

PENSION RECEIPTS AND HOUSEHOLD EXPENDITURE PATTERNS: INSIGHTS FROM ELDERLY HOUSEHOLDS

Sri Lanka Journal of
Economic Research
Volume 12(2) June 2025
SLJER 12.02.01: pp. 1-28
Sri Lanka Forum of
University Economists
DOI: <https://doi.org/10.4038/sljerv12i2.237>

M Tharsalan

R A P I S Dharmadasa



Abstract

This study utilised the Working Leser Model approach to analyse the influence of pension receipt on expenditure patterns among households with adults in Sri Lanka. Analysing data from 9,421 households with at least one elderly person (aged 60 or above) from the Household Income and Expenditure Survey (HIES 2019), the research reveals that pension receipt significantly and positively influences spending on food and consumer goods of the household. While pension income broadly boosts spending, results further reveal nuanced allocation trends, with education, health, and other expenses increasing as a proportion of total expenditure, whereas the relative proportions devoted to food, housing, and consumer durables tend to decline. Factors like the gender of the household head, marital status, age of the head, and number of working members also influence specific expenditure allocations. Female-headed households tend to spend more on education, travel, and leisure, while male-headed households tend to spend more on food and health. Existing disparities in pension access, largely tied to educational attainment and the employment sector, underscore the urgent need for policies aimed at broadening pension coverage to those in the private and informal sectors to ensure a more equitable future for the ageing population.

JEL: D12, H55, J14, D31, I38, C21, O15

Keywords: *Expenditure Pattern, Households With Elders, Pension Receipt, Working Leser Model*

M Tharsalan (Corresponding Author)

*Department of Export Agriculture
Faculty of Animal Science and Export Agriculture
Uva Wellassa University, Sri Lanka*

Email: eag18001@std.uwu.ac.lk,  <https://orcid.org/0009-0005-9403-3720>



R A P I S Dharmadasa

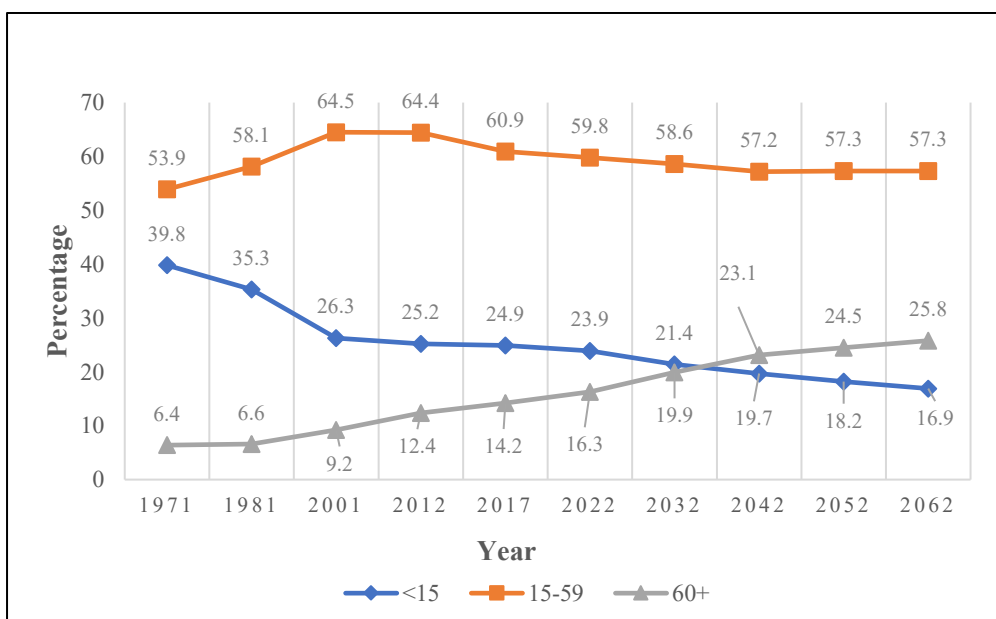
*Department of Export Agriculture
Faculty of Animal Science and Export Agriculture
Uva Wellassa University, Sri Lanka*

Email: sdharmadasa@gmail.com,  <https://orcid.org/0000-0002-3416-173X>

INTRODUCTION

The escalating growth of the ageing population is a critical concern, particularly in developing nations such as Sri Lanka. It is imperative to note that as this trend continues, the government faces mounting pressure to provide adequate pension payouts to cover retirement expenses. The burden of caring for an increasing number of seniors has already been observed in countries where they comprise a significant portion of the total population (Goonatilaka and De Silva, 2022). According to De Silva and De Silva (2015), Sri Lanka has experienced the most rapid increase in the ageing population in the South Asian Region. It is also evident from De Silva and De Silva (2015) that there is a profound demographic shift towards an ageing population (Figure 1). This transition is marked by a significant and persistent decline in the proportion of young people (under 15), a plateauing then subsequent decline in the working-age population (15-59), and a dramatic and continuous increase in the elderly population (60+). This trajectory suggests that the country is moving from a relatively youthful demographic structure to one with a rapidly increasing old-age dependency ratio.

Figure 1: Proportion of population by age groups, 1971–2062



Source: De Silva and De Silva (2015)

This will likely present considerable socio-economic challenges, including increased pressure on healthcare and social security systems, potential labour force shortages, and a shift in economic consumption and production patterns, necessitating proactive policy responses to adapt to an older society. Sri Lanka's population distinguishes itself from other South Asian countries due to its significantly larger population of individuals aged 60 years and above. According to the World Bank (2008), the ageing will create a massive

number of poor for the poorest people who depend on their children or on social assistance provided by the government. The sheer growth in numbers suggests that the spending patterns of this older population will also play an increasingly important role in the economy, an assumption supported by recent trends in expenditure patterns. As seen in Figure 1 above, the proportion of people aged 60 and above is rapidly increasing, projected to reach 25% by 2041. This means a larger number of retirees will need support, while it presents significant challenges for the country's pension system and the overall well-being of its elderly population (ADB, 2019).

In Sri Lanka, pensions are one of the sources of income for the aged population. To help the retiring workforce, they are offered by the public and commercial sectors. The concept of retirement refers to the point where a person stops their employment entirely for working life (Goonatilaka and De Silva, 2022; Mitchell and Fields, 1996; Wang et al, 2014). Retirement and ageing are undeniably intertwined; moreover, it is a major event in a working person's life, accompanied by many lifestyle changes, such as a reduction in labour income and an increase in leisure time.

However, only 30% of the aged population receives a pension (Tilakaratna, 2015). Goonatilaka and De Silva (2022) note that the majority of Sri Lankan retirees get government pensions and that these benefits have reduced poverty and improved the standard of post-retirement living for many retirees. Menike (2016) further states that the percentage of pensioners who were in the government sector was 89% which is a huge proportion comparatively. Karunarathne and Abeysinghe (2005) highlight that the system's flaws, namely low coverage rates of pension, and the need for changes to be made to guarantee its long-term survival. Pension income has a positive effect on life satisfaction, indicating that it may benefit older people's mental health; however, not all old people in Sri Lanka have access to pension money. The majority (75.3%) of pensioners in Sri Lanka live in urban areas, whereas 24.7% of the pensioners reside in rural areas (Menike, 2016).

