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Effect of interest rates and capital adequacy on financial distress in deposit taking savings and credit cooperative organizations in Kenya

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Abstract
Financial distress is disruptive and costly, and especially relevant due to the impact on workers, shareholders, customers, suppliers, communities, and the financial entities. Extreme financial distress often leads to firms' bankruptcy. This study sought to establish the effect of interest rates and capital adequacy on financial distress of Deposit Taking Savings and Credit Cooperative Organizations in Kenya. A descriptive survey research design was used to establish the determinants of financial distress. The target population included 68 deposit taking SACCOs. Secondary data was obtained from SACCOs records at SASRA. Data collected was analyzed STATA. The study established a p-value of the t-statistic for the estimated coefficient of interest rate was 0.042 which is less than 0.05indicating that interest rate as a financial distress determinant had significant influence and distressing effect on probability of financial distress in savings and credit cooperative organizations in Kenya. Secondly, the study established a p-value of the t-statistic for the estimated coefficient of capital adequacy was 0.016 which is less than 0.05 indicating that financial leverage as a financial distress determinant had insignificant influence and distressing effect on probability of financial distress in savings and credit cooperative organizations in Kenya.

Keywords: financial distress, interest rate, capital management, financial management

1. Introduction

Researches on corporate distress have identified varying signs of distress. Companies that consistently generate lower realized rate of return compared to the market rate for similar investments, having average return that is lower than the cost of capital or do not have enough revenue to meet their cost can be classified as experiencing business failures (Baharin & Sentosa, 2013) [2]. Amoa-Gyarteng (2014) [1] argued that highly leveraged firms may face bankruptcy if they are unable to meet repayment schedules, though it may also increase shareholder Return on Investments. Usdin and Bloom (2012) have identified nine signs of financial distress as: the company not timely paying creditors; the company being sued in collection matters; the company suffering a significant event that will not recur; the company's bank or secured lender threatening to shut down business operations; a union threatening some type of action against the company; a major supplier threatening to terminate services to the company; the company not being able to perform its contracts on time or cannot perform at all; the liabilities of the company being greater than its assets; and the company's business model no longer being viable.

Sami (2013) [16] indicates that the financial distress is bound to cash flow problems and incapacity of debts refund. He points out that a firm in distress meets three difficulties: it loses the right to make certain decisions without legal approval; the financial distress can reduce the demand for the product of the firm and increase the production costs; and the managers lose considerable time to solve the financial distress. However, Zhuang and Chen (2014) indicate that the financial state of a company often cannot be observed directly, but only some signal indicators associated with the financial state can be observed.

In Kenya, SACCOs remain the most important players in provision of financial services and have deeper and extensive outreach than any other type of financial institution (ICA, 2002). They provide savings, credit and insurance services to a large portion of the population. Financial sector reforms were adopted in 1989 through the Structural adjustment programs supported by World Bank credit, which included liberalization of interest rate- attained in July 1991, and exchange rate-attained in October 1993. From the year 2010 new developments and intense competition in lending industry in Kenya's economy was witnessed. The introduction of the economic liberalization poses serious challenges to the Sacco's. The emergence of formal and informal segments in the financial sector fragmentation implies that different segments approach problems such as high transactions costs, risk management, mobilization of funds, grants and capitalization (Steel, 1998) [18].

There are various explanations of the causes of financial distress within co-operative societies in developing countries. However, all of them emphasize the issue of mismanagement in lending and spending, which negatively affect the society members (Mulinge 2003) [11]. Many businesses at various times have debts coming due that cause considerable loss of sleep on the part of the owners or managers. They may have a special sale for getting cash immediately to pay their debts or perhaps a bank loan may be obtained. If the need is for long-term funds, a stock issue or a bond issue may be arranged. In some instances, assets other than the stock in trade may be liquidated in order to obtain funds.

According to Outecheva (2007) [14], corporate financial distress is mainly attributed to poor governance, severe competition, adverse economic factors and the capital structure. Parker, Peters, and Turetsky (2002) [15] found that poor corporate governance that encapsulates mismanagement precipitates fraud and corruption and ultimately drive firms

into financial failure. In their study, Kapopoulos and Lazaretou (2007) [6] found that severe industry competition leads to decline in sales turnover and hence reduced profitability for the affected firms. The authors argued that if the situation is sustained, the firm suffers from liquidity shortages that culminate in financial distress.

