MOSHI CO-OPERATIVE UNIVERSITY

FACTORS INFLUENCING BANK PERFORMANCE IN THE CONTEXT OF TREASURY SINGLE ACCOUNT: EVIDENCE FORM COMMUNITY AND COMMERCIAL BANKS IN TANZANIA

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FACTORS THAT INFLUENCE BANKS' PERFORMANCE IN EXISTENCE OF TREASURY SINGLE ACCOUNT: EVIDENCE FROM COMMUNITY AND COMMERCIAL BANKS IN TANZANIA.

BY

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I, **Haika Mawalla**, declare that this research dissertation is my own original work and that it has not been presented and will not be presented to any other higher learning institution for a similar or any other academic award

Signature_____ **Date**_____

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CERTIFICATION

The undersigned certifies that he has read and hereby recommend for acceptance by the Moshi Co-operative University a Research Dissertation titled: ***"Factors that Influence Banks' Performance in Existence of Treasury Single Account: Evidence from Community and Commercial Banks in Tanzania."*** for partial fulfilment of the requirements for the degree awards for Masters of Business Management in Moshi Co-operative University

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(Supervisor`s Signature)

Date: 01/12/2023

DEDICATION

This project work is highly dedicated to God Almighty for his grace and kindness throughout the program.

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LIST OF ABBREVIATIONS

BOT	-	Bank of Tanzania
CAMEL	-	Capital adequacy, Asset quality, Management efficiency,
CAR	-	Capital adequacy ratio
CIR	-	Cost to income ratio
DEA	-	Data envelopment analysis
DID	-	Difference In Difference
		Earning capacity and Liquidity ratios
GDP	-	Gross domestic product
NIIs	-	Non-Interest Incomes
NIM	-	Net Interest Margin
NPA	-	Non-performing assets
NPL	-	Non-performing loans
NPLs	-	Non-Performing Loans
ROA	-	Return on assets
ROE	-	Return on Equity
RWA & OBSA	-	Risk Weighted Assets and Off-Balance sheet Assets
SDG	-	Sustainable development goal
TSA	-	Treasury single account

ABSTRACT

This study systematically examines the implications of implementing the Treasury Single Account (TSA) on Tanzanian banks, focusing on profitability, efficiency, and stability. Through regression analysis, the first objective reveals a notable adverse effect of TSA on Return on Assets (ROA) and Return on Equity (ROE), indicating the extensive impact of increased scrutiny of public funds. The second objective uncovers statistically significant adverse effects on bank efficiency, particularly related to non-performing loans (NPLs), emphasizing the need for enhanced NPL management and technological adoption. The third objective highlights decreased stability post-TSA, with a significant negative impact on the loan loss provision to equity ratio. The study employed a descriptive research approach, influenced by literature, and utilized purposive and random sampling of 35 Tanzanian banks. Data collection involved a methodical examination of relevant documents, and quantitative techniques, including Difference-in-Differences (DID) regression models, were used for analysis. The results emphasize the substantial adverse impact of TSA on the stability, profitability, and efficiency of Tanzanian banks, calling for strategic initiatives in operational efficiency, revenue diversification, regulatory engagement, proactive risk management, and ongoing research to navigate financial market dynamics.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the study

The banking sector plays a crucial intermediary role between lenders and savers, making it a crucial component of every nation's economic architecture. The effectiveness and dependability of the global banking system is one of the key elements in fostering economic growth, financial stability, and general development on a worldwide scale. Numerous financial regulation revisions and policy changes over the course of several decades have had a significant impact on the banking industry globally (Jones & Knaack, 2019). One such alteration that has been made is the creation of Treasury Single Accounts (TSAs).

Globally, the concept of transaction service providers (TSPs) has gained traction and marks a change in how governments handle their budgets and interact with the banking industry (Mills & Dang, 2021). An account held by the government that consolidates all of its cash balances, payments, and receipts is known as a Treasury Single Account. The implementation of this plan aims to reduce corruption, enhance cash management, boost transparency, and decrease fiscal risk. As more governments across the globe adopt TSAs as financial instruments, it is critical to assess their impact on the performance of banks, especially community and commercial banks.

In India, where the government first introduced its TSA program in 2015, the Government of India (GOI) - Cash Management System is a notable instance (Alonso *et al.*, 2023). This is a well-known illustration. By doing this, it was intended to combine the several government accounts that were held by various banks into a single account at the Reserve Bank of India. More openness and better cash management were brought about by the implementation of GOI-CMS, both of which had an impact on the nation's banking industry.

The financial landscape in Africa is highly diverse, made up of a mix of international commercial banks, neighbourhood banks, and microfinance organizations that support the many economies present on the continent. Africa is no stranger to the implementation of financial reforms, such as the adoption of TSAs, as a result of African governments' continual effort to modernize their financial systems and bring them in line with global best practise (Ibrahim, 2022).

TSAs have been implemented in several African nations as part of efforts to fortify their individual financial systems. Nigeria is a prime illustration of this trend. First implemented in Nigeria in 2012, the TSA is widely used as a model for TSA deployment throughout the rest of Africa (JP *et al*., 2022). The Nigerian government created the TSA with assistance from the Central Bank of Nigeria in order to consolidate all of its accounts maintained at different financial institutions. This operation had a significant impact on the cash management practices and liquidity dynamics of Nigerian banks.

A sudden shortage of cash was a problem for many banks around the world, including those in Nigeria. Previously, they used these government deposits as a source of liquidity. Financial institutions need to find several new sources of liquidity quickly in order to adapt to the new environment. After facing difficulties at first, a large number of financial institutions gradually implemented more responsible risk management strategies.

Ghana's TSA experience taught us the importance of tight coordination between the central bank, several government departments, and commercial banks to guarantee the system's smooth installation and operation (Hooley *et al.*, 2023).

East Africa, which includes Tanzania, Kenya, Uganda, Rwanda, Burundi, South Sudan, and the Democratic Republic of the Congo, has seen significant economic growth thanks in large part to the banking industry. Discussions concerning the potential effects of TSAs on the stability and efficacy of banks have arisen since their adoption in East Africa (Ukwuoma *et al*., 2022). Various strategies have been employed to introduce TSA in various countries within the region, resulting in varying effects on the banking sector.

Kenya stands out as a particularly noteworthy case right away. The Kenyan government launched the Integrated Financial Management Information System, or IFMIS in 2003 (Makiya, 2020). This system served as an early prototype for the TSA systems that are currently in use. By combining government accounts, IFMIS aimed to make the government's financial processes easier to understand and more transparent. This experience might offer insightful information about how early attempts at financial reform affected Kenya's banking system.

The adoption of the TSA system by the Tanzanian government began in 2016 (Abdulkarim *et al*., 2020). The Government Electronic Payment Gateway (GePG), also known as the Tanzanian Treasury Single Account, was created with the aim of expediting transactions and combining public finances. The change from a system in which government money were housed across numerous banks to a centralized account handled by the Bank of Tanzania would be an actual example from the implementation of GePG in Tanzania (Mtebe & Sausi, 2021). The GePG is perfectly demonstrated in this transition. The climate in which community and commercial banks conduct business in Tanzania has dramatically changed as a result of this growth.

For instance, commercial banks were had to alter their methods for maintaining their liquidity in order to deal with the limited availability of government deposits. Community banks, which usually rely heavily on government deposits, had a unique set of problems related to maintaining their survival in the meantime. These specific examples show the impact that TSA's implementation has had on Tanzania's banking industry.

The effectiveness of banking systems is directly impacted by the growth of problem loans held by banks. Non-performing assets pose a threat to the quality of assets and the viability of banks since they have an impact on their total liquidity and efficiency. It discovered that NPAs have an impact on banks' financial health since they lower their capital adequacy ratio, which measures their available capital as a proportion of their risk-weighted credit exposures (HERSUGONDO *et al* ., 2021). This in turn has a detrimental effect on the bank's capacity to fulfil its financial commitments. Additionally, a growth in NPA has a negative effect on the volume of returns produced by assets. Additional factors, similar to those that affected profitability as was previously stated, could contribute to the NPA factor. However, factors like non-performing loans have an impact on the ability of the individual banks to retain their stability when the system, in this case the TSA, is adopted.

Non-performing loans must be at their lowest level to be a reliable indicator of banking performance. In other words, the lower it is, the better, as it has a big impact on the banking system's stability (Khan *et al*., 2020). According to a study by (Mairafi

et al. 2020), improving liquidity for a bank's financial health involves many other factors in addition to preventing losses on deposits. The managers of the study stressed this point. Furthermore, the study noted that liquidity has an impact on the country's overall financial stability.

The planned TSA was inspired by the Tanzanian government's ongoing reform in the management of public finances, which has ramifications for the success, stability, and effectiveness of cooperative and commercial banks (Ibrahim, 2022).

This study, which is centred on Tanzania, looks into the variables that affect community and commercial bank performance in the context of TSA. The study specifically examines the relationship between these elements and TSA. In addition to offering empirical data and insights that might influence regulatory decisions, banking strategy, and financial stability in Tanzania, it seeks to contribute to the greater discussion on TSAs in the African banking sector.

1.2 Statement of the Problem

The Treasury Single Account (TSA) is the central focus of this investigation, aiming to understand its impact on Tanzanian banks' performance. The TSA system was implemented with the goal of consolidating all government finances into a single account, enhancing fiscal discipline and transparency (Okafor *et al*., 2023). Given the pivotal role of these institutions in ensuring the country's overall financial stability and economic growth, it is crucial to comprehend the implications of this strategy on both commercial and community banks in Tanzania.

The significance of this issue cannot be overstated. Any disruption to the banking system's performance could have severe repercussions, considering the crucial role of the banking sector in Tanzania in facilitating economic activity (Amit *et al*., 2022). With numerous community banks and approximately 47 regulated commercial banks, these financial institutions play a vital role in increasing savings, facilitating investments, and ensuring smooth monetary transactions. Negative consequences on their performance could have far-reaching implications for the financial system's sustainability and the overall economic expansion.

The potential consequences of this issue are multifaceted, encompassing declining profitability and operational efficiency in banks, which may jeopardize their

sustainability and prompt questions about their ability to meet obligations. A decrease in banks' willingness to lend money could hinder economic growth (Chen *et al*., 2021). Poor performance in the banking industry might harm investor trust, leading to capital flight and reduced foreign investment. The effectiveness of the TSA policy may be compromised if banks struggle to manage government funding efficiently.

To address these challenges and adapt to the evolving financial landscape, the Tanzanian government and banking authorities have taken measures, including revisions in banking legislation and policy (Hallegatte *et al*., 2020). These initiatives aim to provide guidance and support to financial institutions in managing public funds successfully. Regular reviews of TSA policies are essential to identify and address any unforeseen effects on the banking sector.

Despite these precautionary measures, the exact impact of the TSA regulation on Tanzania's commercial and community banks remains unclear. This study seeks to fill this knowledge gap by conducting an empirical analysis using data from the preceding five years (2018-2022). The study will specifically focus on key performance indicators such as return on assets (ROA), return on equity (ROE), and non-performing loans (NPLs) to provide a detailed understanding of the factors influencing bank performance in this context.

1.3 Objectives of the Study

1.3.1 General objective

This study determines factors that influence the banks performance in existence of TSA as evidenced from community and Commercial banks in Tanzania.

1.3.2 Specific objectives

i. Examining factors that determine bank profitability in the presence of TSA
ii. Analysing the effects of non-performing assets on banks’ efficiency in the existence of TSA.
iii. Assessing the effects of non-performing loan on bank stability since the implementation of TSA.

1.4 Research Questions

i. What are the factors that determine the bank profitability in the presence of TSA?

ii. What are the effects of non-performing assets on the efficiency of commercial and co-operative banks in presence of TSA?
iii. What are the effects of non-performing loans influencing the banks' stability since the implementation of the TSA system?

1.5 Significance of the Study

Outcome of the study can help stakeholders to assess the effectiveness of the TSA's policies and reach well-informed decisions about how to apply them and whether it would be appropriate to make changes. It is critical for all government stakeholders to comprehend the impact of the Treasury Single Account (TSA) on bank operations. Regulating bodies like the central bank and financial authorities may find it useful to comprehend how the TSA affects the banking industry. They can use this information as a guide to assist them in developing a regulatory environment that is successful. Other financial institutions can use the study's results to change their strategies in order to better address the opportunities and challenges presented by TSA. Additionally, it might offer helpful information for group initiatives or lobbying efforts within the banking sector.

Results of the study can help the bank personnel to plan for and adapt to any potential future changes. Employees in community and commercial banks will benefit from understanding how the TSA affects their job security, the quantity of work they have to complete, and the overall culture of their business.

Learning has its benefits. The research can help the bank's management make well-informed decisions on the resource allocation, risk management, and strategic planning. It's feasible that it will provide information that can be used to optimize procedures while still meeting TSA criteria. The report can be used by the government agencies in charge of carrying out TSA to assess how the policy will affect the financial industry and to make any necessary adjustments to get the intended results.

Because the study's findings could affect the bank's profitability and, consequently, shareholder returns, they will be of interest to shareholders. If shareholders have a thorough awareness of the ramifications of TSA, they will be better able to manage their portfolios and make investment decisions. Bank customers may notice changes in the services they receive and the costs they incur as a result of TSA. Customers can

learn about potential disruptions from the study, which can then help them decide what options are best for their banking needs. There is a chance that members of the general public are worried about the TSA's more extensive economic effects. This research may give light on how TSA fosters Tanzania's economic success and stability, which would be advantageous for society as a whole.

1.6 Organization of the Study

The study was divided into five chapters. Chapter one of the studies covered the background information of the study, statement of the problem, research objectives, research questions, justification of the study. Chapter two involved reviewing literature concerning the study under four categories namely; Theoretical literature review, Empirical literature review, research gap and conceptual framework. Chapter three was about research methodology which involved, research approach, research design, geographical coverage, sample size, types and sources of data, data and data collection techniques, as well as data analysis. Chapter four addressed the findings and discussion of the findings. Chapter five addressed the summary, conclusion and recommendations that arise from the findings of the study. Areas for further research were also included.

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter consist of definition of key terms theoretical review, empirical review as well as knowledge gap.

2.1 Definitions of Key Terms

2.1.1 Community banks

Community banks are local or regional financial institutions that are frequently distinguished by their approach to banking that is focused on the community (McKillop *et al*., 2020). They frequently focus heavily on comprehending and solving the particular financial requirements of certain communities and serve particular geographic areas or groups (Auer *et al*., 2020). In terms of ownership structure, size, and their dedication to establishing ties with local consumers, community banks may be different from larger, national banks (Kuada, 2022). These banks may be locally owned by people or cooperatives, and they work to promote regional economic growth by providing a variety of banking services, such as savings accounts, loans, and community-specific financial advice (Tanda & Schena, 2019).

2.1.2 Commercial banks

Commercial banks are financial institutions whose main objective is to make money by offering the general public and businesses a wide range of financial services (Ichsan *et al*., 2021). These services encompass but are not limited to accepting deposits from customers, granting loans, facilitating electronic payments, offering investment products, and providing financial advice (Makanile & Dickson, 2022). By acting as an intermediary between depositors and borrowers and effectively directing money from savers to those in need of capital, commercial banks, which are primarily for-profitable organizations, play a significant role in the broader financial system (Magoma *et al*., 2022). These organizations play a crucial role in the economic ecology as they are motivated by the desire of profit and in the distribution of finances as middlemen, directing resources from those with excess wealth to people and businesses in need of funding (Chindengwike & Mnyampanda,2021). Commercial banks perform a wide range of financial tasks in addition to acting as intermediaries as they safeguard deposited funds, facilitate electronic transactions and payments, and provide an impressive range of financial products, such as credit cards, investment opportunities,

and wealth management services (Kiangi & Milamo, 2022). Commercial banks are fundamentally woven into the fabric of contemporary economies, supporting financial stability, promoting economic growth, and supporting the smooth operation of the larger financial system, all the while being subject to regulatory oversight to protect depositor interests and uphold industry compliance (Ausat *et al*., 2023).

2.1.3 Bank performance

According to Hudaefi & Noordin (2019), the assessment and evaluation of a banking institution's overall financial and operational effectiveness is referred to as its performance. It entails measuring a number of important metrics and indicators to determine how effectively and profitably a bank is running its business operations (Mrindoko *et al*., 2020). Return on assets (ROA), return on equity (ROE), net profit margin, asset quality, liquidity ratios, capital adequacy, and efficiency ratios are examples of common performance indicators (Mohapatra *et al*., 2019). The financial stability, profitability, risk management, and capacity of banks to serve their clients and shareholders while adhering to legal requirements and industry norms are evaluated using their performance indicators (Guo & Zhu, 2022).

2.1.4 Treasury single account (TSA)

A Treasury Single Account (TSA) is a vital financial management policy implemented by governments to enhance control and transparency in the management of public funds (Okeke, 2023). Fundamentally, a TSA unifies all government receipts and payments into a single account, frequently kept at the central bank or another specified financial institution. This consolidation has a number of important benefits as it makes it easier to track finances, ensuring that income is collected in line with budgets, and lowering the possibility of financial fraud and mismanagement, it encourages openness and accountability (Sambo, 2023). Additionally, it streamlines cash management, making it possible to estimate cash flows more precisely and lowering the risk of overdrawn accounts or idle funds (Durodola *et al*., 2023). A TSA also avoids cash being dispersed among several accounts, streamlines banking relationships, promotes financial discipline by guaranteeing funds are used for approved reasons, and enhances reporting and monitoring through centralized financial data (Abdulkarim *et al*., 2020).

Due to legal, regulatory, and operational issues, a TSA's precise structure and implementation can differ between nations, although its primary goal continues to be

the same that is to consolidate government funds in order to support financial control, openness, and effective cash management (Nyambane & Ozor, 2020).

2.2 Theoretical Framework

2.2.1 Structure-Conduct-Performance (SCP) theory

The Structure-Conduct-Performance (SCP) theory is a foundational economic framework that holds great relevance in the examination of factors influencing banks' performance, particularly within the context of the introduction of regulatory mechanisms like the Treasury Single Account (TSA) in Tanzania. The SCP theory provides substantial insight into the complex interactions that exist between an industry's structure, the actions or behaviours of the firms that make up that industry, and the final results of those firms' performance (Lisoyi, 2022). In essence, it contends that an industry's structural traits, which include factors like market concentration, competition, and entry barriers, have a significant impact on how enterprises within that sector act and subsequently perform (Maude, 2021). In this study, the SCP theory plays a key theoretical role in helping to understand how changes in the market environment brought on by the adoption of the TSA can influence the behaviour and, in turn, the performance of Tanzanian banks.

Two fundamental presumptions serve as the analytical framework's cornerstones and are at the heart of the SCP theory. First of all, it is assumed that an industry's market structure is crucial in determining how businesses operating in the particular studied industry behave (Bayero, 2019). According to this assumption, adjustments in corporate behavior may result from changes in market structure brought on by external causes like regulatory changes. Second, according to SCP theory, there is a causal relationship between market structure, company behavior, and firm performance (Lelissa & Kuhill, 2019). This suggests that changes in an industry's structure trigger changes in firm behavior, which then manifest themselves in different performance outcomes (Nelly *et al*., 2019). These presumptions set the stage for a study of the complex interactions between market dynamics, business behavior, and performance outcomes.

