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The impact of shadow banking and banking regulations on commercial banks' financial performance in Zimbabwe

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Abstract

The rapid expansion of the shadow banking system has heightened scholarly and regulatory concern due to its implications for financial stability, systemic risk, and regulatory arbitrage. In developing economies such as Zimbabwe, characterised by policy volatility and institutional fragility, the rise of shadow banking presents unique challenges to the efficiency and prudential soundness of commercial banks. This study examines the impact of shadow banking and banking regulations on the financial performance of Zimbabwean commercial banks between 2009 and 2022, covering all 13 licensed institutions. Financial performance was proxied by return on assets (ROA), and a Dynamic Ordinary Least Squares (DOLS) panel regression model was employed to address endogeneity and serial correlation, thereby enhancing robustness of the estimates. Data were sourced from the Reserve Bank of Zimbabwe (RBZ) and the Securities and Exchange Commission of Zimbabwe. Empirical findings indicate that shadow banking exerts a negative and statistically significant effect on commercial banks' performance, reflecting how lightly regulated intermediaries erode profitability, liquidity, and systemic confidence. Conversely, banking regulations have a positive and significant influence, demonstrating that effective prudential frameworks and supervisory oversight strengthen institutional resilience. These results align with evidence from other developing economies yet diverge from advanced markets where regulatory depth mitigates instability. The study emphasises the need for regulatory harmonisation, macroprudential integration, and expanded oversight to safeguard financial stability and sustainable credit intermediation in Zimbabwe's evolving economic landscape.

Keywords: Shadow Banking, Commercial Banks, Regulatory Authorities, Financial Institutions, Regulatory Framework, Financial Performance

Introduction

The shadow banking phenomenon has attracted widespread attention from scholars and regulators alike since the Global Financial Crisis (GFC) of 2007–2008, primarily because of its far-reaching policy implications (Landau, 2019). Broadly defined, shadow banking refers to a network of specialised financial intermediaries that channel funds from savers to investors through various securitisation and secured funding mechanisms (Adrian & Ashcraft, 2012). The Financial Stability Board (FSB, 2017, p. 16) formally conceptualises shadow banking as

...credit intermediation involving entities and activities that operate outside the regulated banking system.

As Zhang et al. (2023) note, shadow banking gained prominence because it performs traditional banking functions, particularly credit intermediation, while exploiting regulatory arbitrage opportunities, thus enabling participants to generate income beyond the oversight of conventional prudential frameworks.

In Zimbabwe, the socio-economic landscape presents a complex challenge for regulatory authorities trying to oversee and control shadow banking activities. According to the Reserve Bank of Zimbabwe (RBZ, 2022), approximately US\$4 billion was circulating outside the formal banking sector, equivalent to nearly 10% of total commercial bank deposits. This indicates that substantial financial intermediation occurs outside regulatory oversight, which could expose the system to systemic risks and threaten the stability of Zimbabwe's formal financial sector (RBZ, 2022). The central bank repeatedly warns that if left unregulated, shadow banking might displace mainstream institutions, disrupt credit markets, and weaken financial intermediation (RBZ, 2020).

Although the RBZ maintains that Zimbabwe's formal banking sector remains sound and stable, concerns persist among economic actors about its performance, especially regarding product innovation, customer responsiveness, and trust restoration (Magobo & Mutize, 2020). Moreover, while financial intermediation, as proxied by the Loans-to-Deposits Ratio (LDR), has improved marginally, it remains below the 70% benchmark prescribed by the World Bank, reflecting the growing prominence of shadow banking as an alternative credit channel (RBZ, 2022).

The interaction between shadow banks and commercial banks is complex: while it can expand credit availability and support economic growth, it also introduces significant systemic vulnerabilities (Ilesanmi & Tewari, 2019). Evidence from

banks' financial disclosures indicates that some Zimbabwean institutions have engaged in shadow-banking activities, including special investment vehicles (SIVs) and off-balance-sheet financing structures, to diversify income. However, such activities increase systemic fragility, a risk extensively documented in global studies (Zhou et al., 2019; Xiong, 2020; Mirjalili, 2021). As Pozsar (2016) observes, systemic risk arises from the interconnectedness between regulated banks and shadow entities. The opacity, complexity, and lack of standardised measures make it exceedingly difficult for regulators to assess these risks accurately. Furthermore, financial innovations—such as securitisation and complex derivatives, amplify risk transmission across institutions and markets (Pozsar, 2016).

In sub-Saharan Africa, empirical evidence confirms that shadow banking contributes to systemic vulnerabilities. For example, Mashimbye and Fanta (2024) demonstrate how shadow banking heightened financial instability in South Africa during the COVID-19 pandemic, noting the regional and temporal persistence of these risks. This growing body of evidence provides a compelling rationale for examining the Zimbabwean experience, where structural fragility and policy inconsistency increase the potential consequences of shadow banking for financial stability and bank performance.

Review of Shadow Banking in Zimbabwe

Empirical research on shadow banking in Zimbabwe remains relatively limited (Mugobo & Mutize, 2020). The country's shadow banking activities are varied and can be broadly categorised into institutional and activity-based forms. Activity-based shadow banking includes peer-to-peer lending, stockvels, mikando (rotating savings clubs), mobile network credit services, and retail credit facilities, among others. These activities imitate conventional banking services but operate outside the RBZ's regulatory oversight (Mugobo & Mutize, 2020). From an institutional perspective, the shadow banking system consists of non-bank financial institutions involved in quasi-banking activities that do not have access to formal safety nets, such as lender-of-last-resort facilities or deposit insurance (Pozsar & Adrian, 2010). Such intermediaries comprise investment banks, hedge funds, asset managers, pawnbrokers, unit trusts, fund managers, and securities dealers, creating a complex network of alternative credit providers (Mugobo & Mutize, 2015).

