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Banking Industry Competition, Efficiency and Stability in Zimbabwe

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Abstract

The relationship between banking competition and financial stability remains one of the most debated issues in banking economics, particularly in emerging economies characterised by structural transformation and macroeconomic instability. Zimbabwe provides a unique setting for examining this relationship owing to recurrent episodes of financial sector reforms, market consolidation, currency regime changes and persistent macroeconomic volatility. This study investigates the effect of banking sector competition on financial stability in Zimbabwe using an unbalanced panel of 18 commercial banks covering the period 2012–2025. Banking competition is measured using the Boone Indicator, while financial stability is proxied by the . The analysis employs fixed-effects and instrumental variable (two-stage least squares) estimators to account for unobserved heterogeneity and potential endogeneity between competition and stability. The empirical model further controls for bank-specific characteristics, including bank size, asset growth and non-performing loans, as well as macroeconomic factors represented by GDP per capita growth and inflation.

The empirical results consistently show that stronger competition is associated with greater banking sector stability. The Boone Indicator exhibits a negative and statistically significant relationship with the across all model specifications, supporting the competition–stability hypothesis that competitive pressures improve efficiency by reallocating market share from less efficient to more efficient banks. The findings further indicate that larger banks, rapid asset growth and higher non-performing loans reduce banking stability, whereas stronger economic growth enhances stability. Inflation is found to exert a significant negative effect on banking sector stability, highlighting the importance of the macroeconomic environment in shaping bank resilience.

The study concludes that banking stability in Zimbabwe is jointly determined by competitive market conditions, bank-specific characteristics and macroeconomic stability rather than market concentration alone. The findings suggest that policies promoting efficiency-enhancing competition, supported by risk-based regulation, stronger credit information systems, financial innovation and prudent macroeconomic management, can improve both financial stability and the efficiency of financial intermediation. The study contributes to the growing literature on banking competition in emerging economies by providing new evidence from Zimbabwe using the Boone Indicator as a behavioural measure of competition.

Keywords: Banking Competition; Efficiency; Stability; Boone Indicator; Z-score; Banking sector; Zimbabwe; Competition-stability hypothesis.

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1. Introduction

A stable, competitive and efficient banking system is fundamental to economic growth because it mobilises savings, allocates capital, facilitates payments and supports investment (Levine, 2005; World Bank, 2013). The effectiveness of these functions, however, depends not only on the degree of competition within the banking sector but also on the broader macroeconomic environment in which banks operate. In developing economies, prolonged macroeconomic instability weakens financial intermediation, increases credit risk and alters banks' incentives, thereby influencing the relationship between competition and financial stability (Beck, 2008; IMF, 2023).

Zimbabwe presents a particularly important case for examining this relationship. Prior to the adoption of the multicurrency regime in 2009, the country experienced one of the most severe episodes of macroeconomic instability in modern history. Between 2000 and 2008, economic activity contracted significantly owing to declining agricultural production, reduced industrial output, persistent fiscal imbalances, shortages of foreign exchange and policy uncertainty (Reserve Bank of Zimbabwe, 2009; World Bank, 2010). These conditions culminated in hyperinflation, rapid depreciation of the Zimbabwe dollar and a loss of public confidence in the domestic financial system (Hanke & Kwok, 2009; IMF, 2009). Consequently, the banking sector experienced severe liquidity shortages, declining deposits, increasing non-performing loans, erosion of capital and the closure of several financial institutions, resulting in a substantial weakening of financial intermediation (Reserve Bank of Zimbabwe, 2009).

The introduction of the multicurrency regime in 2009 marked a significant turning point for Zimbabwe's financial sector. The multicurrency regime stored price stability, improved depositor confidence and strengthened banking sector liquidity, facilitating a gradual recovery in financial intermediation (Kramarenko et al., 2010; IMF, 2011). The post-2009 period also witnessed important structural changes, including regulatory reforms, consolidation through mergers and acquisitions, technological innovation and increased participation by both domestic and foreign banks. These developments reshaped the competitive landscape while simultaneously exposing banks to new regulatory and market pressures. Nevertheless, despite the initial gains associated with dollarisation, the banking sector continued to operate under recurring macroeconomic challenges, including liquidity constraints, inflationary pressures, exchange-rate instability and subsequent currency reforms, all of which continued to influence banks' lending behaviour, profitability and risk-taking (World Bank, 2022; IMF, 2023).

Against this background, the relationship between banking competition and financial stability has become an important policy issue. Theoretical literature provides several competing explanations of how competition influences bank behaviour. The Structure-Conduct-Performance (SCP) paradigm argues that greater market concentration enhances market power and profitability (Bain, 1951, 1956).

In contrast, the Efficient Structure Hypothesis (ESH) attributes superior performance to greater operational efficiency rather than concentration (Demsetz, 1973; Berger, 1995). The Quiet Life Hypothesis (QLH) suggests that banks with substantial market power may become managerially inefficient because competitive pressures to minimise costs and innovate are reduced (Hicks, 1935; Berger & Hannan, 1998). The Competition–Fragility Hypothesis argues that increased competition erodes banks' franchise values and encourages greater risk-taking, thereby increasing financial instability (Keeley, 1990; Allen & Gale, 2000). Conversely, the Competition–Stability Hypothesis contends that stronger competition reduces borrower moral hazard, improves credit allocation and ultimately enhances banking sector stability (Boyd & De Nicoló, 2005). More recent studies suggest that the relationship is contingent upon institutional quality, regulatory effectiveness and macroeconomic conditions, implying that no single theoretical perspective universally explains banking sector outcomes (Martínez-Miera & Repullo, 2010; Anginer, Demirgüç-Kunt, & Zhu, 2014; Beck, De Jonghe, & Schepens, 2013).

Despite the extensive international literature, empirical evidence on the competition–stability nexus remains limited and inconclusive for Zimbabwe. Existing studies have generally focused on bank performance, concentration or financial stability separately, while relatively few have examined the direct relationship between competition and banking stability using behavioural measures of competition. Furthermore, most studies rely on structural indicators such as concentration ratios and the Herfindahl–Hirschman Index, which may not adequately capture competitive conduct in banking markets (Boone, 2008; Schaeck & Cihák, 2014).

This study addresses these gaps by examining the relationship between banking competition and financial stability in Zimbabwe using the Boone Indicator, an efficiency-based measure of competition, together with the Z-score as a measure of banking stability. Using bank-level panel data covering the period 2012–2025, the study estimates fixed-effects and instrumental variable models to evaluate whether greater competition promotes or undermines banking sector stability after controlling for bank-specific characteristics and macroeconomic conditions.

