

IMPACT OF VILLAGE BANK MEMBERSHIP ON HOUSEHOLDS' WELFARE IN NGAKA MODIRI MOLEMA DISTRICT MUNICIPALITY, SOUTH AFRICA

William Djamfa Mbiakop, Abayomi Samuel Oyekale✉

North-West University Mafikeng Campus, South Africa

Abstract. Access to credit is one of the key elements in raising agricultural productivity, and it is a powerful channel for poverty alleviation among smallholding farmers. This study examines the effect of village bank membership on the welfare of smallholder farmers in Ngaka Modiri Molema District Municipality (NMMDM). Using cross sectional data from three villages where village banks was established in the study area, a representative sample of two hundred (200) farmers was obtained using structured questionnaires. Descriptive statistics and simultaneous equation model (SEM) were used for data analysis. The results show that membership in village banking increased per capita expenditure by 83.85% and variables such as income per capita ($p < 0.01$) and technology applied ($p < 0.05$) positively influenced per capita expenditure. It was concluded that village bank members had better socio-economic characteristic which can help them to enhance their welfare. Therefore, creation of more community based village banks holds significant welfare implications in South Africa.

Keywords: smallholder farmers, village bank, simultaneous equation model (SEM), welfare, North West Province

INTRODUCTION

The performance of agriculture in South Africa can be seen in the context of historical supports that were previously given to largely white commercial farmers as a key component of the apartheid government's

policies of economic discrimination and marginalization. In this way, the South African agricultural industry is comprised of two groups of operators. The first group is comprised of commercial farmers that use advanced farming practices with modern technologies and improved inputs of high productivity. The second group is made up of smallholders or traditional farming systems that are practiced by farmers in the homelands mainly with primitive farm implements. Although subsistence or traditional farming system cannot be promoted for significant agricultural transformation, emerging South African farmers have no choice given their low access to land and other required farm inputs. Therefore, these farmers are characterized by low resource productivity, poor access to suitable farmland and water resources, poor access to improved farm inputs, poor development of farm infrastructure, inadequate access to agricultural market information, and most importantly, very poor access to agricultural credits (Sebopetji and Belete, 2009).

It should be noted that despite its low productivity, subsistence agriculture offers an important livelihood to poor households and can play some vital roles in reducing poor households' income shocks and vulnerability to poverty. It also contributes significantly to rural households' food security, sustainable livelihoods and helps in enhancing farm households' resilience and their coping capability with inflation. Policy makers have often addressed food insecurity in rural areas through

✉PhD Abayomi Samuel Oyekale, Department of Agricultural Economics and Extension, North-West University Mafikeng Campus, Mmabatho 2735, South Africa, e-mail: asoyekale@gmail.com

provision of assistances that would enhance productivity of subsistence agriculture. One available policy option is pursuit of sustainable agricultural intensification through increase in the use of improved farm inputs such as inorganic fertilizers, organic manures and other investment opportunities in soil conservation technologies (Baiphethi and Jacobs, 2009). Despite existence of many government's programs to support emerging farmers, the majority still struggle to increase their productivity due to several financial limitations.

Furthermore, agriculture's share in national annual budgets in many African countries is quite low. Similarly, commercial bank's commitment towards agricultural financing is currently poor. This is evident from amount of loans that is granted to farmers by commercial banks which is lower than what is made available to the manufacturing and other non-agricultural sectors. Although some other options for financing rural enterprises exist in South Africa, access of poor households is often limited due to lack of access to requisite information, collateral requirements and lack of proximity. Similarly, socio-cultural problems that are associated with loan administration in rural areas increase the risk of lending with significantly high transaction and supervision costs (Okurut et al., 2004; Spio, 2002). Therefore, microcredit programs through rural banking represent the main credit channel for rural people through provision of collateral-free loans credit facilities which are considerably accessible and affordable to poor farming households in South Africa. This leverage holds significant prospects for enhancing agricultural productivity through enhancement of farmers' liquidity for ease of agricultural inputs' procurement and payment of hired farm labourers (Dzadze et al., 2012).