1.1 Interest Rate as Determinant financial distress

Macit, (2011) [8] analyzed the bank specific and macro-economic determinants of the profitability of commercial banks and found that interest rates are a major determinant. Evidence that banks in poorer financial health charge more for loans comes from Hubbard, Kuttner, and Palia (2002) [3], who, using data on syndicated loans, find that less well capitalized banks tend to charge higher loan rates than well capitalized banks.

Malik, Khan, Khan and Khan (2014) analyze the effect of interest rate in the market and its effects on the profitability of banks in Pakistan. Both public sector banks and private sector banks were included in the sample. The regression results for public sector showed that the interest rate has significant effects on the profitability (ROA) in the public sector banks of Pakistan. The value of R^2 shows that in case of public sector banks the interest rate effect the profitability (ROA) about 25 percent. In the case of return on equity (ROE) in public sector, the interest rate has significant effects on profitability. But in case of ROE the interest rate only affects 14 percent the profitability. In private sector banks the interest rate has significant effect on their return on asset (ROA). But here the R^2 value is very big than as in public sector banks. The R^2 value for ROA in private banks is 34 percent which is high than public sector bank's ROA. In ROE of private banks, the interest rate affects significantly the profitability about 19 percent. The study concluded that in both different proxy of profitability in both public and private sector, the interest rate affects the private sector the most.

Musah, Anokye and Gakpetor (2018) examined the impact of interest rate spread on profitability of commercial banks in Ghana. The study results showed that interest rate spread is positively associated with bank profitability in Ghana contrary to expectations. The results could be interpreted within the context of the loanable funds theory to suggest that the demand for loans far exceed supply of loans compelling banks to maintain higher interest rate for lending. This implies that in order to improve profitability, the bank will seek to increase net interest margin by effectively and efficiently increasing interest income and decreasing interest expense. The bank will also raise interest margin to cover increases in operating costs, thus the increase in ROA will encourage banks to raise interest margin. The results suggest that policies aimed at reducing interest rate spread in Ghana should focus on making credit facilities available at a cheaper rate to compel commercial banks to reduce interest rate. It is only when interest rate spread reduces banks profit that they will head to the general call of reducing interest rate spread.

Murage, Muya and Mogwambo (2018) sought to determine the effect of interest rates on financial performance of Deposit Taking SACCOs in Kisii County. To realize the objective of the study, a descriptive survey research design that comprised of the seven DTSs operating in Kisii County was adopted. The DTSs are: Gusii Mwalimu SACCO, Kenya Achievers SACCO, Wakenya Pamoja SACCO, Egerton SACCO, Mwalimu National SACCO, Afya SACCO and vision point SACCO. The study revealed that interest rate had a positive effect on financial performance of DTSs. It was also revealed that all DTSs adopted interest rate technique as a strategy to generate income from the loans issued. This finding agreed with findings by Kariuki and Ngahu (2016) that interest charged by micro- finance institutions in Naivasha had an influence on loan repayment which further influenced financial performance of the MFIs. If the interest rate charged was higher, the level of loan default will be higher therefore poor financial performance. **H0:** *Interest rates on loans have no significant effect on financial distress in savings and credit cooperative organizations in Kenya* was the hypothesis tested to fill the literature gap on the effect of interest rates on loans on financial distress in savings and credit cooperative organizations in Kenya.

1.2 Capital Adequacy as Determinant of Financial Distress

Sentero (2013) [17] sought to find out the effect of capital adequacy requirements on the efficiency of commercial banks in Kenya. This study used a descriptive research design. The population of interest in the study consisted of all 43 commercial banks operating in Kenya and had been in existence in the last five years, licensed and registered under the Banking Act Cap.488. To measure economic efficiency the study adopted the Data Envelopment Analysis (DEA) techniques. The value of the F statistic indicated that the overall regression model was significant implying that there is a significant relationship between the predictor variables of capital adequacy ratio and the efficiency of commercial banks in Kenya.

