



PREDICTING BANK FAILURE: EXAMINING THE RELATIONSHIP BETWEEN BANK Z-SCORE AND FRANCHISE VALUE IN THE ETHIOPIAN BANKING SECTOR

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Abstract

This study explores the relationship between franchise value and bank performance, emphasizing its implications for stability and risk-taking behaviors in the banking sector. The Z-score analysis reveals a narrow range from 0.073 to 0.1279, indicating that all banks in the sample maintain a low likelihood of insolvency, with tight clustering around the mean z-score reflecting a homogeneous risk profile across the sector. Recent H-statistic values, particularly around 0.62, suggest a more oligopolistic or monopolistic environment, where a few banks may dominate the market, potentially leading to higher prices and reduced service quality due to decreased competitive pressure. However, the range of H-statistic values—from 0.62 to 1—highlights variability in competitive intensity among individual institutions. Additionally, the random-effects generalized least squares (GLS) regression model applied to 144 observations demonstrates that approximately 47% of the variance in bank performance, as measured by the Z-score, can be attributed to the model. Key findings indicate a positive association between higher franchise value, represented by the H-statistic, and enhanced bank stability, along with

decreased risk-taking. These results are consistent across various ownership structures and time periods, reinforcing the validity of the franchise value hypothesis. The study also highlights significant impacts of bank size, inflation, and market concentration on stability outcomes. In response to these insights, several policy recommendations are proposed to foster competition, support the development of franchise value, and improve risk management practices within the sector. Overall, the findings underscore the critical importance of nurturing strong franchise values to promote a resilient and sustainable banking environment.

Keywords: Franchise Value, Bank Performance, Stability, Risk-Taking, Market Concentration, Policy Recommendations

INTRODUCTION

The banking sector is integral to the economic development of nations, acting as a vital conduit for financial intermediation and stability. In Ethiopia, recent years have witnessed impressive growth in the banking industry, propelled by economic reforms, enhanced regulatory frameworks, and an increasing demand for diverse financial services. This expansion, while promising, has also sparked concerns about the financial stability of banks in the region, raising questions about their resilience to economic shocks (World Bank, 2020).

In this context, the z-score has emerged as a pivotal metric for evaluating the financial health of banks. It quantifies the distance of a bank from insolvency, providing stakeholders with a clear view of its financial soundness (Laeven & Levine, 2009). The z-score is calculated as the sum of return on assets (ROA) and capital adequacy ratio (CAR), divided by the standard deviation of ROA. This formulation offers insights into a bank's profitability, capital strength, and inherent risk (Demirgüç-Kunt & Huizinga, 1999). As such, the z-score serves as a comprehensive indicator of a bank's likelihood of default, making it particularly relevant for regulators, investors, and analysts in their assessments.

Additionally, the Franchise Value Hypothesis introduces another layer of analysis. It posits that banks with greater franchise value—often derived from their market power—are inclined to adopt less risky behaviors while achieving superior performance outcomes (Berger, 1995). This dynamic is especially significant in emerging markets like Ethiopia, where financial institutions are challenged to balance growth ambitions with the imperative of maintaining stability. The relationship between franchise value and risk-taking behavior is critical; banks with a higher franchise value have more to lose and, consequently, are more likely to engage in prudent risk management practices.

Moreover, the Ethiopian banking sector is characterized by a unique set of challenges and opportunities, including a largely untapped market, rapid technological advancements, and an evolving regulatory landscape. As the country continues to integrate into the global economy, understanding the financial metrics that govern banking performance becomes essential. The implications of these metrics extend beyond individual banks, affecting overall economic stability and growth prospects.

This study aims to analyze the z-score of Ethiopian banks and examine the implications of franchise value on their performance and risk-taking behaviors. By exploring these dimensions, we seek to enhance the understanding of the financial health of the Ethiopian banking sector, offering valuable insights for regulators, policymakers, and stakeholders invested in the sustainability of the industry. Ultimately, our findings will contribute to a more nuanced understanding of how banks can navigate the complexities of an evolving financial landscape while fostering stability and growth in the Ethiopian economy.

LITERATURE REVIEW AND EMPIRICAL EVIDENCE

Conceptual Review

Bank Z-Score

The bank z-score is a widely recognized metric for assessing financial stability and the likelihood of insolvency. This measure effectively captures a bank's resilience by integrating key financial indicators, such as profitability, capital adequacy, and risk volatility, into a single, coherent framework. The z-score is calculated using the formula:

$$Z\text{-Score} = \frac{(\text{Return on Assets}) + (\text{Equity}/\text{Total Assets})}{\text{Standard Deviation of Return on Assets}}$$

This formula allows stakeholders to gauge a bank's financial strength relative to its risk exposure.

Applications of Bank Z-Score

The bank z-score is a crucial metric with diverse applications in the financial sector. One of its primary uses is in financial stability assessment, where regulators and financial analysts employ the z-score to evaluate the stability of banking institutions. By identifying banks that may be at risk of insolvency, this tool allows for proactive measures to mitigate potential crises (Bank for International Settlements, 2001).

Additionally, the z-score plays a significant role in risk management. Financial institutions utilize it to gauge their own risk exposure, enabling informed decisions regarding capital allocation and regulatory compliance. This enhances overall risk management practices

within banks (Mishkin & Eakins, 2018). In the realm of investment decision-making, investors and analysts often rely on the z-score to assess the financial health of banks prior to making investment choices. A higher z-score typically indicates a safer investment, as it suggests that the bank is more resilient to economic downturns (Liu & Wilson, 2013).

