Journal of Science, Innovation and Creativity
Vol. 5 No. 2 (2026): ISSN (Online): 2958-454X
DOI: https://doi.org/10.58721/d88f9953
Capital Structure and Financial Stability of Deposit Taking SACCOs in Kenya: The Moderating Role of SACCO Size

Capital Structure and Financial Stability of Deposit-Taking SACCOs in Kenya: The Moderating Role of SACCO Size

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Article History
Received: 2026-07-04
Revised: 2026-10-22
Accepted: 2026-10-28
Published: 2026-10-30

Keywords
Capital structure
Deposits
Financial stability
SACCO

How to cite:
Simiyu, R. S., Musiega, M., & Egessa, R. (2026). Capital Structure and Financial Stability of Deposit-Taking SACCOs in Kenya: The Moderating Role of SACCO Size. *Journal Science, Innovation and Creativity, 5*(2), 302-312.

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Abstract
This study examined how capital structure decisions influence financial stability of deposit taking SACCOs in Kenya and whether SACCO size moderates that relationship. The study adopted positivist philosophy, and was grounded on the pecking order theory and trade-off theory. The study used a longitudinal, explanatory design and secondary panel data for 79 DT-SACCOs obtained from SASRA and SACCO annual reports. Financial stability was measured by solvency risk (z-score) and credit risk (non-performing loan ratio); capital structure by the equity-to-asset, debt-to-equity and short-term debt-to-equity ratios respectively; and size by the natural logarithm of total assets. Following panel unit-root and Hausman tests, random-effects regressions were estimated on differenced series. Equity financing significantly improves solvency but has no significant independent effect on credit risk. Debt financing increases credit risk, while its baseline effect on solvency risk is weak. SACCO size is a significantly moderates the relationship between capital structure decisions and financial stability because of diversification and economies of scale. The interactions of Sacco size with EAR and STDER strengthen the solvency effects, and its interaction with DER significantly alters the credit risk effect. Therefore, adding the interaction terms raises the explanatory power of the model. The study provides evidence on how equity–debt mix affects solvency and credit risk in Saccos over a decade; it separates equity, total leverage and short-term leverage rather than relying on a single capital structure ratio; and it tests whether SACCO size conditions these effects, a question that bears directly on SASRA's tiered supervision.

Introduction

Deposit taking SACCOs play a central role in Kenya's financial system by mobilizing member savings and transforming those resources into credit for households, enterprises and community investments, (KNBS, 2023, FSD Report, 2025). Through this intermediation function, DT-SACCOs widen access to financial services and provide an alternative source of finance for members who may face constraints in accessing conventional banking services. The financial stability of these institutions is consequently important because weakness in a SACCO can affect members' savings, the availability of credit and confidence in cooperative financial intermediation, (Fundi, et al., 2023; Akuku, et al., 2023; Millan, et al., 2023).

Empirical work, measure financial stability using accounting metrics that capture different dimensions of financial soundness. For the purpose of this study, Z-score was used because it combines profitability, capitalisation and the volatility of returns to indicate the distance of an institution from insolvency (Boyd, Graham & Hewitt, 1993; Hannan & Hanweck, 1988; Roy, 1952). Credit risk provides a complementary perspective because loans constitute the principal earning

asset of SACCOs. The non-performing loan (NPL) ratio therefore indicates asset-quality pressure and the extent to which lending activities expose an institution to potential losses (Ongore & Kusa, 2013). Considering both solvency and credit risk gives a broader assessment of financial stability than relying on profitability alone.

The theoretical and empirical literature does not provide a uniform conclusion about the financing–stability relationship. Pecking order school of thought argues that institutions prefer internal financing before external sources, implying that retained equity can reduce dependence on borrowing and associated financing risks (Myers & Majluf, 1984). On the other hand, trade-off school of thought proposes that financing decisions involve balancing the benefits of debt against the costs of financial distress (Modigliani & Miller, 1958). Empirical evidence is similarly mixed. Some studies report beneficial effects of leverage under favourable earnings conditions, whereas others find that higher debt is associated with weaker financial performance or greater financial vulnerability (Tailab, 2014; Le & Phan, 2017). Evidence specifically concerning SACCOs remains limited and has largely concentrated on profitability rather than financial stability. Gichuru et al. (2019) found that high leverage was negatively associated with return on assets among Kenyan SACCOs, while Akuku et al. (2023) reported a positive association between capital structure and SACCO financial stability. These divergent findings indicate the need for evidence using direct measures of stability and separate indicators of equity and debt financing.

