Determinants of Poverty: Is Age Non-linearly Related with Poverty? Evidence from Sri Lanka

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ABSTRACT

The current study aims to recognize the nature of the relationship between age and poverty in the context of Sri Lanka while examining the determinants of income and multidimensional poverty. The study uses Household Income & Expenditure Survey (HIES) (2016) data from Department of Census and Statistics of Sri Lanka and employed Probit regression analysis to accomplish the objectives of the study. The results stress that there is a non-linear relationship between the age of head of household and probabilities of being income and multidimensional poverty in Sri Lanka. Furthermore, the study determines that the probabilities of being income poor and multidimensionally poor decrease with age till 69.23 years and 68.18 years respectively and increase after that. Moreover, other households factors such as size of household, education, ethnicity, employment status, marital status, sector of living, disability nature of the head of household, having agricultural lands and receiving remittances are also recognized as crucial drivers of both income and multidimensional poverty in Sri Lanka. The study strongly recommends implementing appropriate policies and safety net programs which focus on the households which are headed by elderly people. Similarly, level of education, access to agricultural land and access to better employment opportunities should also be enhanced to ensure poverty-free society.

1. INTRODUCTION

1.1. Background of the Study

Poverty which is defined as pronounced deprivation in well-being, where well-being can be measured by an individual's possession of income, health, nutrition, education, assets, housing, and certain rights in a society such as freedom of speech (World Bank, 2000) has been recognized as one of the key development issues especially in developing countries. In fact, poverty has been specifically considered for global development agendas such as Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) due to its importance as a development issue. The MDGs aimed to reduce by half the global share of extreme poverty during the period of 1990-2015, while the SDGs focuses on ending poverty in all its forms by 2030. Additionally, individual countries, regional organizations and non-governmental organizations have also included reducing or ending poverty into
their development agendas. However, ending poverty is still an immense challenge for most developing countries mainly due to unfavourable economic and climatic conditions. As the World Bank highlighted, by 2013, 10.7% of people of the global population (766.6 million people) were suffering from poverty while Sub-Saharan Africa and South Asian accommodated 50.7% and 33.4% of the global poor respectively. Clearly there is a high concentration of poverty in South Asia despite poverty levels varying greatly in the region.\footnote{Poverty headcount indices of South Asian countries are (On the basis of the US$1.90 PPP poverty line) India (21.23%), Bangladesh (18.52%), Nepal (14.99%), Maldives (7.26%), Pakistan (6.07%), Bhutan (2.7%) and Sri Lanka (1.92%). (PovcalNet of World Bank).}

Sri Lanka is one the South Asian countries which is widely appreciated because of declining poverty rates, especially during last two decades. Figure 1 illustrates trends in poverty incidence, depth and severity of Sri Lanka during the period of 1990-2016. It is evident that headcount index reached a peak (28.8%) by 1995/96 from 26.1% in 1990/91. However, the population below the official poverty line which is measured by headcount index, has declined from 28.8% in 1996/96 to 4.1% by 2016. Similarly, other poverty measures such as poverty gap and squared poverty gap indices also dropped significantly. More specifically, the Poverty Gap Index (PGI) which measures depth of poverty and the Squared Poverty Gap Index (SPGI) which reflects severity of poverty has also declined by 6% and 2.1% respectively. Moreover, in 2002, approximately 3,841,000 people were in poverty. In 2016, this had decreased 843,913. Similarly, in 2016, 3.1% of total households which accounted for approximately 169,392 households in Sri Lanka, were estimated as poor households.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure1.png}
\caption{Poverty trends at national level of Sri Lanka during the period of 1990-2016.}
\end{figure}

In addition to the poverty estimates based on national poverty line, the headcount indices based on different internationally recognized poverty lines also confirm the declining pattern on poverty incidence of Sri Lanka. However, regional poverty disparity is significantly higher in Sri Lanka as estate and rural sectors account for remarkably higher poverty incidence compared to urban sector.

