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Determinants of household saving: Case study of smallholder farmers, entrepreneurs and teachers in rural areas of Kenya

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The adoption of liberalization measures in Kenya culminated in a rise and spread of interest rates in the financial sector. The saving rate has however remained low. Most studies have not been conclusive on factors influencing savings in developing countries. This study adopted a microeconomic approach in investigating the factors that influence savings among households of teachers, entrepreneurs and farmers in rural parts of Nakuru District. The sample composed of 359 teachers, entrepreneurs and farmers was selected through multistage sampling technique from seven rural administrative divisions of the district. Through application of least squares method the main finding was that household saving is determined by: the type of occupation, household income, age and gender of household head, level of education, dependency ratio, service charge, transport costs and credit access. The study is valuable to decision makers in financial institutions, economists and other policy makers. Generally, decision and policy makers in private, government and international institutions concerned with finance and development need to consider the effects of the above factors when making decisions concerning saving.

Key words: Saving, income, dependency ratio, rural, Kenya.

INTRODUCTION

There has been some skepticism about the effectiveness of financial reforms in less developed countries (LDCs) especially after the collapse of financial institutions during the 1970's and 1980's in Argentina, Chile and Uruguay. Only a few countries among those that implemented financial reforms registered some success (World Bank, 1989).

Theories and past research results about the effect of changes in interest rates on savings and investment have been varied. Few considered credit as a factor influencing savings. According to early economic theory on consumption-saving relationship, inclusive of; Keynesianism, the relative income hypothesis, permanent income hypothesis and Life cycle hypothesis; saving has been regarded as a residual in the household

budget (Smyth, 1993). This implies that there is no major economic factor that motivates household saving. Conversely, future demand for credit can motivate households to forego some current expenditure (being the opportunity cost of saving) for the sake of saving. Furthermore, existing theories do not focus on low-income households who are a majority in the LDC, relatively, little is known about the true determinants of saving in such group of households (Beverly and Sherraden, 1999).

Earlier expectations of the institutions that supported financial liberalization included increase in savings and investment through increases in interest rates. However, this has not been the case with the developing countries. The saving rate in Africa has perpetually been the lowest compared to other regions despite liberalization (Ndung'u and Ngugi, 2000). It is also true that Africa faces serious credit constraints; and this, coupled with low income could greatly reduce any little incentive to save.

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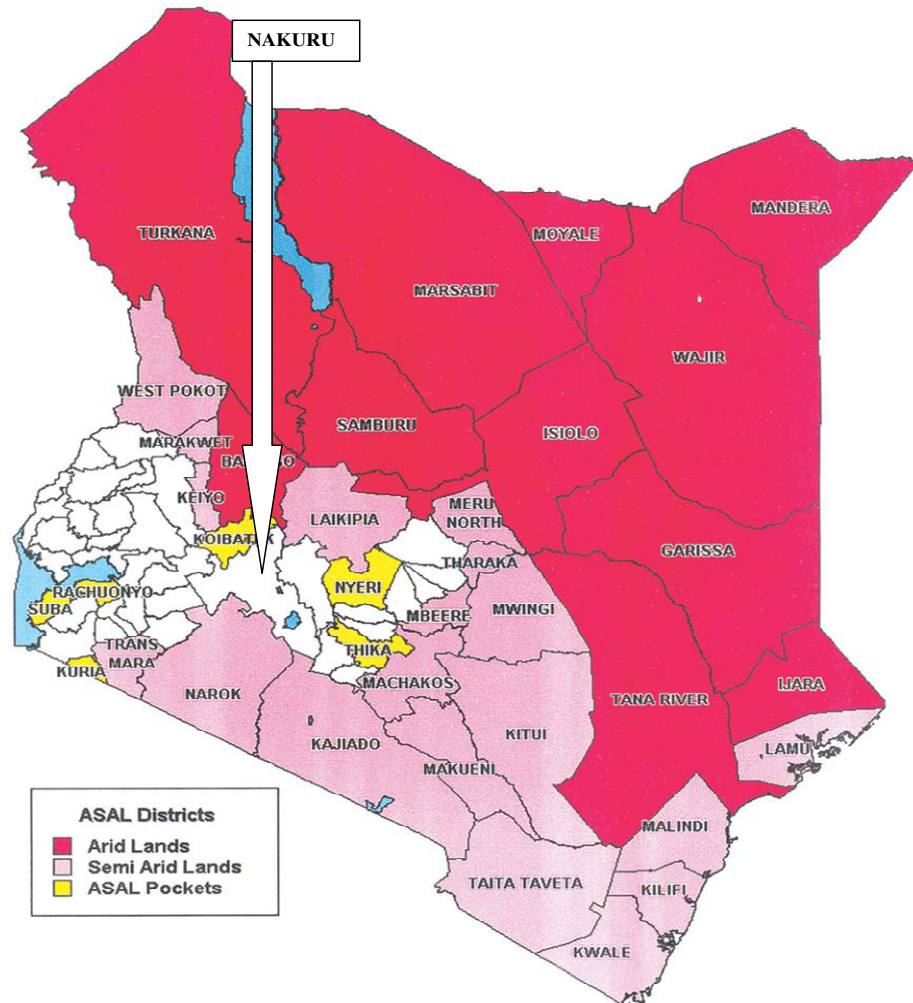


