

## Determinants of household credit behavior of low-income households in Sri Lanka



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### ABSTRACT

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The paper aims to achieve three objectives in relation to household borrowing behavior among low-income households in Sri Lanka. First, it attempts to understand the patterns of savings and credit behavior of households. Second, it identifies the underlying reasons for the credit demand of households. Third, it investigates the relative significance of demographic and other socioeconomic factors that influence the reasons for households' credit demand. Primary data collected from 1,500 household units were utilized for the analysis. Thematic and multinomial logistic regression analyses were used to achieve objectives. The thematic analysis identified 533 household units in debt and has revealed eight reasons behind households' borrowing decisions, with borrowing for housing renovations, investing and consumption being the top three reasons. The results of the multinomial regression analysis revealed that having children is the most influential demographic factor that lies behind most reasons. The paper concludes that only a few households have borrowing habits, and their borrowing purposes vary. Most are not used for productive investments, and having young dependents induces household borrowing decisions. Based on the outcome, the study suggests strengthening social assistance for households with young dependents to protect low-income families from indebtedness.

**Contribution/Originality:** This study's uniqueness lies in the analysis of the relative significance of country-specific demographic and socioeconomic factors responsible for the reasons behind household borrowing, which has not previously been studied in Sri Lanka. In addition, a larger sample and a unique analytical method provide more accurate results and reliable conclusions.

## 1. INTRODUCTION

Access to credit is considered one of the most critical factors for greater financial inclusion and higher economic growth in a country. Individually, borrowing helps to smooth household consumption, and it can be used as a fund for investments. Even though the fact is contextually interesting, the practical situation of credit usage could be worse in most societies. Many households are trapped in indebtedness, preventing them from escaping poverty and hindering their well-being. The literature mentions that unsecured debt is the most influential factor in this regard (Girouard, Kennedy, & André, 2006). In institutional terms, unsecured debt consists of personal and vehicle loans, credit cards, and other related debts that households usually accrue to cover their daily consumption. In contrast, secured debt is debt backed by collateral assets, such as mortgage debts, which are assumed to be secured for institutions. However, they are insecure for households because if they cannot repay, they lose their assets, which they put as collateral. Nonetheless, the positive or negative economic consequences of household borrowing depend

on household debt management or debt utilization practices (Straus, 2015). Well-managed debt generates positive results, such as increased welfare, improved lifestyle, and improved consumption (Johnson & Li, 2007; Lewis, 2007). Poorly managed debt, on the other hand, comes through uncontrolled consumption and generates negative consequences such as increasing households' vulnerability over debt repayment and reducing future spending of households (Baker, 2018; Ekici & Dunn, 2010; Johnson & Li, 2007; Reiakvam & Solheim, 2013). In addition, an increase in poverty and vulnerability and an increase in psychological impacts, such as chronic stress and feelings of exclusion, arise due to the mismanagement of debt (Dunn & Mirzaie, 2016; Hoeve et al., 2014).

Considering the institutional factors, growth in household debt occurs due to the relaxing of financial lending restrictions (Campbell & Hercowitz, 2005). These findings were confirmed by the 2008 global financial crisis due to subprime mortgage loans. Households' decisions to enter the credit market depend on demand and supply factors. On the demand side, households' desires and preferences determine the probability of borrowing and the loan interest rate. On the supply side, lenders' decisions depend on borrowers' capacity to repay and institutional limitations on lending.

Currently, household debt accounts for 10% of the GDP in Sri Lanka, and recently borrowing has become a trend in many urban and rural households. Also, it has been reported that suicidal tendencies are increasing in the country due to indebtedness (Fonseka, 2021). Therefore, studies related to the credit behavior of households are essential to identify the gravity of the problem. In this respect, the study tries to achieve three objectives. First, it aims to understand the patterns of savings and credit behavior of Sri Lankan households; second, it identifies the reasons for the credit demand of households; and third, it investigates the relative significance of demographic and other socioeconomic factors that influence each reason for the credit demand of households. The analysis is based on primary data from 1,500 household units covering six Sri Lankan districts.<sup>1</sup> The study used a thematic approach and a multinomial logistic regression analysis to achieve the desired objectives.

