

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 2, February 2018

Factors Affecting Savings of Small Scale Coffee Farmers in Rwanda

Rurangwa Emile¹, David Mwehia Mburu², Patrick Mulyungi², Ntaganira Eric³, Nsengiyumva Aimable⁴

Postgraduate Student, Jomo Kenyatta University of Agriculture and Technology, Nairobi Kenya¹

Senior Lecturer, Jomo Kenyatta University of Agriculture and Technology, Department of Agriculture Economics,
Nairobi Kenya²

Assistant Lecturer, Jomo Kenyatta University of Agriculture and Technology, Department of Agriculture Economics,
Kigali, Rwanda³

The Secretary to the Scientific Committee, Rwanda Agriculture and Animal Resources Development Board, Kigali
Rwanda and Assistant Lecturer, Jomo Kenyatta University of Agriculture and Technology, Department of Agriculture
Economics, Kigali, Rwanda⁴

ABSTRACT: Despite the importance of savings in agriculture production in Rwanda, farmer savings remains limited and there are no studies done to investigate its cause. This study aims to identify the factors influencing farmer savings in Karongi District, Western Province of Rwanda. Mixed sampling techniques were employed to select 202 respondents using structured questionnaire. Probit model was used to identify household factors influencing farmer savings. Key factors identified were farm size, experience in savings, distance to coffee washing station, extension services and perception. The study concludes that in order to increase farmers' savings policy makers and implementers in Rwanda need to focus on extension services and farmers assets.

KEYWORDS: Farmer savings, Probit model, Smallholder coffee farmers, Karongi District, Rwanda

I. INTRODUCTION

Access to credit is very crucial to small scale farmers especially in less developed nations of the world. This is because it increases farmer's total production and improves their productivity per unit input. In Rwanda there is high demand for credit by farmers in Rwanda, mainly because capital is required for improvement on the land, for purchase of implements, machinery, and breeding stock, purchase of seeds, fertilizer as well as payment of wages of labour. However of the people who live in the rural areas are below the poverty line and more efforts is required to support for socioeconomic development (Musafiri Papias & Ganesan, 2009).

While aiming at increasing farmers income by providing services at lower costs and better prices for their produce, the expected role of farmer organizations could be challenged by various problems such as poor infrastructures, lack of investment, inadequate service provision, poor extension services, competition with local traders and low levels of savings.

Despite the level of domestic savings remain very low and the financial exclusion highly alarming, (only 3% of the population saving with all MFIs in general in Rwanda), government recently inaugurated a National Dialogue Meeting held in December 2008 recommended the creation of at least one SACCO as micro financial institution at the level of each Administrative Sector (Kantengwa, 2009). Currently the Credit and Saving Society (CSS) holds 66% of total deposits Kantengwa (2009) and Low level of rural farmers to save for provisions ranges 1 to5 % and the analysis carried out showed that the majority of the respondents 39.5% applied for a loan of amount less than 500,000 Frws as amount saved yearly (Xanthaki, 2013) ,most of the studies conducted on the factors influencing farmer savings have

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 2, February 2018

been conducted in other countries with contradicting evidences (zu Selhausen & Ruhweza, 2011), (Chowa, Masa, & Ansong, 2012). Therefore, this study was conducted to confirm the cause for low farmer savings in Rwandan context particularly in Karongi district.

II. LITERATURE SURVEY

Gedela (2012) in his study on determinants of saving behaviour in rural households found a positive relationship between age of the household head and savings where increase in age resulted in increase in saving but as the household head becomes old the savings start declining.

A study conducted in Nakuru District revealed that an increase in dependency ratio is bound to cause a decline in savings while a decline in dependency ratio will result in an increase in saving (Swasdpeera & Pandey, 2012).

The findings of the study were that predictions from the Life cycle hypothesis indicate that growth in private savings rate is associated with drop in dependency ratio. This suggested that a reduction in the number of children relative to the working age population alleviated budget constraints thereby boosting savings rates. The neoclassical theories of saving note that households with more children at home save less until the children leave home which in turn raises the capita income of the household, thus a high dependency ratio reduces savings.

A study by Gedela (2012) on Visakhapatnam households indicates a strong negative influence as a result of high dependency ratio where an increase in number of dependants drastically reduce savings rate.

notes a high percentage of older people in a population decrease the saving rate because they are not part of the active labour force and are expected to finance their consumption out of their past savings. On the other hand they still observe that higher young dependency ratio may have dual effect on savings and consumption. Consumption of families for child care may increase and force families to save for future expenses for their children such as their education (Matur, Sabuncu, & Bahçeci, 2012). Income is considered as an important factor in the determination of the saving behaviour of an individual (Gedela, 2012).