Several socio-economic and structural factors explain the proliferation of shadow banking in Zimbabwe. The near-collapse of the formal banking

sector between 2003 and 2008, exacerbated by hyperinflation, forced many economic agents to seek alternative channels for credit and investment (RBZ, 2010). Furthermore, the emergence of regulatory arbitrage opportunities under Zimbabwe's 'Silo' regulatory framework, introduced in 2008, encouraged non-bank institutions to offer deposit-taking, investment, and structured finance services via special purpose vehicles (SPVs) and off-balance-sheet arrangements, including securitisation (RBZ, 2010).

The RBZ acknowledged the difficulty of delineating and monitoring shadow banking activities due to their opacity and complexity (RBZ, 2022). This challenge is compounded by a lack of granular data and the informality of many financial networks, which have expanded significantly since the onset of dollarisation in 2009. In response, commercial banks have adopted defensive strategies, including engaging in off-balance-sheet financing and using special investment vehicles to retain competitiveness and diversify income. However, these practices create potential systemic risks through contagion channels between formal and informal financial systems, as highlighted in international studies (Pozsar, 2016).

Financial Regulatory Developments in Zimbabwe

Zimbabwe's financial regulatory landscape has undergone substantial transformation over the past two decades (Dzapasi, 2020). Before the enactment of the Banking Act [Chapter 24:20] (2000), the Ministry of Finance handled bank registration, while the RBZ exercised limited supervisory functions, largely through moral suasion rather than structured oversight (Nhavira et al., 2013). The sector's deterioration between 2003 and 2008, marked by numerous bank failures, governance lapses, and public mistrust, prompted a suite of regulatory reforms. These included the establishment of the Deposit Protection Corporation (DPC) and the incorporation of prudential regulations into the Banking Act (Nhavira et al., 2013). The reforms aimed to restore public confidence, enhance financial stability, and promote sustainable economic growth (RBZ, 2010).

Until 2008, the RBZ was the sole regulator of both banking and non-banking financial institutions, overseeing entities such as mutual funds, asset managers, securities dealers, and custodians (RBZ, 2020). The creation of the Securities and Exchange Commission of Zimbabwe (SECZim) under the Securities Act [Chapter 24:25] (2008), with its secretariat established in 2009, introduced an independent regulator for the capital markets. Consequently, a fragmented or

‘Silo’ regulatory structure emerged, where separate bodies oversee different segments of the financial system:

- *The RBZ regulates commercial banks, merchant banks, building societies, and microfinance institutions;*
- *The Insurance and Pensions Commission (IPEC) supervises insurance and pension entities; and*
- *SECZim oversees capital market participants.*

Currently, the RBZ’s prudential framework remains anchored on Basel III principles, focusing on enhanced capitalisation and risk management as key pillars of financial stability (RBZ, 2022). However, the persistence of regulatory fragmentation creates arbitrage opportunities, undermining oversight coherence and exposing the financial system to cross-sectoral risks. The challenge, therefore, lies in achieving regulatory harmonisation and inter-agency convergence to effectively mitigate systemic vulnerabilities arising from shadow banking activities within Zimbabwe’s evolving financial ecosystem.

The relationship between shadow banking, banking regulation, and commercial banks’ financial performance has also been widely debated, with existing empirical findings yielding divergent results. A growing body of literature has examined how shadow banking affects banks’ profitability, efficiency, and systemic stability across different economies, yet the evidence remains mixed.

Several studies reveal that shadow banking negatively affects the financial performance of traditional banks by diverting deposits, increasing competition, and amplifying systemic risks (Chen et al., 2018; Thiemann, 2018; Buchark, 2018; Zhou et al., 2019; Xiong, 2020; Mirjalili, 2021). These studies emphasise that unregulated or lightly regulated intermediaries often erode banks’ profitability by absorbing liquidity from the formal sector and increasing exposure to credit and contagion risks. Conversely, other empirical investigations report a positive relationship between shadow banking and bank performance, arguing that such activities expand financial inclusion, stimulate credit intermediation, and enhance banks’ fee-based income through diversification (Ilesanmi & Tewari, 2019; Chan et al., 2019; Rifawati, 2021; Ao, 2022; Zhang et al., 2023). In contrast, Nidhiparpiani (2021) found mixed outcomes, shadow banking negatively affected banks’ financial performance but improved profitability among non-financial firms. These divergent findings underscore the need for further empirical investigation, particularly within developing economies where institutional and regulatory contexts differ significantly.

In Southern Africa, Magobo and Mutize (2020) found that shadow banking adversely influences commercial banks' performance in Zimbabwe, stressing the need for traditional banks to adopt innovation-driven strategies to maintain competitiveness. However, it was noted that shadow banks contribute positively to financial inclusion by providing alternative funding sources to underserved market segments, consistent with the findings of Ilesanmi and Tewari (2019) in South Africa.