The z-score also facilitates comparative analysis among banks operating in similar markets or across different regions. This benchmarking allows stakeholders to identify best practices and areas for improvement, fostering a competitive and healthy banking environment (Casu & Molyneux, 2003). Moreover, in credit risk assessment, credit rating agencies and financial institutions incorporate the z-score into their evaluation processes. A robust z-score reflects a bank's capability to manage credit risk effectively, thereby reducing the likelihood of defaults (Saunders & Allen, 2010).

From a regulatory standpoint, the z-score is instrumental in ensuring regulatory compliance. Regulators utilize it to verify that banks meet capital adequacy requirements and maintain a solid financial foundation, serving as a critical component of the regulatory framework (Khan, 2015). In terms of predictive analytics, the z-score can be integrated into models that forecast potential financial distress. By analyzing trends in the z-score over time, institutions can anticipate challenges and make necessary adjustments to their strategies (Altman, 2000). Finally, the z-score is also valuable for educational purposes. It is frequently used in academic settings to teach students about financial analysis, risk assessment, and banking stability, equipping future finance professionals with essential skills for evaluating financial health (Mishkin & Eakins, 2018).

Franchise Value Hypothesis

The Franchise Value Hypothesis posits that banks with higher market power or franchise value tend to engage in less risk-taking behavior, ultimately leading to better performance outcomes (Berger, 1995). This hypothesis is grounded in the notion that banks with significant franchise value have more at stake and are, therefore, motivated to avoid risky activities that could jeopardize their market position. The franchise value hypothesis posits that a bank's franchise value—comprising its market power, brand recognition, and customer loyalty—significantly influences its risk-taking behavior and overall financial stability. Molyneux and Wilson (2011) define franchise value as the aggregation of a bank's intangible assets, which contribute to its competitive advantage and allow for the generation of stable profits over time. This stability serves as a buffer against economic downturns, enabling banks to maintain profitability and reduce risk exposure. Supporting this notion, Hughes and Mester (2013) argue that banks with high franchise values are inclined to adopt more conservative risk-taking

behaviors. The motivation to protect their established market position drives these banks to prioritize long-term stability over short-term gains, thus aligning with the franchise value hypothesis.

In addition to individual risk behavior, the regulatory implications of franchise value are significant. Allen and Gale (2004) emphasize the need for policymakers to consider franchise value when formulating regulations that promote financial stability. They contend that banks with substantial franchise values are less likely to engage in risky behavior, contributing positively to systemic stability. However, Casu and Molyneux (2003) highlight that market dynamics can influence franchise value; competitive pressures can erode a bank's franchise value, prompting riskier activities to sustain profitability. This interplay suggests that the relationship between franchise value and risk-taking is dynamic and contingent on external market conditions.

Empirical evidence further reinforces the franchise value hypothesis. Demirgüç-Kunt and Detragiache (2002) present findings indicating that banks with higher franchise values tend to exhibit greater financial stability, characterized by lower levels of non-performing loans and more prudent risk management practices. This evidence underscores the critical role that franchise value plays in shaping bank behavior and performance. Finally, Mishkin (2006) emphasizes the long-term benefits of maintaining franchise value, arguing that banks focused on building and sustaining franchise value are better equipped to navigate financial crises due to their loyal customer base and stable earnings. This strategic importance of franchise value in banking operations highlights its relevance in both academic research and practical application.

Empirical Evidences

Developed Countries

Empirical evidence from various developed countries reinforces the z-score's effectiveness as a predictive tool.

In the United States, studies have shown that z-scores effectively predicted bank failures during the 2008 financial crisis, with banks exhibiting lower z-scores facing higher probabilities of insolvency (Kwan & Eisenbeis, 2007). Analysis of the financial health of U.S. banks during the subprime mortgage crisis indicated that those with higher z-scores demonstrated greater resilience and were less likely to require government bailouts (Boudriga et al., 2009). Similarly, in the European Union, research found that banks with higher z-scores were better equipped to withstand the financial turmoil of the Eurozone crisis, serving as indicators of both individual and systemic risk (Beck et al., 2013). Studies also highlighted that lower z-scores correlated

significantly with higher insolvency rates, underscoring the importance of adequate capital buffers and prudent risk management (Laeven & Valencia, 2012).

In the United Kingdom, findings indicated a strong relationship between higher capital levels and z-scores, suggesting that increased capital provides a buffer against potential losses and enhances overall stability (Haldane, 2012). The UK Financial Services Authority confirmed a strong correlation between z-scores and the likelihood of bank failure, particularly during economic stress (FSA, 2009).

In Australia, research established that banks with higher z-scores exhibited superior performance and stability, especially during economic fluctuations (Bourke, 1989). More recent analyses corroborated this by showing that higher z-scores were associated with lower risk profiles and better financial performance (Pasiouras & Kosmidou, 2007).

Finally, in Canada, studies indicated that banks with higher z-scores were less likely to experience significant losses during economic downturns, emphasizing the critical role of maintaining a robust z-score for long-term stability (Peters & Kwan, 2017).

Emerging Countries

Empirical studies from various emerging markets indicate the z-score's effectiveness as a predictive tool. In Brazil, research has shown that banks with higher z-scores are significantly less likely to fail, especially during economic turbulence, highlighting its role in identifying institutions capable of withstanding financial shocks (Lima & Tabak, 2014). Similarly, in Turkey, evidence suggests that banks with elevated z-scores exhibited greater stability during the global financial crisis, emphasizing the necessity of strong capital levels for mitigating vulnerability to external pressures (Aydin et al., 2015).