The study contributes to literature in three important respects. First, it provides updated evidence on the competition–stability relationship in Zimbabwe during a period characterised by substantial structural and macroeconomic change. Second, it complements traditional concentration measures by employing the Boone Indicator, thereby providing a more direct assessment of competitive behaviour. Third, it evaluates the interaction between competition, bank-specific characteristics and the macroeconomic environment within an economy that has experienced repeated episodes of monetary and financial instability. The findings therefore contribute to the growing literature on banking competition in emerging economies while providing evidence to inform banking regulation and financial sector policy in Zimbabwe.

The remainder of the paper is organised as follows. Section 2 details the structure and evolution of Zimbabwe's banking industry, Section 3 discusses the macroeconomic environment and banking sector developments prior to and post adoption of the multicurrency regime. Section 4 reviews theoretical and empirical literature. Section 5 describes the research methodology and data. Section 6 presents and discusses the study's empirical results, while Section 7 concludes and outlines the policy implications.

2. Structure and Evolution of Zimbabwe's Banking Sector

Zimbabwe has a relatively sophisticated financial system comprising deposit-taking institutions, insurance companies, pension funds, capital markets, and a growing financial technology ecosystem. As of 31 March 2026, the banking sector consisted of seventeen deposit-taking institutions, comprising fourteen commercial banks, two building societies and one savings bank (Table 1).

Table 1: Trends in Zimbabwe's Banking Sector Architecture, 2003 - March 2026

Banking Class	Number of Institutions									
	2003	2006	2009	2010-12	2013	2014	2015	2016	2017-25	March 2026
Commercial Banks	16	14	18	17	15	15	13	13	14	14
Building Societies	5	4	4	4	4	4	4	5	4	2
Merchant Banks	6	5	4	4	2	1	0	0	0	0
Savings Banks	1	1	1	1	1	1	1	1	1	1
Discount Houses	9	6	1	0	0	0	0	0	0	0
Finance Houses	5	4	0	0	0	0	0	0	0	0
Total No of Banks	42	34	28	26	22	21	18	19	19	17

Source: MoFEDIP & RBZ

Bank regulation and supervision are undertaken by the Reserve Bank of Zimbabwe (RBZ) in terms of the Reserve Bank of Zimbabwe Act [Chapter 22:15] and the Banking Act [Chapter 24:20]. The RBZ's Banking Supervision Department is responsible for licensing, prudential regulation and continuous supervision of banking institutions, building societies, savings banks, microfinance institutions and selected non-bank financial institutions. Over the past two decades, the regulatory framework has been progressively strengthened to promote financial sector resilience, improve corporate governance and safeguard financial stability. Commercial banks have consistently dominated the banking system. As of 31 March 2026, the six largest banks accounted for 73.6% of total deposits, 72.5% of total loans and advances, and 70.1% of total banking sector assets. Of the seventeen banking institutions, seven were foreign owned with a combined market share exceeding 51.0%, while one domestically owned bank accounted for over 30% of total banking assets. The

remaining institutions comprised locally owned private banks, state-owned banks and mixed-ownership banking groups.

The country's banking sector has undergone significant structural transformation over the past two decades. The total number of banking institutions declined from forty-two (42) in 2003 to seventeen (17) by March 2026 following bank failures, mergers, acquisitions and regulatory interventions (Table 1). At the same time, several merchant banks, discount houses and finance houses converted into commercial banks, reflecting changing business models and greater opportunities within commercial banking. Consequently, while the number of commercial banks remained relatively stable, the composition of the banking industry shifted markedly towards commercial banking.

3. Macroeconomic Environment and Banking Sector Developments

Macroeconomic conditions play a fundamental role in shaping banking sector development by influencing financial intermediation, competition and stability. Sustained economic growth, low inflation and sound institutions generally encourage financial deepening, whereas macroeconomic instability weakens banking sector performance through declining savings, financial disintermediation and deteriorating asset quality. During the decade preceding the adoption of the multi-currency regime in 2009, Zimbabwe experienced prolonged macroeconomic instability characterised by rapid money supply growth, foreign currency shortages, price distortions and declining economic activity (Table 2). Annual inflation accelerated to hyperinflationary levels in 2007 before peaking at an estimated 231 million percent in July 2008, while cumulative output losses exceeded 40% over the same period.

Table 2: Selected Macroeconomic Indicators, 2000–2025

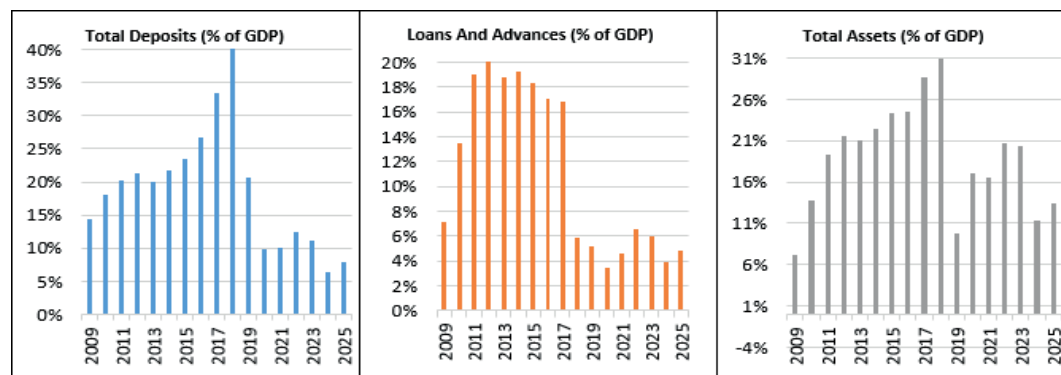
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009-2020	2021-2025
GDP Growth (%)	-3.1	1.4	-8.9	-17.0	-5.8	-5.7	-3.5	-3.7	-17.7	4.9	5.8
Inflation Rate (%)	55.9	6.7	140.1	431.7	282.4	302.1	1,096.7	24,411.0	231,000,000	69.6	352.6

Source: MoFEDIP, ZIMSTATSA & RBZ

The macroeconomic crisis profoundly affected the banking sector. Hyperinflation eroded banks' capital bases, liquidity, profitability and asset quality, while financial intermediation contracted significantly as deposits and financial assets lost real value. Rising non-performing loans (NPLs), declining public confidence and widespread financial disintermediation further weakened banking sector

performance. The adoption of the multi-currency regime marked a major turning point for Zimbabwe's banking sector. Macroeconomic stabilization restored confidence in the financial system, resulting in improved deposit mobilisation, expansion of bank balance sheets, recovery in private sector credit and improved profitability for the period 2010 to 2017 (Figure 1 and Figure 3). The formalisation of economic activity and renewed economic growth further supported financial sector's recovery.