Zhou et al. (2019) examined the relationship between shadow financial services and firm performance in South Africa using a single-equation cointegration approach. Their results were mixed; shadow banking reduced bank profitability but simultaneously enhanced non-financial firms' performance and broader economic activity. The study concluded that functional rather than institutional regulation is essential for mitigating the adverse effects of shadow banking while supporting its developmental role. Similarly, Ilesanmi and Tewari (2019) found that while shadow banking facilitates credit access for the unbanked, weak regulation and limited transparency heighten systemic risks. Mugobo and Mutize (2019) reinforced this view, recommending that regulatory focus should target shadow banking functions to prevent arbitrage and financial instability.

In East Africa, Mathunva (2019) examined determinants of bank profitability in Kenya (1988–2007) using ROA and ROE as proxies and found that bank profitability was positively related to core capital ratios in Tier 1 institutions but negatively associated with equity capital ratios. Similarly, Gbinosa et al. (2017) found that financial regulation significantly influences banking sector performance in Nigeria, both in the short and long run, corroborating findings by Kori et al. (2020), who identified a positive relationship between regulatory compliance and commercial bank performance in Kenya.

Yahaya et al. (2020) examined a panel of 50 publicly listed banks across six sub-Saharan African countries (2010–2018) and utilised a two-step System GMM (Generalised Method of Moments) estimation. Their findings revealed a positive and significant relationship between regulatory capital and bank performance, emphasising the importance of prudential regulation in maintaining financial stability. Conversely, Kiplagata and Kalui (2020), analysing 36 commercial banks in Kenya (2013–2017), found no significant link between capital adequacy and bank performance, indicating that regulation alone might not ensure profitability in volatile conditions.

Collectively, the reviewed studies highlight inconsistent findings across different contexts and methodological frameworks. While most evidence from advanced economies points to shadow banking as a destabilising force, research from emerging markets reveals context-dependent effects, shaped by institutional weaknesses, regulatory fragmentation, and financial innovation. The paucity of studies focusing on Zimbabwe's shadow banking landscape, despite its growing prominence and regulatory challenges, underscores a critical empirical gap that this study seeks to address.

Theoretical Framework

The relationship among shadow banking, banking regulations, and commercial banks' financial performance can be appreciated from several interconnected theoretical perspectives. This study relies on three important theories: the Theory of Financial Intermediation, the Theory of Financial Innovation, and the Theory of Financial Regulation. Collectively, these frameworks offer a comprehensive understanding of how financial systems develop, operate, and respond to regulatory and market changes.

The Theory of Financial Intermediation, rooted in the works of Schumpeter (1911) (Konstantakopoulou et al., 2023), argues that financial intermediaries exist to lower transaction costs and reduce information asymmetries, thereby enabling efficient capital allocation between savers and borrowers. Schumpeter (1911) contended that intermediaries play a crucial role in mobilising savings, managing risks, and encouraging productive investment, activities vital for economic growth. The theory was later refined by Goldsmith (1969), Gurley and Shaw (1973), and Allen and Santomero (1997), who highlighted the intermediary's function in liquidity transformation and credit creation.

In Zimbabwe, both shadow banks and traditional commercial banks perform intermediation functions that improve financial resource allocation and support economic growth. Financial intermediation involves mobilising deposits, extending credit, and managing risks within and across markets (Sara, 2024). However, as Allen and Santomero (1998) and Scholtens and Van Wensveen (2000) note, the traditional focus of the theory on reducing transaction costs has become less significant in modern financial systems characterised by technological innovation and market sophistication. Despite its limitations, this theory offers a fundamental perspective for understanding how shadow banking and regulatory mechanisms influence banks' financial performance,

particularly as measured by the return on assets (ROA), the dependent variable in this study (Ilesanmi & Tewari, 2019; Rifawati, 2019; Zhou & Tewari, 2020).

The Theory of Financial Innovation, advanced by Kane (1981), explains how regulatory constraints and competitive pressures drive the creation of new financial products and institutional structures. The theory posits that when the expected rewards of innovation outweigh the costs imposed by regulation, financial institutions innovate to circumvent such constraints. This reasoning directly relates to shadow banking, which often thrives in regulatory voids or areas of limited oversight. However, critics such as Simpson and Parkinson (1988) contend that financial innovation introduces new forms of risk, including deterioration in asset quality, liquidity mismatches, and market volatility. Similarly, Beck et al. (2016) and Wagner (2007) argue that excessive innovation can propagate systemic fragility and encourage risk-taking behaviour, particularly when managerial incentives prioritise short-term profits over long-term stability.

In Zimbabwe, the financial innovation framework helps explain the rise of digital and non-bank financial intermediation, including mobile credit platforms, peer-to-peer lending, and blockchain-based products. While these innovations enhance financial inclusion and advance Sustainable Development Goal (SDG) 8.10, which promotes access to financial services, they also create new risks, notably cybersecurity breaches, data theft, and electronic fraud. Shi and Wang (2025) highlight scalability, interoperability, and compliance as ongoing challenges, while Zhao and Hao (2025) suggest that innovation can both restrict and reshape shadow banking growth. Despite its limitations, this theory emphasises the dual nature of innovation as both an enabler of inclusion and a source of systemic risk in developing financial markets.