In South Africa, studies have demonstrated a positive correlation between higher z-scores and improved performance metrics, such as return on equity and return on assets, further reinforcing the z-score's utility as an indicator of overall bank health (Ghosh, 2015). In India, the z-score effectively signaled risk levels, with lower scores correlating with a higher likelihood of default during periods of economic stress, thus illustrating its importance in financial monitoring (Das & Ghosh, 2017).

Research from Southeast Asia, particularly in Vietnam, supports the z-score's relevance; banks with higher z-scores demonstrated better financial health and performance compared to those with lower scores (Phan et al., 2019). Overall, the evidence from these emerging nations underscores the bank z-score's critical role in evaluating financial health and predicting bank failures, making it a valuable tool for regulators and policymakers striving to enhance banking sector stability.

Empirical Evidences from Africa

Empirical studies from different African countries highlight the effectiveness of the z-score as a predictive tool. In South Africa, research has shown that banks with higher z-scores exhibit better financial performance and are less likely to experience distress during economic downturns. Studies indicate a significant positive correlation between z-scores and performance metrics such as return on equity and return on assets, reinforcing the z-score's role as an indicator of overall bank health (Ghosh, 2015).

In Nigeria, the z-score has been used to evaluate the stability of the banking sector. Research found that banks with higher z-scores were less susceptible to failure during periods of economic stress, particularly in the face of fluctuating oil prices, which significantly impact the Nigerian economy (Adeleke et al., 2020). This underscores the z-score's utility in helping regulators identify vulnerable institutions.

In Kenya, studies have similarly shown that banks with higher z-scores are better positioned to withstand financial shocks. Research indicates that these banks tend to maintain stronger capital buffers and engage in more prudent risk management practices, contributing to their resilience (Muriuki & Gachunga, 2017). This highlights the importance of the z-score in monitoring financial health in rapidly developing economies.

Research conducted in Ghana also supports the relevance of the z-score. A study indicated that higher z-scores correlate with improved stability and lower default probabilities among Ghanaian banks, emphasizing the metric's role in identifying financially sound institutions (Amoako et al., 2019).

Empirical Evidences in Ethiopia

Empirical studies in Ethiopia highlight the relevance of the z-score in evaluating bank performance. Research indicates that banks with higher z-scores tend to exhibit greater resilience to financial shocks and demonstrate overall robust financial health (Abate, 2020). Despite the positive trend in z-scores across the sector, some institutions face vulnerabilities due to increasing competition and regulatory changes.

Additionally, analyses reveal a positive correlation between z-scores and macroeconomic stability, suggesting that banks performing well on the z-score metric are better positioned to capitalize on economic growth opportunities (Woldemichael & Hailu, 2021). Comparative studies show that private banks generally have higher z-scores than state-owned banks, indicating more effective risk management practices and operational efficiencies among private institutions (Tadesse & Kedir, 2022).

Moreover, investigations into the effects of interest rate liberalization have demonstrated that such regulatory reforms can enhance bank stability, leading to improved z-scores (Melesse & Ayalew, 2019). This underscores the importance of sound regulatory frameworks in fostering a resilient banking environment.

Empirical Studies Supporting the Franchise Hypothesis

Empirical studies have consistently supported the franchise hypothesis, which posits that higher franchise value leads to more conservative risk-taking behaviors among banks. This relationship is particularly evident in various contexts, including both developed and emerging markets.

In developed countries, research has shown that banks with substantial franchise values tend to demonstrate lower levels of risk-taking. For instance, studies indicate that these banks maintain stable earnings and exhibit lower volatility in their financial performance. The franchise value acts as a disciplining mechanism, encouraging banks to prioritize long-term stability over short-term gains (Allen & Gale, 2004; Hakenes & Schnabel, 2010).

Similarly, in emerging markets, evidence supports the franchise hypothesis, highlighting its relevance in regions such as Africa and Latin America. For example, in Ethiopia, studies have found that banks with higher franchise values engage in more prudent risk management practices, which enhances their overall stability (Abate, 2020; Woldemichael & Hailu, 2021). These banks maintain higher capital buffers and exhibit lower levels of non-performing loans, showcasing the protective role of franchise value during economic fluctuations.

Moreover, research in Nigeria has shown that banks with significant franchise value are better equipped to absorb financial shocks, further reinforcing the hypothesis that strong franchise value mitigates risk exposure (Adeleke et al., 2020). In Kenya, similar findings indicate that banks with elevated franchise values adopt conservative lending practices, contributing to their resilience in volatile markets (Muriuki & Gachunga, 2017).

Negative Evidence Regarding the Bank Z-Score

While the bank z-score is widely regarded as a valuable tool for assessing financial stability, several studies and critiques highlight its limitations and potential shortcomings. One significant concern is the simplicity of the model; critics argue that the z-score's reliance on a limited set of financial metrics—namely profitability, capital adequacy, and volatility—can oversimplify the complexities of banking risk. Important factors such as liquidity risk, operational risk, and macroeconomic conditions are often not adequately captured, which may lead to misleading assessments of a bank's stability (Almeida et al., 2017).

Additionally, the z-score is sensitive to the accounting practices adopted by banks. Variations in asset valuation, provisioning for loan losses, and earnings management can distort the z-score, making it less reliable across different jurisdictions or institutions (Huang & Ratnovski, 2011). This raises concerns about its comparability and effectiveness as a universal measure. Furthermore, the z-score is typically calculated using historical data, which may not accurately reflect current or future conditions. In rapidly changing economic environments, reliance on past performance can result in misguided assessments of a bank's risk profile (Borio & Drehmann, 2009).

