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EFFECT OF PORTFOLIO TO ASSETS RATIO ON FINANCIAL PERFORMANCE OF MICROFINANCE INSTITUTIONS IN KENYA

Wycliffe Mugun, PhD Candidate
Part-Time Lecturer Kaimosi Friends University College,
Department of Economics, Kenya
Email:mugunwycliffe@gmail.com

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ABSTRACT

Microfinance is the provision of a broad range of financial services such as deposits, loans, payment services. The sector reaches out to 832,794 active borrowers with a loan book amounting to Kshs.28.6 billion and reporting 26.4 % annual growth in Kenya. However, owing to the fact that there is limited literature on the determinants of financial performance, various studies conducted indicate divergent views on the effect of portfolio to assets ratio on financial performance. For this reasons it is not clear whether or not portfolio to assets ratio affect financial performance of microfinance institutions (MFIs) in Kenya.The main objective of the study was to investigate the effect of portfolio to assets ratio on financial performance of MFIs in Kenya. Fixed effect model was the preferred model based on the Hausman specification but the study used random effect model since fixed effect model gave insignificant results. Random effect model results revealed that debt to equity ratio had a negative but insignificant relationship with return on assets ratio. Portfolio to assets ratio had a positive relationship with financial performance but the relationship was not significant. Operating expense ratio had negative and significant relationship with return to assets ratio. The coefficient for lagged return to assets ratio was 0.4733, debt to equity ratio was -0.0026, portfolio to assets ratio was 0.0090 and coefficient for operating expense ratio was -0.1857. P-values for DER was 0.878 , PAR, 0.686 and OER, 0.000.The results for lagged ROA the coefficient was positive and was statistically significant. ARDL model on portfolio to assets ratio preferred model random effect findings revealed that PAR had positive and insignificant relationship with return to assets ratio. Lagged PAR had positive and significant relationship with return to assets ratio.

Keywords: **Microfinance, Financial ratios, Financial performance, Kenya.**

1.0 INTRODUCTION

1.1 Concept and Scope of Micro Finance

According to Robinson, (1998) micro finance refers to the provision of a broad range of financial services such as; deposits, loans, payment services, money transfers and insurance products-to the poor and low

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income households for their micro enterprises and small businesses to enable them to raise their income levels and improve their living standards. Anan (2002) further elaborates this by describing the core principles of micro finance to include; access to appropriate financial services among the poor-micro financing is based on the premise that the poor has the capability to repay loans, pay the real cost of loans and generate savings, micro finance is an effective tool for poverty alleviation, microfinance institutions must aim to provide financial services to an increasing number of disadvantaged people, microfinance can and should be undertaken on a sustainable basis and microfinance NGOs and programs must develop performance standards that will help define and govern the micro finance industry towards greater reach and sustainability. Gungen (2002) described the features of microfinance based on the type of client, lending technology, loan portfolio, organizational ideology and institutional structure. On the client type for micro finance, Gungen (2002) noted that clients are characterized by low income, employment in the informal sector, low wage bracket, lack of physical collateral, closely interlinked household/business activities.

According to Lafourcade, Isern, Mwangi and Brown, (2005) microfinance institutions (MFIs) in sub-Saharan Africa include a broad range of dispersed institutions that offer financial services to low-income clients; non-governmental organizations (NGOs); Non-bank financial institutions, cooperatives, rural banks, savings and postal financial institutions, and an increasing number of commercial banks. Overall, the prospects and processing of MFIs in Africa are dynamic and growing. Africa's MFIs appear to serve the broad financial needs of their clients by offering savings as a core financial service for clients and use it as an important source of funds for lending. MFIs in Africa tend to report lower levels of profitability, as measured by return on assets, than MFIs in other regions, in the world. Among the African MFIs, that provide information for Lafourcade *et al* (2005) research 47 percent posted positive unadjusted returns, regulated MFIs reported the highest return on assets of all MFI types, averaging around 2.6 per cent.The microfinance sector in Africa is expanding rapidly and the institutions have increased their activities. African MFIs are among the most productive globally as measured by the number of borrowers and savers. It's also reported the MFIs in Africa also demonstrate higher levels of portfolio quality with an average portfolio at risk of over 30 days of only 4 percent.

