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IMPACT OF FINANCING SOURCES ON FINANCIAL SUSTAINABILITY OF MFIS

[*1]Rabia Arshad

[2]Mamoona Javed

[3]Rabia Anwar

*[*1]Lecturer, National Business School, The University of Faisalabad, Faisalabad, Pakistan*

[2]Lecturer, National Business School, The University of Faisalabad, Faisalabad, Pakistan

[3]MS Scholar, National Business School, The University of Faisalabad, Faisalabad, Pakistan

*[*1]rabiaarshad.nbs@tuf.edu.pk, [2]mamoonajaved.nbs@tuf.edu.pk, [3]rabiaanwar2005@gmail.com*

Abstract

This study investigates the impact of various financing sources, retained earnings, deposits, donations, commercial borrowing, and equity, on the financial sustainability (FSS) of microfinance institutions (MFIs), while introducing the Development State of the Economy (DSE) as a moderating variable. Employing a positivist, quantitative research design, the study utilizes secondary data from the Microfinance Information Exchange (MIX) covering 111 MFIs across two distinct economic contexts: a developed economy (United States) and a developing one (Pakistan). Through moderated multiple regression (MMR) analysis, the study reveals that financing sources have heterogeneous effects on FSS, significantly influenced by the economic development context. Deposits and equity consistently enhance sustainability, while donations and commercial debt negatively affect it. However, retained earnings, equity, and donations show markedly stronger positive effects in developed economies, suggesting that institutional and macroeconomic infrastructure plays a critical role in shaping financial outcomes. The findings underscore the importance of context-sensitive financing strategies and offer practical insights for MFI managers, policymakers, and development agencies aiming to promote sustainable financial models in diverse economic settings. This research contributes to the broader literature on microfinance by highlighting the contingent nature of financing efficacy and advocating for tailored approaches to MFI sustainability.

Keywords: Financial Sustainability, Financial Self-Sufficiency, Financing Sources, Development State of the Economy, MFIs

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INTRODUCTION

The financial sustainability (FSS) of microfinance institutions (MFIs) is significantly impacted by the development state of the economy (DSE), which affects the availability and effectiveness of financing sources such as retained earnings, deposits, equity, donations, and commercial borrowing. The capacity of MFIs to mobilize and utilize funds is influenced by critical DSE elements, including institutional quality, regulation, poverty levels, and technology. In developed economies such as the United States, higher financial inclusion and financial security are facilitated by robust capital markets and institutions. In contrast, countries such as Pakistan are confronted with weak enforcement, poverty, and inadequate infrastructure, which results in increased costs and hazards. This study emphasizes the moderating role of the DSE, demonstrating that financing instruments such as commercial borrowing may promote sustainability in robust systems but present risks in those that are weaker. The study underscores the necessity of maintaining a balance between profitability and outreach, as high interest rates could undermine inclusion, in accordance with the sustainable development goals (SDGs) 1, 8, and 10. In the end, it is imperative to establish financial systems that are context-specific and resilient in order to promote sustainable development and reduce inequality. MFIs offer financial services that are not available in traditional banking settings because of irregular income or a lack of collateral. MFIs are instrumental in the promotion of social and economic development, particularly in low-income economies, in addition to their role in inclusion. Nazrul Islam (2022) discovered that microfinance in Bangladesh enhanced income, expenditure, investment, and debt. In Uganda, Kizza and Namukasa (2022) demonstrated that MFIs with robust risk management and social missions were able to maintain their resilience during the COVID-19 pandemic. MFIs serve as development agents by achieving inclusive, adaptive, and socially driven growth by balancing poverty alleviation and profitability. This approach contributes to the advancement of SDGs 1 and 8. Institutional quality, regulations, and access to funding are all influenced by the DSE, which in turn affects the FSS of MFIs. Developed countries can leverage robust systems, while developing countries face significant risks and costs. Context-specific strategies, such as flexible lending, are necessary to address these contrasts. It is imperative to maintain a balance between profitability and outreach as microfinance expands, as high interest rates may prevent inclusion. Sustainable and inclusive microfinance growth require a comprehensive strategy that reconciles internal capabilities with economic realities. The present study investigates the extent to which financing strategies influence the long-term sustainability of microfinance institutions (MFIs) in various economic environments. MFIs must balance FSS with the provision of services to marginalized populations, requiring a shift from universal models to context-specific approaches. The effectiveness of capital structures is contingent upon the local conditions, as emphasized by scholars such as Bayai and Ikhide (2016). The study also emphasizes the moderating function of the DSE and validate the findings of Dokulilová et al. (2009) regarding the alignment of financing with economic environments to improve resilience. By examining the interaction between a country's economic development stage and its financing sources—debt, equity, grants, and retained earnings—this research offers a more comprehensive comprehension of FSS in microfinance. This paper addresses a significant gap in the literature by introducing a moderating construct that incorporates macroeconomic factors such as inflation, institutional integrity, and financial infrastructure. It investigates the combined impact of economic indicators and financing through multilevel analysis. The research recommends

