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Determinants of individual savings among Tanzanians

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Abstract

Purpose – Savings help to provide for future personal and households needs. The purpose of this paper examined Tanzanians' determinants of saving. It studied the relationship between individual characteristics (gender, marital status, age, education level and financial education) and saving behaviour.
Design/methodology/approach – The paper used 2017 national baseline survey data with 8,959 observations from all over Tanzania. Descriptive analysis and econometric models were used to test the developed hypotheses.
Findings – Descriptive results show that Tanzanians mainly associate saving with setting money aside to keep it safe for future use. The results also show that most Tanzanians keep their money at home – a very informal way of saving. The results indicate that age and education level are key characteristics that determine positive saving by Tanzanians.
Research limitations/implications – This study used FinScope survey data which was limited to Tanzania. Since FinScope surveys are done in other African countries, using similar methodologies, it would be interesting to investigate similar trends in other contexts.
Practical implications – The study recommends promoting awareness of saving in formal institutions. This will benefit not only customers but the financial institutions and mobile telecom companies themselves.
Originality/value – This study contributes to the life-cycle theory by showing how families, societies and exposures influence individuals to save. Gender and marital status seem to play a lesser role than social- and exposure-related aspects of age and education. Exposure and social interactions are key determinants in the attitude to saving.

Keywords Tanzania, Characteristics, Finscope
Paper type Research paper

1. Introduction

Saving is an important determinant of economic growth. For individuals, saving helps provide for future personal and household needs. Savings also serve to meet the needs of unforeseen circumstances. Saving is the part of the income earned by individuals. The benefits of saving include: hedging against unforeseen circumstances, building up assets, preparing for investment opportunities, providing for retirement, purchasing or improving dwellings, settling debt and acquiring social services (Rehman *et al.*, 2010; Suppakitjarak and Krishnamra, 2015).

Despite these benefits, households' lack of saving is among the leading challenges for many developing economies. Simlet *et al.* (2011) argued that low savings act as a barrier to economic growth and development and put pressure on the country's current account. Compared with the last decade, Tanzanians have been saving at a decreasing rate (FinScope, 2013, 2017). With the introduction of national financial inclusion in 2016, it was expected that individuals would be motivated to save. Since savings benefit households and the whole economy, this study investigated what influences individuals to save in a developing economy such as Tanzania.

The study focuses on a developing economy context because there is evidence that determinants of saving in developing countries differ in significant ways. Some of the features documented in the literature include: large, poor households in poor countries;

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agriculture-dominated economies; uncertain income flows and varying demographic structures; and binding liquidity constraints (Geda and Kebret, 2006). Given these features, how households balance consumption over time and decide how much to save is likely to differ from the basic predictions in the developed world.

This is so much the case in Tanzania. About 70 per cent of Tanzanians depend on agriculture. This could mean that because of the uncertainty of income (owing to the volatility of agricultural output) such households may not be able to predict future income and thus plan consumption and saving long term. In addition, the country still faces low levels of financial inclusion despite various public and private sector initiatives. As of 2017, only 17 per cent of the adult population (about 3.7m) had bank accounts (FinScope, 2017). However, mobile telephone technology and its 30m subscribers have enabled 43 per cent of the adult population (9.8m) to have active mobile payment accounts (FinScope, 2017). Most Tanzanians also use mobile network platforms such as M-Pesa and Tigo-Pesa as a savings avenue, because they have greater access to these services. Additionally, banks face stringent KYC (know your customers) regulations.

The literature shows that the behaviour of saving does not come automatically (Grinstein-Weiss *et al.*, 2006; Zdravko and Esther, 2017). In standard life-cycle or precautionary savings models, variations in the saving behaviour of individuals are explained by heterogeneity and attitude to taking risks, which means that those with a high aversion to risk are predicted to save more (Deaton, 2005). Theoretical work further suggests that the existence and shape of individual preferences could be the outcome of natural selection (Brennan and Lo, 2011), implying that preferences and savings behaviour can be partially genetic, which means that every individual has an innate genetic predisposition to a specific savings behaviour that does not to disappear later in life.

On the other hand, saving behaviour is argued to be the result of socialisation, cognitive ability, self-control or other non-standard factors (Fazli Sabri and MacDonald, 2010). Socially, parents and extended family members may instill saving behaviour characteristics in their children, through learning about saving (Cronqvist and Siege, 2010). Some parents make a costly effort to teach their children how to save by providing a piggy bank or opening a savings account, and otherwise emphasising the benefits of a frugal lifestyle (Cronqvist and Siegel, 2015). This means that, instead of buying assets and hoarding money to secure their children's financial future, parents just teach good money habits and skills. By doing this they believe that the children will be able to manage their own finances as adults and not rely on their parents´ legacy to sustain them.

Based on these arguments, this paper addresses the following question:

RQ1. What determines an individual's saving behaviour in a developing economy?

The individual determinants examined in this paper are gender, marital status, age and education level. Studies suggest that parents pass their savings propensities on to their children (Charles and Erik Hurst, 2003). Mothers are known to be with children the most and spend more time teaching them what to do, which may include saving. In addition, women are known to be more active participants of informal saving groups, thereby setting an example to their children. This is especially true in Tanzania where most women spend their time caring for their children (Mori, 2014a, b). On the other hand, age and education are among the key elements of exposure and socialisation. As a child grows, she gets exposed to wider network connections. Similarly, education gives people knowledge and literacy skills, which are essential for developing saving behaviour.

This study is based on the life-cycle hypothesis, which suggests that individuals plan their consumption and saving over their life cycle. They intend to even out their consumption in the best possible manner over their lifetime by saving while they earn and not when they are retired or are no longer receiving an income. The permanent-income

theory (Friedman, 1957) is also used as a theoretical background because it emphasises that people constantly face random, temporary changes in their income, and savings help them cope with those changes. The hypotheses were tested using data from the 2017 FinScope baseline survey. The data set covered all regions of Tanzania and has 8,959 observations. A mixture of procedures was used to analyse the data and test the stated hypotheses.