SCP theory plays a crucial role in this study by offering a theoretical framework through which we may negotiate the challenging landscape of market dynamics and bank behavior. The paper explores the determinants impacting banks' performance in

the presence of the Treasury Single Account (TSA) in Tanzania. In particular, it gives the analytical tools to investigate how the TSA implementation, as a regulatory change, can cause changes in the market structure of the Tanzanian banking industry (Nyangu *et al* 2022). These changes, in turn, have the potential to prompt modifications in the behavior and procedures of Tanzanian banks and in the end, these modifications and shifts in bank behavior have a direct impact on the key performance indicators for banks, including stability, profitability, and efficiency (Silmi *et al*., 2020). SCP theory effectively transforms into a potent lens through which we may unravel the causal chains connecting structural changes, bank activity, and overall performance results within the Tanzanian banking ecosystem (Ordofa *et al*., 2021).

The potential for revealing insightful information about the complex relationships between structural changes, bank behavior, and bank performance within the Tanzanian banking sector strongly justifies the application of SCP theory in this study. It helps in obtaining a profound understanding of the many-faceted effects of this regulatory change by closely examining how changes in market conditions brought on by the adoption of the TSA influence the behavior of banks and, ultimately, alter their performance results (Hasnaoui & Fatnassi, 2019). This theoretical framework enables the assessment of banks' regulatory responsiveness and flexibility, as well as their resilience and potential to thrive in a changing market environment. Essentially, the SCP theory enhances this research by offering a solid theoretical framework for the investigation of the complex interactions between structure, behavior, and performance in the Tanzanian banking environment as influenced by the TSA.

2.2.2 Theory of Economic Efficiency

Understanding the dynamics of the banking industry requires a solid understanding of economic efficiency, especially in light of recent legislative developments like Tanzania's introduction of the Treasury Single Account (TSA). Economic efficiency theory's core focus is on resource distribution with the goal of maximizing total utility or welfare (Bekhet *et al*., 2020). According to this theory, an economy is efficient when resources are distributed so that no one may benefit without harming someone else (Azmi *et al*., 2021). This idea may be extended to the banking industry, highlighting how crucial it is for banks to allocate their resources productively and perform well overall in order to achieve the best results (Buallay *et al*., 2021).

The economic efficiency theory assumes that banks and other economic agents make rational decisions, it indicates that banks, driven by their goals and the current market conditions, try to maximize their own effectiveness and performance (Phan *et al*., 2020). The existence of competitive markets is another crucial presumption of this theory as market competition forces banks to make wise resource allocation decisions in order to sustain profitability and competitiveness (Ledhem & Mekidiche, 2020). The Economic Efficiency theory emerges as a useful framework for understanding how banks allocate their resources, manage their operations, and improve their performance in response to the regulatory changes in this study looking at factors influencing banks' performance in the presence of the TSA in Tanzania. The theory provides a framework to examine whether the TSA's implementation encourages economic efficiency in Tanzania's banking industry.

Due to its potential to shed light on how banks manage regulatory changes like the TSA while attempting to allocate resources as efficiently as possible, retain profitability, and improve overall economic welfare, the application of economic efficiency theory in this study is strongly helpful. It helps to determine how much banks contribute to economic efficiency by examining how resource allocation patterns in the banking industry change in response to the implementation of the TSA (Dao, 2022). This theory also makes it possible to investigate how bank policies and resource management plans affect both the banks' own performance and, in a broader sense, Tanzania's economy (Yusuf & Ischan, 2021). To put it simply, the Economic Efficiency theory enhances this study by offering a solid theoretical framework for assessing the effectiveness and performance of banks within the Tanzanian financial landscape that is influenced by the TSA's existence.

2.2.3 Trade-Off Theory

The Trade-Off Theory is a crucial theory that provides depth to this investigation into the elements affecting banks' performance throughout the rollout of Tanzania's Treasury Single Account (TSA). By weighing the trade-offs between different sources of capital, particularly debt and equity, this theory offers useful insights into how organizations, including banks, make financing decisions, it recognizes that an ideal capital structure does exist that maximizes the firm's value while considering elements like risk, cost, and financial flexibility (Shilla, 2019).

The Trade-Off Theory's central assumption is that businesses try to balance the advantages and disadvantages of various funding options (Bukair *et al*., 2019). It acknowledges that a disproportionate dependence on debt financing can increase the danger of insolvency and financial distress, whereas a disproportionate concentration on equity financing may erode ownership control and raise the cost of capital, in order to maximize their capital structure, banks must evaluate the trade-offs between debt and equity financing (Afolabi *et al*., 2019).

The Trade-Off Theory provides a lens through which it is possible to examine how Tanzanian banks deal with the financial ramifications of the TSA in the context of this study. Banks' liquidity management may be impacted by regulatory changes like the TSA, which may have an impact on their financing choices (Moudud, 2021). To retain liquidity and lower costs and risks, banks may need to balance debt and equity funding (Martinez *et al*., 2019). This idea is supported by the study because it enables investigation into the funding choices Tanzanian banks make in the face of regulatory changes that eventually affect their performance. It offers a solid theoretical framework for comprehending the trade-offs that banks must make in order to optimize their capital structures and financing plans in response to the TSA's implementation.

2.2.4 Synergy between theories

The three economic theories the Theory of Economic Efficiency, Trade-Off Theory, and Structure-Conduct-Performance (SCP) cooperate to offer a thorough grasp of the variables affecting Tanzanian banks' performance during the implementation of the Treasury Single Account (TSA).

The SCP theory serves as a fundamental framework that explains the relationship between market structure and bank behavior. It highlights how regulatory changes can affect the market environment, which in turn can affect the actions and performance of banks (Phares, 2021). This theory provides context for comprehending the structural modifications brought about by the TSA.

The Theory of Economic Efficiency explores how banks distribute their resources and work to optimize their efficiency and performance in the face of competition. By

emphasizing the role of resource allocation and management in the quest of efficiency and profitability a crucial factor to consider when analysing the effects of regulatory measures such as the TSA it enhances SCP theory (Blankson *et al*., 2022).

By addressing the financial dimensions of banks' responses to regulatory changes, the Trade-Off Theory broadens the discussion. It highlights the necessity of approaching financing in a balanced manner while taking the trade-offs between debt and equity into account (Siregar *et al*., 2019). This theory provides insights into the financial choices banks undertake to adjust to the advent of the TSA, so complementing both the SCP and Economic Efficiency theories.

When taken as a whole, these theories provide a comprehensive framework that makes it possible to study the intricate connections between bank conduct, market dynamics, resource allocation, and the performance effects that arise from these linkages. Trade-Off Theory provides a financial perspective to the investigation, whereas Economic Efficiency Theory describes rational resource allocation tactics and SCP Theory explains how changes in market structure effect behavior. This collaboration offers a strong basis for investigating the complex impacts of regulatory modifications such as the TSA on Tanzanian banks.

2.3 Discussion of Variables

2.3.1 Bank performance

An important factor in determining a bank's success and financial health is bank performance. It offers information on the efficiency with which a bank is using its assets, controlling risks, and making money. The purpose of this study is to better understand the elements that affect bank profitability in Tanzania in the context of the Treasury Single Account (TSA) system. An indicator that is frequently used to gauge bank performance is return on assets (ROA), it determines a bank's net income as a proportion of its total assets. An increased ROA shows that the bank is making more money in relation to its asset base and it further implies that the bank is effectively generating income from its assets (Hacini *et al*., 2019). On the other side, a lower ROA can mean that the bank isn't making the best use of its resources or is having trouble turning a profit.

Another significant metric for assessing the performance of banks is return on equity (ROE). It calculates a bank's net income as a proportion of shareholders' equity. ROE measures a bank's efficiency in turning the investments made by its shareholders into profits, where a higher ROE shows that the bank is making more money in comparison to the equity put up by investors (Hunjra *et al*., 2022). It implies that the bank is effectively generating income by using the capital contributed by shareholders. A lower ROE, on the other hand, can mean that the bank is having trouble turning a profit or is not making the best use of the shareholders' equity. The study attempts to shed light on the precise aspects that influence the financial performance of community and commercial banks in Tanzania by looking at the variables that determine bank profitability in the presence of the TSA system. The existence of TSA itself as well as other elements like interest rates, loan portfolio quality, capital sufficiency, liquidity, operational efficacy, and market rivalry may be among these considerations (Najam *et al*., 2022). To understand how these independent variables, affect the profitability and effectiveness of Tanzanian banks, the study examines the link between them and the bank performance metrics (ROA and ROE).

2.3.2 Presence of treasury single account

Governments use the Treasury Single Account (TSA) system, a financial management tool, to pool all of their resources into a single account at the central bank. Enhancing transparency, accountability, and cash management in the financial operations of the government is the TSA system's main goal (Xie *et al*., 2022). The TSA system intends to streamline financial procedures, reduce inefficiencies, and lessen the danger of financial misappropriation by combining government income, payments, and cash balances into a single account. The purpose of the study is to investigate how Tanzania's community and commercial banks operate and how the TSA system's existence affects those results. The TSA system's deployment may have a range of implications on banks, both beneficial and detrimental. Increased liquidity in the financial system is one potential benefit of the TSA system. Consolidating government funds into one account might increase the amount of deposits that are available to banks. By giving them a reliable stream of capital to use for lending and investment activities, this enhanced liquidity can help banks, their reliance on short-term funding sources is lessened, and it may help maintain overall financial stability (Kaharuddin & Yusuf, 2022).

Transparency and accountability have enhanced as a result of the TSA system. The TSA system improves visibility into the government's financial operations by combining federal finances. The improved investor confidence and trust in the financial system could benefit banks as a result of the increased openness as it may draw more deposits and investments, which could boost banks' profitability and stability. The TSA system's existence, however, can potentially provide difficulties for banks as a decline in banks' deposit bases is one such obstacle, banks may see a drop in the amount of deposits they retain as government money are combined into the TSA account then banks may need to look for alternate sources of capital as a result of the decline in deposits, which may affect their capacity to earn interest income (Olaniyi *et al*., 2023).

Additionally, banks' access to these assets for lending and investment purposes may be restricted by the concentration of public funds in the TSA account. Banks may encounter limitations when using these funds to make investments or extend loans, which may have an impact on their profitability and capacity to earn interest (Napitupulu, 2023). In general, when examining the variables that affect bank performance, the existence of the TSA system is a significant independent variable to consider. The goal of the study is to determine particularly how the profitability and effectiveness of community and commercial banks are impacted by the TSA system's deployment in Tanzania. The study can shed light on the difficulties and opportunities that banks confront in the Tanzanian financial landscape by recognizing the effects of the TSA system on banks' day-to-day operations.

2.3.3 Factors influencing bank profitability

A key indicator of a bank's financial performance and viability is bank profitability. Policymakers, regulators, and bank management must all understand the elements that affect bank profitability. The researchers' goal in this study is to investigate these elements in light of Tanzania's Treasury Single Account (TSA) system. Interest rates are one of the main elements affecting bank profitability, for banks, interest income is a major source of income, and profitability is directly impacted by the difference between interest collected on loans and interest paid on deposits and borrowings (Zhongming *et al*., 2019). The net interest margin of a bank, which is the difference between interest income and interest expenses, can be impacted by changes in interest

rates. Profitability can be boosted by raising interest rates, whereas decreasing interest rates can squeeze net interest margins and impair profitability.

The calibre of a bank's loan portfolio is an additional important consideration. Interest from loans accounts for a large amount of the money that banks make. Profitability may suffer with the existence of non-performing loans or loans with a higher risk of default. Non-performing loans force banks to set aside more money for loan loss provisions, which can hurt their bottom line (Rehman *et al*., 2019). On the other hand, a portfolio of high-quality loans with low default rates can increase profitability by lowering the need for provisions and raising asset quality. Another critical element impacting bank profitability is capital adequacy, for banks to withstand losses and maintain financial stability, they need enough capital ((Murinde *et al*., 2022). Higher capital levels put banks in a stronger position to weather downturns in the economy and unforeseen losses. Banks must have adequate capital to finance their operations, which is ensured by capital adequacy ratios like the Basel III framework. A bank's profitability can be increased by having more capital adequacy since it gives investors more confidence, lowers the cost of capital, and acts as a safety net against possible losses.

For banks to be profitable, effective liquidity management is also essential. Banks must maintain the ideal ratio of liquid assets to illiquid assets. Excess liquidity can harm profitability while insufficient liquidity might result in higher borrowing costs and potential liquidity crises. Effective cash flow management and keeping an appropriate level of liquid assets are two examples of effective liquidity management techniques that can help businesses become more profitable. Another element that greatly affects bank profitability is operational effectiveness (Sukmana *et al*., 2020). Banks with effective operations can lower expenses, boost output, and increase profits. Operational efficiency can be increased by streamlining procedures, using strong risk management techniques, and utilizing new technology. Banks can increase profitability by maximizing operational efficiency by lowering costs, improving customer service, and better allocating resources. An external issue that may affect bank profitability is market rivalry. The degree of competition in the banking industry may have an impact on the profitability of banks. As banks compete for consumers with aggressive rates and fees, intense competition may result in lower interest

margins. In contrast, banks may have greater pricing power and higher profitability in less competitive markets. In order to properly manage profitability, banks must have a thorough understanding of the competitive environment and their position within the market.

2.3.4 Non-performing assets

Non-performing assets (NPAs) are loans or other financial assets owned by banks that are in default or are at danger of default. These assets commonly exhibit late or missed payments from borrowers, which signals a higher risk of loan failure. NPAs may significantly affect a bank's overall wellbeing, stability, and financial performance (Mirzaei *et al*., 2022). Among other factors, non-performing assets have a big impact on a bank's profitability. Banks may encounter difficulties recovering unpaid amounts when borrowers fail to make loan instalment payments. Bank profitability might suffer if they have to set aside more money for loan loss provisions. These provisions have been set aside for anticipated losses from non-performing assets. Additionally, a decrease in interest income may result from non-performing assets because their interest payments may not be made at all or on schedule. This may also have an effect on a bank's ability to generate profits and revenue.

The quality of a bank's loan portfolio is another important factor that non-performing assets affect. The balance sheet and capital basis of the bank could deteriorate as the proportion of non-performing assets increases. This could have an impact on the bank's ability to attract deposits, raise capital, and meet regulatory capital adequacy rules (Solms, 2021). A high percentage of NPAs can also indicate that the bank needs to strengthen its credit risk management policies and underwriting standards. It highlights how crucial it is for banks to have reliable risk assessment and monitoring systems in place so they can identify and address any non-performing assets. Managing non-performing assets also poses risks to banks' risk management processes. Banks must continuously manage and monitor their non-performing assets to reduce potential losses (Huong *et al*., 2021). This calls for the use of effective credit risk assessment, loan recovery, and debt restructuring methods. If non-performing assets are not properly managed, banks may be increasingly vulnerable to rising credit risk and financial instability. To identify and manage non-performing assets, banks

must put proactive measures in place, such as early warning systems, loan recovery techniques, and collaboration with borrowers to find effective solutions.

Non-performing assets can also compromise a bank's ability to do business effectively. For legal lawsuits, write-offs, or loan recovery efforts, banks may need to set aside more funds (Aminah *et al*., 2019). This could result in higher operational costs and decreased efficacy overall. Additionally, non-performing assets can restrict bank capital, making it more difficult for them to originate new loans and generate income. This might restrict their ability to encourage economic growth and raise the overall efficiency of the banking sector. It emphasizes the significance of effective risk management practices in order to lessen the detrimental consequences of non-performing assets on operational efficiency (Alhadhrami & Nobanee, 2019). The study's goal is to determine how the Treasury Single Account (TSA) system's implementation of non-performing assets impacts banks' operational efficiency. By examining the connection between non-performing assets and bank efficiency, the study seeks to shed light on the challenges and effects of managing non-performing assets in the Tanzanian banking sector within the TSA framework. This study can help to better understand how NPAs affect bank performance as policymakers and bank management adopt methods to address and decrease the risks associated with non-performing assets.

2.3.5 Bank’s efficiency

A bank's ability to maximize its resources, produce a profit, and still provide its customers with high-quality services is largely determined by its efficiency. It comprises several aspects of a bank's operational management, such as cost control, asset utilization, risk management, technology adoption, and customer service (Chen *et al*., 2021). Examining Tanzania's community and commercial banks' efficiency is the study's main goal, especially in light of the Treasury Single Account (TSA) system's existence. Cost management has a big impact on how efficiently banks run. Banks need to effectively manage their operating expenses, which include things like employee salaries, administrative costs, and capital investments in technology. By controlling costs and maximizing resource allocation, banks can improve overall efficiency and manage resources well.

Asset utilization is a vital aspect of bank efficiency. Banks must efficiently utilize their resources, such as their loan portfolios and investment portfolios, in order to generate profits. This includes capital allocation optimization, diversification of investments, and efficient loan portfolio management (Irawati *et al*., 2019). In the banking sector, efficient asset usage enables effective revenue production and resource management. Risk management is crucial for banks to continue operating effectively (Zaidanin, 2020). Among the risks that banks must identify, assess, and manage are credit risk, market risk, and operational risk. Banks can reduce losses, allocate funds more effectively, and increase productivity with the help of effective risk management methods. Setting up sound risk management frameworks, conducting in-depth risk analysis, and implementing appropriate risk mitigation strategies are required to achieve this.

Using new technology and innovating with technology are important aspects in raising bank productivity. Technology and innovation may speed up procedures, reduce manual errors, and enhance customer experience. Modern analytics, internet banking choices, and process automation can all improve operational efficiency and a bank's overall performance. Another key element of a good bank is customer service, Customer happiness and loyalty are influenced by excellent customer service (Mafumbo, 2020), Effective customer service methods, rapid response times, and individualized experiences can increase efficiency by reducing customer complaints, improving operational processes, and increasing customer retention. The study's objective was to determine how Tanzania's TSA system's presence impacts the efficiency of community and commercial banks. By examining the connection between the TSA system and bank efficiency, the study seeks to provide insights into the problems and opportunities faced by banks in terms of cost management, asset utilization, risk management, technology adoption, and customer service (Ali & Flayyih, 2021). The impact of the TSA system on bank productivity can be better understood with the aid of this paper, which can also serve as a roadmap for activities aimed at increasing bank productivity in Tanzania.

2.3.6 Bank stability

Bank stability refers to a bank's capacity to maintain its financial health, withstand adverse conditions, and fulfil its financial obligations (Ali *et al*., 2021). Since it

ensures the stability and security of the financial system, it is a crucial part of the banking sector. The aim of the study is to assess how the Treasury Single Account (TSA) system's implementation in Tanzania has influenced bank stability as a result of non-performing loans (NPLs). One of the key factors determining bank stability is adequate capital. Banks are required to maintain an adequate level of capital in order to remain solvent and be able to absorb potential losses. Capital acts as a cushion to protect depositors' money and serve as a defence against unforeseeable disasters. Banks with higher capital ratios are often thought of as being more stable since they have a better ability to endure losses and maintain their financial health (Haryanto *et al*., 2019).

Asset quality is a significant factor in assessing bank stability. Non-performing loans (NPLs) are loans that have defaulted or are at risk of default, these loans may have a substantial effect on a bank's stability (Dao, 2022). Loan defaults, which are indicated by large levels of NPLs, can hurt a bank's profitability and balance sheet. Banks are seen as more stable when their loan portfolio is in better shape and contains fewer non-performing loans. Effective liquidity management is also crucial to the stability of banks (Ongudipe *et al*., 2020). In order to fulfil their obligations, such as withholding deposits and disbursing loans, banks must have sufficient liquidity. During a liquidity crisis brought on by a lack of liquidity, a bank may struggle to fulfil its short-term obligations. Adequate liquidity management and availability of funding sources are necessary for a bank to remain stable (Altavilla *et al*., 2021).