1.2. Objectives and Structure of the Study

According to Coulombe and McKay (1996) poverty is a household related phenomenon and therefore household level characteristics are important determinants of poverty. Similarly, identifying the determinants of poverty is crucial to formulate appropriate anti-poverty policies. Scholars such as Amarasinghe, Samad, and Anputhas (2005); Gunewardena (2007); Ranathunga (2010); Sinnathurai and Březinová (2012); Ranathunga, and Gibson (2014) and Jayathilaka, Selvanathan, and Bandaralage (2016) have modelled the determinants of poverty in the context of Sri Lanka using Household Income and Expenditure Survey (HIES) data. These studies used now outdated data and survey waves which did not cover both Northern and Eastern provinces due to civil war.
Economic condition improved significantly after the war effectively reducing the incidence of poverty. Specifically, the national poverty headcount index had fallen to 4.1% in 2016 from 26.1% in 1990/91 (HIES, 2016). Apart from that, aforementioned studies have considered age is linearly related with poverty. However, linear relationship between age and poverty is not realistic most of the time. Moreover, empirical evidences on the link between age and poverty are mixed and inconclusive. Therefore, the current study aims to recognize the nature of association between age of the head of household and probability of being poor in the context of Sri Lanka. Apart from that, other household determinants of poverty are also expected to recognize.

The rest of the paper focuses on critical evaluation of the existing body of knowledge followed by the methodology adopted by the study. After that, results of the study are elaborated while the final section of the paper explains conclusions and recommendations.

2. LITERATURE REVIEW

Studies have attempted to identify the key determinants of poverty using both individual country and cross-country analyses. These studies commonly identify demographic characteristics, level of human capital, geographical location, employment status and level of assets ownerships as determinants of poverty. Household size and the number of dependents have also been recognized as an important correlate of poverty. Hassan and Babu (1991); Mukherjee and Benson (2003); Anyanwu (2005); Mok, Gan, and Sanyal (2007) and Dartanto and Otsubo (2013) find that larger household size is associated with a higher probability of being poor. This finding is confirmed by Lanjouw and Ravallion (1995); Sekhampu (2013); Serumaga-Zake and Naudé (2002); Geda, De Jong, Kimenyi, and Mwabu (2005); Baulch and McCulloch (1998); Gounder (2013) and Lekobane and Seleka (2017).

Education and human capital have also been recognized as important correlates of poverty. Rodriguez and Smith (1994); Adam and Jane (1995); Mukherjee and Benson (2003) examined the impact of human capital on poverty in Costa Rica, Pakistan and Malawi, respectively, and confirm that higher levels of human capital reduce the probability of being poor. De Silva (2008); Gunatilaka, Wan, & Chatterjee, 2010); Deepawansa, Sooriyarachchi, and Wickremasinghe (2011); Ranathunga, and Gibson (2014) and Jayathilaka et al. (2016) all confirm this relationship in the context of Sri Lanka. Similarly, empirical studies by Rodriguez and Smith (1994); Fields, Cichello, Freije, Menéndez, and Newhouse (2003); Rupasingha and Goetz (2007) recognized employment type is a crucial determinant of poverty. For the case of Sri Lanka, De Silva (2008) and Ranathunga, and Gibson (2014) find that government sector workers do better than those who are employed in other sectors. Hassan and Babu (1991); Adam and Jane (1995); Grootaert (1997); De Janvry and Sadoulet (2000); Mukherjee and Benson (2003) find that higher level of physical asset ownership are more common among the non-poor than the poor. However, none of the empirical studies in the context of Sri Lanka have incorporated physical assets inot their models. Other important correlates of poverty for studies examining Sri Lanka include local and foreign remittances (De Silva, 2008; Ranathunga, & Gibson, 2014) alcoholism (Jayathilaka et al., 2016) and the condition of the house (De Silva, 2008; Jayathilaka et al., 2016).

Among the household level determinants of poverty, age of the head of household has been recognized as one of the key determinants of poverty. Studies such as Mukherjee and Benson (2003) and Rupasingha and Goetz (2007); Dartanto and Otsubo (2013) and Jayathilaka et al. (2016) assumed a linear relationship between age and poverty while Coulombe and McKay (1996) and De Silva (2008) tested for a non-linear association between age and poverty. Both Mukherjee and Benson (2003) observed a positive relationship between age and poverty in the context of Malawi. In contrast, Rupasingha and Goetz (2007) found a negative relationship in US counties. Dartanto and Otsubo (2013) and Jayathilaka et al. (2016) found that age is positively associated with the level of poverty in Indonesia and Sri Lanka respectively while Coulombe and McKay (1996) and De Silva (2008) have identify a U-shaped relationship between age of the head of household and poverty in the context of Mauritania and Sri Lanka respectively. According to the literature highlighted, empirical evidences provide mixed findings on the relationship
between age of the head of household and poverty. Therefore, the said relationship is inconclusive and further the studies emphasized non-linear relationship between age and poverty hasn’t determine turning point in relation to age. Hence, the present study attempts to overcome the highlighted weakness of literature.