The factors influencing senior people in Sri Lanka's access to pension income were also looked at in a study by Kumara and Senanayaka (2012). According to the study, access to pension income is significantly influenced by variables including marital status, occupation, and degree of education. Likewise, individuals' financial well-being is greatly influenced by their spending habits, particularly in their retirement years. In order to create effective policies that meet the needs of this population, policymakers can benefit from understanding the demographic traits of retirees and their spending habits. Age, gender, marital status, and education are important demographic factors that influence how much money seniors choose to spend. In order to create focused policies that meet the requirements of this group, policymakers might benefit from an understanding of these relationships. Understanding the effect of pension income on the spending habits of older members of households in Sri Lanka is crucial in this setting. Every person's life revolves around decision-making, which greatly affects how he or she will live in the

future. Every household must make decisions about necessary expenditures, but for elderly people who frequently experience a decline in income after their retirement, these decisions are far more important. Therefore, by considering all these factors, the study was conducted to determine how pension receipt affects the spending patterns of households with elders in Sri Lanka. According to Deaton and Muellbauer (1980), these patterns can shed light on household priorities, preferences, and restrictions as well as the effects of numerous variables on consumer behaviour, including income, demographics, and social policies. The results of this study will shed significant light on the efficacy of pension plans in Sri Lanka and how they affect the welfare of the elderly population. Policymakers can use the findings to help them create and carry out social protection policies that are specifically suited to the demands of the senior population. Although pensions are one of the main sources of income for elderly people in Sri Lanka, there is a lack of information about how pension money influences senior households' spending habits. Concerns have also been raised about the sufficiency and coverage of pension plans.

REVIEW OF LITERATURE

Households with elders can be defined as any household with at least one member who is 60 years of age or older. The impact that the pension receipts have on the expenditure pattern of households is context-specific and differs from country to country. Therefore, reviewing literature would provide greater insights into how households cope with associated risks, the household welfare is changed, and allocate household resources are allocated with the receipt of the pension.

Sri Lanka has a mandatory retirement age that employees must adhere to (60 in general). This age marks the point at which an employer must separate an employee from their position. Compulsory retirement is the term used to describe this situation in which an employee is obligated to retire at a certain age. This mandatory retirement age is set by the employer, and the employee has no say in the matter. As per Thomas and Pascall-Calitz (2010), this age is referred to as the Compulsory Retirement Age (CRA), and it represents the age at which retirement becomes necessary. It is important to note that at this age, employees no longer have the right to continue working, and it is solely up to management to decide if they should continue working or not (Opatha, 2022).

A pension is a financial arrangement that provides a regular income to an individual, typically after they retire from work due to age, illness, or a certain period of service. It's essentially a form of deferred compensation, where money is set aside during an individual's working years to support them in their non-working years. Research has shown that pension income can positively affect the spending habits of the elderly, particularly in the area of healthcare. For example, a recent study conducted by Kim and Lee (2021) revealed that pension income had a beneficial effect on healthcare spending in Korean elderly households. Moreover, a longitudinal study by Ju et al. (2016) explored

the impact of national pension benefits on the Quality of Life (QoL) of retired elderly Koreans and found that national pension receipt among retired older adults influences QoL with low economic status. However, the effect of pension receipt on the financial well-being of the elderly can differ depending on their demographic characteristics, such as gender, income level, and education. For instance, a study conducted by Zhao and Zhao (2018) using the China Health and Retirement Longitudinal Study (CHARLS) data highlights a significant disparity in pension benefits, showing that women receive less than half of what men do.

Although there is evidence that pension income has a favourable impact on life happiness and it may help older people with their mental health, access to pensions is not universal in Sri Lanka. Merely a quarter of Sri Lanka's elderly population (24%) benefits from pensions, with the majority of pensioners residing in urban areas (Menike, 2016). This underscores the need for initiatives that facilitate pension income accessibility for older individuals living in rural areas. There has been a growing focus on comprehending the impact of pension income on the spending patterns and overall welfare of senior households in Sri Lanka. One of the key factors influencing the spending decisions of the elderly population is their age. Gao et al. (2009) revealed that elderly individuals tend to spend less than younger pensioners due to factors such as declining health, reduced mobility, and limited social interaction. Nonetheless, Mazzonna and Peracchi (2012) found that financially stable elderly individuals may actually spend more than their younger counterparts to enhance their retirement years.

However, when women control the household resources, it leads to improved children's education, health, and nutrition (Haddad et al., 1997; Quisumbing and Maluccio, 1999; Dharmadasa et al., 2016). Female heads of households typically spend more on food and other expenses and less on household maintenance, alcohol, and tobacco than their male counterparts. Women seem to act as their families' insurers by spending money on food, clothing, education, and health (Guzman et al., 2008). According to Miller and Hendrie (2009), another significant factor influencing the spending choices is marital status, and they conclude that married pensioners spend more than their unmarried counterparts do as they engage in more social activities. It has also been revealed that widowed or divorced pensioners also spend more on their health (Mazzonna and Peracchi, 2012). Furthermore, OECD (2015) highlighted that pensioners with higher education levels tend to spend more on hobbies, travel, and other leisure activities, while pensioners with lower education levels spend more on their health and housing. While pension income demonstrably contributes to the well-being of older adults, its limited reach in rural Sri Lanka is a significant concern. Understanding the diverse factors influencing how pensioners spend their income—such as age, gender of the household head, marital status, and education level—is crucial for developing targeted policies. Initiatives aimed at expanding pension access, particularly in rural areas, and considering these demographic

nuances in policy design could significantly improve the quality of life for Sri Lanka's elderly population.

Pensioners with higher incomes tend to spend more on discretionary items like hobbies, travel, and leisure time, while others tend to spend more on necessities like housing and health care (OECD, 2015; Ferreira, 2006). Homeownership is another factor that affects retirees' spending behaviour. For example, renters save more on housing costs over time than homeowners due to repair and maintenance expenses. Homeownership may be a source of wealth for retirees, affecting their spending choices (Ehrlich and Kim, 2007). It is worth noting that the health status of retired individuals is an essential factor that affects their spending decisions. Börsch-Supan et al. (2013) find that pensioners with poor health usually spend more on healthcare and other essentials than those with good health. Pensioners living in safer areas tend to spend more on leisure activities such as walking and socialising, while retirees in socially cohesive areas with poor infrastructure facilities are more likely to spend their money on socially engaging activities like volunteering and attending cultural events (Bernini and Cracolic, 2016; Hong et al., 2005; Weagley and Huh, 2004).

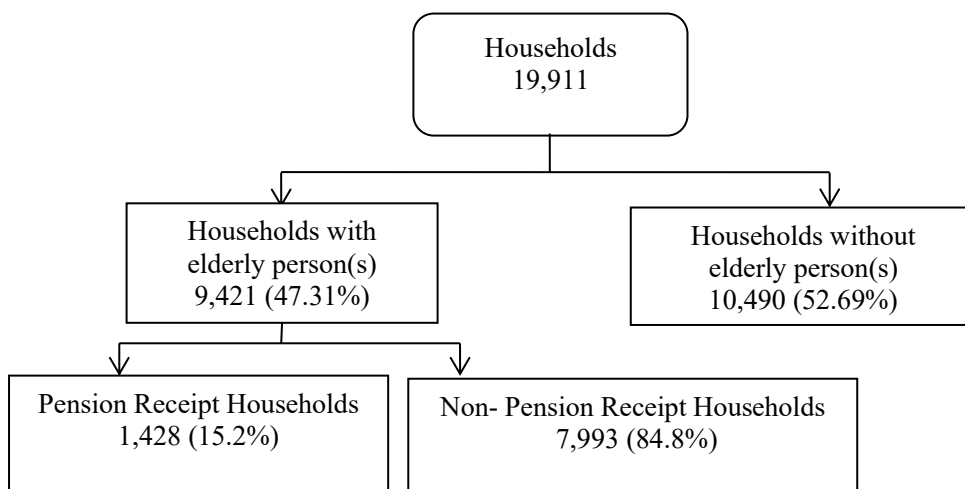
When studying pension receipt, it is important to consider the potential issue of endogeneity in the decision to take up the pension. Endogeneity occurs when the variable being studied is associated with unobserved characteristics that can also affect the outcome being examined (Filer and Honig, 2005). Hamoudi and Thomas (2014) pointed out that such unobserved characteristics can be tastes of household members. To obtain accurate estimates, it is necessary to account for any systematic differences between individuals who opt for the pension and those who do not. This could include differences in income, health status, or risk preferences. By taking these factors into account, we can obtain a better understanding of the true causal effect of pension receipt on outcomes such as retirement behaviour or financial well-being. It is crucial to carefully account for potential selection biases in any research that seeks to address the endogenous nature concern. Econometric techniques like instrumental variable analysis or matching methods can help in this regard. They aim to identify an instrument or use statistical methods to create comparison groups with similar observable characteristics, thereby reducing the bias caused by endogeneity. For instance, limited knowledge about the pension program can make individuals less likely to take it up, resulting in poorer home environments for their children, which can negatively impact their educational outcomes (Mu and Du, 2015; You and Niño-Zarazua, 2019). Failure to account for this endogeneity can lead to biased estimates suggesting a stronger positive relationship between pension receipt and educational outcomes than what truly exists. On the other hand, if the poorest individuals are more likely to ensure they take up their pensions, estimates may be biased downwards. In this case, failing to account for the endogeneity could underestimate the true effect of pension receipt on educational outcomes (Standish-White and Finn, 2015). To address these concerns, researchers need to employ strategies to mitigate the endogenous nature

of their research. This could involve using instrumental variables that are unrelated to the outcome of interest but are correlated with the probability of pension receipt. Alternatively, matching methods can be employed to create comparison groups with similar observable characteristics, reducing the bias caused by the endogenous nature (Stuart, 2010). Neglecting to do so can lead to inaccurate conclusions and misguided policy recommendations based on pension receipt as an explanatory variable (Standish-White and Finn, 2015).