The descriptive results show that, generally, Tanzanians have some understanding of saving. To them, saving is mainly setting money aside, to keep it safe so as to use it in the future. This is among the key aspects of saving. The results also show that most Tanzanians save informally, mainly at home. Despite the fact that people know that saving is important, very few actually save. The results further show that mobile money is a leading source of formal saving, followed by banks. The results from hypotheses testing showed that gender and marital status were negatively associated with saving behaviour, whereas age and education level were key characteristics that determined a positive saving culture among Tanzanians. Surprisingly, financial education did not affect saving behaviour.

This study contributes to the literature on saving behaviour in two ways. It is the first national cross-sectional survey that tracks changes in people's livelihoods, thereby providing new insights regarding savings behaviour. Second, it contributes to the life-cycle theory by showing how families, societies and exposures influence individuals to save. Gender and marital status, which are more associated with family aspects, seem to play a lesser role than social- and exposure-related aspects of age and education. Exposure and social interactions are key determinants of the attitude to saving.

The remainder of the paper is structured as follows. The next section presents a review of theoretical and empirical work, followed by a description of the methodology applied in this paper. The findings are then presented, analysed and discussed. Finally, the conclusions, implications and suggestions for future research are presented.

2. Theory and empirical evidence

2.1 Meaning of saving and saving behaviour

Saving has various meanings to different people. To some, it means putting money in the bank while to others, it means buying stocks or contributing to a pension plan (Kotlikoff, 1993). To economists, saving means consuming less of a given amount of resources to consume more in the future. Saving, therefore, is the decision to defer consumption and to store this deferred consumption in some form of asset. Methods for saving can include putting money aside in a deposit account, a pension account, an investment fund or as cash. Since money is being put aside, it means saving involves reducing expenditures.

This study differentiates saving and savings. In this paper, saving refers to the act of increasing one's assets, whereas savings refer to a part of one's assets, usually a deposit in a savings account or to all of one's assets. Additionally, saving refers to an activity occurring over time, a flow variable, whereas savings refer to something that exists at any one time, a stock variable. This study uses the term "saving" as portion of income not spent on current expenditures (Kotlikoff, 1993), in other words, the excess of income over what is spent on consumption.

When studying saving, it is important to understand the behaviour behind it. Cronqvist and Siegel (2015) defined saving behaviour as having an understanding of why people save in a country to benefit its economy. It is known that if people save more, the level of their personal disposable income increases and their standard of living will improve.

2.2 Saving behaviour-related theory

The choice to save or spend earlier in life is known to be an important determinant of an individuals' accumulation of wealth because variations appear in terms of the wealth

accumulated at retirement age, even among those with similar lifetime incomes (Cronqvist and Siege, 2010). The life-cycle theory described saving behaviour by stipulating that the level of individuals' savings depends on age as well as the demographic structure of society rather than family income (Modigliani and Brumberg, 1954). The main motivation is to accumulate savings to spend in the future. It maintains that people make choices about how much they want to spend at each age, limited only by the resources available over their lives. The key assumption is that individuals try to maximise the utility from their life-cycle consumption. Therefore, consumption must be continuous, even if income through the life-cycle is not, and people save primarily to finance consumption in old age.

On the other hand, the permanent-income theory (Friedman, 1957) emphasises that people constantly face random and temporary changes in their income. Household consumption and savings reflect, in part, the differences in long-term average income (permanent income) and transitory income. The theory further postulates that peoples' consumption habits may change only when they experience changes in their permanent income (Weiss, 2001).

Both theoretical approaches look at savings from an economic point of view, whereby current income reflects the expectations of future income. This would mean that individual features may affect people's saving behaviour because their current income may also affect their future income.

2.3 Literature and hypotheses

2.3.1 Gender and saving. In most societies the family system is based on gender and so pre-designed gender roles help family members to run the household with bounded responsibilities. Any disturbance in gender roles may affect the smooth functioning of any family. As gender is an important aspect of the family, we also expect it to play a role in determining saving behaviour.

Many studies have measured the saving behaviour of individuals as well as the determinants of saving in different economies. These studies showed that the economic welfare of males and females differ (Fisher, 2010). Asare *et al.* (2018) found that households with a male head have a positive effect on the probability that those households will save and the expected amount saved. Men head most households in Africa, and men are more likely to make decisions on behalf of the household. Meanwhile, women are known to have lower income than their male counterparts. Women are often in jobs that pay less, such as hotel work and teaching. Despite the fact that women have lower incomes, they are also associated with higher spending because of their many responsibilities (Seguino and Floro, 2003). Women make different choices because of their greater family responsibilities caused by the gendered division of labour within the family, resulting in women taking primary responsibility for housework and child care, which results in increased spending (Bajtelsmit and Bernasek, 1996).

Evidence also suggests that the gender difference in processing information plays a role in saving behaviour (Vicki *et al.*, 2013). Women have less financial knowledge than men, who are more able to save. Women rationally choose to invest less than men in education, acquiring skills and on-the-job training, which affects their employment opportunities, incomes and ability to accumulate wealth. Similarly, Bucher-Koenen *et al.* (2017) found that women were generally less financially knowledgeable than men, and financial literacy was found to affect both their savings and portfolio choice.

A low level of income is one of the factors that can influence saving. Research shows that women prefer to invest where there is greater certainty of a higher income and are more risk-averse than men (Seguino and Floro, 2003). A number of studies in sociology and psychology indicated that women are more likely to display risk-aversion behaviour than

men (Bajtelsmit and Bernasek, 1996). Fisher (2010) found that women are less likely to save in the short term if they are in poor health, while this did not significantly affect short-term saving by men. The study also found that being less risk-tolerant negatively affected the likelihood of women saving in the short term and saving regularly.

