

IMPACT OF URBAN SECTOR ON POVERTY AND INCOME INEQUALITY IN SRI LANKA

N.P. Ravindra Deyshappriya^{1*}

¹ Faculty of Management, Uva Wellassa University of Sri Lanka, Badulla. 90000.

* Corresponding Author: ravindra@uwu.ac.lk

ABSTRACT

Sri Lanka has been one of the countries in the region with faster expansion of urban areas. However, less attention has been paid on the rapid expansion of Sri Lanka's urban areas and its impacts on poverty and income inequality in Sri Lanka. Hence, the objective of the current study is to examine the impacts of urban sector on poverty and income inequality in Sri Lanka. The study applied probit and ordered probit models and calculations of growth elasticity of poverty along with appropriate descriptive statistics. The analysis is mainly based on the data from Household Income & Expenditure Survey (2012/13) conducted by the Department of Census and Statistics of Sri Lanka. The findings suggest that the being an urban sector household significantly reduces poverty. More specifically, the probabilities of being extreme poor, poor and vulnerable non-poor for a household in the urban sector are lower by 0.2%, 3.4% and 8.1% respectively, compared to the estate sector. Similarly, the probability of being non-poor for a household in urban areas is higher by 11.63%, compared to the estate sector. Furthermore, the urban sector has the highest Growth Elasticity of Poverty (-0.31) which reflects that the rate at which growth translates into poverty reduction is highest in urban sector compared to other sectors. Apart from that, expenditure-based and income-based Gini coefficients for the urban sector are 0.4 and 0.51 respectively, and both are higher than that of the national and provincial averages of the Gini index. Moreover, the poorest decile of the urban sector owns only 0.5% of the total urban sector income while the richest decile accounts for 55.8% of the total household income of the urban sector. The study has empirically confirmed that, despite urban sector has the lowest probability of being poor, urban sector and urbanization significantly increase inequality. Therefore, the study recommends having a well-planned urban sector that promotes more equal distribution of resources as well.

Keywords: *income inequality, poverty, ordered probit model, Gini coefficient, decile*

INTRODUCTION

Process of urbanization in Sri Lanka has been relatively slow compared to other regional counterparts such as India and Pakistan. The share of population living in towns and cities in Sri Lanka was observed to have decreased slightly between 2000 and 2010. This was driven by the low number of people wanting to relocate from rural to urban areas, largely driven by the country's successful progress in achieving spatial equity in the provision of basic public services and improving living standards in both rural and urban areas (World Bank, 2015). Therefore, the share of population relocating from rural to urban areas is relatively low in Sri Lanka when compared to other countries in the region. This is estimated to be the reason for Sri Lanka's relatively stable share of urban population. However, Sri Lanka had the fastest expansion of urban area relative to urban population in comparison to other countries in the region, as measured using nighttime lights data (World Bank, 2015). Its total urban area grew at a rate close to that of the region figures. However, its urban population growth rate was much lower than that of the region overall, despite a continuous increase was observed in its total urban population. However, urban population as a percentage of total population has decreased until 2013, and has increased from 2013 onwards. Moreover, the percentage of urban population growth remained constant until 2012, and continued to increase drastically after 2012. It is important to note, when referring to the urbanization of Sri Lanka, that the urban sector is not confined into any one specific city such as Colombo or Gampaha. The urban sector of Sri Lanka comprises of all urban areas located in each of 9 provinces of Sri Lanka.

Poverty remains a challenge for most South Asian countries, including Sri Lanka, despite progress made in reducing the absolute level of poverty. The most challenging aspect of poverty that remains relatively unacknowledged is urban poverty, which is the poverty prevalent in the urban sector. Some of the major drivers of urban poverty have been improper management of urban development, lack of employment opportunities, and poor quality of services. This implies that urban poverty is relatively independent to average mean income of households, as these are also common problems for households that are not categorized below the national poverty line. According to recent surveys conducted, the poverty headcount index of the urban sector indicates a decreasing trend between 1990-91 and 2012-13, while that of both the rural and estate sectors were observed to increase from 1990-91 to 1995-96, and decrease 1995-96 onwards. Furthermore, the pace of reducing poverty was highest for the urban sector (87%), and lowest for the estate sector (45%).

Inequality has shown an increasing trend in most countries in South Asia, including Sri Lanka. The most important form of inequality in these countries has been the urban-rural gap. Although Sri Lanka has achieved a relatively high standard of spatial equity in the provision of basic public services and improving living standards in urban and rural areas, income inequality still remains as a critical issue. This is primarily driven by factors such as the number of job opportunities available, scale of industries, and differences in the level of skill. The urban sector accounted for steadily increasing income inequality between 1990-91 (0.37) and 2012-13 (0.51). The rural sector on the other hand indicates increasing income inequality from 1990-91 (0.29) to 2002-03 (0.39), decreasing inequality between 2002-03 and 2009-10 (0.37), followed by an increase in 2012-13 (0.45). Furthermore, the estate sector had decreasing trend in income inequality from 1990-91 (0.22) to 1995-96 (0.20), and generally increasing income inequality 1995-96 onwards, with constant estimates for 2002-03 and 2006-07 (0.26). The pace of increasing income inequality was highest for the estate sector (77.27%) and lowest for the urban sector (37.83%).

The main objective of the study is to examine the relationship between the urban sector and poverty and inequality in Sri Lanka. However, more specific objectives of the research include; quantify the impact of the urban sector on poverty level in Sri Lanka and calculate the probability of being extreme poor, poor, vulnerable non-poor, and non-poor and examine the impacts of the urban sector on the income and expenditure inequality of Sri Lanka. In order to accomplish the above research objectives, the paper is structured as follows. The next section reviews existing literature on the topic, followed by the methodology. After that, results and discussion are explained along with the conclusions and recommendation of the study.

RESEARCH METHOD

Data and variables

The current study entirely based on the data from Household Income and Expenditure Survey (HIES) was conducted by the Department of Census and Statistics of Sri Lanka in 2012/2013. This is the most updated and accurate household data series available in Sri Lanka. HIES (2012/2013) covered the whole of Sri Lanka for the first time in Sri Lanka and surveyed 20,536 households across 24 districts located in nine provinces. HIES data set is the key data source for calculating poverty estimates in Sri Lanka and widely used for empirical analysis due to its wide coverage. Hence, data requirements of the econometric model and descriptive analysis were collected from HIES (2012/2013).