3. METHODOLOGY

3.1. Recognizing Income and Multidimensionally Poor Households

It is necessary to carefully define both types of poverty examined in this study. The Department of Census & Statistics (DCS) of Sri Lanka recognizes poor and non-poor groups based on the Official Poverty Line (OPL) which is constructed using data from Household Income and Expenditure Surveys (HIES) conducted once every three years. This chapter adopts this measure of income poverty. The OPL is calculated by examining households’ expenditure on both food and non-food items. A person is considered as poor, if their monthly expenditure is less than the OPL. Similarly, a household is considered as poor household, if at least one member of the household is below the OPL. According to HIES (2016) the OPLs for 2016 survey was Rs. 4166 and this OPLs was applied to recognize poor and non-poor households in the survey year. Analysis of multidimensional poverty is based on the Alkire and Foster (2009); Alkire. and Foster (2011) method. According to Alkire and Foster (2009); Alkire. and Foster (2011) household with scores of at least 33.3% are classified as multidimensionally poor.

3.2. Data Source and Models for Determinants of Poverty

The analysis utilizes HIES (2016) data from DSC Sri Lanka. HIES (2016) is the most comprehensive survey in Sri Lanka conducted every three years and HIES (2016) surveyed 21,756 households. Moreover, HIES (2016) covered the whole of Sri Lanka (all 25 districts), which none of the previous iterations were able to do except (HIES, 2012/13). Hence, the study utilized HIES (2016) data series to examine the determinants of both income and multidimensional poverty.

A Probit model was employed to examine the correlates of both income and multidimensional poverty given the binary dependent variables. The general model that is estimated is:

\[ Y_1 = \beta_0 + \beta_1 X_i + U_i \]  (1)

If \( Y_1 \) is the poverty variable which takes the value of 1 if a household is deemed poor and zero otherwise. \( X_i \) is a vector of independent variables which details of which are provided in Table 1. Equation 1 was econometrically estimated to recognize determinants of both income and multidimensional poverty. The determinants of income and multidimensional poverty were also examined by increasing the OPL and the deprivation score by 25% in order to check the robustness of the determinants of poverty.

