076	930	4515
Northern	1243.71	18.5	18.6	153	773	825	4151
Eastern	1226.74	30.0	32.3	315	1472	1050	4554
North Western	1214.62	26.2	25.5	185	787	705	3086
North Central	1082.91	21.0	22.8	107	534	510	2344
Uva	1217.86	28.3	28.5	153	719	540	2521
Sabaragamuwa	1401.14	37.0	34.7	224	993	660	2860
District							
Colombo	-	21.2	21.6	108	499	510	2312
Gampaha	-	21.6	22.6	107	472	495	2089
Kalutara	-	25.5	27.4	88	423	345	1544
Kandy	-	24.9	22.6	101	437	405	1931
Matale	-	23.8	22.2	57	249	240	1124
Nuwara Eliya	-	14.4	16.2	41	211	285	1299
Galle	-	25.6	25.1	92	428	360	1708
Matara	-	30.5	31.0	96	461	315	1487
Hambantota	-	14.9	14.2	38	187	255	1320
Jaffna	-	17.5	19.3	71	409	405	2115
Mannar	-	18.5	17.2	36	170	195	989
Vavuniya	-	20.4	18.5	46	194	225	1047
Batticaloa	-	34.0	35.5	102	448	300	1263
Ampara	-	27.2	28.4	102	441	375	1555
Trincomalee	-	29.6	33.6	111	583	375	1736
Kurunegala	-	30.3	30.2	132	564	435	1867
Puttalam	-	19.6	18.3	53	223	270	1219
Anuradhapura	-	17.3	18.4	52	255	300	1385
Polonnaruwa	-	26.2	29.1	55	279	210	959
Badulla	-	31.4	32.4	99	455	315	1403
Moneragela	-	24.0	23.6	54	264	225	1118
Ratnapura	-	31.9	31.1	110	466	345	1500
Kegalle	-	42.5	38.8	134	527	315	1360

Note: "-" Not constructed

Source: Sri Lanka Integrated Survey 1999/2000.

Table 4B: Regional Poverty Lines with Percentage of Poor Households and Population –CFS

Area	Poverty line	Percentage of poor households	Percentage of poor population	No. of poor households	No. of poor population	Total No. of households	Total No. of population
Sri Lanka	**883.34**	**22.4**	**25.8**	**1937**	**10285**	**8663**	**39928**
Sector							
Urban	1091.45	17.4	21.2	184	1096	1055	5163
Rural	869.34	23.6	27.3	1686	8885	7137	32533
Estate	882.26	17.2	19.4	81	433	471	2232
Province							
Western	1044.62	18.7	21.4	497	2655	2659	12392
Central	810.46	20.8	24.5	274	1502	1318	6140
Southern	913.98	30.6	35.2	384	2089	1256	5939
Northern							
Eastern							
North Western	877.40	24.7	28.3	289	1447	1172	5119
North Central	838.22	20.9	24.5	126	663	603	2703
Uva	758.16	23.9	27.7	156	848	652	3066
Sabaragamuwa	855.11	24.6	28.2	245	1279	995	4532
District							
Colombo	1110.24	16.2	19.1	174	975	1074	5118
Gampaha	1006.02	16.4	18.4	164	843	1002	4582
Kalutara	971.52	23.0	26.2	134	706	583	2692
Galle	961.75	25.8	30.0	140	742	542	2475
Matara	888.98	31.6	36.4	130	728	412	2000
Hambantota	881.18	40.1	44.3	121	648	302	1464
Moneragala	683.33	17.6	21.3	38	222	216	1040
Polonnaruwa	825.71	18.8	21.6	36	190	191	879
Anuradhapura	843.39	21.4	25.5	88	465	412	1824
Puttalam	941.43	22.9	26.0	64	315	279	1211
Kandy	820.09	22.1	25.7	156	857	707	3329
Matale	798.42	17.2	20.4	49	259	285	1271
Nuwara-Eliya	783.78	20.9	24.5	68	377	326	1540
Badulla	807.38	27.3	30.5	119	617	436	2026
Ratnapura	844.12	26.3	30.2	146	788	556	2608
Kegalle	888.48	23.0	26.0	101	500	439	1924
Kurunegala	841.53	23.3	26.6	208	1040	893	3908

Source: Consumer Finance & Socio Economic Survey 1996/1997.

6.5 Regional Disparities of Poverty Using Indices

The different poverty measures, which are described in the methodology section, are used to identify the regional disparities of poverty in Sri Lanka. The poor population identified is based on overall poverty lines in both surveys. The Foster-Greer Thorbecke Index (FGT index) was used mainly to derive the incidence of poverty (Headcount Index), depth of poverty (Poverty Gap Ratio) and severity of poverty (Squared Poverty Gap Index).

To study income inequality, the Gini index was used by sector, province and district. The values of each index are ranked by sector, province and district. These results from the two surveys are presented in Table 5, Table 6 and Figures 5-7.

As revealed from Table 5, it is clear that the Headcount Index is the highest in the estate sector followed by the rural sector in both surveys. Thus, the incidence of poverty in both surveys and therefore ranking of the sectors are in the same direction. This reveals that the measurement of HI, which represents the proportion of the population, is less than the poverty line in the estate sector in relation to the other two sectors. However, this does not provide insights into the intensity of poverty among the poor in the estate sector as described in the methodology section.

Analysis by province shows that three provinces achieved the same ranking orders in both surveys. According to SLIS and CFS, Uva (.54), North Central (.45), and Central (.42) Provinces show a relatively high incidence of poverty. The lowest incidence of poverty was recorded in the Western Province in both surveys.

The results of the depth of poverty indicator (Poverty Gap Ratio) discloses that the depth of poverty is high in the estate sector (.22) followed by the rural (.16) in the SLIS. However in the CFS, it was highest in the rural sector (.08).

The different ranking orders for the sectors in terms of PGI are not comparable due to indifferent sample frame and coverage as discussed frequently above. Moreover, the poverty dominance in the estate sector contrasts with that in the rural sector and thereby portrays the drawbacks of the PG indicator as described in the methodology section.

As provinces are concerned, the depth ratio is the highest in the Uva Province, followed by the North Central Province and the lowest in the Western Province in both surveys (Table 5). The ranking orders for other districts are different in the two surveys.

Severity (Squared Poverty Gap Index) is an important poverty index, which is used in many studies to understand the poverty gap of the poorest unit. In both surveys, Uva was

recorded as the highest province for severity of poverty while the Western and Eastern Provinces were recorded as the lowest for severity of poverty (Table 5). The severity of poverty indicates how the extent of poverty varies among the poor groups.