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a context-specific approach and provides practical advice for ensuring that financing strategies are in accordance with economic conditions, strengthening the resilience of MFIs, and promoting SDG 8. This research provides valuable insights for public policy by emphasising the necessity of context-specific regulations to promote MFI sustainability. MFIs in economies with weaker economies may be adversely affected by uniform policies, such as strict interest limits. The study advocates for customized strategies, including market-based financing in stable countries and subsidies or blended finance in low-income countries, by underscoring the moderating influence of a country's development state. It also stresses integrating fin-tech and economic realities into policy design, aligning financial inclusion efforts with SDG 8.

LITERATURE REVIEW

Retained earnings are widely found to be the most impactful internal financing source. Fonchamnyo et al. (2023) found in Cameroon that retained earnings significantly improve OSS by up to 33.2%. Wambua (2018) in Kenya also reported strong positive effects (coefficients of 0.738), aligning with the Pecking Order Theory.

H_1: There is a significant relationship between retained earnings and FSS.

Donations have a mixed impact. Emeka et al. (2019) observed that high reliance leads to inefficiencies, while Klein and Ogden (2024) argued that in the U.S., donations could support long-term outreach. Maeenuddin et al. (2023) highlighted that donation-dependent MFIs in Bangladesh were vulnerable during crises, supporting the need for reduced reliance over time.

H_2: There is a significant relationship between donations and FSS.

Equity financing offers MFIs long-term support without debt burden. Maeenuddin et al. (2024) found equity positively correlated with OSS and financial independence. Fonchamnyo et al. (2023), however, reported insignificant results in Cameroon, indicating context dependency.

H_3: There is a significant relationship between equity and FSS.

Deposits provide a critical internal funding source but are sensitive to scale and efficiency. Moyo et al. (2024) found small deposits reduce sustainability, while larger ones improve OSS. Cozarenco et al. (2018) emphasized the cost-efficiency of unsubsidized deposit-taking MFIs. Regmifa (2024) linked high deposit ratios with stronger OSS.

H_4: There is a significant relationship between deposits and FSS.

The impact of debt is context-dependent. Wambua (2018) found positive effects in Kenya, whereas Li et al. (2022) reported negative impacts, suggesting debt increases financial risk. Sommeno et al. (2025) highlighted the importance of lender-MFI institutional compatibility.

H_5: There is a significant relationship between commercial borrowing and FSS.

Recent empirical studies confirm that the level of economic development significantly moderates the relationship between financing sources and the sustainability of MFIs. Using DEA and GMM techniques on data from 661 MFIs across 86 countries (2010–2018), researchers find that internal financing, such as equity and retained earnings, is more effective in settings where broader developmental conditions, such as access to markets, infrastructure, and education, are stronger (Ahamad et al., 2024). Mahmoudi and Ianc (2025), examining 60 developing countries through Panel VAR analysis, demonstrate that human development levels shape and strengthen the mutual relationship between operational sustainability of MFIs and national income, suggesting that improvements in health, education, and standard of living reinforce microfinance effectiveness. Similarly,

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Goel (2024) observes that Indian MFIs operating in more developed districts—characterized by better employment opportunities and infrastructure—were more successful in sustaining operations through client deposits and loan repayments, unlike their counterparts in less developed areas. Halouani (2025) finds that in countries pursuing environmental development goals and green finance policies, MFIs not only performed better in environmental loan delivery but also improved their operational sustainability. In the context of Pakistan, Maeenuddin et al. (2024) highlight that periods of strong economic growth and macroeconomic stability supported more sustainable outcomes for MFIs, while economic volatility and inflation posed significant challenges, particularly for institutions reliant on external debt financing.