Wachiuri (2012) [19] sought to establish the effect of capital adequacy requirements on credit creation by commercial banks in Kenya. Data for a period of 11 years from 2001 to 2011 was studied where an econometric model was used. For this purpose, data from 43 commercial banks in Kenya was extracted from CBK annual bank supervision reports. The study revealed that capital adequacy requirements introduced by Basel 1 had a negative impact on credit creation by banks in Kenya. This was evident especially in 2000 when the requirements were introduced in Kenya and in 2009 when further development of minimum statutory capital requirements from Kshs. 250 million to 350 million (all the way to 1 billion by December 2012) was introduced. The trend in credit created had been changing direction every four years a fact that can be accredited to shocks originating from the continuous development of capital adequacy requirements by the Central Bank of Kenya. Results showed that the volume of existing bank capital may act as binding constraint on liquidity and credit creation. However, there could have been other factors accounting for variations in credit created trends other than the capital adequacy requirements as experienced in 2005, a fact that could be accredited to other factors such as high interest rate and reduced demand for credit. The study recommended that policy makers should ascertain that commercial banks have adequate capital to strengthen confidence of depositors, but capital adequacy requirements should not be very retaliatory as to restrain bank activities and the performance of the overall economy.

Jheng, Latiff, Keong and Qun (2018) [4] examined the relationship between capital adequacy ratio and stock price of banking institutions in Malaysia. The study employed

Altman's original Z-Score model to examine the relationship between capital adequacy ratio and stock price using data derived from 8 local licensed commercial banks from 2005 to 2014. The study provided empirical evidence suggesting that the capital adequacy ratio has no significant relationship with stock price in Malaysia banking institution. This new-found knowledge implied that the capital adequacy ratio, which was established to preserve public confidence, does not have any influence on public confidence. This was a significant finding as it defeated one of the purposes of establishing the capital adequacy ratio in the first place. Moreover, the capital adequacy ratio is not able to influence the public confidence as in times of financial crisis, a good capital adequacy ratio may not have the persuasive power to stop a bank run. Simply, the capital adequacy ratio was no longer suitable to be used as an indicator for predicting the change of public confidence. In fact, it is possible the capital adequacy ratio in actuality is not able to limit the risk of failures of a bank as a bank can high financial distress while maintaining high capital adequacy ratio.

1.3 Statement of the Problem

According to Government of Kenya (2009), despite the increased supervision of SACCOs in Kenya through various mechanisms such as the introduction of SASRA regulations, a significant number of SACCOs still face financial distress which has led to the winding up of these SACCOs. The government has made a significant initiative to support co-operative movements through legislation so as to achieve the millennium development goals and vision 2030 objectives of increasing financial inclusion with the registration of over 6700 SACCOs (Kiaritha, 2015) [5]. Despite the significant government initiative, a significant 3457 (51%) of the SACCOs have not been operational, whose high rate failures continues to frustrate sustainable development goals and vision 2030 objectives of increasing financial inclusion. This is because many SACCOs can't generate enough cash to meet the member requests for loans and some are forced to borrow money from banks in order to lend to their members which seriously eats into their profit margins. Secondly, the model employed by SACCOs in advancing loans limits the amount of loans that they are able to give; this happen as a result of those guarantors who may have already committed themselves in other loans which hinders the full capacity to give loans to member unlike commercial banks. The study aimed at establishing effect of interest rates and capital adequacy on financial distress in SACCOs in Kenya.

2. Conceptual Framework

A conceptual framework is a logically developed, described and elaborated network of interrelationships among variables integral in the dynamics of a situation being investigated (Mugenda & Mugenda, 2003) [10]. The study adopted a conceptual framework whose aim is to show how dependent variables are related to the independent variables to keep the research work focused on the objectives of the study.

2.1 Conceptual Framework

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Biklen, 2003). In conducting the study, a conceptual framework will be developed to show the relationship between the independent variables and dependent variable. In this study, the dependent variable is financial distress and the independent variables are; liquidity management, interest rates, debt leverage, capital adequacy and loan advancing models. The constructs and relationships between research variables are illustrated in the following figure 2.1

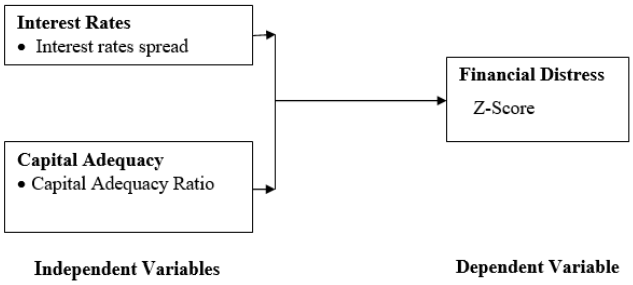

Fig 2.1: Conceptual Framework

3. Research Design

The study adopted a descriptive survey research design. Descriptive study is concerned with finding out who, what, where and how of the variables of the concerned research. The target population for this study comprised of the 176 Deposit Taking Saccos in Kenya. The sample size of 176 DT Saccos was obtained using coefficient of variation. Nassiuma (2000) [12] asserts that in most surveys or experiments, a coefficient of variation in the range of 21% to 30% and a standard error in the range of 2% to 5% is usually acceptable.