Table 5: Poverty Indices by Sector, Districts and Province

	Headcount Index (Incidence of poverty)				Poverty Gap Index (Depth of poverty)				Squared Poverty Gap Index (Severity of poverty)			
	SLIS		CFS		SLIS		CFS		SLIS		CFS	
	Values	R	Values	R	Values	R	Values	R	Values	R	Values	R
Sri Lanka	0.36		0.22		0.15		0.07		0.09		0.04	
Sector												
Urban	0.25	**3**	0.10	**3**	0.10	**3**	0.03	**3**	0.06	**3**	0.02	**3**
Rural	0.37	**2**	0.24	**2**	0.16	**2**	0.08	**1**	0.09	**2**	0.04	**1**
Estate	0.52	**1**	0.28	**1**	0.22	**1**	0.07	**2**	0.13	**1**	0.03	**2**
Province												
Western	0.25	**9**	0.11	**7**	0.10	**9**	0.03	**7**	0.06	**8**	0.02	**7**
Central	0.42	**3**	0.28	**3**	0.19	**3**	0.09	**4**	0.11	**3**	0.04	**4**
Southern	0.36	**6**	0.27	**4**	0.14	**7**	0.09	**3**	0.07	**7**	0.04	**3**
Northern	0.38	**5**			0.15	**5**			0.09	**5**		
Eastern	0.28	**8**			0.10	**8**			0.06	**9**		
North Western	0.34	**7**	0.21	**6**	0.14	**6**	0.06	**6**	0.09	**6**	0.03	**6**
North Central	0.45	**2**	0.32	**2**	0.21	**2**	0.13	**2**	0.13	**2**	0.08	**2**
Uva	0.54	**1**	0.39	**1**	0.24	**1**	0.15	**1**	0.14	**1**	0.09	**1**
Sabaragamuwa	0.39	**4**	0.24	**5**	0.17	**4**	0.08	**5**	0.10	**4**	0.04	**5**
Districts												
Colombo	0.25	**21**	0.08	**17**	0.10	**18**	0.02	**17**	0.07	**15**	0.01	**17**
Gampaha	0.19	**23**	0.11	**16**	0.07	**22**	0.03	**16**	0.04	**22**	0.02	**16**
Kalutara	0.33	**14**	0.16	**14**	0.14	**13**	0.05	**14**	0.08	**13**	0.02	**14**
Kandy	0.40	**10**	0.26	**10**	0.17	**10**	0.08	**10**	0.10	**10**	0.04	**10**
Matale	0.54	**3**	0.29	**8**	0.25	**3**	0.09	**9**	0.15	**3**	0.05	**9**
Nuwara Eliya	0.37	**12**	0.34	**5**	0.16	**12**	0.10	**6**	0.09	**12**	0.05	**8**
Galle	0.31	**16**	0.17	**13**	0.12	**15**	0.05	**13**	0.06	**16**	0.02	**12**
Matara	0.34	**13**	0.31	**6**	0.13	**14**	0.10	**7**	0.07	**14**	0.05	**6**
Hambantota	0.44	**8**	0.42	**1**	0.17	**9**	0.15	**2**	0.10	**11**	0.08	**4**
Jaffna	0.27	**18**			0.08	**21**			0.04	**21**		
Mannar	0.60	**1**			0.28	**1**			0.18	**1**		
Vavuniya	0.39	**11**			0.16	**11**			0.10	**9**		
Batticaloa	0.32	**15**			0.11	**16**			0.06	**19**		
Ampara	0.27	**20**			0.10	**19**			0.06	**18**		
Trincomalee	0.27	**19**			0.10	**20**			0.06	**20**		
Kurunegala	0.44	**7**	0.23	**11**	0.20	**8**	0.07	**11**	0.12	**7**	0.03	**11**
Puttalam	0.20	**22**	0.15	**15**	0.06	**23**	0.04	**15**	0.03	**23**	0.02	**15**
Anuradhapura	0.41	**9**	0.29	**7**	0.20	**7**	0.11	**5**	0.13	**6**	0.06	**5**
Polonnaruwa	0.50	**6**	0.38	**4**	0.23	**4**	0.17	**1**	0.14	**4**	0.11	**1**
Badulla	0.51	**5**	0.40	**2**	0.21	**6**	0.15	**3**	0.12	**8**	0.09	**2**
Moneragela	0.57	**2**	0.38	**3**	0.27	**2**	0.15	**4**	0.17	**2**	0.08	**3**
Ratnapura	0.28	**17**	0.28	**9**	0.11	**17**	0.09	**8**	0.06	**17**	0.05	**7**
Kegalle	0.52	**4**	0.19	**12**	0.23	**5**	0.05	**12**	0.13	**5**	0.02	**13**

Note: R= Rank, **Source:** Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

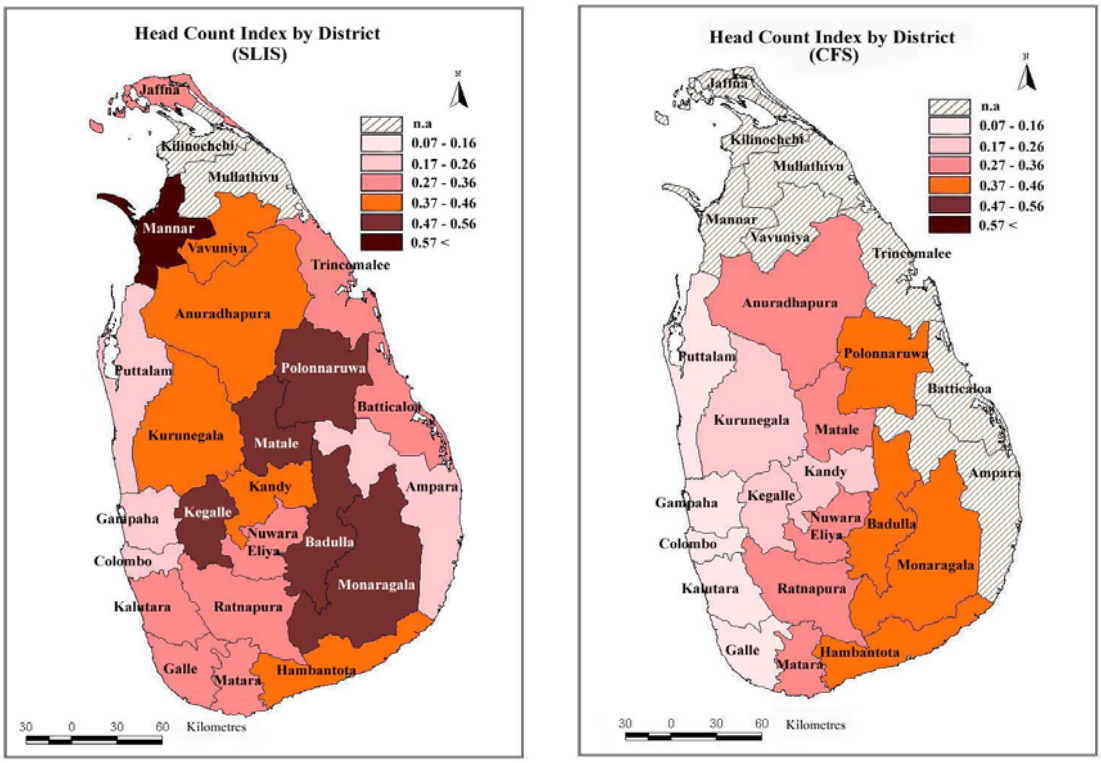
The identification of ranking orders for sector, province and districts depicts the regional disparities of poverty in terms of indices of Headcount, Poverty Gap and severity of poverty, which may be useful for the formulation and implementation of policies for the elimination of poverty and thereby improve welfare facilities when funds are allocated on a provincial basis consequent to devolution of power by the government. These differentials in the ranking order in terms of poverty status could be taken into account even though the two surveys provide slightly different results.

The incidence, depth and severity of poverty by districts are clearly depicted in the set of maps (Figures 5-7). The GIS is used to derive these maps in order to highlight district-wise variations.