A survey on Mpanga tea growers by (zu Selhausen & Ruhweza, 2011) indicates that some farmers fail to save because they do not have enough money to save or their income is too little to allow them to set aside money for saving purposes. In the research conducted by (Athukorala & Sen, 2001) on determinants of private saving in India found that savings rate of households rose with the growth rate and level of disposable income.

In the study on determinants of saving among low-income individuals in rural Uganda their findings were consistent with neoclassical theory which states that when people have more disposable income they save. Study noted that among low income households saving is usually done for consumption purposes and is rarely converted to investments. They further observed that credit constraint encourages households to save while improved access to credit results in reduced saving and relatively less increase in investment expenditure by the households in the short run Kibet, Mutai, Ouma, Ouma, & Owuor, 2009).

A study conducted by (Mutyaba, 2014) draws lessons from China where the financial services sector is under developed leading to credit constraint a factor which contributes to high levels of household saving. Households in China are forced to save in order to purchase big items such as houses and cars which are investment expenditures.

Institutional factors like Saccos are community membership based financial institutions that are formed and owned by their members in proportion of their member's economic interests, as cited (Cheruiyot, Kimeli, & Ogendo, 2012).

Saccos exist as institutions that offer financial services support to individuals or groups that are marginalized by the main stream banking sector. Saccos offer products and services that meet diverse needs of different segments of the population up to the lowest strata of the society (zu Selhausen & Ruhweza, 2011).

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 2, February 2018

III. METHODOLOGY

Research design

This study employed cross section survey design and descriptive survey methodology. Multistage sampling techniques were used to select respondents from sectors under coffee production through structured questionnaires that contained both qualitative and quantitative data. Pre-testing survey was done, descriptive and econometric methods of analysis were used for this study. Relevant secondary data were obtained from different publications, books, journals, newspaper articles, dissertations, year-end reports and others.

Study area

This study was conducted in Karongi district of western Province of Rwanda since it is one of the few Districts of Rwanda that has coffee farms under production and it has well organized farmers in groups and cooperatives and thus has increased the level of farm inputs, conditions which are to be considered for the success of the present study

Target Population

This study was conducted in Karongi District and targeted farmers who grow coffee production. Out of 410 only 202 were selected. The lists of farmers who saved were got from micro finance institutions during the period 2016 and 2017.

Sampling techniques

Two multi-stage sampling techniques were used to select respondents from the selected sectors under coffee cultivation. In the first stage simple random sampling was used to select a sample of coffee growers among others. In the second stage, the stratification sampling techniques was used to select farmers from each of the pre selected farming groups of savers and non-savers. The sample size was determined based on pre selected cooperatives coffee producers group from the perimeter of the study by means of mathematical formula given by (Wooldridge, 2003) as

$$n = \frac{N}{1 + N(\alpha)^2} \dots \dots \dots (1)$$

Where N=410 farmers is the sampling frame or total population, n is the sample size and α is the margin error. α: predicted confidence (for confidence interval of 95%, equal to 5% significance level)

$$n = \frac{410}{1 + 410(0.05)^2} = 202 \dots \dots \dots (2)$$

Data collection methods

The study was based on primary data. The interview method was used to collect data with the aid of structured questionnaire and with the help of trained enumerators that understands the local language. The structured questionnaire first was pre-tested before it is administered to the sampled farmers for the study. Data collection was centered on the following subjects:

Socio-economic characteristics of the coffee producers such as age, gender, household size, marital status, farming experience, educational level, farm size, mode of land acquisition, number of extension visits and membership period, amount of credits received in the previous two farming seasons, quantities of agro inputs used, saving status.

Data analysis

The data collected was edited, coded, and tabulated by computer software SPSS and Microsoft Office Excel and was (Sebopetji & Belete, 2009). Analyzed by using STATA version 13 and SPSS 16. Both descriptive and quantitative analysis was carried out. Probit model was used to determine factors influencing farmer savings.