Globally, the contributions of financial institutions to the promotion of operational and technical efficiencies of small enterprises cannot be over-emphasized. This also applies to South Africa, where access to financial services holds significant prospects for promoting economic development and growth through poverty alleviation. Since inauguration of democratic government in 1994, many policy driven changes have been carried out to assist subsistence black farmers by establishing many financial institutions which have the mandates of promoting smallholders' agricultural development. From the failure of the Land Bank, government introduced the Macro Agricultural Finance of South Africa (MAFISA)

with the goal of providing financial assistances to smallholders and emerging farmers while Land Bank focuses on commercial farmers. MAFISA's failure can be traced to inadequate capacity in handling loan requests, delay in setting up credit administration committee, bureaucratic processes and prolonged period of loan application, approval and disbursement (Sebopetji and Belete, 2009).

Operations of the village banks are meant to bring financial services closer to rural people. This is of significant economic relevance because credit markets are essential economic institutions for transforming rural development initiatives into viable sources of economic livelihoods. Financial service is thus a requisite for many poor people in developing countries to transform their production activities for essential reaping of economies of scale advantages. Therefore, policy makers in developing countries have identified timely availability of credit as a prerequisite for leap frogging the economy into persistent growth, stability and development.

According to Coetzee (2008), South African rural society can be divided into four distinct groups based on differences in their need of financial services. The first group was referred to as the commercial farmers that operate on a very large scale and require large sums of financial assistances that could be matched with the required collaterals. The second group is comprised of commercial farmers who generally operate on a lower scale and possess insufficient collaterals for obtaining investment priority among commercial banks. The third and fourth groups are comprised of the bankable poor and the non-bankable poor, respectively. The former is comprised of small scale farmers whose investment portfolios are at variance with mandates of commercial banks. Therefore, absence of collateral among this group compels their patronage of informal financial institutions for small loans which are often repayable in a short time with high interest.

Microcredit schemes such as village banks provide loan to poor farming households with no requirement of collateral in order to promote rural micro enterprises and self-employment (Rahman, 1999). In addition, some other microfinance companies in South Africa are directly involved in socio-economic empowerment of previously disadvantaged poor rural dwellers. The Land and Agricultural Bank's microcredit scheme primarily provides financial assistances to poor people

to set up small businesses, especially women (Dolny, 2001). This is in line with the need to ensure pro-poor-ness of financial services in order to make the highest impacts on local economies. Barham (1996) noted that informal credit societies are of fundamental relevance because of their proximity to the poor who could seek prompt financial assistances from them at very low rate of interest. Such unions overcome essential information asymmetry problem that is critical to rising loan default rates among commercial banks. The relevance of informal lending schemes becomes critical given that interventions of government in the provision of credit to poor households has not yielded the expected results (FinMark Trust; 2013). This study intends to determine the effects of village banks on welfare of smallholder farmers in the Ngaka Modiri Molema District Municipality (NMMDM) of the North West Province.

MATERIAL AND METHODS

Description of the study area

NMMDM is formally divided into five areas which are Mafikeng, Ratlou, Ramotshere Moiloa, Distsobotla and Tswaing. The population of the area was around 842,699 in 2012, with 93.9% being black Africans. The District covers 31039 square km and shares boundary with the Republic of Botswana (Local Government, 2015).

In order to achieve the study's objectives, the target population of this study comprises members and non-members of village banks in NMMDM who are smallholder farmers. From the five villages where village banks operate in the district, three villages were randomly selected. From the selected three villages, a list of village bankers was obtained. From the list of village bankers, 100 people were randomly selected for interview. Since the focus of the study was on effect of membership in village bank on welfare, non-members of village banks were used as a control group. Therefore, 100 non-members were also interviewed from those selected villages in order to serve as the basis for comparison. The inclusion of non-members helped to compare outcomes of treated smallholder farmers with those of a control group that has not been treated. The total sample size was 200 household heads who were either members or non-members of village banks.