Probit and ordered probit regression estimation

The probit model was applied to observe the impact of urban sector on poverty in Sri Lanka: the first objective of the study. The probit model has been widely used for empirical poverty analysis as the probit model well fits with binary dependent variable models. The current study also employs the probit model as the empirical model consists of a binary dependent variable which takes value 1 for poor households and 0 for non-poor households. The general form of the standard probit model can be expressed as follows:

$$y_i = x_i\beta + u_i \dots\dots\dots (01)$$

Where y_i is the binary dependent variable, which takes value 1 for poor households, and 0 for non poor households. x_i is the vector of independent variables, as described in Table 1, and β indicates the vector of the estimated coefficient of each independent variable. Similarly, u_i stands for the random error term. The standard probit model follows a normal distribution.

Table 1. Description of the independent variables

Variable name	Description
Age	Age of the head of household (HH)
Age squared	Squared of the age of the head of household
HH size	Size of the household
Sector (base category is estate sector)	
Urban	1 if HH lives in an area governed by Municipal Council or Urban Council and 0 otherwise
Rural	1 if HH lives in plantation areas, which are more than 20 acres of extent and having not less than 10 residential laborers and 0 otherwise
Gender of the head of HH	
Ethnicity (base category is Sinhala)	
SL Tamil	1 if HH is Sri Lanka Tamil and 0 otherwise
IND Tamil	1 if HH is Indian Tamil and 0 otherwise
SL Moors	1 if HH is Sri Lanka Moors and 0 otherwise
Burgher	1 if HH is Burgher and 0 otherwise
Civil status (base category is unmarried)	
Married	1 if the head of HH is Married and 0 otherwise
Widowed	1 if the head of the HH Widowed and 0 otherwise
Divorced	1 if the head of HH is Divorced and 0 otherwise
Separated	1 if the head of HH is Separated and 0 otherwise
Education (Base Category is No Schooling)	
Primary	1 if the Head of HH is educated up to grade 5 and 0 otherwise
Secondary	1 if the Head of HH education is between grade 5 – 10 and 0 otherwise
Tertiary	1 if the Head of HH education is between G.C.E. (O/L) – G.C.E. (A/L) and 0 otherwise
Degree or <	1 if the Head of the HH has University qualifications University or above
Employment (base category is unemployed)	
Government	1 if the Head of HH is employed in government sector and 0 otherwise
0Semi-gov	1 if the Head of HH is employed in semi-government sector and 0 otherwise
Private	1 if the Head of HH is employed in private sector and 0 otherwise
Employer	1 if the Head of HH is an employer and 0 otherwise
Self-emp	1 if the Head of HH is self-employed and 0 otherwise
Family work	1 if the Head of HH is a family worker/labor and 0 otherwise
Agri Land (Base Category is No Agri Land)	
Have Agri Land	1 if HH owns agriculture land and 0 otherwise
Disability (Base Category is disability)	
No disability	1 if Head of the HH is not a disabled person and 0 otherwise
Remittances (Base Category is No Remittances)	
Remittances	1 if HH receives remittances and 0 otherwise
Expenditure/Income	Income to expenditure ratio

Source: Created by author

Furthermore, the vector of independent variables includes the following variables:

$$\Pr(y = 1) = \int_{-\infty}^x \frac{1}{\sqrt{2\pi}} e^{-\frac{x^2}{2}} dx \dots \dots \dots (02)$$

The marginal effect of a continuous variable of x_i is given by:

$$\frac{\partial \Pr(y = 1)}{\partial x_i} = \phi(x\beta)\beta_k \dots \dots \dots (03)$$

The marginal effects calculated from the estimated probit coefficients express the changes of probability of being poor due to one unit change in any independent variable. Thus, the probit model empirically estimated to quantify the impact of the urban sector of Sri Lanka on the poverty level of Sri Lanka. Further, the model is estimated with marginal effects, as the marginal effects clearly quantifies the impacts rather than standard probit coefficients.

However, use of binary categorization to identify the level of poverty essentially ignore the diversity nature of poverty status. For instance, the variable called “poor” is a generalization for all the households below the official poverty line, despite the fact that all households are not equally poor in reality. Similarly, “non-poor” equally treats all the households above the official poverty line without considering the diversity among the “non-poor”. Therefore, the current study disaggregates the traditional two poverty status in the four categories based on the official poverty line attached to HIES (2012/13) and then applied the ordered probit model, introduced by Aitchison and Silvey (1957). The generalized nature of the ordered probit model can be expressed as follows:

$$y_i^* = x_i\beta + u_i \dots \dots \dots (04)$$

Where y^* is a discrete variable which can take any value from 1 – 4 which indicates the different poverty levels as indicated below. Similarly, x_i is a vector of independent variables as indicated by Table 1 above.

- Extreme Poor** ($y_i^* = 1$): if the household’s monthly expenditure is less than or equal to half of official poverty line¹. (HH expenditure \leq Rs. 7067)
- Poor** ($y_i^* = 2$): if the household’s monthly expenditure lies between half of official poverty line and official poverty line. (Rs. 7067 <HH expenditure \leq Rs. 14134)
- Vulnerable Non-Poor** ($y_i^* = 3$): if the household’s monthly expenditure lies between the official poverty line and 1.5 times the official poverty line. (Rs. 7067 <HH expenditure \leq Rs. 21201)
- Non-Poor** ($y_i^* = 4$): if the household’s monthly expenditure is higher than 1.5 times the official poverty line. (HH expenditure > RS 21201)

Both ‘Extreme Poor’ and ‘Poor’ categories were previously considered as ‘Poor’ while both ‘Vulnerable Non-Poor’ and ‘Non-Poor’ were considered as ‘Non-poor’ under traditional two-way poverty classification. The ordered probit model was also estimated with marginal effects which indicate the probability of falling into each category of poverty when an independent variable is changing. In fact, marginal effects are indicated in percentage terms to provide more realistic interpretation.

Growth elasticity of poverty

Growth elasticity of poverty (GEP) indicates the percentage change in a poverty indicator due to one percent change in per capita income. Most of the studies have incorporated poverty headcount index to calculate the GEP. The current study calculated GEP during the period of 2002 - 2012/13 based on HIES data from DCS of Sri Lanka.