Figure 1. Position of study area in Kenya. Source: Adapted from - Arid Lands Resource Management Project (ALRMP 1993), Office of the President, Nairobi.

The study was carried out in the rural parts of Nakuru District in the Rift Valley province. The choice of a rural region as area of study is based on the fact that a majority of the households live in the rural areas and hence, investment made thereof will contribute towards the development and growth of the important agricultural sector. The selection of farmers, businesspeople and teachers is first based on the fact that many households depend on farming, business and employment income. Secondly, investments by rural households are visible within the environment they live in, creating employment and contributing towards the well being of the community. Rift Valley province, in which the study area (Figure 1) was conducted, is not only the largest among the 8 provinces in the Republic of Kenya but is also the largest contributor to the national agricultural output. Nakuru district is an important economic and administrative district among the 17 districts in the Rift Valley Province. It is situated on the floor of the Great Rift Valley covering an area of 7,190 sq. km. According to the map on page

58 (administrative boundaries existing during the year 2003), the district lies between the longitudes $35^{\circ}28'$ and $35^{\circ}36'$ East and latitude $0^{\circ}13'$ and $1^{\circ}10'$ South.

The administrative headquarter of the district, which is Nakuru town is also the Rift Valley province commercial and administrative capital. The district was famous as a home for the white settlers who practiced capital-intensive farming on large tracts of land given to them by the British government. After independence the farms were, however, transferred or sold to the local communities who moved in from various locations within the country. The district is therefore relatively more cosmopolitan than most districts in the province. Apart from agriculture, there are many other economic activities being carried out in the district.

The Formal Financial Institutions (FFIs) are located in the urban centres of the district while Informal Financial Institutions (IFIs) are found in all parts of the district. Despite the wide range of credit facilities in FFI, inaccessibility to credit facilities is still a major problem

hindering the development of economic activities within the district (GoK, 1997).

The study area was chosen because of the significance of the District in the country's economy. Rural parts of Nakuru, for the purpose of this study are defined as all Divisions in Nakuru district excluding town municipalities. The choice of rural is based on the fact that majority of the households live in the rural areas. The selection of the farmers, businesspeople and the employees is first based on the fact that many households depend on farming, business and employment income. Secondly, investments by rural households are visible within the environment they live in, creating employment and contributing towards the well being of the community.

The scope of this research is monetary savings among households of farmers, entrepreneurs and teachers whose members lived in the rural areas of Nakuru District over the period November 2005 and May 2006. The choice of such a sample is to have a better representation and comparison of households in the rural areas. The rural households are engaged in numerous economic activities such as: farming, animal husbandry, trade, public transport, milling, housing, hotels/cafes, metal- and wood-workshops, and other small and micro-enterprises (SMEs).

Despite the financial liberalization in Kenya, savings rates have generally remained very low. Given that reasons for low saving are not precisely known, the purpose of this research is to identify and assess the determinants of household savings of teachers, entrepreneurs and farmers residing in rural areas of Nakuru district.