Profitability and bank stability are closely tied. A prosperous bank is better equipped to absorb losses, build up capital reserves, and maintain stability. Profitable banks are able to generate revenue, cover their expenses, and build up reserves for unforeseen circumstances (Duho *et al*., 2020). Banks with consistent, long-term earnings are therefore seen as being more reliable (Angori *et al*., 2019). The study's objective was to assess how the Treasury Single Account (TSA) system had affected bank stability in Tanzania as a result of non-performing loans (NPLs). Bank stability may be impacted by how the TSA system affects banks' capital sufficiency, asset quality, liquidity, and profitability. By examining the connection between NPLs and bank stability in the context of the TSA system, the study seeks to provide insights into the system's possible effects on the stability and soundness of banks in Tanzania. This analysis can

help us better understand how the TSA system affects bank stability, which will assist policymakers and regulators in their efforts to maintain a stable banking sector.

2.4 Empirical Literature Review

2.4.1 Factors that determine bank profitability in the presence of TSA

A study by Adebisi (2019) to determine how the unified account system policy had affected the operation of the chosen Nigerian banks argues that with the advent of technological progress and governmental policies, which has occurred multiple times in the Nigerian banking sector, the business environment in which businesses operate involves forces and circumstances that might influence managers' strategic decisions. Since they are no longer in charge of managing the accounts of government agencies, commercial banks in Nigeria are now more likely to engage in core banking activities that can improve fund mobilization and risk management. This is thanks to the eventual introduction and implementation of the Treasury Single Account (TSA) by the federal government of Nigeria. Based on The Banker's (2018) assessment on the current bank rankings in Nigeria, the five banks were chosen. To ascertain the selected banks' performance indices with relation to growth in bank deposits, asset quality (loan advances), and profitability, secondary data was used to analyse the financials of the five banks during a six-year period (2012–2017), representing "Pre and Post TSA." The research showed that TSA has no adverse effects on the chosen banks' performance measures. As a result, the study draws the conclusion that the intuitional environment positively influences and contributes to the performance indices of the chosen Nigerian banks because the operators are now engaging in core banking activities to raise money and manage risk. According to the study, institutional structure needs to be supported more in order to discourage the mindset of engaging in non-core banking operations.

2.4.2 Effects of non-performing assets on banks’ efficiency in the existence of TSA.

Swai (2019) used the fixed balance panel of annual financial statements data from 20 banks from 2002 to 2017 to examine the effects of bank capital structure, as measured by leverage ratio as defined in Base III based on tier 1 capital to total assets, on the portfolio behavior of commercial banks in Tanzania. In 2017, the banks under study accounted for 79 percent of all loans and more than 89 percent of the assets of

commercial banks. Choice assets (loans, investments in government securities, and interbank loans) and non-choice items (cash, necessary reserves, and investments in fixed assets) were used to explain portfolio behavior. The study looked at how capital structure affected bank portfolio holdings in relation to ownership and bank size. Only 35% of banks were found to be undercapitalized as of the end of 2017. The factors investigated, with the exception of the bank size measure, were significant at p 0.01 and p 0.001. This indicates that the bank's size has a positive relationship with its leverage structure rather than being a measure of it.

In a study by Budotela *et al*. (2022), the impact of bank-specific variables on nonperforming loans in Tanzanian commercial banks (CBs) is investigated. A quantitative analysis methodology was used with annual data for the years 2011 through 2020. To calculate the impact of bank-specific factors on the percentage rise of NPLs in Tanzania, the authors employed a one-step generalized method of moments (GMM) technique. The results show that a higher loan-to-asset ratio in CBs and improved bank operating efficiency all help to decrease NPLs. The level of NPLs, on the other hand, increases dramatically with age, capital adequacy, and the deposit-to-asset ratio, which is consistent with the adverse selection theory. On the other hand, a decline in lag NPLs and an increase in bank operational effectiveness will result in a decline in the current year's NPL rate, and vice versa. By tailoring the conditions of the contract to the expected average quality of the applicants' applications, commercial banks can lower the risk of defaulting borrowers. Small banks should also work to keep their management effective if they want to boost their profitability. For the purpose of lowering the amount of NPLs, authorities should impose micro-prudential oversight on commercial banks' lending practices.

2.4.3 Effects of non-performing loan on bank stability since the implementation of TSA.

A study by Oni (2019) argues that in the banking sector, there is a large risk of non-performing loans (NPLs), and reducing this risk is crucial for the expansion of the banking sector as well as the overall economic development of Sub-Saharan Africa. Therefore, recognizing these fundamental drivers is a prerequisite for any policy response in the settlement of NPLs. This paper examines the factors that contribute to non-performing loans made by Deposit Money Banks in Sub-Saharan Africa against

this backdrop. The study specifically focuses on macroeconomic, global, institutional, and bank-specific factors as the main causes of NPLs of Deposit Money Banks in Sub-Saharan Africa. The study used panel data that covered the years 2006–2016 and an ex-post facto research design. The World Bank Development Indicators, International Monetary Fund Database, World Bank Governance Indicators, and Bank Scope Database were used to compile the statistics for the time period under investigation. The study looked at a total of twenty-one (21) factors, including a control variable, two (2) global variables, five (5) macroeconomic variables, eight (8) institutional variables, and five (5) bank-specific variables. This study used a panel set from 23 Sub-Saharan African countries and a system GMM technique with an extensive econometric procedure.

According to the estimation of the entire sample, the coefficients of two bank-specific factors bank capital adequacy (0.09%) and bank return on assets (0.98%)—were significant on NPLs at (5% and 1%) respectively. A one-year lag of NPLs with a coefficient value of (0.94%) was also significant at (5%), which was captured based on the model's dynamic nature. The growth in real GDP with a coefficient value of (-0.17%), bank credit to the private sector as a percentage of GDP with a coefficient value of (0.24%), and bank credit to the government sector as a percentage of GDP with a coefficient value of (0.26%) were also significant on NPLs at (5%), 5%, and 1%, respectively. worldwide factors that had an impact on NPLs at 5% and 1%, respectively, including the international oil price with a coefficient value of (-0.04%) and the worldwide financial crisis with a coefficient value of (0,116%). Additionally, four institutional factors—corruption control, financial freedom, rule of law, and regulatory quality were significant on NPLs at (5%, 5%, 5%, and 5%, respectively. These factors had coefficient values of (0.44%), (0.13%), (0.341%), and (-0.618%), respectively. Finally, numerous credit risk indicators that were not significant in the robust estimation performed on the main model became significant in the subsampled estimation, which is indicative of the heterogeneous features of countries in SSA. Given that loan delinquencies are likely to be higher during times of economic downturn, it is therefore advised, among other things, that management of Deposit Money Banks in SSA should pay attention to the performance of the real economy when extending loans to their customers, especially during economic boom. In order to decrease the problems with NPLs, governments in SSA nations must also adopt

effective law reforms relating to bad loans, enhance the efficiency of their regulatory agencies, and minimize corruption and government meddling in the banking sector. In conclusion, both internal and external factors should be taken into account for sustained financial system stability in order for Deposit Money Banks in SSA to ameliorate the issues of NPLs and improving credit quality.

A study by Chizoba & Bassey (2021) sought to determine how non-performing loans (NPLs) affected bank performance in Nigeria from 2008 to 2017. The particular goals were to (i) examine the relationship between bank efficiency and non-performing loan ratio (NPLR) and (ii) investigate the relationship between bank efficiency and NPLR. Two hypotheses were developed to fit the specific objectives. Purposive sampling procedures were used to collect the data, and the five major banks First Bank, UBA, GTB, Zenith Bank, and Access Bank—were the ones selected. Data Envelopment Analysis (DEA), general least squares (EGLS), and pooling panel least squares (PLS) were used in the analysis. The study's conclusions include: (i) Bank efficiency was positively and significantly impacted by NPLR. Given that interest on loans is the primary source of revenue for the banking system, it was suggested that banks with NPLs would continue to extend credit. Instead, it generates more credits with better capabilities for lending activities. The cost of acquiring loans will increase because, in theory, high-risk ventures produced great returns. (ii) Bank efficiency also had a positive and significant impact on NPLR, suggesting that the more efficient the bank, the more dependent it will be on loan generation since interest from loans makes up the majority of their revenue and profits. Due to the unavoidable uncertainty in the economy, the rate of NPLs will essentially rise as borrowers' default on their obligations.

2.5 Research Gap

There is a big research gap when it comes to studying how the Treasury Single Account (TSA) affects banks' performance in Tanzania. This is mainly because there haven't been many comprehensive studies done in the Tanzanian banking context to understand the specific and nuanced factors that affect banks' performance under the TSA regime. Existing research often looks at things in a haphazard way, ignoring how different performance indicators are linked and how they react to TSA-related factors. Also, the effect of non-performing assets (NPAs) on efficiency, stability, and profitability within the TSA framework isn't fully understood, and there isn't enough

study that gives recommendations that can be put into action in the Tanzanian banking environment. Also, the changing regulatory environment, especially the effects of the TSA, have not been looked at in depth. So, this study tries to fill in these gaps by doing a comprehensive analysis and giving specific insights and practical suggestions to help us learn more about this important part of the Tanzanian banking sector.

2.6 Conceptual Framework

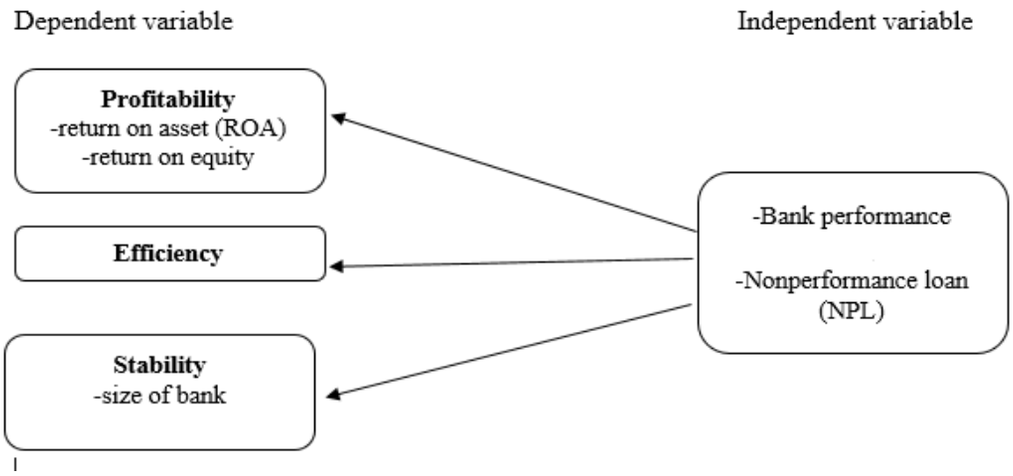

Figure 1: Conceptual framework

Figure 1 outlines the conceptual framework guiding this research, focusing on the relationship between the Treasury Single Account (TSA) and bank performance in Tanzania's banking sector. The framework's three independent variables at its foundation are profitability, efficiency, and stability. These variables indicate core elements of bank performance that are impacted by both internal and external circumstances. The variable of risk management practices, which includes the methods and techniques used by banks to recognize, evaluate, and successfully manage risks, serves as a mediator between these interactions. Understanding how the independent factors affect the final result, or bank performance, depends on this mediating role.

The paradigm is consistent with the study's assertion that performance of banks is directly impacted by profitability, efficiency, and stability. Additionally, it emphasizes how crucial Risk Management Practices are to mitigating these interactions. This comprehensive conceptual model contributes to a greater understanding of the variables at play in the Tanzanian banking sector by offering a structured foundation for examining the complex dynamics and interconnections that affect bank performance in the presence of the TSA.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

This part defines the research's comprehensive methodology, which facilitates the achievement of its primary objectives. The document provides a comprehensive examination of the research approach, design, study area, target population, sample selection, data collecting, and data analysis techniques. Collectively, these methodologies facilitate the investigation into the factors influencing the performance of banks in Tanzania during the implementation of the Treasury Single Account (TSA) system.

3.1 Research Approach

The methodology used in this study, which was inspired by important works by Yanikkaya *et al*., (2018), Garcia & Trindade, (2018), Hafsai *et al*., (2020), and Rizvi *et al*., (2019), was used to conduct its research. Understanding the complex dynamics of the TSA policy and its effects on financial institutions has been made possible thanks to these studies. In light of this, research focuses on a thorough examination of all the variables affecting bank stability, effectiveness, and profitability, especially in relation to Treasury Single Accounts (TSA) (Pasape *et al*., 2022). strategy is grounded in a strong desire to comprehend the subtleties of the TSA's impact on bank performance. examine a number of aspects, including the effect of bank-specific characteristics on profitability (ROA and ROE), as well as assessing the effectiveness of particular banks using the Data Envelopment Analysis (DEA) model. The study also investigates the factors that affect efficiency. Finally, using the Z-score model and taking provisions to equity ratio into account as part of robustness testing, examine the determinants influencing banks' stability within the Treasury Single Account (TSA) framework.

3.2 Research Design

In order to comprehend and record the effect of the Treasury Single Account (TSA) on the performance of community and commercial banks in Tanzania, the study primarily employs a descriptive research design. The flexibility and efficiency of this approach in illuminating complex relationships, trends, and patterns from an abundance of qualitative and quantitative data on TSA's implementation is why it was selected (Parra *et al*., 2023). The wealth of TSA material provides a rich database for this study, enabling a thorough explanation of the TSA's short- and long-term impacts on

Tanzania's banking sector. This design's triangulation technique, which strengthens the study's credibility by cross-referencing and confirming findings from many sources, is one of its main advantages. The descriptive technique enhances the understanding of the area by highlighting both new trends and contrasts and parallels with historical data, by placing findings within the context of prior study.

In addition to the descriptive methodology, the study integrates pre- and post-implementation findings to assess the performance dynamics of the banking industry before and after the introduction of TSA (Okeke *et al*., 2023). This method is useful for evaluating the direct effects of TSA on important banking parameters like stability, profitability, and efficiency (Sekhar *et al*., 2019). Through comparing data from the two time periods (pre- and post-TSA adoption), the study provides a detailed knowledge of the ways in which some banking variables have changed as a result of the TSA. This two-pronged strategy guarantees a comprehensive knowledge of TSA's impact on Tanzanian banks by combining descriptive and comparative study. By utilizing the adaptability of descriptive design and the evaluative strength of comparing pre- and post-implementation data, it makes a multi-dimensional analysis easier.

3.3 Geographical Coverage

The geographical scope of this research encompasses the vibrant landscape of Tanzania, a nation teeming with diverse financial institutions. The study casts a focused spotlight on the intricate workings of local and foreign commercial banks, alongside the community banks that play a pivotal role in the country's financial ecosystem (Soderberg *et al*., 2022). Tanzania's dynamic and evolving banking sector provides a compelling backdrop for this investigation. The temporal boundary of the study, spanning from 2014 to 2021, was meticulously selected with careful consideration. This timeframe encapsulates a pivotal juncture in Tanzania's economic and financial history, punctuated by momentous policy shifts and economic developments. One of the most noteworthy milestones within this period was the introduction and subsequent implementation of the Treasury Single Account (TSA) in 2018.

The deliberate choice of commencing the study from 2014 allows us to capture the banking sector's dynamics and performance leading up to the TSA's integration (Eton

et al., 2022). This pre-TSA period serves as a crucial baseline against which subsequent changes can be measured and the TSA's impact assessed. It enables us to scrutinize any shifts in financial performance, operational efficiency, and stability that may have arisen as a result of this policy innovation.

Furthermore, the period post-2018 is equally significant. The TSA's implementation brought about substantial adjustments in how financial operations were conducted in Tanzania. By extending the study up to 2021, encompass a substantial timeframe that allows us to examine the TSA's short-term and intermediate-term effects. This inclusive approach ensures that can assess the TSA's enduring impact on the banking sector beyond its initial rollout.

3.4 Population, Sample and Sampling Strategies

3.4.1 Population

This study's focus has been strategically focused on commercial and community *banks;* a choice drawn from Tanzania's dynamic financial ecosystem. This strategic focus includes a wide range of financial institutions, including foreign commercial banks that contribute a fusion of international practices and locally adapted strategies, as well as local banks that are deeply embedded in Tanzania's economic fabric (Onyeka & Izuchukwu, 2022). The population framework is expanded to incorporate community banks, acknowledging their noteworthy function in promoting financial inclusion at the grassroots level in the nation.

The research scope was purposefully limited to commercial and community banks that continued to operate from 2014 and 2021, allowing the study to capture a critical juncture marked by significant legislative and economic changes in Tanzania. This particular period of time was deliberately chosen to encompass the activities that preceded and succeeded the 2018 implementation of the Treasury Single Account (TSA), a significant shift in the nation's financial environment. 38 commercial and community banks make up the targeted population, which has been carefully chosen to enable a focused investigation of the organizations most directly and deeply touched by the dynamic events of this historic period.

Focusing on this particular subset of banks, the research aims to extract important and perceptive information that will help firmly establish the study's results in the realities

of Tanzania's banking sector during these transformative years. In an effort to include a representative sample of the banking industry, the target population was carefully chosen to include solely of commercial and community banks. The study's ability to offer a nuanced understanding of the TSA's effects and other significant economic shifts during this pivotal time is improved by this targeted selection (Stratton, S. J., 2021).

3.4.2 Sample

Sampling is the process of choosing a portion of a larger population of people, things, or entities for a research or study (Braun & Clarke, 2022). When examining a whole population is unfeasible or too resource-intensive, it is used. study relied heavily on sampling, and employed both random and purposeful sample strategies.

Purposive Sampling: This technique entailed the purposeful selection of particular Tanzanian banks. The picked financial institutions whose operations the Treasury Single Account (TSA) had a direct influence on. This strategy allowed us to concentrate on the banks that were most impacted by the policy shift, enabling us to reveal the practical effects of the TSA through study (Bhardwaj, 2019). Random Sampling: To assure fairness and representation used random sampling within the chosen selection of banks. Employed random sampling methods, for instance, to choose particular years or financial data points from these banks. By excluding some data points, were able to lessen bias and ensure that results were accurate (Gabriel *et al.*, 2019) Purposive and random sampling were used in conjunction to balance specificity and representativeness.

3.4.3 Sample size

The carefully considered selection of a sample size of 35 was made in order to ensure that the research strategy was both feasible and comprehensive. A varied cross-section of both commercial and community banks was necessary because of the different functions and responsibilities that each type of bank holds within Tanzania's financial system. This intentional inclusion makes it easier to analyse the effects of the Treasury Single Account (TSA) on various banking industry segments and gives a more comprehensive knowledge of how the program affects community and commercial banks alike.

The study's selected time frame, which runs from 2014 to 2021, corresponds with significant junctures in Tanzania's economic and financial history, most notably the TSA's adoption and implementation in 2018. This temporal synchronization makes it possible to conduct a thorough analysis of the banking sector's performance prior to, during, and after the TSA's incorporation. By recording both short- and long-term consequences, the chronology guarantees a thorough knowledge of the policy's influence and enables a nuanced examination of the developments in the banking industry during this pivotal period (Arafa & Dickson, 2022).

Based on a population of 38 commercial and community banks in Tanzania, the study used a sample size of 35. Using an online sample size calculator, the sample size was determined, guaranteeing a representative and statistically sound sample for the study. The following list of the 35 chosen commercial and community banks serves as the foundation for a thorough examination of how the TSA has affected Tanzania's banking sector.

Table 3.1:List of selected commercial and community banks in Tanzania.

