The Central Bank Supervision Stringency on Bank Stability

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Abstract

This study examines the relationship between central bank supervision stringency and bank stability in Tanzania, focusing on 45 licensed banks. Specifically, it assesses the influence of regulatory capital stringency, loan loss provisioning stringency, and loan diversification stringency on bank stability. Guided by Agency Theory and Credit Risk Management Theory, the study adopts a quantitative research design. Primary data were collected using structured questionnaires administered to 225 bank employees, including credit, finance, internal audit, risk, compliance, and human resource officers. Data were analyzed using Structural Equation Modelling (PLS-SEM) via SmartPLS 4.0. Rigorous data screening addressed missing values, outliers, and measurement errors. Confirmatory Factor Analysis confirmed adequate model fit, construct validity, and reliability, with factor loadings exceeding the recommended threshold. The results reveal statistically significant relationships between supervisory stringency measures and bank stability, highlighting the critical role of stringent central bank supervision in enhancing financial system resilience in Tanzania.

***Key words**: Central bank supervision stringency, bank stability, regulatory capital stringency, loan loss provisioning stringency, and loan diversification stringency.*

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1. Introduction

Bank stability is a critical component in maintaining the health of both individual financial institutions and the broader financial system. Bank stability has been an issue of concern to most regulatory bodies, such as the Central Bank, across jurisdictions, specifically the bank stability concern increased after the Global Financial Crisis of 2007 -2009. Bank stability is the ability of a bank to maintain its operational consistency and financial health in the face of numerous risks, uncertainties and challenges (Gurley Holloway, 2023, Shetty et al., 2024). (Barth et al., 2022) suggest that among the causes for the Global Financial Crisis included relaxed regulations and supervision of banks by regulatory bodies, and a culture of undermining the central bank's supervisory role in which one of the central bank strategic objectives includes ensuring bank stability.

While the GFC directly impacted many developed economies, African banks, including those in Tanzania, were indirectly affected. Although Tanzanian banks were not exposed to complex financial instruments like subprime mortgages, they were still exposed to the global economic downturn, particularly those with foreign ownership or ties to parent banks in crisis-affected regions (Nyangu et al., 2022). However, Tanzania's proactive regulatory response, such as adjustments to capital adequacy requirements and changes to lending rates, allowed the country's banking system to demonstrate resilience during the GFC and the subsequent COVID-19 pandemic (Magoma, 2022).

A fundamental element in ensuring the stability of banks is the enforcement of stringent capital requirements. Regulatory capital stringency, defining the minimum capital reserves banks must hold to absorb potential losses, is essential in safeguarding the financial health of banks. Without adequate capital buffers, banks become more vulnerable to financial shocks, increasing the likelihood of insolvency or systemic crises. The GFC demonstrated that many banks that collapsed or required government bailouts lacked sufficient capital to withstand the economic turmoil (Hirtle et al., 2020). On the other hand, banks with more robust capital positions were better equipped to weather such financial stress and maintained stability in the broader economy (Mariscal-Cáceres et al., 2024). This highlights the crucial role of capital stringency in preventing financial instability.

Building upon the importance of capital stringency, the necessity for stricter regulatory measures becomes apparent. Regulatory stringency refers to the

degree of enforcement that regulators apply to ensure that banks comply with laws governing capital adequacy, liquidity, and overall risk management (Mirzaei and Samet, 2022). Stricter regulatory frameworks, which include higher capital requirements, loan loss provisioning, and limits on risk-taking, are critical for enhancing bank stability. These measures incentivize banks to adopt prudent risk management practices, thus reducing the likelihood of financial instability (Borio et al., 2020). Research indicates that central banks with more rigorous supervisory frameworks tend to have more resilient banking systems, especially during economic downturns (Nguyen, 2021). In Tanzania, for example, the Bank of Tanzania's proactive regulatory interventions during the COVID-19 pandemic ensured that banks maintained stability and continued with their support to the economy (Magoma, 2022).

Despite the significant body of literature on the relationship between regulatory frameworks and bank stability, a gap exists in understanding the combined impact of key regulatory elements, specifically regulatory capital stringency, loan loss provisioning, and loan diversification on bank stability. Most existing studies have focused on these factors in isolation, but few have examined how these regulatory elements interact, especially within developing economies like Tanzania. Moreover, the existing research often lacks empirical evidence on how these regulatory measures influence bank stability over time, leaving a gap in understanding their cumulative impact in emerging markets (Nguyen, 2021, Shabir et al., 2023). This gap is particularly relevant in the context of developing countries, where regulatory frameworks are still evolving, and the effects of regulatory stringency may differ from those in more developed economies.

This study aims to bridge this gap by examining the relationship between regulatory stringency focusing on capital stringency (RCS), loan loss provisioning (LLS), and loan diversification (LDS) and bank stability in Tanzania. While previous research has explored these regulatory elements individually, this study will offer a comprehensive analysis of their combined effect, particularly in times of crisis. By focusing on the Tanzanian banking sector, the research will contribute empirical evidence on the role of regulatory stringency in improving bank resilience, particularly in emerging economies. This study will also introduce new data and methodological approaches, providing deeper insights into the regulatory-bank stability relationship. Furthermore, it will offer practical recommendations for

policymakers and regulators to strengthen the banking system in Tanzania and other developing economies.