The remainder of this paper is structured as follows: Section 2 comprehensively reviews the theoretical and empirical literature on household borrowings; Section 3 explains the sampling techniques utilized for the data collection, analytical methods, and tools in the study; Section 4 discusses the estimation results, comparing the existing evidence; and the conclusion and plausible policy implications are given in Section 5.

## 2. LITERATURE REVIEW

### 2.1. Theoretical Background of Credit Demand

The theoretical underpinning of the factors that determine household borrowing was discussed under the two most popular hypotheses, i.e., the life cycle hypothesis (LCH) by Modigliani and Brumberg (1955) and the permanent income hypothesis (PIH) by Friedman (1957). The life cycle hypothesis explains how individuals plan their spending over their lifetime. As shown in theory, there are three stages of an individual's life, i.e., youth, middle age, and old age, and each stage is associated with earning, saving, and spending. It is said that young individuals spend a lot and hence are more likely to borrow when their income is not sufficient. In middle age, individuals are likely to have a stable financial status and, therefore, they tend to save more. However, in old age, they again use their savings for consumption and related spending. During this stage, they are likely to borrow if their income is not sufficient and there is a possibility of going bankrupt. The life cycle theory emphasizes that individuals are more likely to borrow when their income is low and save when it is high.

The permanent income hypothesis, on the other hand, emphasizes individuals' plans for their income based on their lifetime (permanent) income. Friedman (1957) stressed that owing to the uncertainty and risk of an individual's wage income, they try to spread their spending based on their permanent income. Therefore, any policy decision that affects consumers' perception of long-term income will result in increased spending. Further, the theory asserts that

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<sup>1</sup> More details on sample selection and analytical methods are described in the Methodology section of the paper.

individuals' utility maximization method can be observed from how they spread out consumption based on lifetime income (Friedman, 1957; Meghir, 2004). It is said that individuals tend to save only when their earnings are above their expected long-term rate. This theory has gained considerable empirical support from some researchers (Bernanke, 1984; Hall & Mishkin, 1982), while others have found evidence against the theory (Stafford, 1974; Stephens Jr, 2003).

Studies support the utility-maximizing theory of consumption by emphasizing that households borrow money not because they want it, but because the satisfaction of consuming goods and services equals the interest that they pay. On the other hand, households can accumulate assets through loans and invest in them for future earnings (Germidis, Kessler, & Meghir, 1991; Hanson & Menezes, 1971).

## 2.2. Empirical Evidence

Many empirical studies have been carried out on household credit demand. A recent study related to the Organization for Economic Cooperation and Development (OECD) countries has revealed that real residential house prices are the primary determinant of households' credit demand in OECD countries. The study further emphasized that the phase of debt and house price cycles significantly affect household debt accumulation in those countries. Crook (2001) identified that the income and age of the head of the household are the main determinants of credit demand in American households. The study asserted that households' debt burden is less if the household head is over 55 years of age. However, households demand more credit when their income increases and the household head is working. A study related to the UK has emphasized that age, income, positive financial prospects, and housing tenure are the main determinants of households participating in the unsecured debt market (Del-Rio & Young, 2005). Another country-specific study related to Portugal emphasized that wages are the most robust determinant of household debt (Ramao, 2019). The study revealed that in the short run, an increase in wages leads households to increase their credit demand, while in the long-run, a decrease in wages encourages households to demand more credit. Housing prices, real interest rates, and welfare retrenchment also significantly influence household credit demand in Portugal. A macro panel study on emerging economies revealed that financial development, house prices, and lending interest rate positively affect households' credit demand; however, the unemployment rate and inflation are negatively associated (Khairunnisa, Mohd Daud, & Mohd Dali, 2020). A time series study related to Finland revealed that housing price movements have a positive impact on consumption loans (Oikarinen, 2008).

