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The Assessment of Financial Performance of Selected Private Commercial Banks in Ethiopia: A CAMEL Variables Analysis of Financial Soundness

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Abstract

This study, in titled Assessment of Financial Performance Selected Private Commercial Banks in Ethiopia: A CAMEL framework Analysis of Financial Soundness, applying the CAMEL framework, which covering Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity, to evaluate how financial sounds these banks actually are. The aim is to show the actual status of banks and assessing their financial health by identifying strength and weakness of Ethiopian's private commercial banks. The study took a quantitative approach; pulling secondary data from National Bank of Ethiopia purposively selected 13 private commercial banks over 40 quarters. Graphical trend analysis and composite z-score showed differences: top performers like Cooperative Bank of Oromia, Lion International Bank, Wegagen Bank, Berhan Bank, and Bank of Abyssinia show strong stability through proactive governance, while strugglers like Nib International Bank, Abay Bank, and Buna International Bank are declines in Asset Quality, Liquidity, and Management Efficiency raising red flags for solvency risks, even if they meet overall compliance standards. The findings of the research assured CAMEL risks overall, investing on fintech, a word of carefulness for investors watching banks with high cost-to-income ratio (CIR).

1. Introduction

Commercial banks are one among financial institution that facilitates business activities by distributing funds from surplus units to deficit whether developed or developing economies. According to Lip (2022), efficient commercial banks perform activates like facilitate trade, mobilize saving, and provide the necessary credit for business expansion. However, global financial environment has become complex regarding digitalization expansion, geopolitical instability, and aggressive monetary policy shifts Ethiopian commercial banks strive to sustain. Using Bank for International Settlement (2024), as litmus for financial institutions specifically those in developing nations whose safety nets are often weaker, the current era of "higher-for-longer" interest rates and inflationary pressure is a serious stress test.

Based on the above expression, the assessment of commercial bank performance requires different frameworks that improve profitability. According to Seretidou et al. (2025), traditional single-ratio analysis often failed to capture risks that intimidating bank solvency, whereas traditional ratios provide a static picture. Consequently, the CAMEL model, which evaluates a bank's performance, with five CAMEL frameworks: Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity, this is a healthy framework for assessing financial institutions specially banks (Dwivedi et al., 2021). The CAMEL framework is a broadly castoff framework measuring the economic wellbeing of financial institutions especially banks (Roman & Sargu, 2013 as cited in Shrestha and Gnawali 2022). Primarily CAMEL rating introduced in the United States, is used by banking regulators to evaluate financial wellbeing, with score of 1 considered the best and 5 the worst (Kagan, 2021) and it also the best way to measure the financial health of commercial banks (Jean & James, 2020).

The financial sector in Ethiopia has seen rapid growth and liberalization, with the National Bank of Ethiopia (NBE) enforcing reforms for stability. However, challenges arise from credit expansion, which often outpaces deposit growth (Tadesse, 2024) as well as legacy non-performing loans (NPLs), inflationary pressures, and foreign exchange shortages (Lekupanai & Makori, 2024). The effective functioning of financial institutions especially banks essential for capital allocation and sustained economic growth, making it crucial to understand how banks manage these issues to prevent systematic failures that could hinder national development (Habib et al., 2024).

This study employs the CAMEL framework to conduct analysis of 13 private commercial banks over 40 quarters. This approach allows the observation of structural trends, cyclical patterns, and the efficiency of managerial change regulations in contrast to cross-sectional studies that only provide a picture. Due to shifts in the economy, the goal is for evaluating the banking industry's resilience as well as vulnerability while giving empirical data on how different banks' balance the trade-offs between risk, profitability, and liquidity.

2. Statement of the Problem

Financial crises have historically been sparked on by bank collapse; the 2008 Global Financial Crisis was one example. Obeying to regulation doesn't guarantee for solvency, capital can be reduce because of growing risk exposure, especially in growing banking industries with low supervisory frameworks (Basel Committee on Banking Supervision, 2011).

A basic bank level analysis frequently reveals hidden risks, even while aggregate sector data may indicate stability, such as industry wide NPL percentage staying below the 5% threshold (Makri et al., 2014). For example, a bank may have sufficient capital ratios but also be experiencing management inefficiencies and declining asset quality, which together indicate impending trouble (Basel, 2015). Regulators and investors might not recognize institutions at risk until a crisis point is reached if a thorough assessment is not conducted utilizing multidimensional model such as CAMEL (Basel, 2015). By distinguishing between performance paths that indicate resilience and those that collapse (Habib et al., 2024), the motive of the study is to bridge that gap and tried to address the problem by evaluating the stability of commercial banks to prevent potential failures.

Although there is a wealth of literature on the CAMEL model, there is a lack of analysis regarding the accurate trajectory of banks in the context of post-pandemic macroeconomic shrinking (2021–2024); The majority of earlier studies, including those by Salman et al. (2022) and Yadav and Jang (2021), concentrated on pre-2021 data or particular merger impacts. Additionally, over a 40-quarter horizon, this study has graphically displayed the improvement trajectories verses collapse patterns. It also aims to provide a current assessment of how banks are handling these modern issues by covering the recent time marked by high inflation and regulatory changes.

3. Research Objectives

3.1 Main Objective

The main objective is assessing the financial health of selected private commercial banks in Ethiopia with the aid of CAMEL framework.

3.2 Specific Objective

1. To assess trends of Capital Adequacy of bank's for capital position and projection.
2. To evaluate Asset Quality through the analysis of Non-Performing Loans (NPLs) to measure credit risk.
3. To assess Management Efficiency using the Cost-to-Income Ratio (CIR)
4. To assess Earnings quality via Return on Assets (ROA).
5. To evaluate liquidity risk using the Loan-to-Deposit Ratio (LDR) to fulfill financial obligation.

4. Significance of the Study

The study holds significant value for different stakeholders such as regulators, bank management, investors and academia. For regulators are advised to adopt differentiated supervisory approaches rather than a one size fits all method, as evidenced by a study that identifies banks needing dynamic provisioning. For bank management, they can solve operational inefficiencies and problems with asset quality by using technology to cut costs and learning from top performers. The report also helps investors make well informed investment decisions by distinguishing between banks.

5. Scope of the Study

The study examines 13 private commercial banks out of 32 operate in Ethiopia across 40 quarters the year from 2014 to 2023, examining economic growth, the effect of COVID-19 pandemic followed by subsequent inflation and foreign exchange fluctuation. It analyzes specific ratios from the CAMEL framework like Capital Adequacy using CAR as proxy, Asset Quality using NPL as proxy, Management Efficiency using CIR as proxy, Equity using ROA as proxy, and Liquidity using LDR as proxy secondary data collected from National Bank of Ethiopia.

6. Review of Literature

The literature review provides comprehensive overviews of the theoretical and empirical underpinnings and components of CAMEL variables to assess financial soundness of commercial banks.