The independent variables listed in Table 1 were selected based on the availability of data in HIES and on previous empirical analyses such as Kyereme and Thorbecke (1991); Coulombe and McKay (1996); Mok et al. (2007); De Silva (2008); Ranathunga. and Gibson (2014) and Dartanto and Otsubo (2015). Summary statistics of all the variables are indicated in Table 2.
| Name of Independent Variables | Explanation | Type of variable | Categories of Categorical Variables |
|-------------------------------|-------------|-----------------|-------------------------------------|
| Age                           | Age of the head of household | Continuous | -                                   |
| Age^2                         | Square of the age of the head of household | Continuous | -                                   |
| HH Size                       | Number of members of the household | Continuous | -                                   |
| Gender                       | Gender of the head of household | Dummy       | 1 = Male                            |
|                              |                                         |               | 0 = Female                          |
| Ethnicity                    | Ethnicity of the head of household    | Dummy        | 1 = Sri Lanka Tamil                 |
|                              |                                         |               | 2 = Indian Tamil                    |
|                              |                                         |               | 3 = Sri Lanka Moors                 |
|                              |                                         |               | 4 = Burgher                         |
| Civil Status                 | Civil status of the head of household | Dummy        | 0 = Unmarried                       |
|                              |                                         |               | 1 = Married                         |
|                              |                                         |               | 2 = Widowed                         |
|                              |                                         |               | 3 = Divorced                        |
|                              |                                         |               | 4 = Separated                       |
| Education                    | Level of education of the head of household | Dummy | 0 = No Schooling                   |
|                              |                                         |               | 1 = Primary                        |
|                              |                                         |               | 2 = Secondary                      |
|                              |                                         |               | 3 = Tertiary                       |
|                              |                                         |               | 4 = Degree of above                |
| Employment Status            | Employment status of the head of household | Dummy | 0 = Unemployed                     |
|                              |                                         |               | 1 = Government                     |
|                              |                                         |               | 2 = Semi-government                |
|                              |                                         |               | 3 = Private                        |
|                              |                                         |               | 4 = Employer                       |
|                              |                                         |               | 5 = Self-employed                  |
|                              |                                         |               | 6 = Family worker                  |
| Have Agri_Land               | Whether the household has agricultural lands | Dummy | 1 = Yes                            |
|                              |                                         |               | 0 = No                             |
| Disable                      | Whether the head of the household is disable | Dummy | 1 = Yes                            |
|                              |                                         |               | 0 = No                             |
| Have Remittances             | Whether the household receive remittances | Dummy | 1 = Yes                            |
|                              |                                         |               | 0 = No                             |
| Sector                       | Geographic sector of the household located | Dummy | 0 = Urban                          |
|                              |                                         |               | 1 = Rural                          |
|                              |                                         |               | 2 = Estate                         |
| Survey Year Dummy            | Year of the survey conducted           | Dummy         | 0 = 2012/13                        |
|                              |                                         |               | 1 = 2016                           |
| Province                     | Province of the household located      | Dummy         | 0 = Western                        |
|                              |                                         |               | 1 = Central                        |
|                              |                                         |               | 2 = Southern                       |
|                              |                                         |               | 3 = Northern                       |
|                              |                                         |               | 4 = Eastern                        |
|                              |                                         |               | 5 = North-western                   |
|                              |                                         |               | 6 = North-central                  |
|                              |                                         |               | 7 = Uva                            |
|                              |                                         |               | 8 = Sabaragamuwa                   |
Table 2. Summary Statistics of the variables (2016).

| Variable           | Observation | Mean   | Standard Deviation | Min | Max |
|--------------------|-------------|--------|--------------------|-----|-----|
| Poor               | 21,756      | 0.0339 | 0.1809             | 0   | 1   |
| HH-Size            | 21,756      | 3.8132 | 1.5905             | 1   | 13  |
| Age                | 21,756      | 52.6272| 14.0539            | 14  | 99  |
| Age2               | 21,756      | 2967.1240| 1527.3660        | 196 | 9801|
| Rural              | 21,756      | 0.7995 | 0.4004             | 0   | 1   |
| Urban              | 21,756      | 0.1576 | 0.3644             | 0   | 1   |
| Remittance         | 21,756      | 0.0794 | 0.2703             | 0   | 1   |
| Agriland           | 21,756      | 0.425726| 0.284.9993        | 0   | 32531|
| Family Worker      | 21,756      | 0.0047 | 0.0683             | 0   | 1   |
| Self Emp           | 21,756      | 0.2833 | 0.4506             | 0   | 1   |
| Employer           | 21,756      | 0.0211 | 0.1437             | 0   | 1   |
| Private            | 21,756      | 0.3026 | 0.4594             | 0   | 1   |
| Semi-Govt          | 21,756      | 0.0221 | 0.1469             | 0   | 1   |
| Government         | 21,756      | 0.0691 | 0.2536             | 0   | 1   |
| Unemployed         | 21,756      | 0.6958 | 0.4601             | 0   | 1   |
| Degree or above    | 21,756      | 0.0278 | 0.1643             | 0   | 1   |
| Tertiary           | 21,756      | 0.1423 | 0.3494             | 0   | 1   |
| Secondary          | 21,756      | 0.5676 | 0.4954             | 0   | 1   |
| Primary            | 21,756      | 0.2258 | 0.4168             | 0   | 1   |
| No School          | 21,756      | 0.0342 | 0.1819             | 0   | 1   |
| Separated          | 21,756      | 0.0270 | 0.1620             | 0   | 1   |
| Divorced           | 21,756      | 0.0065 | 0.0805             | 0   | 1   |
| Widowed            | 21,756      | 0.1680 | 0.3738             | 0   | 1   |
| Married            | 21,756      | 0.7763 | 0.4167             | 0   | 1   |
| Single             | 21,756      | 0.0222 | 0.1473             | 0   | 1   |
| Burgher            | 21,756      | 0.0013 | 0.0365             | 0   | 1   |
| Malay              | 21,756      | 0.0022 | 0.0469             | 0   | 1   |
| SL Moors           | 21,756      | 0.0838 | 0.2772             | 0   | 1   |
| IND Tamil          | 21,756      | 0.0382 | 0.1868             | 0   | 1   |
| SL Tamil           | 21,756      | 0.1507 | 0.3577             | 0   | 1   |
| Sinhala            | 21,756      | 0.7252 | 0.4464             | 0   | 1   |
| Gender             | 21,756      | 0.7414 | 0.4379             | 0   | 1   |
| Disable            | 21,756      | 0.0758 | 0.2647             | 0   | 1   |