Figure 1: Banking Sector Depth



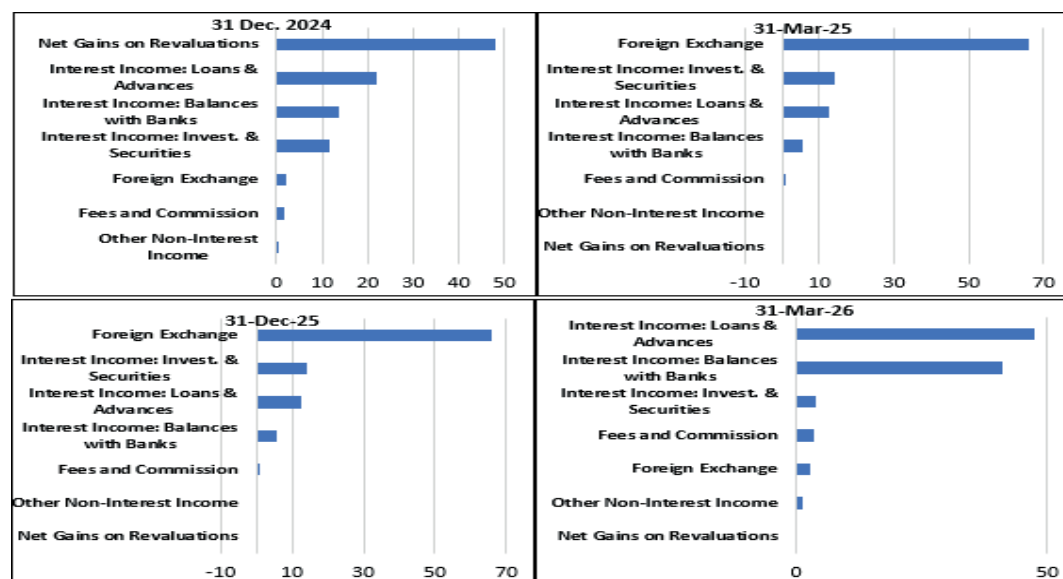
Source: World Bank Global Financial Development Databank and Reserve Bank of Zimbabwe

Despite these improvements, important structural vulnerabilities persisted. The banking system continued to operate under chronic foreign currency liquidity constraints, while the absence of an active interbank market and an effective lender-of-last-resort facility constrained banks' willingness to extend credit. Smaller banks remained particularly vulnerable owing to weaker capitalization, higher funding costs and greater exposure to credit risk. The multi-currency regime also fundamentally altered the policy environment. Without an independent domestic currency, the central bank had limited scope to conduct conventional monetary policy or provide emergency liquidity support. Consequently, banking sector stability depended increasingly on prudential regulation, capital adequacy requirements and sound risk management practices rather than traditional monetary policy interventions.

Post-2018, the trend in bank deposits to GDP sharply declined from 40.0% in 2018 to 8% in 2025 (Figure 1), reflecting a reduced willingness of banks to lend to the private sector due to a resurgence in inflation, exchange rate volatility, bank branch closures, and negative public sentiment. Banking sector's total assets in local currency increased post-2019 (Figure 1) due to revaluation gains, but real asset value decreased because of local currency depreciation and rising inflation. To counter asset erosion, banks invested more in real property and shifted their business models to focus on non-interest income sources (fees and commissions, net

gains on asset revaluations). Private sector credit to GDP was under 10% between 2018 to 2025, down from around 16% in 2017, despite banks being well-capitalized (Figure 1). This decline resulted from low-income levels, banks' reluctance to lend in local currency, high inflation costs, constraints to access credit and an increase in individuals and corporates (manufacturing sector) NPLs, resulting in lower financial depth compared to other SADC nations. The banking sector's earnings performance for 2025 largely emanated from non-interest income, which accounted for 58.0% of total income, as depicted in Figure 2.

Figure 2: Banking Sector Income Mix December 2024 and March 2026

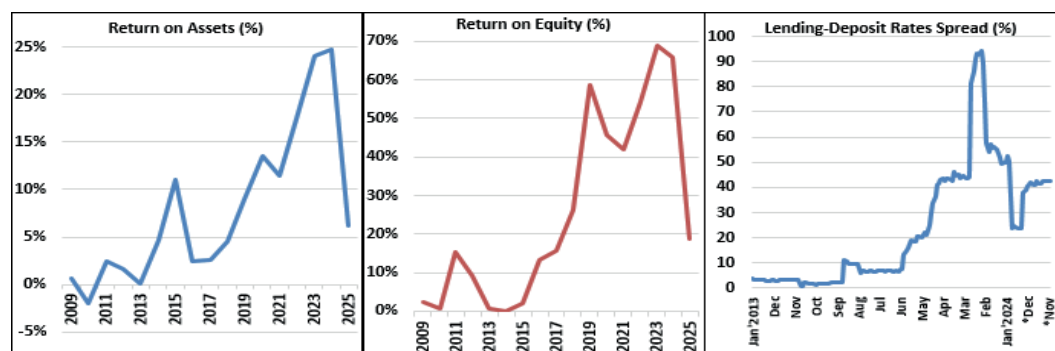


Source: Reserve Bank of Zimbabwe

Reserve Bank of Zimbabwe (2025) observed that during the 2023–2025 period, banks increasingly relied on non-funded income, particularly fees, commissions, and investment income, as their primary source of earnings. While this strategy supported short-term profitability amid subdued lending activity, the RBZ cautioned that such a revenue model was unlikely to be sustainable over the long term (ibid). Excessive dependence on non-interest income reflected weak financial intermediation, constrained private sector credit growth, and limited income diversification through traditional lending. Consequently, sustainable banking sector profitability requires a stronger contribution from core interest-generating activities supported by prudent credit expansion and improved asset quality (ibid). There was a significant drop in income from property and currency revaluations between December 2024 and December 2025, indicating less reliance on foreign exchange due to a stable Zimbabwe Gold (ZiG) currency. This stability is expected to improve banks' earnings.

Banking sector efficiency is a measure of how well financial institutions provide services. It can be measured in two ways: cost of intermediation, which includes net interest income and overhead costs, and profitability indicators, namely, returns on assets (ROA) and equity (ROE). Figure 2 presents the country's banking institutions' efficiency trends. The cost of bank intermediation, measured by the lending-deposit spread, increased significantly from 2015 to 2023 (Figure 2). After the multicurrency regime was adopted in 2009, banks initially had high non-interest income, indicating higher intermediation costs.