METHODOLOGY

This paper uses secondary data from the Household Income and Expenditure Survey (HIES 2019) of the Department of Census and Statistics (DCS) in Sri Lanka. The study extracted comprehensive data related to individuals aged 60 or above. The data was meticulously analysed, and various tools and techniques such as t-test, McFadden's pseudo- R^2 test, and fractional logic model were deployed to ensure the accuracy and reliability of the results. The study provided valuable insights into the living conditions, income, expenditure, and healthcare outcomes of older individuals in Sri Lanka. The most recent HIES data is from 2019, collected from 19,911 households representative of rural, urban, and estate sector areas throughout the country. The data provide valuable insights into the economic conditions of the country. The structure of the Household Income and Expenditure Survey (HIES) is given in Figure 2.

Figure 2: Structure of the data set



Source: Author's construction

Moreover, the data shows that there are 9,421 households (47.31%) with at least one elderly person aged 60 years or above, while 10,490 households do not have anyone in that age group. Among the households with elderly person(s), 15.2% of households have access to pension receipt. It is worth noting that out of the households with elders, 1,428

receive a pension, and it is possible that more households could benefit from receiving a pension. Importantly, 84.8% of households with elderly persons do not receive any pension income, relying instead on their children or alternative sources of income. This information can be used constructively to help identify households with eligible pension recipients and help them receive the financial assistance they need. Additionally, this data can help raise awareness about the needs of the elderly and encourage social and financial support for them.

Theoretical Consideration

It is important to use a suitable functional form to analyse the expenditure patterns of households with and without pensions. The selected functional form must provide a robust statistical fit, indicating its suitability for analysing different types of goods with confidence. A recently developed variant of the Working-Lesser model, belonging to the category of working-lower models, has been designed to estimate household spending that meets the above requirements. This model employs the Engel curve framework, a technique derived from the economic theory of consumer demand. Household models usually operate on the assumption that individuals make budget allocations in a way that maximises their utility from consuming goods and services, either at present or for future investment. This approach is based on the idea that people strive to attain the highest level of satisfaction or well-being from their spending decisions, while taking into account their limited resources (Guzman et al, 2008; Dharmadasa et al., 2020). The Engel curve is used in economics to establish the relationship between a consumer's expenditure on specific goods or services and their total income, while keeping prices constant. In essence, the curve is a graphical representation of how consumer spending patterns change with income levels. By examining the Engel curve, economists and policymakers can gain an in-depth understanding of how changes in income influence consumption patterns. They can also identify consumer preferences and demand elasticity, which can inform policy decisions related to taxation, welfare programs, and other measures. The Engel curve expresses the proportion of each consumption item as a linear function of the logarithm of total expenditure, pension, and other socioeconomic characteristics of the household. As such, it provides a detailed picture of consumer behaviour that can be used to make informed decisions about resource allocation and economic policies.

$$q_t = g_t(y, z) \text{-----} (01)$$

Where;

- q_t - Quantity consumed of the good t
- y - Income, wealth, or total expenditure
- z - Vector of other characteristics of a consumer

Engle curve is generally expressed in budget shares and therefore;

$$W_t = h_t\{\log(y), z\} \text{-----} (02)$$

Where;

W_t - The fraction of y that is spent on buying good t

Accordingly, the expenditure function is set as follows;

$$W_{ht} = f\{p_h, y_h, z_h\} + u_{ht} \text{-----} (03)$$

Where;

h - Household

t - Expenditure category

W_{ht} - Expenditure share on good t

p_h - Vector of price

y_h - Household income

z_h - Variables affecting marginal utilities

u_{ht} - Error term

Empirical Strategy

This section focuses on the econometric methodology used to estimate the impact of pension receipt on the spending patterns of households with elders in Sri Lanka. The approach closely follows the methodology proposed by Guzman et al. (2008) and Dharmadasa et al. (2020). It is important to consider non-random selection when constructing this approach, as the comparison of households receiving and not receiving pensions may produce biased results if pension recipients and non-recipients differ systematically on both observable and unobservable dimensions. This issue has been highlighted by several studies, including Acosta (2006), Adams (2006), and Guzman et al. (2008), as cited by Dharmadasa et al. (2020). They did studies related to receiving remittances or not; likewise, in our study, we consider pension receipt or not.

Interestingly, Adhikari (2023) focuses on the impact of social pension on child nutrition and health outcomes in Nepal, and the assumption made in this study is that there is no systematic difference in nutrition between children living in households with an old age allowance-eligible member and those living in households without one. Goodman and Webb (1994) find that the pension age split depends on whether the pensioner has dependent children or not. They further state that families with children are usually worse off on average than families without children. This indicates that the loss of earnings is often due to child-care responsibilities, particularly for single parents, among other factors.

The issue of non-randomness is a commonly acknowledged concern in pension receipt research, and various methods can be employed to address it. Some of these methods include difference-in-difference estimating (DID), propensity score matching (PSM), ordinary least squares (OLS), Heckman two-step methodology, and instrumental variable (IV) approaches. Guzman et al. (2008) discuss these approaches, but none of them are viable for various reasons. DID analysis is a widely used statistical approach in social science and policy evaluation to estimate the causal impact of a treatment or intervention on a policy. It is a valuable tool for comparing outcomes before and after policy implementation for a treated group (Weeraratne, 2021).

However, given that HIES data are cross-sectional, covering a single period of time, approaches such as first difference and difference in difference cannot be utilised. These methods require data from multiple time periods for comparison. Therefore, alternative analytical techniques must be employed to draw meaningful conclusions from the available one-year data. The instrumental variable technique is often used to address endogeneity difficulties induced by non-randomness in the sample, as mentioned by Guzman et al. (2008). However, an appropriate instrument could not be identified within one year of the provided data set. As a result, different strategies for mitigating potential endogeneity and drawing trustworthy results must be examined. Additionally, in a study conducted by Porell and Almeida (2009), a two-step probit model instrumental variable estimation procedure was utilised to address self-selection issues. They cautioned that predictions from estimated models should be approached with caution, but ultimately found that selection bias was not a significant concern.

Propensity score matching is a valuable statistical tool in social research, but it has some inherent limitations. It relies on the assumption of conditional independence, meaning that treatment assignment is unrelated to potential outcomes given observed covariates (Rosenbaum & Rubin, 1983). However, violating this assumption or having unobservable factors that affect both treatment assignment and outcomes can lead to selection bias. To ensure accuracy, proper model specification is critical, and incorrect estimation of propensity scores can introduce bias. Additionally, this technique only controls for observed covariates, leaving unobserved confounders unaccounted for, which could compromise internal validity. Furthermore, sensitivity to the choice of the propensity score model, a decrease in sample size after matching, and difficulty in handling multivalued treatments all pose challenges to its application (Baser, 2008).