4. RESULTS AND DISCUSSION

The Probit regression model indicated in Equation 1 was empirically estimated to examine household determinants of income poverty in Sri Lanka. The estimated marginal effect coefficients are provided in Table 3. The first column of the table provides the independent variables. The second and third columns provide the marginal effect coefficients related to income poverty while fourth and fifth columns indicate the marginal effect coefficients related to multidimensional poverty.
Table 3. Determinants of income and multidimensional poverty.

| Determinants                  | Income Poor (2016) dy/dx | Income Poor (+25%) (2016) dy/dx | Multidimensional poor (2016) dy/dx | Multidimensional poor (+25%) (2016) dy/dx |
|-------------------------------|--------------------------|--------------------------------|-----------------------------------|------------------------------------------|
| Age                           | -0.0018*** (0.0006)      | -0.0036*** (0.0008)             | -0.0013*** (0.0004)               | -0.0006*** (0.0002)                      |
| (Age)^2                       | 0.000013*** (0.0000)     | 0.000029*** (0.0000)            | 0.000011*** (0.0000)              | 0.0000044*** (0.0000)                    |
| Household Size                | 0.0134*** (0.0008)       | 0.0283*** (0.0011)              | -0.0083*** (0.0007)               | -0.0022*** (0.0004)                      |
| Gender (Female)               |                          |                                |                                   |                                          |
| Male                          | -0.0096** (0.0044)       | -0.0149** (0.0062)              | 0.0035                             | 0.0019                                   |
| Ethnicity (Sinhalese)         |                          |                                |                                   |                                          |
| Sri Lanka Tamil               | 0.0259*** (0.0031)       | 0.0495*** (0.0047)              | 0.0104*** (0.0028)                | 0.0020                                   |
| India Tamil                   | 0.0146* (0.0076)         | 0.0273** (0.0115)               | 0.0116** (0.0116)                 | 0.0018                                   |
| Sri Lanka Moors               | -0.0005 (0.0048)         | 0.0051 (0.0069)                 | 0.0145*** (0.0036)                | 0.0015                                   |
| Burgher                       | Omitted                  | Omitted                        | 0.0177                             | Omitted                                  |
| Civil Status (Never Married)  |                          |                                |                                   |                                          |
| Married                       | -0.0101** (0.0050)       | -0.0239* (0.0144)               | -0.0121** (0.0054)                | -0.0017                                  |
| Widowed                       | -0.0229** (0.0150)       | -0.0348** (0.0150)              | -0.0102* (0.0056)                 | -0.0020                                  |
| Divorced                      | -0.0451 (0.0352)         | -0.0722** (0.0352)              | 0.0032                             | 0.0034                                   |
| Separated                     | -0.0029 (0.0175)         | 0.0030 (0.0175)                 | 0.0021                             | -0.0008                                  |
| Education (No schooling)      |                          |                                |                                   |                                          |
| Primary                       | -0.0158*** (0.0076)      | -0.0436*** (0.0076)             | -0.0133*** (0.0029)               | -0.0097*** (0.0013)                      |
| Secondary                     | -0.0439*** (0.0076)      | -0.1001*** (0.0076)             | -0.0523*** (0.0036)               | -0.0136*** (0.0021)                      |
| Tertiary                      | -0.0951*** (0.0115)      | -0.1871*** (0.0115)             | -0.0643*** (0.0078)               | Omitted                                  |
| Degree or above               | Omitted                  | Omitted                        | Omitted                            | Omitted                                  |
| Employment Status (Unemployed) |   |   | Omitted | Omitted |
|-------------------------------|---|---|---------|---------|
| Government                    | -0.0247*** (0.0091) | -0.0605*** (0.0127) | Omitted | Omitted |