As shown in Figure 5, the highest incidence of poverty (Headcount Index) was recorded in Mannar by the SLIS. Moneragala, Matale, Kegalle and Badulla are the other districts (up to rank 5) with high incidence of poverty in the SLIS. According to the CFS, Hambantota was recorded as the district with the highest incidence of poverty followed by Badulla, Moneragala, Polonnaruwa and Nuwara Eliya districts (up to rank 5). This index may not convincingly capture the severity of poverty among the poor.

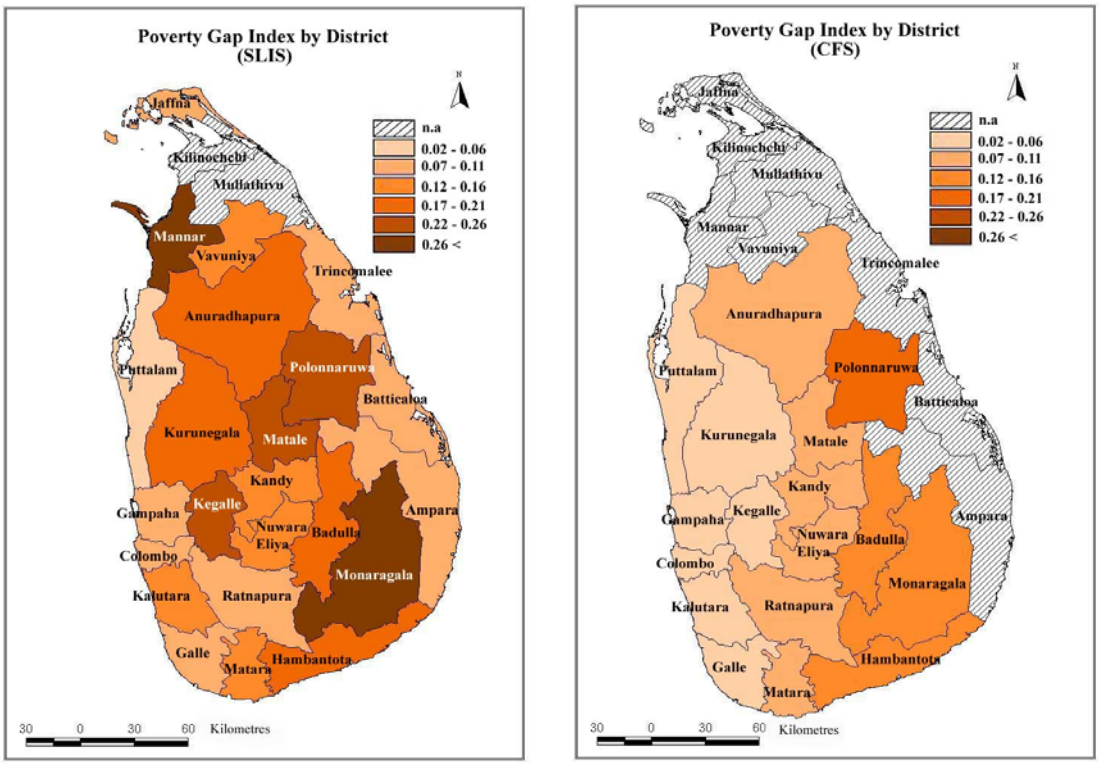
The magnitude of poverty captured through the Poverty Gap Index and its district variations are depicted in Figure 6. The severity of poverty is depicted in Figure 7. As indicated in the above two indices, the highest depth and the severity of poverty was recorded in the Mannar District in the SLIS. Moneragala, Matale, Polonnaruwa and Kegalle are the other districts (up to rank 5) which have higher depth and severity of poverty in the SLIS. In the CFS (Figure 6 and 7), Polonnaruwa was recorded as the district with the greatest depth and the severity of poverty, while Badulla, Moneragala, Hambantota and Anuradhapura are the other districts which recorded a high severity of poverty.

Figure 5: Head Count Index by District – SLIS & CFS



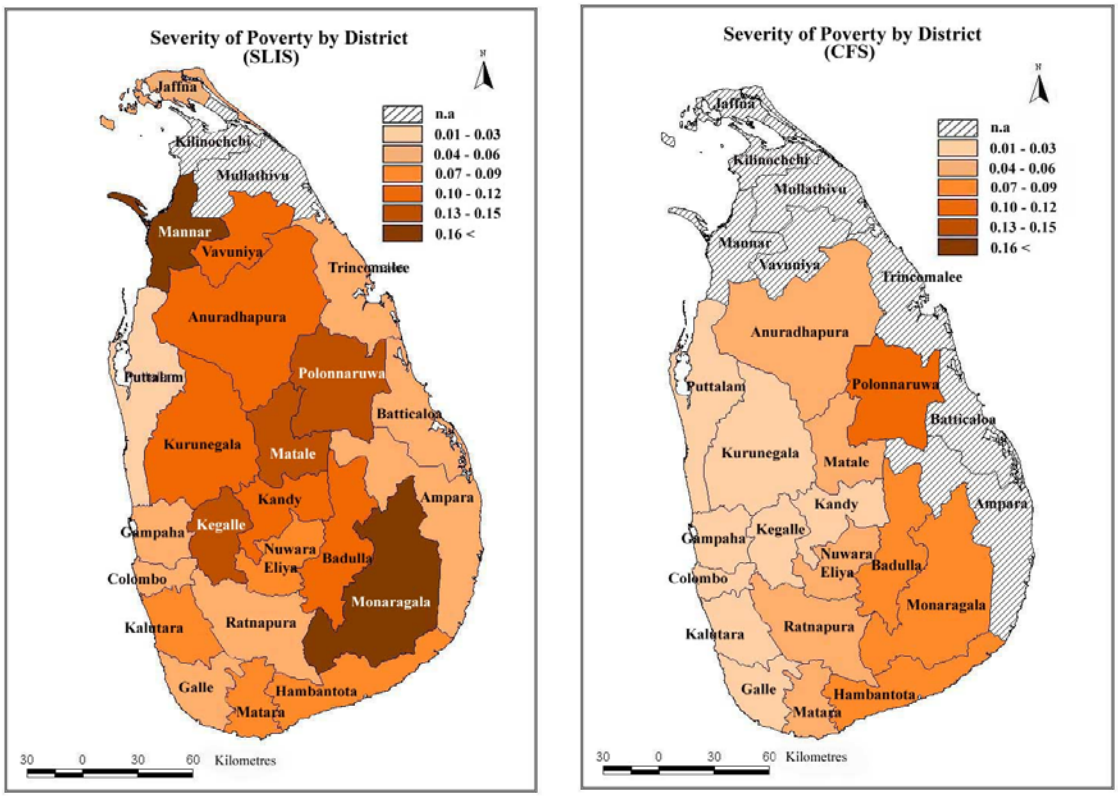
Source: Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

Figure 6: Poverty Gap Index by District – SLIS & CFS



Source: Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

Figure 7: Severity of Poverty by District – SLIS & CFS



Source: Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

The inequality between the poor and the non-poor are identified by using the Gini Coefficient and the Lorenz Curve, as described in the methodology section. The results of the two surveys are given in Tables 6 (Corresponding Lorenz curves are in Appendix A). As expected, the highest inequality of income is reported in the urban sector in the two surveys. As far as the inequality of income by province is concerned, the highest inequality is reported in the Western Province followed by North Western Province, whilst the lowest is recorded in the Northern Province, in the SLIS. In the CFS, Uva Province is recorded as the most inequality of income district and North Western Province the lowest inequality of income district.