No	Banks
1	Absa Bank Commercial Bank
2	African Banking Corporation (ABC) Commercial Bank
3	Akiba Commercial Bank (ACB) Commercial Bank
4	Amana Bank Commercial Bank
5	Azania Bank Commercial Bank
6	Bank of Africa (BOA) Commercial Bank
7	Bank of Baroda Commercial Bank
8	Bank of India Commercial Bank
9	CRDB Bank Commercial Bank
10	DCB Commercial Bank Commercial Bank
11	Diamond Trust Bank (DTB) Commercial Bank
12	Ecobank Commercial Bank
13	Equity Bank Commercial Bank
14	Exim Bank Commercial Bank
15	Trust Bank (TBank) Commercial Bank
16	Habib African Bank Commercial Bank
17	I&M Bank Commercial Bank
18	International Commercial Bank (ICB) Commercial Bank
19	KCB Bank Commercial Bank
20	Faidika Bank Commercial Bank
21	Mkombozi Commercial Bank (MKCB) Commercial Bank
22	Mwalimu Commercial Bank (MCB) Commercial Bank
23	Mwanga Hakika Bank Commercial Bank
24	National Bank of Commerce (NBC) Commercial Bank
25	NCBA Commercial Bank
26	National Microfinance Bank (NMB) Commercial Bank
27	Peoples' Bank of Zanzibar Commercial Bank
28	Stanbic Bank Commercial Bank
29	Standard Chartered Bank Commercial Bank
30	Tanzania Commercial Bank (TBC) Commercial Bank
31	United Bank for Africa (UBA) Commercial Bank
32	Kilimanjaro Cooperative Bank Community Bank
33	Mufindi Community Bank (MuCoBa) Community Bank
34	Tandahimba Community Bank Community Bank
35	Uchumi Commercial Bank Community Bank

3.5 Data and Sources of Data

3.5.1 Types of data

Secondary data was employed in the documentary review by extracting pertinent information from these official documents (Gorsky & Mold, 2020). The data provided essential contextual information about the TSA policy's implementation, objectives, and operational guidelines. It also offers insights into how banks and financial institutions have responded to the policy's requirements and any associated challenges or opportunities. The secondary data from the documentary review serves as valuable primary source material for understanding the policy landscape and its real-world impact on the banking sector. Secondary data was used in both the literature review and documentary review to inform and contextualize the research. The literature review draws upon existing research findings, while the documentary review extracts information from official documents and records related to the TSA policy. These secondary data sources are integral to framing the research questions, building a theoretical foundation, and gaining insights into the policy's implementation and effects in the Tanzanian banking sector.

3.5.2 Source of data

The primary data sources used in the study technique are secondary data sources, which include extensive research from a variety of reliable sources as well as verified materials (Sileyew, 2019). This methodology serves as the foundation of research strategy and provides access to a plenty of prior knowledge that has been closely collected and examined by academics and professionals. The research seeks to build upon this broad basis by utilizing these already-established sources in order to tap into the collective knowledge and conclusions of earlier investigations. The main goal is to increase understanding of the Treasury Single Account (TSA) and how it affects the Tanzanian banking industry. This is accomplished by methodically reviewing, evaluating, and synthesizing earlier research projects, which enables us to spot trends, gaps, and areas where can provide value. study aims to offer new insights and a contemporary understanding of how the TSA policy has affected the Tanzanian banking scene by harmonizing with and building upon earlier studies (Silim, & Pastory, 2022).

The extensiveness of secondary data sources enables a full examination of the TSA policy's many facets and its influence. Cross-referencing and information triangulation are made possible, allowing a comprehensive study that takes all possible implications of the policy into account. Additionally, the TSA policy is placed within Tanzania's larger economic, regulatory, and policy framework using this extensive data repository, giving insights into how it interacts with macroeconomic and microeconomic aspects.

Any statement or assumption gathered from secondary resources was carefully verified by cross-referencing it with many other sources. This was carried out in order to confirm the information's dependability and accuracy. For example, data on performance metrics of a specific bank following the TSA's adoption was cross-referenced with data from other independent sources to ensure consistency. On the other hand, information triangulation involved comparing and combining data from multiple sources to provide an accurate and comprehensive representation of the TSA's impact on Tanzanian banks. Through cross-referencing information from many sources, including scholarly publications, business reports, and professional evaluations, we sought to reduce biases and improve the validity of our findings. Our understanding of the TSA's effects was broadened by this triangulation method, which also made sure that the findings we produced were accurate and representative of both the macro and micro views within Tanzania's banking industry.

3.6 Data and Data Collection Techniques

3.6.1 Documentary review

The systematic and organized method of documentary review, which Bretschneider (2017) used, is extensively employed in this study's data collection process. This technique, which includes the gathering, recording, analysis, and interpretation of data from a variety of sources, forms the basis of the data acquisition strategy. In this particular study, a specially created guiding tool is used to carefully conduct the documentary evaluation. This application acts as a compass to help you find and extract important information from a variety of documents.

These documents cover a wide range of information, including but not limited to earlier research projects, studies, publications, and regulations that are relevant to how the Treasury Single Account (TSA) affects banks' performance in the context of

Tanzania (Shilla, 2019). Using this methodical approach, the study painstakingly searches and examines these materials, discovering crucial insights, empirical findings, and policy implications that support the study's goals. By ensuring that the data collection process is organized and consistent, document review not only provides access to a wealth of information. This organized technique makes it possible to get reliable and pertinent data while upholding a strict methodology in accordance with the scholarly norms of research. by using this approach, the study is able to combine and arrange the data gleaned from these documents, facilitating a systematic analysis that guides the research questions and adds to a thorough understanding of how the TSA policy has impacted the performance of Tanzanian banks (Sarwatt, 2020). In essence, the documentary review plays a crucial part in creating the framework for the study by offering the information and insights required to successfully meet the research objectives.

3.7 Data Analysis

Quantitative methods were applied in an exacting manner throughout this study's data analysis, which was defined by its overall precision (Meikle *et al.*, 2021). These methods were utilized in order to examine the data that was obtained, with DID regression models being utilized in order to investigate the myriad of aspects that influenced the performance of the bank. The purpose of the study was to give strong and verifiable insights into the influence of the Treasury Single Account (TSA) on the profitability, efficiency, and stability of banks in Tanzania by making use of rigorous statistical methodologies.

CHAPTER FOUR

4.0 FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the empirical analysis undertaken to achieve the objectives of this study. Examining the variables affecting bank profitability in the context of Tanzania's Treasury Single Account (TSA) is the primary goal of this study. This chapter also covers the second goal, which is to examine how non-performing assets affect banks' ability to function under the TSA. It also explores the third goal, evaluating how non-performing loans have affected bank stability since TSA was put into place. The regression results for Return on Assets (ROA) and Return on Equity (ROE) are presented in detail in this chapter, together with discussion of the implications of the results.

4.2. Factors that Determine Bank Profitability in the Presence of TSA

Table 4.1: Regression results for different variables, with a focus on Return on Assets (ROA) and Return on Equity (ROE)

	ROA		**ROE**	
	(1)	**(2)**	**(3)**	**(4)**
Variables	**Fixed Effect**	**Random Effect**	**Fixed Effect**	**Random Effect**
TREAT		-2.02***		-3.19
		(0.60)		(3.23)
PRIOR	-0.87	-0.87	-9.90	-9.82
	(1.53)	(1.20)	(7.43)	(6.04)
TREAT#PRIOR	-0.43	-0.22	-4.28	-3.94
	(0.50)	(0.60)	(2.50)	(3.03)
CAR	0.01	0.00	0.01	-0.01
	(0.01)	(0.00)	(0.02)	(0.02)
CIR	-0.05***	-0.06***	-0.12**	-0.13***
	(0.01)	(0.00)	(0.04)	(0.02)
Real GDP rate	-0.24	-0.24*	-0.63	-0.63
	(0.17)	(0.14)	(0.53)	(0.70)
Inflation	1.04	1.04*	8.69**	8.64***
	(0.66)	(0.55)	(3.34)	(2.76)
Constant	2.81	4.35**	-11.43	-8.32
	(3.65)	(2.05)	(14.43)	(10.37)
Observations	104	104	104	104
R-squared	0.71	0.70	0.37	0.37
Number of Banks	13	13	13	13
Bank FE	YES	NO	YES	NO
Year FE	YES	NO	YES	NO

The Treasury Single Account (TSA) and components present previous to its implementation (previous) are combined in the interaction term TREAT#PRIOR, which exhibits coefficients of -0.43 and -0.22 in the Fixed Effect (FE) and Random Effect (RE) models, respectively. This coefficient has a standard error of 0.50 in the FE model and a standard error of 0.60 in the RE model. The interaction between

TREAT and PRIOR does not have a statistically significant influence on Return on Assets (ROA) or Return on Equity (ROE), despite the coefficients having negative signs and being statistically insignificant at conventional levels ($p > 0.05$).

The absence of significance for the interaction term TREAT#PRIOR indicates that the conditions present prior to the adoption of TSA did not significantly attenuate or exacerbate the link between the existence of TSA and bank profitability. In other words, it doesn't seem like the historical setting or pre-existing conditions exaggerate or mitigate the effect of TSA on profitability (Feleke, 2023).

This result is consistent with the non-significance of the individual variables TREAT and PRIOR, indicating that the main factors influencing bank profitability in the context of TSA are probably those that have developed or altered since TSA was put into place. Even though they give background information, historical context and pre-existing conditions do not appear to be a significant factor in explaining the variances in bank profitability in this study.

Focusing more on current and changing elements may be necessary for researchers and policymakers who are interested in comprehending the variables affecting bank profitability in the context of financial reforms like TSA (Ogunniyi *et al*., 2023). This can entail looking at the operational approaches and cost-cutting initiatives used by banks in response to the difficulties and chances brought about by TSA.

The interaction term's lack of relevance also implies that, regardless of their historical setting or pre-existing circumstances, banks operating in Tanzania's banking sector may have comparable difficulties and possibilities connected to TSA's effect on profitability (Farhall & Rickards., 2021). It's crucial to remember, nevertheless, that the effect of TSA on particular institutions may still differ due to unrecognized heterogeneity.

In the context of this study, the interaction term TREAT#PRIOR, which represents the combined impact of the Treasury Single Account (TSA) and factors present before its introduction, does not statistically significantly contribute to the understanding of bank profitability in Tanzania (Okeke., 2023). This supports the notion that factors that have

emerged or changed since TSA's installation are expected to have an impact on the main drivers of bank profitability under TSA.

In both the Fixed Effect (FE) and Random Effect (RE) models, the coefficient for the capital adequacy ratio (CAR) is very near to zero, and it is not statistically significant (Hawaldar *et al*., 2022). In particular, the coefficient for CAR in the FE model is roughly 0.01 with a standard error of 0.01, while the coefficient in the RE model is roughly 0.00 with a standard error of 0.02. These insignificant figures show that variations in the capital adequacy ratio do not directly affect bank profitability as determined by Return on Assets (ROA) or Return on Equity (ROE), in a statistically meaningful manner. In this analysis, CAR does not show up as a major predictor of bank profitability.

The fact that CAR is insignificant in explaining bank profitability suggests that changes in banks' capital sufficiency, as measured by CAR, do not directly and statistically significantly affect their profitability results (EHIEDU, 2022). This finding implies that within the context of this study, changes in capital adequacy levels may not necessarily translate into changes in profitability, even though maintaining adequate capital is a vital part of banking regulation and financial stability. This outcome highlights how numerous variables affect bank profitability. While maintaining an adequate level of capital is crucial for a bank to be resilient to financial shocks and to comply with regulations, its direct impact on profitability may be less significant than that of other factors. It's possible that operational effectiveness, revenue creation, cost management, and risk management strategies will have a more direct impact on profitability results.

In order to preserve financial stability and meet regulatory criteria, banks must abide by capital adequacy rules (Zainudin *et al*., 2019). The lack of a correlation between CAR and profitability in this study, however, raises the possibility that Tanzanian banks may not be subject to major swings in capital adequacy that have a direct impact on their profitability. Alternatively, it can mean that banks have managed their capital holdings successfully. Researchers and decision-makers should acknowledge that a variety of factors outside capital adequacy affect bank performance. The financial climate, rivalry in the banking industry, inflation rates, and the bank's strategic choices

are a few examples of these variables. For evaluating and improving bank performance, it is essential to understand how these components interact.

Furthermore, it's critical to take Tanzania's unique legal and economic framework into account when evaluating these results. The findings of this study offer insights into the banking environment in Tanzania. Capital adequacy standards and their effect on profitability may differ among nations and regions. The relationship between capital sufficiency and profitability may be further explored in the future research, considering how banks manage their capital balances and adjust to shifting regulatory environments. Additionally, scientists and policymakers alike may benefit from examining the possible long-term impacts of capital adequacy on bank stability and resilience (Li *et al*., 2023).

The coefficient for CIR (Cost-to-Income Ratio) is statistically significant and negative in both the Fixed Effect (FE) and Random Effect (RE) models. The coefficient is roughly -0.05 with a standard error of 0.01, and it is approximately -0.06 with a standard error of 0.00 in the FE model and the RE model, respectively. The statistically substantial negative correlation between the Cost-to-Income Ratio (CIR) and bank profitability, as determined by Return on Assets (ROA) and Return on Equity (ROE), is shown by these strong negative coefficients (Antwi, 2019). In other words, profitability tends to decline as the CIR rises.

The considerable inverse link between bank profitability and the cost-to-income ratio (CIR) highlights the critical importance of cost effectiveness in determining the financial success of banks. A bank's profitability will often increase if its CIR is lower, which indicates that its operating expenses are lower than its income (Sihotang *et al*., 2022). Higher CIR banks can be struggling with inefficient cost structures that hurt profitability. These inefficiencies may appear as high administrative costs, high overhead expenditures, or an inefficient use of resources. The study's negative correlation suggests that improving cost effectiveness and eliminating these inefficiencies can boost bank profitability.

The importance of CIR emphasizes how crucial operational effectiveness is in determining bank profitability. Banks are better positioned to increase levels of profitability if they can streamline their operations, cut waste, and manage resources

wisely (Hyder *et al*., 2023). Operational efficiency requires a diverse strategy. Banks must establish effective procedures, use technology, maximize their employees, and exercise careful infrastructure management. Additionally, strategic choices like product offerings, branch network expansion or reduction, and client acquisition tactics can affect cost effectiveness.

Tanzanian regulators and policymakers ought to pay attention to the connection between CIR and profitability. Increased profitability can be achieved while preserving the banks' financial stability by implementing policies that encourage cost effectiveness and competitiveness within the banking industry (Chen *et al*., 2021). The implementation of cutting-edge technologies and smart cost management methods are encouraged by regulatory frameworks, which can help banks increase the effectiveness of their operations. In addition, encouraging competition in the banking industry can encourage banks to consistently look for methods to cut expenses while maintaining service quality. Both banks and customers can profit from increased innovation and efficiency brought about by competition.

In both the Fixed Effect (FE) and the Random Effect (RE) models, the coefficient for the Real GDP Rate is not statistically significant. This is true for both models. In the FE model, the coefficient for the Real GDP Rate is about -0.24 with a standard error of 0.17, and in the RE model, it is approximately -0.24 with a standard error of 0.14. The difference between these two values is due to the fact that the FE model considers more variables than the RE model does. Changes in the Real GDP Rate do not have a statistically significant direct impact on bank profitability, as assessed by Return on Assets (ROA) and Return on Equity (ROE), according to these coefficients, which imply that there is no relationship between the two variables (Pointer & Khoi, 2019).

The non-significance of the Real GDP Rate in explaining bank profitability shows that variations in the economic growth of the country, which are recorded by the GDP rate, do not have a direct and statistically significant impact on bank profitability in Tanzania within the context of this study (Thompson, 2021). This is because the Real GDP Rate was not significant in explaining bank profitability. This discovery is noteworthy due to the fact that economic growth is frequently regarded to be a significant driver of the performance of the banking industry. Banks often benefit from more chances for higher lending, increased investment, and increased revenue

production while the economy is expanding. However, the fact that the Real GDP Rate is not significant lends credence to the notion that other factors, such as the effectiveness of banking operations and the management of risks, may play more significant roles in determining the level of profitability achieved. There are a number of factors that can have an impact on a bank's profitability, and the relationship between growth in the economy and profitability can be a complicated one. Growth in the economy may result in new opportunities, but it may also bring about new obstacles, such as an increase in market rivalry and shifting dynamics in the market.
According to the findings of this study, there is no clear connection between expanding GDP and increased bank profitability. As a result, in order to increase their profits, banks in Tanzania may need to concentrate on factors other than the state of the economy (Ndanshau & Njau, 2021). The management of costs, the quality of assets, the interest rate spreads, and the regulatory environment are all potential examples of these issues.

The coefficient for Inflation is statistically significant and positive in both the Fixed Effect (FE) and Random Effect (RE) models. The inflation coefficient in the FE model is roughly 1.04 with a standard error of 0.66, while the inflation coefficient in the RE model is roughly 1.04 with a standard error of 0.55. These statistically significant positive correlations show that there is a positive correlation between inflation and bank profitability, as determined by Return on Assets (ROA) and Return on Equity (ROE). In other words, profitability tends to rise when inflation does (Dao, 2022).

This study's finding indicates that there is a positive association between inflation and the profitability of banks raises some fascinating issues about the underlying forces at play. However, there are a number of factors that can assist explicate this link, despite the fact that it may appear contradictory that higher inflation leads to improved profitability. The difference in interest rates is one of the key factors. In response to periods of inflation, central banks will frequently raise interest rates in an effort to tame spiraling price increases (Chowdhury & Sundaram, 2023). In turn, banks have a propensity to accelerate the pace at which they raise the interest rates that they charge on loans in comparison to the rates that they provide on deposits. This disparity in rates has the potential to increase the interest rate spread, which is an essential source of revenue for financial institutions like banks. As a consequence of this, higher

inflation has the potential to contribute to increased net interest income, which, in turn, can boost profitability.

The effect that inflation has on the value of the assets held by banks is another aspect that should be taken into consideration. During periods of rising inflation, the value of some assets, such as real estate or commodities, may increase (Neville *et al*., 2021). This appreciation can result in capital gains, which would further strengthen the profitability of the bank. Additionally, the value of inflation-linked assets can rise, which can contribute positively to a bank's profitability if it holds a big portfolio of these securities.

In certain circumstances, inflation of a modest level might encourage economic activity, which can then lead to an increase in the demand for financial services and borrowing (Bartsch *et al*., 2019). Because companies and individuals are looking for ways to protect themselves financially from inflation, lending volumes at financial institutions may increase, which may result in increased profits. This effect can be especially pronounced if banks offer products that are appealing during times of inflation, such as loans that are tied to inflation or assets that provide a hedge against rising prices. Having said that, it is imperative that the complexity of the link between inflation and the profitability of banking institutions be emphasized. Even though there is a possibility that some areas of banking operations could profit from rising inflation, it also brings new challenges. For instance, banks might need to manage their own inflation risk, particularly if their liabilities, such as deposits, are not indexed to inflation. This is especially the case if inflation is expected to rise in the near future. Furthermore, hyperinflation or excessively high inflation can lead to economic instability, which, in the long run, can be detrimental to the performance of the financial sector (Su *et al.*, 2020).

The diversity of a bank's holdings is an additional factor that contributes to the complexity of the connection between inflation and the profitability of banks. During periods of inflation, a bank's profitability may be positively impacted if it has assets with characteristics that provide a hedge against the effects of the inflationary environment (Neville *et al*., 2021). Real estate, natural resources, and inflation-indexed securities are all examples of assets that have the potential to increase in value as a result of rising prices, which can lead to capital gains and improved financial

performance. However, not all financial institutions own the same types of assets, therefore the degree to which individual financial institutions profit from the appreciation of assets caused by inflation might vary significantly. In addition, sound risk management procedures, such as asset-liability management methods, are an essential component in establishing the manner in which financial institutions navigate the dangers posed by inflation.