¹The used official poverty line is Rs. 3624 (HIES, 2012/13). However, the official poverty line for household was calculated by multiplying the official poverty line by average household size of 3.9 (HIES, 2012/13).

$$\text{Growth elasticity of poverty (GEP)} = \frac{\% \text{ Change in poverty headcount index}}{\% \text{ Change in per capita income}}$$

This study also calculated the sectoral GEP in order to examine how growth of per capita income in the urban sector affects the poverty level.

RESULTS AND DISCUSSION

Impacts of urban sector on poverty in Sri Lanka

Mainly, econometric analysis based on probit model is employed to analyze the impacts of the urban sector on poverty in Sri Lanka. Apart from the probit model analysis, Growth Elasticity of Poverty (GEP) for sectors (urban, rural and estate) were also estimated in order to check how the urban sector elasticity is different from other sectors. Figure 1 illustrates the poverty headcount index across sectors and provinces in Sri Lanka along with the national, provincial, and sectoral averages. The poverty headcount index was lowest in the urban sector and highest in the estate sector. Furthermore, the Western province had the lowest Headcount Index, while the Uva province had the highest. The provincial average of the Index (8.4) was significantly higher than the national average (6.7) and sectoral average (6.8).

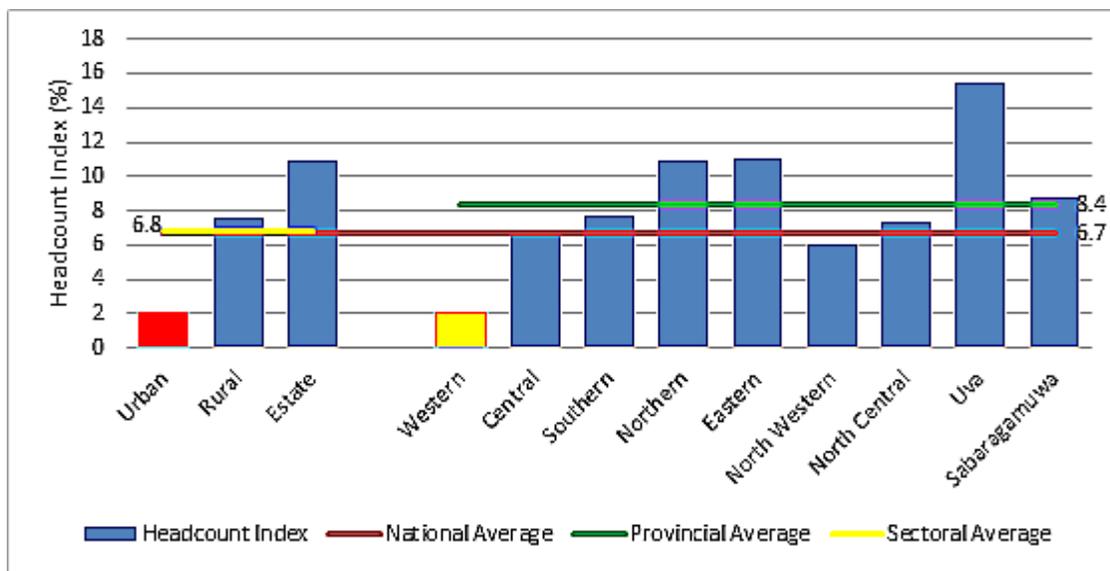


Figure 1. Sectoral, provincial and national poverty headcount index
(Source: Created by author based on HIES (2012/13) data from DCS, Sri Lanka)

Probit model estimation

Table 2 summarizes the probit model estimates that focus on the impact of urban sector on the poverty status of Sri Lanka. Three models were estimated adding variables gradually in order to check the robustness of the estimates especially relevant to the variable called Urban. According to the Probit estimation, all three models consistently confirm that the poverty level of the urban and rural sectors is significantly low compared to the estate sector. Further, the estimated coefficients of both urban and rural sectors stress that the poverty status of the urban sector is the lowest. Living in an urban sector household and rural sector household reduces the probability of being poor by 2.1% and 1.1% respectively, compared to the estate sector household.

Table 2. Result of the probit model estimation

	Marginal effect	Z-value	Marginal effect	Z-value	Marginal effect	Z-value
Age	-0.18***	-2.76	-0.14**	-2.70	-0.12**	-2.46
Age squared	0.002**	2.5	0.00*	1.95	0.00*	1.73
HH size	1.78***	20.02	1.38***	19.97	1.32***	19.94
Sector (Estate)						
Urban	-4.43***	-8.15	-2.52***	-5.42	-2.13***	-4.71
Rural	-0.49	-0.67	-0.50	-0.94	-1.05**	-2.19
Gender (Female)						
Male	0.466	1.09	0.08	0.20	-0.16	-0.41
Ethnicity (Sinhala)						
SL Tamil	3.07***	6.95	1.10***	3.35	1.40***	4.22
IND Tamil	0.87**	0.796	0.51**	0.21	0.48**	0.20
SL Moors	-1.26**	-2.45	-1.53***	-4.14	-1.18***	-3.22
Burgher	1.80	0.52	0.97	0.35	1.14	0.41
Civil Status (Single)						
Married	-4.97***	-3.64	-3.27***	-3.09	-2.84***	-2.86
Widowed	-2.30**	-2.46	-2.07***	-3.02	-1.99***	-3.09
Divorced	-3.14*	-1.82	0.63***	0.09	0.58***	0.09
Separated	-0.47	-0.38	0.84**	0.50	0.81**	0.55
Education (No Schooling)						
Primary			-1.62***	-4.15	-1.50***	-4.07
Secondary			0.64	0.00	0.62	0.00
Tertiary			0.22	0.00	0.21	0.00
Degree or <			-0.17**	-0.00	-0.16**	-0.00
Employment (Unemployed)						
Government			-1.75***	-2.95	-1.87***	-3.53
Semi-gov			0.55**	0.06	0.44**	0.01
Private			1.18***	3.10	0.57	1.58
Employer			-2.79***	-3.57	-2.65***	-3.82
Self-employ			-0.64*	-1.77	-0.81**	-2.42
Family Work			0.57	26	2.24***	0.81
Agri land (no land)						
Have agri land					0.41	0.00
Disability (head of HH is a disable)						
No disability					-0.0028	-1.22
Remittances (No remittances)						
Have remittances					-0.0231***	-7.12
Expenditure/income					-0.0056***	-3.05
Prob > chi ²	0.0000		0.0000		0.0000	
Pseudo R ²	0.0869		0.1502		0.1627	
Observations	20,536		20,536		20,536	

Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka

Figure 2 shows that the average probability of being poor for a household in the urban sector is the lowest (0.06) and it is lowered by average probabilities of 0.13 and 0.09 compared to the estate and rural sectors respectively. Therefore, it is proven that the urban sector of Sri Lanka results for a lower poverty level compared to the rural and estate sectors.