Figure 3: Banking Sector Efficiency

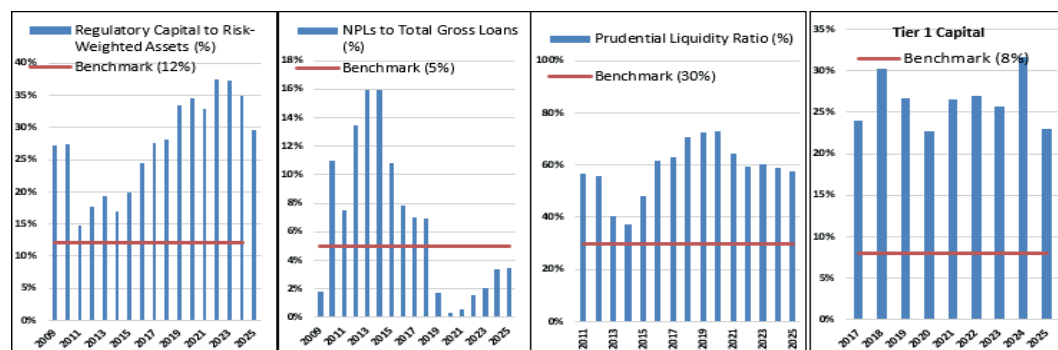


Source: RBZ and World Bank Global Financial Development Databank

Economic stability post-2009 led to improved bank assets and private sector credit, causing intermediation costs to fall until they reversed after 2017 when lending fell. Between 2009 and 2017, bank efficiency improved, but challenges arose in 2018, with further fluctuations during COVID-19 and subsequent years. Despite this, banks reported higher profits from 2009, driven by interest income and revaluation of assets, with peaks in 2023. However, by 2025, returns fell due to currency stability. Increased overhead costs are linked to a high cost of intermediation, leading clients to avoid financial services. It is worth noting that in the case of Zimbabwe and for the period 2019 to 2024, traditional bank efficiency measures did not necessarily reflect production efficiencies but the high levels of bank charges and high lending interest rates.

The country's banking sector remains safe and sound, underpinned by adequate capitalisation, strong asset quality, satisfactory earnings and sufficient liquidity buffers. The sector's average capital adequacy, Tier 1 capital and liquidity ratios were all above the regulatory minimum of 12%, 8% and 30%, respectively, as of 31 December 2025 (Figure 4) and all banks were compliant with the minimum capital adequacy requirements. Banking sector core capital's growth post the reintroduction of the local currency in 2019 was mainly due to revaluation gains from foreign exchange denominated assets and investment properties.

Figure 4: Banking Sector Soundness and Resilience



Source: RBZ and World Bank Global Financial Development Databank

Non-performing loans (NPLs) have been below 5% since 2019, in part due to increased corporate revenues and strong banking risk management. Despite the banking sector having high capital adequacy and low NPL ratios, there are financial stability concerns. These include large net open positions from blocked funds¹, non-standard loan classification with inadequate provisioning, illiquid long-term government bonds, revaluation issues with foreign currency loans, and limited lending activities by banks.

The macroeconomic environment improved further during the implementation of the National Development Strategy 1 (2021–2025), with average annual economic growth of 5.8%, the strongest performance in two decades. Nevertheless, structural vulnerabilities - including high public debt, climate-related shocks and shallow financial intermediation - continue to constrain banking sector development. At the same time, rapid digitalisation, financial technology innovations, mobile money platforms, open banking and artificial intelligence are transforming financial service delivery while introducing new regulatory and supervisory challenges for the central bank.

4. Theoretical and Empirical Literature Review

The relationship between bank competition, efficiency and stability has been extensively examined within banking and industrial organisation literature, yet no single theory adequately explains the complex interactions among these variables.

Instead, several complementary and competing theoretical perspectives provide different explanations regarding how competition influences bank performance and financial stability. The principal theories underpinning this study are the Structure-

¹ Following the 2019 currency conversion, the Government decided to compensate stakeholders for losses on cash flows that could not be repatriated due to foreign currency shortages; these liabilities are known as blocked funds.

Conduct-Performance (SCP) Theory, Efficient Structure Hypothesis (ESH), Quiet Life Hypothesis (QLH), Competition-Fragility Theory, and Competition-Stability Theory. Together, these theories explain how market structure influences bank behaviour, operational efficiency, risk-taking and ultimately banking sector stability. Since this study investigates the competition-efficiency-stability nexus in Zimbabwe's banking industry, these theories provide the conceptual foundation for analysing the transmission mechanisms through which competition affects financial stability.

4.1 Structure-Conduct-Performance (SCP) Theory

The SCP paradigm, developed by Bain (1951, 1956), is one of the earliest industrial organisation theories explaining firm performance. It postulates that market structure influences firms' conduct, which consequently determines performance. In banking, market structure refers to concentration or competition, conduct includes pricing and lending behaviour, while performance encompasses profitability, efficiency and stability. The SCP paradigm posits that highly concentrated banking markets allow dominant banks to exercise market power by charging higher lending rates, offering lower deposit rates and earning monopoly rents (Bain, 1956). As such, profitability is viewed as a product of market concentration rather than operational efficiency (Berger, 1995). Boyd and Runkle (1993) argue that concentration may also enhance financial stability because larger banks often benefit from greater diversification, stronger capital buffers and easier access to funding. However, excessive concentration can create moral hazard through the "too-big-to-fail" problem, encouraging greater risk-taking by systemically important institutions (World Bank, 2013).

A major criticism of the SCP theory is its assumption that concentration inevitably reflects market power. As argued by Demsetz (1973), efficient firms naturally acquire larger market shares, implying that concentration may result from superior efficiency rather than anti-competitive behaviour. This critique led to the Efficient Structure Hypothesis, discussed in sub-section 4.2. Empirical evidence remains mixed, with studies showing that while concentration may improve profitability, institutional quality and regulatory effectiveness often moderate this relationship (Nguyen, Boateng & Gan, 2022). Although SCP explains the influence of market structure, it does not adequately explain why banks operating within the same market achieve different performance outcomes (World Bank, 2013).

4.2 Efficient Structure Hypothesis (ESH)

The Efficient Structure Hypothesis (ESH), proposed by Demsetz (1973) and further developed by Peltzman (1977), argues that superior profitability results primarily from operational efficiency rather than market concentration. Efficient banks achieve lower costs through better management, technology and production processes, enabling them to expand market share while maintaining higher profitability (ibid).

Unlike SCP, ESH views concentration as the outcome of competition rather than its cause. Efficient banks grow because customers prefer lower prices and better

services (Berger, 1995). The theory also provides a principal justification for the Boone Indicator (BI) used in this study. Boone (2008) argues that stronger competition reallocates profits from inefficient to efficient firms, making the BI an appropriate measure of competitive intensity. Empirical evidence generally supports ESH, particularly in liberalised banking systems where technological innovation and improved governance enhance efficiency. Studies show that efficient banks record higher profitability, stronger market shares and greater resilience during financial shocks (Anarfo, Abor & Osei, 2021; Nguyen et al., 2022). Nevertheless, profitability often reflects both efficiency and market power, suggesting that ESH and SCP are complementary rather than mutually exclusive.