For decades, Tanzanian culture has put women in a lower position than men (IMED, 2011). Women in Tanzania are found to have lower levels of education, spend more time with the family (housewives, taking care of children, etc.) and are engaged in low paying jobs (Mori, 2014a, b). All these could contribute to women's low level of financial literacy, hence saving less.

However, the emergence of microfinance services, which, at first, necessitated compulsory savings, helped women to start seeing the importance of saving. With better financial education and the need for loans, which further necessitated the creation of and participation in informal self-help saving groups, VICOBA, SACCOs. Women are key members of these groups (Mori, 2014a, b), which have transformed their saving behaviour. These informal groups also show women how and where to deposit their savings. Based on these arguments we hypothesise that:

H1a. There is a negative association between being a woman and saving behaviour.

H1b. Women are less likely to save in formal sources than men.

2.3.2 Marital status and saving. Marital status can be defined as the status of being married, single, widowed, divorced or separated and includes the status of living with a person in a conjugal relationship outside marriage[1]. Marital status affects the family, as it may cover a lone parent, blended families and families where the parents are in an agreed relationship. We categorised gender and marital status as family-related factors and developed hypotheses for each in relation to saving.

Marriage has a major effect on reducing the risk of poverty due to an increase in income. Unmarried people save much less of their income and accumulate fewer assets. From the economic perspective advocated by the both life-cycle and permanent hypotheses and summarised by Grinstein-Weiss *et al.* (2006), marriage can have several impacts that may enhance wealth accumulation. First, the total income of a married couple is larger than the sum of the outputs of each when produced separately. Furthermore, the marriage institution involves long-term commitment, in which the division of labour enables each spouse to specialise in specific duties (Godwin and Carroll, 1986; Ping and Xiaoqing, 2010). This brings about productivity and efficiency and enables them to earn more for two.

Third, based on economies-of-scale, a married couple may achieve the same utility with less combined expenditures than the sum of their individual consumption if living apart. Fourth, the requirements and expectations of married (vs single) people may encourage them to make joint decisions that may need them to save, such as for children's education, buying a house and acquiring other assets. Furthermore, married couples have an expanded social network and social support, which may result in additional opportunities and benefits that lead to saving.

Various studies have found evidence of this. Mauldin *et al.* (2009) discovered that married couples were at an advantage with respect to various savings and investments relative to cohabiting couples and singles. In addition, Grinstein-Weiss *et al.* (2006) indicated that both married and unmarried low-income earners save but unmarried people save less than married couples.

Most Tanzanians are low-income earners. In addition, Tanzania is among the countries where people are on the poverty line. About 12m Tanzanians still live in extreme poverty on earnings of less than $0.60 per day[2]. Many others live just above the poverty line and risk falling back into poverty in the event of socio-economic shocks. Because of poverty, their

income level is very low. It may also mean that being married increases the burden of being two instead of one, and all the economic advantages of marriage are unrealised. In addition, saving may become riskier because an individual member who saves might ensures another against the impulse to spend. This raises the question as to whether or not married couples are better at saving. We therefore hypothesise that:

H2. There is a positive association between being married and saving behaviour.

2.3.3 Age and saving. The literature shows that increased age is associated with greater social expertise (Hess, 2006). This means that as people get older, their social ties become fewer and less strong, and they tend to be more exposed than younger ones. The relationship between age and saving is well depicted by the life-cycle theory (Modigliani and Brumberg, 1954). The argument postulated by the theory is that individuals and households change their mix of consumption and saving over their expected life span. This means that older people, who are near the end of their lives, and younger people, who are educating themselves or earning a low income, save less than middle-aged individuals (Bloom *et al.*, 2003). The tendency to save increases as people move from youth to middle age, but the evidence does not clearly support the proposition that individuals save less towards the end of their lives.

There is evidence that suggests that age matters with regard to the ability to save and the amount saved. Sneed and Wise (2005) found a relationship between age and saving and the positive effect of age on the amount saved. Their results further showed that this is not equal across all age groups. Respondents tended to not to save while young but attempt to "catch up" immediately prior to retirement, hence confirming the life-cycle theory. Studies further show that the life cycle might not be correct in that some people never stop saving, regardless of their age. Furthermore, if people's income increases with age, they will also increase the amount saved to take precautions for events later in life, such as health care costs, and intended bequests (Bloom *et al.*, 2003).

Geda and Kebret (2006) conducted a saving behaviour study in Ethiopia and found that saving is negatively related to age-dependency ratio, meaning that age was a bell curve shaped course of savings. This is in line with Suruga and Tkchibanaki's study on employees in Japan, which saw a positive and increasing effect on saving of those aged 45 to 64 and a positive and decreasing effect after 65. This does not reject the hump-shaped course of saving behaviour as advocated by the life-cycle theory. The literature also shows that rich people, women and healthy people live much longer than poor, male and sick counterparts (De Nardi *et al.*, 2009). The effect is magnified with the increase in age.

In Tanzania, life expectancy is 63.8 years for men and 67.4 for females, which gives an average life expectancy of 65.6. The working age is from 16 to 55 years (FinScope, 2013), which means one would expect that at the age of 16, people would start to save. However, given the high poverty level – affected by low income and low level of health services as one grows old – saving behaviour is likely to confirm the life-cycle hypothesis. People save more when they are working. Based on this, we argue that as people get older, it increases socialisation and exposure to different income-generating activities, which will then increase their savings. However, it will reach a point when people will not be able to earn a lot and so they will save less. We therefore hypothesise that:

H3. Age has an inverted U-shaped association with saving.