H_6: DSE significantly moderates the relationship between retained earnings and FSS.
H_7: DSE significantly moderates the relationship between donations and FSS.
H_8: DSE significantly moderates the relationship between equity and FSS.
H_9: DSE significantly moderates the relationship between deposits and FSS.
H_{10}: DSE significantly moderates the relationship between commercial borrowing and FSS.

DATA AND METHODOLOGY

Research Design

This study used a positivist research design, positing that reality is objective, immutable, and observable without external influence. Positivism advocates for the examination of variables using replicable, objective observations. Creswell (2014) observes that this methodology is appropriate for researchers who maintain objectivity and detachment from the subject matter. This study adheres to a systematic research methodology, commencing with hypothesis development and concluding with evidence-based inferences. It employs a positivist, objective epistemology, regarding phenomena as observable and amenable to scientific analysis (Saunders et al., 2007). The study employs a quantitative, deductive methodology utilizing secondary data from the MFIs Exchange (MIX), so ensuring dependability, especially for single-point studies (Gall et al., 2007). This methodology effectively advances the study aims and guarantees credible outcomes.

Data and Sample

This study investigates the relationship between gender dynamics and sustainable performance in microfinance institutions, utilising data from the MIX database. The analysis concentrates on a substantial subset of 1,294 microfinance institutions from 102 countries between the years 2009 to 2018, a timeframe chosen for its data richness and significance to pivotal legislative and sectoral advancements. The study prioritises data quality and worldwide diversity, ensuring dependable and broadly applicable results. This research depends solely on secondary data obtained from the MIX platform, a worldwide esteemed repository for extensive microfinance institution data. In accordance with prior research (Imai and Azam, 2012; Tchuigoua, 2015), this study utilises data spanning from 2001 to 2020, concentrating on 111 microfinance institutions (81 from the USA and 30 from Pakistan). This prolonged duration facilitates a comprehensive, ten-year analysis. The utilisation of MIX guarantees the study's dependability and significance owing to its comprehensive, methodical, and esteemed dataset.

Variables

The dependent variable examined is sustainable performance, quantified by financial self-sufficiency, whereas the independent factors are retained profits, deposits, contributions, commercial borrowing, and equity, with the moderating effect of DSE being explored.

The dependent variable in this study is financial self-sufficiency, quantified as the ratio of

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adjusted operating revenues to adjusted operating expenses, in accordance with the methodology of Marwa and Aziakpono (2015). A multitude of independent variables is employed to evaluate financial sustainability. Retained Earnings are evaluated by the retained earnings to total assets ratio, as proposed by Dahmash et al. (2023) and Zabolotnyy and Wasilewski (2019). The deposit-to-assets ratio quantifies deposits by dividing total deposits by total assets. Donations are quantified utilising the donations to total assets ratio, as per the methodology established by Hasan and Hasan (2020). The ratio of total commercial bank borrowing to total assets represents commercial borrowing, as detailed by Shamsuddin Ahamad et al. (2024). Equity is evaluated by the ratio of total equity to total assets, as articulated in the studies of Githaiga (2024) and Singh (2024). The research incorporates a moderating variable: the economic development status, represented as a binary variable coded '1' for Microfinance Institutions (MFIs) in developed countries and '0' for those in developing countries, in accordance with Singh's classification (2024).

Econometric Strategy

The use of Moderated Multiple Regression (MMR) is justified as it allows simultaneous examination of both direct and interaction effects of financing sources—donations, equity, commercial borrowing, retained earnings, and deposits—on financial self-sufficiency (FSS) under varying economic conditions. Since DSE is a categorical (dummy) variable, MMR provides a robust statistical approach to assess how the economic environment moderates these relationships. This method captures the ex-post-facto nature of these connections, yielding more meaningful insights into how the state of economic development influences financing effects (Brown and Abulela, 2025). The econometric model is given below:

$$FSS_{it} = \beta_0 + \beta_1(Donations_{it}) + \beta_2(Deposits_{it}) + \beta_3(Equity_{it}) + \beta_4(Commercial\ Borrowing_{it}) + \beta_5(Retained\ Earnings_{it}) + \varepsilon_{it} \quad ---(1)$$

$$FSS_{it} = \beta_0 + \beta_1(Donations_{it}) + \beta_2(Deposits_{it}) + \beta_3(Equity_{it}) + \beta_4(Commercial\ Borrowing_{it}) + \beta_5(Retained\ Earnings_{it}) + \beta_6(Donations \times DSE_{it}) + \beta_7(Deposits \times DSE_{it}) + \beta_8(Equity \times DSE_{it}) + \beta_9(Commercial\ Borrowing \times DSE_{it}) + \beta_{10}(Retained\ Earnings \times DSE_{it}) + \varepsilon_{it} \quad ----(2)$$