2.0. LITERATURE REVIEW

Muchomba (2012) studied the determinants of commercial banks investment portfolio in Kenya for the period 2007 to 2012. The study used a panel data collected from a sample of 15 banks and the study determinants included rate of return, deposit asset ratio, cash reserve ratio, liquidity by reserve ratio, bank risk, interest rate elasticity, none-performing loans, fee income ratio, bank size and rate of inflation. Hausman test was conducted to assess whether to use the fixed effects estimation or random effect estimation. Also Breusch – pagan LM test of heteroscedasticity was conducted to test if the variance of the residual term was constant over different valves of the explanatory variables. The study revealed that there exists a functional relationship between the commercial banks investment portfolios and the determinants in Kenya context. Also results showed that cash reserve and deposit asset ration have the greatest impact on the investment portfolios. Coefficients of the variables were estimated using Maximum Likelihood Estimation (MLE), regression and correlation analysis was conducted. Weakness arose whereby the study only included Kenyan banks and not Microfinance Institutions in Kenya.

Gongera *et al* (2013) investigated loan portfolio management on organization profitability in the Kenyan commercial banks using cross-sectional data. A descriptive survey research design was employed and sample accessed by the use of both stratified and simple random sampling. Results of the study revealed that public sector banks and private sector banks were not much affected by increasing or decreasing of interest margin. It could therefore be interpreted that the profitability growth of public and private sector banks were not dependent on fluctuation of interest rate although banks have the benefit of high return due to increase or decrease in interest margin. The study applied cross-sectional data and ordinary least squares estimation method was done. Diagnostic tests such as autocorrelation and multicollinearity were

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conducted. However, the study employed weaker methodologies such as ordinary least squares estimation techniques whereas this study has utilized robust methodologies.

Al-Tarawneh and Khataybey (2015) investigated portfolio behavior of commercial banks; the expected utility approach in Jordan using monthly services data for the period 2002 to 2009.Empirical results in general did not render any support for the argument that interest rates are an important determinant for the composition of Jordanian bank portfolio and they did not fully explain the behavior such units. The results however showed that availability of funds is more important in determining the structure of these portfolios. The study employed full information maximum likelihood estimation (FIML) method and correlation analysis in their model. However, weakness was the study employing descriptive statistics and correlation analysis which determine only association. While current study has used robust methodologies such as regression analysis.

Bouslama and Ouda (2014) studied international portfolio diversification benefits in equity investing from the perspective of an American investor in the context of a growing market correlation. Equity returns from 41 countries were used including developed emerging and frontier markets during the period from 1988 to 2009.Different investment strategies employing different risk measures including standard variance, GARCH variance, CVAR and LPM (n) were used to assess the robustness of international diversification benefits. Empirical results showed that economic gains from international equity diversification were still substantial despite the growing market correlations. Interestingly international equity diversification allows obvious reduction of returns variability and minimum loss and this is only for restricted portfolios. The study also found that emerging markets continue to be an important component of well-diversified portfolio. However, the research employed descriptive statistics while current study has used robust methodology.

Ndong (2015) examined the effect of portfolio equity investment flows on equity returns and economic growth in 11 major Africa stock markets. The data panel of 11 Africa countries hosting major stock returns were estimated using least squares method (LS), Two stage least squares (2 SLS), Three stage least squares (3 SLS) and least squares Dummy (LSDV) method over the period 1990-2013. Results indicated that the stock market size is a positive determinant of equity returns there is a simultaneous evolution of equity returns and economic growth; net portfolio equity investment have a positive but not statistically significant effect on equity returns and economic growth. Housman specification test and regression analysis was employed in the study. However, the results were not consistent on portfolio equity investment flows on returns.

Bhattacharya *et al* (1997) examined the productive efficiency of 70 Indian commercial banks during the early stages of liberalizing the sector technical efficiency scores were deliver using a non- parametric data envelopment analysis as well as parametric stochastic frontiers models .Result showed that variation in efficiency scores among banks is due to temporal components ownership component and random noise component. Public owned banks were most efficient followed by foreign banks and privately gunned banks. However, the results are not consistent on changes in productivity growth.

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology that was used in the study. The chapter outlines research design, target population, model specification, data collection, data analysis.

3.2 Model Specification

The model is specified to examine the effect of financial indicators on financial performance of Microfinance Institutions in Kenya. It is a multiple regression model whereby determinants of financial performance are the independent variables and dependent variable is the Return on Assets. Thus we have the multiple regression model of the firm derived and estimated as follows.