2.3.4 Education and saving. Education is also another aspect through which people get exposed and socialized. Being in school enables people to pass through various paths of socialisation and become exposed to certain behaviours (Cronqvist and Siegel, 2015). In this case, education level refers to an individual's acquisition of systematic or formal instruction

at school, college or university (Munisi, 2015). The level of education can be put into four categories: university degree or above, diploma/higher diploma, secondary education and primary education. Education is further seen to have an impact on employment, income and the people who participate in the workforce. The higher the level of education a person attains, the greater the chance of that person being involved in wide range of income-generating activities, being socialized and earning a higher income. This exposure helps the person to think about starting to save.

Unny examined the influence of the level of education on household saving in India and found it positively influenced saving. Similar findings were reported by Morriset and Revoredo (1995). Also, Njung'e (2011) showed savings to be positively related to total income and education in a study of households in Kenya. Suruga and Tachibanaki (1991) did a similar study on employees and observed that the higher the educational attainment – namely, from high school to university graduates – the lower the saving rate. They argued that employees with a low level of education are more risk-averse than educated employees, which may negatively affect their saving.

Financial education is also among key aspects of education that help people's intention to save. The OECD (2009) indicated that financial education is essential for the average family trying to decide how to balance its budget, buy a home, fund children's education and ensure income when the parents retire. The report further showed that financially educated people not only help themselves with their financial decisions, but they can also help ensure that the financial sector makes an effective contribution to real economic growth and poverty reduction (OECD, 2009). Researchers speculate that one of the major reasons why people save less is that they find it difficult to decide how much to save and how to achieve goals with a savings plan, because of the lack of education and financial knowledge. Financial education and knowledge seek to influence behaviour, and "influencing behaviour is largely a matter of communication (Clancy *et al.*, 2001). Clancy *et al.* (2001) studied the effects of financial education on increased savings and asset accumulation. The results indicated that when people are exposed to a few hours of financial education, the increment in savings is huge.

In 2014, Tanzania introduced the national financial inclusion framework, among the objectives of which is to improve the financial knowledge and literacy of its citizens. The framework is designed to create informed customers and protect consumers through providing financial education. The evidence suggests that 80 per cent save in informal groups (NFIF, 2018). This is not safe and it is also important to know what motivates them to save informally. The reason may be due to less financial education with regard to saving in formal sources. Based on this we hypothesise that:

H4a. A high level of education is positively associated with saving.

H4b. Financial education moderates positively the relationship between education level and saving.

The relationships hypothesised in this paper are summarised in Figure 1. On the left side are the demographic variables of gender, marital status, age and education level, which are expected to be associated with the saving behaviour.

3. Methodology

3.1 Data

This study was empirically done in Tanzania, which has a population of 51.5m with 52 per cent being female and 66 per cent living in rural areas and relying on agriculture as the main income-generating activity (FinScope, 2017). The country is regarded as a rapidly emerging economy in Africa south of Sahara, with a GDP growth rate of 7 per cent.

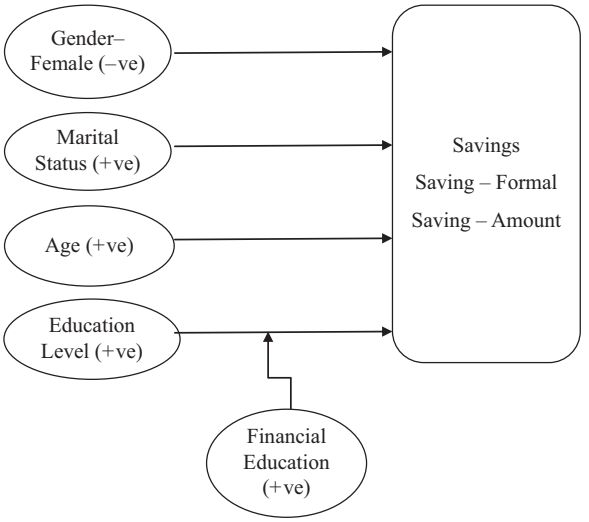


Figure 1.
Conceptual framework

The study is based on the FinScope survey, which has been done in many countries. It was developed by FinMark Trust[3] and piloted in South Africa in 2002. The objective of the survey was to measure and profile the level of access to and uptake of financial products/services (both formal and informal) in a particular country, across income ranges and other demographics. FinScope surveys are of two types, FinScope Consumer and FinScope MSME. Both are nationally representative surveys of how individuals and small business owners source their income and how they manage their financial lives. FinScope Consumer focuses on adults and FinScope MSME looks at owners of enterprises and individual entrepreneurs.

In Tanzania, FinScope consumer surveys are organised by the Financial Sector Deepening Trust (FSDT)[4]. The survey is nationally representative and provides an overview of the financial behaviour of Tanzanian adults. The survey focuses on how individuals generate income and how they manage their money. It provides insights into the extent of uptake and usage of financial services in this context and highlights the factors that prohibit or drive uptake and usage (FSDT). Surveys were conducted in 2006, 2009, 2013 and 2017.

This study used the FinScope data collected between April and July 2017. It was obtained from www.fsdt.or.tz/FinScope/. The data set has 1,213 variables and 9,459 observations. The information included in the data set comprises: individual demographics and their position in the household; money-generating activities and main expenses; planning, cash flow and risk management; saving including motivation to save, sources and amount saved; borrowing including reasons for borrowing, usage of money borrowed and repayment capacity; payments including bills and information on payments to business and government; and service providers including training providers and financial institutions, social security and mobile network operators.

The data set comprises respondents aged 16 years or older at the time of data collection, living in Tanzania. According to the National Bureau of Statistics[5] the size of the Tanzanian adult population (16 years and above) is currently estimated at 27,864,302 (54 per cent) of the total population. The data were collected from all 27 regions of the country. A detailed explanation of the sampling design is in the FinScope (2017) report.