Table 6: Gini Index by Sector, Districts and Province – SLIS & CFS

	Gini Index			
	SLIS	**Rank**	**CFS**	**Rank**
Sri Lanka	0.53		0.46	
Sector				
Urban	0.64	**1**	0.50	**1**
Rural	0.46	**2**	0.43	**2**
Estate	0.41	**3**	0.30	**3**
Province				
Western	0.61	**1**	0.45	**3**
Central	0.50	**6**	0.45	**4**
Southern	0.52	**4**	0.40	**6**
Northern	0.38	**9**		
Eastern	0.38	**8**		
North Western	0.58	**2**	0.40	**7**
North Central	0.55	**3**	0.46	**2**
Uva	0.50	**5**	0.46	**1**
Sabaragamuwa	0.47	**7**	0.44	**5**
Districts				
Colombo	0.71	**1**	0.47	**2**
Gampaha	0.50	**9**	0.42	**11**
Kalutara	0.48	**12**	0.40	**13**
Kandy	0.56	**4**	0.47	**4**
Matale	0.42	**17**	0.47	**3**
Nuwara Eliya	0.42	**18**	0.34	**17**
Galle	0.44	**14**	0.39	**15**
Matara	0.48	**11**	0.39	**14**
Hambantota	0.65	**2**	0.43	**10**
Jaffna	0.34	**23**		
Mannar	0.47	**13**		
Vavuniya	0.35	**22**		
Batticaloa	0.37	**20**		
Ampara	0.38	**19**		
Trincomalee	0.36	**21**		
Kurunegala	0.56	**5**	0.37	**16**
Puttalam	0.58	**3**	0.43	**9**
Anuradhapura	0.55	**6**	0.44	**8**
Polonnaruwa	0.54	**7**	0.49	**1**
Badulla	0.53	**8**	0.46	**6**
Moneragela	0.43	**15**	0.46	**7**
Ratnapura	0.43	**16**	0.42	**12**
Kegalle	0.49	**10**	0.46	**5**

Source: Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

The Gini Index by district, which is presented in Table 6, indicates that Colombo (0.71) is recorded as the district with the most inequality of income followed by Hambantota (0.65) and Puttalam (0.58) which are the districts with the least inequality of income as recorded in the SLIS. According to the CFS, Polonnaruwa (0.49) is recorded as the district with the most inequality of income followed by Colombo, Kandy and Matale (0.47 for all) and least inequality is recorded in Nuwara Eliya (0.34). Thus, income inequality provides an insight into how wide the status of the poor and non-poor is.

The above discussion helps to provide a better understanding of the regional variations, and poverty dimension through the income inequality, persisting in the regions. The relationship between income inequality in terms of the Gini Index and the severity of poverty demonstrates the regional disparities in poverty. The regions with higher income inequality show a high severity of poverty, particularly in the urban sector (eg., Western Province and Colombo District). Therefore, identification of regional disparities of income inequality per se provides insights into the dimension of poverty which will assist the formulation of better policies and programmes by the government. The strategies to reduce income inequality either through welfare programmes or fiscal or financial intervention would be useful in poverty reduction.

6.6 Composite Indicator of Multidimensional Poverty

In order to achieve the ultimate objective of the study, the Composite Indicator of Multidimensional Poverty was developed to capture the non-income dimension of poverty in Sri Lanka. As discussed above, due to the limitations of income and expenditure as a measure of identification of the poor, the study analysed several other socio-economic dimensions including income in the identification of poor districts using two data sets. The number of variables such as nutrition, water, sanitation, housing facilities – type of wall, type of floor, source of drinking water, source of lighting and source of cooking—minimum level of calorie consumption, food expenditure, level of education and per capita total household monthly income are initially used and significant factors are taken into account using the

Principal Component based Factor Analysis. In order to compare the Composite Indicator of Multidimensional Poverty in the two surveys, the Northern and Eastern Provinces were excluded from the SLIS. The variables are weighted and rescaled with the eigen (more than 1) value and accordingly the two types of the regional poverty pattern viz., highly-severe poor districts and moderately-severe poor districts are identified.

Using the methodological procedure of Principal Component based Factor Analysis, the Composite Indicator of Multidimensional Poverty has been developed and, using this indicator, the regional disparities of poverty are analysed. This indicator provides a realistic configuration of poverty in Sri Lanka because it accounts for the multidimensional situations in each district. As discussed elsewhere in this study, some districts are strong in nutritional status while others are strong in having good amenities of water and sanitation and so on.

The results of the Principal Component based Factor Analysis using SPSS are presented in Table 7. Since the three eigen values (greater than 1) in the SLIS and two eigen values in the CFS (greater than 1) explained 51 per cent and 42 per cent of the variability respectively (Table 7A), the factors provide sufficient explanation of the nine variables listed. (Table 7B). Thus, three factors (F1= Household Condition Factor; F2=Socio Economic Status Factor and F3=Nutrition Factor)[3] were extracted in the SLIS and two factors (F1= Household Condition Factor; F2=Socio Economic Status and Nutrition Factor)[4] were extracted in the CFS (Table 7B).The composite indicators for SLIS and CFS were separately developed using the mean value of three factors in the SLIS and mean value of two factors in the CFS, multiplying them with the corresponding eigen values.

3 In the SLIS, the variables included in the factors are:

F1=Type of floor + Type of wall + Type of latrine+ Lighting utilized.

F2= Expenditure on food + Drinking water + Level of Education + Per capita household income.

F3=Calorie consumption.

4 In the CFS, the variables included in the factors are:

F1=Type of floor + Type of wall + Type of latrine+ Lighting utilized+ Drinking water.

F2= Expenditure on food + Level of Education + Per capita household income + Calorie consumption.

Table 7: Eigen Values (7A) and Factor Scores (7B) of the Factor Analysis

(7A)

SLIS

Eigen value	Percentage	Cumulative %
2.4790	27.55	27.55
1.0970	12.19	39.73
1.0400	11.56	51.29
0.9300	10.34	61.63
0.8830	9.81	71.44
0.8210	9.12	80.56
0.6840	7.60	88.16
0.5710	6.34	94.50
0.4950	5.50	100.00

CFS

Eigen value	Percentage	Cumulative %
2.6440	29.38	29.38
1.1620	12.91	42.29
0.9500	10.56	52.85
0.9050	10.06	62.91
0.7670	8.52	71.43
0.7500	8.33	79.77
0.6590	7.32	87.09
0.6190	6.88	93.97
0.5420	6.03	100.00

(7B)

SLIS

Rotated Component Matrix[a]

	Component 1	2	3
CALORY	-0.0304	0.2400	0.8040
FOOD_EXP	0.0159	0.3540	-0.6550
FLOOR_T	0.7890	0.0832	0.0352
WALL_TY	0.7320	0.0367	0.0280
DRINK_WA	0.2220	0.4420	-0.0057
TY_LATR	0.7110	0.1400	-0.0442
LIGHT_UT	0.6940	0.1890	-0.1090
LEV_EDU	0.2390	0.5690	-0.0721
P_HOINCO	-0.0809	0.7020	0.0459

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a :Rotation converged in 5 iterations.