Studies on households' credit demand from a micro perspective revealed that household characteristics are the most influential factors for credit demand. A study related to Nigeria has shown that household credit is quite low, and the sources of credit are mostly semi-formal (Silong & Gadanakis, 2020). The study emphasized that education, family size, and group membership are the influential factors for households' credit demand, and men have more credit access than women in the country. In contrast, studies by Ogbuabor and Nwosu (2017) and Emelesi and Yusuf (2014) have emphasized that credit increases farm output and farm family income as it helps the poor to accumulate their wealth to invest in farming. They stressed in their studies that credit appears as an instrument that could transform the traditional agricultural sector into a modern type that creates employment opportunities. According to a study by Deng and Yu (2021) related to China, family size significantly influences household debt decisions. The study stressed that having an additional child positively influences the borrowing decisions of households in urban China. Dunn and Mirzaie (2016) asserted that the number of children and changes in children's education highly influence household debt in the US. The study revealed that the level of stress in households varies with collateral and non-collateral debt, emphasizing that non-collateral debt causes more stress to households than collateral debt. Cynamon and Fazzari (2008) argued that external factors such as culture and behavior of friends, relatives and neighbors influence household debt decisions in the US. Since people try to imitate others and try to keep up with others' socioeconomic status, they rely on credit if their income is not sufficient for financing their needs. Motivation and personal abilities are also among the determinants of household debt (Brown, Taylor, & Price, 2005; Cynamon &

Fazzari, 2008; Mian & Sufi, 2011; Shahrabani, 2012). Household debt behavior in the Indian context mostly weighs on emergencies. As stressed by Kumar and Mukhopadhyay (2013), households readily borrow and disregard any consequences that they have to face during and after the borrowing. The study asserted that high interest rate margins apply to such cases. Similar findings were reported by Mehrotra and Yetman (2015).

Regarding Sri Lanka, studies on household credit demand are limited. The study by Muneera (2015) pointed out that socioeconomic factors such as gender, education level, financial literacy, income, savings, expenditure patterns, location, the cost of the investment project, and the marketing success of the project affect households' borrowing decisions in Sri Lanka. The study also revealed that households' borrowing behavior is different according to region and gender. De Alwis (2016) revealed that regional borrowing disparity is much greater than the income borrowing disparity in Sri Lanka, stressing that there are no loan facilities that are specially designed for the poor. However, the study emphasized that financial inclusion among the poor is greater in Sri Lanka compared to other South Asian countries. However, these studies used small samples and therefore the results cannot be generalized. Studies that emphasize the reasons for household borrowing and the influences of demographic and socioeconomic factors on those underlying reasons are rare, so this study attempts to fill this gap using a wider sample related to Sri Lanka.

### 3. METHODOLOGY

#### 3.1. Data

Primary data was collected through a sample survey using a semi-structured questionnaire. The survey covered six districts (Colombo, Anuradhapura, Puttalam, Nuwara-Eliya, Ratnapura, and Batticaloa) and incorporated the urban, rural, and estate sectors in Sri Lanka. A purposive sampling technique was used to select the districts. The selection criteria were high natural disaster threats, a high rate of informal sector workers, and a high rate of poverty. Twenty-five divisional secretariats (DS) were selected purposively from these districts, and one grama niladhari (GN) division from each DS division was randomly chosen for the survey. The final sample size comprised 1,500 households selected using a random sampling method. The time period of the survey was from March 2021 to May 2021. Among the selected households, 439 were identified as Samurdhi beneficiaries, and the rest were beneficiaries of at least one of the social assistance programmes provided by the Sri Lankan government.

#### 3.2. Analytical Methods

A thematic approach and a regression analysis were utilized as analytical methods. Household characteristics, savings and borrowing habits, institutional choice, and reasons for borrowing were analyzed using a thematic approach. In contrast, the multinomial logit regression was used to analyze the significance of factors affecting loan demand. The thematic analysis results show that people borrow from various sources and for multiple purposes. Hence, this method is the best fit for the study. The following model is utilized for the task:

$$Y_{ij} = \alpha_0 + \alpha_k C_{ij} + u_{ij}$$

Where  $Y_{ij}$  represents reasons for borrowing (the respondents gave eight different reasons), in which it emphasized that if they equal 1  $\{P(Y=1)\}$ , households tend to borrow and 0 otherwise. Those reasons are: use for income-generating activity (Y1); repairs in a house or building (Y2); loan repayment (Y3); the purchase of land/a house or vehicle (Y4); consumption (Y5); education (Y6); emergencies (Y7); and other reasons not mentioned (Y8).<sup>2</sup>  $C_{ij}$  represents the vector of socioeconomic variables: income, family size, number of young dependents, number of school-goers, number of elders, age of the household head, gender, level of education, occupation, marital status, amount of savings and investments ( $ij$  represents observed data points ranging from 1 to 1,500).  $u_{ij}$  represents the disturbance term. The analysis followed a general to a specific procedure; hence, insignificance variables were removed at each stage. The model was run using STATA software.