Manning et al. (1987) have illustrated that in cases where the true specification of a model is not known, the prediction bias resulting from disregarding the selection effect becomes negligible provided that the data are employed to identify an appropriate model specification. In order to have a better fit to the model, the best solution is to use a standard fractional logit model, which does not demand instruments. We specify the following functional form in estimating the fractional logit model;

$$W_{ht} = \alpha_t + \beta_t \log\left(\frac{X_h}{n_h}\right) + \varepsilon_t \log(n_h) + \theta_t Z_h + u_{ht} \text{-----} (04)$$

Where W_{ht} is the share of the budget devoted to good t by household h , X_h is the total household expenditure, n_h is household size (i.e. $\frac{X_h}{n_h}$ is per capita expenditure), Z_h is a vector of household characteristics that may affect expenditure behaviour and u_{ht} is an error term. Since our dependent variables are bound between 0 and 1 (being the percentage of total expenditure spent on the good t)

Therefore, we can model the $E\left(\frac{W_{ht}}{X}\right)$ as a logistic function as follows:

$$E\left(\frac{W_{ht}}{X}\right) = \exp(X\beta) / [1 + \exp(X\beta)] \text{ ----- (05)}$$

Where, W_{ht} represents the fraction of total expenditure spent on each of our six expenditure categories, and X is a matrix of independent and control variables. This model guarantees that the predicted values of W_{ht} fall between 0 and 1.

The basic equation that serves as a point of departure for the analysis is:

$$W_{ht} = \alpha_t + \beta_t PR_h + \beta_t \log\left(\frac{x_h}{n_h}\right) + \varepsilon_t \log(n_h) + \theta_t Z_h + u_{ht} \text{ ----- (06)}$$

Where, W_{ht} is defined as above, PR is a dummy variable that equals unity for those households receiving a pension and 0 for households not receiving a pension.

Details of the expenditure share categories are given in Table 1.

Table 1: Description of dependent variables

Expenditure share category	Description of the variable	Example
Food	Purchased food	Cereal, prepared foods, etc.
	Non-purchased food	vegetables, meat, fats and oils, sugary, fruits, condiments, milk and milk foods, beverages, liquor, etc.
Education	Educational expenses	Stationery, school textbooks, tuition fees, school fees, etc.
Housing	Real estate, rent with related costs	Rent, taxes, etc.
Health	Health expenses	Consultant fees, medical laboratory test fees, purchase of medical & pharmaceutical products, spectacles, etc.
Consumer goods and durables	Consumer goods Household durables	Textiles, personal care, durable goods, footwear & others, etc.
Other expenses	Miscellaneous	Ad hoc expenditure, communication, entertainment, non-durables, transport

Source: Author's construction

Insights into household spending patterns can be gained through the collection of data for various expenditure categories. To make analysis more manageable, expenditures are grouped into categories (Butrica et al., 2005; Dharmadasa et al., 2020). Weekly data is collected on food expenditures, which include raw and prepared foods, milk products, and beverages, including liquor. This allows for a detailed understanding of a household's food consumption habits and preferences. Education expenses, such as stationery, tuition fees, boarding fees, and school fees, are recorded monthly. This monthly collection

enables researchers to analyse trends in education-related spending and its impact on household budgets over time. Housing expenses, including rent and taxes, have been collected monthly, providing an opportunity to study variations in housing costs and their implications on household finances. Health expenses data is also collected monthly, covering consultant fees, payments for medical laboratories, medical and pharmaceutical products, and spectacles. This provides a comprehensive view of healthcare spending trends within the household over time. Textile-related expenses are gathered on a six-month basis, enabling insights into semi-annual expenditure patterns. Certain durable goods, such as chairs and tables, are collected yearly, allowing for a long-term analysis of durable goods purchasing behaviour.

When formulating the fractional logit model, we incorporated various factors related to household heads, human capital, and other pertinent household characteristics, as depicted in Table 2. The selection of independent variables followed standard practices outlined in existing literature, including references such as Guzman et al. (2008).

Table 2: Variable definitions

Variable	Unit of Measurements
Characteristics of Household Head	
Age of household head	Years
Education level of household head	Number
Gender of household head	1= Female & 0=otherwise
Marital status of the household head	1= Married & 0=otherwise
Ethnicity of the household head	1= Sinhala, 1= Tamil, 1= Muslim, 0= otherwise
Other Household Characteristics	
Total household size	Number
Religion of the household head	1= Buddhist, 1= Hindu, 1= Islam, 0= otherwise
Number of workers or economically active persons over age 15	Number
Number of persons below age 15	Number
Number of members above age 15 with no education	Number
Number of members above age 15 with 1-5 years of education	Number
Number of members above age 15 with 6-11 years of education	Number
Number of members above age 15 with 12 years of education	Number
Number of members above age 15 with 13 years of education and above	Number
Health condition of adults	1= Adults having chronic illness, 0= otherwise

Source: Author's construction

Subsequently, we analysed how senior citizens distribute their resources and investigated variations based on significant individual and household attributes, as conducted by Butrica et al. (2005). The study further examines how older adults allocate their financial means and identify disparities associated with various factors such as age, income, family composition, and other relevant characteristics (Butrica et al., 2005). The researchers paid special attention to the health condition of elderly people.

Model Fit Criteria

To assess the goodness-of-fit of the fractional logit models applied to the six household expenditure categories, McFadden's pseudo- R^2 was employed. Unlike the traditional R^2 used in linear regression, McFadden's R^2 is specifically designed for models estimated via maximum likelihood, such as logit-based models. It is computed as:

$$R_{McF}^2 = 1 - \frac{\ln L_{full}}{\ln L_{null}} \quad (07)$$

where $\ln L_{full}$ is the log-likelihood of the fitted model, and $\ln L_{null}$ is that of the intercept-only model (McFadden, 1974).

While the values of McFadden's R^2 are typically lower than those in OLS regression, values between 0.2 and 0.4 are generally considered indicative of a satisfactory fit (Domencich and McFadden, 1975). McFadden's R^2 has been widely adopted in applied microeconometrics and health economics for fractional outcomes where the dependent variable is a proportion bounded between 0 and 1 (Wooldridge, 2010). Thus, its use here aligns with best practices for evaluating fractional logit model adequacy.

RESULTS AND DISCUSSION

The empirical results of the study are presented, beginning with a discussion of descriptive statistics. An independent sample t-test was performed to compare the means of selected variables. This statistical analysis allowed us to assess the differences between the groups. To determine whether the means of two groups are statistically different from one another, a two-sample t-test was performed to compare the data. The alternative hypothesis (H_1) contends that there is a significant difference between the means of the two groups, contrary to the null hypothesis (H_0), which implies there is no significant difference between the means of the two groups.

Next, we present and discuss the outcomes of estimating the influence of pension receipt on specific expenditure patterns among households with elders in Sri Lanka. The study sheds light on how receiving a pension affects spending behaviour. Finally, the estimated results of the impact of pension receipt on expenditure patterns are thoroughly discussed, providing valuable insights into the financial dynamics of households with older people and the potential implications for policymakers and social welfare programs.

Table 3 represents the descriptive statistics of selected variables for both pension-receiving and non-receiving households.

Table 3: Descriptive statistics of selected variables

Variable	Households without pension receipts	Households with pension receipts	T-test
Characteristics of the Household Head			
Age of the household head	63.27	66.96	-10.61***
Education level of household head	7.52	11.15	-31.76***
Other Household Characteristics			
Household size	3.69	3.57	2.39***
Number of workers in the household	1.37	0.87	17.74***
Number of persons below age 15	0.66	0.51	5.65***
Number of members above age 15 with 1-5 years of education	0.61	0.20	19.36***
Number of members above age 15 with 6-11 years of education	1.82	1.47	9.63***
Number of members above age 15 with 12 years of education	0.22	0.31	-5.58***
Number of members above age 15 with 13 years of education & above	0.68	1.37	-22.53***
Number of members in the government sector employment	0.14	0.28	-11.32***
Number of members in the semi-government sector employment	0.04	0.05	-0.82
Number of members in private sector employment	0.66	0.35	13.30***
Number of members in self-employment	3.15	3.19	-0.73
Expenditure Categories			
Total household expenditure (Rs)	10192.23	19346.79	-10.78***
Food expenditure per capita (Rs)	499.99	531.03	-3.64***
Education expenditure per capita (Rs)	1493.135	4796.16	-4.80***
Health expenditure per capita (Rs)	1362.511	2884.15	-4.85***
Housing expenditure per capita (Rs)	4786.044	7466.94	-16.67***
Consumer goods and durables expenditures per capita (Rs)	248.045	447.15	-6.28***
Other expenditures per capita (Rs)	1802.494	3221.363	-5.45***

Note: *, **, *** Significant at 10%, 5% and 1% probability level

Source: Author's calculations

Fractional logit and linear regressions were performed separately for the households with an elder. Further, there is a substantial variation between households that receive pension benefits and those that do not. There is a stark disparity between reception and non-reception groups, and the average household size of non-pension-receiving households is comparatively high.