3.2 Variables

3.2.1 Independent and control variables. The independent variables are demographic aspects of individuals. Gender is defined as binary, 1 if a person is female and 0 if male. Marital status is defined as binary, 1 if a person is married and 0 if divorced, widowed or single. Marital status1 is defined as binary, 1 if a person is a widow or divorced and 0 if not. The reason for this variable is because a person who has had a formal marital relationship is different from one who is single. There was a time when she/he had a partner with whom he/she shared financial matters and that might make a difference in her/his saving decisions. Age is defined as number of years since the person was born up to the time of data collection, which is 2017 (Mori, 2014a, b). Education level is defined as binary, 1 if a person has secondary education and above and 0 if not (Munisi, 2015). Financial literacy is defined as binary, 1 if a person knows about money issues and 0 if not. One control variable, Own money, was used and defined as binary, 1 if a person has a source of income and 0 if not.

3.2.2 Dependent variables. Saving is referred to as the portion of income not spent on current expenditures. In other words, it is the excess of income over what is spent on consumption. We used three dependent variables: saving is defined as binary, 1 if a person has saved in the last months and 0 if he/she has not saved. Saving formal is measured as binary, 1 if a person saves in a formal financial avenue (bank, MFI or mobile) and 0 if not. Savings amount is defined as the amount in Tanzanian shillings that a person has saved in the previous month.

3.3 Analysis

The variables in our data set were analysed using univariate and multivariate statistics. We used descriptive statistics to analyse how Tanzanians define saving and how demographics affect their understanding. We also used demographics to assess the savings avenues used by most Tanzanians. Finally, summary statistics and correlation analyses were done on all variables of interest. For multivariate analyses we used both logit and ordinary least square (OLS) to test the hypotheses.

4. Findings and discussion

4.1 Tanzanians and saving understanding

Here we analyse how Tanzanians define saving and how it differs demographically. Table I Panel A presents the results of how Tanzanians understand saving. The results show that most (34 per cent) understand saving as a process of putting money somewhere to stop one from spending it and to have it later when in need. From this understanding, it does not matter where the money is being put and whether it can earn anything. The results also show that 15 per cent of the respondents believe that putting money somewhere to keep it safe is a way of saving. This is in line with Limings (2016)[6] suggestion that saving protects a person from being a spendthrift, meaning that a person will stop spending money wastefully or needlessly.

Examining the meaning by age group (Table I Panel B), we found a similar trend in the results, with the majority putting money somewhere to keep it safe or to keep from spending it. Interestingly, few people realized interest can be earned on savings. Only a small percentage of Tanzanians indicated that saving can make the total amount increase over time as it earns interest. This could mean that with the low level of financial education and saving behaviour, the majority do not see advantages of saving apart from preventing current spending. The effect of education is also seen on Panel C on Table I where we examined the meaning of saving by different education levels. The results show that people with low levels of education believe that purchasing an asset to sell in the future is a way of saving. Those with a high level of education do not.

Meaning of saving	Panel A – meaning	Panel B – age and meaning 16–34	35–54	55 and above	Panel C – education and meaning Secondary and above	Below secondary
1. Putting money somewhere to keep it safe	15.3	29.2	30.5	34.9	18.3	14.6
2. Putting money somewhere to stop you from spending it so that you have it later when you need it	34.3	69.0	68.2	69.5	35.9	33.9
3. Putting money away so that the total amount increases over time as you put more away	8.6	19.1	16.4	12.6	9.5	8.4
4. Putting money away so that the total amount increases over time as it earns interest	14.5	9.5	8.3	6.3	6.0	3.9
5. Putting money aside for you to use later for something specific	6.1	30.6	28.1	26.2	15.2	14.3
6. Savings is the money that is left over from your income after you have covered all your expenses	6.1	12.5	12.0	12.2	6.2	6.1
7. Purchase an asset to sell in future	14.1	25.9	32.2	27.5	8.2	15.5
8. Do not know	2.7	4.2	4.3		0.6	3.2

Table I. Meaning of savings and profile of Tanzanians (percentage)

Overall, Tanzanians have some understanding of saving. To them, saving is mainly setting money aside to keep it safe to use in the future. This is one of the key aspects of saving. As indicated by Limings (2016), saving means the clever usage of money, whereby one is able to learn the value of spending money at the right time. It not only helps one at the time of emergencies, but it also helps to develop an intelligent way of spending money. However, saving also helps one to earn interest, especially if the money is also being invested. Few respondents in Panels A and C of Table I indicated this. Saving also increases the possibility of fulfilling financial goals. When people have a financial goal, it is important that they have money at the right time. This is implied in Panel A of Table I, where some Tanzanians indicated that they saved so as to purchase an asset to sell in the future.

Since the majority indicated that saving is a way of putting money somewhere, the next section analyses the avenues that are mostly used to save money.

4.2 Where do Tanzanians save?

People save in formal or informal institutions (FinScope, 2017). Formal financial institutions are regulated and registered by formal regulators. These include banks, mobile money providers, microfinance institutions, pension funds, capital markets and SACCOS. Informal institutions are neither registered nor regulated. These include informal saving groups, community groups, rotation saving and credit associations (FinScope, 2013).

The results in Table II Panel A show that most Tanzanians save with informal groups (34.6 per cent). Even though people know that saving is important, and it helps when you need it in the future, the level of saving is still very low. Mobile money saving is preferred as 14 per cent save via their mobile phones followed by 7 per cent who save in banks. Informally, most prefer to save their money at home, which is the leading source. This suggests that people do not know where to save their money. There is need for more awareness of the importance of using various saving sources.

Using the home as the major saving avenue is aligned with how people define saving. Most respondents (Table I Panel A) defined saving as "Putting money somewhere to stop you from spending it so that you have it later when you need it." This is not linked with getting something in return, which may be why people save at home. It could also be that most Tanzanians do not know the benefits of saving in different avenues. There are many efforts advocating the use of SACCOS and saving groups, but these results show that the uptake is still low.