<sup>2</sup> These reasons are represented by numbers 1 to 8 in the results Tables 3 and 5 in Section 4.

## 4. RESULTS AND DISCUSSION

### 4.1. Results of the Thematic Analysis

#### 4.1.1. Saving Behavior of Households

Within the sample, 439 household units have savings, and the remaining 1,006 don't have any savings. The data relating to households with savings revealed that the majority maintain their savings in state banks (either People's Bank or Bank of Ceylon), accounting for 66% of the total households. Only 10% of households use private banks, and another 10% have savings with informal sources (refer to Figure 1).

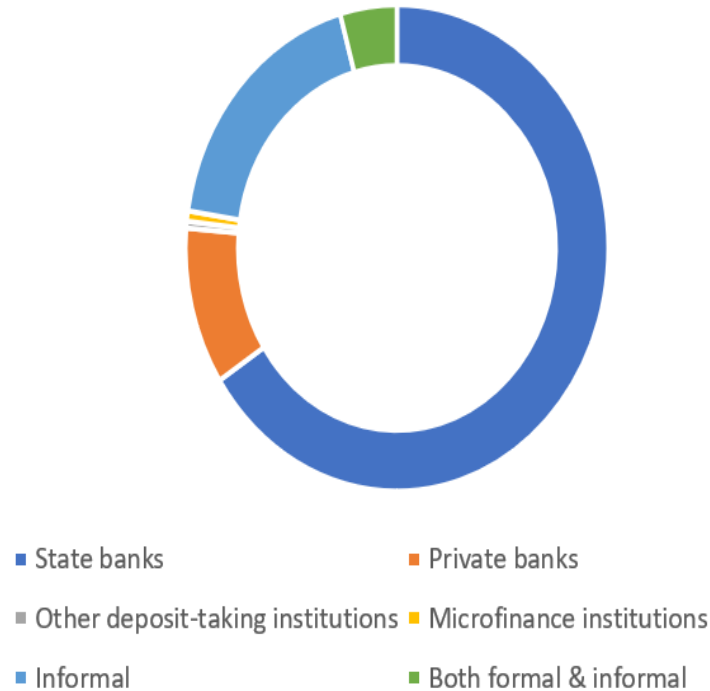


Figure 1. Savings institutions.

Regarding reasons to use institutions for savings, the majority have savings with government banks, but they did not provide a reason why (see Figure 2). This reflects the typical household behavior in Sri Lanka. Financial literacy in Sri Lankan households is around 35%, which is very low (Standard & Poor, 2018).<sup>3</sup> It is said that a low level of financial literacy leads to low savings and poor financial management (Gaisina & Kaidarova, 2017). A total of 112 households, which is also a considerable number, focus on security concerns and therefore choose government banks. Among the savers, 21 household units use state banks for convenience, while 17 household units consider state banks for high-interest margins. Utilization of private banks for savings is low compared to the utilization of state banks, indicating the dominance of state banks in Sri Lanka. The spread of branches of state banks in selected areas is also responsible for this factor. The spread of state bank branches in rural areas is higher compared to private bank branches and other non-financial institutions in the country.<sup>4</sup>

<sup>3</sup> The report shows that this rate is above 65% in advanced economies. Even though print literacy is around 92.2% in Sri Lanka, the relatively low financial literacy rate poses a threat to the government's effort to enhance greater financial inclusion in the country.

<sup>4</sup> Peoples' Bank has 741 bank branches, and Bank of Ceylon has 651 branches across the island.