The role of institutional size adds another dimension to the financing–stability relationship. Larger SACCOs may have broader funding options, more diversified loan portfolios, stronger bargaining power and greater capacity to invest in risk-management systems. At the same time, expansion can introduce organisational complexity and pressure to maintain rapid loan growth, meaning that scale does not automatically translate into stronger stability. Existing studies provide contrasting evidence. Kerongo et al. (2022) reported a positive moderating effect of firm size, while Mahat and Dahir (2018) found that size could weaken the stability benefits associated with funding liquidity in BRICS banks. For Kenyan DT-SACCOs, where institutions vary substantially in asset size and operate under a tiered regulatory environment, examining size as a moderator can provide a more differentiated understanding of how financing structure translates into stability. This study therefore focuses on the relationship between capital structure decisions and financial stability of DT-SACCOs in Kenya, while testing whether SACCO size changes that relationship.

The significance of SACCO stability has become more pronounced as the sector has expanded and regulatory expectations have increased, (Cheang, Li & Allen 2020). Following the global financial crisis of 2007–2009, financial regulators internationally placed greater emphasis on the resilience of financial institutions Moreno, Parrado-Martínez and Trujillo-Ponce (2022) while in Kenya the Sacco Societies Regulatory Authority (SASRA) has strengthened prudential oversight of deposit taking SACCOs through requirements relating to capital adequacy, liquidity, governance and risk-management, (CBK, 2015; Collier & Ndung'u, 2011).

Deposit Taking SACCOs play a crucial role in Kenya's financial inclusion landscape where over 80% of the citizenry derive their livelihood directly or indirectly, (Kagiri, 2023; KES, 2023; Fundi & Wamugo, 2023; Akuku, Nyang'au & Maobe 2023; Millan, Kamau & Ibua, 2023). However, several SACCOs have experienced credit risk, liquidity shortfalls, operational distress, and insolvency, leading to receivership or licence revocations, (Wangechi & Irungu 2023; SASRA (2021). SACCOs rely on member deposits, retaining share capital, and external borrowing. Striking an optimal balance between external debt and member deposits remains a major operational challenge. Determining how this financial structure directly impacts financial stability is critical to preventing systemic failures.

Existing corporate finance literature yields mixed and contradictory findings. For instance, studies on Ho Chi Minh City Stock Exchange find that excessive debt relative to equity severely

compromises liquidity and solvency, Almanaseer, (2024), Nguyen Minh Ngoc (2021). Studies in Kenya advocate for high leverage to take advantage of tax shields and capital growth, (Vithessonthi & Tongurai, 2015, Kerongo, et al., 2022). While extensive empirical research has been conducted on capital structure and stability within Kenya's commercial banking sector, the unique cooperative model, remains under researched. Additionally, while capital structure directly affects financial health, its impact is rarely uniform across all institutions. For instance, larger D-T SACCOs possess greater asset bases, market reach, and economies of scale to absorb financial shocks, Hertina, et al., (2020) in Indonesia, Ujam, et al., (2023), in Nigeria and Kiemo, et al., (2019), in Kenya, compared to smaller SACCOs, which show that size negatively influence financial stability (Mahat & Dahir, 2018). Consequently, this study sought to address the critical inadequacy identified in the literature by empirically examining the impact of capital structure on financial stability of D-T Saccos in Kenya and testing the moderating role of SACCO size.

Theoretical and Empirical Literature

Pecking order theory (Myers & Majluf, 1984) holds that, because managers know more about a firm's prospects than outsiders, firms prefer internal funds, then debt, and only last new equity. For SACCOs, whose equity comes largely from member shares and retained surplus, the theory predicts heavy reliance on internal equity and borrowing only when retained earnings are insufficient, which preserves stability by limiting external obligations. *Trade-off theory* (Modigliani & Miller, 1958) argues that firms balance the tax and discipline benefits of debt against the costs of financial distress, implying an optimal mix. For SACCOs the distress-cost side is prominent: excessive leverage threatens solvency, so a strong equity base is a buffer and prudently used debt may support growth.