Table 3 further shows that the age of the household head of the pension-receiving households is approximately 67 years, while it is approximately 63 years in the households that do not receive a pension. The results strongly suggest that in Sri Lanka, household heads who receive pensions are significantly older and have higher education levels compared to household heads who do not receive pensions. This implies that access to pensions is correlated with educational attainment, as the level of education is a determinant in securing a pensionable job in Sri Lanka. This finding could have implications for policy design aimed at expanding pension coverage and addressing disparities among the elderly population. Households receiving pensions tend to be slightly smaller, have fewer working members, and have fewer young dependents. This suggests that these households might be in a later life stage, where the primary income source shifts from active labour to retirement benefits. There is a stark contrast in educational attainment. Households without pensions have a higher proportion of members with lower education levels (1-11 years), while households with pensions have a significantly higher number of highly educated members (12+ years of schooling). This strong correlation between higher education and pension receipt is a critical insight. The most striking difference is the significantly higher representation of government sector employees in households receiving pensions. Conversely, households without pensions have more members working in the private sector, and a similar proportion in self-employment. This highlights the dominant role of government pensions in Sri Lanka's retirement landscape and suggests potential gaps in formal pension coverage for those in the private and informal sectors. In essence, households benefiting from pensions in Sri Lanka are characterised by older heads, higher educational attainment across their members, and a strong connection to government sector employment, while those without pensions are generally larger, have more workers, more dependents, and a higher reliance on private sector employment and lower education levels. This underscores the existing disparities in pension access and the need for policies to bridge these gaps, particularly for those in the private and informal sectors and those with lower educational attainment.

The results unequivocally demonstrate that pension receipt has a substantial and statistically significant positive impact on the overall expenditure patterns of households with elders in Sri Lanka. Households receiving pensions not only have a significantly higher total household expenditure but also exhibit higher per capita spending across all measured expenditure categories. This increased purchasing power extends across all analysed categories. Pension-receiving households spent significantly more per capita on food, education, health, housing, consumer goods and durables, and other miscellaneous

expenses. The most pronounced difference was observed in housing expenditure, indicating a substantially higher investment in living arrangements by pensioned households. These findings collectively highlight the vital role of pension income in improving the economic well-being and quality of life for elderly households in Sri Lanka, while also underscoring existing disparities in pension access tied to age, education, and employment sector. In conclusion, pension income provides a crucial financial foundation that enables elderly households in Sri Lanka to spend considerably more on essential needs (food, health, housing) as well as on improving their quality of life through education, consumer goods, and other services. This reinforces the vital role of pensions in enhancing the welfare and economic stability of the elderly population.

Goodness-of-Fit Summary of the fractional logit model

The findings from the fractional logit models reveal that the explanatory variables significantly account for variation across all six expenditure categories, with McFadden's pseudo- R^2 values ranging from 0.742 for consumer goods and durables to 0.825 for education, indicating a strong model fit (Table 4). The education expenditure model demonstrated the highest explanatory power at 0.825, while the consumer goods model, despite a slightly lower R^2 , displayed superior efficiency as evidenced by more favourable AIC and BIC scores. These results suggest that education and food expenditures among elderly households are particularly responsive to socio-demographic and economic factors, whereas discretionary spending on durables is more uniformly distributed or explained by fewer observable factors.

Table 4: Goodness-of-Fit Statistics Summary

Expenditure Category	Log-Likelihood	AIC	BIC	McFadden's R^2
Food	-8550.57	0.4611	-387771.1	0.76
Education	-8514.82	0.4592	-381169.4	0.82
Health	-9780.87	0.5275	-382566.7	0.75
Housing	-18375.48	0.9909	-382068.1	0.75
Consumer goods & durables	-4686.07	0.2527	-389183.2	0.74
Other	-11339.25	0.6115	-382851.2	0.76

Source: Author's calculations

Coefficients derived from both the fractional logit regression and linear regression analyses are presented in Table 5. The objective of these analyses was to delve into the spending patterns of households in relation to their pension receipt status. The fractional logit regression was utilised to explore the relationship between expenditure and pension receipt, whereas the linear regression was employed to check the differences in results if endogeneity was not taken into account.

Table 5: Fractional logit and linear regression outputs of elderly households by expenditure category

Variables	Food		Education		Health	
	Fractional Logit	Linear regression	Fractional logit	Linear regression	Fractional logit	Linear regression
Log total expenditure per capita	-.9526***	-.0646***	.7191***	.0423***	.3066***	.0316***
Log household size	-.9280***	-.0684***	2.2555***	.0664***	.1746***	.0177***
Gender	-.0840***	-.0058***	.2498***	.0112***	.1143***	-.0108***
Ethnicity of household head (Sinhala)	.0636	-.0006	-.4140	-.0433	-.0817	-.0098
Ethnicity of household head (Tamil)	.0803	.0145	-.5692	-.0500	-.1626	-.0154
Ethnicity of household head (Muslim)	.0637	.0073	.3417	.0117	-.0693	-.0072
Age of the household head	-.0130***	-.0088**	-.0011	-.0004	-.0074	-.0010*
Age ² of the household head	.0001***	7.27e-06	-.0001	-4.32e-06	.0001***	.0000***
Sector-Rural	-.1151***	-.0092***	-.1696***	-.0137***	-.0415*	-.0047*
Sector-Estate	-.1920***	-.0219***	-.3919**	-.0284***	-.1300*	-.0082**
Buddhist	-.2450***	-.0160***	-.2563**	-.0162*	.0399	.0045
Hindu	-.0449	.0057	-.0057	.0014	-.1387	-.0160
Muslim	-.0353	-.0005	-1.2896***	-.0801***	.0459	.0054
Education level of the household head	-.0127***	-.0012***	-.0077	-.0012**	.0049	-.0003
Pension Receipt	.0400*	.0039**	.0057	-.0032	.0271	.0040
Marital status	-.2268***	-.0197**	.9607***	.0076*	.0940	.0098
Number of persons engaged in workforce	.0132*	.0016**	-.2770***	-.0153***	-.0026	-.0002
Number of dependent persons below age 15	.0552***	.0031***	.0779*	.0181***	.0176	.0012
Number of persons above age 15 with primary education (1-5)	.0279*	.0020	.0991*	.0126***	-.0026	.0004
Number of persons above age 15 with O/L education (6-11)	0.506***	.0011	.1039***	.0113***	-.0452*	-.0043*
Number of persons above age 15 with A/L education (12-13)	.0486***	.0018	.1677***	.0166***	.0872***	-.0087***
Number of persons above age 15 with above A/L education (>13)	.0562***	.0066***	.0647	.0123***	.1095***	-.0102***
Health condition of adults	-.0884***	-.0082***	-.0110	-.0009	.6937***	.0581***
Constant	6.6043***	.7321***	-11.1480***	-.2614***	5.026***	-.1655***
Number of observations	9,421	9,421	9,421	9,421	9,421	9,421
Significance	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R ²	0.0822	-	0.1470	-	0.0308	-
R ²	-	0.4859	-	0.1798	-	0.0865

Note: *, **, *** Significant at 10%, 5% and 1% probability level

Source: Author's calculations

Table 5: Fractional logit and linear regression outputs of elderly households by expenditure category (continued)