CFS

Rotated Component Matrix[a]

	Component 1	2
CALORY	0.1960	0.3760
FOOD_EXP	0.1200	0.7050
FLOOR_T	0.7220	0.2040
WALL_TY	0.5690	0.1510
DRINK_WA	0.4730	-0.2590
TY_LATR	0.6520	0.2090
LIGHT_UT	0.6480	0.3450
LEV_EDU	0.2520	0.5180
P_HOINCO	-0.0381	0.7580

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a :Rotation converged in 3 iterations.

Note : CALORY= Calorie consumption per day; FOOD_EXP= Expenditure on food; FLOOR_T = Type of floor; WALL_TY= Type of wall; DRINK_WA= Drinking water; TY_LATR= Type of latrine; LIGHT_UT= Lighting utilized; LEV_EDU= Level of education; P_HOINCO = Per capita household income.

Source: Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

Based on these composite indicators for SLIS and CFS, the variability of district-wise poverty was measured and the results are presented in Table 8.

Table 8: Composite Poverty Indicator by District

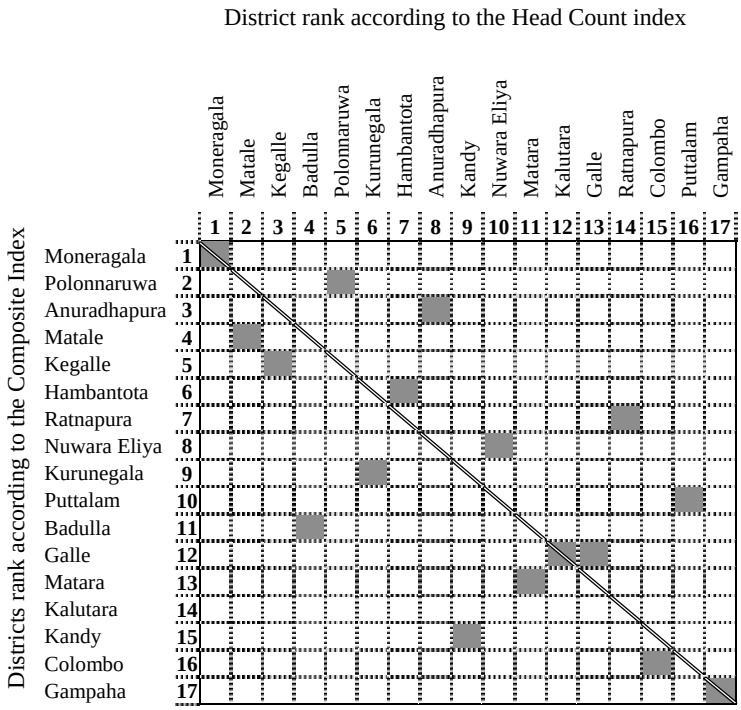
	Composite Indicator			
	SLIS	**Rank**	**CFS**	**Rank**
Districts				
Colombo	0.407	**16**	0.992	**15**
Gampaha	0.424	**17**	1.110	**17**
Kalutara	0.143	**14**	0.829	**13**
Kandy	0.158	**15**	0.557	**12**
Matale	-0.315	**4**	0.026	**3**
Nuwara Eliya	-0.116	**8**	0.185	**5**
Galle	0.117	**12**	1.015	**16**
Matara	0.124	**13**	0.917	**14**
Hambantota	-0.154	**6**	0.270	**7**
Kurunegala	-0.051	**9**	0.464	**10**
Puttalam	-0.038	**10**	0.522	**11**
Anuradhapura	-0.366	**3**	-0.096	**2**
Polonnaruwa	-0.421	**2**	0.214	**6**
Badulla	-0.033	**11**	0.332	**8**
Moneragala	-0.545	**1**	-0.221	**1**
Ratnapura	-0.152	**7**	0.051	**4**
Kegalle	-0.164	**5**	0.382	**9**

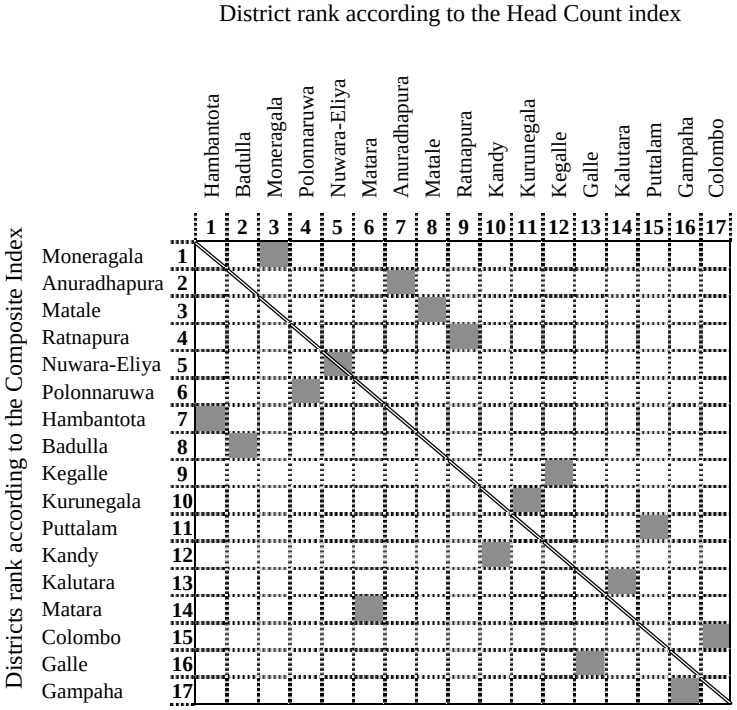
Source: Consumer Finance & Socio Economic Survey 1996/1997.
Sri Lanka Integrated Survey 1999/2000.

As revealed from the ranking order of the composite indicator in the Table, Moneragala represents the most deprived district having the largest number of the poor whilst Gampaha represents the most privileged district to have the least number of poor people in both SLIS and CFS. The districts of Polonnaruwa, Anuradhapura, Matale (in both SLIS and CFS) and Ratnapura (CFS) are the other districts which are relatively deprived by having a large number of the poor.

The ranking order based on the composite poverty indicator is more realistic than the ranking order based on the Head Count Index. As shown in Figure 8, the district ranking order in the composite index is conspicuously different in comparison to the district ranking order of the Head Count Index. The similar district ranking order represents the diagonal of the figure whilst the deviations from the diagonal indicate the different district ranking order. Thus, as the Figure 8 shows other than very few districts (i.e., Moneragala, Galle and Gampaha in the SLIS and Nuwara-Eliya in the CFS) there are many districts that have a different ranking order.

Figure 8: Rank Order Comparison (districts) between Composite Indicator and Head Count Index – SLIS and CFS





Moreover, the Spearman's rank correlation coefficient values also show that there is no perfect relationship between these two ranking orders in SLIS and CFS (Figure 8). These results suggest that the district ranking order for poverty is more properly indicated by the Composite Poverty Indicator than the Head Count Index because the multidimensional factors such as sanitation, drinking water, level of education etc. are included in the Composite Indicator. Based on the ranking order of Composite Indicator for the two surveys, the districts are classified into ***highly-severe poor districts*** and ***moderately-severe poor districts*** (Table 9).