$$S = \frac{N(Cv)^2}{(Cv)^2 + (N-1)e^2}$$

Where
S = the sample size
N = the population size
Cv = the Coefficient of Variation
e = standard error

Therefore, the sample size was:

$$S = \frac{176(0.21^2)}{0.21^2 + (176\text{-}1)\ 0.02^2} = 68.04 \approx 68 \text{ DT Saccos}$$

The study will then randomly pick 68 farmers from the universal population of 176 who were the main respondents to the study.

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + e$$

Where:
Y = Financial Distress for DT-Sacco i at time t
β 0 = the Y Intercept for DT-Sacco i at time t
*X*1 = Interest Rate for DT-Sacco i at time t
*X*2 = Capital Adequacy for DT-Sacco i at time t
e = the error term

For this study, β0 is the regression constant while β_1-β_2 is the coefficients of independent variables in regression model.

4. Findings and Discussions

4.1 Descriptive Statistics of Interest Rate

Table 1: Interest Rate

Year	Obs	Mean	Std.	Max	Min
2008	68	0.02	0.02	0.1	0.0
2009	68	0.02	0.02	0.1	0.0
2010	68	0.01	0.01	0.0	0.0
2011	68	0.02	0.01	0.0	0.0
2012	68	0.01	0.00	0.0	0.0
2013	68	0.02	0.16	0.0	0.0
2014	68	0.02	0.02	0.1	0.0

Refers to the amount received in relation to an amount loaned, generally expressed as a ratio of shillings received per hundred shillings lent (Radha 2011). An increase in interest rates should lead to an increase in the financial performance of commercial banks since this leads to an increase in the spread between the interest rates for savings and the interest rates for borrowing.

The study established that the interest rate in the period was between 1%-2%. Interest rates affect both the commercial banks and their customers in two major ways. When the interest rates rise, customers are unable to service their existing loans which leads to losses to the commercial banks since if the situation continues that way, they are forced to write off their debts. This eats into the profits of the company since it means that the commercial bank is not able to recover both the principal amounts loaned as well as the expected interest from the customers (Makkar & Singh, 2013) [9]. When the interest rates are too low, the interest earned from the loaned out amounts is negligible and thus contributes little to the profitability of the commercial bank. There is therefore need for a balance in the interest rates in order to ensure the banks benefit (Lipunga, 2014) [7].

Customers on the other hand avoid the consumption of bank loans when the interest rates are too high since they can either not afford to take up loans or the interest rates are too high that they just prefer to seek other cheaper alternatives such as micro finance institutions and other cheaper lending institutions. This affects negatively the ability of the commercial banks to earn interest from their customer deposits since they cannot loan them out to borrowers. This therefore leads to poor performance of the commercial bank as well as its profitability. It is important to note that this is the case that happened when the financial crisis of 2008 occurred. Macit, (2011) [8] analyzed the bank specific and macro-economic determinants of the profitability of commercial banks and found that interest rates are a major determinant. Evidence that banks in poorer financial health charge more for loans comes from Hubbard, Kuttner, and Palia (2002) [3], who, using data on syndicated loans, find that less well capitalized banks tend to charge higher loan rates than well capitalized banks.

4.2 Descriptive Statistics of Interest Rate

Table 2: Capital Adequacy of DT Saccos

Year	Obs	Mean	Std.	Max	Min
2008	68	1.576	1.786	1.502	0.0101
2009	68	1.618	1.427	1.681	0.017
2010	68	1.741	1.702	1.662	0.019
2011	68	1.609	1.501	1.472	0.014
2012	68	1.772	1.695	1.726	0.0173
2013	68	1.429	1.318	1.537	0.0183
2014	68	1.519	1.704	1.493	0.0318

Results from Table 3 indicate that the DT Saccos had higher capital adequacy ratios as compared to the minimum regulatory capital adequacy ratios in average over the eleven years. The Saccos used shareholders' funds to finance between 31.9% to 51.9% of the total assets while the remaining balance is financed by deposit and other liabilities. The results is supported by Olweny and Mamba (2011) [13] whose study on the banking sector indicated that about 18% of the total assets of the sector were financed by shareholders funds while the remaining 82% was financed by deposit liabilities.