| Semi-government               | -0.0196* (0.0119)    | -0.0423** (0.0165)  | -0.0074 (0.0105) | 0.0020 (0.0045) |
| Private                       | 0.0064 (0.0041)      | 0.0181** (0.0060)   | 0.0002 (0.0035)  | 0.0002 (0.0022) |
| Employer                      | Omitted              | -0.1697*** (0.0368) | Omitted         | Omitted         |
| Self-Employment               | -0.0086** (0.0043)   | -0.0063 (0.0061)    | -0.0045 (0.0039) | -0.0029 (0.0028) |
| Family Worker                 | 0.0012 (0.0163)      | 0.0127 (0.0236)     | Omitted         | Omitted         |
| Having Agriculture Lands (Not Having) |   |   |   |   |
| Have Agri land                | 0.0000 (0.0000)      | 0.00001 (0.0000)    | -0.0000.921** (0.0000) | 0.0000 (0.0000) |
| Disability (None of Household Member is Disable) |   |   |   |   |
| Disable                       | 0.0124** (0.0049)    | 0.0185** (0.0073)   | 0.0065*** (0.0034) | 0.0153*** (0.0024) |
| Remittances (No Remittances)  |   |   |   |   |
| Have Remittances              | -0.0264*** (0.0059)  | -0.0512*** (0.0081) | -0.0146*** (0.0045) | -0.0039 (0.0027) |
| Sector (Urban)                |   |   |   |   |
| Rural                         | 0.0324*** (0.0049)   | 0.0802*** (0.0070)  | 0.0073** (0.0036) | 0.0038 (0.0024) |
| Estate                        | 0.0211*** (0.0082)   | 0.0772*** (0.0121)  | 0.0173*** (0.0058) | 0.0045 (0.0024) |
| Prob > chi2                   | 0.0000                | 0.0000               | 0.0000           | 0.0000           |
| Pseudo R2                     | 0.1465                | 0.1556               | 0.4123           | 0.3990           |
| Number of Observations        | 21,756                | 21,756               | 21,756           | 21,756           |
Table 3 indicates that age of the head of household is an important correlate of household poverty. Moreover, considering column two, a non-linear relationship between age and income poverty is confirmed since the estimated coefficients on both the ‘Age’ and '(Age)²' variables are statistically significant. Therefore, a 'U'-shaped relationship between age and income poverty is identified. Similarly, the same relationship between age and poverty is observed even after increasing the OPL by 25%, which is apparent from the column three. Moreover, the same U-shaped relationship can be observed between age and multidimensional poverty as well. The notion is obvious through the estimated coefficients for ‘Age’ and '(Age)²' in the fourth column of Table 3. Similarly, the same non-linear relationship between age and multidimensional poverty is recognized even after revising the multidimensional poverty index by increasing the deprivation threshold by 25%. Under this scenario, the findings generally implies that households’ probability of being poor decreases up to some extent with age of the head of household and thereafter increases with the age. This finding is consistent with the findings of Coulombe and McKay (1996) and De Silva (2008) in the context of Mauritania and Sri Lanka, respectively. However, they haven’t take into account multidimensional poverty and also haven’t determined the age-turning point related to the non-linear relationship between age and poverty. The current study determines the age-turning points as 69.23 years (for income poverty) and 68.18 years (for multidimensional poverty). Figure 2 illustrates the non-linear relationship between age and poverty (both income and multidimensional poverty). As Figure 2 depicts, both income and multidimensional poverty increase with age after age-thresholds 69.23 and 68.18 years respectively.

Specifically, it implies that the probabilities of being income poor and multidimensionally poor decrease with age till 69.23 years and 68.18 years respectively and increase after that. In fact, older people are more likely to suffer from health issues and are less likely to engage with the workforce. Specifically, Sri Lanka’s retirement age is generally 60-65 years. Therefore, such head of households have more household responsibilities after the retirement such as arranging marriage of their children while spending considerable proportion for their own health. Apart from that, the labour productivity and efficiency of elder people are considerably lower than that of the young. Hence, elder people who work as casual workers and also in informal sector may be effected adversely. Consequently, it is acceptable that the probability of being poor increases when people get older (According to this study, it is after 68-69 years).