Formal sources	Panel A – avenues	Panel B – education and avenue	
		Above secondary	Below secondary
Bank	7.3	23.20	3.5
Microfinance institution	0.6	0.66	0.6
Mobile money	14.5	30.18	10.8
SACCOs	0.7	2.16	0.4
Capital markets	0.2	0.06	0.2
Pension funds	1.4	5.64	0.4
Total savings – formal	24.6		
Informal avenues		8.70	8.1
Savings groups	8.3	0.88	0.9
Community groups	0.9	4.15	5.3
Family and friends	4.3	14.70	23.6
At home	21.2	Above secondary	Below secondary
Total savings – informal	34.6	23.20	3.5

Table II.
Saving avenues used – (percentage)

In addition, these findings show that 59.2 per cent of Tanzanians save, which means that 41 per cent do not. They spend all the money they get. This could mean that 41 per cent are excluded from financial services. The percentage is high (60 per cent) if we include those who save at home, since it means they are not financially included. These results indicate that most Tanzanians are excluded from financial services. The reason for this is not only ease of access, but awareness of the importance of saving (FinScope, 2017).

The low level of education could also contribute to the low level of awareness. As shown on Panel B of Table II, the majority of Tanzanians do not have higher than secondary education level. The results further shows the saving avenue used by education levels, in that those with higher education are more likely to save in formal avenues than those with a lower level of education. For example, 23 per cent more highly educated save in banks, compared with 3.4 per cent of less educated ones. Similarly, 30 per cent of more highly educated save via mobile phones compared with 10 per cent of less educated people. We also discovered that fewer people with a higher education save in informal avenues compared with those with less education. Only 14 per cent of those with higher education save at home compared with 24 per cent of those with less education. These results provide preliminary findings for *H4a* that education level positively correlates with individual saving behaviour. The results further show how education helps create awareness of the importance of saving in formal avenues.

4.3 Summary statistics

Table III presents summary statistics of the variables used in the econometric analysis. The results for the dependent variables indicated that 46 per cent had saved money in the last month. This is a good indicator of saving behaviour among individuals, although only 24 per cent had savings in formal institutions like banks, MFI or mobile phones. For those who saved in the last month, the average amount saved is 102,912 Tanzanian shillings, which is equivalent to $50. In terms of the independent variables, we found that 56 per cent of the respondents were female and 64 per cent were married. The results also show that 19 per cent of the respondents were either widows or had separated from their spouse. We found this variable to be important when analysing saving behaviour since a person who had been in a formal relationship is more likely to think differently money-wise than those who are single. We also aligned this with the report[7] by Ryan (2016), who argued that divorced people behave differently financially. He argues that being financially literate is crucial as it enables them to understand and more actively participate in decisions.

	Measurement	Mean	SD
Dependent variables			
Saving	A binary equals 1 if a person has saved in the last month and 0 if not	0.46	0.49
Saving formal	A binary equals 1 if a person saves in formal financial institution and 0 if not	0.24	0.39
Saving amount	Tanzanian shillings saved last month	102,912	0.31
Independent variables			
Gender	A binary equals 1 if a person is female and 0 if male	0.56	0.49
Marital status	A binary equals 1 if a person is married and 0 if divorced, widowed or single	0.64	0.48
Marital status1	A binary equals 1 if a person is a widow or divorced and 0 if not	0.19	0.39
Age	Number of years since the person was born	38.2	16.2
Education level	A binary equals 1 if a person has secondary education and above and 0 if not	0.19	0.39
Financial literacy	A binary equals 1 if a person perceives himself/herself to know about money issues and 0 if not	0.21	0.40
Control variables			
Own money	A binary equals 1 if a person has own source of income and 0 if not	0.69	0.46

Table III.
Summary statistics

This implies that when a person has undergone a separation/divorce, he/she is more likely to be aware of financial matters, including saving, which will help in future needs.

The average age in our sample is 38 years, indicating that most are of working age, which is a good age for creating an awareness of saving and influencing behaviour. The level of education level is low, as only 19 per cent had attained a secondary level and higher. This is one of the major challenges of Tanzanians (IMED, 2011). Since the data set nationally representative, it shows that most Tanzanians do not have higher than primary education, which can have a major effect on financial education and saving behaviour. We also observed that 21 per cent perceived that they had a basic understanding of money issues (financial literacy). This was also observed in the way people understood saving, as presented in Table I. The results also show that 69 per cent of the respondents in the data set earn their own income, which is good given that their average age is 38 years. At this age, most people are expected to be independent and working.

4.4 Correlation results

Table IV presents the correlation between the variables. First, we look at the correlation among the saving variables. As seen in Table IV, although these variables are separate constructs, all are significantly related. For example, saving is significantly correlated with saving in formal sources (coefficient 0.525) and with the amount saved (coefficient 0.035). Saving in formal sources is also positively correlated with the amount saved (coefficient 0.047). These results indicate that the saving variables are highly correlated with each other and they truly measure the saving behaviour of individuals. To reduce the combined effects on the correlated dependent variables we ran separate regressions for each item.

Next, we examined the correlation between the dependent and independent variables, which provided the first impressions of our hypotheses. For gender, we tested whether females are negatively associated with saving. The results show a significant negative correlation between saving and gender (coefficient −0.084), saving in formal sources and gender (coefficient −0.129) and amount saved with gender (coefficient −0.023). These results indicate that women are not good at saving, which is consistent with *H1*.