Table 9: Ranking Order of Composite Poverty Indicator by District

Rank	Districts		
	SLIS	CFS	
1	**Moneragala**	**Moneragala**	**Highly-Severe Poor Districts**
2	**Polonnaruwa**	***Anuradhapura***	
3	**Anuradhapura**	Matale	
4	**Matale**	Ratnapura	***Moderately-Severe Poor Districts***
5	***Kegalle***	Nuwara-Eliya	
6	***Hambantota***	Polonnaruwa	
7	***Ratnapura***	Hambantota	
8	***Nuwara Eliya***	Badulla	
9	***Kurunegala***	Kegalle	
10	***Puttalam***	Kurunegala	
11	***Badulla***	Puttalam	
12	Galle	Kandy	
13	Matara	Kalutara	
14	Kalutara	Matara	
15	Kandy	Colombo	
16	Colombo	Galle	
17	Gampaha	Gampaha	

Although the two surveys do not categorize the districts as ones with highly or moderately severe districts with poverty, most districts belong to the same category. According to the SLIS data, using the Composite Indicator of Multidimensional Poverty, the study categorized in order of rank, Moneragala, Polonnaruwa, Anuradhapura and Matale as ***highly-severe poor districts*** and Kegalle, Hambantota, Ratnapura, *Nuwara Eliya,* Kurunegala, Puttalam, *Badulla* as ***moderately-severe poor districts*** (which gives the negative values of the mean). According to CFS data, it is observed that Moneragala is the

highly-severe poverty districts while Anuradhapura is the ***moderately-severe poverty district***. The relationship between the ranking orders of districts with poverty in the SLIS and CFS are measured by using Spearman's rank correlation coefficient. Spearman's rank correlation coefficient is 0.887 at the 0.01 level of significance. The high value of the rank correlation coefficient indicates that there is a close relationship between district ranking of CFS and SLIS data. Thus, both surveys clearly indicate that the districts of Anuradhapura, Polonnaruwa, Moneragala and Matale emerge as relatively the most deprived districts with poor in terms of the lack of sanitation, water, education, income, calorie consumption, and housing facilities etc.

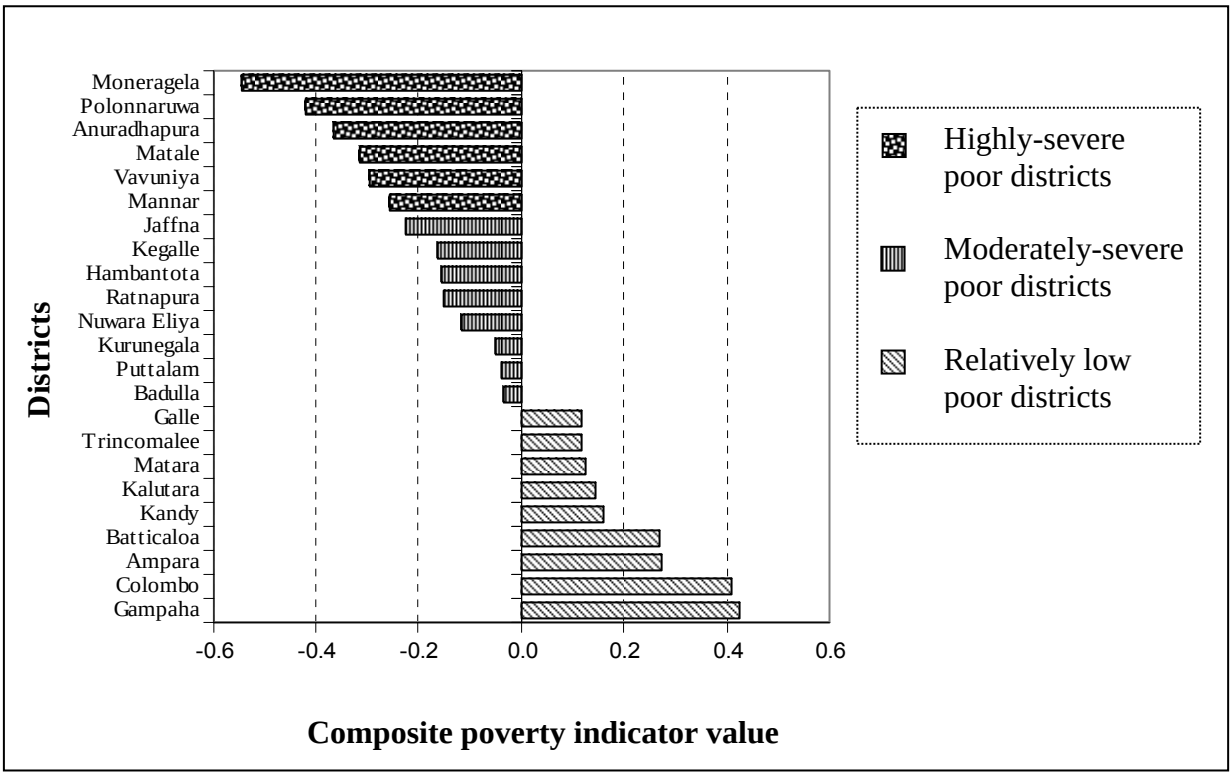
In addition, accessibility to services and frontier location have also contributed to the condition of highly-severe poor districts (Seneviratne, 2003). Poor accessibility to services leads to low mobility, low exposure to new ideas and increase in expenditure in case of family emergencies particularly health. This will result in missed opportunities, which are generally available in the surrounding areas and prevent the enhancement of economic and social status of the very poor. The border location has two major hazards, which lead to formation of very poor condition. Firstly, the high prevalence of endemic malaria and many other infectious diseases in the border areas of these districts makes the general poverty situation more severe through increase in household expenditure on health and loss of man days, which are critical to low income families. Secondly, place originated hazards like conflict, war and localized drought are common in most of the districts cited in the relationship established above.

The effects of conflicts and war and other confounding factors on poverty may have been observed when the Northern and Eastern Provinces were taken into account. Thus, this study finally paved the way to develop the composite indices for all provinces in the SLIS. Accordingly, Mannar and Vavuniya districts were also identified as *highly-severe poor districts* and Jaffna identified as a *moderately-severe poor district*. The positive values of the

composite indicator are categorized as relatively low poor districts such as Colombo and Gampaha etc. (Figure 9).

Thus, according to the traditional income based indices which are used in this study (i.e., FGT, Regional disparities on expenditure base), Badulla, Kegalle, Batticaloa, Matara and Kalutara are identified as the poor districts. However, under the Composite Indicator of Multidimensional Poverty, those districts are noticeably different from the districts identified as severely poor such as Moneragala, Polonnaruwa, Anuradhapura, Matale, Vavuniya and Mannar. In sum, it is interesting to note that the Composite Indicator in this study makes a significant difference to the classification of districts from what is obtained by using the more traditional income/consumption based poverty line due to the consideration of multidimensional factors prevailing in the above severely poor districts.

Figure 9: Categorization of the Poor Districts - SLIS



Source: Sri Lanka Integrated Survey 1999/2000.

7. Summary and Conclusions

7.1 General Findings

The identification of the poor households and the poor population are presented in this study using a constructed poverty line for the two data sets of Consumer Finance and Socio Economic Survey (1996/97) and Sri Lanka Integrated Survey (1999/2000). The Minimum Required Adult Equivalent Food Expenditure which equals to Rs.883 and Rs. 1,206 in the CFS and SLIS respectively, are used as the National Poverty line for the above two surveys.