4.3 Quiet Life Hypothesis (QLH)

The QLH, originally proposed by Hicks (1935) and extended to banking by Berger and Hannan (1998), argues that market power reduces managers' incentives to improve efficiency. In concentrated markets, limited competitive pressure encourages managerial complacency, higher operating costs and slower technological innovation. Conversely, stronger competition compels banks to reduce costs, improve service quality and strengthen governance. This supports Leibenstein's (1966) X-efficiency theory, which links productivity gains to competitive pressure. Empirical evidence indicates that banks operating in more competitive markets generally exhibit greater efficiency than those in concentrated markets (Berger & Hannan, 1998). Mlambo and Ncube (2011) and Saha and Dutta (2022) report similar findings in African banking systems, where financial liberalisation and technological advancement have improved operational efficiency, although institutional quality remains an important moderating factor. For Zimbabwe, the hypothesis suggests that post-2009 reforms and increased competition should have encouraged banks to improve efficiency through better cost management and innovation.

4.4 Competition-Fragility Theory

Competition-Fragility theory represents the traditional view that greater competition weakens financial stability. Developed by Marcus (1984), Chan, Greenbaum and Thakor (1986), and Keeley (1990), the theory argues that increased competition reduces banks' franchise values and profit margins, encouraging excessive risk-taking. On one hand, lower profitability weakens capital buffers and incentivises banks to pursue riskier investments, increasing moral hazard and financial fragility (Allen & Gale, 2000). On the other hand, concentrated banking systems are considered more stable because larger banks benefit from greater diversification and stronger capital positions. Empirical studies provide considerable support for this view. Increased competition has been linked to excessive credit expansion before the global financial crisis (Dell'Ariccia, Igan & Laeven, 2008), while Fu et al. (2014) found that competition increased bank risk-taking across Asia. Evidence from Zimbabwe also suggests that intensified competition post adoption of the multi-currency regime reduced banking stability (Sanderson et al., 2018). However,

the theory focuses primarily on banks' incentives and pays limited attention to borrower behaviour.

4.5 Competition-Stability Theory

The Competition-Stability hypothesis, advanced by Boyd and De Nicoló (2005), challenges the traditional view by arguing that market power may itself undermine financial stability. Banks with greater market power charge higher lending rates, increasing borrowers' repayment burdens and encouraging investment in riskier projects, thereby raising default risk. Accordingly, greater competition lowers borrowing costs, improves loan quality and reduces adverse selection, strengthening banking sector stability. Unlike the Competition-Fragility theory, this perspective explicitly incorporates borrower behaviour into the analysis of banking risk. Subsequent studies suggest that the relationship between competition and stability is non-linear. Moderate competition can improve both efficiency and stability, whereas excessive competition may increase risk where regulatory oversight is weak (Martinez-Miera & Repullo, 2010). Recent cross-country evidence indicates that institutional quality, prudential regulation and macroeconomic stability determine whether competition ultimately promotes or weakens banking stability (Anginer et al., 2014; Fernández et al., 2021; Anarfo et al., 2021).

4.6 Theoretical Synthesis and Development of Study Hypotheses

The five theories discussed above provide complementary explanations of the relationships between banking competition, efficiency and stability. The SCP paradigm emphasises the influence of market concentration on profitability, whereas the ESH argues that superior efficiency explains market dominance. The QLH extends this argument by suggesting that increased competition improves operational efficiency through stronger managerial discipline. Conversely, the Competition-Fragility and Competition-Stability theories offer competing explanations regarding the effects of competition on bank risk-taking and financial stability. Rather than viewing these theories as mutually exclusive, the present study adopts an integrated framework. The SCP and ESH explain how market structure influences bank behaviour, while the QLH identifies efficiency as an important transmission mechanism linking competition and performance. The Competition-Fragility and Competition-Stability theories provide alternative predictions regarding the impact of competition on financial stability. Together, these theories suggest that bank efficiency may mediate the relationship between competition and stability, particularly within emerging banking systems characterised by evolving regulatory frameworks and macroeconomic uncertainty.

The study's hypotheses conceptualise banking competition as the primary explanatory variable, bank efficiency as an intervening mechanism and banking stability as the ultimate outcome². This framework is particularly appropriate for

² Guided by the theoretical literature, the study tests the following hypotheses: **H1:** Banking competition significantly influences bank efficiency in Zimbabwe. **H2:** Bank efficiency significantly influences banking stability. **H3:** Banking competition significantly influences banking stability. **H4:** Bank efficiency mediates the relationship between banking competition and banking stability.

Zimbabwe, where banking reforms, liberalisation and structural changes since the adoption of the multicurrency system altered market structure, competitive dynamics and prudential regulation. Collectively, these hypotheses integrate the competing theoretical perspectives and provide a coherent framework for examining the competition-efficiency-stability nexus within Zimbabwe's banking sector. The theoretical framework underpins the empirical model developed in the subsequent Sections and provides the basis for interpreting the study's findings within the broader banking literature.

5. Methodology

5.1 Measuring Bank Competition in Zimbabwe

The study applies a modified version of the competition indicator proposed by Boone (2001) and extended by Boone (2008), namely the Relative Profit Difference (RPD), to measure competition in Zimbabwe's banking industry over the period 2012-2025. BI captures competition by assessing the extent to which more efficient banks gain market share or profitability at the expense of less efficient competitors. Greater competition is reflected in a stronger reallocation of market outcomes towards efficient firms, particularly where entry barriers are low and competitive interactions are more aggressive. The BI has been widely applied in banking competition studies (Delis & Tsionas, 2009; Van Leuvensteijn et al., 2011; Tabak, Fazio, & Cajueiro, 2012; Schaeck & Cihák, 2014). The BI is selected for this study because it offers several conceptual and empirical advantages over traditional measures of bank competition. Unlike structural measures that infer competition from market concentration, BI directly links competitive pressure to differences in bank efficiency, making it particularly suitable for analysing evolving banking markets.

Its application is especially relevant to Zimbabwe's banking sector during the post-2009 period. Financial liberalisation reduced entry barriers and encouraged the entry of both domestic and foreign banks, while the migration of institutions into the commercial banking sector intensified competition in deposit and lending markets. At the same time, mergers and acquisitions improved efficiency among surviving institutions but also increased market concentration, potentially offsetting competitive pressures. These simultaneous structural changes make the BI an appropriate measure, as it captures competition arising from changes in efficiency, market entry, and strategic interaction rather than relying solely on market structure. Following Van Leuvensteijn et al. (2011), the BI is estimated using bank market share as the dependent variable instead of bank profits, as specified below:

$$ms_{it} = \alpha + \beta \ln(c_{it}) + \varepsilon_{it} \quad (1)$$

where ms_{it} denotes the market share of bank i at time t , β is the BI, c_{it} represents the bank's marginal cost, and ε_{it} is the error term. BI is based on the premise that more efficient banks, characterised by lower marginal costs, achieve larger market

shares or higher profits, with this relationship becoming stronger as competition intensifies. Consequently, a larger absolute value of β indicates a higher degree of competition. Since more efficient banks are expected to command larger market shares, the Boone coefficient is anticipated to be negative ($\beta < 0$). Market shares may be measured using either the loan or deposit market. Because marginal costs are not directly observable, previous studies have approximated them using average costs (Boone, 2004) or estimated them from a translog cost function (Pruteanu-Podpiera, Weill, & Schobert, 2008; Van Leuvensteijn et al., 2011; Fiordelisi & Mare, 2014)³. This study adopts the latter approach, estimating marginal costs through a translog cost function, as it is theoretically grounded and provides more precise estimates.