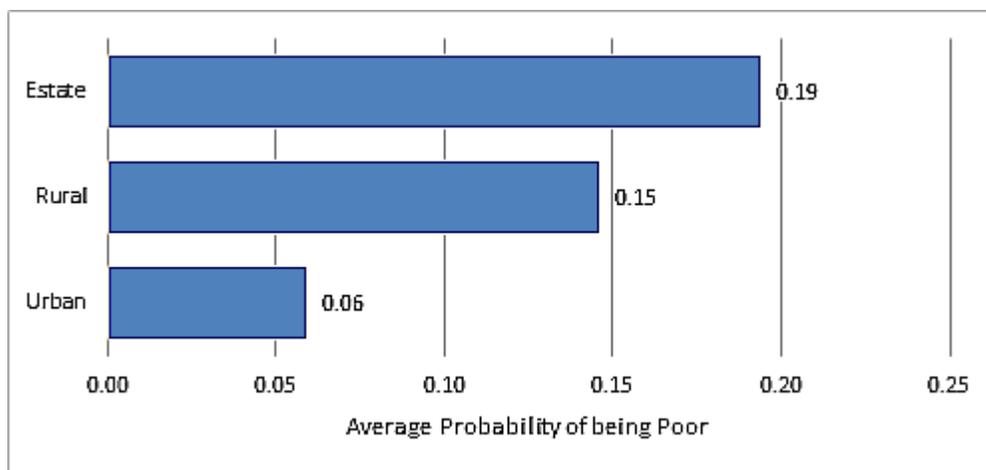


Figure 2. Average predicted probabilities of being poor for households in three sectors
(Source: Author's calculation based on the probit model estimation)

Apart from the linkage between the urban sector and poverty status, there is a parabolic association between age of the head of household and poverty level of Sri Lanka. Similarly, expanded household size, living as a divorced or separated household head, being a Sri Lankan or Indian Tamil, and being employed as a family worker increases the probability of being poor. Conversely, the following factors such as being a Sri Lankan moors compared to Sinhalese, living as a married or widowed household head compared to unmarried, having higher educational attainment compared to no-schooling, being an employer, self-employer or employed in the government sector compared to unemployed and having remittances, essentially reduce the probability of being poor. Overall significance of all three models are confirmed by Prob > chi2 value which is equal to zero in each model. However, this probit estimation uses only a very broad categorization of poverty by ignoring considerable disparity within the groups “poor” and “non-poor”. Hence, this analysis was further extended by applying the ordered probit model as explained in the methodology.

Ordered probit estimation

Ordered probit model was applied to further examine the impact of the urban sector on the poverty status of Sri Lanka. Four aspects of poverty – “Extremely Poor”, “Poor”, “Vulnerable Non-Poor” and “Non -Poor” as explained in the methodology were incorporated into the ordered probit model. The estimated results are summarized in Table 3.

The most focused and objective oriented variable of the ordered probit model is “Urban” and the estimated coefficients indicate that the probability of being extremely poor, poor and vulnerable non-poor for a household in the urban sector is significantly lower than both the estate and rural sectors. Particularly, the probability of being extreme poor, poor and vulnerable non-poor for a household in the urban sector is lower by 0.2%, 3.4% and 8.1% respectively, compared to the estate sector. However, the probability of being extreme poor, poor and vulnerable non-poor for a household in the rural sector is lower only by 0.06%, 1.5% and 3.2% respectively, compared to the estate sector. Interestingly, the probabilities of being non-poor for households in the urban sector and rural sector are higher by 11.63% and 4.8% respectively, compared to the estate sector. In fact, these estimates sufficiently prove that both the poverty level of the urban sector, and probabilities of being extreme poor, poor and vulnerable non-poor for households in the urban sector are significantly lower compared to both estate and rural sectors. Further, Figure 3 visualizes the average predicted probabilities of being extreme poor, poor, vulnerable non-poor and non-poor for the households in each sector.

Table 3. Results of ordered probit estimation

Variables	Coefficients	Robust standard error	Marginal effects (%)			
			Extreme poor	Poor	Vulnerable poor	Non-poor
Age	0.012***	0.005	-0.01**	-0.11***	-0.23***	0.35***
Age squared	0.000***	0.000	0.00***	1.34E-03***	2.7E-03***	-4.E-03***
HH Size	0.401***	0.010	0.20***	3.64***	7.48***	-11.27***
Sector (estate)						
Urban	0.478***	0.060	-0.20***	-3.37***	-8.13***	11.63***
Rural	0.18***	0.056	-0.06***	-1.51***	-3.28***	4.85***
Gender (female)						
Male	0.126***	0.036	-0.10***	-1.21***	-2.37***	3.63***
Ethnicity (Sinhala)						
SL Tamil	-0.26***	0.031	0.14***	2.80***	5.01***	-7.96***
IND Tamil	-0.006	0.062	0.01	0.05	0.10	-0.16
SL Moors	0.020	0.043	-0.01	-0.17	-0.36	0.55
Burgher	-0.144	0.264	0.07	1.46	2.75	-4.29
Civil status						
Married	0.424***	0.067	-0.30***	-4.70***	-8.11***	1.31***
Widowed	0.434***	0.071	-0.10***	-3.10***	-7.43***	10.65***
Divorced	0.205	0.139	-0.06**	-1.57**	-3.62	5.25
Separated	0.248***	0.089	-0.10***	-1.85***	-4.35***	6.27***
Education (no schooling)						
Primary	0.406***	0.046	-0.10***	-3.09***	-7.11***	10.31***
Secondary	0.923***	0.046	-0.6***	-9.69***	-16.64***	26.91***
Tertiary	1.628***	0.062	-0.2***	-6.72***	-18.80***	25.76***
Degree or <	2.178***	0.178	-0.1***	-4.89***	-16.52***	21.56***
Employment (unemployed)						
Government	0.400***	0.068	-0.1***	-2.73***	-6.76***	9.59***
Semi gov.	0.307***	0.087	-0.08	-2.19***	-5.28***	7.55***
Private	-0.15***	0.035	0.06***	1.41***	2.80***	-4.26***
Employer	0.682***	0.119	-0.10***	-3.61***	-10.19***	13.91***
Self employ	0.028	0.035	-0.01	-0.25	-0.52	0.78
Fam. work	-0.045	0.225	0.02	0.43	0.85	-1.30
Agri land (no agri land)						
Have agri land	0.215***	0.032	-0.10***	-2.21***	-4.10***	6.42***
Disability (head of HH is a disable)						
No disability	0.12***	0.024	-0.10***	-0.91***	-1.89***	2.85***
Remittances (no remittances)						
Have remitt.	0.449***	0.045	-0.10***	-2.98***	-7.48***	10.56***
Expen./Income	0.061***	0.012	-0.10***	-0.55***	-1.14***	1.72***
Ancillary parameters			Marginal effects after ordered probit			
/cut1	0.4159	0.1562	0.0012`	0.0436	0.1561	0.7989
/cut2	1.7578	0.1557				
/cut3	2.6168	0.1567				
Prob > chi ²	0.0000					
Pseudo R ²	0.2078					
Observations	20,536					

Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka

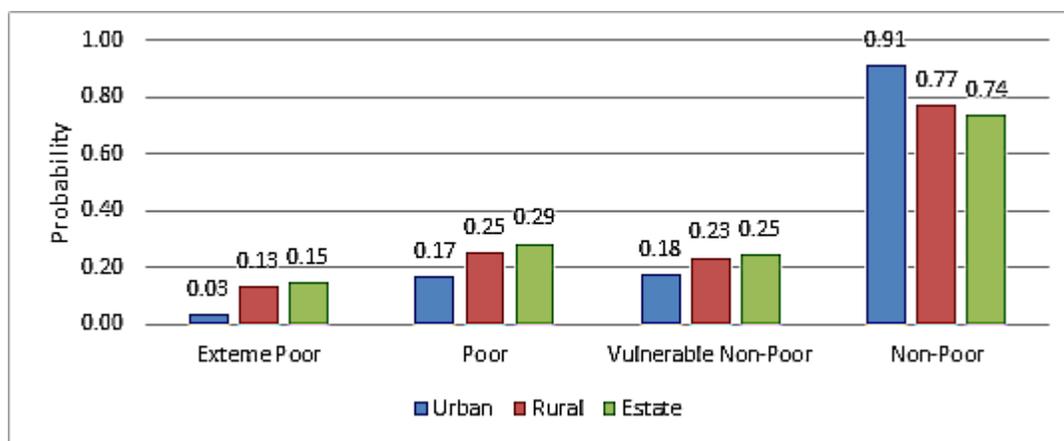


Figure 3. Average predicted probabilities of being extreme poor, poor, vulnerable non-poor and non-poor for the households in three sectors
(Source: Author's calculation based on the ordered probit model estimation)

As the graph illustrates, the urban sector's average predicted probabilities of being extreme poor, poor and vulnerable non-poor are 0.03, 0.17 and 0.18 respectively, and these probabilities are significantly lower than the predicted probabilities for both rural and estate sectors. In contrast, the average predicted probability of being non-poor for the urban sector is 0.91, while the predictions for rural and estate sectors are 0.77 and 0.74 respectively. Therefore, both marginal effect estimations and average predicted probability estimations clearly highlight that the probabilities of being extreme poor, poor and vulnerable non-poor for the urban sector are remarkably low, while the probability of being non-poor is significantly higher compared to the other two sectors. In fact, urban sectors provide sufficient economic opportunities such as better employment opportunities, access to financial markets, and other essential services to households compared to the rural and estate sectors. Consequently, income poverty measured by the Poverty Headcount index is considerably low in the urban sector, while the urban sector permits very low probability of being poor for its inhabitance.

In addition to the key factor focused in the study, age of the head of household non-linearly (U Shaped) associates with each type of poverty. In fact, the more realistic story behind the U shaped relationship is, younger or middle-aged households' heads reduce the poverty level while relatively elder heads of household may account for higher poverty rates. Similarly, size of the household indicates that one extra household member increases the probability of being extreme poor, poor and vulnerable non-poor by 0.2%, 3.6% and 7.4% respectively, and reduces the probability of being non-poor by 11.27%. Male headed households have less probability of being poor compared to female headed households; specifically, being a male headed household increases the probability of being non-poor by 3.6% compared to female headed household counterparts. According to the civil status variable, being a married household head rather than being a single, reduces the probability of being extreme poor, poor and vulnerable non-poor by 0.3%, 4.7% and 8.1% respectively. Apart from that, education has become one of the key factors of getting households out of poverty, and the heads of household with primary, secondary, tertiary, and degree or higher educational qualifications increase the probability of being non-poor by 10.3%, 26.8%, 25.7% and 21.5% respectively, compared to the heads of the household with no schooling. Moreover, employment in any sector (except in the private sector and family work) compared unemployment, having agricultural lands, receiving remittances and household heads with no disability, reduce the probability of being poor in each aspect, and increase the probability of being non-poor.

Growth elasticity of poverty

The growth elasticity of poverty (GEP) for urban, rural and estate sectors were calculated in order to further examine the impacts of urban sector on the poverty level of Sri Lanka. In fact, GEP indicate the percentage change of poverty headcount index due to one percent change in per capita income. The negative coefficient of GEP indicates that increase in per capita income reduces the Poverty Headcount Index.

Table 4 indicates the GEP for each sector during the period of 2002-2013. The urban sector has the highest GEP (-0.31) and it expresses that one percent increase in the urban sector per capita income during 2002-2013 reduced the poverty headcount index of urban sector by 0.31%. However, GEP for both the rural and estate sectors are -0.24% and -0.19% respectively. Therefore, it is obvious that the rate at which growth translated into poverty reduction is considerably higher in the urban sector compared to the rural and estate sectors.

Table 4. Growth elasticity of poverty

Sector	Percentage change in per capita income (2002-2013/13)	Percentage change in headcount index (2002-2012/13)	Growth elasticity of poverty
Urban	245.45	-75.00	-0.31
Rural	282.47	-68.00	-0.24
Estate	326.94	-63.33	-0.19

Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka.

Impact of urban sector on inequality

The econometric analysis explained in the previous section clearly highlighted that the poverty level and the probability of being poor for the household in the urban sector are significantly low compared to the rural and estate sectors. The main objective of this section of the paper is to examine the impact of urban sector on income inequality.