6.1 Theoretical Framework

To examine financial soundness of the banks CAMEL framework is appropriate "CAMEL test is the most popular technique for examining the financial soundness of banks" (Roman & Sargu, 2013 as cited in Shrestha and Gnawali 2022). CAMEL rating is "a US regulatory rating method used to categorize banks" (Kagan, 2021). It applies to around 8,000 US banks and credit unions and is implemented by various banking regulators (Golin & Delhaise, 2013). According to Julie (2018), CAMELS is "assessing financial soundness of financial institutions; it is an acronym stands for: Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Sensitivity to market risk"; "a score of 1 is reflected the best, and 5 is referred the poorest" (Kagan, 2021). The previous scholars Golin & Delhaise (2013) argued that "the banks were evaluated the five variables C-A-M-E-L: Capital Adequacy, Asset Quality, Management Soundness, Earnings Capacity, and Liquidity; model of rating in the 1970s as a component of their "Standardized Financial Evaluation System" to offer practical". National Bank of Ethiopia also uses five rating approach to rate the bank's performance which is CAMEL, therefore, the study excludes sensitivity to risk.

CAMEL is a framework mostly used for the estimation of bank performance (Edilawit, 2021) and assessing financial health of banks (Getahun, 2015 as cited in Magoma et al., 2022), there are different problems that hinder banks to achieve their objectives like problem of liquidity management, asset quality, and capital adequacy (Jean & James, 2020).

The other study by Barker and Holdsworth, (1993 as cited in Vincent A. et al., 2023) found that the CAMEL ratings framework is the best way for forecasting banks' financial distress and measuring organizational performance.

6.2 Capital Adequacy

For banks to be able to absorb possible losses without becoming financially weak or insolvent capital adequacy is an essential prerequisite. It depicts the bank's overall financial situation (Kagan, 2021). Alrafadi (2023), argued that the percentage of the bank's assets that are financed by capital is evaluating capital adequacy.

According to the CFI Team (2022), Capital adequacy evaluates an institution's commitment specification for the minimum capital reserve amount. The present and long-term capital status of the financial institution is evaluated by regulators in order to determine the grade. The capital position is projected based on the institution's future goals, including the intention to distribute dividends or buy another company. In addition, the CAMEL

examiner would assess trend analysis, the capital composition, and the liquidity of the capital. According to the Basel Committee (2011), of the Bank for International Settlements, a minimum of 9 percent risk-weighted assets ratio (CRWA) is required; while National Bank of Ethiopia declares 8%.

CAR = Capital & Reserves / Total Asset

6.3 Asset Quality

According to Kagan (2021), Asset quality is essential for financial institutions to stay healthy and prevent value loss. One important factor in determining level of financial health of banks is the quality of its assets. The degree of current and prospective credit risk connected to the bank's financial asset is referred to as asset quality. The assets of the bank consist of loans and investments in securities issued by other organizations. The borrower's creditworthiness and the appropriateness of modifications for anticipated loan losses determine the asset quality of loans, which are substantial bank assets. Loans are recorded on the balance sheet net of allowances for loan losses and are valued at amortized cost.

"Asset quality is measured by non-performing assets, provisions adequacy, recoveries, and asset distribution" (Vincent et al., 2023). This ratio aids in evaluating the bank's asset quality, or the caliber of loans made in order to generate interest revenue. There are fewer defaulters or non-performing assets when a loan is of high quality. This ratio's primary goal is to quantify non-performing assets in relation to total assets (Vincent et al., 2023).

NPL= Gross NPL/ Total Loan

6.4 Management Efficiency

Management quality is crucial for financial institutions' performance, encompassing capital adequacy, asset quality, earnings, profitability, liquidity, compliance with norms, technical competence, leadership, and administrative ability that assurances the development and strength of a bank. Sound control is essential for employee efficiency and overall performance, which lowers operational costs and enhances service delivery (BARTLETT, 2024). It is typically assessed via cost-to-income ratio (CIR) found that better management capability correlates with lower CIRs. A lower CIR indicates that a bank is managing its costs effectively relative to its income, with ratios below 50% generally considered excellent (Financial Edge, 2021). BARTLETT (2024) argued that "management efficiency ratio also called activity ratios, measure organizational performance through management of liquid asset and short term obligations", closely linked to liquidity ratios. For comparative purposes, they are frequently calculated using the year-end or average value, guaranteeing consistent computations throughout analysis. Finding and taking advantage of suitable profit opportunities while controlling risk is known as active management (Kagan, 2021). Credit risk, market risk, operating risk, and other risks are examples of these risks (European Central Bank, 2023). Internal sound controls, clear management communication, and high-quality financial reporting are markers of management performance. Although evaluating managerial soundness is difficult because it is qualitative, efficiency metrics can work together as indicators (Verhoef & Casebeer, 1997).

CIR= (Operating Expense/ (Net Interest Income + Non-interest Income))* 100

6.5 Earning Quality

It is best indicator of a bank's success and capacity to create value for shareholders is its earning quality. While Raja et al. (2023) reported an average ROA of 5.58 for top performers, Salman et al. (2022) noted a strong earning factor in conforming banks. Although the makeup of profits is important, banks with poor earning quality, especially those reliant on unreliable non-interest income, are prone (Magoma et al., 2022). Alrafadi (2023) proofed that excellent earning quality is always not correlated with instable revenue that means earning instability is hazardous sign of underlining instability.

NIM = Net Interest Income / Total Asset

ROA = Net Profit/ Total Asset

6.6 Liquidity

Proper management of liquidity is shows the balance between profitability and solvency. While attaining a high quality always protecting from solvency but, getting smaller profits (Salman et al., 2022). Magoma et al., (2022) found that inverse relationship between performance and liquidity banks in Tanzania showing trade-off. Liquidity transformation risk happened because of aggressive lending that beats the growth of deposit, it also erodes liquidity shields and exposure to funding shocks (Carola et al., 2025).

LDR = Total loan & advance / Deposit

7. Research Methodology

7.1 Research Design

The study employed trend analysis of 40 quarters of 13 commercial banks. It describes the trends of CAMEL variable financial ratios over time and interprets the implications of those trends on banks' financial soundness. The longitudinal nature of the research design allows for the identification of performance models like stable, volatile and decline. Using Mat lab software to generate output.

7.2 Population and Sampling

While the population consists of around 32 commercial banks operating in Ethiopia, a purposive sample of 13 commercial banks (AB, AIB, BIB, BOA, BRB, CBO, DB, HB, LIB, NIB, OB, WB, and ZB) was selected based on years of operation, data availability, starting date of digital financial services, and stability of operations.

7.3 Data Source and Time Horizon

Secondary data was collected from the National Bank of Ethiopia (NBE). It covers 10 years of 13 private commercial banks around 40 quarters (2014–2023). This operation period is vital since it documents the banks' performance over many economic cycles.

7.5 Data Analysis

Data analysis involves both graphical trend analysis and descriptive statistics. The study utilizes panel data to generate graphs to plot the movement of ratios over 40 quarters. Additionally, z-scores are calculated to aggregate the CAMEL framework into a composite index of bank soundness, allowing for a general status of the banks.

8. Data Analysis and Results

8.1 Capital Adequacy

Source: Mat lab output 2026

Based on the Fig. 1 that put on the above the following analysis of Capital Adequacy across 13 commercial private banks over 40 quarters were showed that there are a significant divergence in capital management strategies a sector characterized by a general compliance with regulatory standards. All private commercial banks under study maintained the minimum standard of 8% put by the National Bank of Ethiopia, improving between 14.2% and 14.7% sector average. Meanwhile the growth of 3.5%, the result shows a big difference between strongest “Capital Leaders” and the average “Efficient Operators” and the weakest “Strugglers” that faced pressure from aggressive asset expansion.