Based on this poverty line, 22.4 per cent and 25.2 per cent of the households are identified as poor households whilst 25.8 and 25.3 per cent of the population are identified as poor in the CFS and SLIS respectively. Apparently, the higher value of the percentage of poor households in the SLIS is due to its adoption of a national sample.

Poverty in Sri Lanka is predominantly a rural phenomenon whilst the lowest poverty is recorded in the estate sector. The salient feature of rural poverty is that it accounts for more than three-fourths of aggregate poverty in Sri Lanka. However, this contribution to national poverty is largely invariant over the different poverty measures and regional poverty lines. As far as the proportion of poor households and poor population are concerned there is a decrease in the rural sector whilst a significant increase is apparent in the urban sector though the data in the two relevant surveys is not comparable. During the corresponding period, the proportion of poor households and poor persons also slightly increased in the estate sector.

The high incidence of poverty is seen mostly in the Eastern Province according to the SLIS whilst the highest severity of poverty in terms of squared poverty gap index is recorded in the Uva Province. The lowest severity of poverty is recorded in North Central Province in both surveys.

According to both surveys, the Southern, Central and Western Provinces experience a relatively high proportion of poverty when the single country poverty line is taken into account. The regional differences using Single Consumption Based Poverty Line certainly do not provide a clear portrait of poverty differentials by region because the basket of food consumption is different from region to region. When the regional poverty line and different poverty indices such as FGT and Gini indices are used, the features of the regional variations of poverty would change from the above. North Central, Central, Uva, Western and Eastern Provinces emerged as relatively more vulnerable provinces for poverty. Considerable incidence of poverty exists in the districts of Moneragala, Polonnaruwa, Matale, Kegalle and Mannar. Colombo is recorded as the district with the most inequality in income followed by Hambantota.

Based on the regional poverty lines and the Composite Indicator of Multidimensional Poverty, the poor household and its regional variations are clearly identified. The poverty indicator provides a realistic configuration of poverty in Sri Lanka because it accounts for the multidimensional factors. Therefore, the district variations of poverty status emerged better by the Composite Indicator than the Head Count Index. Thus, the Composite Indicator of Multidimensional Poverty has set out several districts as highly-severe poor districts: Moneragala, Polonnaruwa, Anuradhapura and Matale. These districts are relatively deprived in terms of lack of sanitation, water, education, income, calorie consumption and housing facilities etc.

According to the traditional income based indices which are used in this study (i.e., FGT, regional disparities on expenditure based measures), Badulla, Kegalle, Batticaloa, Matara and Kalutara are identified as the poor districts. However, under the Composite Indicator of Multidimensional Poverty, these districts are noticeably different from the districts identified as severely poor districts such as Moneragala, Polonnaruwa, Anuradhapura, Matale, Vavuniya and Mannar. It is interesting to note that the Composite Indicator in this study makes a significant difference to the classification of districts compared with what is

obtained by the more traditional income/consumption based poverty line due to the consideration of multidimensional factors prevailing in the above severely poor districts.

7.2 Policy Implications and Further Research

Undoubtedly, the above findings may be useful in the formulation of policies and implementation of strategies to reduce poverty in the identified districts in Sri Lanka. The improvement of infrastructure, particularly in the fields of sanitation, water, nutrition and housing conditions should be targeted to reduce poverty for which a national policy has to be adopted by the national government. Moreover, it is important that every district formulates its own poverty reduction strategies for the lessening of poverty because each region has its own carrying capacity based on resource availability.

There is no clear national policy for the alleviation of poverty in the country. Therefore it is important to formulate better policies in this regard by way of identification of genuine characteristics of the poor households and poor people as revealed in this study.

Development programmes must be intensified to cover more projects in rural areas where the majority of the poor reside, such as micro-finance induced project, self employment, housing project, health service improvements, enhancing quality of education and other infrastructural facilities. Further, the government should develop poverty reduction programmes in urban areas where the poor have apparently increased over the last few decades, such as access to safe water, sanitation facilities, living environment and accessibility to primary health care. It is imperative that such development projects be targeted at both male and female, youth and older heads of households. The regional poverty variations in this study based on the district ranking of the composite poverty indicator and the regional poverty lines provide a basis for making decisions concerning needs-based-rules for the allocation of the budget expenditure to districts in the provinces in Sri Lanka. Furthermore, the highly severe poor districts should be prioritized for fiscal spending, especially when regional budgets are formulated for the improvement of the well-being of people of those districts.

The ranking orders for sector, province and districts reveal the regional disparities of poverty in terms of indices of headcount, poverty gap and severity of poverty, which may be useful for the formulation and implementation of policies for the elimination of poverty and consequent improvement of welfare facilities. When funds are allocated on a provincial basis consequent to devolution of power by the government, these differentials of ranking order in terms of poverty status could be taken into account. Therefore, identification of regional disparities of income inequality per se provides insight into dimensions of poverty which will assist in the formulation of better policies and programmes by the government. The strategies to reduce income inequality either through welfare programmes or fiscal or financial interventions would be useful in poverty reduction.

Further research on specific areas of poverty linked to the household may be conducted in the areas of conflict, resettled areas and urban fringe, where severe poverty has been confirmed by this study. This is because these areas have produced a large number of unemployed youth and displaced persons leading to numerous social problems, which lead to communal insecurity. It is also important to further analysis the poverty dimensions on the basis of place and locality because it has an important role to play in poverty reduction in Sri Lanka, through empowerment of the household. This has to originate both from community participation and institutional guidance where social and political awareness of poverty reduction will be transmitted to individual households. This type of approach is necessary as there is a regional bias in severe poverty as indicated by data used in this analysis and by many other researchers cited. Therefore, it is timely to engage in projects of micro-level research in the regional context of poverty in Sri Lanka.