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$$ROA_{it} = \beta_o + \beta_1 DE_{it} + \beta_2 PA_{it} + \beta_3 OE_{it} + \varepsilon_{it} \quad \text{…….……..} (3.1)$$

Model I: Autoregressive Distributed Lag Model

The second category of models are specific model which specifies the individual financial indicators against the ROA. The equations are 3.3, 3.4 and 3.5.

(i). Debt to equity ratio on Microfinance Institution

$$ROA_{it} = \alpha_0 + \alpha_1 DE_{it} + \alpha_2 DE_{it-1} + \varepsilon_{it} \quad \text{……..} (3.3)$$

(ii).Portfolio to assets ratio on Microfinance Institution

$$ROA_{it} = \delta_0 + \delta_1 PA_{it} + \delta_2 PA_{it-1} + \varepsilon_{it} \quad \text{…….…..} (3.4)$$

(iii).Operating expense ratio on Microfinance Institution

$$ROA_{it} = \gamma_0 + \gamma_1 OE_{it} + \gamma_2 OE_{it-1} + \varepsilon_{it} \quad \text{……..….} (3.5)$$

ROA_{it} = Return on Assets DE_{it} =Debt to Equity ratio

PA_{it} = Portfolio to Assets ratio OE_{it} =Operating Expense Ratio

i=…n, where n is the number of firms. β_0 =constant/the intercept point of the regression line and the Y-axis. β =is the slope /gradient of the regression line. ε =is the error term.

The expected signs $\beta_1 \geq 0, \beta_2 \geq 0, \beta_3 \geq 0$

3.3 Diagnostic Tests

Diagnostic tests are usually used as a means of indicating model inadequacy or failure. For example in the case of a linear regression model which is estimated by OLS a series of diagnostic tests could be used to indicate whether any of the assumptions required for OLS to be the best linear unbiased estimation (BLUE) appear to be violated. These assumptions include serially uncorrelated and homoscedastic error term, absence of correlation between the error term and the regressions and correct specification of the model. Diagnostic tests play an important role in the model evaluation stage of econometric studies. (Otto, 1994)

3.3.1 Heteroscedasticity Test

Homoskedasticity is one of the assumptions of the classical linear regression model which states that the variance of the errors must be constant. If the errors do not have a constant variance, they are said to be heteroskedasticity (Brooks, 2008).Wooldridge (1999) noted that homoskedasticity fails whenever the variance of the unobservable changes across different segments of the population, which are determined

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by the different values of the explanatory variables. Thus heteroskedasticity refers to a situation where the disturbance variance is no longer constant. They tend to occur where there is a large variation in the size of the independent variable.

3.3.2 Hausman Test

This tests the efficiency and consistency between the fixed effect and random affect estimations. Although the econometric theory recommends random effect estimation for unbalanced panels, a confirmatory test by use of the Hausman specification test is usually carried out to evaluate the efficiency between fixed effect and random effect estimation methods. A rejection of the null hypothesis is when Prob > $Ch_2 = \alpha$ confirms the efficiency and consistency of the random effect in estimating the model, Munyambonera (2012).The Hausman specification is a chi-square test with k-1 degree of freedom, where k=number of regressors.

Table 3.1 Hausman specification test results on the financial Indicators

Coefficients				
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fe	Re	Difference	S.E.
Llroa	.0691465	.4733858	-.4042392	.1240889
Par	.0067674	.0090436	-.0022762	.016294
Der	.000582	-.0026717	.0032538	.0051747
Oer	-.1793176	-.1857857	.0064681	.097838
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 13.55				
Prob>chi2 = 0.0089				

Source: Research data

In the table 3.1 the computed chi-square value at 4 degrees of freedom was 13.55 which is more than the p-value at 0.0089 which is less than 5 % level of significance. This indicates that there was correlation between the unique errors (u_i) and the regressors.Hence the null hypothesis was rejected and fixed effect estimation was favoured against random effect estimations. However the fixed effect model was not a good model thus the study chose the random effect model which gave good results.

4.RESULTS AND DISCUSSION

4.1 Introduction

This chapter summarizes results and discussion which includes summary of the variables, presentation, interpretation and discussion of fixed and random effect regression results.