Variables	Saving	Saving formal	Saving amount	Gender	Marital status	Marital status1	Age	Age square	Education	Literacy	VIF
Saving											
Saving formal	0.525*										
Saving amount	0.035*	0.047*									
Gender	−0.084*	−0.129*	−0.023*								1.1
Marital status	0.052*	−0.003	0.014	−0.091*							2.4
Marital status1	−0.065*	−0.081*	−0.011	0.222*	−0.655*						2.3
Age	−0.067*	−0.105*	0.013	−0.054*	0.015	0.367*					5.5
Age square	−0.088*	0.119*	0.009	−0.048*	−0.045*	0.365*	0.877				6.3
Education level	0.110*	0.291*	0.001	−0.073*	−0.119*	−0.149*	−0.251*	−0.222*			1.6
Financial literacy	−0.142*	−0.173*	−0.004	0.109*	−0.038*	0.038*	0.010	0.032*	−0.095*		1.4
Own money	0.184*	0.177*	−0.007	−0.165*	−0.014	0.012	−0.002	−0.024	0.067*	−0.099*	1.1

Note: $*p < 0.05$

Table IV.
Correlation results

Marital status has a significant positive correlation with saving (coefficient 0.052) similar to *H2*. However marital status1, which examines whether a person is a widow or separated, shows a negative correlation with both saving (coefficient −0.065) and saving in formal sources (coefficient −0.081). Age and age-square variables provided interesting results. First, age is significantly negatively correlated with saving (coefficient −0.067) and saving in formal sources (coefficient −0.105). This implies that as people get older, saving decreases, similar to our hypothesis. However, this reaches a certain point where saving starts to increase with age. This can be seen in the association between age-square and saving in formal sources (coefficient 0.119). Contrary to *H3*, these correlation results show that age has a U-shape association with saving.

Similar to *H4a*, education level is positively associated with saving (coefficient 0.110) and saving in formal sources (coefficient 0.291). Financial literacy is negatively associated with both saving (coefficient −0.142) and saving in formal sources (−0.173), suggesting that when people perceive that they know about money issues, they do not save. It is possible that they opt for other investment opportunities because they know there are higher returns on investments. Finally, we found a positive correlation between own money and saving (coefficient 0.184) and saving in formal sources (coefficient 0.177). This means there is positive relationship between earning your own money and deciding to save it.

Furthermore, we are aware of the potential multicollinearity among the independent variables. As seen in Table IV, the correlation coefficients among the independent variables are rather low, with the highest being between age and age-square (coefficient 0.877), which was expected since it is the same variable being squared to determine the U relationship. Kennedy (2008) maintained that correlations need to be above 0.7 to indicate multicollinearity between the two variables. Except the age and age-square variables, none of the coefficients was this high. In addition, we calculated variance inflation factors that describe how much multicollinearity (correlation between independent variables) there is. Except for age and age-square, which was expected due to the nature of the variable, none of the other variables exceeded 5, and so we can conclude that multicollinearity was not a problem in this study.

4.5 Regression results

Table V shows the results for both logistic and OLS regressions. Model 1 presents the results for the dependent variable, saving, Model 2 for saving in formal sources and Model 3 for the amount saved:

H1a. Negative association between being a woman and saving behaviour.

H1b. Women are less likely to save in formal sources than men.

All three models provide support for these hypotheses. We found a negative significant relationship between gender (1 being a woman) and saving (coefficient −0.150, $p < 0.001$) in Models 1 and 2, showing gender and saving in formal sources (coefficient −0.416, $p < 0.001$) as well as Model 3, showing gender and amount saved (coefficient −0.644, $p < 0.001$). The results for Models 1 and 3 support *H1a*. These results indicate that women do not save as much as men. This is in line with the literature, suggesting that because most women have lower levels of education and income, their saving behaviour is also affected (Mori, 2014a, b). Model two supports *H1b*. Women do not save in formal sources but are members of informal institutions like Vicoba and savings associations where they mostly save so they can access loans, which are usually three times the amount of their savings:

H2. There is a positive association between being married and saving behaviour.

The results for Model 2 show a negative relationship between being married and saving in formal sources (coefficient −0.324, $p < 0.001$), which is contrary to the stated hypothesis. These results also contradict the life-cycle theory and permanent hypothesis summarised by Grinstein-Weiss *et al.* (2006), who argued that because the total product of a married couple is larger than the sum of the outputs of each if produced separately, a couple will have more savings.

These results suggest that married couples do not save, which could be because the need for to spend increases because there are two, which leaves them with nothing to save. This is further reflected in studies that found that low-income earners associate economic well-being with marriage (Smock *et al.*, 2005). Edin (2000) found that money and saving was an issue for married people. Both women and men expect their spouses to generate an income that will help them with life's needs. Also, since most Tanzanians live below the poverty line and with little education, these results show that being married increases the burden of being two instead of one, and so all the economic advantages of being married are not realized. In addition, with a low income, saving may be riskier because the one who saving is insuring against the other's impulse to spend:

H3. Age has an inverted U-shaped association with saving.

Independent variables	Model 1 – logistic Saving	Model 2 – logistic Saving formal	Model 3 – OLS Saving amount
Gender	−0.157**	−0.416**	−0.644**
Marital status	0.067	−0.324**	0.079
Marital status1	−0.091	−0.399**	0.096
Age	1.264**	2.671**	1.425**
Age-square	−0.001	−0.001**	−0.001*
Education level	0.462**	1.502**	0.508**
Financial literacy	−0.511**	−0.745**	−0.217*
Education × literacy	0.094	−0.152	−0.025
Own money	0.698**	0.951**	0.176**
Obs.	9,459	9,459	4,338
Pseudo and Adj. R^2	0.05	0.15	0.07

Notes: *$p < 0.05$; **$p < 0.01$

Table V. Regression results for saving and individuals demographics

The results regarding the relationship between age and saving are positive. Model 1 shows a positive relationship between age and saving (coefficient 1.264, $p < 0.001$), implying that as people get older, they tend to save. Model 2 shows the results for age and saving in formal sources, which are also positive (coefficient 2.671, $p < 0.001$). This implies that with age comes education and literacy, which exposes people to better forms of saving, which they believe will yield future returns (Furnham, 1985). Model 3 further shows that age is positively associated with the amount a person saves (coefficient 1.425, $p < 0.001$). This also means that when people start working and generating an income, it enables them to save more for future circumstances.