Overall, this research will provide valuable empirical insights into how regulatory frameworks can be structured to enhance the stability and resilience of banks, with a particular focus on the Tanzanian banking sector. By addressing the gaps in the current literature, the study will contribute to a better understanding of the role of regulatory stringency in promoting bank stability, especially during times of economic distress. The findings will offer valuable insights for policymakers, regulators, and financial institutions, supporting efforts to strengthen banking systems and foster sustainable economic growth in developing economies.

2. Theoretical Perspective

Theoretical frameworks that anchored this study to understand the relationship between central bank supervision stringency and bank stability are the Agency Theory and Credit Risk Management Theory.

2.1 Agency Theory

Agency Theory (Meckling and Jensen, 1976) focuses on the relationship between principals (shareholders) and agents (such as bank managers). In the context of regulatory capital stringency, the theory would analyze how stringent capital requirements imposed by regulators who work to ensure that the shareholders and other stakeholders' interests are fulfilled, influence the behavior and decision-making of bank managers (the agents). It explores issues such as how banks manage their capital ratios, allocate resources, and make risk-taking decisions under regulatory constraints. The theory also addresses the alignment of incentives, monitoring mechanisms, and the mitigation of agency problems that arise when managers may prioritize their own interests over those of shareholders or regulatory expectations. Therefore, Agency Theory would be particularly relevant in examining how regulatory capital stringency affects bank stability through its impact on the behavior and risk management practices of bank managers.

Agency Theory focuses on the existence of conflicts of interests between the shareholders and managers and due to those conflicts of interest, agency costs may increase. Agency Theory assumes that the main friction is the conflict of interests between different parties interested in the companies including banks. An agency problem exists if a principal, such as the shareholder, uses an agent, such as the managers and executive team, to manage the company.

Agency theory assumes that managers and shareholders are expected to have potentially conflicting interests, which can affect the bank performance and capital level (Musa and Ibrahim, 2022).

The necessary monitoring cost decreases as the company's assets become more tangible and well-capitalized. As a result, shareholders will be less likely to issue more debt in order to split the monitoring cost with debt holders (Le et al., 2023). From this perspective, shareholders are often viewed as better positioned to protect their interests compared to regulators, especially in environments with minimal regulatory oversight. This viewpoint aligns with former Fed Chair Alan Greenspan's belief that market participants, such as shareholders, are more adept at monitoring and safeguarding their interests than external regulatory bodies (Klinger et al., 2022).

However, Agency Theory also captures the inherent tension between shareholders' goals of profit and value maximization, and regulators' focus on stability maximization. These objectives may not always align, as efforts to enhance stability may limit profit and value in the short term. This contradiction is a key challenge in balancing shareholder interests with regulatory priorities. Empirically, Agency Theory is often used to examine the relationship between regulatory capital stringency and bank stability by analyzing how stringent regulations influence the behavior of bank managers and their risk management practices. Studies suggest that stronger governance and well-capitalized institutions reduce agency costs, leading to better performance and higher valuations (Al-Ahdal et al., 2022 (Al-Ahdal et al., 2022, Warrad and Khaddam, 2020). Therefore, the Agency Theory framework can offer valuable insights into how regulatory frameworks impact bank stability, particularly by addressing the alignment between the interests of shareholders, managers and regulators.

2.2 Credit Risk Management Theory

Credit Risk Management Theory (Jorion, 2009) focuses on how banks assess, mitigate, and control the risks associated with lending, particularly credit risks, to ensure the stability and resilience of financial institutions. This theory emphasizes the importance of effective risk management practices, including the establishment of loan loss provisions, to safeguard against potential defaults that could threaten bank capital and stability (Khine, 2023). Given that banks operate by lending depositor funds, prudent credit risk management becomes essential in maintaining their financial health. If banks engage in reckless lending, they face stricter regulatory provisions for

credit losses, which could impact their stability. Therefore, adopting sound credit risk management practices is critical for banks to ensure responsible lending, minimize defaults, and foster economic growth.

In the context of regulatory stringency, particularly in loan loss provisioning, Credit Risk Management Theory provides a framework for understanding how stringent regulatory requirements influence banks' lending behavior and their overall stability. By requiring banks to set aside adequate provisions for potential loan defaults, regulatory authorities ensure that banks maintain a buffer against unexpected credit losses, which in turn supports long-term financial stability. This alignment between regulatory capital stringency and credit risk management helps to ensure that banks perform their intermediary role effectively, minimizing credit risks while contributing to economic development (Lumpkin and Schich, 2020, Kuznyetsova et al., 2022). Therefore, Credit Risk Management Theory offers valuable insights into how regulatory policies around loan loss provisions impact the stability and risk management practices of banks, particularly in an environment of central bank supervision.