Empirical review

Empirical evidence indicates that the relationship between financing structure and financial stability is not uniform across institutions and sectors. Tailab (2014), reported an inverse relationship between total debt and return on assets and return on equity, although short-term debt was positively associated with the performance measures. Similarly, Le and Phan (2017), found that capital structure negatively affected performance, providing support for the argument that excessive leverage can impose financial costs that outweigh the benefits of external financing. In contrast, Kong et al. (2023), found that debt and debt-to-equity ratios were associated with financial sustainability through higher return on equity. These contrasting findings indicate that the effect of debt can depend on institutional characteristics, economic conditions and the way financial outcomes are measured.

Evidence on equity financing is comparatively more favourable. Othman, Abdul-Majid and Abdul-Rahman (2023), reported that Islamic banks with equity financing structures were more stable, with medium equity financing associated with the highest stability in their analysis. Al-Slehat (2022), found a negative and statistically significant effect of equity financing structure on financial fragility. Johnston-Ross, Ma and Puri (2021) also found that private-equity participation contributed to the stabilisation of failed US banks following the financial crisis. While these studies support the loss-absorbing role of equity, their institutional settings differ from SACCOs, whose capital is closely connected to member ownership and cooperative principles.

Evidence from the SACCO context is comparatively limited. Gichuru et al. (2019) found that high leverage had a negative and statistically significant effect on return on assets, and reported that SACCOs relied substantially on internal equity, a pattern consistent with pecking order theory. Akuku et al. (2023) found a positive relationship between capital structure and financial stability, although their discussion highlighted the need to manage loan levels, interest rates and repayment conditions. The existing evidence therefore leaves an important empirical question unresolved: whether equity and debt financing have differentiated effects on the distinct dimensions of

financial stability. The present study addresses this issue by separating equity financing, total debt financing and short-term debt financing and examining their relationships with both solvency and credit risk among Kenyan DT-SACCOs. The focus on stability rather than profitability also responds to the limitation that much of the existing literature evaluates financing decisions through returns while giving less attention to distance from insolvency and non-performing loans.

The moderating role of SACCO size

Firm size can influence how financing decisions translate into financial outcomes because larger entities may have different access to capital, risk-management capacity, diversification opportunities and bargaining power from smaller entities. Kerongo et al., (2022), found that firm size had a positive moderating effect and associated this result with the greater capacity of larger firms to use debt and their perceived lower risk among lenders. Although this evidence shows that scale can change the consequences of capital structure, the study was conducted among listed firms and used financial performance rather than stability as the outcome. Its findings therefore cannot be directly transferred to member-owned DT-SACCOs.

Ujam, Okolie and Sunday (2023), found that the effect of a financial resource on stability may vary according to organisational scale and the specific financial component under consideration. However, the study focused on construction firms, used asset structure rather than equity and debt financing, and was undertaken in Nigeria. These differences leave unanswered questions whether similar moderation occurs in Kenyan cooperative financial institutions. Evidence from banking studies is also mixed. Kiemo, et al (2019) found a positive and statistically significant relationship between bank size and financial stability alongside regulatory capital, bank financing and corporate governance. However, the study did not test size as a moderator of the financing structure–stability relationship. Mahat and Dahir (2018), found that bank size could weaken the stability benefits associated with funding liquidity. Their findings suggest that scale may introduce organisational complexity and other risks that offset some benefits of greater resources. The contrasting evidence indicates that size should not be assumed to have a uniform effect; its moderating role requires testing within the relevant institutional setting.

Conceptual framework and Conceptual review

As Table 1 indicates, the reviewed literature leaves three gaps. Contextually, most studies address listed firms or banks, not SACCOs. Conceptually, SACCO studies emphasise profitability rather than stability, and rarely separate equity from short-term and total debt. Methodologically, many studies use cross-sectional data or do not test for unit roots, serial correlation or model specification in panels. Figure 1 shows the framework adopted: equity financing (EAR) and debt financing (DER and STDER) affect stability (solvency and credit risk), with SACCO size moderating the relationship.