Variables	Housing		Consumer Goods & Durables		Other	
	Fractional Logit	Linear regression	Fractional logit	Linear regression	Fractional logit	Linear regression
Log total expenditure per capita	-.1526***	-.0368***	-.5975***	-.0201***	.4150***	.0471***
Log household size	-.1100***	-.0259***	-.6858***	-.0253***	.3221***	.0351***
Gender	-.0199	-.0048	.0093	-.0005	.0945***	.0101***
Ethnicity of household head (Sinhala)	.1209	.0295	.2274	.0058	.2042	.0173
Ethnicity of household head (Tamil)	-.1920	-.0469	.3209**	.0122***	.8164**	.0861***
Ethnicity of household head (Muslim)	-.1273	-.0308	.2794*	.0095**	.1031	.0098
Age of the household head	.0117**	.0028**	.0017	.0001	-.0044	-.0005
Age ² of the household head	-.0001	-.0000***	-.0000	-9.44e-07	-.0000	-1.55e-06
Sector-Rural	-.0346	-.0083	-.0796***	-.0029***	.3811***	.0397***
Sector-Estate	.3762***	.0911***	-.1814***	-.0099***	-.1726**	-.0202**
Buddhist	.0369	.0085	-.0607	-.0020	.2008***	.0209***
Hindu	-.0794	-.0191	.0122	.0022	.1583*	.0165*
Muslim	.1562	.0378	.0375	.0011	.3628	.0367
Education level of the household head	.0202***	.0049***	.0020	.0000	-.0232***	-.0026***
Pension Receipt	-.0200	-.0047	.0524*	.0017*	-.0105	-.0019
Marital status	-.0421	-.0945	-.0343	-.0013	.1620*	.0126
Number of persons engaged in workforce	.0374***	.0090***	.0140	.0005	.0385**	.0043*
Number of dependent persons below age 15	-.0800***	-.0195***	-.0279*	-.0009*	-.0135	-.0018
Number of persons above age 15 with primary education (1-5)	-.0792***	-.0192***	.0136	.0003	.0405	.0044
Number of persons above age 15 with O/L education (6-11)	-.0422***	-.0104***	.0276**	.0005	.0148	.0015
Number of persons above age 15 with A/L education (12-13)	-.0739***	-.0179***	.0645***	.0019***	.0597*	.0063
Number of persons above age 15 with above A/L education (>13)	-.0732***	-.0178***	.0470***	.0022***	.0563**	.0067**
Health condition of adults	-.1897***	-.0455***	.0313*	.0009	-.0428	-.0044
Constant	1.2537***	.7912***	1.7970***	.2168***	-	-.3249***
Number of observations	9,421	9,421	9,421	9,421	9,421	9,421
Significance	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo R ²	0.0098	-	0.0302	-	0.0216	-
R ²	-	0.0552	-	0.2320	-	0.0664

Note: *, **, *** Significant at 10%, 5% and 1% probability level

Source: Author's calculations

The study reveals that the total per capita expenditure has a significant impact on various expenditure categories. Specifically, the expenditure on food, education, health, consumer and durable goods, housing, and other expenses is found to be strongly influenced by these variables.

These findings suggest that an increase in total per capita expenditure is likely to result in a proportionate increase in the expenditure on these essential categories, albeit at a diminishing rate. Moreover, the non-linear relationship between total per capita expenditure and expenditure categories highlights the importance of considering the complex interplay of factors that determine household consumption patterns. The fractional logit model results, focusing on the impact of Log total expenditure per capita on various expenditure shares, reveal distinct and statistically significant patterns in household spending in Sri Lanka. Accordingly, as a household's total expenditure per capita increases, the share of its budget allocated to food decreases. This finding robustly supports Engel's Law, a fundamental economic principle.

Conversely, highly significant positive coefficients related to education and health indicate that the shares of the budget dedicated to both education and health services increase as total expenditure per capita rises. These results suggest that as households become wealthier, they proportionally invest more in human capital development (education) and well-being (health). The findings suggest that household members reallocate the budget away from necessities like food and towards investments in areas like education and health. The results further highlight that the share of their budget allocated to housing tends to decrease, as households' total expenditure per capita increases, suggesting that while absolute spending on housing might increase, it constitutes a smaller proportion of the overall budget for wealthier households. A highly significant negative coefficient for Consumer Goods & Durables reveals that as total expenditure per capita rises, the share of the budget spent on these items also decreases. This implies that, similar to housing, these categories become relatively less dominant in the spending patterns of more affluent households. Conversely, the highly significant positive coefficient (0.4150) for "Other" expenditure indicates that as total expenditure per capita increases, the share of the budget allocated to this residual category tends to increase. This suggests that wealthier households are proportionally spending more on diverse goods and services not captured in the specified categories, potentially reflecting a broader range of discretionary spending or higher-end services. The study by Butrica et al (2005); Gist and Figueiredo (2002) explains that housing costs tend to decrease when the individual ages, once the homeowners pay off their mortgage. As the number of elderly household members increases, it shows a pattern similar to per capita expenditures. The distributions of expenditure on food, housing, and consumer and durables show latent coefficient results even as the number of family members increases. Similarly, the allocations for education, health, and other expenses also show a positive trend, and the results reveal the importance of education in spite of the aging society.

The study also found that the gender of the household head makes a significant difference in the household expenditure. In that way, the research results show that female-headed households mainly spend on education activities and other expenses, while male-headed households spend on food, housing, consumer goods and durables, and health. In particular, significant emphasis can be seen on health expenditure by male-headed households. Expenditure patterns of elderly household members, ethnicity has not shown significant results, although the positive coefficient results in both regressions show that Tamil ethnicity allocates more to consumer goods and durables, and miscellaneous expenses. It also shows that the Muslim community has received less allocation to consumer goods and durables.

In general, when considering the expenditure patterns of the household, the sector of living also plays a crucial role as the residential sector controls the access or the distribution of levels of resources, which could determine the expenditure shares among the categories. Results express a significant impact on households with adults who reside in the estate sector; they tend to allocate a larger portion of their income on housing. Likewise, rural households with retired member(s) share a larger portion of miscellaneous expenses, but sector-wise expenditure shares in food, education, health, and consumer goods and durable goods expenses show the negative impact on household expenditures of having elderly people.

According to the results, religious group coefficients show a wide range of results. Most of the results are nearly zero and insignificant, suggesting that these factors that not significantly influence food expenditure shares except for Buddhists. Elderly households' religious groups, like Buddhism and Islam, show a negative impact on educational expenditure shares; moreover, the Buddhist religious factor significantly increases the probability of expenditure shares on miscellaneous expenses. Aged household head's educational level shows a positive upward trend in housing-related expenditure allocations, while its coefficient is close to zero or has no significant effect when considering expenditure allocations on other categories. The results further show that pension recipients tend to spend a lower proportion of their financial resources on food expenses, compared to those who are actively employed.

The study further reveals an insignificant disparity in health care expenditure allocation between pensioners and workers in Sri Lanka. The fractional logit model shows that pensioners spend more of their financial resources on health-related expenses than actively employed individuals do.

Interestingly, these findings are consistent with a separate study by Choi and Kang (2019), which was conducted in South Korea and based on data from the Korean Retirement and Income Study (KReIS). Their research also concluded that pensioners tend to allocate a higher proportion of their income to health-related expenditures compared to active workers.

The results indicate that receiving a pension may not have a significant impact on the share of housing expenditure. However, the analysis does highlight a positive and statistically significant coefficient in both models, which suggests that individuals who receive pensions may devote a larger portion of their budget towards purchasing consumer goods and durable items. This could be attributed to the fact that these types of items often include necessities such as clothing, personal care products, and footwear, which are crucial for the well-being of elderly individuals and households. Additionally, elderly individuals may prioritise their quality of life and allocate a significant portion of their budget towards items that enhance their daily living, such as comfortable footwear, clothing, and personal care products.