The Theory of Financial Regulation, introduced by Stigler (1971) and later expanded by Llewellyn (1999), provides a framework for understanding the rationale and limitations of regulatory oversight in financial systems. The theory argues that regulation seeks to correct market failures, protect consumers, ensure financial stability, and prevent systemic crises. Regulatory frameworks, therefore, address imperfections such as information asymmetry, conflicts of interest, agency problems, and the complexity of financial contracts. However, this theory also recognises the cost-benefit dilemma inherent in regulation. Excessive regulation can suppress innovation and efficiency, while insufficient oversight can lead to instability and erosion of public confidence. In Zimbabwe, where multiple regulatory authorities oversee different financial subsectors, a

phenomenon known as ‘silo regulation’, coordination gaps create opportunities for regulatory arbitrage, particularly among shadow banking entities. The financial regulation theory thus illuminates how policy frameworks shape the interaction between formal and informal intermediaries in Zimbabwe’s financial ecosystem.

While prior studies have typically applied these theories in isolation, this study integrates them into a multi-theoretical framework to provide a comprehensive understanding of financial intermediation dynamics in a developing economy. The Theory of Financial Intermediation explains the role of both formal and informal intermediaries in resource allocation; the Theory of Financial Innovation captures their adaptive and disruptive tendencies; and the Theory of Financial Regulation contextualises the oversight mechanisms necessary to maintain systemic stability.

Taken together, these perspectives offer a holistic analytical lens for assessing how shadow banking and regulatory mechanisms jointly influence commercial banks’ financial performance in Zimbabwe. This integrative approach is especially relevant in structurally constrained economies, where financial innovation, limited regulation, and institutional fragility coexist, shaping the delicate balance between efficiency, risk, and stability in the banking sector.

The Conceptual Model

This study was framed around a conceptual model exhibited in Figure 1.

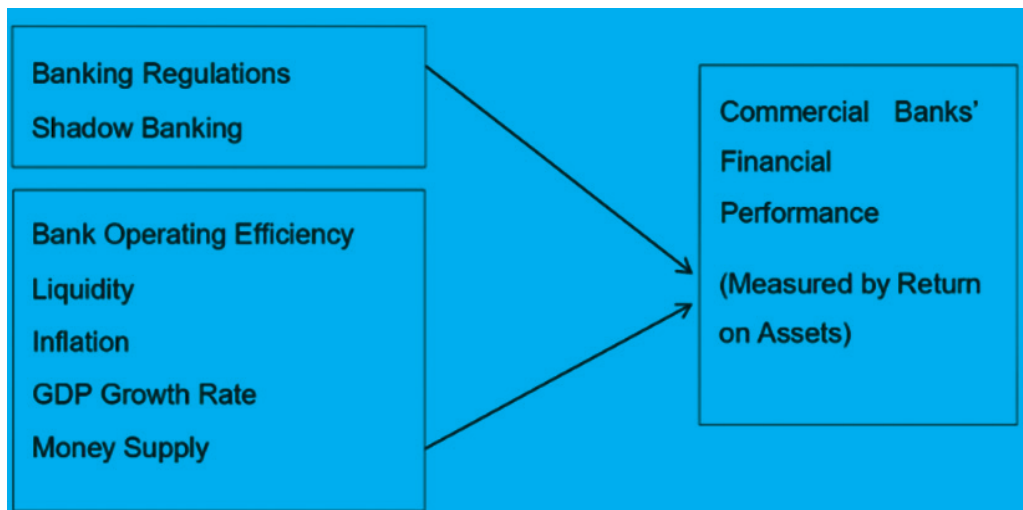


Figure 1: A conceptual framework on the relationship between shadow banking, banking regulations and commercial banks’ financial performance (Source: Researcher)

The independent variables in this paper were shadow banking and banking regulations. Specifically, shadow banking was proxied by the assets of non-bank financial institutions. Bank-specific factors comprised the bank's operating efficiency and liquidity ratio, while macroeconomic factors included inflation, the Gross Domestic Product (GDP) growth rate, and the money supply (M3). The dependent variable was commercial banks' financial performance, proxied by return on assets. The cost-to-income ratio measured banks' operating efficiency. The following section discusses the materials and methods used in this study.

Methodology

This paper adopted a positivist research philosophy and a deductive approach to empirically examine the impact of shadow banking and banking regulations on the financial performance of commercial banks in Zimbabwe. The positivist paradigm was appropriate because the study aimed to establish objective, measurable relationships among quantifiable variables. The research design was deductive as it tested hypotheses derived from established theories and prior empirical evidence. Similar methodological approaches have been employed in related studies (Rifawati, 2019; Zhou et al., 2020).

The study utilised secondary data sourced from the Reserve Bank of Zimbabwe (RBZ) and the Securities and Exchange Commission of Zimbabwe (SECZim). A panel data analysis approach was employed because it allows for the simultaneous examination of cross-sectional (inter-bank) and time-series (over years) variations, providing deeper insight into how variables evolve and interact over time.

The utilisation of panel regression in this study was justified on methodological and econometric grounds. The dataset exhibited both cross-sectional and time-series characteristics, enabling the simultaneous examination of commercial banks' performance across multiple institutions and years. Panel regression was preferred because it enhances statistical efficiency by increasing sample size, reducing degrees of freedom, and mitigating omitted-variable bias, thereby improving the precision and reliability of parameter estimates. Moreover, it effectively addresses econometric challenges such as multicollinearity, aggregation bias, and endogeneity, which often compromise the validity of time-series or cross-sectional analyses (Wooldridge, 2015; Baltagi, 2021; Hsiao, 2022). Data analysis was performed using STATA version 18, selected for its robustness, accessibility, and efficiency in managing and estimating complex panel datasets.