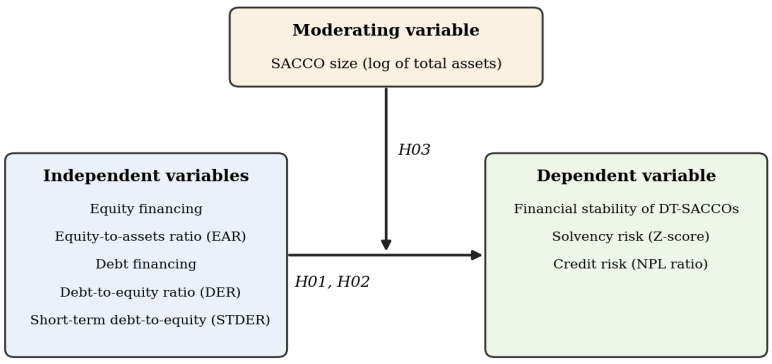


Figure 1: Conceptual framework

Methods

The study adopted a positivist philosophy and a deductive approach, using a longitudinal explanatory design because the aim was to explain how financing structure affects stability over time without manipulating the variables. The target population was the 176 DT-SACCOs and sample of 121 SACCOs was drawn proportionately by tier. Secondary data were extracted from audited financial statements submitted to SASRA and published by the SACCOs using a document analysis sheet.

Variables and measurement

The measurements of capital structure and financial stability of SACCOS was the basis for the econometric specifications. The measures are shown in table 1 below:

Table 1: Operationalisation of variables

Variable	Role	Indicator	Measurement
Solvency	Dependent	Z-score	(ROA + EQA) / σ(ROA), where EQA is equity-to-assets; higher values imply lower insolvency risk
Credit risk	Dependent	NPL ratio	Non-performing loans / total loans
Equity financing	Independent	EAR	Equity / total assets
Debt financing	Independent	DER; STDER	Total debt / equity; short-term debt / equity
SACCO size	Moderator	LNTA	Natural logarithm of total assets

Source: Author compilation, (2026).

Estimation strategy and model

Panel regression was used, Wooldridge (2002). Variables were log-transformed. Normality was assessed with the Jarque–Bera test, stationarity with the Levin–Lin–Chu (2002), Im–Pesaran–Shin (2003) and Fisher-type ADF panel unit-root tests (Maddala & Wu, 1999; Choi, 2001), model choice with the Hausman (1978) test, serial correlation with the Wooldridge test, multicollinearity with variance inflation factors (VIF), and variance of residuals with the Breusch–Pagan test. Variables that were not stationary at level were differenced. The baseline specification was:

$$Y_it = \alpha + \beta1\ EAR_it + \beta2\ DER_it + \beta3\ STDER_it + \varepsilon_it \quad (1)$$

where Y_it is solvency (Z-score) or credit risk (NPL) of SACCO i in year t. Following Baron and Kenny (1986), moderation was tested in two further steps: size (M) was added as a predictor (Model 2), and interaction terms between size and each financing ratio were then introduced (Model 3):

$$Y_it = \alpha + \beta1\ EAR_it + \beta2\ DER_it + \beta3\ STDER_it + \beta4\ M_it + \beta5\ (EAR\times M)_it + \beta6\ (DER\times M)_it + \beta7\ (STDER\times M)_it + \varepsilon_it \quad (2)$$

Size moderates the relationship if one or more interaction coefficients (β5–β7) are statistically significant, and an increase in explanatory power between Models 2 and 3 provides additional support.

Results

The results showed that the average NPL ratio is 8.77 percent, with a maximum of 29.5 percent in the weakest SACCO-year, and the mean Z-score of 15.95 indicates that DT-SACCOs are on average a reasonable distance from insolvency. SACCOs rely mainly on equity: the mean EAR is 0.337, against mean DER and STDER of 0.159 and 0.151. This is consistent with the pecking order view that SACCOs prefer internal funds. Total assets vary greatly (KSh 56.6 million to KSh 68.9 billion; coefficient of variation 1.38), reflecting the coexistence of small and very large SACCOs, which justifies the logarithmic transformation used for size.

Figure 2 shows the annual means over 2015–2024. Solvency rose in 2016 and then declined almost continuously, ending the period at its 2015 level. Credit risk was stable until 2017, rose sharply from 2018 to a peak in 2020, and thereafter fluctuated. Equity-to-assets rose to 2017 and then fell steadily, dropping sharply in 2023–2024, while debt-to-assets and short-term debt-to-assets also declined, and DER remained broadly stable. Total assets grew without interruption, from about KSh 3.9 billion to KSh 10.5 billion on average. Overall, SACCOs grew rapidly while their capital cushions thinned and their asset-quality deteriorated, a pattern that motivates the tests below.