Application of probit model

According to (Sebopetji & Belete, 2009), probit model constrains the estimated probabilities to be between 0 and 1 and relaxes the constraint that the effect of the independent variable is constant across different predicted values of the dependent variable. This is normally experienced with the Linear Probability Model (LPM). The probit model assumes

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 2, February 2018

that while we only observe the values of 0 and 1 for the variable Y, there is a latent, unobserved continuous variable Y^* that determines the value of Y. The other advantages of the probit model include believable error term distribution as well as realistic probabilities (Anang, Sipilainen, Backman, & Kola, 2015). Thus, for this study the probit model is preferred and used. We assume that Y^* can be specified as follows: $Y_i^* = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_k x_{ki} + U_i$ And that: $\{Y_i = 1 \text{ if } Y^* > 0; \text{ and } \{Y_i = 0 \text{ otherwise where } x_1, x_2, \dots, x_k \text{ represents vector of random variables, } \beta \text{ represents a vector of unknown parameters and } U \text{ represents a random disturbance term (Sebopetji \& Belete, 2009).}$

Model specification

The probit model specified in this study to identify the influence behind farmer savings or not can be expressed as follows:

$$Y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \beta_4 x_{4i} + \beta_5 x_{5i} + \beta_6 x_{6i} + \beta_7 x_{7i} + \beta_8 x_{8i} + \beta_9 x_{9i} + \beta_{10} x_{10i} + U_i$$

Where Y_i is the Small-scale farmers' to save (dependent variable) which takes the value of 1 if the farmer is a saver, 0 otherwise for non saver. The summary of operational independents variables involved in probit model and the expected intercepts.

IV. RESULTS AND DISCUSSION

The result of the probit model indicated that sample households who had large cultivated farm size have high saving capacities. This is confirmed by the positive coefficient of the variable, indicating that farm size is significantly influenced capacity to save at 5 % percent. This is an implication that irrespective of bigger farm size one cannot easily increase production because land is an indicator of economic wealth and place for agricultural activities to take place. Another possible explanation for the positive coefficient of the farm size may be due to the reason that, when size of the land increases the need for production costs, which requires the need for additional capital and this increases demand for previous savings. The findings of the study agree with (Chowa et al., 2012).

The study findings further illustrate the significance of experience and savings as experience may lead to better managerial skills being acquired over time and farmers have more tendencies on the importance of savings, experience also increases proper management of farmers' resources. The findings of the study tally with (Tanget al. 2010).

Access to extension services level of the household head was found to have the positive relationship with the dependent variable. The result indicates that through government extension program farmers' ability to save increases with the assistance of the extension agents in coffee farming in the study area. Extension services provide essential information to farmers regarding agricultural interventions such as farm production technologies, facilitating farm management, marketing and processing equipment. The results of the study agree with (Sulaiman, Abdulsalam, & Damisa, 2015).

Contrarily to the findings of other scholars farmers who are far from assigned infrastructure such as main road and market place and coffee washing stations find difficulties in marketing their produce as they may face higher transaction costs. Distance to coffee washing stations did not affect farmers ability to save. This is explained by presence of different alternatives in the study area of farmers to sell their produce. The findings of the study tally with (Verhofstadt & Maertens, 2014).

The result indicates that farmers with a high level of perception on savings have a higher probability to save. The result is consistent with the literature. According to the expected utility theory, it is logical that farmers who save have a higher production and financial banks perceive to be financially stable. The findings of the study are in line with (Shaik et al., 2008). Hence the null hypothesis that house hold factors do not influence farmer savings was rejected.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 2, February 2018

Table 1: Household factors influencing savings

Farmer savings	Coef.	Std. Err.	Z	P> z
Age	-0.01	0.02	-0.61	0.54
Marital Status	0.42	0.35	1.18	0.24
Family size	0.00	0.09	-0.05	0.96
Education	0.33	0.25	1.36	0.18
Experience in savings	-0.06	0.03	-2.01	0.05*
Experience in farming	-0.01	0.04	-0.29	0.77
Farm size	1.16	0.24	4.73	0.00*
Extension services	3.65	1.12	3.26	0.00*
Distance to coffee washing stations	0.07	0.04	2.04	0.04*
Farmers' awareness	-0.62	0.62	-0.99	0.32
Famers' perception	1.95	0.47	4.16	0.00*
_cons	-4.60	1.68	-2.74	0.01

Log likelihood = -87.47, Number of Obs =188, LR chi2 (12)= 85.34, Prob>chi2= 0.0000, Pseudo R²=0.3279, Significant at 5 % *

V. CONCLUSION AND RECOMMENDATIONS

It was concluded that farm size, experience in savings, distance to coffee washing station, extension services and perception were key factors that influenced farmer savings. The study recommends that the government and other relevant stakeholders help in the improvement of farmers' household factors such as farm size, physical infrastructure, introducing labour saving and cost effective technologies and land tenure systems, decentralization of physical infrastructures, increase the numbers of extension worker providers to reduce the farmers' extension worker ratio, consulting saving farmers and assisting savers. This study suggests that further research should be taken on farmers' knowledge, awareness on savings.

Statement of no competing interests

We, the authors hereby declare that there are no competing interest in this research and publication.