3 Empirical Literature and Development of Hypothesis

3.1 Empirical Review

Triki et al. (2017) explored the impact of various regulatory requirements on bank efficiency across African countries. They investigated how different factors such as overall capital stringency, entry and exit restrictions, transparency requirements, liquidity and diversification standards, financial repression (price controls), availability of financial safety nets, and quality of supervision influence bank performance. Their findings indicate that increased availability of financial safety nets tends to improve efficiency in African banks. Moreover, the study highlighted that the effectiveness of regulations varies significantly depending on the size and risk profile of the banks. Specifically, stringent entry restrictions were found to enhance efficiency for larger banks, whereas exit restrictions diminished efficiency for smaller banks. Similarly, high-risk banks benefited from strict entry regulations in terms of efficiency, while low-risk banks did not gain from stringent exit regulations. Additionally, the findings revealed that small banks tend to be negatively affected by heightened transparency requirements and price controls. Conversely, stringent capital requirements were found to enhance efficiency primarily among large banks and those with low risk profiles. Overall, the study supports the argument that regulatory

frameworks should be tailored to the specific risk and size characteristics of the institutions they regulate.

The relationship between central bank supervision stringency and bank stability is multifaceted, with the overall effect depending on various factors such as the design and implementation of regulatory frameworks. Stringent supervision typically promotes sound banking practices and reduces risks, contributing to greater stability (Dordevic et al., 2021). However, achieving an optimal balance is essential, as excessively stringent regulations may inadvertently discourage bank growth or result in unintended consequences.

Several studies have examined the intricate ways in which regulatory frameworks impact bank behavior and stability. Chen et al. (2021) explored the impact of bank regulation and supervision across 65 countries, finding that restrictions on bank activities, stringent capital requirements, and corrective action measures are positively linked to systemic risk, as measured by Marginal Expected Shortfall. Their analysis underscores the importance of carefully designed regulatory frameworks to manage systemic risk effectively, as overly strict regulations, if not properly balanced, can lead to unintended consequences.

Similarly, Dias (2021) observed a complex, inverted 'U' shaped relationship between capital regulation and bank risk-taking. Banks tend to take less risk with moderate increases in capital ratios, but excessive capital levels can incentivize riskier behavior. Stricter regulations were shown to mitigate this tendency, underscoring the nuanced relationship between regulation and risk-taking. This highlights the importance of calibrating regulatory stringency to avoid creating incentives for excessive risk-taking once capital ratios exceed certain thresholds.

Mutarindwa, Schäfer, and Stephan (2020) further illustrated the complex dynamics in the context of African banks, showing that banks meeting Basel III capital thresholds tend to lend more and exhibit enhanced stability, as evidenced by improvements in Z-scores and reductions in non-performing loan (NPL) ratios. However, the study also highlighted the importance of regulatory institutions' strength in shaping compliance and outcomes, emphasizing that the effectiveness of regulatory frameworks significantly influences their impact on bank stability.

Taken together, these studies emphasize that while regulatory stringency can positively impact bank stability, the design and implementation of these frameworks must carefully consider various factors such as capital adequacy, institutional effectiveness, and regional contexts. The findings underscore the necessity of adaptive regulatory frameworks that strike a balance between risk mitigation, bank resilience, and sustainable economic growth. From the above discussion, the following came as a hypothesis:

3.2 Development of Hypothesis

H_1: Regulatory capital stringency positively influences the bank stability.

Tighter macroprudential policies and regulatory frameworks, such as Basel III, have a significant influence on loan loss provisioning (LLP) practices and bank stability. Olszak et al. (2023) found that when macroprudential policies tighten, banks often adjust their LLP practices, typically increasing their provisions in response to stricter provisioning standards. This adjustment helps mitigate risks and improve financial stability. The study also highlighted that the impact of macroprudential tightening varied depending on the type of regulatory tool applied, with tighter provisioning standards generally leading to higher LLPs, whereas other tools, such as taxes on financial activities, reduced LLP levels. Furthermore, the dynamic nature of LLP policies, as banks respond to changing regulatory environments, emphasizes the critical role of these provisions in stabilizing the banking sector.

Similarly, Jutasompakorn et al. (2021) found that Basel III regulations, which increased Tier 1 capital requirements, led to banks utilizing discretionary loan loss provisions (DLLP) more effectively for capital management purposes. This shift towards a more proactive approach to capital management resulted in better-timed loan loss provisions, enhancing the banks' overall stability. The increased incentives for banks to report higher capital ratios under Basel III contributed to more timely and effective provisioning, reducing the potential for income smoothing behaviors and bolstering the banks' resilience.

Together, these findings suggest that stricter loan loss provisioning regulations play a vital role in enhancing bank stability by encouraging more conservative risk management practices. This supports the hypothesis that loan loss provisioning stringency positively influences bank stability. From these explanations, we can hypothesize the following:

H_2: Loan loss provisioning stringency positively influences the bank stability.

Existing literature highlights that loan diversification stringency is a key determinant of bank stability, as it helps mitigate risk and enhances financial resilience. Loan diversification involves spreading loans across different sectors, geographic regions, or borrower types to reduce concentration risks and increase stability. Studies have shown that stringent regulations surrounding loan diversification contribute to bank stability by ensuring a broader distribution of risk across the bank's portfolio.

Research by Hunjra et al. (2021) found that diversification strategies significantly reduce risk-taking behavior in banks, especially in emerging economies. By diversifying their loan portfolios, banks are less reliant on any single borrower or sector, reducing their exposure to potential losses. Similarly, Gwatidzo (2024) found that regulatory measures, including activity restrictions that promote diversification, improve both the performance and stability of banks. This aligns with the findings of Adem (2022), who demonstrated through dynamic panel data from 45 African countries that diversification lowers risk and enhances bank stability, particularly during economic crises.