Studies carried out in the past, have not been conclusive about the factors influencing saving. Also most of these studies adopted a macroeconomic approach yet the behavior of economic units on the aggregate level may not necessarily be the same as on an individual level. Theories and past research results about the effect of changes in interest rates on savings and investment have been varied. None of them has considered credit as a factor influencing savings. According to past studies (Fukuchi, 1995; Khan and Hasan, 1998); the McKinnon-Shaw hypotheses are still open for additional studies and debates because empirical studies have shown mixed results. Fukuchi (1995), expressed that dual interest rate structure may persist even after financial liberalization.

Factors influencing savings through the microeconomic view are hence identified from the perceived household utility. Choice of a financial institution directly implies a choice of saving, credit and transaction services thereof. This choice concerning financial modes selected by a household depends on the perceived utility that can be derived from the financial modes. The perceived utility depends on the attitudes or behavioral intent of the decision takers, which are a function of the institutions' and individual, attributes respectively (Hensher, 1979; Shem, 2002). The main factors influencing the choice of savings institutions include: security for savings,

membership to the savings institutions and being able to qualify for group assistance.

According to Shem (2002), personal attributes include: individual level of monthly income; individual level of education; individual's age; gender; size of household and; major source of income. Institutional characteristics are: interest rate on loans; distance from financial institutions; collateral for loan; time required to process a loan; minimum balance requirement; loan repayment method; restrictions on loan use; loan repayment period, and; loan amount.

The direction of the impact of each of the above individual attributes with respect to a priori expectations would vary. Defining monthly income as the disposable income of the household from all sources of economic activity before deducting loan repayments, it is expected to be positively related to the choice of services in Formal Financial Systems (FFS) (Shem, 2002). It is also expected on a priori grounds to be positively related to savings in the FFS. According to Sameroykina (2004) who studied saving behaviour among households in Russia and deduced that the marginal propensity to save out of income is positive. This concurs with economic theory where an increase in income is bound to lead to an increase in saving. A study of some Asian countries by Lahiri (1989) indicated that the rate of growth of personal disposable income determines private saving, while, Schrooten and Stephan (2005) showed that per capita income positively influences saving. This is in agreement with the LCH.

Studies by Lahiri (1989), Edwards (1996), Dayal-Gulati and Thimann (1997) and Loayza, Schmidt-Hebbel and Serven (1998) have proven that the share of working population relative to that of retired persons is positively related to saving. A factor related to dependency in the family is child's income share cohabiting with parents. A study of Netherlands and Italy by Alessie et al. (2004) showed that child's income share has strong positive effects on household saving rate. This is interpreted to mean that the lower the dependency in a family the higher the saving rate. We would therefore expect a negative effect of dependency rate on household saving. Family size is however not a good proxy for dependency levels and this study prefers using ratio of unemployed members of the household over those employed.

Individual level of education (EDUC) is measured in terms of the years an individual has spent in formal education and is expected to improve the understanding of the FFS by individuals and hence their choice of services in the FFS. Moreover, individuals with higher levels of education would feel less intimidated by the institutional environment within FFS relative to others with lower level of education. A study by Bernheim and Garrett (1996) showed that saving rates increase with education.

Individual's age (AGE) is expected to be negatively correlated with saving, such that, older people save less and the younger save more. Incorporating the fact that

younger people who earn little or no income save little or none (often net borrowers) implies that actual relationship between age and saving is non-linear. This is confirmed by a study of United Kingdom and United States of America by Attanasio (1997) that showed a curvilinear relationship (hump-shaped curve).

According to economic theory, credit access is expected to have several influences on savings: impatient consumers will be tempted to borrow and consume more in the present, hence save less; some current savers will reduce their saving since future needs can be financed more easily through credit; no change in saving will occur for the very patient and highly risk-averse savers (Rogg, 2000). This implies that improvement in credit access is expected to impact negatively on saving. However, the study by Rogg (2000), where binary choice model (Probit model) was used, showed saving to be positively related to credit access. According to the International Monetary Fund (IMF) survey by Terrones (2005), improvement in availability of credit is one cause cited for decline in saving in many industrial countries.

MATERIALS AND METHODS

Multi-stage sampling method was used to select the sample because the population was geographically dispersed. Information concerning household activities, composition of households and population densities were obtained from divisional administrative offices.

A sample of 359 households was finally selected from the seven divisions (Bahati, Njoro, Gilgil, Mbogoini, Olenguruone, Rongai and Keringet). Since the sampling procedure was fairly random, the samples adequately represented the targeted populations of teachers, businessmen and farmers in the area of study.