Mean monthly expenditure and expenditure based Gini coefficient

Figure 4 illustrates the sector-wise and provincial-wise mean monthly household expenditure of Sri Lanka. Further, Figure 04 clearly compares the mean monthly household expenditure of each sector and province with the sectoral, provincial and national monthly average household expenditure. It is apparent that monthly mean household expenditure of the urban sector – Rs. 58,930, is significantly higher than that of both rural and estate sectors. Moreover, mean household expenditure of the urban sector is also higher than both national and sectoral averages. Consequently, it is clear that there is a higher sectoral variation in household expenditure and also the spending of households in the urban sector is considerably higher than other sectors. In order to provide more specific analysis, provincial-wise mean monthly household expenditure is also considered. Particularly, the Western Province – the most urbanized province in Sri Lanka accounts for the highest mean monthly household expenditure (Rs. 58,298) over other provinces. In fact, the mean household expenditure of the Western Province is remarkably higher than both national and provincial averages of Rs. 41,444 and Rs. 38,890 respectively. Hence, both sectoral and provincial analyses stress that the urban sector and most urbanized provinces cause for a significantly higher monthly

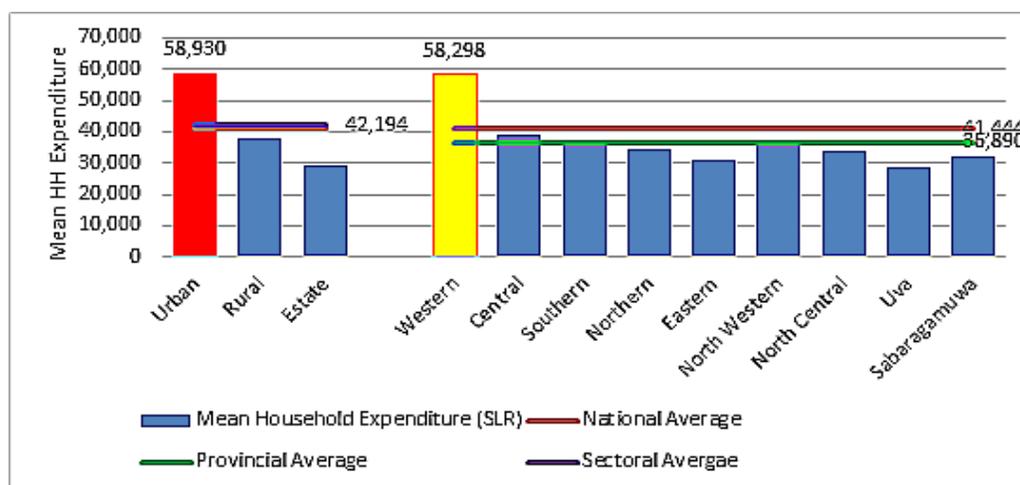


Figure 4. Sectoral and provincial differences in household mean monthly expenditure
 (Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka)

household expenditure and this is mainly due to the spatial price difference among the sectors and provinces. Apart from the distribution of the mean monthly household expenditure, the official Gini coefficient (expenditure based) is also used to explain how the urban sector accounts for higher inequality.

Figure 5 illustrates the expenditure-based Gini coefficient differences across sectors and provinces in Sri Lanka. Similar to the above Figure, this graph compares the expenditure-based Gini coefficient difference across sector and provinces in Sri Lanka to the provincial, sectoral and national averages. The mean household expenditure in the urban sector has the largest Gini coefficient of 0.4, in comparison to the rural and estate sectors. Therefore, the urban sector experiences the highest level of inequality in mean household expenditure, in comparison to the rural and estate sectors. It is also important to note that inequality of the mean household expenditure of the urban sector is equal to the inequality of national average of mean household expenditure as both have a Gini coefficient of 0.4. Also, the Gini coefficient of the provincial average is 0.36 and is equal to that of the sectoral average. Consequently, the inequality of mean household expenditure across sectors is equal to that across provinces. The Western province has the largest Gini coefficient of 0.39 in comparison to other provinces implying that the highest inequality in mean household expenditure is experienced in the Western province where the urbanization is significantly higher. A significant observation from this graph is that the inequality in mean household expenditure is approximately the same across all sectors except the estate sector, and across all provinces except the eastern province. The estate sector and the eastern province display lower inequality in mean household expenditure. Hence, although Figure 05 (previous graph) indicates that the household mean monthly expenditure is significantly higher for the urban sector and western province, inequality of mean monthly expenditure is approximately equal to that of the rural sector and all other provinces except the eastern province.

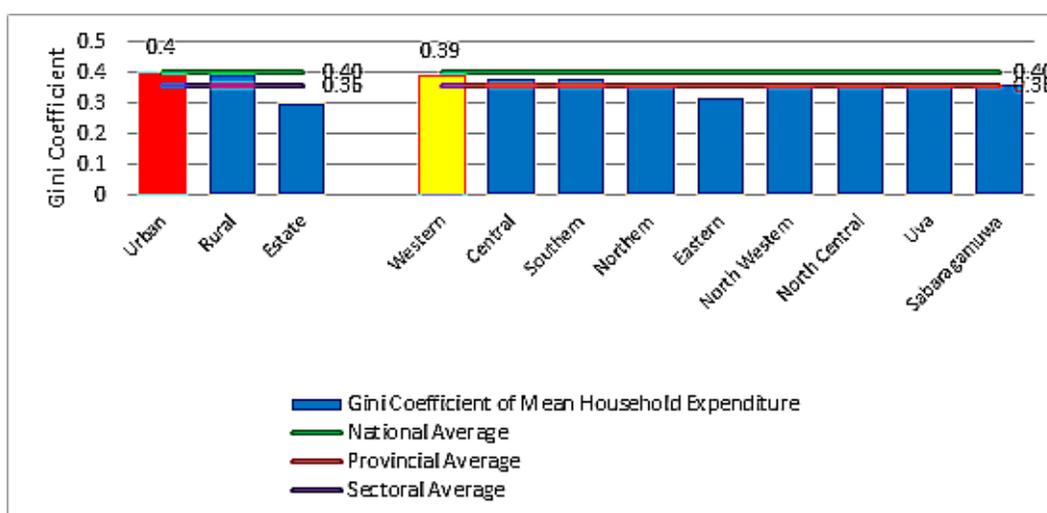


Figure 5. Sectoral and provincial differences in expenditure-based Gini coefficient
(Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka)

Mean monthly income and income based Gini coefficient

Sectoral and provincial distribution of household mean monthly income is also an important proxy of income inequality. Figure 6 illustrates the sector-wise and province-wise mean household income difference across Sri Lanka. The mean household income in the urban sector is Rs. 69,880 and is significantly higher than that of the rural and estate sectors. Similarly, the mean household income in the Western province is Rs. 64,152 and is significantly higher than the other provinces. This correlates with the significantly higher mean monthly household expenditure observed in the urban sector and western province in Figure 04. Consequently, the uniformity in the trends observed in these two graphs indicate that sectors with the highest mean household expenditure also have the highest mean household income, and sectors with the lowest mean household expenditure have the lowest mean household income. Also, the mean household income of the urban sector and the Western province is significantly higher than the national average of Rs. 45,878, provincial average of Rs. 40,719, and sectoral average of Rs. 47,193.