These studies collectively emphasize that loan diversification, as a stringently regulated practice, plays a critical role in shaping bank behavior and performance. Effective diversification strategies, supported by regulatory oversight, can minimize risk-taking, thus enhancing the stability of banks in various economic contexts. This underscores the importance of regulatory frameworks that balance stability goals with incentives for sustainable growth.

Thus, from the above discussion, we can postulate that:

H_3: Loan diversification stringency positively influences bank stability.

The literature highlights the significant impact of regulatory frameworks on bank efficiency, earnings quality, and stability, with varying effects depending on factors like bank size and risk profile. Key findings suggest that financial safety nets improve efficiency, while stringent regulations such as capital requirements and entry/exit restrictions affect banks differently based on their characteristics. Regulatory measures also influence earnings quality, with some promoting better earnings management, while others have a negative effect. Capital regulation, especially after financial crises, is crucial for stability, though its effectiveness can be limited by weak institutional

environments. However, gaps remain in understanding the relationship between regulatory measures like capital adequacy and loan loss provisions and bank stability in regions like Sub-Saharan Africa and China. This study seeks to fill these gaps by examining the effects of regulatory stringency, focusing on loan loss provisioning and capital requirements, to offer insights into strengthening banking sector stability through tailored regulatory frameworks.

4. Methodology

4.1 Research Design

This quantitative study employed a cross-sectional research design as its chosen methodology. This approach involved distributing a semi-structured questionnaire to designated officers from 45 licensed and operating banks in Tanzania. The decision to utilize a cross-sectional design was motivated by its ability to swiftly gather data within a limited timeframe, which was well-suited to the study's specific time constraints. Furthermore, the deliberate selection of officers occupying relevant positions in the banks such as Finance Officer, Human Resource Officer, Internal Auditor, Loan Management Officer, and Risk Officer, was pivotal. These roles were identified as crucial contributors to the objectives of the study, thus warranting their inclusion in the data collection process. Additionally, the researcher involved the assessment of various variables utilizing multiple indicators. These included Regulatory Capital Stringency (RCS), Loan Loss Provisioning Stringency (LLS), Loan Diversification Stringency (LDS), and Bank Stability (BS), providing a comprehensive framework for evaluating the pertinent factors within the scope of the study. This methodological approach facilitated a thorough examination of how these variables interplay and impact the operational dynamics and stability of banks in Tanzania.

While empirical data, such as bank financial information and central bank stringency metrics, are crucial for quantifying bank stability, responses from key officers provide important insights into how regulatory measures are perceived and applied within the organization. By collecting data from officers in roles such as finance, risk management, and loan management, the study captures their direct experiences and perspectives on the practical impact of regulatory stringency. This helps to complement and contextualize the financial data, offering a more comprehensive understanding of how regulatory frameworks influence bank stability. Thus, combining both quantitative data and qualitative input strengthens the empirical connection between regulatory stringency and bank stability.

4.2Population and Sample Size

The study targeted individuals from 45 banks, as identified by the Bank of Tanzania (BOT, 2022). The total population of employees across these banks was not specified, but a representative sample was drawn using a stratified random sampling method. From each bank, five officers were selected, resulting in a total of 220 respondents. The officers were chosen based on their critical roles within the banks, including Finance Officer, Human Resource Officer, Internal Auditor, Loan Management Officer, and Risk Officer. These positions were selected because of their direct involvement in daily banking operations, regulatory compliance, and risk management, which are essential to the study's objectives.

The sampling frame consisted of individuals occupying these roles within the 45 banks. Stratified random sampling ensured that individuals from diverse departments were represented, allowing for a comprehensive perspective on various aspects of banking practices and regulatory compliance. Given the total number of banks in the sample (45) and the selection of 5 officers per bank, the sample size of 220 respondents is considered adequate for providing reliable insights. The chosen sample allows for a robust analysis while balancing the time and resource constraints of the study. Additionally, the stratified sampling approach helps ensure that each department's input is adequately captured, enhancing the study's depth and accuracy in understanding the regulatory dynamics and their impact on bank stability in Tanzania.

4.3 Data Collection Instrument and Validation

Quantitative data collection for this study involved the systematic administration of a carefully designed semi-structured questionnaire aimed at generating statistical insights pertinent to the formulated hypotheses. The questionnaire construction followed a rigorous approach outlined by Churchill and Iacobucci (2006), encompassing nine recommended steps to ensure reliability and validity. Each questionnaire item pertaining to the variables under investigation was rated on a seven-point Likert scale, facilitating a precise assessment of respondents' perceptions.

The decision to utilize quantitative data collection methods was driven by their capability to generalize findings and enable predictive analysis, as emphasized by Akter *et al*. (2019). The hard copy of a semi-structured questionnaire was distributed among staff members from banks, specifically targeting departments involved in credit management, internal audit, risk and compliance, finance, and human resources. This approach was chosen to

gather comprehensive data reflecting diverse perspectives and insights relevant to the study's objectives.