The best performers are ZB, BIB, BRB, AB, and WB, constantly maintained CAR average exceeding 15%, pretending them satisfactory with Basel III compliance. ZB recorded a consistent capital leader with average of 15.86% upward trajectory and steady level or no volatility. BIB put as a second private commercial bank with 15.43% average, validating strong upward trend following the 2018 regulatory changes. When we see BRB showed the most unstable performance among champions; while it boomed at 19.7% in 2024, it experienced a harsh decline to 14.5% from 2016 to 2018 before reviving to 15.5% in the final three years. AB and WB showed persistency, with averaging of above 15.02% and 15.6% respectively in the latter half of the period. This persistency of careful risk management and getting proper earnings is aliened to (Sherestha & Gnawaili, 2020) Nepal’s banks show superior performance with (11% CAR) NRB capital edges and the higher CAR helps to manage cost and proper efficiency between threshold of 12% to 13% (Das & Dab, 2020). The finding of (Salman et al., 2020), revealed that Capital Adequacy Ratio (CAR) ranges between 21.29% and 25.17% shows financial health and very good performance, constantly recorded above 8% throughout operational time.

On the other hand the average performers compared to others banks like NIB, LIB, AIB, and OB with Capital Adequacy Ratio (CAR) lay between 12% and 14% harmonizing obedience with growth objectives. AIB and OB recorded average of 12.57% and 12.04% respectively, with AIB showing effective capital utilization. The weakest “Strugglers” group HB, DB, BOA, and CBO their CARs shrink 1 to 2% because of rapid asset growth it leads to face significant challenges basically between 2021 and 2023 operation years. The worst of all is CBO, which recorded CAR of 4.8%, below regulatory bench mark 8% during operational period of 2015; while it recovers to 10.05% at 2023; such volatile behavior indicates reactive rather than proactive capital management method. Likewise, DB and BOA recorded their CAR of 11% and 10.5% respectively pushed by heavily invested on physical assets. This finding aligned with (Faiz, 2020), investigates using CAR over 10 Afghan banks proves that instabilities of CAR ratio significantly deteriorate the overall bank stability.

8.2 Asset Quality

Source: Mat lab output 2026

Based on the above Fig. 2 the following analysis will drive on NPL of across 13 private commercial banks, deducing from the best “Golden Era” of strength to worsening “Crisis Era”. Against National Bank of Ethiopia (NBE) thresholds of less than 5% and Global thresholds between 3 to 6%, the sector confirmed operational health. The operational period 2014 to 2020, the banking industry recorded average NPL ratio 1.5% and 2.2% respectively. While, from 2021 to 2023 recorded a significant change, with the industry average recorded 100% decline to 2.5% to 3.5%. In spite of this volatile, the general industry average of 1.9% remains the best amongst developing market, although the result shows a big deviation among high performing banks and those facing asset quality failure.

Among 13 private commercial banks, DB and HB arose the best performers recorded the average NPL ratios of 1.19% and 1.23% respectively. This result is perfectly aligned with Salman et al. (2022), the finding suggested that healthy funding standards leads effective recovery mechanisms. This also strengthened by Jean & James (2020) that revealed that lower NPL symptomatic of higher profitability. NIB which recorded “incredible” recovery from 2.4% to 1% established the best standard for effective risk management. Similarly, AB, BOA, and AIB controlled increases below 2% of NPL,

assuring the strength private commercial bank's top performer institutions. These banks are not only assuring "World Class" asset quality threshold that is below 1.5% during Golden Era but also recorded significant post-COVID essence.

In contrary, the post-2020 period private commercial banks exposed critical crisis such as WB, BRB, LIB, and ZB. While the sector initially boasted that all banks maintained NPL ratios below 2.5% during the Golden Era, the recent shock caused eight (8) of the thirteen (13) banks double their NPLs. Most alarmingly, LIB and ZB suffered catastrophic collapse; LIB deteriorated from manageable 1.8% (2014–2020) to a hazardous 5.59% in 2023Q4, representing the steepest decline in asset quality. Similarly, BRB and ZB recorded average of 2.48% and 3.75%, respectively, with BRB accelerating to 5.35% NPL ratio by the end of 2023. By the fourth quarter of 2023, the sector health dashboard indicated that while 54% of banks remained "safe" (NPL < 2%), 23% had entered the "danger" zone (NPL > 3%), signaling an urgent need for loan book restructuring and liquidity management in the lower tier of the banking sector. This decline supports the worries exposed by Kanchan & Choudhary (2023), about India's small financial banks. Mustari & Shivaji (2018), further point out that because of the higher provisioning requirements, such deterioration causes serious problems for profitability. Additionally, Vuong et al. (2023) found that the generation of liquidity considerably lowers bank risk taking in Vietnam's transition economy, as indicated by non-performing loans. In order to reduce non-performing loans, Alfradi (2023), highlights that banks must consistently assess the profitability and health of borrowers. Despite these difficulties, the industry-wide NPL percentage remained below the NBE's 5% regulation maximum, reaching 3.9% in late 2024 (Tadesse, 2024). This implies that even in the face of regional hardship, the banking industry retains systemic resilience.

8.3 Management Efficiency

Source: Mat lab output 2026

The above Fig. 3 examines the evolution of the Cost-to Income Ratio (CIR) across 13 private commercial banks over 40 quarters period spanning form the first quarter of 2014 to the fourth quarter of 2023. To measure the management efficiency, globally accepted standard is CIR of below 50% considered as excellent cost control, CIR lays between 50 to 60% is good, if CIR of greater than 65% considered as poor. The trend analysis revealed that a diverse change from era of operational excellent to poor was CIR of 12% the deviation between 55 to 62%. By the last quarter of 2023, the sector average stood at 57.2%, a figure that remains within the bounds of industry standards but highlights a worrying upward trend.

In spite of the overall industry wide decline, performance was extremely diverged. ZB emerged as a leader with a world class CIR of 42.3% even remarkable elasticity satisfying ratio below 45% at a time of sectorial turmoil. ZB demonstrated as the benchmark for Ethiopian private commercial banks, this is aligned with the finding of (Kanchan & Choudhary, 2023) the performance ratio steady with the better management efficiency. AIB secured the second position following ZB with an average CIR of 50.18%. NIB and DB were followed with the average CIR of 54.08% and 55.43% respectively. Those private commercial banks successfully directed the post-2020 cost stress, attaining their operations at a good organization. On the other hand the middle average banks including AB, BIB, OB, HB, and BOA got the average CIR between 58 and 62%, classifying their performance as fair to good.

The finding of the study assure that especially post-COVID pandemic observed operational distress, the operational period between 2020 and 2023 caused "efficiency crisis" in which out of thirteen (13) private commercial banks seven (7) of them saw their CIRs increase by 5% to 20%. This is the era of structural weakness especially, BRB faced the most disastrous one with CIR average between 58% to 82% in 2019 and the fourth quarter of 2023 respectively; a 42% increase shows the worst decline in the history of Ethiopian private commercial banks. Similarly, WB and CBO consistently recorded poor performance, average CIRs of 75% and 95% the first one and 68.17% and 76% the latter one respectively by the end of 2023. At the end of the last quarter six (6) banks out of thirteen (13) were recorded CIRs average above 65%, showing a cost control distress. Generally, the result shows is a big difference between world-class performer "ZB" and struggler "BRB", it shows "cost disease" referred by European Central Bank (2023), where profits are worn-down because of overstaffing, operational inefficiencies and old infrastructure.