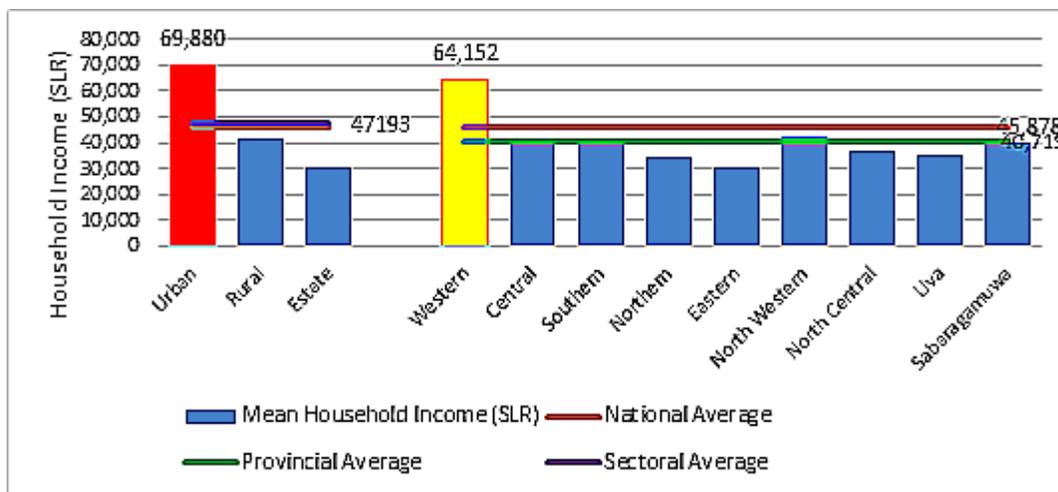


Figure 6. Sectoral and provincial differences in mean household income
 (Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka)

Further to the distribution of household mean income, Figure 7 illustrates the income-based Gini coefficient differences across sectors and provinces in Sri Lanka. The urban sector has the highest inequality in mean household income with a Gini coefficient of 0.51, and the Western province has the highest inequality in mean household income with a Gini coefficient of 0.47. However, the inequality in mean household income across provinces is approximately uniform with the North Central province being the only exception with a significantly lower Gini coefficient. In addition, the sectoral average of inequality in mean household income is equal to the provincial average of the mean household income with the same Gini coefficient of 0.45. The Gini coefficient of the mean household income of the urban sector (0.51) is even higher than the national average (0.48). The trend across sectors also indicate that the urban sector which has the highest inequality also has the highest mean household income, and the estate sector which has the lowest inequality also has the lowest mean household income. This is also true for mean household expenditure and inequality in mean household expenditure across sectors. However, this is not the case across provinces. It is apparent that the urban sector and the most urbanized province of Sri Lanka (Western Province) account for the significantly higher inequality in terms of both household income and expenditure.

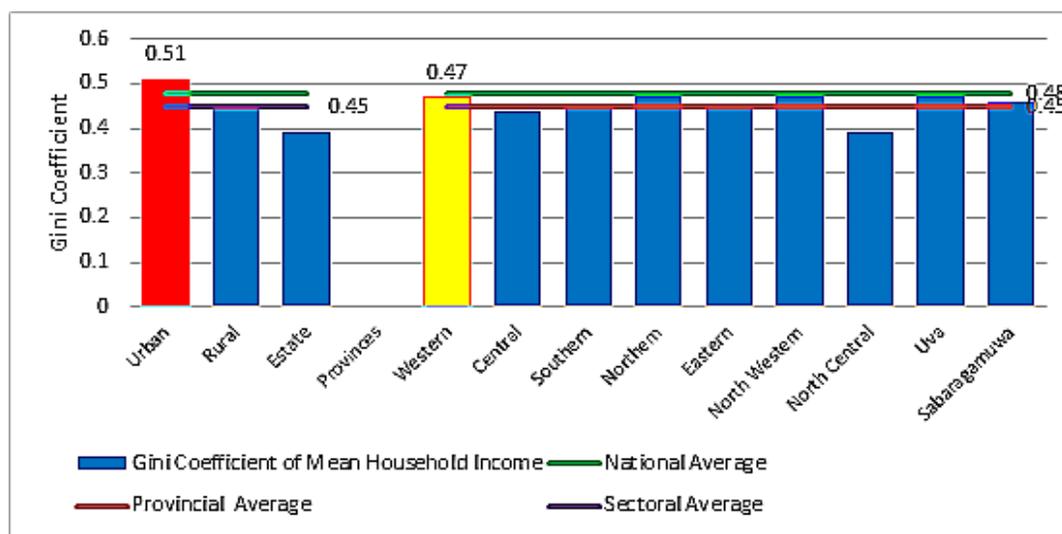


Figure 7. Sectoral and provincial differences in income-based Gini coefficient
 (Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka)

Decile-wise income distribution

The decile groups can be efficiently used to explain the inequality of income distribution across the sectors. The first decile represents the 10% of the total population who have the least monthly income (the poorest decile) while the tenth decile holds the 10% of total population that have the highest monthly income (the richest decile). Table 5 indicates sector-wise household shares and income shares owned by each decile along with income groups relevant to the deciles. As much as 19.4 % of the urban sector households whose income is greater than Rs. 83,815, received 55.8% of the total urban sector household income, while 4.5% of the urban sector households whose income is less than Rs. 10,836, received only 0.5% of the urban sector household income. At the same time, the poorest decile of the urban sector only own 0.5% of the total urban sector income while the richest deciles (10th Decile) account for 55.8% of the total household income of the urban sector. In contrast, the first deciles of the rural and estate sectors account 1.8% and 3.3% of total household income while the tenth deciles of these sectors own 32.3% and 16.5% of total household income respectively. Therefore, it is clear that there is a higher income inequality especially among the deciles of the urban sector compared to rural and estate sectors. The severe income inequality in the urban sector is also reflected by the percentages of the households who incorporate with each income group.