Empirical specification of simultaneous equation model

Two Stage Least Square method was used to analyze the impact of village bank's membership on welfare of smallholder farmers. The model is applicable because of the endogenous nature of village bank membership variable (Gujarati, 2003), which is a critical independent variable in specified model (Oczkowski and Farrel, 1998). The model that was estimated can be specified as presented in equation 1:

$$Y_i = \alpha + \beta_j \sum_{j=1}^k + \gamma Z_i + v_i \quad (1)$$

α , β_j and γ are the parameters to be estimated. Y_i is the log of per capita expenditure. Per capita expenditure was computed as total monthly expenditure divided by the number of household size. Expenditure data of households were used as proxy for welfare due to its being recognized as a good indicator of households' permanent income and therefore a good reflection of average welfare in the long term period (Narayan and Nyamwaya, 1995; Deaton, 1997). Also, data on households' expenditures are easier to collect and are less subjected to deliberate falsification which often characterizes income data in many developing countries (Deaton, 1997).

The endogenous variable represents membership in village bank which was coded as 1 for participants and 0 for non-participants. In order to carry out the analysis, we used loan amount satisfaction, auto-consumption and number of time eating per day and total assets as instrumental variables. These variables need to satisfy the condition of being highly correlated with village bank membership, but not correlated with per capita expenditure. Also, X_{ij} represents other included socioeconomic variables of farmers which are gender of farmers (male = 1, 0 otherwise), dummy education (formally educated = 1, 0 otherwise), dependency ratio, land size, logarithm of monthly income (South African Rand (R)), diversification of product (yes = 1, 0 otherwise), distance from household head to village bank office (kms), use of hired labor (yes = 1, 0 otherwise), marital status (married = 1 0 otherwise), primary occupation (yes = 1, 0 otherwise), use of improved technology (yes = 1, 0 otherwise) and farming experience. The stochastic error terms is denoted by v_i .

In the proposed model, test for multicollinearity showed that only age and farming experience were highly correlated. Therefore, farming experience, which

explained the model, better have been retained. We also carried out test for heteroskedasticity using Breuch-Pagan test. The results indicated no presence of heteroskedasticity. In order to ensure that Ordinary Least Square (OLS) regression would not produce more efficient parameters, we evaluated the endogeneity of village bank membership variable using Durbin Score and Wu Hausman tests. Statistical significance of both tests ($p < 0.05$) indicated that village bank membership should be treated as an endogenous variable.

Using STATA 12 software, the validity of selected instruments was justified by the post estimation tests of instrumental variables after running the 2SLS regression with per capita expenditure as dependent variable. When we tested for weak instrument, the computed partial R square was high (0.3717) and the F -statistic (27.069) was slightly higher than all variable of the 2SLS and LIML between 10% and 25%. These results proved that the selected instruments are strong.

RESULTS AND DISCUSSIONS

Descriptive analysis of data

The results in Table 1 show that among those farmers who received loan from village banks, 42% were satisfied with the amount of loan received, while only 9% of non-members who received loan from other sources beside village banks were satisfied. This is an indication that the majority of the respondents were not satisfied with the amount of loans that they received irrespective whether they belong to village bank or not. It also shows that satisfaction was higher among village bank members. Despite the low rate of satisfaction, however, most of the village bank members (80.9%) used the loans obtained for agricultural purposes, compared to non-members with only 40%. This gives some indication on supervision of loans obtained from village banks to ensure strict compliance with the purpose for which they were obtained.

Table 1. Socioeconomic characteristics of respondents

Qualitative dummy variables	Categories	Members of village bank, number (100)	Non-members of village bank, percentage	Number (100)	Percentage
Loans satisfaction	Yes	42	42	9	9
	No	47	47	21	21
	Not qualified	11	11	70	70
Purpose of loan (for qualified for loan)	Agricultural purpose	72	80.90	12	40
	Personal business	7	7.86	10	33.34
	Family issues	10	11.24	8	26.66
Main occupation	Full time farmer	60	60	67	67
	Part time farmer	40	40	33	33
Number of eating times/day	1	0	0	39	39
	2	41	41	61	61
	3	29	29	0	0
	4	30	30	0	0
		Mean	Standard deviation	Mean	Standard deviation
Dep ratio	Dependency ratio	1.75	0.06	1.73	0.04

Source: field survey data, 2016.

