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The impact of village banking on dryland rural household poverty alleviation: Case of Kenya's K-REP bank

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ABSTRACT

The research on this paper investigated the impact of one village Bank: Kenya Rural Enterprise Programme Bank. A case study approach was used in which the K-REP programme was given ex post evaluation. The evaluation was conducted for the purpose of drawing best practice lessons on the impact of village banking on poverty alleviation. The research findings were expected to register a significant impact on the incomes of the participants considering the popularity of microfinance institutions in Kenya. The results however showed that even though the K-REP programme was effective in enhancing access to credit and development of small and medium-sized businesses, the chief objective of raising household incomes remained a distant mirage. Few of the community members held shares in the village bank owing to prolonged droughts and hence lack of savings from crop production. Similarly, access to credit facility was undermined by the droughts which eroded the borrowing confidence of households. Consequently, only the main business community in the area fully benefited from the programme. The results led to the conclusion that village banking has the potential to reduce poverty in rural areas of Kenya. However, their operations should be aligned with agricultural production calendar of the target community. Further, integration of strategies such as crop insurance schemes into the bank programme would be relevant towards mitigation of the effects of drought on agricultural production, and cushion farmers against unprecedented income shortfalls.

Keywords: Impact, village, banks, rural, dry land, poverty, alleviation.

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INTRODUCTION

Absolute poverty in Kenya is wide and grave in the drylands which constitute about 83 percent of the country (Kibirde and Grahn, 2008). In terms of income, it is estimated that over 35 percent of the populations in the drylands are poor (REGLAP, 2012). The low incomes are aggravated by lack of basic services. For example, only 25 percent of girls in North eastern Kenya complete primary education compared to 75 percent countrywide. Access to food is also a challenge. In 2011, about 4 million people were affected by droughts requiring close to $US 430 million (REGLAP, 2012).

The scenario has led to a number of interventions including Microfinance with the focus on enhancing access to credit and savings. Access to credit and savings by poor rural households has been a long standing challenge in Kenya. This is mainly because majority of rural population are poor farmers with little potential to save (Geda et al., 2001). Besides, traditional financial institutions tend to shy away from agricultural-based enterprises because of the risky-nature of rain-fed agricultural production (Kibaara, 2006). The situation worsens geographically from highly productive central highlands to the lowly productive Eastern and Coastal lowlands (Kibaara, 2006).

To enhance rural savings and credit in these regions, the Kenya Rural Enterprise Programme (K-REP) spinned off the smallholder Farmer Savings and Credit project through the K-REP Bank in collaboration with Danida

(Danish Technical Cooperation) in 2004. The project uses a village banking model referred to as the Financial Services Associations (FSAs). The association is registered as a self help group under the Ministry of Culture and Social Services. Membership is acquired through purchase of shares. For it to be operational, it requires a minimum of 300 shareholders. The community contributes towards the share capital and setting up of a physical financial transaction structure that acts as a 'banking' hall (Kibaara, 2006).

The main financial services offered are; compulsory savings, voluntary savings, fixed deposit, money transfer, business loans, agricultural loans, education loans, emergency loans and safe deposit. The financial services are open to the non-shareholders at a higher fee. Each FSA operates a bank account with a link mainstream bank located in the nearest town center where surplus money is deposited and money transfer is transacted. Members interested in borrowing loans are required to be part of a group. In case of default, the group guarantee to repay the loan which amount averages $US 72. The borrower is loaned three times the amount of accumulated shares. The loan attracts an interest rate ranging between 3 and 7% per month on reducing balance, depending on the loan type, repayment and credit history. The loans are insured at a small fee averaging $US 0.8 per month.

The village banking initiative was hypothesised to significantly improve incomes and alleviate poverty among the smallholder farmers in the rural areas of Kenya. The discourse behind the hypothesis is that rural households have incomes aligned to the seasonality of the agricultural production characterising their economy. During harvests, surplus is sold and invested in livestock as security for dry or lean seasons. However, natural disasters like droughts and diseases destroy the livestock investment rendering the households poor and dependent on external aid for food and agricultural inputs such as seeds (Muyanga et al., 2007). Often, the cycle repeats itself. To break the cycle, it was expected that farmers would sell crop and livestock surplus and save it in the village bank. So the asset values of households would build up through accumulation of shares and savings. The bank would multiply the wealth of the shareholders through provision of other services such as credit, advanced also to non-shareholders. The credit would facilitate rural households to invest in diverse businesses and escape poverty.