Prior to commencing the main study, a pilot investigation was undertaken involving 20 (10%) financial institutions to validate the questions included in the final questionnaire. Convergent validity indices were computed, yielding values of 0.600 for Capital Stringency (RCS), 0.562 for Loan Loss Provisioning Stringency (LLS), and 0.695 for Loan Diversification Stringency (LDS). Additionally, reliability analyses were conducted, resulting in coefficients of 0.784 for Capital Stringency (RCS), 0.804 for Loan Loss Provisioning Stringency (LLS), and 0.886 for Loan Diversification Stringency (LDS). Based on the insights gleaned from the pilot study, items deemed redundant, overly complex, or ambiguous were accurately eliminated from the final questionnaire intended for the main study in order to ensure robustness and clarity of the instrument employed for data collection.

4.4 Techniques of Data Analysis

The researcher diligently input field-acquired data into Statistical Package for Social Sciences (SPSS Version 27), demonstrating a commitment to precision and reliability in subsequent analyses. Stringent checks were implemented to uphold data integrity, accurately identifying and correcting potential entry errors, and addressing missing values and outliers. Following best practices as recommended by Hair et al. (2010), linear interpolation was employed to impute missing data, minimizing disruptions to dataset integrity. Additionally, a thorough examination of box plot results ensured that outliers were adequately managed, confirming the dataset's suitability for further statistical scrutiny. With a robust dataset in place, the researcher proceeded to conduct comprehensive analyses using Partial Least Squares Structural Equation Modeling (PLS-SEM). The structural model was specified as follows:

$$BS=\beta_0+\beta_1 RCS+\beta_2 LLPS+\beta_3 LDS+\varepsilon \quad (1)$$

Where:

BS represents *Bank Stability*, measured using composite indicators capturing financial soundness, risk resilience, and operational stability;
RCS denotes *Regulatory Capital Stringency*, measured through indicators reflecting the strictness of capital adequacy requirements imposed by the central bank;

LLPS represents *Loan Loss Provisioning Stringency*, measured by indicators assessing the rigor of provisioning requirements for non-performing loans;
LDS denotes *Loan Diversification Stringency*, measured using indicators capturing regulatory emphasis on portfolio diversification to mitigate credit risk;
β_0 is the intercept;
β_1–β_3 are the path coefficients representing the strength and direction of the relationships between the independent variables and bank stability; and
ε is the error term.
Special attention was given to evaluating the coefficient of determination (R^2), a pivotal metric for gauging the model's predictive efficacy.

5. Empirical Results

5.1 Descriptive statistics

The demographic profile of the respondents provides valuable insights into the characteristics of individuals involved in the study. The majority of respondents were male (55%), while females constituted 45% (Table 1). Regarding education, half of the respondents hold a bachelor's degree, indicating a well-educated respondent pool. A significant number also possess master's degrees (35%), with only a small fraction holding a PhD (2%). This educational background is crucial as it suggests that the respondents have the knowledge necessary to engage with complex regulatory and financial topics, including the influence of capital stringency on bank stability. In terms of experience, nearly half of the respondents (49%) have 16-25 years of experience, which enhances the reliability of their insights into bank stability issues. The area of operations reflects a diverse range of expertise, with significant representation in credit (23%), risk and compliance (20%), and finance (20%). This diversity ensures that various perspectives are considered when examining the influence of regulatory capital stringency, loan loss provisioning stringency, and loan diversification stringency on bank stability. Overall, this demographic profile indicates that the respondents possess the necessary experience and expertise to contribute valuable insights to the study's objectives, facilitating a comprehensive analysis of the regulatory factors affecting bank stability.

Table 1: Demographic profile of the respondents

SN	Type	Profile	Frequency	Percentage
1	Sex	Male	113	55%
		Female	93	45%
2	Age	21-29 years	34	17%
		30-39 years	67	33%
		40-49 years	72	35%
		50 years and above	30	15%
3	Education	(a) Diploma	19	9%
		(b) Bachelor's degree	103	50%
		(c) Master's Degree	72	35%
		(d) Phd	4	2%
		(e) Others	8	4%
4	Experience	3 to 5 yrs	6	3%
		6 to 15 yrs	37	18%
		16-25 yrs	101	49%
		26 to 35 yrs	54	26%
		36 and above	8	4%
5	Area of Operations	Credit	47	23%
		Audit	40	19%
		Risk and compliance	42	20%
		Finance	41	20%
		Human resources	36	17%

Source: Authors' computation from field data (2024)

The indicators in Table 2 show a strong consensus on the benefits of higher capital requirements (mean of 5.684), suggesting that they enhance resilience against financial shocks. Adequate loan loss provisioning is similarly viewed favorably, with a mean score of 5.388, indicating its role in reducing bank failure risks. However, there are concerns that stringent provisioning (mean of 5.316) could restrict credit flow, potentially hindering economic growth. The perceptions regarding loan diversification highlight its importance in risk mitigation, with a mean of 4.728 suggesting that diversified portfolios contribute positively to stability.

Overall, the findings underscore the need for a balanced regulatory approach that fosters bank stability, while allowing sufficient operational flexibility. The effectiveness of these supervisory measures hinges on their design, which should enhance trust in the banking system and ensure that banks can navigate economic challenges without overly constraining their lending capabilities.