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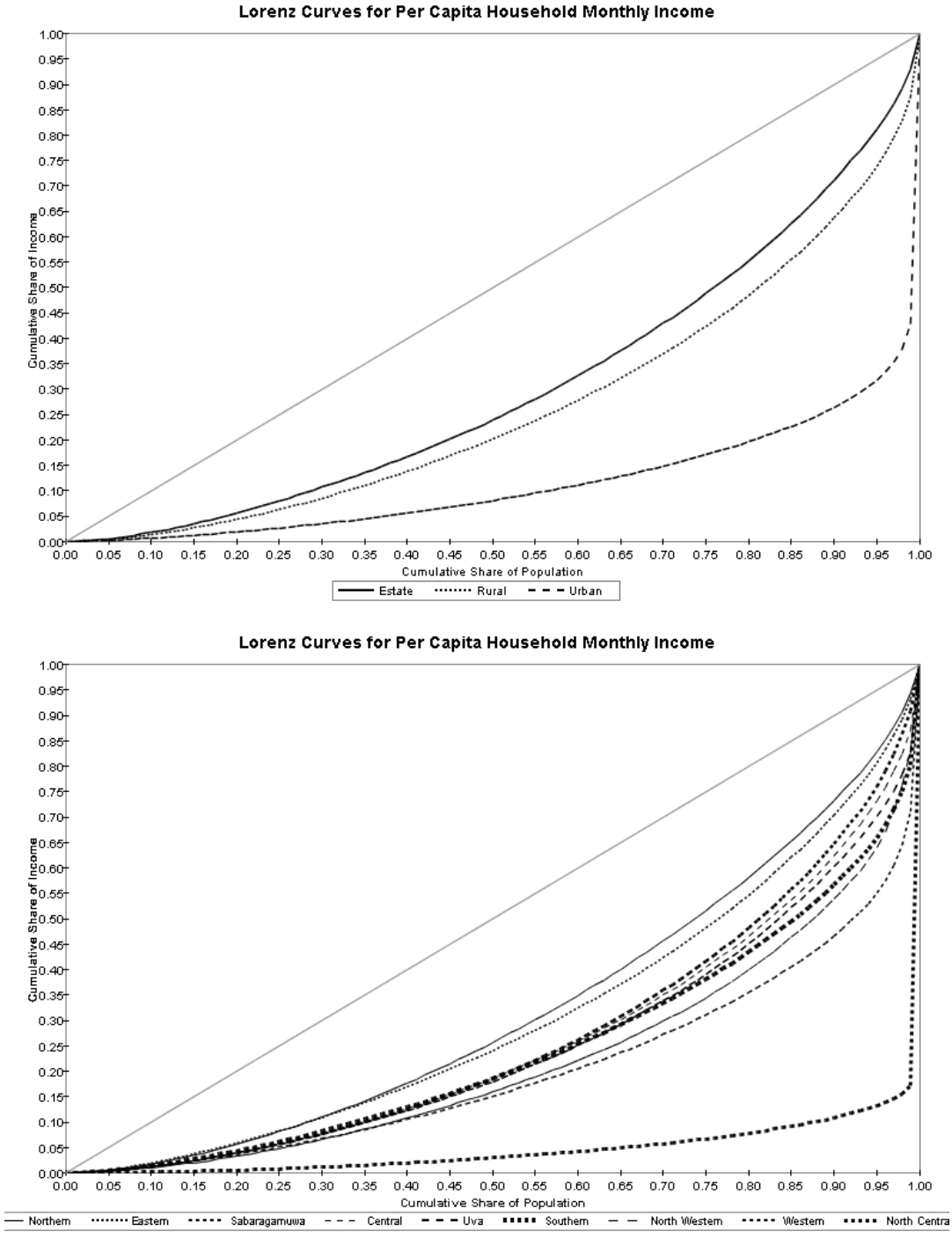
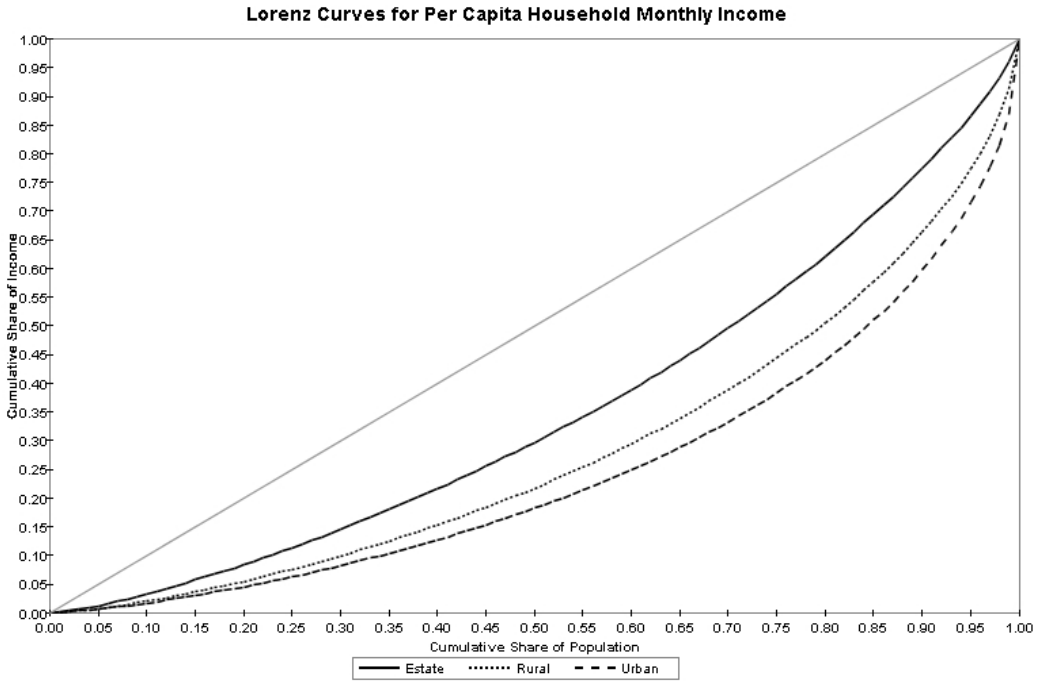
Appendix A: Lorenz Curves - SLIS and CFS

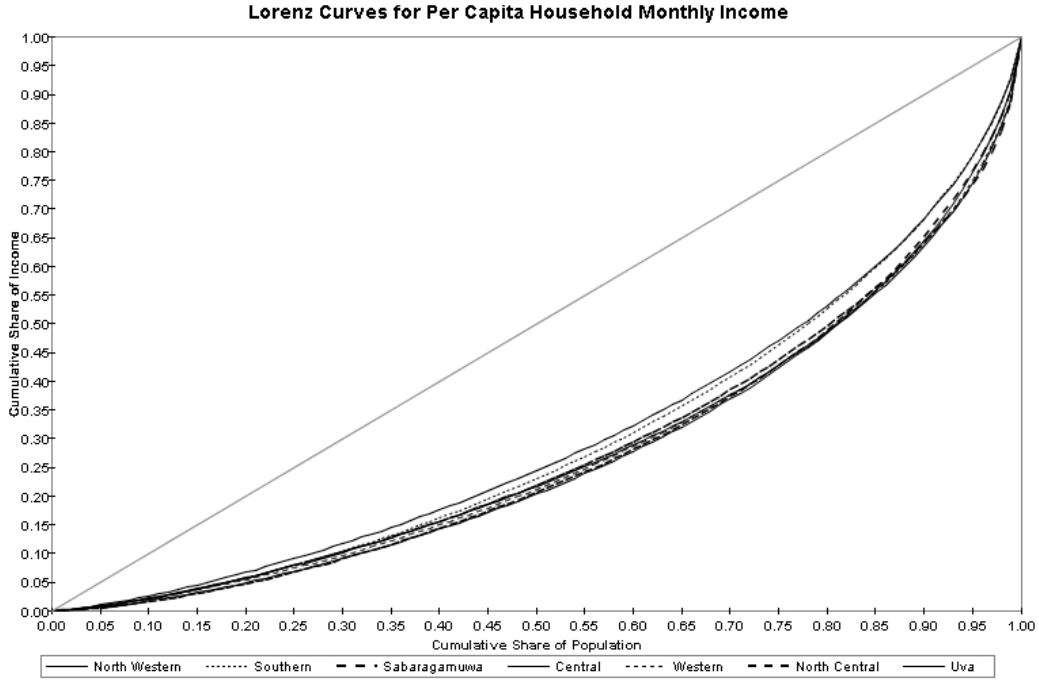
Figure A1: Lorenz Curves – SLIS



Note: Order of the legend displays increasing degree of inequality.
Source: Sri Lanka Integrated Survey 1999/2000.

Figure A2: Lorenz Curves - CFS





Note: Order of the legend displays increasing degree of inequality.
Source: Consumer Finance & Socio Economic Survey 1996/1997.