Where; "FSS: Financial Self-Sufficiency, DSE: Development State of the Economy, β_0 : constant, β_1 - β_{10} : regression parameters, and ε_{it} : error term for 'i^{th}' cross-section and 't' time."

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics (Table 1) show notable asymmetries in the distribution of financing variables. The strong negative skewness in retained earnings (–1.258) and equity (–1.546) signals that a significant proportion of MFIs are undercapitalized or suffer from negative reserves, likely reflecting the precarious financial conditions of institutions in developing economies such as Pakistan. This is compounded by the low mean values for donations (0.017) and commercial debt (0.326), indicating their relatively minor but variable role in funding structures. Despite these challenges, the average FSS is above unity (1.171), suggesting that on aggregate, MFIs tend to cover operational costs from their revenues, but with wide dispersion. This skewed distribution of FSS (skewness = 2.679) and high kurtosis (1.525) suggests that while a few MFIs are highly sustainable, the majority hover near the break-even mark, especially in more fragile economies.

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Table 1: Descriptive Statistics

Variable	Minimum	Maximum	Mean	Std. Dev.	Skewness	Kurtosis
Retained Earnings	-12.350	1.401	0.040	0.541	-1.258	2.594
Deposits	0.000	0.911	0.309	0.335	0.391	-1.617
Donation	0.000	1.261	0.017	0.074	2.823	1.405
Commercial Borrowing	0.000	2.637	0.326	0.308	1.270	3.397
Equity	-4.797	1.476	0.271	0.353	-1.546	2.158
Financial Self-Sufficiency	-0.433	6.197	1.171	0.393	2.679	1.525
Development State of the Economy	0.000	1.000	0.725	0.447	-1.012	-0.978

Multicollinearity

Table 2 reports the correlation matrix to examine multicollinearity among the predictors. The results indicate no issue of collinearity as the highest correlation coefficient (-0.6080 is less than 0.70.

Table 2: Correlation Matrix

Variable		1	2	3	4	5	6	7
1	Retained Earnings	1.000						
2	Deposits	-0.057	1.000					
3	Donation	-0.219	-0.194	1.000				
4	Commercial Borrowing	-0.120	-0.608	-0.001	1.000			
5	Equity	0.473	-0.282	-0.218	-0.010	1.000		
6	Financial Self-Sufficiency	0.215	0.124	0.252	0.044	0.269	1.000	
7	Development State of the Economy	0.036	0.261	0.093	-0.336	-0.039	0.079	1.000

MMR Results

Moving to the regression results (Table 3), Model 1 presents the direct effects of deposits on FSS. Deposits emerge as the most consistently positive contributor ($\beta = 0.3039$, $p < 0.01$), underscoring the centrality of deposit mobilization to long-term sustainability. This aligns with the theory of financial intermediation, wherein deposits not only serve as a low-cost source of funds but also signal client trust and institutional legitimacy (Armendáriz and Morduch, 2010). The significance of this result has critical implications: MFIs that can mobilize local deposits are more likely to achieve cost-effective growth, especially in environments where external funding is volatile or politically contingent. This underscores the importance of building financial literacy, savings culture, and regulatory structures that support deposit taking among poor populations, areas where developed economies already enjoy structural advantages.

The result for retained earnings ($\beta = 0.0514$, $p = 0.0561$) is only marginally significant in the base model, indicating a weak overall effect when not accounting for economic context. This suggests that merely generating surplus income is not, on its own, sufficient to ensure sustainability. The ability to retain and reinvest earnings is often constrained in developing economies by inflationary pressures, unstable regulatory environments, or pressure to subsidize operations. In contexts like Pakistan, retained earnings may be used

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to absorb operating inefficiencies rather than to invest in productive expansion, thereby limiting their capacity to improve sustainability.