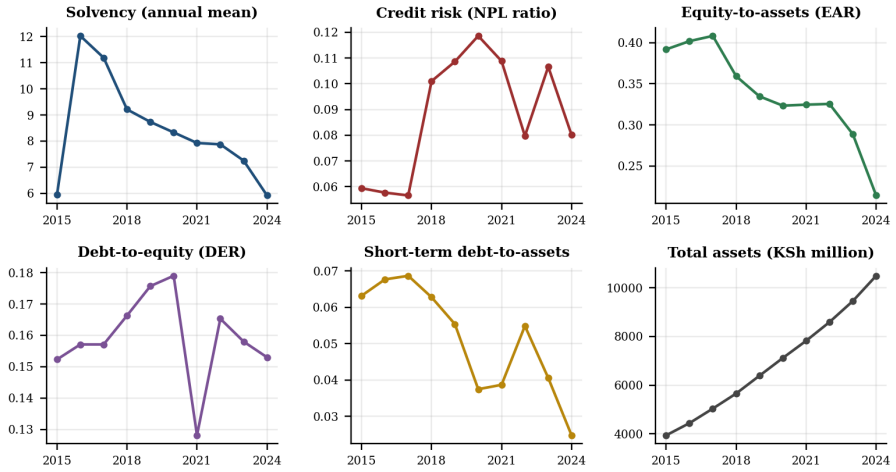


Figure 2: Annual mean trends in stability, financing structure and size, 2015–2024
Source: Author compilation, (2026).

Diagnostic tests

To ensure non-violation of the Classical Linear Regression Model, the following tests were carried out; normality, correlation, heteroscedasticity multi-collinearity, autocorrelation, stationarity, and Hausman test which are summarised in table 2 below:

Diagnostic tests
The diagnostics support the use of panel regression. All variables are approximately normal. The unit-root tests show mixed orders of integration (most variables are stationary at level, while EAR requires differencing), so models were estimated on differenced series to avoid spurious regression (Choi, 2001). The Hausman tests favor random-effects, indicating that SACCO-specific effects are uncorrelated with the regressors, and the remaining tests show no serial correlation, harmful multicollinearity or heteroscedasticity.

Correlation analysis

The study used the Pearson's correlation coefficient to test for the relationship existing between variables and the results are shown in table 2 below:

Table 2: Pearson correlations of stability measures with financing structure and size

Variable	Solvency (Z-score)	Credit risk (NPL)
Equity-to-assets (EAR)	0.362***	−0.184***
Debt-to-equity (DER)	−0.098***	0.164***
Short-term debt-to-equity (STDER)	−0.172***	0.165***
Size (log of total assets)	0.094***	−0.182***

*Source: Author compilation, (2026). *** $p < 0.01$. Variables in logarithms.*

Equity financing is positively correlated with solvency (r = 0.362) and negatively with credit risk (r = −0.184), whereas both debt measures are negatively correlated with solvency and positively with credit risk. Larger SACCOs are more solvent and have lower credit risk in these bivariate results. These associations are in the directions predicted by the trade-off and pecking order theories, but they are unconditional; the regressions below test them while controlling for the other financing ratios.

Effect of equity and debt financing on financial stability

Table 3: Baseline random-effects regressions (Model 1)

Variable	Solvency: β (SE)	Credit risk: β (SE)
D2.LNEAR	0.792*** (0.136)	−0.079 (0.062)
D2.LNDER	0.242* (0.140)	0.200*** (0.064)
D2.LNSTDER	0.153 (0.121)	0.122** (0.055)
Constant	−0.400*** (0.082)	−0.040 (0.037)
R^2 within / between / overall	0.059 / 0.052 / 0.059	0.032 / 0.000 / 0.031
Wald $\chi^2(3)$	39.16***	19.99***
Observations (SACCOs)	632 (79)	632 (79)

*Source: Author compilation, (2026). *** p < 0.01, ** p < 0.05, * p < 0.10. Observations are fewer than 790 because of differencing.*

Both models are jointly significant. Equity financing has a large, positive and highly significant effect on solvency (β = 0.792, p < 0.01), so H01 is rejected for solvency: a stronger equity base raises the distance from insolvency, as the Z-score construction and the trade-off theory imply, and in line with Othman et al. (2023) and Al-Slehat (2022). Its effect on credit risk is negative but insignificant (p = 0.198), so H01 is not rejected for credit risk. Equity cushions losses but does not by itself improve loan quality, which depends on credit appraisal and collection.