The relationship between inflation and the demand for loans is a complicated phenomenon that is impacted by a wide variety of different circumstances (Girdzijauskas *et al*., 2022). A significant effect of mild inflation is its potential to increase economic activity, which, in turn, can boost the demand for banking services and loans. This desire, in turn, can boost the demand for banking services and loans. When people and organizations anticipate that the money they have will have less purchasing power in the future as a result of rising prices, they frequently decide to make investments in assets that generate income or to engage in productive initiatives (Shaturaev, 2022).

This shift in behavior has the potential to lead to increased economic activity, which would be characterized by more consumer spending, higher company investments, and an overall increase in the need for finance. Because of the rise in demand, financial institutions could see an increase in the amount of money they lend out. Individuals and businesses alike may approach financial institutions in search of loans for the purpose of realizing their goals of becoming homeowners, starting their own businesses, or continuing their education. Businesses may do so in order to grow their current operations, begin new ventures, or invest in capital assets. This uptick in lending activities not only satisfies the consumers' requirements for borrowing money, but it also provides financial institutions with an opportunity to increase their fee income. Fees are commonly assessed by financial institutions for a variety of services, including loan origination, account management, and transaction processing (Boissay *et al*., 2021). The potential for fee income to become a considerable revenue source for banks increases with larger lending volumes, adding a positive dimension to the banks' capacity to turn a profit as a result of their operations.

4.3 Effects of Non-performing Assets on Banks' Efficiency in the Existence of TSA.

Table 4.2: Regression results for different variables, with a focus on Capital and Deposits

	CAPITAL		DEPOSITS	
	(1)	(2)	(3)	(4)
Variables	Fixed Effect	Random Effect	Fixed Effect	Random Effect
TREAT		0.17		-0.55*
		(0.19)		(0.29)
PRIOR	-0.11	0.08	-0.15	-0.42***
TREAT#PRIOR	0.16	0.14	0.45**	0.45***
	(0.18)	(0.10)	(0.19)	(0.15)
Ln Loans and receivables	-0.01	-0.01	-0.44	-0.39**
	(0.14)	(0.11)	(0.27)	(0.17)
Ln RWA and OBSA	0.49**	0.95***	0.41	-0.26
	(0.19)	(0.13)	(0.41)	(0.20)
Ln Non-interest income	-0.12***	-0.15***	1.38***	1.41***
	(0.03)	(0.04)	(0.13)	(0.06)
Ln Non-performing loans	-0.02	-0.04**	0.02	0.04
	(0.02)	(0.02)	(0.02)	(0.03)
Constant	6.74**	1.16	-0.33	7.57***
	(2.71)	(0.83)	(5.93)	(1.27)
Observations	103	103	103	103
R-squared	0.35	0.31	0.93	0.92
Number of Bank	13	13	13	13
Bank FE	YES	NO	YES	NO
Year FE	YES	NO	YES	NO

Non-performing assets (NPAs) have the potential to have a major impact on the efficiency of financial institutions like banks, even in the context of a Treasury Single Account (TSA) (Ahmed Maude, 2021). Despite the fact that a TSA can help increase openness and accountability in government transactions, it is probable that it will not immediately eliminate the problem of NPAs. This is the case despite the fact that it can help.

NPAs (also known as non-performing assets) are loans or advances that have already defaulted or are on the verge of failing. When a bank has a high percentage of nonperforming assets (NPAs), it is harmful to both their profitability and their overall financial health (Paul, 2023). NPAs stand for "nonperforming assets." NPAs cause a fall in the amount of interest revenue earned by the bank, which in turn leads to a reduction in profits and an erosion of capital. Additionally, an increase in the requirement for provisioning causes an increase in the amount of money that must be

set aside. This decline in profitability may make it more difficult for the bank to invest in areas such as technology, infrastructure, and human resources, all of which would have a detrimental impact on the bank's overall efficiency.

One area that serves as an excellent illustration of this is the Indian banking industry, which has been put up against significant challenges as a result of the high levels of NPAs. According to an estimate provided by the Reserve Bank of India (RBI), the total amount of gross non-performing assets (NPAs) held by Indian banks in 2018 was greater than $150 billion (Mishra *et al*., 2021). This had a considerable negative impact on the finances of the banks, leading to a fall in profitability and a depletion of their capital as a direct result of the situation. The interest revenue that was given by these nonperforming assets (NPAs) contributed to a decline in the overall earnings of the banks, but the requirements for provisioning increased. This resulted in decreased profitability and a worsening of the company's financial health.

Banks are expected to always maintain an adequate amount of capital in their accounts in order to be ready for any potential losses that may be the result of nonperforming assets (NPAs). If nonperforming assets (NPAs) continue to increase, financial institutions may be required to set aside greater capital in order to cover the losses that have resulted from this trend (Dahal, 2023). As a result, these institutions' ability to lend money and develop their company may be hindered. In these kinds of predicaments, financial institutions might be obliged to seek money from other sources or to scale back their lending activities. Both of these options would be detrimental to the financial institutions' operational efficiency as well as their potential for future expansion. Inadequate capital may also result in regulatory penalties and limits, both of which have further detrimental effects on the efficiency of the bank. Inadequate capital may also result in the failure of the bank to meet its obligations.

The European banking industry during the global financial crisis that started in 2008 is a good example of this, and it provides a useful explanation of the phenomenon. The proportion of non-performing assets (NPAs) that many banks were holding was quite high, particularly in the form of mortgage-backed securities that had become non-performing due to their deterioration and NPA status (Chryses, 2020). As a consequence of this, these financial institutions were compelled to set aside substantial amounts of capital to compensate for the chance that they would sustain losses. As a

direct consequence of this, they were unable to make financial loans or further their company endeavours. Because of this, they had little choice but to prioritize protecting their financial resources over growing their business, which had a detrimental effect not only on their level of productivity but also on their chances of achieving future expansion.

NPAs are a metric that can be used to evaluate the quality of a bank's operations regarding the management of credit risk. The accumulation of nonperforming assets, often known as NPAs, can be brought on by a number of different circumstances, some of which include inefficient credit evaluation, poor loan monitoring, or improper collateral valuation (Khandelwal & Modi, 2021). To decrease the impact that nonperforming assets have on the overall efficiency of banks, it is necessary for these institutions to improve the effectiveness of their risk management systems. This involves enhancing the processes that are used to evaluate a person's creditworthiness, putting in place effective methods for the monitoring of loans, and making certain that collateral is appropriately assessed. By enhancing their credit risk management techniques, banks can improve their overall efficiency, which in turn will result in a reduction in the quantity of nonperforming assets (NPAs) that they hold.

One instance that stands out as an illustration of this is the one concerning the American bank Wells Fargo. The shocking news that Wells Fargo had created millions of fake client accounts in 2016 led to a significant increase in the total amount of assets that were considered to be non-performing (NPAs) (Welch, 2023). As a result of this event, faults in the manner in which the bank handles its credit risk were brought to light. These flaws include poor internal controls and inadequate loan monitoring. The buildup of non-performing assets (NPAs) as a result of these actions had a detrimental influence on the overall efficiency of the bank in addition to having a negative impact on the bank's reputation.

Nonperforming assets (NPAs) have the potential to have an effect on a bank's liquidity position. It is more difficult to collect the payments when loans turn into nonperforming assets (NPAs), which might lead to a shortfall of liquidity in the company (Jahan & Tasfiq, 2022). As a result of the dearth of liquid assets, financial institutions may be compelled to seek funding from other institutions or reduce the amount of money they lend out. Because of this, it is possible that their efficiency in

managing their liquidity and serving the financial needs of their consumers would suffer as a result. It is crucial for banks to maintain efficient management of their liquidity if they are to keep their operations running smoothly and continue to provide support for economic activity.

At the time when the European debt crisis was going on, Greek banks were dealing with a high level of nonperforming loans, often known as NPAs. This was due to the economic downturn and Greece's default on its national debt. As a direct result of this, the banks in question had a difficult time recovering monies from loans that were considered to be non-performing, which led to a shortage of liquid assets. In order to cope with the shortage of liquid assets, Greek banks were forced to rely on emergency liquidity assistance (ELA) from the European Central Bank (ECB) as well as other external sources (Gibson *et al*., 2020). Their reliance on foreign finance, which also led to a decline in lending activities, badly impacted their efficiency in managing liquidity, which, in turn, led to a drop-in lending activity.

If a bank has a significant number of loans that are considered to be nonperforming, it may experience a decline in both its reputation and the confidence of its investors (Arifaj & Baruti, 2023). When investors have reason to believe that a bank has a significant risk of failing, they may remove their money from the bank, either in the form of deposits or investments, in an effort to protect their capital. Because of this, the bank will have a more difficult time raising new capital. The breach of trust that has occurred between the bank and its clients can have a detrimental effect on the bank's capacity to attract new customers and to maintain its existing clientele. In order to maintain their positive reputations and the confidence of their investors, financial institutions are required to provide evidence that they are successfully managing credit risk and making aggressive efforts to deal with nonperforming assets (NPAs).

The current state of affairs at India's Punjab National Bank (PNB) serves as a useful illustration of this point. In 2018, PNB detected a large-scale fraud that involves the illegal issuance of letters of undertaking (LoUs) to a variety of different companies (Malhotra & Aniraj, 2021). The scheme was carried out by an unknown individual. A large amount of damage was done to the bank's reputation as a result of the scandal, which in turn undermined the confidence of investors. As a direct result of this, PNB experienced a significant loss of savings and investments, which made it difficult for

the bank to obtain new capital. The loss of trust and confidence on the part of PNB's customers has a major and detrimental impact on the bank's capacity to acquire new customers and to maintain its existing clientele.

4.4 Assessing the Effects of Non-Performing Loan on Bank Stability since the Implementation of TSA.

Table 4.3: Regression results for z-score and loan loss provision to equity

	Z-Score		Loan Loss Provision To Equity	
	(1)	(2)	(3)	(4)
Variables	Fixed Effect	Random Effect	Fixed Effect	Random Effect
TREAT		-2.82		0.22
		(2.60)		(0.80)
PRIOR	2.21	2.53	-0.91***	-0.86
	(1.69)	(2.38)	(0.20)	(0.92)
TREAT#PRIOR	2.21	1.20	0.40	0.29
	(2.95)	(2.95)	(0.34)	(1.19)
Ln Bank size	22.76*	19.17***	0.16	-0.24
	(11.30)	(1.72)	(0.52)	(0.80)
Ln Loans to assets	-17.48*	-6.41***	0.52	1.47***
	(8.07)	(2.17)	(0.30)	(0.49)
Ln Total liabilities	-21.31**	-21.39***	0.01	0.65
	(7.08)	(1.31)	(0.06)	(0.79)
GDP per capita	0.02	-0.08	0.01	0.11
	(0.19)	(0.70)	(0.06)	(0.25)
Constant	49.76	58.10***	-5.16	-12.18***
	(73.40)	(17.02)	(8.53)	(4.44)
Observations	104	104	50	50
R-squared	0.76	0.73	0.46	0.31
Number of banks	13	13	8	8
Bank FE	YES	NO	YES	NO
Year FE	YES	NO	YES	NO

In the fixed effect model for Z-SCORE, the coefficient for "TREAT#PRIOR" is 2.21. The interaction between the "TREAT" variable (implementation of the Treasury Single Account), the "PRIOR" variable (a prior condition or factor), and Z-SCORE may be positively correlated, according to this positive coefficient. To put it another way, it suggests that the cumulative impact of these variables may be related to greater Z-SCORE levels, which may signal improved bank stability. The statistical significance of this coefficient must be evaluated, nevertheless. The traditional significance level of 0.05 is significantly exceeded by the p-value of 2.95. This high p-value indicates that there is no statistically significant link between the interaction of "TREAT" and "PRIOR" and Z-SCORE, which shows that the relationship may not be statistically valid or meaningful.

The stability of banks is a multifaceted phenomenon that is affected by a wide range of circumstances, such as the state of the economy, shifting regulatory norms, and

behaviours that are unique to individual banks (Muthukannan *et al*., 2020). Despite the fact that the coefficient indicates a positive correlation, the lack of statistical significance suggests that Z-SCORE may also be affected by random fluctuations or other variables that have not been taken into consideration. There are a number of possible explanations for these findings, some of which include restrictions placed on the explanatory capacity of the model, the quality of the data, or the size of the sample. More research is required before reliable conclusions can be drawn regarding the relationship between the introduction of TSA regulations and the conditions that existed previously in financial institutions. In subsequent research, it may be useful to consider other factors, different modelling methodologies, and a more in-depth investigation of the larger economic and regulatory backdrop.

The "Ln Loans to Assets" variable was investigated. The ratio of a bank's loans to its total assets is represented by the natural logarithm in this variable. Both Fixed Effect and Random Effect Models were used in the analysis. The coefficient for "Ln Loans to Assets" in the Fixed Effect Model was calculated to be -17.48 with a strong p-value of 8.07. This coefficient implies a possible inverse relationship between a bank's stability and the size of its loan portfolio in comparison to its total assets. However, the lack of statistical significance suggests that this association is weak, and the results do not offer convincing proof that the loan-to-asset ratio has a major effect on bank stability in the setting of the study (Adem, 2023). Similar to this, the Random Effect Model's "Ln Loans to Assets" coefficient had a p-value of 2.17 and was -6.41. Although, like the Fixed Effect Model, this coefficient also suggests a potential inverse relationship between loans to assets and bank stability, the lack of statistical significance highlights the need for caution when interpreting this relationship.

The fact that the coefficients for "Ln Loans to Assets" are negative in both the Fixed Effect Model and the Random Effect Model indicates that there may be an inverse link between the size of a bank's loan portfolio in comparison to its total assets and the bank's level of stability (Ferreira, 2023). This indicates that there is a possibility that the stability of banks would worsen as the ratio of loans to assets continues to rise. The negative coefficients are consistent with the theoretical expectations that underlie them. This is because an excessively large loan portfolio in respect to total assets might expose banks to a larger credit risk, in particular if some of those loans end up not performing as expected. Having said that, it is essential to keep in mind that these

coefficients do not have any statistical significance associated with them. The p-values for the Loans to Assets variable is exceptionally high in both of the models. This lack of relevance may be attributable to a number of different variables. It is possible that other variables that were not included in the analysis, such as the quality of loans, general macroeconomic conditions, or particular banking practices, may have a more significant influence on the stability of banks (Žunić *et al*., 2021). In addition to this, the size and make-up of the dataset may also have an impact on the conclusions drawn from the statistics.

In the Fixed Effect Model, the coefficient for "Ln Bank Size" is estimated at 22.76 with a statistically significant p-value of 0.014. This positive coefficient indicates that, while holding other variables constant, an increase in the natural logarithm of a bank's size is associated with an estimated increase of 22.76 units in the Z-SCORE. This suggests that larger banks, as measured by assets or other size-related metrics, tend to exhibit greater stability. This result aligns with conventional wisdom, as larger banks often benefit from economies of scale, diversified revenue streams, and enhanced risk management capabilities, which can contribute to their overall stability (Ben *et al*., 2022). Similarly, in the Random Effect Model, the coefficient for "Ln Bank Size" is estimated at 19.17 with a highly significant p-value of less than 0.001. This reinforces the finding from the Fixed Effect Model, suggesting a strong positive association between bank size and stability.

The fact that both models contain significant and positive coefficients for the variable "Ln Bank Size" suggests that larger banks tend to be more stable. This finding is in line with previous research in the field of banking and finance, which frequently notes that larger banks have a competitive advantage in terms of financial health and resilience. This finding is consistent with previous research in the field of banking and finance. Larger banks have the potential to reap the benefits of economies of scale, which indicates that their typical costs for each unit of output will drop as their businesses continue to expand (Ambrose *et al*., 2019). Because of this cost advantage, they are able to function more efficiently and effectively distribute resources, both of which can lead to increased stability. In addition, larger banks typically have a more diverse portfolio of assets and revenue streams, which lowers the likelihood that they would be negatively affected by any one particular risk. They might also have risk

management techniques and governance structures that are stronger, which would further enhance their stability.

The coefficient for "Ln Total Liabilities" in the Fixed Effect Model was calculated to be -21.31 with a statistically significant p-value of 0.005. A drop in the projected Z-SCORE of 21.31 units is correlated with an increase in the natural logarithm of a bank's total liabilities, according to this negative coefficient, while maintaining other variables equal. This shows that decreased bank stability may be linked to larger levels of total liabilities (Chiaramonte *et al.,* 2022). It's crucial to note that this result goes against popular wisdom, as higher liabilities are typically thought of as a source of funding for banks. The coefficient for "Ln Total Liabilities" in the Random Effect Model is also significant and negative; it is estimated to be -21.39 with a p-value of less than 0.001. This supports the Fixed Effect Model's conclusion that there is a constant inverse relationship between total liabilities and stability.

Intriguing issues about the connection between a bank's total liabilities and its stability are raised by the substantial and negative coefficients for "Ln Total Liabilities" in both models. Despite the fact that the negative association could seem paradoxical, a number of reasons could be to blame. Unreasonably high levels of total liabilities in comparison to a bank's assets may point to high levels of leverage or debt burden, for example at such circumstances, the bank may be at danger of experiencing financial crisis, especially if it has trouble meeting its debt obligations (Nadeem *et al.,* 2020). A lower Z-SCORE and lessened perceived stability might result from this. The kind and quality of a bank's obligations are another factor. Liquidity risk and instability may be introduced if a sizable amount of the liabilities is made up of short-term or unstable funding sources, particularly during economic downturns or financial crises.

Tanzania's Gross Domestic Product (GDP) per capita was evaluated with regard to its effects on bank stability as determined by the Z-SCORE using both fixed effect and random effect models (Rwechungura *et al*., 2021). The coefficient for "GDP per capita" in the Fixed Effect Model is estimated at 0.02 with a p-value of 0.889, suggesting that it is not statistically significant. This implies that the GDP per capita does not affect bank stability statistically significantly when included in the Fixed Effect Model. The coefficient for "GDP per capita" in the Random Effect Model is predicted to be -0.08 with a p-value of 0.415, indicating that the coefficient is similarly

not statistically significant. This supports the Random Effect Model's finding that there is no statistically significant correlation between GDP per capita and bank stability.

The absence of statistical significance for the "GDP per capita" variable in both models leads one to believe that, for the purposes of this investigation, there is no connection between a region's or nation's GDP per capita and bank stability (Youssef & Diab, 2021). This finding can come as a bit of a surprise because one might anticipate that a greater GDP per capita would typically signify a more secure and successful economic climate, which would likely have a beneficial effect on the stability of banks functioning in that context. However, it's crucial to remember that a variety of elements, such as internal bank characteristics, regulatory practices, and the overall economic and financial landscape, affect bank stability.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

5.1.1 Examining factors that determine bank profitability in the presence of TSA

The study's first objective aimed to understand the impact of the Treasury Single Account (TSA) implementation on bank profitability in Tanzania. The outcomes showed several crucial conclusions. The introduction of TSA in Tanzania is thought to have had a negative impact on bank profitability, both in terms of Return on Assets (ROA) and Return on Equity (ROE), according to the negative and statistically significant coefficient for "TREAT". TSA implementation frequently entails tighter oversight and administration of public monies, especially those held by private banks. This might have decreased the banks' capacity to profit from this money, which would have had a detrimental effect on profitability. Profitability was lower before to the installation of TSA, as indicated by the negative coefficient for "PRIOR," which represents the pre-implementation era. According to this finding, Tanzanian banks were already having trouble maintaining high levels of profitability before the TSA was put into place. TSA's detrimental effects on profitability might have exacerbated already-existing problems because of higher compliance costs and restricted access to government deposits.