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4.2 Diagnostic Test Results

4.2.1 Hausman Specification Test

The decision on whether to use fixed or random effects model was reached through Hausman test where the null hypothesis was that, the preferred model was random effects versus the alternative fixed effects. The test was carried to determine whether or not the unique errors (u_i) were correlated with the regressors.The null hypothesis was that there was no correlation between the unique errors (u_i) and the regressors.The Hausman test tested the efficiency and consistency between the fixed effects and random effect estimators. In this test, a rejection of the null hypothesis is when prob $\geq chi^2$, confirms the efficiency and consistency of the random effect in estimating the model.

Table 4.1 Hausman specification test results on the financial ratio

Coefficients				
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fe	Re	Difference	S.E.
Llroa	.0691465	.4733858	-.4042392	.1240889
Par	.0067674	.0090436	-.0022762	.016294
Der	.000582	-.0026717	.0032538	.0051747
Oer	-.1793176	-.1857857	.0064681	.097838
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)				
= 13.55				
Prob>chi2 = 0.0089				

Source: Research data

In the table 4.1 the computed chi-square value at 4 degrees of freedom was 13.55 which is more than the p-value at 0.0089 which is less than 5 % level of significance. This indicates that there was correlation between the unique errors (u_i) and the regressors.Although according to the Hausman specification test fixed effect model would be the preferred model of choice.However,fixed effect model gives insignificant values. This study has chosen random effect model as the preferred model since it's a good model and gives better results.

4.3 Autoregressive Distributed Lag Models

4.3.1 Debt Equity Ratio on Microfinance Performance

Table 4.2:Fixed effect (within) regression results

Fixed-effects (within) regression	Number of obs = 33
Group variable: id	Number of groups = 12
R-sq: within = 0.6055	Obs per group: min = 1
Between = 0.0006	avg = 2.8
Overall = 0.0000	max = 4

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F(2,19) = 14.58						
corr(u_i, Xb) = -0.2967				Prob> F = 0.0001		
roa	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
der	.0534118	.0156617	3.41	0.003	.0206315	.0861921
Llder	.0799378	.0164983	4.85	0.000	.0454065	.1144692
_cons	-2.66287	.3234821	-8.23	0.000	-3.339926	-1.985815
sigma_u 8.4481251						
sigma_e 1.4628308						
rho | .9708903 (fraction of variance due to u_i)						
F test that all u_i=0: F(11, 19) = 77.44 Prob> F = 0.0000						

Source:Research data

Table 4.4 was the fixed effect model which revealed that debt to equity ratio had positive and statistically significant relationship with return ratio at 5 % level while lagged debt to equity ratio had positive and statistically significant relationship with return to assets ratio. The coefficient for debt to equity ratio was 0.0534 and lagged debt to equity ratio 0.079.

Table 4.3:Random effect GLS estimation results

Random-effects GLS regression				Number of obs = 33		
Group variable: id				Number of groups = 12		
R-sq: within = 0.6054				Obs per group: min = 1		
Between = 0.0006				avg = 2.8		
Overall = 0.0000				max = 4		
				Wald chi2(2) = 29.53		
corr(u_i, X) = 0 (assumed)				Prob> chi2 = 0.0000		
Roa	Coef.	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
Der	.0525143	.015408	3.41	0.001	.0223152	.0827133
Llder	.0789972	.0162163	4.87	0.000	.0472138	.1107807
_cons	-3.418111	2.494618	-1.37	0.171	-8.307471	1.47125
sigma_u| 8.6832395						
sigma_e| 1.4628308						
rho | .97240244 (fraction of variance due to u_i)						

Source:Research data

Table 4.5 was the random effect model. In this model the random effect model was the preferred model according to the Hausman specification test. The probability was 93.33% which is more than 5% level of significance. This also indicated that there was correlation between the unique errors and the regressors.Results from the random effect indicated that debt to equity ratio had positive and statistically significant relationship with return to assets ratio and results are consistent with the results of Disanayake (2014) who postulated that debt to equity ratio is statistically significant predictor variable in determining return to assets ratio. Lagged debt to equity ratio had positive and statistically significant relationship with return to assets ratio. Coefficient for debt to equity ratio was 0.0525 and lagged debt to

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equity ratio was 0.0789 which implies that debt to equity ratio in the previous period is a determinant to the current period.