Debt financing matters most for asset-quality. DER (β = 0.200, p < 0.01) and STDER (β = 0.122, p < 0.05) both increase credit risk, so H02 is rejected for credit risk. Higher leverage, particularly short-term borrowing, is associated with more non-performing loans, consistent with the distress-cost argument of the trade-off theory, with the negative leverage findings of Tailab (2014) and Le & Phan (2017), and with Gichuru et al. (2019) for SACCOs. A plausible mechanism is that borrowed funds are used to expand lending quickly, with weaker screening. The baseline effect of debt on solvency is positive but weak (DER significant only at 10 percent; STDER insignificant), so H02 is not rejected for solvency at the 5 percent level. This is compatible with leverage amplifying returns when earnings exceed the cost of funds (Berger & di Patti, 2006), though the evidence here is not strong. The R^2 values are low (0.059 for solvency, 0.031 for credit risk), so financing structure explains only a small share of the variation in stability; other factors, such as governance and credit management, clearly matter.

A note on interpretation is needed. Because the series were differenced to achieve stationarity, the coefficients describe how movements in the financing ratios are associated with movements in stability within and across SACCOs, rather than relationships between levels. They should be read as evidence that SACCOs which strengthen their equity position (or increase their leverage) over time experience correspondingly stronger (or weaker) stability outcomes. This is a deliberately conservative reading, appropriate where the level series are non-stationary, and it is the reason the magnitudes of the coefficients should not be compared directly with those from level regressions in other studies.

Moderating effect of SACCO size

Moderation was tested in two steps. Model 2 adds size to the baseline regression, and Model 3 adds the three interaction terms. Adding the interactions improves the fit of both equations: the

overall R^2 rises from 0.161 to 0.220 for solvency and from 0.039 to 0.098 for credit risk, and the Wald statistics increase markedly. The individual interaction coefficients shown where moderation operates. The results are shown in table 4 below.

Table 4: Moderation analysis (Models 2 and 3), random-effects regressions

Variable	Solvency: Model 2	Solvency: Model 3	Credit risk: Model 2	Credit risk: Model 3
EAR	3.288*** (0.216)	−6.699** (2.657)	0.030 (0.038)	−0.002 (0.040)
DER	0.631** (0.313)	2.349 (2.475)	0.100* (0.059)	−0.375** (0.164)
STDER	1.246*** (0.217)	0.566** (0.260)	−0.152*** (0.043)	−0.123*** (0.043)
Size	−0.116* (0.059)	−0.041 (0.061)	0.044*** (0.012)	0.079*** (0.027)
EAR × Size		4.716*** (1.259)		0.008 (0.015)
DER × Size		−0.845 (1.145)		0.225*** (0.073)
STDER × Size		0.269*** (0.067)		−0.011* (0.006)
Constant	15.981*** (0.832)	15.364*** (0.849)	−2.513*** (0.142)	−2.679*** (0.153)
R^2 within	0.338	0.388	0.041	0.104
R^2 overall	0.161	0.220	0.039	0.098
Wald χ^2 (df)	284.75*** (4)	333.55*** (7)	25.62*** (4)	67.43*** (7)

*Source: Author compilation (2026). Coefficients with standard errors in parentheses; dependent variables and regressors are differenced log values. N = 632 from 79 SACCOs. *** p < 0.01, ** p < 0.05, * p < 0.10.*

Solvency. The interactions of size with EAR ($\beta = 4.716$, $p < 0.01$) and with STDER ($\beta = 0.269$, $p < 0.01$) are positive and significant, while the DER interaction is not significant. The equity–solvency relationship therefore strengthens as SACCOs become larger. The negative coefficient on EAR in Model 3 is its conditional effect at a size of zero, which lies far outside the observed range of log assets (4.0 to 11.1) and should not be read as a negative effect of equity; the relevant quantity is the combined effect with the interaction term. Larger SACCOs appear better able to convert retained capital into earnings stability, through diversification and economies of scale. Similarly, short-term debt is associated with higher solvency in larger SACCOs, plausibly because they can raise short-term funds more cheaply and deploy them profitably.