Population and Sampling

At the time of the study, 14 commercial banks were operating in Zimbabwe, collectively holding core capital of USD 438.11 billion, total assets of USD 3.1 trillion, and deposits of USD 1.91 trillion (RBZ, 2022). The study used a census sampling technique because the total population was manageable. However, one institution was excluded because it was converted from a building society to a commercial bank midway through the study period. The final sample, therefore, comprised 13 commercial banks that had been continuously operating in Zimbabwe over the 14 years (2009–2022). This timeframe aligns with Bose et al. (2012), who assert that a period of at least 10–15 years provides sufficient depth for studies of this nature. The resulting dataset produced 182 observations, adequate for robust panel analysis. A power analysis conducted with G*Power software confirmed sample adequacy, with a statistical power of 0.899, exceeding the recommended threshold of 0.8 for regression-based studies.

The study's theoretical model was grounded in three complementary frameworks: the Theory of Financial Intermediation, the Theory of Financial Innovation, and the Theory of Financial Regulation. Collectively, these frameworks explain how shadow banking activities and regulatory measures interact to influence banks' financial performance.

Drawing from Nath and Chowdhury (2021), Farhi and Tirole (2021), Tian, Tu, and Wang (2021), Zhang et al. (2023), and Tarawneh et al. (2024), the study posits that shadow banking exerts a measurable effect on the performance of traditional banks. This relationship is shaped by bank-specific and macroeconomic factors, which serve as control variables that influence profitability dynamics (Alnajjar & Othman, 2021; Boamah et al., 2023; Wilson, 2023). The theoretical model assumes:

- i) Profit maximisation remains the primary goal of banks, as reflected by Return on Assets (ROA) and Return on Equity (ROE) (Simanullang et al., 2021; Nwuba et al., 2021).
- ii) A regulation–efficiency trade-off exists, wherein stricter regulations enhance stability but may constrain profitability (Goel, 2023; Agarwal & Goel, 2024).
- iii) Shadow banking competition compresses margins and alters risk-taking behaviour (Farhi & Tirole, 2021; Tan et al., 2022).
- iv) Macroeconomic conditions, including inflation, GDP growth, and monetary policy, significantly shape bank performance (Tiblola et al., 2024; Fernanda et al., 2024).

Theoretical Model Specification

Grounded in the Theory of Financial Innovation, the model recognises that the continuous evolution of financial products and services, often driven by technology, intensifies competition between formal and shadow banking systems (Nath & Chowdhury, 2021; Ghroubi & Khalifa, 2025). Meanwhile, the Theory of Financial Regulation underscores the necessity of regulatory oversight to mitigate systemic risks and protect depositors (O'Donnell, Shannon, & Sheehan, 2024). Accordingly, the theoretical panel model was specified as follows:

Where:

- Financial performance of bank i at time t (proxied by ROA or ROE)
- Shadow banking variable
- Vector of bank-specific factors
- Vector of macroeconomic factors
- Bank-specific fixed effects
- Time-specific effects
- Idiosyncratic error term

Empirical Model Specification

Building upon the theoretical foundation, the empirical model incorporated the following variables:

Where:

- = Return on Assets for bank i at time t (dependent variable)
- = Shadow banking proxy (non-bank financial institutions' assets)
- = Capital adequacy ratio (proxy for banking regulation)
- = Liquidity ratio
- = Cost-to-income ratio (operating efficiency)
- = Inflation rate
- = GDP growth rate
- = Broad money supply
- = Intercept
- = Coefficients of independent variables
- = Bank fixed effects
- = Error term

Variable Description

Variable	Type	Proxy / Measure	Expected Sign	Source
ROA	Dependent	Net income / Total assets	–	RBZ Annual Reports
Shadow Banking (SB)	Independent	Assets of non-bank financial institutions	±	SECZim
Capital Adequacy Ratio (CAR)	Independent	Regulatory capital / Risk-weighted assets	+	RBZ
Liquidity Ratio (LQ)	Bank-specific	Liquid assets / Total deposits	±	RBZ
Cost-to-Income Ratio (CIR)	Bank-specific	Operating costs / Operating income	–	RBZ
Inflation (IN)	Macro	Annual inflation rate (%)	–	ZIMSTAT
GDP Growth (GDP)	Macro	Annual real GDP growth (%)	+	World Bank
Money Supply (M3)	Macro	Broad money as % of GDP	+	RBZ / IMF

The methodological framework provides a comprehensive basis for analysing the causal relationship between shadow banking, regulatory frameworks, and the financial performance of Zimbabwean commercial banks. The combination of bank-level panel data, robust econometric modelling, and multi-theoretical grounding enhances both the reliability and validity of the findings. The subsequent section presents the results and analysis, interpreting empirical findings in light of the study’s theoretical and contextual framework.