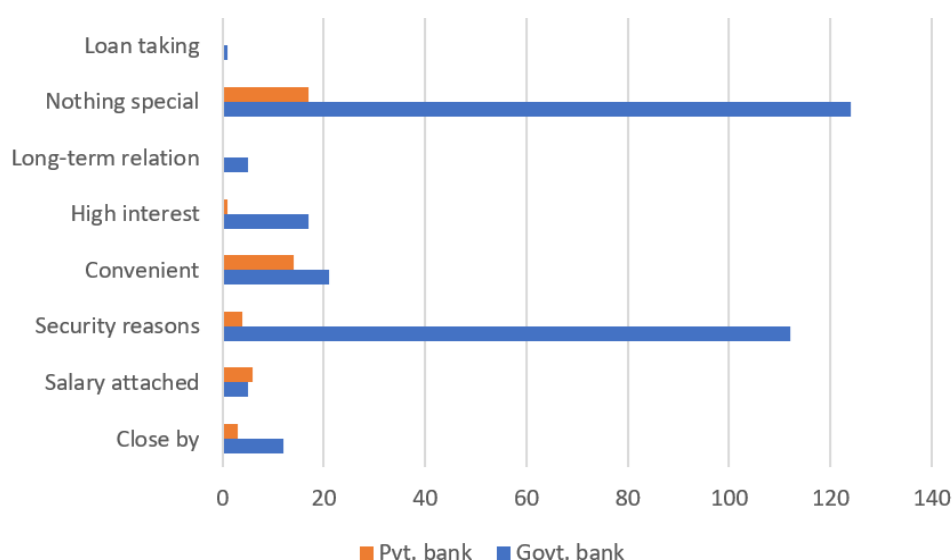


Figure 2. Reason for using saving institution.

#### 4.2. Credit Behavior of Households

As the main objective of this paper is to analyze the credit behavior of households, the number of households in debt and the institutions that they owe are considered (refer to Table 1). Survey results have also shown that a total of 35.5% of households in the sample hold debt from various institutions and informal sources. Both state and private banks take the leading role and account for 66% of household units out of the total indebted households. Borrowing from other deposit-taking institutions (DTI) and informal sector borrowings take second place. Some households borrow from retail shops, pawning institutions, and women's associations in their villages.

Table 1. Number of households in debt.

Loan type	No. of households	Rank
Bank (State/private)	352 (66%)	1
Other DTI	65 (12%)	2
Employer	4	5
Informal money lender	65 (12%)	2
Credit card	0	8
Retail shop	15 (2.8%)	3
Pawning institution	14 (2.6%)	4
A formal institution through a third party	1	7
Goods loan	3	6
Other (Women's association/friends/village-level associations)	14 (2.6%)	4
Total	533	

However, the usage of modern debt instruments and methods aren't observed in the sample. Usage of credit cards and other modern loan instruments cannot be seen among the surveyed community, which indicates that technology-driven financial practices are not familiar to some segments of society in Sri Lanka.<sup>5</sup> This is evident in the study by Gamage and Kumudumali (2020), which revealed that credit card usage in Sri Lanka is limited to people with higher education and income levels.

However, it is observed that banks impose fewer restrictions when obtaining loans (refer to Table 2). Of all the households surveyed, 227 asserted that banks only required two witnesses to sign when obtaining loans and 94 said that banks required group witnesses. Only 24 household units mentioned that they had to use fixed assets as collateral when obtaining loans.

<sup>5</sup> According to the CBSL report, the average use of credit card services in Sri Lanka was 10.3% in 2021.

**Table 2.** Regulations of banks for issuing loans.

Regulations	Banks	Other DTI	Employer
Witness	227	32	62
Fixed assets	24	8	1
Group witness	94	24	-
Other (Pension loan)	4	-	-

One of the most important aspects of people's credit behavior is their demand for credit and the underlying reasons for obtaining loans (refer to Table 3). Only 23% used loans for income-earning activities, the majority obtained loans for non-economic reasons, 35% of households borrowed money to repair their living spaces, and 10% of households took out loans for consumption. Another 10% used loans for buying assets, which is a good sign. In addition, 9% borrowed for emergencies, whereas 6.8% of households borrowed for debt repayments. Such household credit patterns can be seen in many countries with a similar socioeconomic background (Herispon, 2019).