8.4 Earnings Quality

Source: Mat lab output 2026

The Fig. 4 put above revealed a dynamic background of earning quality based on Return on Assets (ROA). Classifying as infancy stage, Ethiopian commercial banks considered as superior performers achieving industry average of 2.75%; while, the global banking average lays between 1 to 2%. Using the above Fig. 4 as reference, the period between 2014 and 2018 denoted as profitability era, which was the industry average recorded between 2.8 and 3.2%. However, post-COVID pandemic and subsequent financial distress, bringing the average ROAs reduced a range between 2.4 and 28%.

ZB considered as an industry leader with an average ROA of 3.86% and booming a sector-high of 4.37% in the last quarter of 2023; particularly, ZB was the only bank recorded sustainable ROA growth throughout the sector's recent chaos, which corresponds with the higher earning quality of top performers as reported by Raj (2023). AIB stood second with ROA average of 3.18%, categorized persistently good, while BIB considered persistent increase ROA to average 2.96%, effectively serving as sectorial standard. Those three banks, laterally with AB with average of 2.88%, considered as excellent performers keeping average ROA of 3%. The middle groups like NIB, DB, and OB recording the average of ROA between 2.56 and 2.59%, performing well compared to the industry average. This result is aligned to (Liu et al. 2025); those institutions have faith in on advisable deposit franchise.

In contrary, the result shows a significant instability and decline among the lower performers like BRB and LIB experienced the most severe decline, recording 1.3% and 1.43% of average ROA respectively. This result also assured by the finding of (Magoma et al. 2022), banks achieving declining

earnings. Banks like WB, CBO, and BOA deviation between 2.2 and 2.5%, those banks had different reasons for such declining, for example WB obstructed by operational inefficiency and poor CIR, for HB observed lower average of 2.2% because of extra operational model with limited potential. In spite of these deviations, the institutions remain healthy, recording ROAs above 2.5% ten (10) commercial banks out of thirteen (13). Alrafadi (2023), argued that such kind of variability often triggered by unstable non-interest income sources, it is designating a lack of income variation.

8.5 Liquidity

Source: Mat lab output 2026

The Fig. 5 listed above shows the LDR trend of thirteen (13) commercial banks that are operated in Ethiopia. The analysis would made based on the globally accepted ranges where LDR below 80% considered as “conservative approach”, it shows that the bank has potential for increased lending; LDR is between 80–90% said “balanced”, it indicates the bank has follow optimal use of deposit, while LDR above 90% called “risky”, it indicates the bank in liquidity concerns.

The above Fig. 5 showed divergent range of LDR like the period between 2014 and 2018 the aggregate LDR found between 65% and 72%, the period where considered as conservative. The period from 2019 to 2023 the LDR range shift 72–82%, it is the era of balanced. While, at the end of 2023Q4, the industry average reached 82%.

The banks like NIB, DB, AB, HB, and CBO considered as “optimal masters” use demonstrated liquidity management. NIB recorded 72.01% average LDR over the forty (40) quarters; maintain perfect consistency and a model performer. Similarly, DB, AB, HB, and BRB magnificently shift from conservative at early 2010s to balanced or ideal range early 2020s. CBO recorded balanced range performance, optimal developmental directive with financial attention. The result is stick to (Salman et al., 2022; Lip, 2022) the finding highlighted the liquidity aspect “fairly healthy” it intended to operational consistency; producing income with low-cost deposit use as a primary source of revenue within aggressive industry competition. This also assured by (Lichtenberg, 2025), those companies are considered as excellent operator called “fortress balance sheet”.

In contrary, banks like BIB, LIB, and WB following aggressive expansion strategies which pushed their LDR ratio in to risky range above the threshold. BIB, exceeded 90% threshold, considered aggressive expansion and LIB demonstrated as “dangerous ramp-up” with LDR of 103% above the threshold at the fourth quarter of 2023. WB also considered as following unsustainable business expansion, where this happened because of deteriorating NPL/LDR balance.

The result also showed persistently conservative banks, like ZB and OB because of insignificant idle capital, these banks consistently maintained low LDR average of 64.16% and 62.56% respectively. Therefore, there is significant variability among individual banks, the institutions evolution from state of conservatism to more balanced financial structure.

Banks may experience decreasing liquidity (increasing LDRs) as a result of increased competition, which raises liquidity holdings (Liu et al., 2025). The negative correlation between liquidity and performance shown by Magoma et al. (2022), is empirically supported by this tendency. According to Faiz (2022), aggressive lending that outpaces deposit growth weakens liquidity buffers and increases vulnerability to financing shocks, a risk that is clearly shown in the LDR figure’s upper lines. The result of Salman et al. (2022) also revealed that the Loan to Deposit Ratio (LDR) varied greatly, frequently above 100%. This was classified as unhealthy since it was difficult to predict to liquidity requirements and apply liquidity risk management.

8.6 Composite CAMEL Status (Z-Score Analysis)

Source: Mat lab output 2026

Table 1
Banks category based on phases using Z-score

Category	Phase 1 (2014–2017)	Phase 2 (2018–2020)	Phase 3 (2021–2023)
Strong (best)	CBO, LIB, WB, ZB, and BOA	CBO, LIB, WB, BRB, and BOA	CBO, LIB, WB, BRB, and BOA
Moderate	BRB, DB, OB, and AIB	ZB, DB, OB, and AIB	ZB, DB, OB, AIB, and HB
Weak (worst)	NIB, BIB, HB, and AB	NIB, BIB, AB, and HB	NIB, AB, and BIB

Source: Owns computation

The table 1and Fig. 6 put the above presented the category of banks with phases and composite z-scores across CAMEL variables, revealing performance between 13 private commercial banks in Ethiopia the period between 2014Q1 to 2023Q4. It shows the top performer CBO, constantly leader across all the three phases, scores of -0.40 in phase 1, -0.77 in phase 2, and − 0.77 in phase 3, demonstrating excellence in CAMEL dimensions. LIB recorded strong performance throughout phase 1, phase 2, and phase 3 with composite z-score of -0.35, -0.49, and − 1.37 respectively. WB also scored strength the entire three phases, with fast racing in phase 3 and sharpest negative slope of -0.055; in which z-score of -0.16 in phase 1, -0.48 in phase 2, and − 1.07 in phase 3. The other strong bank is BOA, showing advisable score range and consistent development with steady growth of z-score − 0.12 in phase 1, -0.29 in phase 2, and − 0.64 in phase 3. ZB at the beginning categorize moderate state and gradually recovers become strong

with score of -0.37 in phase 1, 0.02 in phase 2, and 0.64 in phase 3, it's score was highly fluctuated but remain strong with positive trajectory of + 0.0361.