The research on this paper tests the hypothesis that participation in the K-REP village bank has significant impact on the level of household aggregate income and hence poverty alleviation.

METHODOLOGY

The research was located in Makueni. This is one of the 36 dryland districts of Kenya characterised by hot and dry climate with average annual rainfall as low as 400 mm (GOK, 2006). Livelihoods here are mixture of agro-pastoral systems and include fragmented irrigated areas, wetlands and extensive national parks. The district was selected because of its high household poverty levels (over 40%) and presence of K-REP programme which was target for evaluation. The choice of K-REP Bank programme was based on the reports that Microfinance interventions were highly relevant for rural poverty alleviation.

The study used ex post method to evaluate the impact of K-REP Bank on household income. Ex post evaluation made randomization and access to pre intervention data impossible. Therefore, non equivalent quasi experimental group design was used involving treatment group (those who participated in Programme) and control group (those who did not participate in K-REP). The treatment group of 29 households was randomly selected from the list of 94 K-REP members. The control group of 57 households was randomly picked from the project areas constituting of members who had no access to banking; and had similar social characteristics as the treatment households.

All the sampled households were addressed with structured questionnaires to gather demographic and income data. The data was analysed using SPSS. To determine whether participation in K-REP had significant impacts, the standard treatment effects model of the following form was applied according to (Geda et al., 2001):

$$Y_i = \beta X_i + \delta I_i + \mu_i \quad (1)$$

$$I_i^* = \alpha Z_i + \varepsilon_i \quad (2)$$

$I_i = 1$ if $I^*_i > 0$, otherwise $I_i = 0$,

Where, Y_i was the per capita aggregate income (used as proxy for poverty) of a particular household I, X_i was vector of explanatory variables; I_i was the dummy for participation in K-REP; and Z_i was the vector for the variables explaining participation. The base equation (2) cannot be estimated directly because the decision to participate may be determined by factors which also affect aggregate income. In this case, the error terms, μ_i and ε_i in the two equations will be correlated, resulting to biased estimates on the participation parameter δ. To correct for the endogeneity bias, a joint normal error distribution was assumed and a two-step regression run. In the first step, the decision to participate in the intervention was modeled and the residuals used in the second - step regression as explanatory variables (Ravallion, 2001).

Participation was modeled as dichotomous choice problem since it is had binary response values (0, 1) (Greene, 2000). In the case of this study, a cumulative distribution of μ^i was assumed and a logit model (Equation 3) was used in the first step (Imbens, 2004; Bollen et al., 2007).

$$y_i = \sum_{n=1}^{n} x_i' \ \beta + \mu_i \quad (3)$$

Where, $\beta = \beta_1, \beta_2 \ldots \beta_k$ and $x' = X_{i1}, X_{i2} \ldots X_{ik}$; and y_i is unobservable latent variable represented by a dummy variable y defined by y = 0 if $y_i < 0$, and y = 1 otherwise.

The maximum likelihood function for the logistic model leads to the following expressions:

$$Prob(i = 1) = 1 - F\left(-\sum x_i' \beta\right) = \frac{e^{x'i\beta}}{1 + e^{x'i\beta}} \quad (4)$$

$$Prob\ (i = 0) = F(-\sum x'i\beta) = \frac{e^{-\sum x'i\beta}}{1 + e^{-\sum x'i\beta}} \quad (5)$$

Where, Equation 4 represents the probability that a household

participates in an intervention; and Equation 5 is the probability of not participating. X_i represents the level of the ith variable expected to influence the decision taken. B is the coefficients to be estimated. In addition to correcting for endogeneity bias, the two-step regression corrects for selection bias arising from unobserved variables (Imbens, 2004; Lee et al., 2005).

The second step was based on multiple regression model. In such cases involving two regressions, the estimated errors in the second stage regression are biased and need to be adjustment (Lee et al., 2005). However, Bollen et al. (2007) show that the gains from adjustment do not change substantially the test results. No adjustments were done in the present analysis.