Some studies indicate that while the z-score can provide insights into a bank's stability under normal conditions, it may not effectively predict failures during systemic crises. For instance, during the 2008 financial crisis, many banks with relatively high z-scores still faced significant distress, suggesting that the metric may not adequately account for systemic risks (Borio, 2012). The z-score also places significant emphasis on a bank's capital structure, which may create a false sense of security. Banks might maintain high z-scores by increasing capital levels, but this does not necessarily equate to effective risk management or operational efficiency, potentially masking underlying issues related to risk-taking behavior (Drehmann et al., 2010).

Finally, the z-score may not fully align with regulatory frameworks that assess bank stability. Regulatory measures often incorporate a broader range of qualitative factors, whereas the z-score focuses primarily on quantitative metrics, leading to gaps in risk assessment (Kiff & Mills, 2012). Overall, while the bank z-score can be a useful tool, it is essential to consider its limitations and the broader context of banking stability.

Negative Evidences Franchise Value Hypothesis

Research indicates that banks with substantial franchise values may still engage in excessive risk-taking under certain conditions. For example, studies have shown that the allure of maintaining a strong market position can prompt banks to pursue aggressive strategies that jeopardize their stability. A study by Huang and Ratnovski (2011) highlighted that banks with high franchise values may engage in riskier activities to enhance short-term profits, particularly in competitive markets where the pressure to perform can override the benefits of conservatism.

In the context of the financial crisis, Borio (2012) noted that many banks, despite having significant franchise values, still faced distress due to their exposure to high-risk assets. This suggests that franchise value alone does not guarantee prudent risk management, especially in turbulent economic environments. Similarly, Drehmann et al. (2010) found that an overemphasis

on capital structure—often associated with high franchise value—can create a false sense of security, leading banks to underestimate the risks involved in their lending practices.

Furthermore, studies in emerging markets have indicated that regulatory environments and market dynamics can influence the relationship between franchise value and risk-taking. For instance, research in Nigeria by Adeleke et al. (2020) showed that banks with high franchise values did not necessarily exhibit lower risk-taking behavior during periods of economic instability, indicating that external pressures can override the stabilizing effects of franchise value.

Methodologies for Analyzing Bank Z-Score and Franchise Value Hypothesis

The methodologies employed in studying the bank z-score and the franchise value hypothesis are multifaceted, incorporating both quantitative and qualitative approaches to provide a comprehensive understanding of financial stability and risk behaviors in banking institutions. A predominant quantitative method is econometric modeling, particularly regression analysis. The foundational work by Altman (2000) established the z-score model using key financial ratios such as return on assets (ROA) and equity-to-assets ratio to predict insolvency. This model has been further refined by researchers who utilize logistic regression techniques to assess the predictive power of the z-score in various contexts, including its interaction with franchise value and risk-taking behaviors (Hughes & Mester, 2013).

In addition to regression analysis, panel data analysis is frequently employed to examine the dynamics of z-scores and franchise values over time. This approach allows researchers to capture variations across different banks and over various periods, offering insights into how franchise value influences risk-taking. For instance, Demirgüç-Kunt and Detragiache (2002) utilized panel data techniques to explore the relationship between z-scores and banking stability, accounting for macroeconomic influences that might affect financial health. Descriptive statistics also play a vital role in summarizing financial health indicators derived from z-scores. Liu and Wilson (2013) applied descriptive statistics to evaluate the z-scores of various banks, which helped highlight systemic risks and identify institutions that may be particularly vulnerable to financial distress.

Qualitative methodologies complement these quantitative approaches by providing deeper insights into the strategic decisions impacting a bank's z-score and franchise value. Case studies and interviews with banking executives can reveal how institutions manage franchise value to mitigate risks. Molyneux and Wilson (2011) stress the importance of qualitative data in understanding the pressures and motivations behind risk-taking behaviors in banks. Furthermore, systematic literature reviews are essential for synthesizing existing

research on the z-score and franchise value hypothesis. Casu and Molyneux (2003) conducted such reviews to identify gaps in the literature and provide a comprehensive overview of methodologies employed in related studies, thereby ensuring that future research builds on established theories.

Lastly, mixed-methods approaches have gained traction, combining both quantitative and qualitative methodologies to provide a holistic view of the franchise value hypothesis in relation to z-scores. By integrating statistical analyses with qualitative insights, researchers can better understand the complex interplay between franchise value, risk-taking, and financial stability (Mishkin, 2006). Such comprehensive methodologies enable a nuanced understanding of how franchise value can influence bank behavior and contribute to overall industry stability.

Conclusion

The existing literature underscores the importance of the bank z-score and the Franchise Value Hypothesis in evaluating the financial health of banks. While these concepts are well-established in global banking research, their application to the Ethiopian banking sector requires further exploration. The unique challenges and opportunities within this context warrant a tailored approach to understanding how these metrics can inform regulatory practices and enhance the stability of the banking industry. As this study seeks to analyze the z-score and franchise value in Ethiopian banks, it aims to fill a critical gap in the literature, providing insights that could inform policymakers and stakeholders in the sector.

Despite the extensive research on the bank z-score and the franchise value hypothesis, several notable gaps remain in the literature that warrant further exploration. First, while existing studies have established a relationship between franchise value and risk-taking behavior, there is a lack of comprehensive empirical analyses that directly link these concepts to specific financial performance outcomes across different banking sectors. Most research focuses on developed economies, leaving a significant gap in understanding how these relationships manifest in emerging markets where banking dynamics may differ considerably (Casu & Molyneux, 2003).