VI. ACKNOWLEDGEMENTS

This study was largely self-funded by the team of researcher from both Jomo Kenyatta University of Agriculture and Technology (JKUAT). However, the authors greatly acknowledge the support from the institutions for availing ample time to complete this research. The authors are very grateful to the local authorities and the farmers in Karongi District for good collaboration. The local administration facilitated the research team to meet the farmers from different sectors.

REFERENCES

- [1] Anang, B. T., Sipilainen, T., Backman, S. and Kola, J. "Factors influencing smallholder farmers access to agricultural microcredit in Northern Ghana", African Journal of Agricultural Research, 10(24), 2460-2469, 2015.
- [2] Athukorala, P.-c. and Sen, K., "Liberalization and business investment in India", 2001.
- [3] Cheruiyot, T. K., Kimeli, C. M. and Ogendo, S. M., "Effect of Savings and Credit Co-operative Societies Strategies on Member's Savings", 2012.
- [4] Chowa, G. A., Masa, R. D. and Ansong, D., "Determinants of saving among low-income individuals in rural Uganda: Evidence from assets Africa", Advances in Applied Sociology, 2(04), 280, 2012.
- [5] Gedela, S. P. R., Determinants of saving behaviour in rural and tribal households (An empirical analysis of Visakhapatnam District)", International Journal of Research in Social Sciences, 2(3), 108, 2012.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 2, February 2018

- [6] Kantengwa, A., "Financial cooperatives in Rwanda-historical background and regulation", Paper presented at the Expert group meeting on co-operatives Apri, 2009.
- [7] Kibet, L. K., Mutai, B. K., Ouma, D. E., Ouma, S. A. and Owuor, G., "Determinants of household saving: Case study of smallholder farmers, entrepreneurs and teachers in rural areas of Kenya", *Journal of Development and Agricultural Economics*, 1(7), 137-143, 2009.
- [8] Kibret, G. D., Mengestie, S. W. and Degu, G., "Perceptions and Practices of Early marriage of female child from 2009 to 2013 in Sinane district Northwest Ethiopia", *International Journal of Biomedical and Advance Research*, 5(11), 543-547, 2014.
- [9] Matur, E. P., Sabuncu, A. and Bahçeci, S., "Determinants of private saving and interaction between public & private savings in Turkey", *Topics in Middle Eastern and North African Economies*, 14, 2012.
- [10] Musafiri Papias, M., and Ganesan, P., "Repayment behaviour in credit and savings cooperative societies: Empirical and theoretical evidence from rural Rwanda", *International Journal of Social Economics*, 36(5), 608-625, 2009.
- [11] Mutyaba, F., "Determinants of household savings and the effect of household savings on the stock market in South Africa and China: a comparative survey", 2014.
- [12] Sabasi, D., and Kompanyets, L., "Impact of credit constraints on profitability and productivity in US agriculture", Paper presented at the Selected Paper prepared for presentation at the Agricultural & Applied Economics Association's 2015 AAEE Annual Meeting, San Francisco, California, CA, 2015.
- [13] Sebopetji, T., and Belete, A., "An application of probit analysis to factors affecting small-scale farmers decision to take credit: A case study of the Greater Letaba Local Municipality in South Africa", *African Journal of Agricultural Research*, 4(8), 718-723, 2009.
- [14] Sulaiman, M., Abdulsalam, Z., and Damisa, M., "Profitability of sugarcane production and its contribution to farm income of farmers in Kaduna State, Nigeria", *Asian J. Agric. Ext. Econ. Soc.*, 7(2), 1-9, 2015.
- [15] Swasdpeera, P. and Pandey, I., "Determinants of personal saving: a study of salaried individuals in Thailand", *Afro-Asian Journal of Finance and Accounting*, 3(1), 34-68, 2012.
- [16] Verhofstadt, E., and Maertens, M., "Can agricultural cooperatives reduce poverty? Heterogeneous impact of cooperative membership on farmers' welfare in Rwanda", *Applied Economic Perspectives and Policy*, 37(1), 86-106, 2014.
- [17] Wooldridge, J. M., "Cluster-sample methods in applied econometrics" *The American Economic Review*, 93(2), 133-138, 2003.
- [18] Xanthaki, H., "Legislative Techniques in Rwanda", *Present and Future. Eur. J. L Reform*, 15, 95, 2013.
- [19] zu Selhausen, F. M., and Ruhweza, J., "The current performance of business and operations of rural Microfinance Institutions (MFIs) in the Rwenzori region", *Rwenzori Journal*, 1, 77-99, 2011.