Cross-sectional primary data were collected by interview method from household level and used in this study. Main variables of interest related to households includes; education level of respondent, occupation, dependency ratio, the various expenditures, income from various sources, land size owned, deposit and lending rates, incomes, transport costs to financial institutions of saving, service charges by financial institutions, savings/deposits and credits/loans.

A linear savings function is adapted from the empirical model by Rogg (2000). Linearity is assumed because the purpose of the study is to test whether there is any relationship between the variables in subject, assuming causality. The first equation is a credit access function and the other is a savings function.

In the savings function, variables that influence savings (S) are identified as; gross income (Y), dependency ratio (DEP), age of respondent (AGE), gender of respondent (GEND), rate of interest on savings (r_s), transport cost to and from financial institution of saving (TRANS) and credit access (CA). Thus;

$$S_i = \alpha_0 + \alpha_1 Y_i + \alpha_2 DEP_i + \alpha_3 AGE_i + \alpha_4 GEND_i + \alpha_5 r_{si} + \alpha_6 TR_i + \alpha_7 SERVC_i + \alpha_8 EDUC_i + \alpha_9 CA_i + \alpha_{10} DUMT_i + \alpha_{11} DUMB_i + \xi_i \quad (\text{Equation 1})$$

Where,

S_i = household savings defined broadly as sum of deposits and investment in Kenya shillings (KShs) of two months and above.

Y_i = disposable income received by the breadwinner/s from gainful employment and other economic activities in KShs less taxes

DEP_i = dependency ratio being in this study the ratio of unemployed members of the household over the household size

AGE_i = age of household head in years

$GEND_i$ = gender of household head (Male = 1, Female = 0)

r_s = weighted average rate of interest on saving with savings as weight

TR_i = weighted average transport cost to and from financial institution of saving in KShs, with number of trips made per month as weights

$SERVC_i$ = weighted service charge by saving institution

$EDUC_i$ = dummy for education level of respondent (primary level education and below = 0, secondary level education and above = 1)

CA_i = credit access is average monthly expenditure on loan repayment in KShs

$DUMT_i$ = Dummy for teacher (teacher = 1, other = 0)

$DUMB_i$ = Dummy for businessperson (businessperson = 1, other = 0)

α_i = the coefficient of the i th explanatory variable in the savings function

Subscript i stands for household i .

Both problems of autocorrelation and heteroscedasticity did exist to a certain degree and were resolved through use of Newey-West Heteroscedasticity and autocorrelation-Consistent Standard Errors and Covariance (HAC lag truncation) method. The Newey-West HAC estimator also constitutes a generalized method of moments (GMM) estimator for regression model with autocorrelation (Davidson and MacKinnon, 2004; Greene, 2003).

RESULTS AND DISCUSSION

Saving was ranked on average sixth out of the twelve items in the household budget and is therefore not a residual as assumed by conventional economic theory. It is actually significantly different in ranking from; wages, electricity and entertainment in the case of entrepreneurs; rent, water, entertainment and recreation in the case of teachers, and; rent, water, electricity and wages in the case of farmers. Saving is therefore an important budget item for all households, which proves that poor households do also save because other factors other than income influence saving. Household saving was also the second most regular expenditure item among entrepreneurs and teachers while it is the fifth most regular item among farmer households and is significantly more regular than at least 50% of the items within the household expenditure. The relative irregularity of farmers' saving is as a result of relatively irregular monthly income.

Reasons for saving varied from one occupation to another. The reasons were categorized into four effects. The other two effects viz., interest rate and formal-informal substitution effects; could not be isolated from the reasons given by respondents. None gave interest earned from saving as a motive to save, neither; could the preference for formal over informal be inferred from the given reasons. Though, a comparative analysis of intercept term allowed for isolation of the formal-informal effect.

Table 1. Results of savings model for all groups of households.