It is crucial to consider local economic conditions as well, as lower cost of living could allow pensions to cover a greater proportion of basic needs, thereby enabling more spending on consumer and durable goods. Pension receipts do not possess a statistically significant coefficient in either model, indicating that pensions may not have a significant effect on the allocation of miscellaneous expenses.

Marital status did not reveal large changes in elderly households' spending, but it does highlighted that married people allocated a significantly higher share for educational expenses, and single persons spent significantly more on food. Married partners typically split financial obligations, including the expense of their children's education. This joint financial effort can result in higher educational spending compared to single households, where a single individual bears the financial burden alone. As the age of the elderly household head increases, the share of housing expenses rises significantly, while age has no notable effect on other expenditure categories. In elderly households, as the number of employed persons increases, their proportion on expenditure increases. As a result, they have a significant impact on expenses, mainly food, housing, consumer goods, and durables, and miscellaneous expenses. This could be due to a higher number of working members in an elderly households, typically translating to a higher total household income. This increased income provides the financial capacity to allocate a greater proportion of the budget to food, housing, consumer goods and durables, and miscellaneous expenses. On the other hand, as the number of workers increases, a significant downward trend can be observed in allocations for education and health expenditure.

Furthermore, when it comes to spending by elderly households, the presence of dependents under 15 years old has a notable positive impact on expenses, particularly for food and education. Similarly, households with adults who have completed primary education see a slight increase in spending on food and education, and a less significant effect on housing expenses. Additionally, as the number of individuals with a standard education level rise, there is a noticeable increase in spending on education and food. However, households with individuals pursuing advanced education show both positive and negative effects on spending allocations. Overall, it is clear that the number of people

in elderly households has a significant impact on various spending categories, with a particular emphasis on food, consumer goods, and travel expenses. In addition to that, households with chronically ill member(s) often face financial hardship, redirecting spending from essentials like food and housing to meet rising healthcare demands. This shift highlights the significant economic toll of chronic illness on household welfare.

According to a study conducted by Butrica et al (2005), the financial obligations and expenses that come with working life tend to be significantly reduced for retirees. As a result, retirees have lower consumption needs than workers, which provides them with the opportunity to allocate their financial resources towards other pursuits such as leisure activities, travel, or other interests they may have. In essence, retirees can enjoy a more financially stable retirement due to the elimination of work-related expenses even in Sri Lanka.

CONCLUSIONS AND POLICY IMPLICATIONS

This study employed HIES 2019 data and provides a comprehensive analysis of the impact of pension receipt on the expenditure patterns of elderly households in Sri Lanka, offering crucial insights for policymakers and social welfare programs.

Our empirical results, derived from summary statistics and independent sample t-tests, clearly demonstrate significant demographic and socio-economic distinctions between households that receive pensions and those that do not. Pension-receiving households are characterised by older household heads and notably higher educational attainment among both household heads and other members. This strong correlation between higher education and pension receipt highlights the existing structure of pensionable employment in Sri Lanka, where formal education often determines access to such benefits. Furthermore, pensioned households tend to be slightly smaller, with fewer working members and fewer dependents under 15 years old, suggesting a shift towards a retirement-focused life stage. A key finding is the significantly higher representation of government sector employees in pension-receiving households, contrasting with a greater reliance on private sector employment in non-pensioned households. This underscores the dominant role of government pensions in Sri Lanka's current retirement landscape and points to potential gaps in formal pension coverage for those in the private and informal sectors.

Crucially, the study unequivocally confirms that pension receipt has a substantial and statistically significant positive impact on the overall expenditure patterns of elderly households. Households receiving pensions exhibit significantly higher total household expenditures (averaging Rs. 19,346.79 compared to Rs. 10,192.23 for non-pensioned households) and increased per capita spending across all measured categories: food, education, health, housing, consumer goods and durables, and other miscellaneous expenses. The most pronounced increase was observed in housing expenditure, indicating

a greater investment in living arrangements. This enhanced purchasing power enables pensioned households to not only meet their essential needs more comfortably but also invest in improving their quality of life through education, healthcare, and discretionary spending.

While pension income generally boosts spending across categories, the regression analyses (fractional logit and linear) reveal more nuanced expenditure allocation trends. As total per capita expenditure increases, expenditure shares for education, health, and other expenses show a positive trend, indicating that a larger proportion of the budget is allocated to these areas. Conversely, expenditure shares for food, housing, and consumer durables show a negative tendency, meaning a smaller proportion of the budget is allocated to these as overall spending rises. This aligns with observations that housing costs may decrease for ageing homeowners who have paid off mortgages.

Other factors also influence spending: female-headed households primarily allocate more to education and other expenses, while male-headed households prioritise food, housing, consumer goods, durables, and health (with a particular emphasis on health). Marital status also plays a role, with married individuals allocating more to education and single individuals spending more on food. The age of the household head is positively linked to housing expenditure, but has less impact on other categories. Lastly, the presence of more working members in a household is associated with higher spending on food, housing, consumer goods, and miscellaneous expenses, likely due to increased overall income, but paradoxically, shows a downward trend in education and health allocations.

In conclusion, pension income serves as a critical financial foundation that significantly enhances the economic well-being and stability of elderly households in Sri Lanka, enabling them to meet essential needs and invest in a better quality of life. Far from being a minor income supplement, pension income provides a crucial financial foundation that enables a substantially higher standard of living. Specifically, the findings confirm that households receiving pensions exhibit a dramatically higher total household expenditure, almost double that of non-pensioned households. This enhanced purchasing power translates directly into significantly increased per capita spending across all essential and discretionary categories. Pensioned households allocate notably more resources to food, education, health, housing, consumer goods and durables, and other miscellaneous expenses. The most pronounced impact of pension receipt is observed in housing expenditure, suggesting better living conditions and security. These detailed expenditure patterns collectively underscore how pension income empowers elderly households to meet their basic needs more robustly while also allowing for greater investment in their overall quality of life, including educational pursuits for family members, comprehensive healthcare, and improved household amenities.

In essence, pension receipt acts as a powerful determinant of economic stability and improved consumption for Sri Lanka's elderly population. While its benefits are clear and

far-reaching, the uneven distribution of access—primarily linked to prior government employment and higher education—underscores an urgent need for policy intervention. Expanding formal pension coverage to those in the private and informal sectors, along with addressing educational disparities, will be crucial to ensure that the transformative positive impact of pension income can be realised by a much broader segment of Sri Lanka's rapidly ageing population, fostering a more equitable and secure future for all its elderly citizens.

REFERENCES

- Acosta, P. (2006). Labor supply, school attendance, and remittances from international migration: the case of El Salvador. World Bank Policy Research Working Paper, (3903).
- Adams, Jr., R.H. (2006). Remittances and Poverty in Ghana. World Bank Policy Research Working Paper No. 3838, Available at: <https://ssrn.com/abstract=922964> [February 20 August 2024].
- Adhikari, S. (2023). Social pensions and children's nutrition: Evidence from Nepal. *Journal of International Development*, 35, 2318-2331.
- Asian Development Bank (ADB). (2019). Growing old before becoming rich: Challenges of an ageing population in Sri Lanka. Asian Development Bank.
- Baser, O. (2006). Too much ado about propensity score models? Comparing methods of propensity score matching. *Value Health*, 9, 377–385.
- Bernini, C. and Cracolici, M. F. (2016). Is Participation in the Tourism Market an Opportunity for Everyone? Some Evidence from Italy. *Tourism Economics*, 22(1), 57–79
- Börsch-Supan, A. Brandt, M., Hunkler, C. Kneip, T., Korbmacher, J. Malter, F. Schaan, B. Stuck, S. and Zuber, S. (2013). Data resource profile: the Survey of Health, Ageing and Retirement in Europe (SHARE). *International journal of epidemiology*, 42(4), 992-1001.
- Butrica, B.A., Goldwyn, J.H. and Johnson, R.W. (2005). Understanding Expenditure Patterns in Retirement. <http://dx.doi.org/10.2139/ssrn.1148888>
- Choi, R. and Kang, H. G. (2019). Medical expenditures and their determinants depending on receipt of public pension in South Korea. *Medicine*, 98(28), e16294.
- Deaton, A. and Muellbauer, J. (1980). An almost ideal demand system. *The American Economic Review*, 70(3), 312-326.