The BI is estimated using a two-step Generalized Method of Moments (GMM) estimator on a panel of 17 Zimbabwean banks over the period 2012–2025. The two-step GMM estimator is preferred to conventional instrumental variable approaches because it employs an optimal weighting matrix and relaxes the assumption of independently and identically distributed (i.i.d) errors. Consistent with Blundell and Bond (1998) and Koetter, Kolari, and Spierdijk (2012), one-period lagged values of the explanatory variables are used as instruments.

5.2 Bank Competition and Stability

Banking industry stability is proxied by the Z-score, following Laeven and Levine (2009), Demirgüç-Kunt and Huizinga (2010), and Houston et al. (2010). The Z-score is computed as:

$$Z - score = \frac{ROA + \left(\frac{E}{TA}\right)}{\sigma ROA} \quad (2)$$

where ROA denotes return on assets, E is bank equity, TA represents total assets, and σROA is the standard deviation of return on assets. The Z-score combines profitability, capitalization and earnings volatility into a single measure of bank stability. It measures the number of standard deviations by which returns must decline before equity is exhausted, thereby providing an inverse measure of insolvency risk. Higher Z-scores indicate greater banking stability, reflecting stronger profitability, higher capital buffers and lower earnings volatility. Consequently, the Z-score is widely regarded as a comprehensive firm-level measure of financial stability (Schaeck & Cihák, 2014).

To examine the relationship between bank competition and stability, the study follows Schaeck and Cihák (2014) by estimating the following panel model:

$$Z_{it} = \alpha + \varphi\beta_t + \gamma X_{it} + \delta C_t + \varepsilon_{it} \quad (3)$$

³ The Translog (Transcendental Logarithmic) production or cost function is the standard econometric framework used to measure bank efficiency by evaluating how a bank minimizes costs or maximizes profits relative to an efficient frontier.

where Z_{it} denotes the stability of bank i in year t , β_t is the industry-wide Boone (2008) competition indicator, X_{it} is a vector of bank-specific variables, C_t represents macroeconomic control variables, and ε_{it} is the error term. The empirical specification is expressed as:

$$Z_{it} = \alpha + \varphi\beta_t + \gamma_1 ta_{it} + \gamma_2 ag_{it} + \gamma_3 loan_{it} + \delta_1 econ_t + \delta_2 infl_t + \varepsilon_{it} \quad (4)$$

Where ta_{it} is the logarithm of total assets, ag_{it} is asset growth, and $loan_{it}$ is loan loss provisions as a ratio of total assets. The macroeconomic variables include growth in GDP per capita, $econ_t$ and year-on-year inflation, $infl_t$. BI is expected to exhibit a negative coefficient, implying that greater competition - through the reallocation of profits from less efficient to more efficient banks - enhances banking sector's stability. Bank size (total assets) controls for scale effects and is expected to have a negative association with the Z-score, reflecting the greater moral hazard associated with institutions considered "too big to fail." Asset growth serves as a proxy for banks' risk-taking behaviour and is also expected to reduce stability if rapid expansion is accompanied by increased risk. Higher loan loss provisions, reflecting deteriorating asset quality, are likewise expected to reduce banking stability. Conversely, stronger economic growth, measured by GDP per capita growth, is expected to improve banking sector's stability, while higher inflation is anticipated to weaken stability by increasing earnings volatility and reducing real profitability.

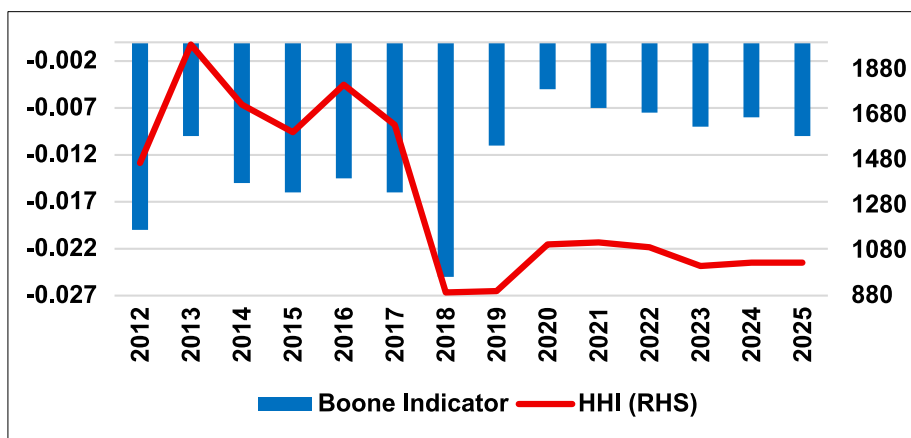
The empirical analysis covers the period 2012-2025, corresponding to Zimbabwe's post multi-currency adoption era, which followed the pre-2009 economic crisis and was characterised by relatively improved macroeconomic stability. The sample comprises 17 commercial banks operating during the study period. Bank-level data were obtained from balance sheets and income statements submitted to the RBZ Bank Supervision Division. Macroeconomic data on GDP per capita growth were sourced from the MoFEDIP, The World Bank and IMF while inflation data were obtained from the Zimbabwe National Statistics Agency (ZIMSTAT).

6. Empirical Results and Discussion

6.1 Estimation of the Boone Indicator

Figure 5 below illustrates the evolution of the estimated Boone indicator and the HHI for the period 2012-2025. The HHI, calculated by the RBZ was used as a benchmark for the evaluation of the Boone Indicator.

Figure 5: Boone Indicator for the Loans Market and HHI: 2012-2025



Source: Authors' Calculations (Boone Indicator) and RBZ (HHI)

Banking industry competition between 2012 and 2025 took two distinctive phases (Figure 5). First, there was a marked increase in competition in the loans market for the period 2013-2017. This was, to some extent, attributed to the banks' aggressive approaches to increasing client bases by offering loans to increase their asset bases and profitability. This trend was, however, reversed post 2017, as depicted by declining competition between 2018 and 2025. This was mainly attributed to waning demand for both personal and business loans and a cautious approach by banks in issuing new loans following the significant rise in NPLs.