Table 1: Variables Description for the Study

Variable	Measurement	Data Source	Period	Reference
Commercial Banks' Financial Performance	Return on Assets	RBZ, Bank Supervision Division	2009-2022	(Issah & Antwi, 2017); (Zhou & Tewari, 2019; Nidhiparpiana, 2021)
Shadow Banking	Non-Bank Financial Institutions Assets	Securities Exchange Commission	2009-2022	(FSB, 2016)
Banking Regulations	Capital Adequacy Ratio	RBZ Annual Reports	2009-2022	(Igbinosa et al, 2017)
Bank-specific and macro-economic variables	Liquidity Ratio, Cost-to-Income Ratio, Inflation, GDP and Money Supply	RBZ Annual Reports	2009-2022	(Ware, 2015; Nathan, 2003; Mathiva, 2015, Christian et al 2008)

(Source: Author's compilation, 2025)

Econometric Diagnostic Tests

To ensure that the dataset met the statistical assumptions underlying the panel regression model, a series of diagnostic and pre-estimation tests were carried out prior to analysis using STATA version 18. Since the variables did not follow a normal distribution and showed the presence of outliers, Spearman's Rank Correlation Test was used to assess the level of association among variables. The results showed no violation of the correlation threshold, confirming the absence of problematic inter-variable dependencies. To further enhance the model's robustness, Variance Inflation Factor (VIF) diagnostics were performed to detect multicollinearity among the explanatory variables. All VIF values were below the conventional benchmark of 10, thus confirming the independence of the regressors (Gujarati, Porter, & Gunasekar, 2021; Wooldridge, 2021).

Additionally, a Shapiro–Wilk Test confirmed non-normality in the data distribution, which is common in financial datasets characterised by volatility and heteroskedasticity (Baltagi, 2021; Hsiao, 2022). To check the stationarity of the series and prevent spurious regression, the Levin–Lin–Chu (LLC) unit root test was used. The results showed that most variables were stationary at the level, but return on assets (ROA) and capital adequacy ratio (CAR) became stationary after first differencing, which is typical of integrated order I(1) properties often seen in macro-financial panel data (Im, Pesaran, & Shin, 2020).

Subsequently, panel cointegration tests were conducted to examine the existence of long-run equilibrium relationships among the variables. Both the Kao Residual Cointegration Test and the Westerlund Error-Correction Test returned statistically significant results ($p < 0.05$), leading to the rejection of the null hypothesis of no cointegration. These outcomes confirmed that the variables share a stable long-term relationship, justifying the estimation of a cointegrated panel regression framework (Pedroni, 2020; Westerlund & Narayan, 2022).

To determine the most suitable estimation technique, diagnostic tests for endogeneity were performed using the Robust Chi-square and Robust Regression F-tests. The results identified CAR and the cost-to-income ratio (CIR) as endogenous variables, signalling a violation of the exogeneity assumption and potential bias in conventional estimators. In response, the Dynamic Ordinary Least Squares (DOLS) model was adopted due to its ability to correct for endogeneity and serial correlation by including leads and lags of the differenced regressors (Phillips & Moon, 2021; Choi, 2023). The DOLS framework also demonstrates superior small-sample properties compared to Fully Modified OLS and Pooled Mean Group estimators, especially when panel variables are cointegrated (Pesaran, 2022; Sarafidis, 2024). Given the relatively modest sample size of 182 observations, DOLS was therefore the most methodologically robust choice for deriving efficient and unbiased parameter estimates in this study.

Results and Discussion

To assess the central tendency of the variables in this study, a summary of descriptive statistics is shown in Table 2.

Table 2: Descriptive Statistics Summary

	N	Mean	SD	Median	Skewness	CV
CAR	182	25.373	11.502	23.370	2.063	0.453
CIR	182	81.064	79.764	75.375	8.243	0.984
Liquidity	182	59.731	25.169	58.385	1.38	0.421
SB	182	20.37	0.453	20.450	-1.101	0.022
ROA	182	4.986	10.919	2.795	3.609	2.19
Inflation	182	80.693	154.371	3.600	2.156	1.913
GDP	182	5.407	7.529	5.100	0.161	1.392
M3	182	22.034	0.510	22.059	0.072	0.023

(Source: Researcher compilation from Stata version 18)

As presented in Table 2, the dataset comprised 182 panel observations from 13 commercial banks over 14 years (2009–2022), consistent with methodological precedents in banking performance studies (see, for instance, Bose et al., 2012; Beck et al., 2022). The capital adequacy ratio (CAR) exhibited a mean of 25.37 with a standard deviation of 11.50, indicating moderate dispersion across institutions and years. In contrast, shadow banking activity (SB) recorded a mean value of 20.37 and a comparatively higher standard deviation of 20.45, reflecting substantial heterogeneity in the extent of non-bank financial intermediation across the sampled institutions. The descriptive statistics underscore the structural diversity within Zimbabwe’s commercial banking sector, particularly in capital strength and exposure to shadow banking dynamics.

The results of the DOLS panel regression model, which estimates the long-run relationships among shadow banking, banking regulation, and financial performance, are summarised in Table 3. The DOLS specification was preferred for its efficiency and consistency in small samples with cointegrated variables, allowing for reliable inference on the magnitude and direction of the relationships under investigation (Phillips & Moon, 2021; Sarafidis, 2024; Pesaran, 2022).

Table 3: DOLS Regression Results Summary

	Coefficient	t-Statistic	Probability
	DOLS	DOLS	DOLS
CAR	.5357	8.9119	p<0.0001
CIR	-0.0510	-7.2444	p<0.0001
Liquidity	-0.0964	-3.9107	0.0001
Shadow Banking	-4.0642	-2.2139	0.0282
Inflation	0.0138	2.0951	0.0377
GDP	0.2585	2.5288	0.0124
Money Supply	1.3604	0.9990	0.3193

(Source: Researcher computation using Stata version 18)

The DOLS regression model was estimated, and the results are summarised in Table 3. The model produced an R-squared of 0.74, suggesting that approximately 74% of the variation in the dependent variable, Return on Assets (ROA), is explained by the independent variables. The remaining 26% of the variation is attributable to unobserved exogenous factors not specified within the current framework. The standard error of regression was estimated at 5.8619, representing the degree to which actual observations deviate from the regression line; a smaller standard error denotes a tighter model fit. The long-

run variance of 38.5453 confirmed the model's stability and robustness across the period under review (Pesaran, 2022; Sarafidis, 2024).