Explanatory variables for the participation model included attributes of the intervention and individual characteristics of participants. The intervention attributes were expected to be constant among participants, controlling for socio-economic characteristics of households (Wollni and Zeller, 2007). Following previous studies (ZBinden and Lee, 2005; Wollni and Zeller, 2007), these include the age and education level of the head of the household, household size, area under crop cultivation, proximity of the household to the intervention and land holdings; the β_s are the coefficients to be estimated. Since some variables affect both participation in intervention and aggregate income, introducing them in the models would cause errors (Imbens, 2004). Instrumental variables were used in the regression for participation (Heckman, 1997; Lee et al., 2005). The instruments selected were the distance (km) of participants from the intervention offices (location) and the age (years) of the head of the household. Households living close to the intervention offices have more access to the intervention in terms of time and information and are more likely to participate than those relatively far off (Pitt, 1993). Age was also expected to negatively affect participation as relatively younger people are more responsive to new ideas (Nzomoi et al., 2007).

Per capita aggregate income was the sum of mean farm, nonfarm and remittances received in a year divided by the household size (adult equivalents). Farm incomes were based on local market value of farm products of the households both consumed and marketed. Age was expected to have negative impact on aggregate incomes as older people may be marginalised in non-farm employment opportunities. The level of education was expected to have a positive impact income through better access to salaried employment. The dummy for participation was expected to have positive impact due to significant effect on access to credit and savings.

RESULTS

Socio-economic characteristics

Table 1 shows the comparison of socio-economic parameters between the treatment (K-REP) and control groups. K-REP participants are significantly closer to the offices compared to non-participants. But participants are gender-balanced. The age and household size of participants are also significantly higher than those of the control group. Subsequently, we determine if these factors determine participation based on logit model.

Determinants of participation in K-REP

Table 2 shows the determinants of participation in K-REP. As expected, location (distance of the participants to K-REP offices) of the households was significantly influential on participation ($P < 0.05$). Households located close to K-REP offices were more likely to participate than those far off.

Before analysing the impact of K-REP on aggregate incomes, we evaluated the impact on the intermediate project outputs: access to credit and savings, and development of small and medium businesses (SMEs). This is given subsequently in which participation was used as explanatory variables in logit regressions for identifying the determinants of access to credit and savings which could have subsequencial effect on income.

Impact of participation on household savings and credit and business

The results of the logit regressions undertaken to determine the impact of participation on credit and savings are shown in Table 3. Among the variables included in the models, participation in K-REP had significant positive influence on access to credit and savings ($P < 0.01$) and development of SMEs ($P < 0.01$).

To determine if the effectiveness in access to credit had impact on household incomes, a multiple regression was run on aggregate incomes against participation and other variables.

Impact of participation on household aggregate income

The figures in Table 4 summarize results of the linear multiple regression of aggregate household income.

The results show that the size of the household had significant positive influence on the aggregate household income. The age and education level of the household head had no significant effect. Participation in K-Rep has a negative relation with aggregate income though not significant.

DISCUSSION

Participation is negatively associated with location (Table 2). Households close to K-REP offices were more likely to participate in the programme than those relatively far. This is either because they were informed or because of convenience or both. However, demographic characteristics do not affect the decision to participate in K-REP. The results contradict the findings of other studies who find household demographic characteristics deterministic of participation e.g. Nzomoi et al. (2007).

The findings that participation in K-REP has positive impact on credit and savings (Table 3) concur with

Table 1. Statistical (ANOVA) comparison of the means of the explanatory variables between K-REP (treatment) and the control groups.

	Location (km)	Gender (F = 1, M = 0)	Age (yrs)	Education (yrs)	No. employed members	Household size (adult equivalents)	Cropped area (acres)
K-REP (N = 29)	12.0** (2.7)	0.27 (0.45)	52.1** (13.1)	6.9 (4.1)	1.3 (1.4)	5.5** (1.5)	3.6 (1.9)
Control (N = 57)	69 (54.0)	0.22 (0.42)	43.0 (10.2)	6.9 (2.3)	0.9 (1.1)	4.3 (1.8)	3.3 (2.1)

Mean and standard deviation in parenthesis. Note: ***, ** and * denote statistical significance at 99, 95 and 90 percent respectively. Location is the household distance from the intervention's offices.

Table 2. Results of Logit Model to identify determinants of participation in K-REP.

N	Coefficient	Std error
Location (km to K-REP offices)	- 0.18***	(0.06)
Age (years)	0.05	(0.04)
Constant	2.92***	(0.8)
Model summary		
Chi square	49.0***	
-2 log likelihood	69.8	
R^2	0.609	
Percent correctly predicted		
0	78.9	
1	93.1	
Mean	83.7	

Note: Project participation is dichotomous (0= not participation, 1 = participated). ***, ** and * denote 99, 95 and 90 percent CL, respectively.