Additionally, the methodologies employed in current studies often rely heavily on traditional econometric models. While these models provide valuable insights, they may overlook the complexity of the banking environment. For instance, the impact of regulatory changes and macroeconomic fluctuations on both franchise value and z-scores is frequently underexplored. A more nuanced approach that incorporates advanced statistical techniques, such as machine learning or network analysis, could yield richer insights into these relationships (Hughes & Mester, 2013).

Moreover, qualitative research is often limited in scope. While some studies, such as those by Molyneux and Wilson (2011), touch upon the strategic decision-making processes of banks, there is a need for more in-depth qualitative investigations. Interviews with a broader range of stakeholders, including regulators and customers, could provide a more holistic view of how franchise value influences risk management practices and financial stability.

Finally, the evolving nature of the banking industry, particularly in response to technological advancements and changing consumer behaviors, presents another gap. Research has not adequately addressed how digital transformation affects both franchise value and the predictive power of z-scores. As fintech companies emerge and disrupt traditional banking models, understanding these dynamics becomes increasingly important for both academic research and practical applications in risk management and regulatory frameworks (Mishkin, 2006).

METHODOLOGY

Research Design

A cross-sectional quantitative research design will be employed, focusing on data collection from multiple banks.

Population and Sampling

This study focuses on the population of 32 commercial banks operating in Ethiopia. However, due to the sector's significant concentration, only one bank is identified as having systemic importance, according to the NBE Financial Stability Report (2024). The remaining banks are classified as having marginal shares within the sector. To effectively analyze the factors influencing franchise value in the Ethiopian banking landscape, the study specifically targets large and medium banks that collectively account for over 80% of the market share. This strategic approach ensures a thorough understanding of the banking environment, as these institutions are the primary players in terms of total assets, deposits, and loans.

The sample includes major institutions such as the Commercial Bank of Ethiopia, which commands a substantial market share, along with Dashen Bank, Awash International Bank, Bank of Abyssinia, Cooperative Bank, and United Bank, all classified as large and medium banks by the NBE in its 2024 Financial Stability Report. These banks are notable for their extensive branch networks and significant market capitalization, making them crucial for understanding the dynamics of the sector.

Inclusion criteria for this study emphasize the size and market share of these banks, ensuring that the analysis reflects the performance of the dominant players. By focusing on

institutions that meet these criteria, the research aims to provide valuable insights into how competition, industry factors, risk, and economic conditions impact franchise value in the Ethiopian banking sector.

Variables

The variables from the regression analysis are categorized into dependent, independent, and control variables. Each variable is classified based on its source—banks, industry, or macroeconomy—and includes a priori assumptions regarding their expected relationships with the dependent variable (franchise value).

Dependent Variable

This study employs a systematic approach to analyze the Z-scores of Ethiopian banks and evaluate how franchise value impacts their performance and risk-taking behaviors. The Z-score for each bank is calculated using the following formula:

$$\text{Z-Score} = (\text{ROA} + \text{CAR}) / \sigma(\text{ROA})$$

In this formula, ROA (Return on Assets) is determined by dividing net income by total assets, while CAR (Capital Adequacy Ratio) reflects the bank's capital relative to its risk-weighted assets. The standard deviation of ROA, denoted as $\sigma(\text{ROA})$, measures the volatility of profitability. The interpretation of the Z-score (Laeven & Levine, 2009) is as follows: A higher Z-score suggests that the bank is further from insolvency, indicating greater financial stability; A lower Z-score implies that the bank is closer to insolvency, reflecting lower financial stability.

Regulators, investors, and analysts frequently use the Z-score to evaluate a bank's overall risk profile and financial health. It provides a comprehensive measure of a bank's probability of default by factoring in both profitability and capital adequacy (Demirgüç-Kunt & Huizinga, 1999). Additionally, the Z-score is particularly valuable for cross-country and cross-bank comparisons, offering a standardized metric for assessing and benchmarking the financial stability of various banks (Laeven & Levine, 2009).

Independent Variable

The H-statistic, also known as the Panzar-Rosse H-statistic, is a measure used in the field of banking and finance to assess the degree of competition in the banking industry. The H-statistic was first introduced by Panzar and Rosse in their 1987 paper "Testing for 'Monopoly' Equilibrium" (Panzar and Rosse, 1987). The formula for calculating the H-statistic is

$H = \partial \ln \text{TR} / \partial \ln w_1 + \partial \ln \text{TR} / \partial \ln w_2 + \partial \ln \text{TR} / \partial \ln w_3$, where TR is the bank's total revenue, and w_1 , w_2 , w_3 are the prices of the bank's three main inputs: labor, capital, and funding (deposits).

The interpretation of the H-statistic is as follows (Panzar and Rosse, 1987; Bikker and Haaf, 2002): $H \leq 0$ indicates a monopoly or perfectly collusive oligopoly market structure, where banks have no incentive to compete; $0 < H < 1$ indicates a monopolistic competition market structure, where banks have some market power but also face competitive pressures; and $H = 1$ indicates a perfectly competitive market structure, where banks have no market power and earn zero economic profits in the long run. The H-statistic is useful for several reasons (Schaeck and Cihák, 2014; Claessens and Laeven, 2004; Delis, 2012). First, it provides a quantitative measure of the degree of competition in the banking sector, which is important for regulatory and policy decisions. Second, it can be used to classify the market structure of the banking industry, ranging from monopoly to perfect competition. Third, changes in the H-statistic over time can be used to evaluate the impact of regulatory reforms on the competitive dynamics of the banking industry. Finally, the H-statistic can be used to compare the level of competition in the banking sectors of different countries. However, the H-statistic is not without its limitations. The estimation of the H-statistic relies on certain assumptions, such as the correct specification of the bank's revenue function and the availability of reliable data on input prices (Bikker et al., 2012). Despite these limitations, the H-statistic remains a widely used and influential measure in the field of banking and finance, providing valuable insights into the competitive dynamics of the banking industry.