Moderate performer's banks were DB, OB, AIB, and HB. DB which persistently pretend moderate performance and lower volatility with score of -0.07 in phase 1, -0.11 in phase 2, and − 0.14 in phase 3. OB also recorded moderate performance throughout all phases scored − 0.04, 0.01, and − 0.02 for phase 1, phase 2, and phase3 respectively. The last one is HB, which showed progresses starting at weak state and improved to moderate through late recovery with z-score of 0.43 in phase 1, 0.07 in phase 2, and − 0.09 in phase 3.

The weaker performers like NIB, AB, and BIB, showed that persistently weak all the entire phases. NIB, persistently poor performance and z-score of positive in all phases, 0.80 in phase 1, 0.49 in phase 2, and 0.22 in phase 3; AB also persistent positive score and weak in the entire phases, 0.22 in phase 1, 0.24 in phase 2, and 0.10 in phase 3; and BIB, score negative in phase 3 and poor performance in the remaining phases, the scores were 0.40 in phase 1, 0.25 in phase 2, and − 0.04 in phase 3.

Therefore, the best performers are LIB, WB, BRB, and BOA maximize gains post-2020, while bank like NIB persistently declining, and ZB's instability shows trajectory shift. CBO, LIB, and WB the best performers with respect to z-scored, while NIB, AB, and BIB face a higher risk of financial soundness. There is a volatility observed in the case of ZB, it shifts form strong to moderate and back to strong status across phases with score of -0.37 in phase 1, 0.02 in phase 2, and 0.64 in phase 3, + 1.01 swipes that shows sector's decline.

Phase Analysis

Phase 1 (2014–2017)

The above Table 1 and Fig. 6, showed that the first phase from 2014 to 2017, banks were categorized into strong, moderate, and weak performers based on Z-score metrics. The strong/best category includes CBO, LIB, WB, ZB, and BOA, indicating more stability and performance. Moderate performers included BRB, DB, OB, and AIB, while the weak/worst group consisted of NIB, BIB, HB, and AB.

Phase 2 (2018–2020)

Throughout Phase 2, covering between 2018 and 2020, the strong/best banks were CBO, LIB, WB, BRB, and BOA, showing consistency with some shifts. Moderate banks include ZB, DB, OB, and AIB. The weak/worst category persisted NIB, BIB, AB, and HB.

Phase 3 (2021–2023)

The last phase lies between 2021 and 2023, strong/best performers was CBO, LIB, WB, BRB, and BOA, persistently stability except ZB. Moderate banks were ZB, DB, OB, AIB, and HB. Weak/worst banks were NIB, AB, and BIB.

9. Conclusion and Recommendations

9.1 Conclusion

In conclusion, the study uses CAMEL framework to thoroughly evaluate the financial soundness of 13 private commercial banks in Ethiopia the period between 2014Q1 and 2023Q4. While most banks able to meet NBE capital adequacy threshold and non-performing loan criteria, there are significant principal changes. Upon closed inspection, distinct trends become apparent: banks such as ZB excel due to their robust capital reserves and astute management that ensures seamless operations. Financial institutions like CBO, BOA, LIB, and BRB, on the other hand, are facing difficult times due to declining assets, decreasing liquidity, and uncontrollably rising costs. Following Q36 competition is significant; the gap between top performers and those falling behind is narrowing, but the weakest still face significant dangers.

9.2 Recommendations

For Bankers:

Strong credit checks and recovery mechanisms are essential for banks with rising non-performing loans (NPLs), like ZB, BRB, and LIB; in particular, moving from collateral-focused to cash-flow based loan is crucial for preventing asset risk; and banks should move from unstable to dependable fee-based service in order to achieve consistent profits. Fintech is essential for automating processes and reducing overhead, so high-CIR banks like WB, BRB, and CBO must invest in it right away.

For Investors:

- Give preference to banks with solid balance sheet; for the highest level of safety and dependability, choose those with stable Capital Adequacy Ratio (CAR) and Loan-to Deposit Ratio (LDR) indicators.
- Be cautious when dealing with banks that have high Cost-to-Income Ratios (CIRs) or unpredictable earnings trends. These banks may indicate instability and lower returns so steer clear of them or restrict investor's exposure to them.

Acronyms

AB: Abay Bank

AIB: Awash Intrenational Bank

BIB: Buna International Bank

BOA: Bank of Abyssinia

BRB: Berhan Bank

CAMEL: Capital adequacy, Asset quality, Management, Earnings, and Liquidity

CAR: Capital Adequacy Ratio

CBO: Cooperative Bank of Oromiya

CIR: Cost-to-Income Ratio

DB: Dashen Bank

HB: Hibret Bank

LDR: Loan-to-Deposit Ratio

LIB: Lion International Bank

NBE: National Bank of Ethiopia

NIB: Nib International Bank

NPLs: Non-Performing Loans

OB: Oromiya Bank

ROA: Return on Asset

ROE: Return on Asset

WB: Wegagen Bank

ZB: Zemen Bank

Declarations

Ethical approval and consent to participate

We**, authors,** declare that this journal article entitled: **"*The assessment of Financial Performance of Selected Commercial Banks in Ethiopia: A CAMEL Variables Analysis of Financial Soundness*"**, is our own work. We have undertaken the research work cooperatively. This study has not been submitted to any degree/diploma program and in this or any other publishers and that all sources of materials used for the research has been duly acknowledged.

Consent for publication

"Not applicable"