**Table 3.** Reasons for obtaining loans.

Reason	No. of Households	Rank
1. For income-generating activity	124 (23%)	2
2. House or building repairs	187 (35%)	1
3. Loan repayment	36 (6.8%)	6
4. To buy land/a house or vehicle	54 (10%)	4
5. Consumption	61 (11%)	3
6. Education	5 (1%)	7
7. Emergencies	49 (9%)	5
8. Other	17 (3.1%)	7
Total	533	-

**Table 4.** Baseline estimation results of the multinomial logistic regression (MNL).<sup>6</sup>

Variable	Coefficient	Std. Error	P-Value
Family size	0.22	0.05	0.00***
Age	-0.09	0.07	0.22
Gender	0.02	0.15	0.91
Level of education	0.07	0.02	0.00***
Young dependents	-0.62	0.42	0.14
No. of school goers	-0.31	0.21	0.13
No. of elders	-0.38	0.12	0.00***
_cons	0.36	0.91	0.69
Dependent variable = Credit demand			
Log likelihood = -924.022			
Pseudo R <sup>2</sup> = 0.03			

Note: \*\*\* indicates the level of significance at 1%.<sup>6</sup>

Overall, the results revealed that 65.9% of households mostly borrow for purposes such as consumption and emergencies and very few borrow for investing in income-generating activities. This motivates us to investigate the relative significance of demographic and other socioeconomic factors for each underlying reason for the loan demand of these households.<sup>7</sup> For that purpose, the paper utilized the multinomial logistic regression (MNL) method, which allows more than two categories of dependent variables.<sup>8</sup> The analysis is done in two steps. First, it runs a baseline MNL test to identify which socioeconomic and demographic factors affect the credit demand of the people, and second, it extended the test to identify the most influential factor on each reason for credit demand. The baseline test results are shown in Table 4.

<sup>6</sup> The original output can be found in Appendix 1 of this paper.

<sup>7</sup> Demographic and socioeconomic factors are described in Section 3 of this paper.

<sup>8</sup> A detailed description is given in Section 3 of this paper.



The baseline estimation indicated that households' demand for loans depends significantly on family size, education, and the number of elderly dependents in the family. Family size and the level of education of household heads increase loan demand, while the number of elderly in the family caused a reduction in loan demand, confirming the findings of previous studies (Deng & Yu, 2021; Dunn & Mirzaie, 2016; Muneera, 2015). However, other socioeconomic factors did not show any significant influence on the loan demand of households. The likelihood ratio indicates evidence of a good model, and the Chi-square test statistic also shows an equivalent fit of the utilized model.

However, this paper aims to thoroughly investigate the relative significance of the underlying reasons for the demand for household credit. As revealed from the thematic analysis, there were eight reasons given by households when asked about why they borrow.<sup>9</sup> Therefore, in addition to the baseline test, the paper extended the analysis further and investigated how the other socioeconomic factors influence each reason given by households and thereby tried to find their relative significance on loan demand. The results are shown in Table 5.

Table 5. Results of the MNL II.

Reason	Variable	Coefficient	P-value
1.	Family size	0.47	0.3
	Age	0.53	0.5
	Gender	-0.97	0.5
	Level of education	0.03	0.8
	Young dependents	4.06	0.03**
	No. of school goers	1.63	0.03**
	No. of elders	0.39	0.7
	_cons	22.3	.
2.	Family size	0.67	0.3
	Age	-0.23	0.8
	Gender	-0.07	0.9
	Level of education	-1.05	0.11
	Young dependents	-18.53	0.9
	No. of school goers	0.46	0.7
	No. of elders	-0.08	0.7
	_cons	43.5	.
3.	Family size	0.49	0.3
	Age	0.38	0.6
	Gender	-0.75	0.5
	Level of education	0.13	0.5
	Young dependents	3.99	0.03**
	No. of school goers	1.54	0.03**
	No. of elders	0.42	0.7
	_cons	22.3	.
4.	Family size	0.35	0.53
	Age	0.58	0.495
	Gender	-0.93	0.948
	Level of education	0.024	0.91
	Young dependents	3.48	0.1*
	No. of school goers	1.23	0.17
	No. of elders	1.38	0.22
	_cons	19.8	.
5.	Family size	0.69	0.2
	Age	0.62	0.5
	Gender	-0.88	0.5
	Level of education	0.24	0.3
	Young dependents	4.94	0.02**
	No. of school goers	1.90	0.04**
	No. of elders	1.59	0.16

<sup>9</sup> Refer to Table 3.