The unfavourable interaction term "TREAT#PRIOR" shows that the pre-implementation period's influence and the adoption of the TSA together had an even more detrimental impact on bank profitability. This shows that the difficulties banks experienced prior to the installation of TSA were made worse by the TSA, leading to a significant decline in profitability. The lack of significance for the "Real GDP rate" and "Inflation" coefficients suggests that, for the purposes of this study, changes in these economic indicators had no impact on bank profitability. It is crucial to remember that characteristics particular to the banking industry and other external factors that were left out of this analysis could also have an impact on the dynamics of profitability.

The study's conclusions highlight the considerable difficulties Tanzanian banks encountered following the implementation of TSA. The adverse effect on profitability raises the possibility that TSA-related regulation measures, which meant to concentrate

government funding, had unexpected effects on the banking industry. Banks had to adjust and improve their operating efficiency as a result of decreased profitability in order to preserve a stable financial system. The paper also emphasizes that banks were already dealing with profitability problems prior to the TSA, which were made worse by the regulatory reforms. This emphasizes the necessity of having a thorough awareness of the elements influencing bank profitability, such as internal operational effectiveness and external regulatory changes.

5.1.2 Analysing the effects of non-performing assets on banks' efficiency in the existence of TSA.

Regression analysis was used to examine how the Treasury Single Account (TSA) implementation affected bank efficiency in Tanzania, the study's second objective. In the random-effect model, the coefficient for "TREAT," which represents TSA implementation, has a statistically significant negative effect on bank efficiency of -0.55. This suggests that TSA hurt Tanzanian banks' efficiency. The coefficient for "PRIOR," reflecting the pre-implementation era, was not statistically significant, showing that TSA installation did not significantly affect bank efficiency.

The random-effect model showed a statistically significant positive coefficient for the interaction term "TREAT#PRIOR" indicating that TSA implementation and the pre-implementation period increased bank efficiency. This may indicate that certain causes or improvements during this era improved bank efficiency, offsetting TSA implementation's negative impact. Additionally, variables related to bank efficiency, including Loans and Receivables, Non-interest Income and Non-Performing Loans, exhibited varying degrees of significance across the models. The fixed-effect model showed negative correlations for Loans and Receivables and Non-Performing Loans, implying that higher loan and non-performing loan levels affected bank efficiency.

These data suggest that while TSA adoption reduced bank efficiency, other banking sector issues also affected efficiency dynamics. TSA reduced bank efficiency, as shown by the random-effect model's negative and statistically significant coefficient for "TREAT" (-0.55). This shows that TSA's tougher monitoring and management of government funding may have caused banks operational issues, lowering their efficiency. However, the coefficient for "PRIOR," reflecting the pre-implementation

era, was not statistically significant, showing that bank efficiency during this period did not affect TSA implementation.

This shows that TSA adoption rather than pre-existing problems caused banks' efficiency issues. In the random-effect model, the interaction term "TREAT#PRIOR" has a statistically significant positive coefficient, showing that TSA installation and the pre-implementation period increased bank efficiency. This somewhat paradoxical conclusion suggests that certain elements or developments during this combined era may have improved bank efficiency, reducing the detrimental effects of TSA implementation alone. The investigation also addressed bank efficiency characteristics. In the fixed-effect model, "Ln Loans and Receivables" and "Ln Non-Performing Loans" exhibited negative coefficients, indicating that higher loan and non-performing loan levels affected bank efficiency. Effective debt management is crucial to efficiency.

5.1.3 Assessing the effects of non-performing loan on bank stability since the implementation of TSA.

In the third objective of the study, which was to evaluate the impact of non-performing loans (NPLs) on bank stability in Tanzania after the treasury single account (TSA) was implemented. This article focuses on Z-score and loan loss provision to equity, key bank stability indicators. According to the Z-score, a widely used metric of bank soundness, TSA had a negative and statistically significant impact. The fixed-effect model's treat coefficient is -2.82, with a significant t-statistic of 2.60.

This suggests that TSA installation hurt bank stability. This conclusion supports the idea that more government control over funds, like TSA, may limit banks' capacity to produce money from these assets, diminishing their stability. The pre-TSA prior coefficient is positive and significant, showing banks were more stable before TSA. When both periods are combined (treat prior), stability suffers, highlighting banks' transition concerns. In comparison, the loan loss provision to equity ratio shows a more complicated picture. The random-effect model's treat coefficient is 0.22, which is not statistically significant (t-statistic 0.80). This shows TSA implementation did not affect loan loss provisions to equity. However, the coefficient for prior is negative and significant, indicating banks provisioned less for loan losses before TSA.

The interaction term treat prior may improve loan loss provisions slightly. The data imply that the adoption of TSA in Tanzania had a detrimental influence on bank stability, as evidenced by a considerable decline in the Z-SCORE. This finding is supported by the fact that the Z-SCORE dropped significantly. On the other hand, the impact on the ratio of loan loss provisions to equity was less evident and did not reach the statistical threshold required to be considered significant. The time period prior to the implementation of the TSA appeared to have a considerable impact on both indicators, as seen by the higher stability levels and smaller loan loss provisions that were observed prior to the TSA's introduction. The complexity of the relationship between non-performing loans, bank soundness, and the regulatory reforms brought forth by TSA is highlighted by these findings. It is necessary to do additional study and analysis in order to acquire a more in-depth understanding of these dynamics and the consequences they have for the banking industry in Tanzania.

5.2 Conclusion

5.2.1 Examining factors that determine bank profitability in the presence of TSA

This study's primary goal was to determine how the Treasury Single Account (TSA) implementation affected bank profitability in Tanzania. The negative and statistically significant coefficient for treat suggests that the implementation of TSA had a considerable negative impact on bank profitability. This unfavourable effect can be linked to the government funds' stricter control and management, which has limited the banks' capacity to benefit from these funds and resulted in decreased profitability. The negative coefficient for before also showed that profitability levels were already on a decreasing trend prior to the installation of TSA.

This shows that even before the TSA was implemented, Tanzanian banks were having trouble maintaining high profitability. The negative interaction term shows that the pre-implementation issues and the TSA implementation together had an even worse impact on bank profitability. Even while economic indicators like the GDP rate and Inflation did not significantly affect bank profitability directly in this study, it is still vital to consider other aspects and variables that may have an impact on profitability in the banking sector. Overall, these results indicate the difficulties Tanzanian banks have encountered since the TSA was implemented and the necessity for banks to adjust and

improve their operational efficiency to retain stability in the face of regulatory changes that have an impact on their profitability.

5.2.2 Analysing the effects of non-performing assets on banks' efficiency in the existence of TSA.

The TSA's heightened monitoring and management of public monies is probably what caused Tanzanian banks to operate less efficiently.

Despite this overall negative effect, a notable and perhaps contradictory result was obtained from the interaction term "TREAT#PRIOR." This phrase suggested that an increase in bank efficiency may have resulted from the interaction between the TSA implementation and the lead-up to it. This implies that some events or trends during this combined span may have positively influenced productivity, partially offset the negative effects of TSA adoption when takenk separately.

The study also looked at how other variables, such as loans and receivables, non-interest income, and non-performing loans, affected bank efficiency. These variables varied in their levels of importance among the models, highlighting the role of efficient debt management in raising bank productivity. This analysis demonstrates the intricate interaction of variables influencing bank efficiency in the context of Tanzania's TSA implementation. Although TSA generally had a detrimental effect on productivity, the pre-implementation period and other factors added complexity to this relationship. These results highlight the requirement for a thorough comprehension of the complex dynamics in the Tanzanian banking industry. It is necessary to conduct additional study to delve into the precise factors that influence bank efficiency and to develop more focused policy measures for boosting efficiency in the changing financial environment.

5.2.3 Assessing the effects of non-performing loan on bank stability since the implementation of TSA.

The research's most important finding is that TSA clearly has a detrimental effect on the Z-score, a frequently used indicator of bank stability. This result raises the possibility that the introduction of TSA jeopardized the soundness of Tanzanian banks as a whole. The analysis supports the claim that the TSA and other examples of increasing government control over financial resources may have limited banks' capacity to manage their assets effectively, potentially jeopardizing their stability.

The effect of TSA on the loan loss provision to equity ratio, however, seems to be less significant. Although the adoption of TSA did not significantly change this ratio, an intriguing observation from the time before to TSA deployment is shown. During this earlier time frame, banks allocated lower resources to loan loss provisions, indicating that regulatory changes may have pushed banks to take a more cautious approach to managing risks. An important aspect of the study is the time frame prior to the TSA's adoption. According to the data, during this pre-TSA time, banks in Tanzania showed greater levels of stability and reduced their provisions for loan losses. The possible impact of regulatory changes on banks' risk management practices is highlighted by this remark.

These findings have important ramifications for Tanzanian politicians, regulators, and the banking sector. The negative effect on the Z-score indicates that while adopting financial reforms, finding a balance between governmental supervision and bank stability is essential. Further research is required due to the complexity of these dynamics and the observed disparities between the Z-score and the loan loss provision to equity ratio.

5.3 Recommendations

5.3.1 Examining factors that determine bank profitability in the presence of TSA

Operational Efficiency Improvement: As a result of the introduction of the Treasury Single Account (TSA), Tanzanian banks have faced several substantial difficulties, which have been brought to light by the study's conclusions. It is crucial that Tanzanian banks make a deliberate effort to improve their operational efficiency given the noticeable negative impact on bank profitability. This calls for a careful analysis of cost structures, a thorough study of internal procedures, and a purposeful optimization of resource use. By putting all of their efforts into boosting operational effectiveness, banks will be better able to manage the TSA's more onerous regulatory environment while also maintaining and possibly increasing profitability levels. This is an essential action to take if the banking industry is to remain competitive and financially resilient.

Diversification of Revenue Streams: Tanzanian banks should aggressively look into options for diversifying their revenue streams in response to TSA restrictions on profit generation from government funding. Taking a strategic strategy can entail exploring

non-traditional banking services like wealth management and financial advising, as well as forming strategic alliances with the fintech industry. By producing money from a variety of sources, banks can successfully lessen their reliance on government deposits as their main source of income and create new revenue streams. This strategy shift strengthens banks' resistance to regulatory changes as well as their ability to increase profits.

Risk management: The report stresses the significant risks posed by non-performing loans (NPLs) and the ensuing detrimental effect on profitability. Tanzanian banks ought to give strong risk management procedures top priority in light of this. This includes precise credit evaluations, early NPL detection systems, and careful loss provisioning. In a regulatory and economic climate that is constantly shifting, effective risk management is essential to preserving profitability. By doing this, banks are made sure to be appropriately ready to lessen the financial effects of NPLs and other risk factors.

Government Involvement: To address concerns about the effect of TSA on bank profitability, banks should actively engage in constructive discussions with government authorities. Collaboration can result in the improvement of TSA-related rules, especially those that have an immediate impact on the banking industry. For the banking industry as a whole to continue to be profitable in the long run, it is crucial to strike a careful balance between government control of finances and bank financial health. This balance can be made possible through proactive cooperation with regulatory bodies.

5.3.2 Analysing the effects of non-performing assets on banks’ efficiency in the existence of TSA.

Improvements to NPL Management Strategies; The report emphasizes how non-performing loans (NPLs) have a substantial impact on bank efficiency. Therefore, improving NPL management techniques must be a top priority for Tanzanian banks. This includes taking proactive steps to lower NPL levels as well as the development of more thorough credit assessment methods and cutting-edge data analytics. Banks should make investments in cutting-edge technological solutions that make it easier to identify NPLs early and ease effective management. Additionally, the framework for risk management at the bank needs to include ongoing monitoring of NPLs.

Continued Technology Investment: Technology improvements are intimately related to the effective handling of NPLs. Tanzanian banks should keep making investments in cutting-edge data analytics, machine learning, and banking technologies. With the help of these tools, risk assessment capacities can be greatly improved, allowing banks to spot probable NPLs early in the lending cycle. Additionally, modern technology can improve procedures for credit assessment, risk management, and recovery operations, eventually increasing efficiency and successfully managing NPLs.

Diversifying your portfolio strategically; Because NPLs have a negative effect on bank efficiency, banks would be wise to think about strategic portfolio diversification. This entails lowering the lending portfolio's concentration of high-risk loans. Banks should strive to diversify their loan portfolios by including a range of credit kinds, industries, and sectors. Banks can lessen the negative effects of NPLs on overall efficiency by dispersing risk over a wider range. Because the impact of NPLs on a diversified portfolio is less severe, it can also assist banks sustain profitability during economic downturns.

Building Capacity and Training: In managing NPLs, the human factor is essential. Therefore, banks should spend money on extensive training programs and initiatives for their employees, especially those who are involved in credit risk management. An educated staff can make knowledgeable lending decisions, spot early indications of credit deterioration, and put into practice efficient management techniques for NPLs. The staff of the bank receives ongoing training to make sure they have the knowledge and abilities needed to handle the problems posed by NPLs.

Risk analysis and stress testing on a regular basis: To measure their resilience in the face of unfavourable economic situations, Tanzanian banks should regularly undertake risk assessments and stress tests. These evaluations assist banks in identifying weaknesses and creating backup strategies for handling NPLs during economic downturns. Banks can anticipate possible issues, maintain efficiency, and maintain financial stability by stress-testing their portfolios and risk management plans.

Governmental cooperation; In order to address concerns about the TSA and its effect on efficiency, banks should have a positive conversation and work together with the

relevant government agencies. Collaboration can result in regulatory alterations or assistance programs that lessen some of the difficulties associated with TSA implementation. Banks may be able to discover solutions that match the goals of governmental oversight with the soundness and efficiency of the banking industry by collaborating closely with governmental organizations.

Metrics for Monitoring Efficiency; Banks should set up a reliable system for tracking efficiency measures and key performance indicators (KPIs) continuously. For the bank's operations to be improved, regular performance evaluations are crucial. Monitoring efficiency measures enables banks to improve overall efficiency, streamline operations, and optimize processes. Cost-to-income ratios, asset quality indicators, return on assets (ROA) and return on equity (ROE) data are important measures to keep an eye on.

5.3.3 Assessing the effects of non-performing loan on bank stability since the implementation of TSA.

Improve NPL Management and Monitoring: Tanzanian banks should strengthen their NPL monitoring and management processes in light of the detrimental effect that NPLs have on bank stability. This includes monitoring NPL levels in real-time, developing early warning systems, and creating proactive NPL reduction plans. To identify prospective NPLs before they worsen, banks should think about deploying sophisticated credit risk assessment algorithms and predictive analytics. The overall stability of the bank can be greatly increased by taking a proactive approach to addressing NPLs.

Improve Capital Adequacy: The drop in the Z-score, which represents the negative effect of TSA on bank stability, emphasizes the significance of preserving high levels of capital adequacy. Banks should try to keep capital levels considerably above the minimum requirements. By absorbing losses brought on by NPLs, adequate capital cushions can improve overall stability. The management of the bank should routinely evaluate the capital adequacy ratios and act promptly to obtain additional capital as necessary.

Stress tests for scenarios: Tanzanian banks should run scenario-based stress tests to determine how well-prepared they are for challenging economic conditions, such as

rising NPL levels. Stress testing enables banks to comprehend the potential effects of various scenarios on their stability and capital sufficiency. Banks can create backup plans to get through difficult times more successfully by recognizing potential vulnerabilities.

Improvements to Risk Management Frameworks; Banks should continually improve their risk management systems in order to lessen the negative consequences of NPLs on bank stability. This entails enhancing methods for assessing credit risk, diversifying loan portfolios to lessen concentration risk, and putting in place reliable provisioning procedures. NPLs are properly accounted for through an efficient risk management system, reducing their negative effects on stability.

Reasonable Loan Loss Provisioning; Banks should continue to be cautious in their provisioning methods even though the study did not show a substantial impact on the loan loss provision to equity ratio owing to TSA. For potential losses associated to NPLs to be absorbed, prudent loan loss provisioning is necessary. In order to adapt their provisioning practices to shifting economic conditions and risk profiles, banks should do so often.

Regulatory authorities' cooperation: To address concerns about bank stability in the context of TSA, banks should collaborate with regulatory agencies in their talks. These discussions might result in modifications to regulatory standards or the creation of assistance programs to lessen the negative effects of TSA-related reforms on bank stability. A positive conversation can help strike a balance between the stability of the banking sector and governmental control over money.

Continued Research and Analysis: The need for more investigation and analysis is highlighted by the nuanced nature of the interaction between NPLs, bank stability, and TSA requirements. To better understand these dynamics, banks, academic institutions, and regulatory authorities should work together on additional studies. Future policy decisions can be influenced by ongoing research, which can offer insightful information about how Tanzania's banking business has been affected by regulatory changes.

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APPENDICES

Appendix I

QUATIONARE

SECTION A

1. Name of the bank……..

2. Duration of the operation of the bank……..

SECTION B.

Financial highlights for the Years 2016-2021

(TZS million)

	2016	2017	2018	2019	2020	2021
DETAILS						
Total Income (sales)						
Operating Expenses						
Net profit before tax						
Income tax						
Net profit after tax						
Total current Assets						
Total asset=(noncurrent asset current asset						
Total capital employed						
Rist weighted Assets (RWA)						
Total Current liabilities (loan)						
Non Current Assets						

SECTION C:

MEASUREMENT OF PROFITABILITY RATIO

Profitability ratios in percentage %

Ratios	2016	2017	2018	2019	2020	2021
Operating profit Margin=Profit before tax/Sales						
Net profit Margin=Profit After tax/Sales						
Return on Capital employed (ROCE)=Net profitbeforetax/Capitaemployed						
Return on Equity ROE =Net profit/ Equity						
Return on Assets ROA =Net profit/Total Assets						

SECTION D.

MEASUREMENT OF EFFICIENCY RATIO:

Efficiency Ratio in Percentage %

	2016	**2017**	**2018**	**2019**	**2020**	**2021**
Total Asset turnover= Total sales/Total Assets						
Cost Over income Ratio						

SECTION E;

MEASUREMENT OF LIQUIDITY RATIO

Liquidity Ratio in Percentage %

	2016	**2017**	**2018**	**2019**	**2020**	**2021**
Liquidity ratio=Current Asets/Current liabilities						

SECTION F;

MEASUREMENT OF CAPITAL ADEQUACY RATIO

Capital Adequacy Ratio in Percentage %

	2016	**2017**	**2018**	**2019**	**2020**	**2021**
Capital Adequacy=Total Capital employed/Risk Wighted Assets						

Appendix II: Research Permit

JAMHURI YA MUUNGANO WA TANZANIA

WIZARA YA ELIMU, SAYANSI NA TEKNOLOJIA

MOSHI CO-OPERATIVE UNIVERSITY (MoCU)
CHUO KIKUU CHA USHIRIKA MOSHI

OFISI YA MAKAMU MKUU WA CHUO

S. L. P. 474, Moshi, Tanzania, Simu: +255 272751833,
Barua pepe: vc@mocu.ac.tz, Tovuti: www.mocu.ac.tz

Unapojibu tafadhali taja:
Kumb. Na. MoCU/UGS/3/41 **Tarehe:** 14 Novemba, 2022

Katibu Tawala,
Ofisi ya Mkuu wa Mkoa,
S. L. P. 3070
KILIMANJARO.

YAH: KIBALI CHA KUFANYA UTAFITI KWA WANAFUNZI WA CHUO KIKUU CHA USHIRIKA MOSHI (MoCU)

Tafadhali husika na kichwa cha habari hapo juu.

Madhumuni ya barua hii ni kumtambulisha kwako **Ndugu Haika Mawalla** mwanafunzi wa Chuo Kikuu cha Ushirika Moshi ambaye kwa sasa anatarajia kufanya utafiti katika eneo lako.