Table 2: Descriptive statistics for central bank's supervision effectiveness

Indicator	Description	Mean	Median	Observed min	Observed max	Standard deviation
BS1	Higher capital requirements can enhance banks' resilience to shocks	5.684	6	1	7	1.289
BS2	Adequate provisioning may reduce the likelihood of bank failures.	5.388	6	1	7	1.159
BS3	Diversification can mitigate risk, leading to greater stability	5.189	5	2	7	1.222
BS4	Stronger regulations may lead to improved trust in the banking system	5.684	6	2	7	1.208
BS5	Stricter capital norms might initially reduce profits but enhance stability	4.772	5	2	7	1.187
BS6	Higher provisioning can restrict credit, affecting economic growth	5.316	5	2	7	1.24
LDS1	Stringent loan diversification policies improve my bank's risk profile	4.471	4	1	7	1.353
LDS2	Diversified loan portfolios contribute to bank stability	4.728	5	1	7	1.331
LDS3	Bank's adherence to diversification regulations has a positive effect on stability	4.655	5	1	7	1.212
LDS4	Reduced risk of defaults is due to diversified lending practices	4.568	5	1	7	1.387
LDS5	Stricter diversification requirements enhance bank's ability to withstand economic shocks	4.869	5	1	7	1.21
LDS6	Loan diversification stringency is essential for minimizing financial risk in banks	4.791	5	1	7	1.358
LDS7	More stringent loan diversification enhances loan portfolio quality	4.845	5	1	7	1.209
LLS1	Higher provisioning requirements reduce the likelihood of bank failures.	4.743	5	1	7	1.5
LLS4	Bank's stability is enhanced by rigorous loan loss provisions.	4.68	5	1	7	1.275

Indicator	Description	Mean	Median	Observed min	Observed max	Standard deviation
LLS5	Adequate provisioning helps mitigate the impact of economic downturns on banks.	4.782	5	1	7	1.237
LLS6	Loan loss provisioning is a crucial factor in maintaining confidence in the banking system.	4.791	5	2	7	1.207
LLS7	Stricter provisioning regulations influence my bank's lending practices positively	4.782	5	2	7	1.253
RSL1	Compliance with RCS has improved my bank's risk management practices	5.015	5	1	7	1.201
RSL2	RCS requirements restrict my bank's ability to lend effectively.	4.728	5	1	7	1.103
RSL5	RCS has a direct impact on my bank's operational flexibility.	4.883	5	1	7	1.245
RSL6	Easing RCS would improve my bank's competitive position without compromising stability	4.976	5	1	7	1.327

Source: Authors' computation from field data (2024)

5.2 Measurement

Confirmatory Factor Analysis (CFA) served as the methodological cornerstone to rigorously evaluate the alignment of the proposed model with the collected dataset. This involved a detailed examination of both the reliability of individual indicators and the broader constructs they represent, alongside a thorough assessment of convergent and divergent validity (Table 3) and discriminant validity (Table 4). The outcomes of this analysis underscored a strong fit of the measurement model to the data, with the majority of factor loadings exceeding the conventional threshold of 0.7 (Hair et al., 2013). Construct reliability was evaluated through composite reliability, with a minimum threshold of 0.7 indicating satisfactory scale reliability (Hair *et al.*, 2013). Additionally, the constructs' reliability was further assessed using Cronbach's alpha coefficient (Table 4), which exceeded 0.7 for all constructs, affirming high levels of internal consistency and reliability (Hair and Alamer, 2022).

Table 3: Construct reliability and validity

Variable	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
BS	0.881	0.884	0.910	0.629
LDS	0.886	0.889	0.911	0.595
LLS	0.804	0.810	0.865	0.562
RCS	0.784	0.799	0.857	0.600

Source: Authors' computation from field data (2024)

Table 4: Discriminant validity-HTMT

Variable	**BS**	**LDS**	**LLS**	**RCS**
BS				
LDS	0.652			
LLS	0.777	0.554		
RCS	0.688	0.614	0.729	

Source: Authors' computation from field data (2024)

Convergent validity was ascertained using the Average Variance Extracted (AVE) criterion, where all constructs demonstrated AVE values of at least 0.5, indicating robust convergent validity (Hair & Alamer, 2022). Divergent validity was evaluated by comparing the square root of AVE with the correlation values between constructs. The results, presented in Table 5, confirmed satisfactory divergent validity among the constructs, thereby validating the distinctiveness of each construct (Fornell and Larcker, 1981, Hair et al., 2021).

Table 5: Factor loading for constructs and composite reliability

Indicator	BS	LDS	LLS	RCS	VIF
BS1	0.800				2.174
BS2	0.859				2.682
BS3	0.772				1.903
BS4	0.788				2.332
BS5	0.697				1.588
BS6	0.832				2.399
LDS1		0.775			2.086
LDS2		0.844			2.689
LDS3		0.732			1.677
LDS4		0.814			2.223
LDS5		0.760			1.921
LDS6		0.749			1.817
LDS7		0.715			1.830
LLS1			0.715		1.585
LLS4			0.798		1.815
LLS5			0.765		1.810
LLS6			0.773		1.721
LLS7			0.691		1.438
RCS1				0.746	1.729
RCS2				0.767	1.330
RCS5				0.798	1.516
RCS6				0.785	1.839

Source: Authors' computation from field data (2024)

To interpret the results presented in Table 6, we examine the Variance Inflation Factor (VIF) values for the independent variables: Regulatory Capital Stringency (RCS), Loan Loss Provisioning Stringency (LLS) and Loan Diversification Stringency (LDS) predicting the dependent variable, Bank Stability (BS). The VIF values provide insight of multicollinearity assessment among the independent variables. The VIF values for RCS, LLS, and LDS predicting BS indicate that multicollinearity is not likely to be an issue. This suggests that the independent variables are not excessively correlated with each other, which would potentially distort the interpretation of their individual effects on the dependent variable.