Reason	Variable	Coefficient	P-value
	_cons	17.3	0.99
6.	Family size	0.53	0.3
	Age	0.45	0.6
	Gender	0.03	0.9
	Level of education	-0.01	0.9
	Young dependents	2.72	0.14
	No. of school goers	0.63	0.3
	No. of elders	0.004	0.9
	_cons	21.9	0.99
7.	Family size	1.03	0.1*
	Age	0.53	0.6
	Gender	-16.59	0.9
	Level of education	0.20	0.4
	Young dependents	2.39	0.2
	No. of school goers	0.34	0.7
	No. of elders	0.87	0.5
	_cons	35.9	0.99
8.	Family size	0.35	0.5
	Age	0.63	0.4
	Gender	-1.23	0.3
	Level of education	-0.02	0.9
	Young dependents	4.09	0.05**
	No. of school goers	1.37	0.12
	No. of elders	0.83	0.4
	_cons	21.4	.

Note: Dependent variable = Reasons for loan demand.

\* and \*\* show the level of significance at 5% and 1%, respectively.

As shown in Table 5 for each reason of borrowing, except housing renovation (no. 2) and educational purposes (no.6), having young dependents and school-going children are the two main demographic factors that influence households to borrow. In the case of emergency borrowing (no.7), family size shows a weak significance. However, most households indicated that having young dependents is the most influential factor for households to borrow. This was proven by many empirical studies, which stress that having young children and having an additional child in the family significantly increase households' borrowing propensity (Deng & Yu, 2021; Dunn & Mirzaie, 2016). This survey covers the low-income population, whose income is not sufficient to cover their daily expenses, especially for families with younger dependents and school-going children. Since most women substitute work for the caretaking of youngsters, the family income decreases substantially, and they rely on borrowing to meet their daily needs. Having children encourages parents to invest in alternative income-earning activities to strengthen their lives. Based on the results, it can be said that, despite the reasons that they put forward, having children is the most influential demographic factor that affects household borrowing decisions in Sri Lanka.

## 5. CONCLUSION

The paper set out to achieve three objectives in relation to household borrowing behavior among low-income households in Sri Lanka. First, it attempts to identify the saving and credit behavior among households; second, it identifies the reasons for the credit demand of Sri Lankan households; and third, it investigates the relative significance of demographic and other socioeconomic factors that influence the reasons for credit demand. Thematic and multinomial logistic regression analyses were used to achieve these objectives. The thematic analysis identified 533 household units in debt, accounting for 35% of the total sample. The analysis revealed that eight reasons influence households borrowing decisions, and among them, households mostly borrow to renovate their houses. Investing in income-generating activity became the second reason for credit demand, and consumption appeared as the third reason for household borrowing.

The results of the multinomial logit regression analysis revealed that whatever the underlying reason for household borrowing, having young children (young dependents and school-going children) is the most influential demographic factor that lies behind household borrowings. Based on the results, the paper concludes that only a small number of households have borrowing habits, and their purposes for borrowing are varied. Most are not used for productive investments, and having young dependents induces household borrowing decisions. Therefore, the study suggests strengthening social assistance for households with young dependents so that low-income families can protect themselves from indebtedness.

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**Institutional Review Board Statement:** The Ethical Committee of the University of Kelaniya, Sri Lanka has granted approval for this study on 12 February 2021 (Ref. No. UOK/ERC/SS/20/012).

**Transparency:** The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

**Data Availability Statement:** Upon a reasonable request, the supporting data of this study can be provided by the corresponding author.

**Competing Interests:** The authors declare that they have no competing interests.

**Authors' Contributions:** All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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## APPENDIX

Appendix 1. Results of the baseline estimation.

Multinomial logistic regression					Number of observations = 1,453 LR $\chi^2(7) = 56.38$ Prob > $\chi^2 = 0.0000$ Pseudo $R^2 = 0.0296$ Log-likelihood = -924.022	
Loan	Coeff.	Std. error	-	P > Iz1	[95% Conf. interval]	
1						
Family size	0.216	0.0465	4.64	0.000	0.125	0.308
Age	-0.090	0.074	-1.22	0.221	-0.234	0.054
Gender	0.018	0.154	0.12	0.907	-0.284	0.321
Education	0.065	0.021	3.12	0.002	0.024	0.107
Young	-0.623	0.419	-1.48	0.138	-1.443	0.199
Schooling	-0.312	0.207	-1.51	0.132	-0.717	0.0937
No. of elders	-0.379	0.125	-3.04	0.002	-0.625	-0.134
Cons	0.355	0.914	0.39	0.697	-1.435	2.146
2 (Base outcome)						

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