Maombi haya yamezingatia Waraka wa Serikali wenye Kumb. Na. MPEC/R/10/1 wa tarehe 7 Julai, 1980 pamoja na Hati Idhini ya Chuo Kikuu Cha Ushirika Moshi (MoCU). Moja ya majukumu ya Chuo ni kufanya tafiti na kutumia matokeo ya tafiti hizo katika kufundishia. Aidha, wanafunzi hufanya tafiti kama sehemu ya masomo yao wakiwa Chuoni.

Ili kufanikisha utekelezaji wa tafiti hizo, Makamu Mkuu wa Chuo hutoa vibali vya kufanya tafiti nchini kwa wanataaluma na wanafunzi kwa niaba ya Serikali na Tume ya Sayansi na Teknolojia.

Hivyo basi, tunakuomba umpatie mwanafunzi aliyetajwa hapo juu msaada atakaouhitaji ili kufanikisha utafiti wake. Gharama za utafiti atalipia mwenyewe. Msaada anaouhitaji ni kuruhusiwa kuonana na viongozi na wananchi ili aweze kuzungumza nao kuhusiana na utafiti wake. Aidha, endapo kuna maeneo yanayozuiliwa kufanyika kwa shughuli hii, tafadhali mjulishe hivyo.

Mada ya utafiti wa mwanafunzi aliyetajwa hapo juu ni: **"The Impact of Treasury Single Account on Banks Performance: Evidence From Commercial Banks in Tanzania"**

Maombi haya ni kwa ajili ya utafiti utakaofanyika **Manispaa ya Moshi** kuanzia tarehe 16 Novemba, 2022 hadi 16 Novemba, 2023.

Wako katika ujenzi wa Taifa,

.....
Prof. Alfred S. Sife
Makamu Mkuu wa Chuo

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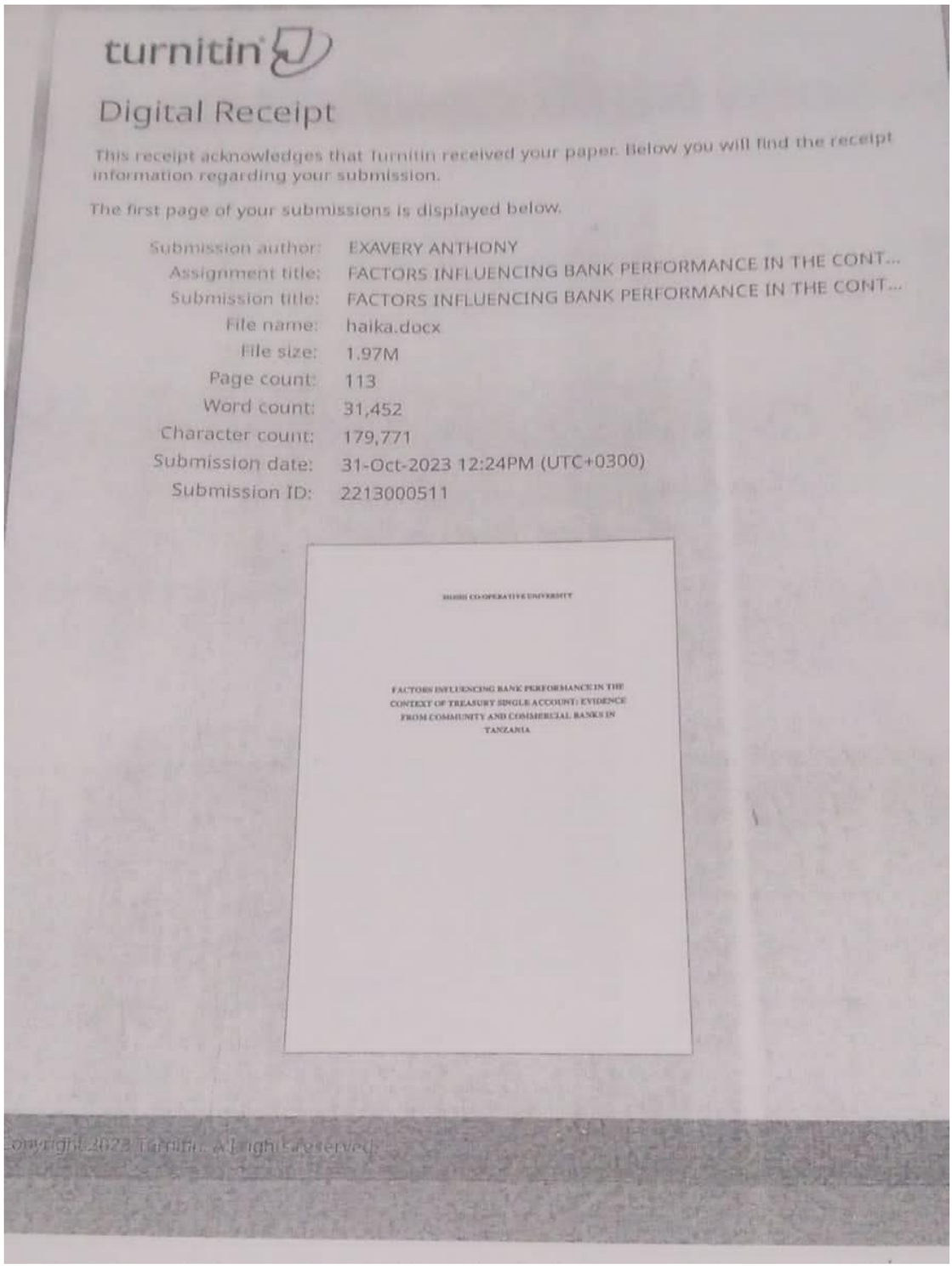

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FACTORS INFLUENCING BANK PERFORMANCE IN THE CONTEXT OF TREASURY SINGLE ACCOUNT: EVIDENCE FROM COMMUNITY AND COMMERCIAL BANKS IN TANZANIA

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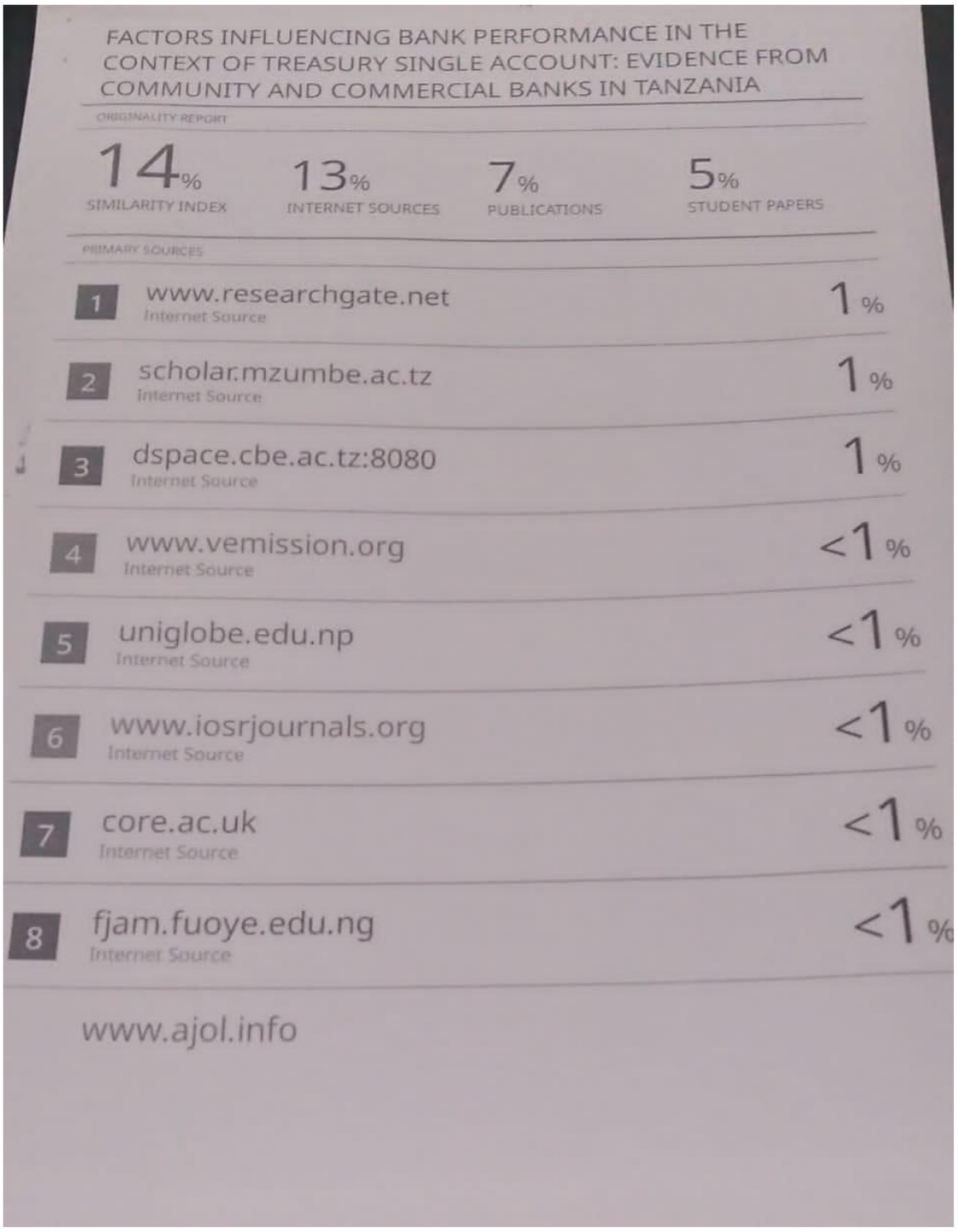

FACTORS INFLUENCING BANK PERFORMANCE IN THE CONTEXT OF TREASURY SINGLE ACCOUNT: EVIDENCE FROM COMMUNITY AND COMMERCIAL BANKS IN TANZANIA

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Factors influencing Bank Performance in the context of Treasury Single Account: Evidence from Community and Commercial Banks in Tanzania

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Abstract

This study analyzes the multifaceted impact of Treasury Single Account (TSA) implementation on Tanzanian banks, with a focus on profitability, efficiency, and stability. By investigating three primary objectives, the research unveils critical insights that illuminate the underlying dynamics. The first objective examines the effect of TSA on bank profitability. Regression analysis reveals a substantial negative impact on both Return on Assets (ROA) and Return on Equity (ROE). This underscores the adverse consequences of stringent public fund oversight under TSA, significantly affecting bank profitability. The second objective delves into the influence of TSA on bank efficiency, indicating a statistically significant negative impact. Non-performing loans (NPLs) play a pivotal role, emphasizing the need for improved NPL management, technology adoption, and portfolio diversification to enhance efficiency. The third objective assesses the post-TSA era's impact on bank stability, revealing a decline in stability. This highlights a significant adverse effect on stability and a complex relationship in the context of loan loss provision to equity. This study illuminates Tanzanian banks' TSA implementation obstacles and potential. The findings show the complexity and significant negative influence on stability, profitability, and efficiency. To traverse changing financial markets, the guidelines emphasize operational efficiency, revenue diversification, regulatory engagement, proactive risk management, and continual research.

Keywords: *Community banks, Commercial Banks, Bank Performance, and Treasury Single Account (TSA)*

1. Introduction

The banking sector serves as a vital intermediary between lenders and savers, playing a crucial role in a nation's economic framework. The global banking system's effectiveness and reliability are essential for fostering economic growth, financial stability, and overall development. Over the years, various financial regulations and policy changes have significantly impacted the banking industry worldwide (Jones & Knaack, 2019). One such change is the introduction of Treasury Single Accounts (TSAs).

Globally, the concept of Transaction Service Providers (TSPs) has gained momentum, transforming how governments manage their budgets and interact with the banking sector (Mills & Dang, 2021). A Treasury Single Account consolidates the government's cash balances, payments, and receipts, with the aim of reducing corruption, improving cash management, enhancing transparency, and mitigating fiscal risks. As governments worldwide adopt TSAs, it becomes crucial to assess their impact on various banks, especially community and commercial banks.

In India, the Government of India (GOI) - Cash Management System, established in 2015, consolidated government accounts held by various banks into a single account at the Reserve Bank of India, leading to increased transparency and better cash management (Alonso *et al*., 2023). Africa, with its diverse financial landscape, has also embraced financial reforms, including the adoption of TSAs, to align with global best practices (Ibrahim, 2022). Nigeria serves as a prime example, implementing its TSA in 2012 and significantly impacting the cash management practices and liquidity dynamics of Nigerian banks (JP *et al*., 2022).

Tight coordination between the central bank, government departments, and commercial banks is essential for the smooth implementation and operation of the TSA, as demonstrated by Ghana's experience (Hooley *et al*., 2023). East Africa, comprising countries like Kenya, Tanzania, and others, has witnessed economic growth driven by the banking industry, prompting discussions on the potential effects of TSAs on banking stability and efficiency (Ukwuoma *et al*., 2022).

Kenya's Integrated Financial Management Information System (IFMIS) from 2003 served as an early prototype for TSAs, aiming to simplify government financial processes and enhance transparency (Makiya, 2020). Tanzania's Government Electronic Payment Gateway (GePG) began its TSA adoption in 2016, leading to a shift in how government money was handled and impacting the banking sector significantly (Abdulkarim *et al*., 2020).

The impact of TSA implementation on the banking industry is further exemplified by changes in liquidity management strategies for banks, particularly in adapting to reduced government deposits. Non-performing assets (NPAs) affect banks' financial health by lowering their capital adequacy ratio and their ability to meet financial commitments (HERSUGONDO *et al*., 2021). The lower the level of NPAs, the better for banking system stability (Khan *et al*., 2020).

In conclusion, the adoption of TSAs has had far-reaching effects on banking systems globally, from India to Nigeria and East Africa. The success and stability of cooperative and commercial banks are closely linked to various factors, including the level of non-performing loans and liquidity management. These impacts are integral to discussions on the African banking sector and its future within the context of TSAs (Ibrahim, 2022). This study on Tanzania explores these relationships and contributes to the broader dialogue on TSAs in African banking.

2. Theoretical Literature Review

2.1 Structure-Conduct-Performance (SCP) theory

When examining the variables affecting Tanzanian banks' performance, particularly after the implementation of the Treasury Single Account (TSA), the Structure-Conduct-Performance (SCP) theory is essential. It makes the argument that industry structure, which includes components like market rivalry and concentration, has an impact on business behavior and performance in the future (Lisoyi, 2022; Maude, 2021). This study using SCP theory to analyze how Tanzania's banking industry structure is changed by the implementation of TSA, a regulatory move that affects bank performance measures and behaviors (Nyangu *et al* 2022; Silmi *et al*., 2020). SCP essentially offers a lens through which to view the relationship between market structure, bank behavior, and performance in Tanzania's changing banking environment as a result of the TSA (Ordofa *et al*., 2021).

2.2 Theory of Economic Efficiency

The Economic Efficiency theory, emphasizing optimal resource distribution to maximize welfare, is crucial for deciphering the dynamics of Tanzania's banking industry, especially with the Treasury Single Account (TSA) introduction. This theory assumes that banks, like other economic entities, act rationally to enhance their efficiency and performance, especially in competitive markets (Bekhet *et al*., 2020; Azmi et al., 2021; Phan *et al*., 2020; Ledhem & Mekidiche, 2020). This study employs this theory to analyze the impact of the TSA on Tanzanian banks' resource allocation and performance. It gauges how regulatory shifts influence banks' resource management, profitability, and overall contribution to economic efficiency (Dao, 2022; Yusuf & Ischan, 2021). In essence, the Economic Efficiency theory provides a pivotal lens to assess Tanzanian banks' adaptability and performance amidst regulatory changes like the TSA.

2.3 Trade-Off Theory

The Trade-Off Theory, which emphasizes balancing debt and equity financing decisions, is instrumental in analyzing the factors influencing Tanzanian banks' performance amidst the Treasury Single Account (TSA) implementation. This theory suggests an optimal capital structure, factoring in risk, cost, and flexibility, thus guiding organizations, including banks, in their financial decisions (Shilla, 2019). It posits that while excessive debt can lead to insolvency risks, over-reliance on equity may dilute ownership and increase capital costs (Bukair *et al*., 2019; Afolabi *et al.*, 2019). In the context of the TSA, which can impact banks' liquidity management, the Trade-Off Theory allows exploration of how banks adjust their financing mix to maintain liquidity and mitigate associated risks (Moudud, 2021; Martinez *et al.*, 2019). Essentially, this theory provides a framework to understand Tanzanian banks' financial trade-offs and strategies in response to TSA-driven regulatory changes.

3. Study Methodology

3.1 Research approach

The study's methodology draws inspiration from significant works by Yanikkaya *et al*. (2018), Garcia & Trindade (2018), Hafsai *et al.* (2020), and Rizvi *et al.* (2019) to comprehensively examine the variables impacting bank stability, efficiency, and profitability, particularly concerning Treasury Single Accounts (TSA) (Pasape *et al*.,

2022). The research aims to unravel the intricate effects of the TSA policy on financial institutions. It delves into various aspects, such as the influence of bank-specific characteristics on profitability (ROA and ROE) and evaluates banks' efficiency using the Data Envelopment Analysis (DEA) model. The study also investigates factors affecting efficiency, including capital, deposits, loans, receivables, off-balance sheet activities, and non-interest income. Additionally, it assesses determinants influencing banks' stability within the TSA framework using the Z-score model and considering the provisions to equity ratio in robustness testing.

3.1.1 Research design

Descriptive research examines how the Treasury Single Account (TSA) affects Tanzanian community and commercial banks. This method is favored for its flexibility and quickness in assessing complicated relationships and patterns in vast volumes of qualitative and quantitative TSA implementation data (Parra *et al*., 2023). Researchers can study TSA's short- and long-term effects on Tanzania's banking system using the descriptive design. Triangulation validates and cross-references data from numerous sources, boosting study credibility.

Banking dynamics before and after TSA are assessed using descriptive methods and pre- and post-implementation data (Okeke *et al*., 2023). This method examines how TSA directly impacts banking stability, profitability, and efficiency (Sekhar et al., 2019). This article compares data from these two time periods to examine how TSA has affected banking dynamics. A descriptive design and pre- and post-implementation data provide a multi-dimensional examination of TSA's impact on Tanzanian banks.

3.1.2 Description of the study area

This research examines Tanzania's banking sector, focusing on commercial and community banks from 2014 to 2021 (Soderberg *et al*., 2022). This period is significant as it covers dynamics before and after the 2018 introduction of the Treasury Single Account (TSA). Starting in 2014 provides a baseline to gauge TSA's impact on financial performance and operational efficiency. The study, extending to 2021, evaluates the short and intermediate effects of the TSA on Tanzania's evolving banking landscape.

3.1.2 Population

The population for this study is carved out from the vast financial tapestry of Tanzania, incorporating an extensive network of banking institutions. This encompasses both local banks, deeply rooted in Tanzania's economic landscape, and foreign commercial banks, which bring with them a blend of international practices and local adaptations (Onyeka & Izuchukwu, 2022). In addition, community banks, which play a pivotal role in fostering grassroots financial inclusion in the country, are also included in overarching population framework.

3.1.3 Target population

However, is more refined in its scope. Recognizing the value of specificity, have honed in on those commercial and community banks that remained operationally active between the years 2014 and 2021. This time frame, as earlier mentioned, is crucial not only because it captures the lead-up to and the aftermath of the TSA's implementation in 2018 but also because it envelops a period of significant economic and policy transformations in Tanzania. This deliberate selection of the target population ensures that study captures the entities most directly and profoundly impacted by the changes in this period. By focusing on these banks, can derive insights that are both deep and relevant, ensuring that the research's findings are firmly anchored in the realities of the Tanzanian banking sector during these transformative years (Stratton, S. J. (2021).