Table 1 further shows that most of the village bank non-members (67%) and village bank members (60%) were full time smallholding farmers. This shows that there were more non-members who were full time farmers compared to the number of village bank members. This result was not anticipated if one considers the importance of belonging to a farming group in a rural area. Over 90% of food produced in the country comes from rural areas. However, this result can be explained from the fact that village banks do not focus solely on full-time farmers (Sikwela and Mushunje, 2013). Utilization of such loans for small scale farming business is highly encouraged, whether the applicant is a full time farmer or not.

Table 1 shows that average dependency ratio for village bank members was slightly greater (1.75) than that for non-members of village bank (1.73). This is an indication that non-members of village banks could provide more labour (low dependency ratio) and contribute to family incomes. However, present economic crises and deepening poverty levels are making rural households to embark on family planning measures in order to reduce the number of children in their households (Hlongwane et al., 2014). Village bank staff members are also sometimes involved in provision of such counseling to their clients.

Results from table 1 also show that most of the non-members of village bank (61%) as well as members (41%) ate twice a day. This is contrary to the expectation that people should eat on average three times a day. In addition, 39% of non-members are shown to be eating only once a day. This points to a persisting food problem and poverty among rural households in South Africa.

Table 2 shows that 53% of village bank members and 57% of non-members spent most of their income on domestic household expenditures rather than farming operations. Precisely, only 47% of total expenditure for members and 43% of total expenditure for non-members were for agricultural purposes. The results also shows that the major sources of income of smallholder farmers were farming (representing 75% of total income of members and only 57% of the total income of non-members). However, off-farm income represented 22% of the total income of non-members and 17% of the total income of members. The contribution of spouses represented 21% of the total income for non-members of village bank and only 8% of the total income for members. The results show that most members of village banks (70%) had a positive gross margin above specified cost compared to the majority (60%) of non-members of village banks with a positive gross margin. This can be explained by the high percentage of off-farm income and

Table 2. Annual expenditure, sources of income and gross margin by membership

Characteristics	Members of village banks – amount	Non-members of village banks (%)	Amount	Percentage
Expenditure	5 406 600		3 898 200	
Household	2 869 200	53	2 212 200	57
Farming	2 537 400	47	1 686 000	43
Income	7 544 142		4 721 400	
Contribution of spouse	580 800	8	1 002 000	21
Off-farm income	1 251 600	17	1 050 000	22
Farm income	5 711 742	75	2 669 400	57
Gross margin above specified cost with off farm income included	N(100)	(%)	N(100)	(%)
Positive	70	70	60	60
Negative	30	30	40	40

Source: field survey data, 2016.

farm income from members of village banks compared to non-members of village banks.

Effect of Village Bank Membership on Welfare

Results from Table 3 show that seven variables were statistically significant in the estimated Two Stage Least Square regression. Membership in village bank is highly significant at 1% level. Thus, it is one of the main determinants of per capita expenditure. Membership in village bank parameter is with positive coefficient (0.8385). Thus, holding other variables as constant, village bank participation increases per capita expenditure by 83.85%. This finding supports the work of Dupas and Robinson (2013), Van Rooyen et al. (2012) and

Fasoranti (2013) who found that participating in savings group was promising for promoting entrepreneurial investment in agriculture and therefore increase expenditure which will have a negative effect on poverty levels.