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Figures

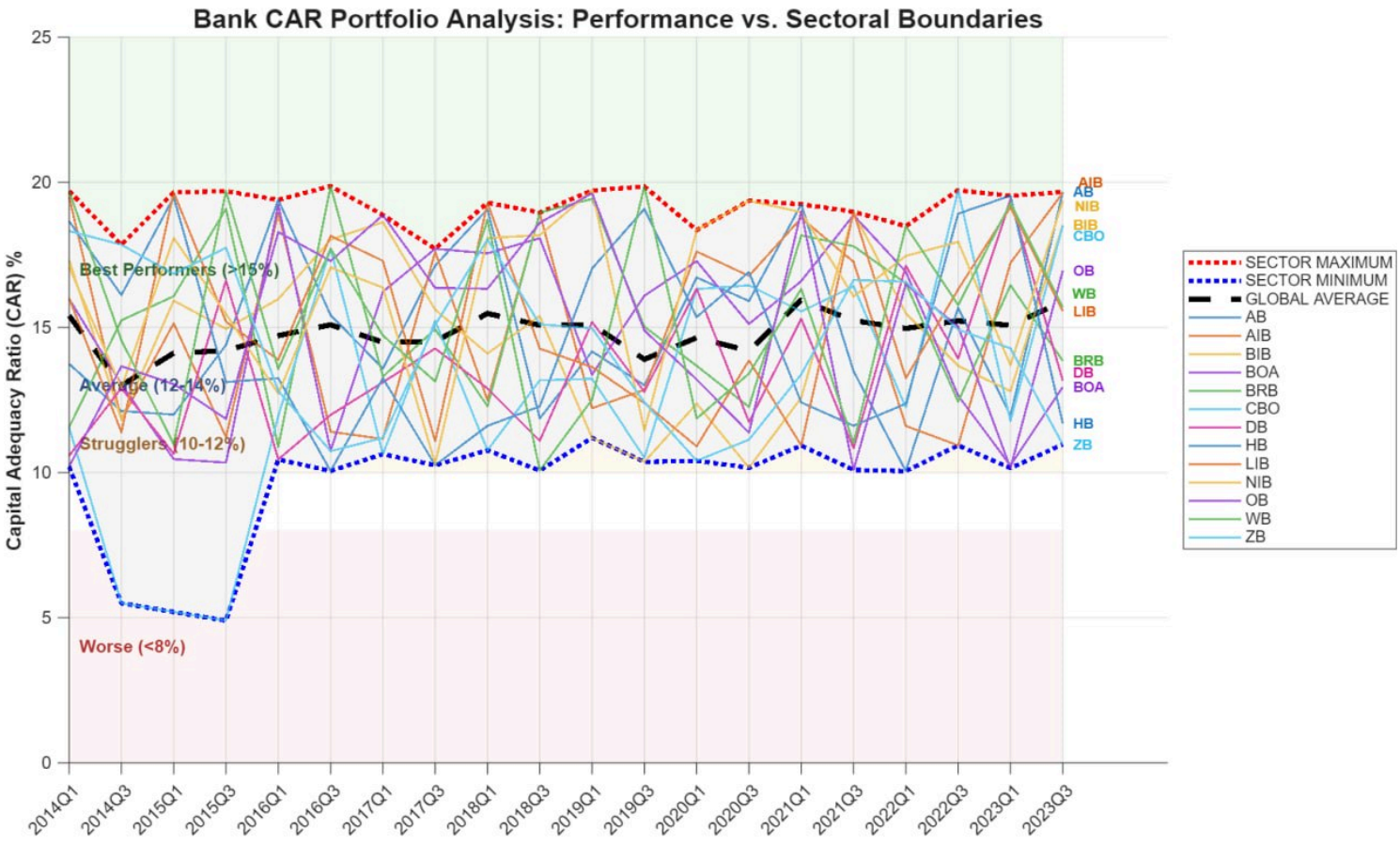


Figure 1

Capital Adequacy

Source: Mat lab output 2026

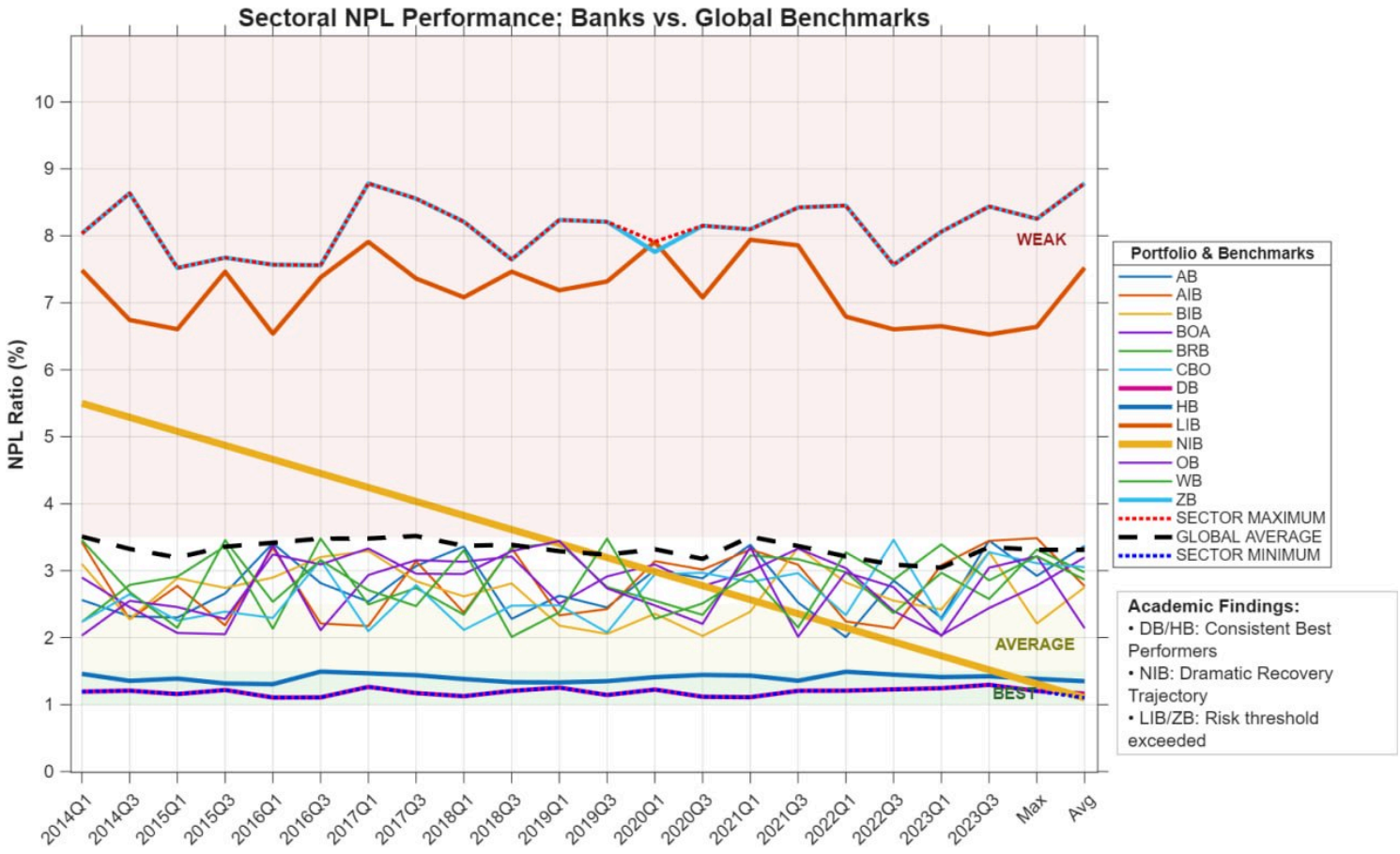


Figure 2

Asset Quality

Source: Mat lab output 2026