Table 6: R-square and Q-square to assess the Quality of the structure model

Variable	R^2	Q^2	f^2
BS	0.559	0.343	
LDS		0.000	0.112
LLS		0.000	0.232
RCS		0.000	0.070

Source: Authors' computation from field data(2024)

Furthermore, the outcomes displayed in Table 6 include the R^2 values, which gauge the proportion of variation in the dependent variable explained by the model and its ability to predict outcomes. Additionally, in the context of Structural Equation Modeling (SEM) models, the cross-validity redundancy and commonality measure Q^2 are evaluated. In SEM, a Q^2 value greater than zero for a reflective endogenous latent variable indicates the model's predictive relevance for that specific construct. According to the guidelines by Hair *et al*. (2014), a Q^2 value of 0.02 suggests small predictive relevance, while $Q^2 = 0.15$ implies medium relevance, and $Q^2 = 0.35$ indicates large predictive relevance. By assessing the Q^2 values, we can ascertain the extent to which the SEM model accurately predicts the variability in the reflective endogenous latent variables. These values offer valuable insights into the model's ability to capture and explain the underlying relationships among the constructs under investigation.

In the results from Table 6, Q^2 values notably exceed zero, providing substantial evidence supporting the model's predictive relevance for the specified endogenous construct. Examining the columns of the f-square, the value of 0.232 represents the f-square effect for the predictive value of LLS on BS, indicating that LLS has a more significant impact on producing the R-square for BS. Conversely, the values of 0.112 (LDS) and 0.070 (RCS) suggest relatively smaller effects on R^2. The structural model presented in Table 7 serves as a framework for testing the hypotheses formulated in the research model. The table provides a concise summary of the hypothesis results, offering insights into the significance of the relationships between the variables under investigation. In this analysis, all t-statistics are expected to be significant at a p-value less than 0.001 to establish statistical significance. A p-value below the significance level indicates that the null hypothesis is rejected, suggesting a meaningful relationship between the variables.

Specifically, the T-values presented in Table 7 play a crucial role in determining the significance of the paths between the variables. A T-value greater than 2.63 signifies that the path is significant at $p < 0.001$, indicating strong evidence to reject the null hypothesis. Conversely, a T-value falling between 2.63 and 1.96 is considered significant at $p < 0.05$, providing moderate evidence against the null hypothesis (Sergey and Tienan, 2013). On the other hand, a T-value below 1.96 is not considered statistically significant ($p < 0.001$).

Table 7: Structural Equation Model for testing hypothesis

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
LDS -> BS	0.269	0.274	0.074	3.615	0.000	Accept
LLS -> BS	0.403	0.392	0.077	5.239	0.000	Accept
RCS -> BS	0.229	0.236	0.068	3.354	0.001	Accept

Source: Authors' computation from field data (2024)

In this study, three hypotheses were formulated, and Partial Least Squares (PLS) Bootstrapping was employed to rigorously test these hypotheses. PLS Bootstrapping is a robust statistical technique used to assess the reliability and significance of the estimated parameters in structural equation modelling, particularly when dealing with small sample sizes or non-normal data distributions. By scrutinizing the T-values and corresponding p-values in Table 7, researchers can evaluate the support for each hypothesis and draw meaningful conclusions regarding the relationships between the variables in the research model. These findings contribute to advancing theoretical understanding and informing practical implications in the relevant field of study.

The findings reveal that hypotheses H1 (RCS->BS), H2 (LLS->BS), and H3 (LDS->BS) are accepted, indicating that there is a statistically significant causal relationship between Regulatory Capital Stringency, Loan Loss provisioning Stringency and Loan Diversification Stringency, on one hand, and Bank Stability, on the other hand.

6.0 Discussions and Conclusions

The primary objective of this study was to provide an understanding of the relationship among Regulatory Capital Stringency, Loan Loss Provisioning Stringency and Loan Diversification Stringency to Bank Stability. The

findings presented in Table 7 shed light on this relationship and they contribute valuable insights to the field.

The results demonstrate that there is a significant effect of Regulatory Capital Stringency (RCS) on Bank Stability (BS). This indicates strong support for Hypothesis 1 (H1), indicating that the variable Regulatory Capital Stringency (RCS) has a statistically significant impact on Bank Stability (BS). In simpler terms, the research findings strongly suggest that when Regulatory Requirements for Capital (RCS) become more stringent, it significantly influences and improves the stability of banks (BS).