In line with the hypothesis, we found a significant negative effect of age squared (which measures the inverted U-shape relationship) on saving in formal sources (coefficient −0.011, $p < 0.001$) and on the amount saved (coefficient −0.011, $p < 0.001$). Although the coefficients are not economically significant, they still correspond to the life-cycle theory (Modigliani and Brumberg, 1954) in that individuals and households change their mix of consumption and savings over their expected life span. The results also support the notion that savings do increase when people become middle aged.

Since in Tanzanian life expectancy is 59.9 years for males and 63.8 for females, and the average age in our data set is 38, it shows that most middle-aged people save, which explains the economic association of the age squared variable with the saving-related variables. Based on our results, we argue that as people get older, their socialisation and exposure to different income-generating activities increases, thereby increasing the amount saved. We also found that, in Tanzania, the situation changes as people get older, beyond 55 years:

H4a. High level of education is positively associated with saving.

H4b. Financial education moderates positively the relationship between education level and saving.

A high level of education was found to greatly affect the saving behaviour of Tanzanians. *H4a* is supported because we found that education level positively affected saving (coefficient 0.462, $p < 0.001$); saving in formal sources (coefficient 1.502, $p < 0.001$), and the amount saved (coefficient −0.011, $p < 0.001$). These results are in line with the extant literature, which suggests that education level is positively related to saving (Jappelli and Padula, 2013).

Surprisingly, the results show that financial education has a significant negative effect on all saving-related variables. This could mean that financially literate people know about investment avenues that will yield higher returns, and so they opt not to save but to invest. Christiansen and Rangvid (2008) revealed that investing in stocks and shares increases when individuals are financially and economically literate. Van Rooij *et al.* (2011) found that financial literacy affects financial decision making and that people with a low literacy level are much less likely to invest in stocks and shares.

The negative effect of financial education on saving might have affected the moderate effect stated in *H4b*. As seen in Table V, none of the coefficients is significant, implying that *H4b* is not supported.

In summary, these results show that individual characteristics matter in regard to saving and its associated behaviour. We see that women do not save as men do and they prefer informal saving sources. It is possible that women do not save in formal sources because of the perception that they are for high-income people (Naegels *et al.*, 2018). We also found that married people do not save, which may be due to low income and low education. Similar to the life-cycle theory argument, we saw that age matters when it comes to saving. People need to start generating an income in order for them to save. The final characteristic we found that mattered, both statistically and economically, is level of education. Therefore, we argue that Tanzania needs to focus on improving education and increasing access because it is the main driver of saving behaviour, which, in turn, contributes to economic development.

5. Conclusion and implications

This paper responds to the need for a deeper understanding of saving behaviour among Tanzanians (FinScope, 2017). Using a national data set, we have shown the relationship between individual characteristics (gender, marital status, age, education level and financial education) and saving behaviour. We used a mixture of techniques in the analysis to test the stated hypotheses.

From the descriptive results we found that Tanzanians have some understanding of saving. To them, saving is mainly setting money aside, to keep it safe so as to use it in the future. The results also show that most Tanzanians save with informal groups, mainly at home. Even though people know that saving is important, and it helps when they need it in the future, very few actually save. We also found that mobile money was a leading source of formal saving, followed by banks.

Having tested the hypotheses, we found that gender and marital status were negatively associated with saving and saving behaviour. Age and level of education were found to be key characteristics that determine saving behaviour among Tanzanians, although financial education did not matter. We argue that financially literate people know about higher benefit investment avenues, such as owning stocks and shares and investing in real estate, and do not put their money in savings accounts. The practical implication of this is that government efforts of increasing financial inclusion (NFIF, 2018) may not be beneficial if Tanzanians are not first equipped with a high level of basic education.

The fact that women do not save much and rely on informal sources implies that the efforts to increase their access to education should be a priority, so that more women benefit, such as increasing their ability to generate income, which will help them save more. Having a better education will also help them see that they are equal to men and that formal sources of saving, such as banks, are for all. Various banks have established special products and windows that serve women only, seemingly confirming that some women are scared of entering banks (Mori, 2014a, b). The social implication of this study is that there is a need for more financial institutions to increase access to saving avenues for women. More efforts are needed to financially include more women as women are the engine of families.

From the policy perspective, both government and financial sectors have done a commendable job in introducing the financial inclusion framework in Tanzania. However, there is a need to advocate education attainment for all. There is a movement for free primary and secondary education, which is good, but it should be accompanied by quality education. Education is important not only for earning certificates, but also for being able socialise and learn from other highly educated people. These interactions help when people make financial decisions.

Practically, we urge more efforts for awareness creation among current and potential customers. Apex associations such as bankers' associations, mobile operators' associations and companies themselves need to work on creating awareness of the importance of saving in formal institutions. This will be beneficial not only to customers but also to the companies themselves. The fact that most Tanzanians keep money at home when statistics show that more than 30m Tanzanians are subscribers or have mobile phones is a clear indication that most do not fully utilise the services offered by mobile companies, including saving.

Our findings indicate that financial education does not moderate the relationship between education level and saving behaviour, which warrants deeper research. To what extent does financial literacy hinder saving behaviour? How does it affect investment behaviour? This study utilized FinScope survey data for Tanzania and so its scope was limited. Because FinScope surveys are done in many other African countries, it would be interesting to find out if there were similar trends in other contexts.

Notes

1. www.ohrc.on.ca/en/code_grounds/family_marital_status
2. www.worldbank.org/en/country/tanzania/overview
3. www.finmark.org.za/FinScope/
4. www.fsdt.or.tz
5. www.nbs.go.tz
6. www.importantindia.com/23895/saving-money-its-meaning-and-importance/
7. www.sdflaw.com/files/PTR%20financial%20literacy%20CDLB.pdf

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