Explanatory Variable	All H/holds	Teachers	Businessmen	Farmers
CONST	2576.650** (3.3401)	5519.178** (4.1249)	4704.563** (3.2789)	297.0929 (0.4032)
Y	0.157789** (6.2014)	0.060530* (2.4614)	0.255813** (5.0393)	0.193660** (8.1361)
CA	-0.235169** (-3.4471)	-0.082510 (-1.3466)	-0.218639 (-1.7571)	-0.498028** (-3.1401)
DUMB	1420.001** (2.7118)			
DUMT	-74.99253 (-0.2088)			
EDUC	36.42268 (0.0967)	-185.2625 (-0.2332)	-503.5369 (-0.7001)	660.2535 (1.2898)
GEND	543.6622 (1.6835)	-146.3386 (-0.3452)	902.9849 (1.3706)	88.98296 (0.1735)
AGE	-51.26400** (-3.0880)	-88.67215** (-3.7046)	-75.30124* (-2.1491)	-7.036594 (-0.3403)
DEP	-202.2050* (-2.4362)	-36.81748 (-0.4426)	-410.9172 (-1.7643)	-203.2017 (-1.9222)
Rs	24.82433 (0.5237)	-23.95316 (-0.5901)	-164.4011 (-1.0118)	115.5481* (2.0957)
SERVC	3.528567 (1.6917)	5.346929* (2.3064)	-1.559173 (-0.3268)	3.294857 (1.0887)
TRANS	-1.234230 (-1.9217)	-1.003430* (-2.3692)	-2.505540 (-0.8652)	-1.764054 (-0.8696)
Adjusted R ²	0.4102**	0.1674**	0.3686**	0.7268**
F-statistic	18.2613	3.6369	6.3843	21.6925

Note: Figures in parenthesis indicate z-statistic; ** significant at 1% level; * significant at 5% level. Source: Survey data (2008).

Unlike what is assumed in theory, households not only save for future consumption but also for future investment investment. This may explain the reason for insensitivity of saving to interest rates as found in numerous empirical studies. Thus interest on savings does not motivate saving amongst rural households of Nakuru. The rates of return to investment by households may exceed the interest rates offered for saving with a net result that the opportunity cost of saving is higher than anticipated. Households therefore find it prudent to directly engage in investment rather than save at existing relatively low interest rates. Households save primarily to accumulate capital for future investment, build up a buffer stock for contingencies and accumulate enough funds to pay for future planned expenditure on durable goods (which includes education).

The resulting saving function for all households that was estimated is given in the Table 1. Household income was found to be significant¹ in explaining the level of

saving by the household. The marginal propensity to save out of income ranges from 0.0605 in the case of Teachers to 0.2558 in the case of Businessmen and averages 0.1578 for all households. This concurs with the studies by Sameroynina (2005), Gan (1995), Wood (1995) and Schrooten and Stephan (2003) showing that income positively influences saving. Hence, low saving level is as a result of low income levels.

Credit access was found to be significant in explaining the level of saving by the household. Since it was -0.235 in the case of all household and -0.4980 in the case of farmers, it can be concluded that credit access has a net negative effect on saving such that; an improvement in credit access will cause a reduction in saving, and vice versa. It was observed that on average, accessibility of the above targeted households to credit was very poor (60% did not have any access to credit) hence any small improvement would significantly have an impact on saving. Savings in Kenya, as in other LDCs, may therefore not only be explained by income, a foreign borrowing constraint and fiscal policy among others

¹ Significance level used in this study is 5%.

(Loayza et al., 2000), but also by the domestic borrowing constraint. According to economic theory, credit access is expected to have several influences on savings (Rogg, 2000). An improvement in credit access is expected to have a negative impact on saving. However, according to the study by Rogg (2000), there is a likelihood of savings increasing in the FFS with increase in credit access due to a shift of saving from cash and near-liquid assets to deposit accounts in FFS.

The dependency ratio was found to be significant in explaining the level of saving by the household. The result of the coefficient estimated here as -202.205 for all households also tallies with a priori expectation. An increase in the dependency ratio is bound to cause a decline in saving, while a decline in dependency ratio will result in an increase in saving. This concurs with the study by Johansson (1998) which investigated the reasons for the sustained growth in private savings in Indonesia since 1970. The main finding of the study was that predictions from a simple life cycle model do well in as much as the growth in private savings rates is associated with a drop in the dependency ratio. This suggested that a reduction in the number of children relative to the working age population alleviated household budget constraints, thereby boosting savings rates. A higher dependency ratio implies a greater burden of consumption expenditure and hence, the more the allocation of household budget towards consumption expenditure leads to lower saving.