6.2 Descriptive Statistics

Table 3 presents descriptive statistics for variables used in the analysis over the study period. The average Z-score is 1.16, with values ranging from -2.64 to 4.43, indicating considerable heterogeneity in bank stability across the sample. While some banks exhibited relatively high insolvency risk, others maintained substantial capital buffers and earnings stability. The HHI averages 1,135, suggesting a moderately concentrated banking market. The BI has a mean value of -0.012, implying that more efficient banks generally gained market share at the expense of less efficient institutions, consistent with the existence of competitive pressure within the banking sector. Among bank-specific variables, loans account for an average of 15.3% of total assets, indicating that banks continued to perform a subdued financial intermediation in the face of episodes of macroeconomic challenges. Average ROA is 9.51%, although the wide dispersion reflects substantial differences in efficiency across banks, with a minimum ROA of 0.06 and a maximum of 24.72%.

Table 3: Summary Statistics of Selected Variables: 2012-2025

Variable	Mean	Median	Stan. Dev.	Min.	Max.
Bank Insolvency Risk					
Z-score	1.162	0.801	1.244	-2.643	4.426
Market Structure					
HHI	1135	1098	235	829	1659
Boone Indicator	-0.012	-0.011	0.006	-0.025	-0.005
Bank-specific Control Variables					
Total Assets	19.760	19.658	0.782	17.735	21.515
Loans	19.005	18.866	1.614	9.288	23.923
Loans to Total Assets	15.278	15.150	1.781	8.773	20.035
Return on Assets	9.510	7.580	8.006	0.060	24.720
Non-performing Loans	6.505	5.195	5.587	0.310	15.920
Employee Expenses	16.718	16.497	1.425	13.695	21.183
Interest Expense on Deposits	15.278	15.150	1.781	8.773	20.035
Macroeconomic Indicators					
Annual growth of GDP per capita (%)	1.873	2.108	5.911	-9.334	14.787
Annual CPI Inflation (%)	184.876	39.154	268.358	-2.409	736.106

Source: Author's Own Computations. **Note:** Bank-specific variables were transformed into logs

The average NPLs ratio of 6.51%, slightly about the international benchmark of 5.0% suggests that, overall, asset quality remained relatively sound, although some institutions experienced considerably higher credit risk. With respect to the macroeconomic environment, annual GDP per capita growth averaged 1.87%, reflecting modest economic expansion during the sample period. In contrast, inflation averaged 184.88%, highlighting the highly inflationary environment in which Zimbabwean banks operated, and the significant macroeconomic uncertainty faced by the sector.

6.3 Empirical Analysis

The relationship between banking competition and financial stability was estimated using both bank fixed-effects (FE) and two-stage least squares (2SLS) estimators based on Equation (4). The fixed-effects estimator controls for unobserved, time-invariant bank-specific heterogeneity, while year dummy variables account for common macroeconomic shocks affecting all banks simultaneously. Nevertheless, fixed-effects estimation cannot fully eliminate endogeneity arising from reverse causality or omitted variables that vary across both banks and time. To address this concern, in addition, the study estimates a 2SLS model in which the BI, the measure of banking competition, is treated as an endogenous variable.

Consistent with the approach adopted by Schaeck and Cihák (2014), two instrumental variables are employed: (i) the interaction between market share and loan growth, and (ii) the Financial Freedom Index (FFI)⁴, which captures the degree of operational freedom and regulatory openness within the banking sector. These instruments are expected to influence the degree of competition while remaining exogenous to individual bank stability. The first-stage regression predicts the endogenous BI using the selected instruments together with the exogenous control variables. The fitted values are subsequently used in the second-stage regression to estimate the effect of competition on bank stability. Diagnostic statistics for instrumental variable estimation are reported in Table 4.

Table 4: Model Diagnostic Results

Estimator	Fixed Effects		Two-Stage Least Squares	
	FE (1)	FE (2)	2SLS (1)	2SLS (2)
Dependent Variable	Z-score	Z-score	Z-score	Z-score
Anderson test	n/a	n/a	216.01***	201.99***
Shear's Partial R^2	n/a	n/a	0.19	0.23
Hansen J-test	n/a	n/a	16.11*	17.09*

Notes:***, **, and * denote significance at 1%, 5%, and 10%, respectively. *t*-statistics are in parentheses.

The Anderson canonical correlation test is highly significant in both 2SLS specifications, rejecting the null hypothesis of under-identification. This result confirms that the selected instruments are sufficiently correlated with the endogenous competition measure and therefore satisfy the relevance condition. Shea's Partial R^2 values of 0.19 and 0.23 indicate moderate explanatory power of the instruments in predicting banking competition, suggesting that the instruments are not weak. The Hansen J-test, which evaluates the validity of the over-identifying restrictions, is statistically significant at the 10 percent level. Although this outcome suggests some caution regarding the joint exogeneity of the instruments, the evidence does not invalidate the estimation strategy. Taken together, the diagnostic statistics indicate that the instruments possess adequate explanatory power and provide a reasonable basis for identifying the causal relationship between banking competition and financial stability.

⁴The Heritage Foundation's FFI measures the efficiency of the banking system and the interventions of the government into the banking system. A higher score means more efficient banking institutions and less government intervention. Zimbabwe's FFI has been constant, at 10, for the period 2010-2025. In comparison, the world average is 48, based on data from 175 countries.

Table 5 reports the estimated coefficients. Columns (1) and (2) present the bank fixed-effects estimates, while Columns (3) and (4) report the corresponding 2SLS estimates.

Table 5: Effect of Competition on Bank Stability

Estimator	Fixed Effects		Two-Stage Least Squares	
	FE (1)	FE(2)	2SLS (1)	2SLS (2)
Dependent Variable	Z-score	Z-score	Z-score	Z-score
Boone Indicator	-1.19* (-1.88)	-1.07** (-2.85)	-1.88* (-1.84)	-2.01* (-1.88)
Total Assets	-0.23** (-2.33)	-0.18** (-2.02)	-1.06* (-1.88)	-1.14* (-2.64)
Asset Growth	-0.17** (-2.37)	-0.24* (-2.53)	-0.11 (-1.96)	-0.18** (-2.22)
Non-Performing Loans	-2.91** (2.11)	-1.98** (-2.27)	-0.89* (-1.81)	-0.62** (-2.25)
GDP per capita growth		3.81*** (3.08)		2.09** (2.30)
CPI Inflation		-4.18** (-2.61)		-3.21** (-2.54)
Observations	238	238	238	238
R ²	0.49	0.52	0.45	0.57

Notes:***, **, and * denote significance at 1%, 5%, and 10%, respectively. *t*-statistics are in parentheses.

The estimated BI coefficient is consistently negative and statistically significant across all model specifications. Since a more negative BI represents stronger competitive pressure, the results imply that greater competition significantly improves banking sector stability. Importantly, the coefficient becomes larger in absolute magnitude under the 2SLS estimation than under the FE estimator, suggesting that endogeneity biases the FE estimates towards zero. After correcting for endogeneity, the stabilising effect of competition becomes even more pronounced. These findings provide strong empirical support for the competition-stability hypothesis, which argues that greater competition promotes banking stability by improving operational efficiency, strengthening market discipline, reducing managerial slack and discouraging excessive pricing power. Rather than inducing excessive risk-taking, competition appears to have encouraged banks to improve efficiency and allocate resources more prudently in Zimbabwe post-2009.