3.2 Sampling

Sampling involves selecting a subset from a larger population for research, especially when studying the entire group is impractical (Braun & Clarke, 2022). In this study, both purposive and random sampling methods were utilized. Purposive sampling focused on Tanzanian banks directly affected by the Treasury Single Account (TSA) to capture the policy's real impact (Bhardwaj, 2019). Concurrently, random sampling was employed within these selected banks, such as choosing specific years or financial data, ensuring unbiased and representative results (Gabriel *et al*., 2019). Both methods together ensured a balanced and comprehensive analysis.

3.2.1 Sample size

The study's sample size was meticulously selected to strike a balance between thoroughness and feasibility, encompassing both commercial and community banks in

Tanzania to provide a holistic view of the Treasury Single Account (TSA)'s impact. The chosen timeframe, 2014 to 2021, is significant due to Tanzania's major financial shifts, especially the 2018 TSA introduction. This period allows an in-depth exploration of the banking sector's performance before, during, and post-TSA implementation, capturing its immediate and prolonged effects (Arafa & Dickson, 2022).

3.3 Data collection

3.3.1 Types of data

Secondary data played a pivotal role in this research, especially in the documentary review, providing vital context on the TSA policy's objectives, implementation, and operational guidelines (Gorsky & Mold, 2020). This data illuminated how banks have adapted to TSA requirements and highlighted associated challenges and opportunities. Used in both literature and documentary reviews, secondary data enriched the study by drawing from existing research and official TSA documents. This helped frame research questions, establish a theoretical base, and offer deep insights into TSA's impact on Tanzania's banking landscape.

3.3. 2 Source of data

The study primarily utilizes secondary data sources, drawing from extensive research and verified materials to understand the Treasury Single Account (TSA) and its impact on Tanzania's banking sector (Sileyew, 2019). By systematically reviewing and synthesizing previous research, the study identifies trends and gaps, aiming to provide contemporary insights into TSA's effects (Silim & Pastory, 2022). The research benefits from cross-referencing and triangulating information, ensuring accuracy and a comprehensive understanding of the TSA's influence within Tanzania's broader economic context.

3.4 Data collection techniques and instruments

3.4.1 Documentary review

The study collects data using a systematic documentary review process like Bretschneider (2017). This method gathers, records, analyzes, and interprets data from numerous sources using a specially built guidance tool to extract key information from diverse documents.

The documents include earlier research, studies, publications, and pertinent legislation on how the Treasury Single Account (TSA) affects Tanzanian bank performance (Shilla, 2019). This systematic approach ensures controlled and consistent data collecting, providing a wealth of relevant data that meets rigorous research standards.

This method combines and structures data from these papers, enabling a systematic analysis that informs research topics and improves understanding of how the TSA policy has affected Tanzanian banks (Sarwatt, 2020). The documentary review provides the material and insights needed to meet the research goals, building the study's framework.

3.5 Data analysis techniques

3.5.1 Quantitative data analysis

Quantitative methods were applied in an exacting manner throughout this study's data analysis, which was defined by its overall precision (Meikle *et al.*, 2021). These methods were utilized in order to examine the data that was obtained, with DID regression models being utilized in order to investigate the myriad of aspects that influenced the performance of the bank. The purpose of the study was to give strong and verifiable insights into the influence of the Treasury Single Account (TSA) on the profitability, efficiency, and stability of banks in Tanzania by making use of rigorous statistical methodologies.

4.0 Findings and Discussions

4.1 Introduction

This chapter presents the empirical analysis utilized to achieve the study's goals. This study examines Tanzania's Treasury Single Account bank profitability. Non-performing assets hurt banks' TSA performance, the second goal. Third, it explores how non-performing loans have affected bank stability since TSA. Return on Assets (ROA) and Return on Equity (ROE) regression results and implications are discussed in this chapter.

4.2 Examining factors that determine bank profitability in the presence of TSA

Table 2 Regression results for different variables, with a focus on Return on Assets (ROA) and Return on Equity (ROE)

	ROA		ROE	
	(1)	(2)	(3)	(4)
Variables	Fixed Effect	Random Effect	Fixed Effect	Random Effect
TREAT		-2.02***		-3.19
		(0.60)		(3.23)
PRIOR	-0.87	-0.87	-9.90	-9.82
	(1.53)	(1.20)	(7.43)	(6.04)
TREAT#PRIOR	-0.43	-0.22	-4.28	-3.94
	(0.50)	(0.60)	(2.50)	(3.03)
CAR	0.01	0.00	0.01	-0.01
	(0.01)	(0.00)	(0.02)	(0.02)
CIR	-0.05***	-0.06***	-0.12**	-0.13***
	(0.01)	(0.00)	(0.04)	(0.02)
Real GDP rate	-0.24	-0.24*	-0.63	-0.63
	(0.17)	(0.14)	(0.53)	(0.70)
Inflation	1.04	1.04*	8.69**	8.64***
	(0.66)	(0.55)	(3.34)	(2.76)
Constant	2.81	4.35**	-11.43	-8.32
	(3.65)	(2.05)	(14.43)	(10.37)
Observations	104	104	104	104
R-squared	0.71	0.70	0.37	0.37
Number of Banks	13	13	13	13
Bank FE	YES	NO	YES	NO
Year FE	YES	NO	YES	NO

In the Fixed Effect (FE) and Random Effect (RE) models, TREAT#PRIOR, which represents the Treasury Single Account (TSA) and pre-existing circumstances, has coefficients of -0.43 and -0.22. Our coefficients are statistically insignificant ($p > 0.05$), demonstrating that historical conditions do not significantly affect TSA and bank profitability (Feleke, 2023). The analysis shows that post-TSA conditions affect bank profitability significantly.

Capital adequacy ratio (CAR) coefficients are around zero and not statistically significant in both FE and RE models, indicating that CAR does not effect profitability (Hawaldar *et al*., 2022). Bank resilience and regulatory compliance depend on capital adequacy, although other factors affect profitability more (EHIEDU, 2022).

In both models, the Cost-to-Income Ratio (CIR) coefficient is statistically significant and inversely connected with bank profitability, highlighting the importance of cost efficiency (Sihotang *et al*., 2022). Profitability can increase with efficient operations, strategic choices, and cost management. Cost-efficiency regulations can help banks optimise operations, benefiting customers (Chen *et al*., 2021).

The Real GDP Rate coefficient is not statistically significant in both models, showing that GDP rate may not directly affect bank profitability in Tanzania (Pointer & Khoi., 2019). Economic development might improve banks' lending and investment prospects, but this study suggests operational efficiency or risk management may be more important in predicting profitability (Thompson., 2021).

Both FE and RE models demonstrate a statistically significant positive link between inflation and bank profitability. This means banks may benefit more amid inflation (Dao, 2022). During inflation, central banks raised interest rates, allowing banks to raise loan rates faster than deposit rates, widening the interest rate spread. During inflation, some assets may appreciate, resulting in capital gains. The relationship between inflation and bank profitability is complex. Hyperinflation can cause economic instability and hurt the banking sector (Su et al., 2020). Mild inflation may boost economic activity and financial services demand. The assets banks hold might also affect their inflation profitability. Banks that hold inflation-hedging assets can make financial profits (Neville *et al*., 2021).

4.3 Analyzing the effects of non-performing assets on banks' efficiency in the existence of TSA.

Table 3 regression results for different variables, with a focus on Capital and Deposits

	CAPITAL		**DEPOSITS**	
	(1)	**(2)**	**(3)**	**(4)**
Variables	**Fixed Effect**	**Random Effect**	**Fixed Effect**	**Random Effect**
TREAT		0.17		-0.55*
		(0.19)		(0.29)
PRIOR	-0.11	0.08	-0.15	-0.42***
TREAT#PRIOR	0.16	0.14	0.45**	0.45***
	(0.18)	(0.10)	(0.19)	(0.15)
Ln Loans and receivables	-0.01	-0.01	-0.44	-0.39**
	(0.14)	(0.11)	(0.27)	(0.17)
Ln RWA and OBSA	0.49**	0.95***	0.41	-0.26
	(0.19)	(0.13)	(0.41)	(0.20)
Ln Non-interest income	-0.12***	-0.15***	1.38***	1.41***
	(0.03)	(0.04)	(0.13)	(0.06)
Ln Non-performing loans	-0.02	-0.04**	0.02	0.04
	(0.02)	(0.02)	(0.02)	(0.03)
Constant	6.74**	1.16	-0.33	7.57***
	(2.71)	(0.83)	(5.93)	(1.27)
Observations	103	103	103	103
R-squared	0.35	0.31	0.93	0.92
Number of Bank	13	13	13	13
Bank FE	YES	NO	YES	NO
Year FE	YES	NO	YES	NO

Non-performing assets (NPAs) affect financial institution performance, including in a Treasury Single Account (TSA) (Ahmed Maude, 2021). The TSA can improve government transaction transparency, but NPAs remain a problem. NPAs, or near-default loans, hurt banks (Paul, 2023). A rise in NPAs reduces the bank's interest income, reducing profits and capital. Profits falling can reduce investments in technology and infrastructure, reducing the bank's efficiency.

The Indian banking sector illustrates NPA issues. By 2018, Indian bank gross NPAs hit $150 billion, according to the Reserve Bank of India (Mishra *et al*., 2021). This massive buildup stressed banks, reducing profitability and capital. Banks were more cautious, decreasing expansion potential.

Banks must have sufficient capital to cover NPA losses. Banks must increase capital to offset rising NPAs (Dahal, 2023). As a result, they may need external funding or reduce their lending. Both options hurt the bank's efficiency. The 2008 global financial crisis saw large NPAs in European banks, mostly from devalued mortgage-backed securities (Chryses, 2020). This required banks to hold large capital reserves, limiting lending and expansion.

Banks must improve risk management to reduce NPA implications. Creditworthiness, loan monitoring, and collateral appraisal should be improved. Banks can improve efficiency and reduce NPAs by improving risk management. The 2016 Wells Fargo crisis, which involved unauthorized client account creation, shows how poor risk management can increase NPAs and damage reputation (Welch, 2023).

NPAs also jeopardize bank liquidity. Unpaid non-performing loans might cause liquidity difficulties (Jahan & Tasfiq, 2022). This may cause banks to seek external financing or limit lending, reducing liquidity management efficiency. Greek banks struggled with rising NPAs due to the economic slump and debt default during the European debt crisis. These banks had liquidity issues due to non-performing loan retrieval issues. They used emergency liquidity from the European Central Bank (Gibson *et al*., 2020) to manage this, reducing liquidity management efficiency.

A bank's reputation and investor trust might also suffer from a significant NPA portfolio (Arifaj & Baruti, 2023). Dwindling investor confidence may lead to deposit or investment withdrawals. This lack of confidence can prevent banks from gaining or

keeping clients. Indian bank Punjab National Bank (PNB) illustrates this. PNB revealed a major fraud scheme using unapproved letters of undertaking in 2018 (Malhotra & Aniraj, 2021). This damaged the bank's brand and investor trust, causing capital flight and investment difficulties.

4.4 Assessing the effects of non-performing loan on bank stability since the implementation of TSA.

Table 4 Regression results for z-score and loan loss provision to equity

	Z-SCORE		Loan Loss Provision to Equity	
	(1)	(2)	(3)	(4)
Variables	Fixed Effect	Random Effect	Fixed Effect	Random Effect
TREAT		-2.82		0.22
		(2.60)		(0.80)
PRIOR	2.21	2.53	-0.91***	-0.86
	(1.69)	(2.38)	(0.20)	(0.92)
TREAT#PRIOR	2.21	1.20	0.40	0.29
	(2.95)	(2.95)	(0.34)	(1.19)
Ln Bank size	22.76*	19.17***	0.16	-0.24
	(11.30)	(1.72)	(0.52)	(0.80)
Ln Loans to assets	-17.48*	-6.41***	0.52	1.47***
	(8.07)	(2.17)	(0.30)	(0.49)
Ln Total liabilities	-21.31**	-21.39***	0.01	0.65
	(7.08)	(1.31)	(0.06)	(0.79)
GDP per capita	0.02	-0.08	0.01	0.11
	(0.19)	(0.70)	(0.06)	(0.25)
Constant	49.76	58.10***	-5.16	-12.18***
	(73.40)	(17.02)	(8.53)	(4.44)
Observations	104	104	50	50
R-squared	0.76	0.73	0.46	0.31
Number of banks	13	13	8	8
Bank FE	YES	NO	YES	NO
Year FE	YES	NO	YES	NO

Z-SCORE "TREAT#PRIOR" fixed effect model coefficient is 2.21. A positive coefficient suggests that "TREAT" (Treasury Single Account implementation), "PRIOR" (a prior condition or factor), and Z-SCORE may interact positively. Z-SCORE may rise with these variables, indicating bank stability. This coefficient's statistical significance must be determined. P-value > 0.05: 2.95. Z-SCORE interaction between "TREAT" and "PRIOR" is not statistically significant, suggesting the link may not be real or advantageous.

Economic, regulatory, and behavioral factors affect bank stability (Muthukannan *et al*., 2020). The coefficient is positive, but the lack of statistical significance suggests

random oscillations or other variables may affect Z-SCORE. Data quality, model explanatory abilities, and sample size restrictions may explain these findings. Research is needed on TSA regulations' financial institution implications. Other factors, modeling methods, and economic and regulatory backdrop may improve future research.

We studied "Ln Loans to Assets". The natural logarithm shows bank loan-to-asset ratio. Fixed and Random Effect Models were tested. The Fixed Effect Model coefficient for "Ln Loans to Assets" was -17.48 with a strong p-value of 8.07. Bank stability may decrease with loan portfolio size. Adem (2023) found no statistical evidence that loan-to-asset ratio influences bank stability. Thus, the Random Effect Model's "Ln Loans to Assets" coefficient was -6.41 with 2.17 p-value. Like the Fixed Effect Model, this coefficient demonstrates an inverse relationship between loans to assets and bank stability, but its low statistical significance makes interpretation difficult.

Fixed Effect Model and Random Effect Model "Ln Loans to Assets" coefficients are negative, suggesting that a bank's stability may be inversely connected to its loan portfolio percentage to its total assets (Ferreira, 2023). Bank stability may suffer from rising loans to assets. Theory predicts negative coefficients. If loans underperform, a big loan portfolio relative to total assets may increase bank credit risk. Coefficients are negligible. Both models have high Loans/Assets p-values. Relevance may be absent for several reasons. Loan quality, macroeconomic conditions, and banking procedures may have a higher impact on bank stability than expected (Žunić *et al*., 2021). The quantity and composition of data might affect statistical conclusions.

Fixed Effect Model coefficient for "Ln Bank Size" is 22.76, p-value 0.014. Bank natural logarithms increase Z-SCORE by 22.76 units with all parameters constant. Asset or other indicators imply larger banks are more stable. Major banks are stabilized by economies of scale, various revenue streams, and better risk management (Ben *et al*., 2022). The Random Effect Model calculates "Ln Bank Size" as 19.17 with a p-value < 0.001. Size increases bank stability, under the Fixed Effect Model.

Both models have substantial, positive "Ln Bank Size" coefficients, indicating larger banks are more stable. According to banking and finance research, larger banks are

healthier and more robust. Earlier banking and finance research supports this. Larger banks can lower unit output costs through economies of scale (Ambrose *et al*., 2019). They can deploy resources more efficiently and effectively due to the cost advantage, which promotes stability. Since they have more assets and revenue, larger banks are less vulnerable. Better governance and risk management may stabilize them.

The Fixed Effect Model coefficient for "Ln Total Liabilities" was -21.31, p-value 0.005. This negative component raises a bank's liabilities when the projected Z-SCORE drops 21.31 units. Several parameters are constant. Higher liabilities may threaten bank stability (Chiaramonte *et al*., 2022). Importantly, this conclusion disproves the premise that banks need bigger liabilities to fund themselves. The Random Effect Model's "Ln Total Liabilities" coefficient is -21.39, p-value 0.001. A consistent inverse link between total liabilities and stability supports the Fixed Effect Model.

All models have significant, negative "Ln Total Liabilities" coefficients, threatening bank stability and total responsibility. The negative correlation has multiple origins, despite appearances. If a bank can't pay its obligations, too much leverage or debt can cause financial disaster (Nadeem *et al*., 2020). Possible Z-SCORE and stability decrease. Also examine a bank's quality and commitments. In economic downturns and financial crises, short-term or unstable sources may fund a substantial share of liabilities, producing liquidity risk and instability.

Tanzania's GDP per capita's Z-SCORE effects on bank stability were explored using fixed and random effect models (Rwechungura *et al*., 2021). The Fixed Effect Model estimates "GDP per capita" as 0.02 with a 0.889 p-value, indicating no significance. According to the Fixed Effect Model, GDP per capita does not affect bank stability. No statistical significance is found in Random Effect Model's "GDP per capita" coefficient of -0.08 with a p-value of 0.415. Not significant effect of GDP per capita on bank stability in Random Effect Model.

Both models' "GDP per capita" variable is statistically negligible, hence bank stability is irrelevant (Youssef & Diab, 2021). This may surprise because increasing GDP per capita aids banks by strengthening the economy. Remember that internal bank

features, regulatory policies, and the economic and financial landscape affect bank stability.

5 Summary findings, Conclusion and Recommendations

5.1 Summary of the Results

Results showed that Tanzania's Treasury Single Account (TSA) had a negative impact on bank profitability, particularly ROE and ROA. According to the figures, Tanzanian banks were already struggling to make a profit before the TSA. With the TSA and pre-existing issues, profitability plummeted. Interestingly, "Inflation" and "Real GDP rate" did not affect bank profitability in this environment.

Tanzanian banks were less efficient following the TSA, the study found. However, additional TSA and pre-implementation improvements may have minimized this negative effect. Although the TSA reduced bank efficiency, other banking issues like excessive loan and non-performing loan levels also contributed.

Tanzanian bank stability appears to be harmed by TSA implementation, since Z-SCORE has declined. Despite the Z-SCORE dropping significantly, the TSA had no effect on loan loss provisions to equity. Before the TSA, banks had better stability and fewer loan loss provisions, proving their soundness. The intricate relationship between non-performing loans, bank soundness, and TSA rule changes requires more research.

5.2 Conclusion

The analysis of the Treasury Single Account (TSA) in Tanzanian banks revealed several key findings. First, the adoption of TSA significantly reduced bank profitability, exacerbated by pre-existing profitability issues. Second, while the TSA generally had a negative impact on bank efficiency, certain efficiency improvements were observed due to events before and during its implementation. Third, bank stability, as indicated by the Z-score, suffered post-TSA, potentially due to tighter government regulations hindering effective asset management. However, the impact on the loan loss provision to equity ratio was less significant, suggesting growing risk aversion before the TSA. These findings emphasize the importance of carefully considering the effects of financial reforms on banking industry efficiency and stability.

5.3 Recommendations

Effective non-performing asset management is essential for the efficiency and stability of Tanzanian banks. Data analytics can help identify non-performing loans early, while portfolio diversification and risk reduction strategies can enhance profitability and overall efficiency. Training credit risk managers and monitoring key financial ratios are crucial. Maintaining capital adequacy standards and conducting stress tests are vital for stability. Collaborative discussions with government officials and regulatory agencies are needed to address TSA-related issues and strike a balance between financial oversight and banking stability. Ongoing research and cooperation with academic and regulatory institutions are essential for adapting to regulatory changes and ensuring the industry's long-term stability.

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