Marital status has negative and statistically significant parameters ($p < 0.01$). This implies that other variables being held constant, being married decreases per capita expenditure by 26.83%. This is not in line with economic theory where marital status is expected to positively influence expenditures. It is expected that when people get married, their expenses increase because of increase in the number of dependents. However, high rate of divorce may make single parents (especially women) incur more expenses because they are often charged with the responsibility of child care in

Table 3. Simultaneous Equation model of the impact of village banks membership on per capita expenditure of smallholder farmers

Log per capita expenditure	Coefficient	d_y / d_x	Robust standard error
Membership	0.8385**	0.8385**	0.1551
Gender	0.0690	0.0693	0.0625
Marital status	-0.2683**	-0.2683**	0.0638
Education level	0.0036	0.0036	0.0270
Dependency ratio	-0.1202*	-0.1202*	0.06
Main occupation	-0.3073**	-0.3073	0.0763
Farm experience	0.006	0.006	0.0113
Land size	-0.003	-0.003	0.0163
Diversification	0.0427	0.0427	0.0635
Hired labor	-0.0107	-0.0107	0.0654
Technology apply	0.1445*	0.1445	0.0644
Office distance	-0.1372**	-0.1372**	0.0318
Log income per capita	0.4141**	0.4141**	0.0651
Constant	5.55		0.6607
Number of observation	200		
Wald chi ² (12)	291.30		
Prob > chi ²	0.0000		
R-squared	0.5202		
Root MSE	0.4144		

Variables significant at: * 5%, ** 1%.

Source: computed from field survey data, 2016.

the event of marriage collapse. This finding goes in line with those from Bime and Mbanasor (2011) in Cameroon where due to economic circumstances being married means sharing of responsibilities.

Dependency ratio has a parameter with negative sign and statistically significant ($p < 0.05$). A unit change in dependent ratio decreased per capita expenditure by 12.02%. This is consistent with literature such as Okpala (2012) and Towungana (2015) where results revealed that dependency ratio was negative and statistically significant. A household with less efficient labour will not decide to get credit easily because they do not earn much income. This will decrease their production because of lack of input and therefore affect their expenditure negatively.

From the results shown in Table 3, main occupation of the household head was negatively signed and statistically significant ($p < 0.01$). This means that being a full-time farmer decreases smallholder farmers' per capita expenditure by 30.73%. This result is a reflection of growing poverty among farmers. In the absence of any other sources of income, some small scale farmers are unable to meet their family food needs. Talukder (2014) revealed that occupation is an essential determinant of household income and expenditure.

Technology usage parameter is with positive sign and statistically significant ($p < 0.05$). This implies that farmers who applied technology had their per capita expenditure being higher by 14.45% when compared with those who did not. This is consistent with the study conducted by Chandra and Skinner (2012). The use of technology generally increases income which would in turn increase expenditures.

Distance variable has negative coefficient that is statistically significant at 1% level. This implies that distance from household head to village bank office was a determinant of per capita expenditure. The negative sign means that the more farmers are closed to the village bank office the more their expenditure increases. Proximity may imply ability to access financial assistances from village banks. This is in line with the work of Dupas et al. (2014) who submitted that the higher the transaction cost, the less farmers would participate in village bank.

Per capita income has positive coefficient and it is statistically significant ($p < 0.01$). This implies that one unit increase in per capita income will increase per capita expenditure by 41.41%. This result is supported by

several previous findings that indicated income as a major determinant of welfare. Many of such studies have emphasized that household income and expenditure are highly correlated.

CONCLUSION

This study concludes that in general members of village bank had better socio-economic characteristics which could help them to enhance their welfare better than smallholder farmer who are non-members of village bank. The SEM estimates indicate that membership increases per capita expenditure. Results also reveal that variables such as per capita income and technology applied were positively significant on per capita expenditure, while variables such as marital status, dependency ratio, main occupation and distance negatively influenced per capita expenditure. Smallholder farmers in South Africa in general and North West Province in particular have failed to access credit market opportunities because inadequate access to such services. This study underscores the need to promote microloans to rural people in order to advance their production activities for rapid poverty alleviation. Also, such an initiative should consider the spatial distribution of rural financial facilities with proper coverage at minimum possible distance.

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