The estimated coefficients of the control variables are broadly consistent with theoretical expectations. Bank size, measured by total assets, exhibits a negative and statistically significant relationship with the Z-score. This finding suggests that larger banks are relatively less stable, possibly reflecting increased incentives

for risk-taking associated with implicit “too-big-to-fail” expectations, greater organisational complexity, or higher exposure to systemic shocks. Asset growth also displays a negative relationship with bank stability. Rapid balance-sheet expansion may therefore reflect aggressive lending strategies, weaker credit screening, or heightened exposure to credit and liquidity risks. This finding is consistent with the view that excessively rapid growth can undermine financial resilience if not supported by sound risk management practices. NPLs exert a consistently negative and statistically significant effect on the Z-score across all specifications. The results underscore the importance of maintaining high asset quality, as deteriorating loan portfolios reduce profitability, erode capital buffers and increase the probability of bank distress. The findings reaffirm that effective credit risk management remains central to preserving banking sector’s stability.

The macroeconomic variables also behave as expected. GDP per capita growth has a positive and statistically significant effect on banking stability, indicating that favourable macroeconomic conditions strengthen borrowers’ repayment capacity, improve bank profitability and enhance financial resilience. Conversely, inflation exerts a negative and significant effect on the Z-score, reflecting the adverse consequences of macroeconomic instability on banks’ earnings, operating costs, real asset values and credit quality. These results emphasise that macroeconomic stability remains an important prerequisite for financial sector stability.

Overall, the empirical findings suggest that increased competitive pressure within Zimbabwe’s banking sector facilitated the reallocation of market share from relatively inefficient institutions to more efficient banks, thereby strengthening the resilience of the banking system. The results are consistent with the post-2009 restructuring of Zimbabwe’s banking industry, during which stronger prudential regulation, market-driven consolidation, mergers and acquisitions, and the exit of financially weak institutions improved overall sector efficiency and stability. Consequently, the evidence indicates that competition, when supported by effective regulation and supervision, complement rather than undermines financial stability. The findings are also broadly consistent with previous empirical studies that report a positive relationship between banking competition and stability, including Boyd and De Nicoló (2005), Amidu and Wolfe (2013) and Schaeck and Cihák (2014). In the context of Zimbabwe, where banking sector reforms following post-2009 strengthened prudential oversight and encouraged market discipline, increased competition appears to have improved efficiency without inducing excessive risk-taking. The results therefore suggest that policies aimed at promoting competitive banking markets, while maintaining strong regulatory and supervisory frameworks, can simultaneously enhance banking industry competition, efficiency and stability.

7. Conclusion and Policy Implications

This study examined the relationship between banking competition, efficiency and stability in Zimbabwe using bank-level panel data for the period 2012–2025. Competition was measured using the Boone Indicator, while banking stability was

proxied by the Z-score. The analysis employed FE and instrumental variable (2SLS) estimators to account for unobserved heterogeneity and potential endogeneity between competition and stability. The empirical results consistently indicate that greater competition is associated with higher banking sector stability. Across all model specifications, the BI exhibits a negative and statistically significant relationship with the Z-score, implying that stronger competitive pressures reallocate market share towards more efficient banks and improve the resilience of the banking system. These findings provide support for the competition-stability hypothesis and suggest that efficiency-enhancing competition can strengthen financial stability rather than undermine it.

The results further demonstrate that banking stability is influenced not only by competition but also by bank-specific and macroeconomic factors. Larger banks, rapid asset growth and higher NPLs are associated with lower stability, whereas stronger economic growth improves banking resilience. Conversely, high inflation weakens banking stability by increasing uncertainty and earnings volatility. These findings highlight that competition operates within a broader institutional and macroeconomic environment and should not be viewed in isolation. From a policy perspective, the evidence suggests that promoting competition needs not conflict with maintaining financial stability, if competition is supported by effective prudential regulation and sound macroeconomic management. Policies should therefore focus on strengthening risk-based supervision, improving credit information systems, encouraging financial innovation, enhancing operational efficiency and maintaining macroeconomic stability. Rather than concentrating solely on market concentration, regulators should promote a competitive environment that rewards efficiency, prudent risk management and innovation, summarized as follows:

- a) **Strengthening risk-based prudential regulation:** The central bank should continue implementing a risk-based supervisory framework that aligns capital and liquidity requirements with the size, complexity and risk profile of banking institutions. Such an approach would preserve financial stability while allowing well-managed smaller banks to compete effectively within appropriate market segments.
- b) **Promoting competition through market efficiency rather than excessive market entry:** Policies should encourage competition by improving operational efficiency, innovation and service quality instead of simply increasing the number of market participants. Maintaining appropriate licensing standards and supervisory oversight remains essential to safeguarding financial stability.
- c) **Enhancing credit information infrastructure:** Expanding and strengthening credit information-sharing mechanisms, including the Credit Reference Bureau, would reduce information asymmetries, improve credit risk

assessment and encourage competition based on better pricing and service delivery rather than excessive risk-taking.

- d) **Supporting financial innovation and digital banking:** The continued development of digital financial services, Fintech partnerships and greater payment system interoperability can increase competition, expand financial inclusion and improve banking efficiency without undermining prudential standards.
- e) **Encouraging diversification of bank income sources:** Commercial banks should strengthen non-interest income through digital banking services, transaction banking, trade finance and advisory services. A more diversified revenue base would improve earnings resilience and reduce dependence on interest income during periods of economic volatility.
- f) **Maintaining a stable macroeconomic environment:** Sustainable banking sector stability ultimately depends on sound macroeconomic management. Policies that promote low and stable inflation, predictable monetary policy and exchange rate stability will reduce uncertainty, improve credit allocation and enable competitive forces to enhance efficiency rather than amplify financial vulnerabilities.

This study contributes to the literature by providing new evidence on the competition-stability relationship in Zimbabwe using an efficiency-based measure of competition. The findings demonstrate the usefulness of the BI in analysing competitive dynamics within emerging banking systems characterised by structural change and macroeconomic volatility. As the country continues to reform and modernise its financial sector, striking a balance between competition, efficiency and stability will remain essential for promoting sustainable financial intermediation and long-term economic development. Although this study provides important evidence, several limitations are acknowledged. The analysis focused primarily on examining the direct relationship between competition, efficiency and stability. Future research could extend the analysis by examining the role of deposit insurance, financial technology and digital banking in shaping competition, or exploring potential non-linear effects of competition under different regulatory and macroeconomic regimes.

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