- De Silva, W.I. and De Silva R. (2015). Sri Lanka: 25 million people and implications – population and housing projections, 2012-2062, United Nations Population Fund. Colombo, 2015
- Dharmadasa, R.A.P.I.S., Weerahewa, J. and Samarathunga, P.A. (2016). Gender and intra-household allocation of remittances: Evidence from the estate sector of Sri Lanka, Proceedings of 13th International Conference on Business Management (ICBM 2016) of University of Sri Jayawardanapura, 13(7), 200-226.
- Dharmadasa, R.A.P.I.S., Rathnayake, K.K.H.M. and Samaraweera, W.G.R.L. (2020). Impact of Remittances and Gender on Expenditure Pattern: An Insight into Intra-Household Resource Allocation of Rural Sector Households in Sri Lanka. Kelaniya Journal of Management, 9(1), 87-114.
- Domencich, T. A. and McFadden, D. (1975). Urban Travel Demand: A Behavioral Analysis. North-Holland.
- Ehrlich, I. and Kim, J. (2007). Social Security and Demographic Trends: Theory and Evidence from the International Experience, Review of Economic Dynamics, 10 (1), 55-77.
- Ferreira, M. (2006). The differential impact of social pension income on household poverty alleviation in three South African ethnic groups. Ageing & Society, 26(3), 337-354.
- Filer, R. and Honig, M. (2005). “Endogenous Pensions and Retirement Behavior.” CESifo Working Paper 1547. Munich: Ifo Institute for Economic Research
- Gist, J. and Figueiredo, C. (2002). Deeper in debt redux: Housing and non-housing debt burdens. AARP Data Digest. Washington, DC: AARP Public Policy Institute.
- Goodman, A. and Webb, S. (1994). For richer, for poorer: the changing distribution of income in the UK, 1961–91. Fiscal Studies, 15(4), 29-62.
- Goonatilaka, W.S.M. and De Silva, W.I. (2022). Longer life and stagnated retirement age: Sri Lankan perspectives. Social Work and Social Welfare, 4(1), 179-184.
- Guzman, J.C., Morrison, A.R. and Sjöblom, M. (2008). The impact of remittances and gender on household expenditure patterns: evidence from Ghana. The international migration of women, 125-152.
- Haddad, L., Hoddinott, J. and Alderman, H. (1998) Intra-household resource allocation in developing countries: Models, Methods, and Policies. Food and Nutrition Bulletin. 19(1): 71-72. <https://doi.org/10.1177/156482659801900111>
- Hamoudi, A. and Thomas, D. (2014). Endogenous coresidence and program incidence: South Africa's old age pension. Journal of Development Economics, 109, 30-37.

- Hong, G. S., Fan, J. X., Palmer, L. and Bhargava, V. (2005). Leisure travel expenditure patterns by family life cycle stages. *Journal of Travel & Tourism Marketing*, 18(2), 15-30.
- Ju, Y.J., Han, K., Lee, H., Lee, J. E., Choi, J. W., Hyun, I. S. and Park, E. (2016). Quality of life and national pension receipt after retirement among older adults. *Geriatrics and gerontology*, 17(8), 1205-1213. <https://doi.org/10.1111/ggi.12846>
- Karunaratne, W. and Abeysinghe, T. (2005). Does mandatory pension savings crowd out private savings: The experience of Sri Lanka. *Journal of Asian Economics*, 16(5), 830-846.
- Kim, H.K. and Lee, S.H. (2021). The effects of population aging on South Korea's economy: The National Transfer Accounts approach. *The Journal of the Economics of Ageing*, 20, 100340.
- Kumara, A. S. and Senanayaka, T. S. (2012). The employment status of the elderly in Sri Lanka: patterns and determinants (MPRA Paper). Germany: Munich University Library
- Manning, W.G., Duan, N. and Rogers, W.H., (1987). Monte Carlo evidence on the choice between sample selection and two-part models. *Journal of Econometrics*, 35(1), 59-82.
- Mazzonna, F. and Peracchi, F. (2012). Ageing, cognitive abilities, and retirement. *European Economic Review*, 56(4), 691-710.
- McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics*, Academic Press, 105–142.
- Menike, H.R.A. (2016). Socio-economic issues of the elderly population in Sri Lanka: a comparison between rural and urban sectors. *International Journal of Economics, Commerce and Management*, 4(1), 525-540.
- Miller, T.R. and Hendrie, D. (2009). Substance abuse prevention dollars and cents: A cost-benefit analysis. Rockville, MD: US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Prevention.
- Mitchell, O.S. and Fields, G.S. (1984), The Economics of Retirement Behavior, *Journal of Labor Economics*, 2(1), 84-105.
- Mu, R. and Du, Y. (2015). Pension Coverage for Parents and Educational Investment in Children. Policy Research Working Paper. World Bank Group.
- OECD (2015), Pensions at a Glance 2015: OECD and G20 indicators, OECD Publishing, Paris, https://doi.org/10.1787/pension_glance-2015-en.

- Opatha, H.H.D.N.P. (2022). The Retirement Age: An Informative Analysis. *Sri Lankan Journal of Human Resource Management*, 12(1), 39-53. <https://doi.org/10.4038/sljhrm.v12i1.5679>
- Porell, F. and Almeida, B. (2009). The pension factor: assessing the role of defined benefit plans in reducing elder hardships. Gerontology Institute Publications. 67.
- Quisumbing, A.R. and Maluccio, J.A. (1999). Intrahousehold allocation and gender relations: new empirical evidence from four developing countries. Working Paper 2. Washington, DC: World Bank
- Rosenbaum, P.R. and Rubin, D.B. (1983). The central role of the propensity score in observational studies for causal effects, *Biometrika*, 70(1), 41-55.
- Standish-White, J. and Finn, A. (2015). Unconditional cash transfers and children's educational outcomes: Evidence from the old-age pension programme in South Africa. A Southern Africa Labour and Development Research Unit Working Paper Number 147. Cape Town: SALDRU, University of Cape Town.
- Stuart, E. A. (2010). Matching methods for causal inference: A review and a look forward. *Statistical Science*, 25, 1–21. <http://dx.doi.org/10.1214/09-STS313>
- Tilakaratna, G. (2015). Income Security for Older Persons in Sri Lanka, Institute of Policy Studies of Sri Lanka, Colombo, Sri Lanka.
- Thomas, A. and Pascall-Calitz, J. (2010). Default retirement age: Employer qualitative research. Published for the Department for Work and Pensions under licence from the Controller of Her Majesty's Stationery Office. Department for Work and Pensions. Research Report No 672. Available at: <https://www.gov.uk/government/publications/default-retirement-age-employer-qualitative-research-rr672> [Accessed 24 August 2024].
- Wang, P., Zhang, M., Shand, R., and Howell, K. (2014). Retirement, pension systems, and models of pension systems. Pension Systems and Models of Pension Systems. Economics Working Paper No. 1402.
- Weagley, R. and Huh, E. (2004). The impact of retirement on household leisure expenditures. *Journal of Consumer Affairs*, 38(2), 262-281.
- Weeraratne, B. (2021). Ban on female migrant workers: Skills-differentiated evidence from Sri Lanka. United Nations University, World Institute for Development Economics Research.
- Wooldridge, J. M. (2010). *Econometric Analysis of Cross-Section and Panel Data* (2nd ed.). MIT Press.
- World Bank. (2008). Sri Lanka: Addressing the Needs of an Aging Population. © Washington, DC. <http://hdl.handle.net/10986/8105>.

- You, J. and Niño-Zarazúa, M. (2019). The intergenerational impact of China's new rural pension scheme. *Population and Development Review*, 47-95.
- Zhao, R. and Zhao, Y. (2018). The Gender Pension Gap in China. *Feminist Economics*, 24(2), 218–239. <https://doi.org/10.1080/13545701.2017.1411601>