Shadow banking, proxied by the consolidated assets of Non-Bank Financial Institutions (NBFIs), including asset management firms, unit trusts, mutual funds, broker funds, and collective investment schemes, was found to have a negative and statistically significant relationship with banks' financial performance ($\beta = -4.0642$; $p = 0.0282$). This inverse association implies that the expansion of shadow banking erodes commercial banks' profitability, consistent with the hypothesis that unregulated financial intermediation intensifies competition and undermines the traditional banking model (Claessens & Ratnovski, 2020; Adrian & Ashcraft, 2023).

The findings align with previous research in developing and emerging economies, which similarly reported that shadow banking constrains bank profitability by diverting deposits and lending opportunities toward alternative financial channels (Rifawati, 2012; Zhou & Tewari, 2019; Zins & Weill, 2020; Beck, De Jonghe, & Schepens, 2022). In Zimbabwe, this effect is particularly pronounced due to weak regulatory convergence and high levels of financial informality. The magnitude of the coefficient (-4.0642) underscores the severity of this relationship: given that the average ROA for Zimbabwean commercial banks during the dollarisation period was 5.105% (RBZ, 2022), the contractionary effect of shadow banking represents a substantial erosion of profitability. This result supports the contention that the shadow banking sector has become a parallel credit system that competes directly with formal banks for market share, deposits, and lending clientele (Ehlers, Kong, & Zhu, 2021; FSB, 2023). However, given the lack of granular data on informal credit activities, this study's estimate may understate the actual extent of shadow banking's systemic influence on the financial sector.

The capital adequacy ratio (CAR) demonstrated a positive and statistically significant relationship with ROA ($\beta_{CAR} = 0.535$; $SE = 0.005$; $t = 8.911$; $p = 0.001$), confirming that well-capitalised banks are more resilient and profitable. This finding supports the tenets of the Financial Regulation Theory (Stigler, 1971) and aligns with the empirical literature, which finds that higher capital buffers enhance operational stability and investor confidence while mitigating insolvency risk (Albulescu, 2015; Chavarín, 2015; Rahman et al., 2015; Beck et al., 2022). The result is consistent with contemporary studies that highlight the role of Basel III capital standards in strengthening banks' balance sheets and risk management practices in emerging markets (Chodorow-Reichl, Covas,

& Driscoll, 2024; IMF, 2024). In Zimbabwe, the RBZ's capitalisation policy, requiring a minimum threshold of USD 100 million for commercial banks, has been instrumental in maintaining stability and solvency, as evidenced by the sector's sustained recovery following periods of macroeconomic turbulence (RBZ, 2024).

The results further revealed that inflation exerts a positive and significant effect on banks' profitability ($\beta = 0.0138$; $p = 0.0377$). This relationship suggests that moderate inflation enhances banks' earnings through loan repricing and interest-margin adjustments, thereby improving returns on assets (Demirgüç-Kunt & Huizinga, 2020; Claessens & Ratnovski, 2020). However, persistently high inflation may distort credit markets and exacerbate liquidity pressures, particularly in fragile economies with volatile exchange rate regimes (IMF, 2024). In Zimbabwe, inflationary pressures and the widespread informalisation of the economy have contributed to the expansion of shadow banking, as borrowers increasingly turn to unregulated lenders offering lower interest rates and flexible repayment terms (RBZ, 2024; FSB, 2023).

The cost-to-income ratio (CIR) had a negative and statistically significant effect on profitability ($\beta = -0.0510$; $p < 0.001$), indicating that higher operating costs reduce bank performance. This inverse relationship aligns with efficiency theory, which posits that operational inefficiencies directly undermine profitability (Baltagi, 2021; Beck et al., 2022). To enhance cost efficiency, banks are encouraged to leverage digital transformation, including fintech partnerships, process automation, and data-driven cost management, to achieve economies of scale and scope (Adrian & Ashcraft, 2023; Chodorow-Reich et al., 2024).

Similarly, the liquidity ratio displayed a negative and significant relationship with profitability ($\beta = -0.0964$; $p = 0.0001$), suggesting that excessive liquidity holdings reduce income-generating capacity. This trade-off between liquidity and profitability supports the classical liquidity–profitability hypothesis, which contends that holding surplus liquidity entails an opportunity cost by restricting lending and investment activities (Ehlers et al., 2021; Pesaran, 2022). Banks must therefore maintain optimal liquidity levels that ensure solvency without constraining credit intermediation.

Finally, Gross Domestic Product (GDP) growth exhibited a positive and significant correlation with ROA ($\beta = 0.2585$; $p = 0.0124$), indicating that macroeconomic expansion strengthens banks' performance by stimulating credit demand, improving asset quality, and broadening financial intermediation channels (Beck et al., 2022; IMF, 2024). This finding reinforces the procyclical

nature of bank profitability relative to economic activity: as GDP rises, financial transactions intensify, boosting income from both interest and non-interest sources. Collectively, the DOLS results confirm that both internal operational factors (such as capital adequacy and efficiency) and external macroeconomic variables (inflation, GDP, and money supply) play a pivotal role in determining the financial performance of Zimbabwean commercial banks.