According to CBK (2015), minimum capital adequacy ratios which are measured by the ratio of core capital and total capital to total risk weighted assets, are 0.105 and 0.145 respectively. The study established that the DT Saccos continued to build their capital adequacy frameworks through various means in order to meet the new capital adequacy requirements which were to become effective on 1st January 2015. From Table 4.17, the lowest mean is 31.9% while the highest is to 51.9% between 2008 and 2014, this result slightly differs with Olweny and Mamba (2011) [13] whose result found an average mean of 18% and 20.66% between 2002 and 2008.

4.3 Financial Distress Probability

Table 3: Financial Distress Probability

Year	Obs	Mean	Std.	Max	Min
2008	68	0.495	0.278	0.991	0.028
2009	68	0.501	0.327	0.873	0.037
2010	68	0.411	0.108	0.916	0.029
2011	68	0.443	0.069	0.692	0.027
2012	68	0.537	0.418	0.708	0.037
2013	68	0.492	0.319	0.829	0.416
2014	68	0.511	0.479	0.837	0.293

A company is distressed when it misses interest payments or violates debt covenants. The transformation from a solvent to an insolvent state happens only on the date of maturity if the terminal value of the company's assets is lower than the face value of debt. The study established that the financial distress was highest in the year 2012 at 53.7% and lowest in 2010 at 41.1%. It is important to indicate that generally, the DT Saccos faced higher financial distress (See table 4.5).

Table 4: Combined effect of interest rates and capital adequacy on probability of financial distress using random effect model

Random-effects GLS regression		Number of obs	=	210
Group variable	code	Number of groups	=	68
R-sq: within	0.483	Obs per group: min	=	7
between	0.172	avg	=	7.0
Overall	0.635	max	=	7
		Wald chi2(4)	=	14.17

Group variable	0 (assumed)	Prob > chi2		=	0.0068	
distress |	**Coef.**	**Std. Err.**	**z**	**P>|z|**	**[95% Conf. Interval]**	
Interest |	-2.53708	1.249995	-2.03	0.042	-4.987026	-.0871352
Capital |	.0570817	.0237926	2.40	0.016	.0104491	.1037143
_cons |	.4779976	.0550046	8.69	0.000	.3701906	.5858047
sigma_u |	.10713132					
sigma_e |	.24273947					
rho |	.16682825					

The random effects model on table 4 shows that the combined effect of interest rate and capital adequecy by the DT Saccos between 2008 to 2014 on probability of financial distress was statistically significant. A conclusion was therefore made that the independent variables of the study can be used to foretell the outcome of financial distress of DT Saccos between 2008 to 2014. Further analysis shows that liquidity management can be used to predict financial distress of DT Saccos in Kenya apart from financial leverage.

Specifically, interest rates had statistically significant relationship with the probability of financial distress with $p=0.042<0.05$ indicating that interest rates can be used to predict Saccos financial distress, though negatively related. Growth in interest rates by 1 unit leads to decline in financial distress by 2.53708 units, holding capital adequacy constant.

Second, capital adequacy had a statistically insignificant relationship with DT Saccos financial distress, $p=0.016<0.05$ indicating that capital adequacy can be used to predict Saccos financial distress. Growth in capital adequacy by 1 unit leads to increase in financial distress by 0.0570817 units, holding interest rate constant.

5. Conclusions and Recommendations

The aim of this study was to bring to the fore the interest rates and capital adequacy as determinants of financial distress among SACCOs in Kenya. First, the evidence of interest rate significantly predicting financial distress among SACCOS in Kenya confirms the initial hypothesized relationship for the study as well as the relevance of shift ability theory in the corporative context. Interest rates spread were found to significantly predict financial distress among SACCOs in Kenya. From this result four conclusions were derived.

Secondly, the ability of capital adequacy ratio to attain statistical significance in predicting financial distress among SACCOs in Kenya raises confirms the regulatory focus of the existing Acts set out to guide the sector. Capital adequacy is predominantly the core of the SACCO regulations of 2008, considering that the regulation anchors deeply on the BASEL framework designed for commercial banking environment, the set regulatory limits on capital maybe limiting in the SACCO context. It still important and great significance if the current capital adequacy requirements are reviewed in the interest of determining the true levels that will promote better stability in the sector.

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