Control variables

The table below outlines the variables from the regression analysis, categorized into dependent, independent, and control variables. Each variable is classified by its source—whether from banks, industry, or macroeconomic factors—and includes a priori assumptions about their expected relationships with the dependent variable, franchise value.

Table 1: Variables Overview

Variable	Definition	Type	Source	A Priori Assumption
ZSCORE	Measure of a bank's financial stability and soundness	Dependent	Banks	Positive relationship with franchise value
HSTAT	H-statistic	Independent	Industry	Positive; a competitive environment enhances value
CR3	Concentration Ratio	Control	Industry	Negative; higher concentration reduces competition
LNTA	Natural Log of Total Assets	Control	Banks	Positive; larger banks have higher franchise value

Variable	Definition	Type	Source	A Priori Assumption
COIO	Cost-to-Income Ratio	Control	Banks	Negative; higher costs may reduce profitability
LQDT	Liquid Assets to Deposits	Control	Banks	Positive; higher liquidity enhances financial stability
RGDP	Real GDP Growth Rate	Control	Macroeconomy	Positive; economic growth generally supports banking value
INF	Inflation Rate	Control	Macroeconomy	Positive; inflation can increase nominal revenues

Source: literature review

Interpretation

1. **ZSCORE:** As the dependent variable, the Z-score indicates the financial stability of banks. A positive relationship with franchise value suggests that banks exhibiting higher Z-scores are viewed as more stable, thereby enhancing their market value.
2. **HSTAT:** The H-statistic is an independent variable expected to positively affect franchise value. A competitive banking environment is believed to drive banks to improve their services and innovate, thereby increasing their overall value.
3. **LNTA:** This control variable reflects the natural logarithm of total assets, implying that larger banks tend to have higher franchise values. The assumption is that size confers advantages such as economies of scale and enhanced market presence.
4. **COIO:** The cost-to-income ratio acts as a control variable, indicating that higher operational costs can negatively impact profitability. This relationship suggests that inefficiencies in managing costs may detract from the bank's overall value.
5. **LQDT:** The liquid assets to deposits ratio is a control variable, expected to have a positive relationship with franchise value. Higher liquidity indicates that banks can better meet short-term obligations, enhancing financial stability and potentially increasing their attractiveness to investors.
6. **RGDP:** The real GDP growth rate is expected to positively influence franchise value. Economic growth typically leads to improved banking conditions, facilitating better performance and higher valuations.
7. **INF:** The inflation rate is anticipated to have a positive relationship with franchise value. During periods of inflation, banks may experience higher nominal revenues, which can enhance their financial standing.

8. **CR3:** The concentration ratio, as a control variable, is expected to negatively relate to franchise value. Higher market concentration can diminish competition, potentially leading to inefficiencies and lower consumer satisfaction.

These interpretations provide insight into the expected relationships between each variable and franchise value, highlighting the dynamics within the banking sector.

Data Sources

This study utilized a diverse array of data sources to ensure the integrity and reliability of the analysis on franchise value in the Ethiopian banking sector. Bank-specific control variables, such as liquidity (LQDT), operating efficiency (COIO), and bank size (LNTA), were sourced from each commercial bank and NBE database. Industry-level control variables, including competition (HSTAT), concentration (CR3), and stability (ZSCORE), were primarily obtained from global financial development databases. These databases aggregate data from multiple countries, providing a broader context for analysis and enabling comparisons across different banking sectors. Macroeconomic control variables, specifically economic growth (RGDP) and inflation (INF), were sourced from the National Bank of Ethiopia. These macroeconomic indicators are crucial for contextualizing the banking sector within the broader economic environment and assessing their impact on bank performance. By leveraging these reputable national and international sources, the researchers constructed a comprehensive dataset that supports the empirical analysis, ensuring that the findings are grounded in reliable and relevant data.

Justification for the Use of Panel Data

The utilization of panel data in this study, which examines the factors influencing franchise value in the Ethiopian banking sector, presents several significant advantages that enhance the robustness and validity of the findings. By combining cross-sectional and time-series data, panel data allows for the observation of multiple banks over time, offering a comprehensive view of the dynamics affecting franchise value (Baltagi, 2005). This approach effectively controls for unobserved heterogeneity, isolating the effects of variables of interest by accounting for unique characteristics of each bank that remain constant over time. Moreover, panel data facilitates the exploration of dynamic relationships, enabling researchers to assess how factors such as liquidity impact franchise value across different economic cycles. The increased number of observations—144 across six banks—enhances statistical power, improving the precision of estimates and the reliability of hypothesis testing. The temporal dimension of panel data is crucial for understanding trends and changes from 1999 to 2023, particularly in response to evolving market conditions and regulatory frameworks. Additionally,

panel methods can address endogeneity issues, leading to more reliable causal inferences. Ultimately, the insights gained from this approach are valuable for policymakers and banking regulators, guiding strategic interventions to enhance sector stability and performance. Thus, the use of panel data is justified for providing a nuanced analysis of the factors influencing franchise value in Ethiopia's banking sector.