Table 4.4: Hausman Specification results

---- Coefficients ----				
(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))	
	Fe	Re	Difference	S.E.
Der	.0534118	.0525143	.0008975	.0028076
Llder	.0799378	.0789972	.0009406	.0030371
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)				
= 0.14				
Prob>chi2 = 0.9333				

Source:Research data

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Table 4.5 Test of Heteroscedastcity

Breusch and Pagan Lagrangian multiplier test for random effects		
roa[id,t] = Xb + u[id] + e[id,t]		
Estimated results:		
Var	sd = sqrt(Var)	
roa	58.33731	7.637886
e	2.139874	1.462831
u	75.39865	8.68324
Test: Var(u) = 0		
chibar2(01) = 14.69		
Prob> chibar2 = 0.0001		

Source:Research data

Table 4.7 Breusch-Pagan LM test results indicated presence of heteroscedasticity .The probability was 0.001 which is less than 5 % implying that we shall reject the null hypothesis and accept the alternative which states that heteroscedasticity exists in the model.

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4.3.2 Portfolio to Asset Ratio on Microfinance Performance

Table 4.6 Fixed effect (within) regression results

Fixed-effects (within) regression				Number of obs = 34		
Group variable: id				Number of groups = 12		
R-sq: within = 0.4655				Obs per group: min = 2		
Between = 0.0214				avg = 2.8		
Overall = 0.0354				max = 4		
F(2,20) = 8.71						
corr(u_i, Xb) = -0.6177			Prob> F = 0.0019			
Roa	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
Par	.0182386	.0377548	0.48	0.634	-.0605166	.0969937
Llpar	.20117	.0613237	3.28	0.004	.073251	.3290891
_cons	-12.29561	2.456791	-5.00	0.000	-17.42039	-7.170833
sigma_u | 10.655111						
sigma_e | 2.2631146						
rho | .95683476 (fraction of variance due to u_i)						
F test that all u_i=0: F(11, 20) = 36.46				Prob> F = 0.0000		

Source:Research data

Table 4.8 was the fixed effect model which revealed that portfolio to assets ratio had had positive but insignificant relationship with return to assets ratio .While the lagged portfolio to assets ratio had positive and statistically significant relationship with return to assets ratio at 5 % level. The coefficient of portfolio to assets ratio was an important determinant of the current portfolio to assets ratio. This also implies that lagged portfolio to assets ratio has effect on return to assets ratio. The coefficient for portfolio to assets ratio was 0.0182 with probability of 0.634 whereas lagged portfolio to assets ratio had positive coefficients of 0.2011 and with a probability of 0.004 that was statistically significant at 5 % level.

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Table 4.7 Random effect GLS estimation results

Random-effects GLS regression				Number of obs = 34		
Group variable: id				Number of groups = 12		
R-sq: within = 0.4648				Obs per group: min = 2		
Between = 0.0219				avg = 2.8		
Overall = 0.0357				max = 4		
				Wald chi2(2) = 12.98		
corr(u_i, X) = 0 (assumed)				Prob> chi2 = 0.0015		
Roa	Coef.	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
Par	.0200419	.0387534	0.52	0.605	-.0559133	.0959971
Llpar	.1621406	.0593394	2.73	0.006	.0458374	.2784437
_cons	-12.26365	3.783317	-3.24	0.001	-19.67882	-4.848488
sigma_u 9.4552024						
sigma_e 2.2631146						
rho .94581517 (fraction of variance due to u_i)						

Source:Research data

Table 4.9 was the random effect model results which revealed that portfolio to asset ratio had positive had positive and insignificant relationship with return to assets ratio the findings are inconsistent with the results of Muchomba (2013) .Lagged portfolio to assets ratio had positive and significant relationship with return to assets ratio .The insignificant results between portfolio to assets ratio and return to assets ratio implies that portfolio to assets ratio is not a determinant of return to assets ratio. The coefficients for portfolio to asset ratio was 0.200 with probability of 0.605 and lagged portfolio to assets ratio had coefficients of 0.1621 with probability of 0.006 that was significant at 0.6 %.