The negative coefficient for donations (β = –1.4056, p < 0.01) is substantial and consistent with prior literature emphasizing the distortive effects of donor dependence (Mersland and Strøm, 2010). Donations, while intended to subsidize outreach to the poorest, often lead to mission drift or operational complacency. MFIs that receive predictable grants may face less pressure to manage costs, evaluate credit risk, or innovate. This has profound implications: development agencies and philanthropists must design donation programs that incentivize efficiency and accountability, possibly through matched funding or performance-based disbursements.

Commercial borrowing also negatively affects FSS (β = –0.2459, p < 0.01), challenging assumptions that debt financing always leads to scale and operational maturity. While debt may enable rapid portfolio growth, it comes with fixed servicing obligations that can erode margins, especially when lending to low-income, high-risk clients. This is particularly problematic in developing economies where interest rate spreads are high, and enforcement of loan contracts is weak. The result suggests that commercial borrowing, if not carefully structured and timed, can expose MFIs to liquidity shocks and reputational damage.

Table 3: Moderated Multiple Regression Results

Variable	Model 1				Model 2			
	Coeff.	S. Err.	T-value	P-value	Coeff.	S. Err.	T-value	P-value
Constant	1.3365	0.0406	32.9071	0.0000***	1.3057	0.0411	31.7421	0.0000***
Retained Earnings	0.0514	0.0269	1.9129	0.0561**	0.9665	0.1412	6.8445	0.0000***
Deposits	0.3039	0.0543	5.5964	0.0000***	0.1899	0.0866	2.1942	0.0285**
Donation	-1.4056	0.1882	-7.4673	0.0000***	-2.1976	0.3492	-6.2929	0.0000***
Commercial Borrowing	-0.2459	0.0551	-4.4634	0.0000***	-0.1984	0.0581	-3.4154	0.0007***
Equity	0.1136	0.0443	2.5633	0.0105***	-0.2162	0.0929	-2.3269	0.0202**
Retained Earnings × DSE					0.9495	0.1437	6.6078	0.0000***
Deposits × DSE					0.0848	0.0794	1.0679	0.2859
Donation × DSE					1.2810	0.4032	3.1769	0.0015***
Commercial Borrowing × DSE					-0.0329	0.0665	-0.4948	0.6209
Equity × DSE					0.4324	0.0956	4.5233	0.0000***
R^2	0.451				0.513			
$R^2\Delta$					0.062			

Note: DSE is development state of the economy. ***, ** and * indicate level of significance at 1%, 5% and 10%, respectively.

Interestingly, equity financing shows a positive and statistically significant effect (β = 0.1136, p = 0.0105), affirming its role as a stabilizing force. Equity offers long-term capital without repayment obligations, giving MFIs the flexibility to innovate and scale sustainably. However, the relatively modest coefficient indicates that many MFIs, particularly in

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developing countries, may not be attracting sufficient equity investments due to weak legal frameworks, low investor confidence, or regulatory constraints on ownership structures. This finding implies that policy efforts should focus on improving the enabling environment for equity investors, including transparent governance, enforceable shareholder rights, and exit mechanisms.

Model 2 integrates the DSE as a moderator and yields a higher R^2 value (0.513 vs. 0.451), with a ΔR^2 of 0.062, indicating that accounting for economic context significantly enhances explanatory power. The interaction term for retained earnings × DSE ($\beta = 0.9495$, $p < 0.01$) reveals that retained earnings substantially improve FSS in developed economies but have little impact in developing ones. This suggests that economic infrastructure, such as sound financial regulations, inflation control, and investor protections, plays a crucial role in converting internal surplus into institutional resilience. In Pakistan, however, retained earnings may be devalued by inflation or diverted into unproductive uses due to weak internal controls.

The significant interaction for donation × DSE ($\beta = 1.2810$, $p = 0.0015$) points to an important nuance: while donations are generally detrimental, their effect is less harmful in developed economies like the USA. This could be attributed to more disciplined donor agencies, better oversight, and more effective monitoring mechanisms. In contrast, donations in developing countries may be misallocated due to corruption, political interference, or weak institutional capacity. This finding calls for a rethinking of donor strategies in such contexts, shifting from unconditional grants to results-based financing models.