The coefficient of age is -51.264 which implies that aging by one year will result in a decline in household saving by about Shs.51.25. Age was found to have a negative influence on saving of specifically among teachers and businessmen, which passes the priori test. It is expected that, saving by the adult population (especially above 30 years) would be diminishing with age as they grow towards and beyond retirement age.

The nature of occupation of the household head significantly explains the level of investment saving and broad saving. The estimated coefficient of the dummy for businessman profession was 1420.001; which means that businessmen household investment and broad saving is greater than that of farmers and teachers. Businessmen household save about Shs.1, 420.00 more than other households. The nature of businessmen production units is such that their recurrent capital expenditures (monetary-wise) are greater than that of farmers and hence investment expenditures are relatively more.

The rest of the variables are found insignificant in explaining saving level of all households except for interest rate, transport costs and service charge by saving institution. Interest rate on deposits has some positive influence on the saving of farmers since its coefficient is estimated at 115.548. Increase in interest rates is expected to motivate the farmers to save since it implies that they get better returns on their saving. Transport cost to saving institution was found to have a

negative impact on saving of Teachers as observed by the estimated coefficient of -0.1.003. Such transport cost increases the cost of saving and reduces the real returns on saving thus has a negative impact on saving. Service charge by saving institution is herein found to be positively correlated to saving of Teachers with a coefficient of 5.3469. This is due to the fact that service charge likely corresponds to the security of the saving by the saving institution. This concurs with Shem (2002) in that increase in service charge implies improved security of the saving and hence increased saving.

Conclusion and Recommendations

Though the theory of saving is yet to be conclusive on the determinants of saving, from this study; household income, nature of businessmen occupation, gender, and education level of household head positively influenced the saving behaviour of the rural households in Nakuru district, while credit access, age, and dependency ratio negatively influence household saving. This is in agreement with the other empirical studies.

Just like other developing economies, the levels of domestic savings and investment in Kenya have been very low. One way of meeting the Millennium Development Goals (MDG) targets is to mobilize saving and encourage increased investment for greater productivity and national income.

Outside this study, there are numerous ways of improving saving in rural areas. With due consideration of the income factor, one way to improve the saving level is by implementing policies that improve productivity and income of households. Institutions that are involved in development projects need to increase their support to improve the business environment of the rural populations. Such decisions include improvement in the transport and communication infrastructure. Also of importance is increased involvement of the government in services that support economic activities in the rural areas such as, electricity, water, extension services and marketing channels. These will motivate households to increase their production, income and hence saving.

The dependency ratio observed in this study results from high underemployment and unemployment rates among households. To improve on saving, there is great need to increase investment and thus employment in rural-based industries especially the agricultural related ones. The government should increase subsidies and reduce taxes on inputs and outputs of such industries. Emphasis should be laid on labour-intensive production activities so as to ensure increased employment.

Provision of education by the government is (in the case of the education factor) proved important in improving saving. The government should therefore increase its funding of the education sector not only to secondary and tertiary institutions but also to the adult

education program that has been running for decades. NGOs should also be encouraged to participate in the provision of education especially in training and acquisition of necessary skills for management of finances.

The credit constraint is a significant factor impacting on productivity and output of rural households. Among low income households, observed saving is often for consumption purposes and not convertible to investment. Any improvement in credit access results in reduction in saving but relatively less increase in investment expenditure by the household in the short-run. A greater proportion of the saving is for food and medical security. An improvement in credit access may therefore have a negative impact on saving but positively on food (and generally basic needs) security of the household and hence improved welfare in the long run. In the light of these observations, improved credit access should therefore be accompanied with effective restriction on credit use. It is also recommended for a low income country (with credit constraint as a major problem) that utmost care should be taken to ensure that a greater proportion of credit received is appropriated in capital goods.

Since this research covers monetary savings among households living in the rural areas of Nakuru District, it may be of an interest to establish whether other households in different set-ups such as in urban areas behave the same. Even within the urban region, there exist different sub-populations with different socio-economic characteristics. There is need of investigating the influence of the above factors on genuine saving. Gender factor is another determinant that was not well captured in this study and may be covered by other future researchers. Since only monetary savings was considered within this study, it would be of interest for future research to assess households where non-monetary income and savings form a significant part of their budget.

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