In addition to age, factors such as household size, household with members with a disability and having a female-headed household are positively associated with the probability of being poor. Specifically, an additional household member increases the probabilities of being income and multidimensional poor by 1.34% and 0.83%
respectively. The positive relationship between size of household and probability of being poor is consistent with the studies of Hassan and Babu (1991); Serumaga-Zake and Naudé (2002) and Mukherjee and Benson (2003). Ethnicity is also important. Both Indian and Sri Lankan Tamils are associated with a higher probability of being poor relative to Sinhalese. For instance, the probabilities of being income and multidimensional poor for Sri Lankan Tamils are 2.5% and 1.04% respectively higher than being Sinhalese. However, Sri Lankan Moors are the least likely to be poor among all ethnic groups. The findings relating to ethnicity align with those of De Silva (2008) and Jayathilaka et al. (2016). The analysis confirmed that the probabilities of being poor for both married and widowed heads of household are significantly lower than that for the unmarried group. Results from across the models suggest that having completed any level of educational qualification reduces the probability of being poor compared to having no schooling. All of the estimated marginal effects on primary, secondary, tertiary and degree or above educational levels are negative and highly statistically significant. Clearly, education is key for better employment opportunities which essentially determine household income. Similarly, education enhances social networks and human capital which contribute to the success of self-employment and Small and Medium Enterprises (SMEs). De Silva (2008); Gunatilaka et al. (2010); Deepawansa et al. (2011); Ranathunga and Gibson (2014) and Jayathilaka et al. (2016) also confirmed this relationship between education and poverty in the context of Sri Lanka.

Household heads working for government or semi-government, as well as being employers or self-employed are less likely to be poor compared to the unemployed. Scholars such as Rodriguez and Smith (1994); Fields et al. (2003); Rupasingha and Goetz (2007) and Ranathunga and Gibson (2014) have also observed the similar results in relation to employment status and poverty. Similarly, households with agricultural land and that receive remittances are associated with a lower probability of being poor. Households in estate and rural sectors have a higher probability of being poor compared to households in the urban sector. The probability of being income poor for estate and rural households is higher by 2.1% and 3.2% respectively compared to the households who are in urban. The same pattern can be seen for multidimensional poverty as well. These findings related to income poverty are consistent with Gunawardena (2000); De Silva (2008); Gunatilaka et al. (2010); Deepawansa et al. (2011); Ranathunga and Gibson (2014) and Jayathilaka et al. (2016). Moreover, the estimated models are overly statistically significant and also have considerably higher pseudo $R^2$ values.

5. CONCLUSIONS AND RECOMMENDATIONS

The current study examines the determinants of income and multidimensional poverty in Sri Lanka while emphasizing the nature of the relationship between age and poverty in the context of Sri Lanka. The existing literature has clearly recognized age as a factor of poverty and however non-linear relationship between age and poverty hasn’t been addressed sufficiently. The present analysis based on data from HIES (2016) the most comprehensive and updated household level data published by Department of Census and Statistics of Sri Lanka. An econometric analysis which based on Probit regression was employed to recognized the determinants of two types of poverty. Income poor households were recognized based on OPL of Sri Lanka while Alkire and Foster (2009); Alkire and Foster (2011) method used to identify multidimensionally poor households. The results clearly indicates that there is a non-linear relationship between the age of head of household and the probabilities of being income and multidimensional poverty in Sri Lanka. Moreover, the study determines that the probabilities of being income poor and multidimensionally poor decrease with age till 69.23 years and 68.18 years respectively and increase after that. Hence, the households which headed by the people over 68 years have higher probability of being poor. Apart from that age, other households factors such as size of household, education, ethnicity, employment status, marital status, sector of living (urban, rural and estate), disability nature of the head of household, having agricultural lands and receiving remittances are also recognized as crucial drivers of both income and multidimensional poverty in Sri Lanka. The study strongly recommends implementing appropriate policies and safety net programs which focus on
the households which are headed by elderly people. Similarly, level of education, access to agricultural land and access to better employment opportunities should also be enhanced to ensure poverty-free society.

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