Credit risk. The interaction of size with DER is positive and significant ($\beta = 0.225$, $p < 0.01$), whereas the interactions with EAR ($p = 0.601$) and STDER ($p = 0.065$, marginal) are not significant at 5 percent. Debt's relationship with non-performing loans thus differs by scale: the negative conditional DER coefficient in Model 3 is offset as size grows, so that leverage is associated with weaker asset-quality in larger SACCOs. Size itself has a positive coefficient on credit risk ($\beta = 0.079$, $p < 0.01$) once financing is controlled, in contrast to the negative bivariate correlation. This suggests that rapid asset growth may dilute credit discipline, which accords with the rising NPLs observed while total assets expanded (Figure 2) and with Mahat & Dahir (2018), who find that scale can undermine stability. The positive moderating role of size on the financing–performance relationship reported by Kerongo et al. (2022) is thus confirmed for solvency but qualified for credit risk.

Because at least one interaction term is significant in each stability equation, H03 is rejected: SACCO size significantly moderates the effect of equity and debt financing on financial stability. Table 9 summarises the hypothesis tests.

Joint reading of the results

Read together, the tables show a consistent picture. First, the direct effects are economically distinct: equity matters mainly for solvency, while debt matters mainly for credit risk. Second, the gain in explanatory power from adding size and its interactions is large relative to the baseline models, rising from an overall R^2 of 0.059 to 0.220 for solvency and from 0.031 to 0.098 for credit risk, which indicates that ignoring size would understate how financing choices work. Third, the Model 1 and Model 2 coefficients for the short-term debt-to-equity ratio differ in sign in the credit

risk equations (0.122 against −0.152), which suggests that part of the Model 1 effect reflects the correlation between short-term borrowing and SACCO size rather than short-term debt itself. Results for short-term debt should therefore be read with caution.

Discussion

Taken together, the results give a coherent account of how financing shapes SACCO stability. Equity which composed of share contributions and retained earnings is the engine of solvency. This finding is in line with the trade-off theory, which regards equity as a buffer against distress costs, and with the Z-score definition, in which the capital ratio is an explicit component. It also fits the pecking order theory: SACCOs finance themselves overwhelmingly from internal funds (mean EAR of 0.337 against a mean DER of 0.159), and the institutions that do so are the most solvent. The sharp fall in the equity ratio after 2017 (Figure 2), coinciding with the decline in solvency, is consistent with this interpretation: the erosion of capital relative to assets coincided with a weaker distance from insolvency.

Debt, by contrast, is primarily a credit risk issue. Short-term debt in particular carries rollover and liquidity pressure, and the liquidity preference perspective suggests that SACCOs relying on short-term funds must hold more liquid assets and may therefore lend under pressure to generate income. The significant positive effect of both debt ratios on credit risk in the baseline model supports this view. The reversal in signs in Model 3, where the conditional DER and STDER coefficients turn negative while their interactions with size are positive, shows that the debt–credit risk relationship cannot be summarised by a single coefficient: it depends on scale.

The practical message is that no single financing rule fits all SACCOs. Equity accumulation consistently supports solvency, whereas the consequences of borrowing depend on scale and on how well the funds are deployed. The weak explanatory power of the baseline models also cautions against attributing stability to financing structure alone: governance, credit management and the macro-economic environment (for example, the 2020 shock, when NPLs peaked) remain important.

Conclusions

This study examined how equity and debt financing affect the financial stability of DT-SACCOs in Kenya and whether size moderates the effect, using a ten-year panel of 79 SACCOs. Three conclusions follow. First, equity financing is the main source of solvency: SACCOs with a larger equity share are further from insolvency, though equity alone does not significantly reduce credit risk. Second, debt financing, both total and short-term, increases credit risk, with only weak support for any solvency benefit in the baseline model. Third, SACCO size significantly moderates these relationships, strengthening the solvency benefits of equity and short-term debt but changing the way leverage relates to credit risk. The evidence is consistent with the pecking order and trade-off perspectives: SACCOs rely mainly on internal equity, and borrowing carries distress and credit-quality costs that depend on scale. The decline in mean equity-to-assets from 0.41 in 2017 to 0.21 in 2024, while mean assets grew nearly threefold, is a cause for concern which was occasioned by the macro-economic fluctuations of 2015 to 2024.

The explanatory power of the baseline models is low, so financing structure explains only part of SACCO stability. Moderation was tested with a continuous interaction term, and the results are based on differenced series, which emphasise short-run changes over long-run levels. The data are limited to SACCOs with ten years of published accounts and may under-represent very young institutions. Future studies could add governance, liquidity and macroeconomic variables, use dynamic panel (GMM) estimators to address endogeneity, estimate effects separately by SASRA tier, and examine non-linear (threshold) effects of leverage on stability, also include non-deposit-taking Saccos do tiered analysis.

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