Table 5. Percentage of households and share of income to total household income by national household income decile and sector

Decile group	Income group (Rs)	Percentage of households			Share of income (%)			
		Urban	Rural	Estate	National	Urban	Rural	Estate
1	< 10,836	4.5	11	14.1	1.5	0.5	1.8	3.3
2	10,836 - 16,532	6.3	10.6	13.8	3.0	1.2	3.5	6.3
3	16,532 - 21,287	6.3	10.6	13.8	4.1	1.7	4.8	8.8
4	21,287 -25,904	7.5	10.4	13	5.1	2.5	5.9	10.1
5	30,815 – 36,758	8.1	10.3	12.2	6.2	3.3	7.0	11.4
6	25,904 - 36,759	9.3	10.2	10.1	7.3	4.5	8.2	11.2
7	36,759 - 45,001	10	8.3	8.9	8.9	6.4	9.8	11.1
8	45,001 - 57,496	12.1	9.6	6.3	10.9	8.8	11.8	10.4
9	57,496 - 83,815	15.6	9	4.9	14.9	15.4	14.9	11.0
10	> 83,815	19.4	8.3	3.5	38.0	55.8	32.3	16.5

Source: Author's calculation based on HIES (2012/13) data from DCS, Sri Lanka.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The current study attempts to quantify the impacts of the urban sector on the poverty level of Sri Lanka while descriptively analyzing the link between the urban sector and income inequality of Sri Lanka. This study used urban sector rather than urban population, as there is a rapid expansion in the urban sector than urban population. Similarly, the expansion of the urban sector has spread across all the districts and was not limited to one particular district or city. In order to accomplish the objectives of the study, HIES (2012/13) data was used primarily along with other secondary data from DCS, Sri Lanka. Econometric estimation focuses on urban sector-poverty linkages based on Probit and Ordered Probit models. As results suggest, the lowest poverty rates were reported in the urban sector and the probabilities of being extreme poor, poor and vulnerable non-poor for a household in the urban sector are significantly lower than that of the estate sector where the highest poverty rates are reported. Similarly, the probability of being non-poor for households in the urban sector is considerably higher than that of the households in both rural and estate sectors. Moreover, according to the predicted probabilities based on the Ordered Probit model, the urban sector accounts for the lowest average predicted probabilities of being extreme poor, poor and vulnerable non-poor whereas owning the highest average predicted probability of being non-poor. According to the calculated Growth Elasticity of Poverty (GEP), urban sector accounts for the highest GEP compared to other two sectors. Therefore, the reduced poverty level in the urban sector is mainly due to the higher rate

at which the growth translated into poverty reduction in the urban sector. Apart from that, the descriptive analysis focusing on inequality clearly illustrated that the urban sector and the most urbanized province of Sri Lanka (The Western Province) account for higher inequality (in terms of both income and expenditure) and also, the inequality in the urban sector is significantly higher than that of the rural and estate sectors. Therefore, it is well examined that despite the fact that the urban sector reduces poverty level, urban sector and most urbanized provinces significantly widen both income and expenditure based inequality.

Recommendations

Moreover, this study only focuses on income poverty and hence social issues attached to the urban sector and quality related matters attached to health, education and living standard are not sufficiently addressed. Consequently, the scholars who are willing to work on these relations are recommended to consider more multidimensional approaches to poverty that capture education, health, and living standard as well. Therefore, the study recommends to have a well-planned urban sector that provides a more equal distribution of resources with less social issues. Particularly, urbanization should not be centralized only in the Western Province where most of manufacturing and service sectors industries located. Instead, such well-planned cities and urbanized areas should be located across all the provinces in order to reduce regional disparities in terms of both poverty and inequality. Moreover, it is required to provide services and facilities available in cities and urban areas to sectors in order to uplift the living standards of such households.

REFERENCES

- Aitchison, J. & Silvey, S.D. (1957). The generalization of probit analysis to the case of multiple responses. *Biometrika*, 44(1/2), 131-140.
- Chen, G., Glasmeier, A.K., Zhang, M., & Shao, Y. (2016). Urbanization and income inequality in post-reform China: A Causal Analysis Based on Time Series Data. *PloS one*, 11(7), e0158826.
- Department of Census and Statistics of Sri Lanka. (2012/13). Household Income and Expenditure Survey.
- Ellis, P., & Roberts, M. (2015). Leveraging urbanization in South Asia: Managing spatial transformation for prosperity and livability. *World Bank*.
- Ferreira, F. H. (1999). Inequality and economic performance. A brief overview to theories of growth and distribution. *World Bank*.
- Gunewardena, D., Meedeniya, A. & Shivakumaran, S. (2007). Absolute and relative consumption poverty in Sri Lanka. Working Paper Series. No. 16 – 2007. Centre for Poverty Analysis.
- Jayathilaka, R., Selvanathan, S., & Bandaralage, J. S. (2015). Is there a link between alcohol consumption and the level of poverty? *Applied Economics*, 48(22), 2054-2063.
- Kanbur, R. & Zhuang, J. (2013). Urbanization and inequality in Asia. *Asian Development Review*, Vol. 30 (1), pp. 131-147.
- Mathur, O.P. (2014). Urban Poverty in Asia. *Asian Development Bank*.
- Nanayakkara, W. (2017). *Status of Poverty in Sri Lanka Based on Different Poverty Lines*. Institute of Policy Studies, Sri Lanka.
- Tacoli, C., McGranahan, G. & Satterthwaite, D. (2015). Urbanisation, Rural-Urban Migration and Urban Poverty. Human Settlements Group. International Institute for Environment and Development.
- World Bank. (2015). Sri Lanka: Poverty and Welfare. Recent Progress and Remaining Challenges. *World Bank*.
- Zhang, Xiaobo, Jin Yang & Wang, W. (2010). The People's Republic of China has reached the Lewis Turning Point. *IFPRI Discussion Paper* No. 000977.
- Zhang, Y. (2016). Urbanization, Inequality, and Poverty in the People's Republic of China. *ADB Working Paper*. No. 584.