Table 4.8 Hausman Specification results

---- Coefficients ----				
(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))	
	Fe	Re	Difference	S.E.
Par	.0182386	.0200419	-.0018033	.
Llpar	.20117	.1621406	.0390295	.0154735
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 5.99				
Prob>chi2 = 0.0500				

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(V_b-V_B is not positive definite)

Source:Research data

Table 5.0 was the Hausman specification test which indicated that random effect model was the preferred model. Since the probability was 0.0500 which is more than 5 % significant level. Thus we shall not reject the null hypothesis which states that random effect model is the preferred model but rather we shall accept it. Also the chi-square value was more than the probability. This further indicated that there was no correlation between the unique errors (ui) and the regressors.

Table 4.9 Test of Heteroscedastcity

Breusch and Pagan Lagrangian multiplier test for random effects			
roa[id,t] = Xb + u[id] + e[id,t]			
Estimated results:			
Var	sd = sqrt(Var)		
Roa	67.93271	8.24213	
E	5.121688	2.263115	
U	89.40085	9.455202	
Test: Var(u) = 0			
chibar2(01) = 8.80			
Prob> chibar2 = 0.0015			

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Source:Research data

The Breusch –Pagan test of heteroscedasticity table 5.1 revealed the presence of random effects. Thus the null hypothesis was that no heteroscedasticity exists and alternative heteroscedasticity exists. The probability was 0.0015 which was less tha 5 % level. which implied that heteroscedasticity exists. Thus the Hausman specification test and the Breusch-pagan test both indicated that random effect model was the preferred model.

4.3.3. Operating expense ratio on financial performance

Table 5.0 Fixed effect (within) Estimation results

Fixed-effects (within) regression				Number of obs = 30		
Group variable: id				Number of groups = 11		
R-sq: within = 0.2683				Obs per group: min = 1		
Between = 0.9208				avg = 2.7		
Overall = 0.8287				max = 4		
F(2,17) = 3.12						
corr(u_i, Xb) = 0.7990				Prob> F = 0.0703		
Roa	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
Oer	-.2163149	.0876106	-2.47	0.024	-.401157	-.0314727
Lloer	.0211536	.0587713	0.36	0.723	-.1028429	.1451501
_cons	5.388137	2.880802	1.87	0.079	-.6898239	11.4661

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sigma_u	5.2121517
sigma_e	1.4328562
rho |	.92973632 (fraction of variance due to u_i)
F test that all u_i=0:	F(10, 17) = 8.59 Prob> F = 0.0001

Source:Research Data

Table 5.2 was the fixed effect model and the results indicated that operating expense ratio had negative and statistically significant relationship with return to assets ratio and results are consistent with results of Munyambonera (2012) who added that negative effect of growth in bank profitability could be explained by high costs in bank operations. Other results that are consistent with study findings are those of Abebe(2014), Alkhatib (2012) and Kosmidou *et al* (2008).The lagged operating expense ratio had positive and insignificant relationship with return to assets ratio .Operating expense ratio had coefficients of -0.2163 and probability of 0.024 while lagged operating expense ratio had coefficients of 0.0211 with probability of 0.723 which was insignificant relationship at 72.3%.The coefficients of the lagged operating expense ratio was negative and the negative sign of the coefficients could be explained by the high costs of the microfinance institutions in the previous period.

Table 5.1 Random effect GLS estimation results

Random-effects GLS regression				Number of obs = 30		
Group variable: id				Number of groups = 11		
R-sq: within = 0.2611				Obs per group: min = 1		
Between = 0.8990				avg = 2.7		
Overall = 0.8208				max = 4		
				Wald chi2(2) = 78.08		
corr(u_i, X) = 0 (assumed)				Prob> chi2 = 0.0000		
Roa	Coef.	Std. Err.	Z	P>|z|	[95% Conf. Interval]	
Oer	-.3339128	.0753496	-4.43	0.000	-.4815952	-.1862304
Lloer	-.0048241	.0301196	-0.16	0.873	-.0638574	.0542092
_cons	9.772487	1.76053	5.55	0.000	6.321912	13.22306
sigma_u	2.4693963					
sigma_e	1.4328562					
rho |	.74811947 (fraction of variance due to u_i)					

Source:Research data

Table 5.3 was the random effect model and results revealed that operating expense ratio had negative and statistically significant relationship with return to assets ratio whereas lagged operating expense ratio had negative but insignificant relationship with return to assets ratio .The coefficients for operating expense ratio was -0.3339 with probability of 0.000 whereas lagged operating expense ratio had coefficients of -0.0048 and probability of 0.873 .the relationship with return to assets ratio was not significant at 87.3 %.