Specifically, the results of the analysis suggest that changes in Regulatory Capital Stringency (RCS) have a meaningful effect on Bank Stability (BS). This implies that a Beta Coefficient represents the strength and direction of the relationship between Regulatory Capital Stringency (RCS) and Bank Stability (BS). In this case, a beta coefficient of 0.229 indicates a positive relationship, suggesting that as Regulatory Capital Stringency increases, Bank Stability tends to improve. The statistical significance indicates the reliability of the relationship between Regulatory Capital Stringency (RCS) and Bank Stability (BS). This finding aligns with previous researche by Thamae and Odhiambo (2024) as well as Abou-El-Sood and Shahin (2023) who emphasized the importance of Regulatory Capital Stringency in enhancing bank stability.

Moreover, the findings demonstrate a substantial impact of Loan Loss Provisioning Stringency (LLS) on Bank Stability (BS), which is statistically significant, thereby providing robust support for Hypothesis 2 (H2). The results indicate that variations in Loan Loss Provisioning Stringency significantly affect the stability of banks. Specifically, an increase or enhancement in Loan Loss Provisioning Stringency correlates positively with improved bank stability. The beta coefficient signifies both the strength and direction of this relationship, suggesting a positive effect wherein higher Loan Loss Provisioning Stringency is associated with greater bank stability. The statistical significance of this relationship is underscored by the findings. A p-value of less than 0.001 indicates high statistical significance, indicating that the observed relationship is unlikely to occur by random chance alone. Additionally, the t-value of 5.239 surpasses the critical value of 1.963 for a significance level of 0.05, further confirming the robust statistical significance of the relationship between Loan Loss Provisioning Stringency and Bank Stability.

The findings further highlight a significant and statistically robust influence of Loan Diversification Stringency (LDS) on Bank Stability (BS), providing strong support for Hypothesis 3 (H3). The results indicate that variations in Loan Diversification Stringency (LDS) significantly impacts Bank Stability, demonstrating that changes in LDS are associated with fluctuations in the stability of banks. The beta coefficient signifies both the strength and direction of this relationship, revealing a positive association: as Loan Diversification Stringency increases, bank stability tends to improve. The statistical significance underscores the reliability of this relationship between Loan Diversification Stringency and Bank Stability.

7.0 Implications

7.1 Theoretical Implications

The study contributes significantly to several theoretical perspectives in banking and finance, namely Agency Theory and Credit Risk Management Theory. By examining the influence of regulatory capital stringency on bank stability, the study provides insights into how regulatory requirements affect the behavior of banks in managing their capital adequacy. Agency Theory posits that conflicts of interest exist between principals (shareholders) and agents (managers) within organizations, and stringent regulatory capital requirements can influence these dynamics by aligning incentives towards maintaining stability and reducing risk-taking behaviors.

The study has assessed the impact of loan loss provisioning stringency on bank stability, grounded in Credit Risk Management Theory. This theory emphasizes the critical role banks play in evaluating and managing credit risk, particularly through assessing borrowers' creditworthiness and repayment capacity to minimize defaults. Stringent loan loss provisioning regulations are designed to ensure that banks set aside sufficient reserves to cover potential defaults, thereby reducing financial risk. Additionally, regulations promoting loan diversification help mitigate concentration risks by encouraging banks to diversify their loan portfolios, which further supports financial stability by spreading risk and lowering the likelihood of significant losses. The study examines how these regulatory measures influence banks' risk management practices and overall stability, illustrating the importance of robust credit risk management in enhancing the resilience of the banking sector.

7.2 Methodological Implications

Methodologically, the study has employed a quantitative approach, utilizing structural equation modeling. The use of this method allows robust statistical testing of hypotheses related to the influence of regulatory capital stringency, loan loss provisioning stringency, and loan diversification stringency on bank stability. By employing econometric models, the study ensures rigorous analysis of relationships between variables by providing credible empirical evidence to support theoretical arguments from Agency Theory and Credit Risk Management Theories. The study's findings are generalizable to a broader context of banking systems subject to similar regulatory frameworks, enhancing the external validity of the research. It should be noted that the methodological rigor facilitates the identification of specific regulatory measures that most effectively enhance bank stability by providing practical insights for policymakers and regulatory authorities.

7.3 Contextual Implications

From this study, policymakers gain insights into the effectiveness of different regulatory measures (capital stringency, loan loss provisioning, diversification rules) in promoting financial stability and mitigating systemic risk. To bank management, banking executives can better understand the implications of regulatory compliance on their institutions' stability and strategic decision-making processes. Shareholders and investors benefit from enhanced transparency and understanding of how regulatory stringency impacts the risk-return profile of banks, influencing investment decisions. The study contributes to academic literature by enriching theoretical frameworks with empirical evidence, paving the way for further research on regulatory impacts based on banking stability at global level.

7.4 Limitations

While the study provides insights specific to Tanzania, its findings may not necessarily apply to other contexts. Variations in institutional structures, regulatory landscapes, and economic circumstances across different countries could constrain the generalizability of the results to other developing economies. Understanding the unique characteristics of Tanzania's banking sector and regulatory environment is crucial for interpreting the study's findings within its specific context. Differences in governance frameworks, regulatory practices, and economic stability among developing economies could lead to varying impacts of regulatory stringency on bank stability. Another key limitation is associated with not using secondary data on various central bank stringency metrics/measures, and financial data on bank

stability. These would provide more empirical estimation results. This study has relied only on ratings and responses from respondents (banks' employees) who filled-in administered questionnaires, leaving an opportunity for further studies of this kind to be conducted using secondary data and compare the results.

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