Perhaps the most policy-relevant finding is the significant and positive interaction between equity and DSE ($\beta = 0.4324$, $p < 0.01$). Equity financing, already beneficial in general, has a magnified effect in developed economies. This reinforces the argument that macroeconomic institutions, such as contract enforcement and property rights, enhance the ability of MFIs to use equity effectively. In developing contexts, the underperformance of equity financing may not reflect flaws in the model itself but rather the absence of supportive conditions for its deployment. Legal reforms that promote equity participation, protect investors, and simplify incorporation procedures can help unlock the potential of this financing source.

Conversely, the insignificant interaction terms for deposits × DSE ($\beta = 0.0848$, $p < 0.01$) and commercial borrowing × DSE ($\beta = -0.0329$, $p > 0.01$) suggest that these funding channels operate similarly across development contexts. This does not imply they are universally effective, but rather that their impact is shaped by institution-level factors such as governance, loan portfolio quality, and risk management, rather than macroeconomic conditions per se. These findings underscore the need for capacity building within MFIs, especially in areas of treasury management and credit control, regardless of their operating environment. Thus, all the hypotheses are accepted except H_{10} and H_{11}.

CONCLUSION AND IMPLICATIONS

Policy Implications

This study emphasizes that financing strategies for MFIs must align with the economic and institutional context. The moderating role of the DSE shows that no single financing model fits all settings. Deposit mobilization is effective in both developed and developing countries but is often restricted due to regulatory concerns. A graduated licensing system allowing well-performing MFIs to take deposits under supervision can improve

sustainability. Equity financing works better in developed markets, while developing countries need to strengthen investor protections and promote impact investments. Donations linked to performance metrics to prevent dependency and guarantee accountability. Commercial borrowing provides liquidity but has hazards, including over-indebtedness and interest obligations, particularly in fragile economies. Regulators ought to oversee these via advantage restrictions, credit reporting, and integrated finance models. The results underscore the necessity for tailored national policies—strategies effective in affluent countries may not provide the same success in underdeveloped nations. Pakistan should priorities internal capital production and governance improvements. Enhancing regulatory frameworks, digital finance, and data technologies is crucial for developing sustainable microfinance institutions. Ultimately, adaptive, evidence-based regulation is essential for empowering microfinance to facilitate poverty alleviation, economic expansion, and institutional advancement.

Recommendations

It is advised that policymakers and microfinance players implement a diverse approach to financing options, informed by the DSE. Regulators must to contemplate the establishment of tiered frameworks that enable deposit mobilization by well-governed microfinance institutions under appropriate oversight, especially in developing nations. Investor protections must be strengthened to promote equity financing, and merged finance methods should be broadened to mitigate the risks associated with commercial borrowing. Donor agencies are encouraged to link funds to performance-based results to reduce dependency. Moreover, enhancing institutional capacity, digital infrastructure, and regulatory frameworks—particularly in nations such as Pakistan—will be essential for advancing financial sustainability. Future research ought to examine a wider array of countries and incorporate qualitative data to enhance comprehension of institutional dynamics which affecting financing selections.

Conclusion

The results demonstrate that the correlation between several financing sources—retained earnings, deposits, donations, commercial borrowing, and equity—and the FSS of MFIs is contingent upon the DSE. The study employed a positivist, quantitative approach using mixed data from 111 microfinance institutions in the USA and Pakistan, utilizing moderated multiple regression (MMR) to evaluate both direct and contextual effects. Deposits and equality exhibited significant positive impacts on FSS, advancing SDGs 1 and 8 by improving stability and outreach. Retained earnings, despite their limited magnitude, exerted a considerable positive influence when tempered by economic development, underscoring the importance of robust institutional infrastructure. Donations, although beneficial for outreach, adversely affected sustainability in emerging contexts due to dependency. Likewise, commercial borrowing frequently diminishes sustainability due to excessive advantage and elevated interest expenses. The DSE was pivotal: in affluent economies, robust institutions and rules facilitated more efficient financing, while in developing countries, inadequate governance and infrastructure constrained the efficacy of otherwise feasible financing techniques. However, the study's focus on only two countries may limit the generalizability of its findings, and the reliance on secondary data may omit qualitative insights into institutional behavior.

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