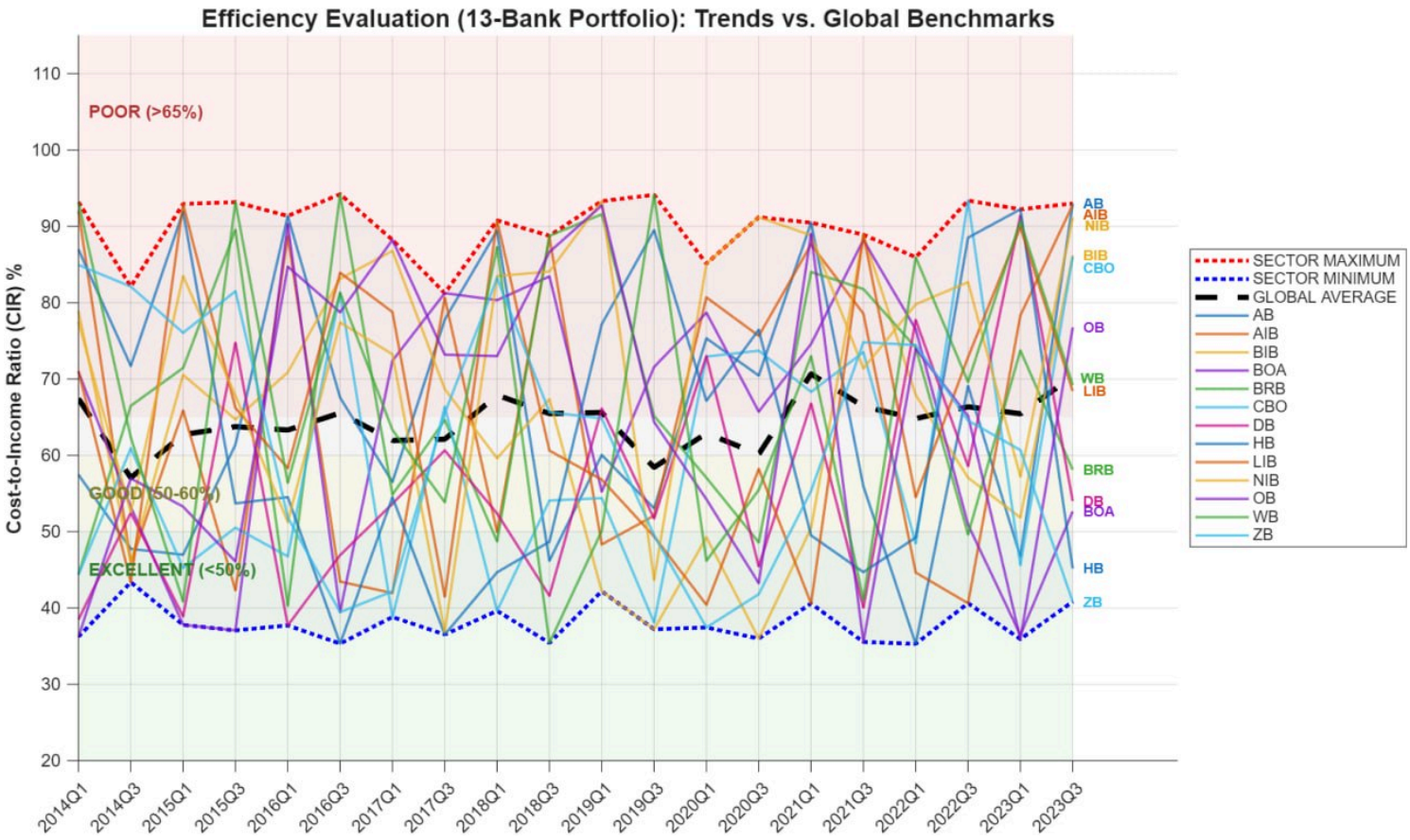


Figure 3

Management Efficiency

Source: Mat lab output 2026

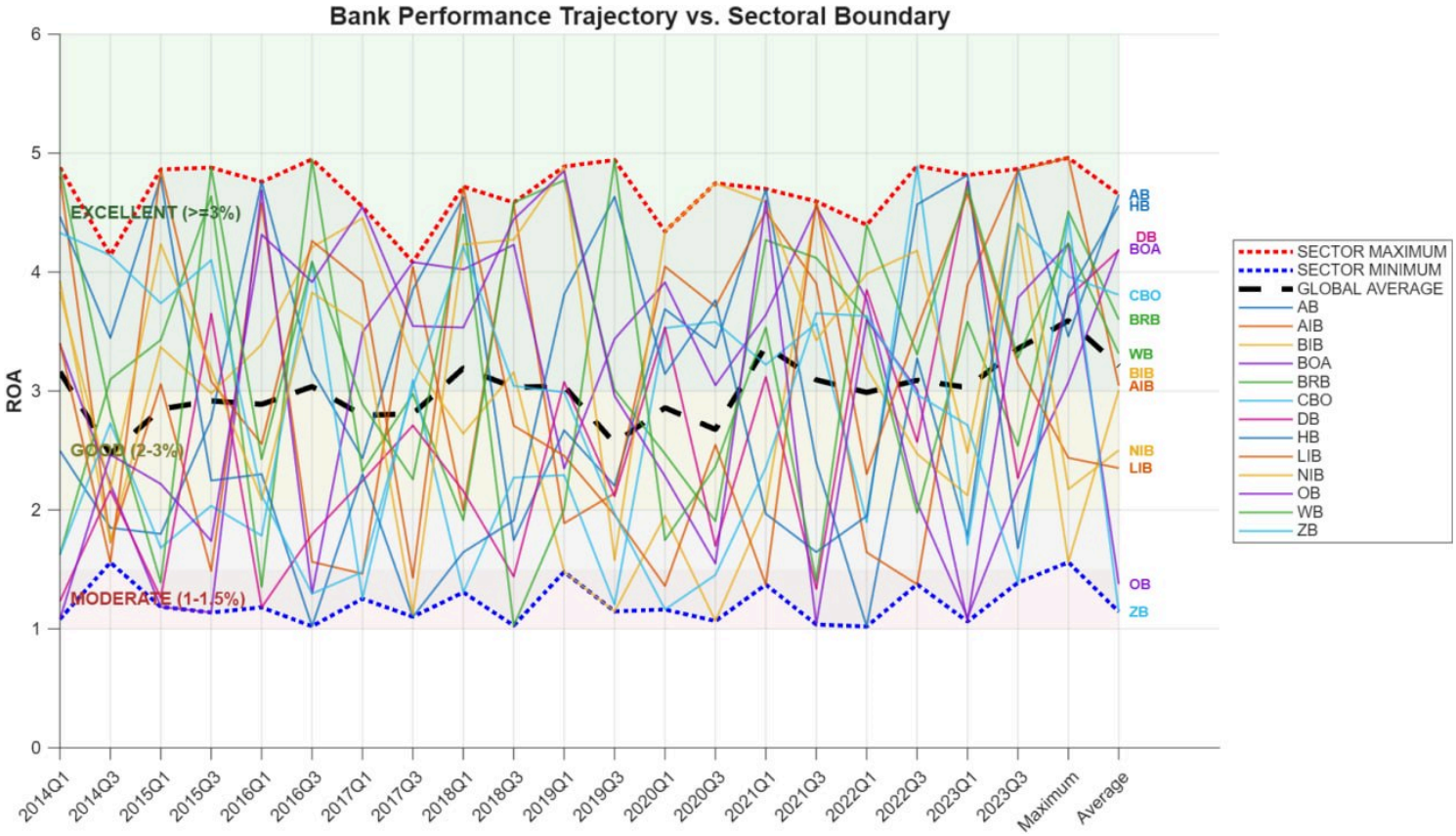


Figure 4

Earning

Source: Mat lab output 2026

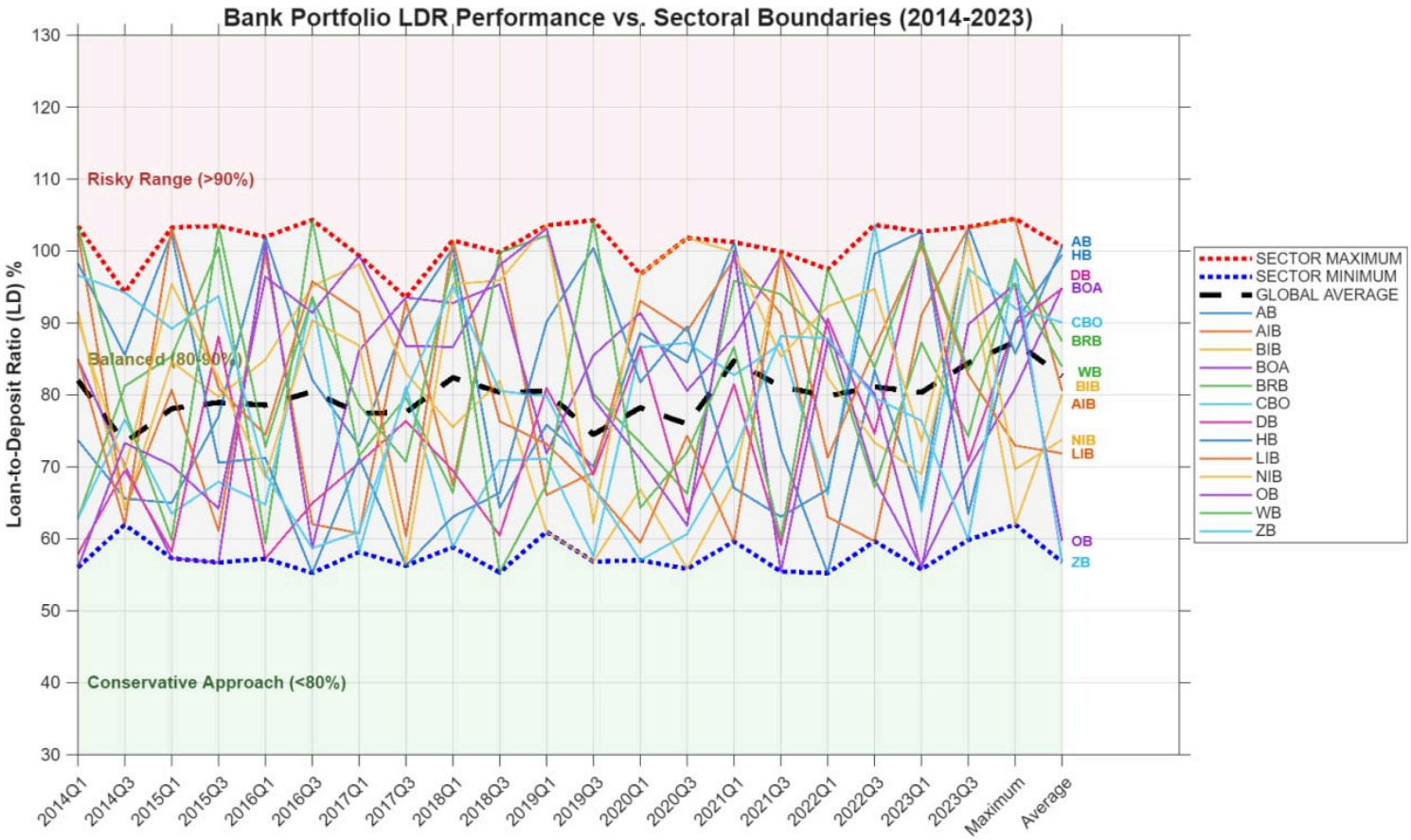