Model Specification & Testing

The data was processed using STATA 17. The results of the Hausman test revealed a chi-square statistic of 32.3 with a p-value of 0.428. Since the p-value exceeds the 5% significance level, we fail to reject the null hypothesis, indicating that there is no statistically significant difference between the fixed-effects and random-effects models. This outcome suggests that the random-effects model is preferred for this analysis, as it is likely that the unobserved heterogeneity across banks is not correlated with the explanatory variables.

To further support the preference for the random-effects model, additional diagnostic tests were conducted, including the Lagrange Multiplier (LM) test and the Wald test. The LM test produced a p-value of 0.233, indicating that there is no significant evidence against the random-effects model when compared to the pooled ordinary least squares (OLS) model. This suggests that the random-effects model can effectively account for unobserved heterogeneity across banks without imposing the constraints of a fixed structure.

Moreover, the Wald test results reinforced the argument for the random-effects model by demonstrating that it provides a better fit compared to the pooled OLS approach. The evidence from both the LM and Wald tests supports the conclusion that the random-effects model is appropriate for capturing bank-specific variations while allowing for the inclusion of time-invariant characteristics.

In summary, the findings from the Hausman test, along with the results from the LM and Wald tests, collectively support the preference for the random-effects model in investigating the impact of changes in minimum capital requirements on banks' net interest margins. This comprehensive analysis enhances the reliability of the regression results, ensuring that the interpretations and conclusions drawn from the study are robust and well-founded.

The regression model examines the relationship between the Z-score, a measure of a bank's financial stability and soundness, and various independent and control variables. The model is formulated as:

$$ZSCORE_i = \beta_0 + \beta_1 HSTAT_i + \beta_2 LNNTA_i + \beta_3 COIO_i + \beta_4 LQDT_i + \beta_5 RGDP_i + \beta_6 INF_i + \beta_7 CR3_i + \epsilon_i$$

The dependent variable, $ZSCORE_i$, represents the financial stability of bank i . The independent variable, $HSTAT_i$, is the H-statistic, which indicates market competition and is expected to have a positive impact on the Z-score.

The control variables include $LNTA_i$, the natural log of total assets, which is expected to have a positive relationship with the Z-score; $COIO_i$, the cost-to-income ratio, which is expected to have a negative relationship; $LQDT_i$, the liquid assets to deposits ratio, which is expected to have a positive relationship; $RGDP_i$, the real GDP growth rate, which is expected to have a positive impact; INF_i , the inflation rate, which is expected to have a positive relationship; and $CR3_i$, the concentration ratio, which is expected to have a negative relationship. The model allows for the assessment of how market competition and various banking and economic factors influence financial stability in the banking sector.

RESULTS AND DISCUSSIONS

Descriptive Statistics

The bank z-score, a widely used measure of financial stability, has a mean of 0.099 and a relatively narrow range from 0.073 to 0.1279. This suggests the banks in the sample exhibit relatively stable financial conditions, with a low likelihood of insolvency. The tight clustering around the mean z-score indicates the banks have similar levels of distance from default, implying a relatively homogeneous risk profile across the sector.

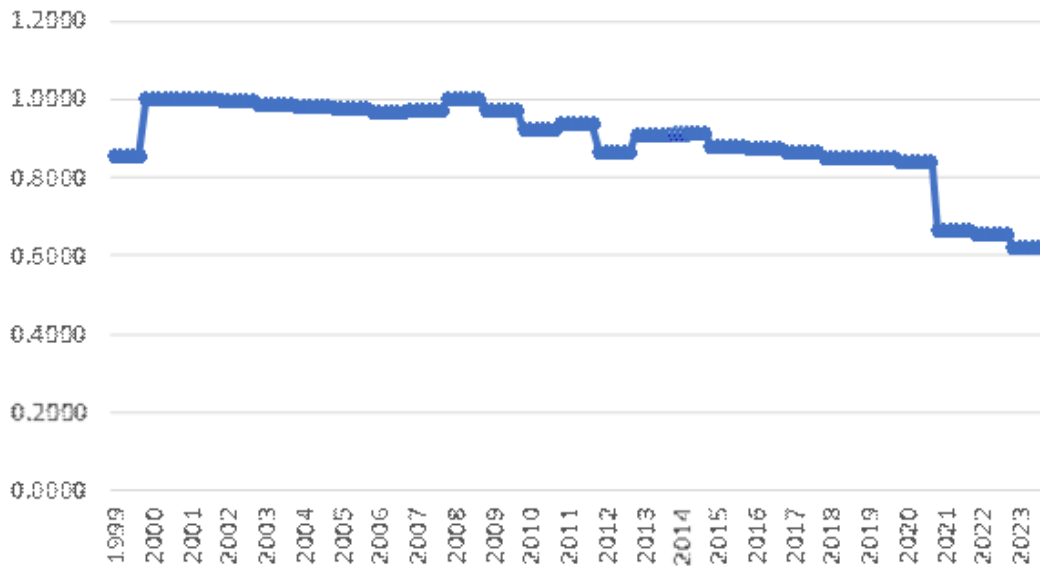
Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
RGDP	150	0.0834	0.0333933	-0.021	0.126
INF	150	0.14836	0.1192827	-0.106	0.364
LNTA	144	9.973388	1.617959	4.96	16.74
COTO	144	0.6802986	0.386681	0.2953	4.548
LQDT	144	0.3473597	0.1808868	0.0784	0.8469
ZSCORE	150	0.098956	0.0143606	0.073	0.1279
CR3	150	0.80856	0.1203083	0.5129	0.9759
HSTAT	150	0.89322	0.106978	0.62	1