Conclusions

This study concludes that shadow banking exerts a negative and statistically significant influence on the financial performance of commercial banks in Zimbabwe, confirming its dual role within the national financial architecture. While shadow banking contributes to financial inclusion and credit diversification through innovative and flexible financial products, it simultaneously erodes the profitability and stability of traditional banking institutions by diverting deposits, intensifying competition, and increasing systemic vulnerabilities. This duality shows the paradox of shadow banking as both a facilitator of market innovation and a potential source of financial fragility in developing economies characterised by weak regulatory coordination and limited supervisory oversight (Adrian & Ashcraft, 2023; Claessens & Ratnovski, 2020; IMF, 2024).

The findings further demonstrate that banking regulation has a positive and stabilising effect on commercial banks' performance. Robust prudential and macroprudential frameworks, particularly those aligned with Basel III standards, strengthen institutional resilience, improve risk management, and mitigate adverse spillovers from shadow banking activities. However, the opaqueness and interconnectedness of shadow banking operations pose persistent challenges to effective oversight, facilitating regulatory arbitrage and cross-sector contagion (Ehlers, Kong, & Zhu, 2021; Zins & Weill, 2020).

The study also establishes that macroeconomic fundamentals, notably inflation, GDP growth, and money supply, play a pivotal role in shaping the profitability and resilience of the banking sector. Sound macroeconomic management enhances financial intermediation efficiency, lowers credit risk, and promotes sustainable banking profitability, thereby reinforcing the broader objectives of financial stability and economic growth (Pesaran, 2022; Beck, De Jonghe, & Schepens, 2022). Collectively, these findings validate the principles of Financial Intermediation and Financial Innovation Theories, which posit that a well-regulated and adaptable financial system supports national development by facilitating efficient resource allocation (Stigler, 1971; Schumpeter, 1934).

Recommendations

To strengthen the resilience and stability of Zimbabwe's financial system, several strategic interventions are recommended. The RBZ and the Securities and Exchange Commission of Zimbabwe (SECZ) should expand the regulatory scope to cover all major non-bank financial entities, including shadow banking, within a comprehensive macroprudential framework that enhances systemic risk detection, reduces regulatory arbitrage, and protects financial stability (FSB, 2023; IMF, 2024).

Simultaneously, regulatory agencies should pursue regulatory harmonisation and inter-agency supervisory coordination to align prudential standards across the formal and non-bank financial sectors, ensuring that financial innovation develops within transparent and monitored structures (Chodorow-Reich, Covas, & Driscoll, 2024). Improving transparency and data reporting is also essential; enhanced disclosure requirements on shadow banking exposures, asset composition, and cross-sectoral linkages would provide regulators with detailed insights necessary for evidence-based policymaking and timely macroprudential responses (Ehlers, Kong, & Zhu, 2021).

Furthermore, commercial banks must embrace financial innovation and digital transformation, including fintech partnerships and technology-driven products, to remain competitive, retain market share, and extend services to underserved populations in line with Zimbabwe's financial inclusion agenda and Sustainable Development Goal 8.10, which calls for universal access to affordable financial services (UNDP, 2023; RBZ, 2024).

Equally important is the adoption of a balanced macroprudential policy framework that harmonises regulatory strictness with economic growth objectives, as stable inflation and GDP growth are vital for sustaining bank profitability and mitigating systemic shocks (Pesaran, 2022; Beck, De Jonghe, & Schepens, 2022). Lastly, strengthening regulatory institutional capacity through continuous training and analytical skill development is essential to address the complexity and opacity of shadow banking instruments, allowing for proactive rather than reactive supervisory interventions that reinforce confidence and stability within Zimbabwe's evolving financial ecosystem.

Limitations of the Study

This paper recognises several limitations that may affect the interpretation and generalisability of its findings. Foremost among these is the lack of a universally accepted definition and standardised measurement of shadow banking, which complicates comparative analysis across jurisdictions. The reliance on Non-Bank Financial Institutions' consolidated assets as a proxy, although consistent with international practice, may not capture the full range of shadow banking activities, especially informal or unregulated operations.

Additionally, data unavailability, a common constraint in developing economies, limits the inclusion of broader variables such as fintech-based lending and cross-border investment vehicles. These constraints restrict the replicability of the study in other contexts where shadow banking structures vary in scope and institutional composition (FSB, 2023; Adrian & Ashcraft, 2023).

Suggestions for Future Research

Future research should broaden the analytical scope by incorporating other deposit-taking institutions, such as building societies and microfinance banks, into the empirical framework to capture a more comprehensive picture of the financial sector. Longitudinal studies examining regulatory responses over time could illuminate the dynamic interplay between shadow banking, financial stability, and innovation. Moreover, scholars are encouraged to explore alternative proxies for shadow banking, such as credit-to-GDP gaps, securitisation volumes, or fintech lending data, to enrich the empirical validity of future analyses.

Comparative cross-country studies across sub-Saharan Africa and emerging Asian economies may also offer valuable insights into how different regulatory architectures mediate the effects of shadow banking on financial performance. Such expanded inquiries would advance the discourse on financial innovation, regulation, and systemic risk management in developing economies (Choi, 2023; Sarafidis, 2024).

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