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Table 5.2 Hausman specification test

---- Coefficients ----				
(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))	
	Fe	Re	Difference	S.E.
oer	-.2163149	-.3339128	.117598	.0446996
lloer	.0211536	-.0048241	.0259778	.0504665
b = consistent under Ho and Ha; obtained from xtreg				
B = inconsistent under Ha, efficient under Ho; obtained from xtreg				
Test: Ho: difference in coefficients not systematic				
chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)				
= 6.92				
Prob>chi2 = 0.0314				

Source:Research data

Table 5.4 was the Hausman specification test which showed that fixed effect model was the preferred model .The null hypothesis was that the preferred model was random effect and the alternative fixed model preferred model. The probability was 0.0314nwhich was statistically significant at 5 %.The probability was significant at 0.03 % implying that we shall reject the null hypothesis and accept the alternative. Thus fixed effect model was the preferred model. Also the chi-square test value 6.92 which was more than the probability value at 0.03 % which indicated that there was correlation between the unique errors (ui) and the regressors.

Table 5.3 Test of Heteroscedasticity

Breusch and Pagan Lagrangian multiplier test for random effects			
roa[id,t] = Xb + u[id] + e[id,t]			
Estimated results:			
Var		sd = sqrt(Var)	
Roa	42.83768	6.54505	
E	2.053077	1.432856	
U	6.097918	2.469396	
Test: Var(u) = 0			
chibar2(01) = 9.23			
Prob> chibar2 = 0.0012			

Source:Research data

Table 5.5 Breusch –Pagan test of heteroscedasticity for return to assets ratio was conducted. The null hypothesis was that no heteroscedasticity existed and alternative heteroscedasticity exists. The chi-square value was 9.23 % greater than the probability value at 0.1%.The probability was 0.1 % which was less than the 5% significant level. This indicated that heteroscedasticity existed.

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5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents conclusions, relevant policy recommendations and areas for further research.

5.2 Conclusion

The main objective of the study was to examine the effect of portfolio to assets ratio on financial performance of microfinance institutions in Kenya. The study concentrated on 12 MFIs due to insufficient data available for the panel data of 42 MFIs within a span of five years from 2009-2013.The findings of the study showed a negative correlation between portfolio to assets ratio and return on assets ratio whereas debt to equity ratio correlated positively with return on assets ratio. Operating expense ratio exhibited a negative correlation with returns on assets ratio. The negative coefficient and significant effect of operating expense ratio on financial performance (ROA) shows that decrease in expenses increases the performance of the microfinance institution industry in Kenya. This indicates that the MFIs in Kenya have much to profit if they are able to exercise efficient cost management practices. The negative coefficient (-0.1857) of the operating expense ratio implies that there is a lack of efficiency in expense management in MFIs industry in Kenya. Thus highly significant and negative coefficient of the OER causes poor performance in Kenyan MFIs.This means that the higher costs of operation negatively affect financial performance of the Microfinance institutions.

In addition, the researcher postulated that operating expense ratio and debt to equity ratio are statistically not significant predictor variables in determining return on assets ratio. Conclusions of this study are contrary to the results of Brand *et al* (2001) and Zeynap (2006) in profitability of MFIs whereas the study findings constitute the results of Modigliani *et al* (1958), Berger *et al* (2006) a study on leverage of MFIs.

5.3 Policy Recommendations

The main aim of MFIs is to provide access to financial empowerment to support self employment and small enterprises .Thus the following recommendations are put forward in order to improve the financial performance of MFIs.Thus MFIs should consider the provision of long term loans to their clients thus reducing the frequency of repayment.MFIs should consider setting up offices in the rural areas.Microfinance institutions in Kenya should aim at formulating and implementing strategies that are likely to enhance rate of returns from their investment portfolios. They could do this by stepping up their effort in educating their clientele about the loan products and they can in turn invest. This would make loans more attractive and competitive thus widening the interest spreads and a higher rate or return. The government should enact a law that requires that all MFIs should belong to the Association of Microfinance institutions. This will promote accountability and make the MFI industry grow stronger in terms of resource mobilization and thus improve the MFIs financial performance.

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