Table 3. Results of Logit Model to identify determinants of access to credit and savings and SMEs in the K-REP.

N=86	Credit and savings	Development of SMEs
Education level (years)	0.16 (1.0)	-0.07 (0.2)
Cropped area (acres)	0.06 (0.2)	0.08 (0.2)
Household size (adult equivalents)	-0.32 (0.2)	-0.29 (0.2)
Dummy participation	2.71 (0.8)***	3.63 (0.9)***
Probability participation	-0.67 (1.4)	0.78 (1.5)
Constant	-2.20 (1.4)	1.46 (1.4)
Model summary		
Chi-square	28.1***	39.5***
-2loglikelihood	81.8	76.7
R^2 (Nagelkerke)	0.386	0.497
% correctly predicted		
0	86.0	90.2
1	65.5	68.6
Total	79.1	81.4

Standard errors in parenthesis. Note: ***, **, and * denote 99, 95 and 90 percent Levels of Confidence, respectively.

Table 4. Determinants of mean aggregate income.

Parameter	Coefficient	Std error
Constant	10.4***	(0.26)
Location (km)	40.5	(18.9)
Gender (head)	0.18	(0.03)
Education level	0.55	(0.01)
Number embloyed members	0.41	(0.04)
Household size (adult equivalents)	0.14***	(0.31)
Cropped area (acres)	0.67	(0.03)
Dummy participation (0,1)	-0.31	(0.25)
Probability participation (0,1)	-0.44	0.16)
R^2 adjusted	0.296	0.322
F –statistic	5.2***	6.2***
SEE	0.57	0.48

Standard errors in parenthesis. Note: ***, **,* denote statistical significance at 99, 95 and 90 percent CL, respectively.

Kibaara (2006) who report positive effect of FSAs in Kenya. Another study also indicated that 38% of the total clients had access to credit (Westley, 2005). However, participation in K-REP did not have positive impact on aggregate incomes as was expected. Apparently, the observed access to savings and credit did not translate into improved investment in SMEs and eventually into significantly better incomes.

The results show that the size of the household had significant positive influence on the aggregate household income, probably due to contribution in terms of wages and salaried employment.

The results could be explained by combination of factors. The first is the duration of participation. According to Duft and Sindhaham (2004), the impact of microfinance depends on the duration of participation. Participation of an average of four years is expected to lead to significant impact. By the time of data collection, the K-REP was in existence for about 3 years. The relatively short participation period may have affected impacts of the intervention. The results could also be explained by what Humberstone and Singer (2006) refer to as lack of complementary services. They argue that credit alone without complementary services (related to poverty) such as housing, medical and funerals expenses may not have maximum impact in Africa. This is due to presumed diversion of credit to the more pressing needs, rather than in productive purposes such as business investment. Other reasons were poor management of local financial groups, marginalization of some participants and small loan amounts, as reported by the participants (sollicited information from respondents). Similar arguments were reported from Northern Kenya (Orsterloh, 2001). Thirdly, K-REP membership may have attracted the poorest members of the community who have no savings. This means that that they may need to have access to large amounts of credit to facilitate investment in relatively large business ventures which would result in income improvement. This was observed by Westley (2005) and Kibaara (2006) who report that the credit extended to participants is low. The respondents in this research mentioned low credit amounts and high interest rates as problems associated with the K-REP programme.

The results lead to the rejection of the hypothesis that participation in K-REP village bank would have positive impact on the household income. Evidently, participation does not lead to alleviation of poverty among this social group.

CONCLUSION

The findings of this research have confirmed reports that poverty alleviation in the rural areas of the drylands cannot be achieved by single interventions like village banking. Village banking however does provide much needed credit which may be used for short-term food consumption or emergency domestic purposes. To be of significant impact on poverty alleviation however, this study suggests that K-REP (and perhaps other microfinance institutions) needs to revise the design to make credit services more beneficial to the poor target community. This should include raising the loan amounts, down-rating the interest rate and aligning the terms of loan repayment. Considering that agriculture is the mainstay of the study area, K-REP may consider harnessing loan repayments with crop production cycles; and provision of crop and livestock insurance services against weather uncertainties.

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