Figure 5

Liquidity

Source: Mat lab output 2026

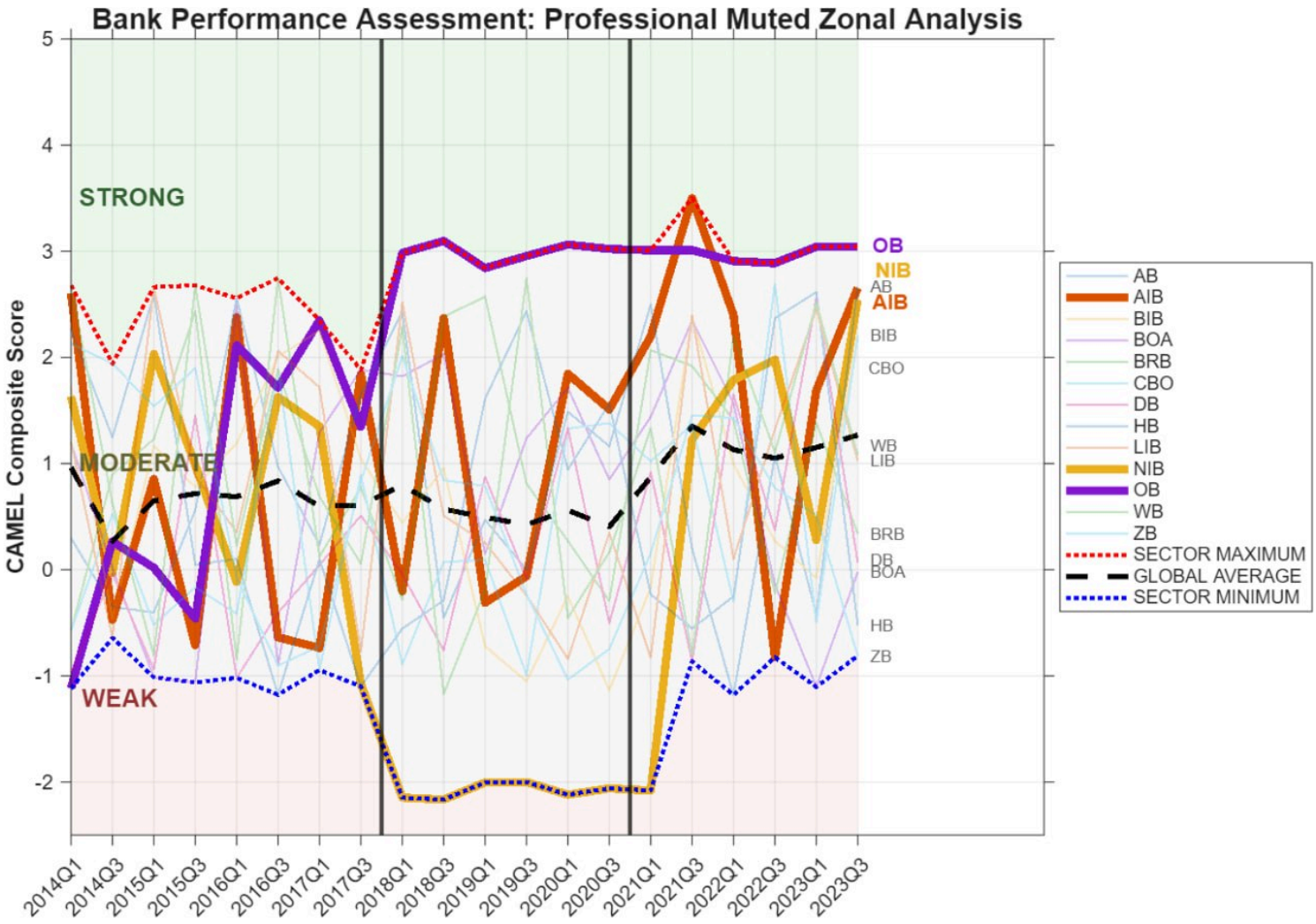


Figure 6

CAMEL Trends of 13 Banks

Source: Mat lab output 2026

Supplementary Files

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- FinalData1.xlsx