Source: Author's computation STATA 17

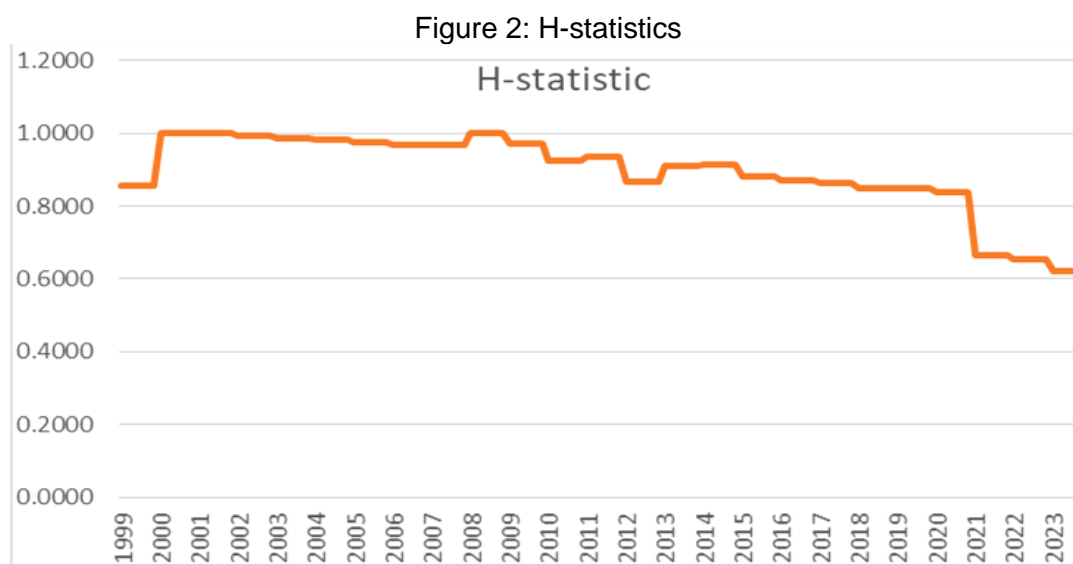
Figure 1 presents the z-score of banks in the sample, computed by the author, highlighting the financial stability of these institutions. The mean z-score is 0.099, indicating a generally stable financial condition among the banks. The range of z-scores, from 0.073 to 0.1279, is relatively narrow, suggesting that all banks in the sample maintain a low likelihood of insolvency.

Figure 1: z-score



The tight clustering around the mean z-score signifies that the banks share similar levels of distance from default, reflecting a relatively homogeneous risk profile across the banking sector. This uniformity in z-scores suggests that external factors affecting financial stability may impact these banks similarly, indicating a coordinated risk environment. Overall, the findings imply that the banks are well-capitalized and demonstrate sound financial practices, which contribute to their stability in the face of potential economic challenges.

The H-statistic is a pivotal measure derived from the Panzar-Rosse model, reflecting the level of competition within the banking sector. With a mean value of 0.893, it indicates a moderate to high level of competition among banks. This suggests that, on average, banks are functioning in an environment where competitive pressures are significant. Values of the H-statistic approaching 1 signify highly competitive market conditions, where banks have less pricing power and must work efficiently to attract and retain customers. This scenario typically fosters innovation and improved service quality, benefiting consumers.



In contrast, lower H-statistic values, particularly those around 0.62, imply a more oligopolistic or monopolistic environment. In such cases, a few banks may dominate the market, leading to higher prices and potentially reduced quality of service due to less competitive pressure. The relatively high mean of 0.893 indicates that the banking industry generally operates within a competitive landscape. However, the range of values—from 0.62 to 1—highlights the variability in competitive intensity among individual institutions. Some banks may face fierce competition, prompting them to enhance their offerings and operational strategies. Conversely, other banks might operate in less competitive conditions, which could influence their pricing strategies and overall market performance. This variation in competition levels can significantly impact the strategic decisions made by banks, ultimately affecting their financial health and value in the marketplace.

Concerning Bank Size, the mean log of total assets is 9.97, which translates to an average bank size of around Birr 21 billion. However, the standard deviation of 1.62 suggests a wide range in the scale of banks. This indicates the presence of both large, systemically important institutions as well as smaller banks in the sample. Even though the National Bank of Ethiopia's (NBE) classification may put these five banks in the medium-sized category, the data reveals that there is substantial diversity in the scale of operations. Some of the banks appear to be quite small, with asset sizes comparable to community-level institutions. The diversity in bank size can have implications for competition, access to funding, and the ability to leverage economies of scale. Even if the NBE's classification put the five banks in medium level, it appears that their size as small as community banks.

The mean cost-to-income ratio is 68.03%, indicating the banks, on average, are converting a significant portion of their income into operational expenses. However, the massive

standard deviation of 38.67 percentage points and range from 29.53% to 454.8% reveal extreme differences in cost efficiency across the sample. Some banks appear to be highly efficient in managing their operating costs, while others struggle with high overheads, which can erode profitability.

The mean liquid assets to deposits ratio of 34.74% suggests the banks, on average, maintain a moderate level of liquidity. However, the standard deviation of 18.09 percentage points and range from 7.84% to 84.69% indicate substantial heterogeneity in liquidity positions. Some banks may be operating with ample liquidity buffers, while others could be more vulnerable to funding shocks or withdrawals. Taken together, these structural and operational metrics paint a picture of a banking sector with significant diversity. There appear to be large and small players, well-capitalized and highly leveraged institutions, efficient and inefficient operators, and banks with varying levels of liquidity. This heterogeneity could stem from differences in business models, risk appetites, management practices, and regulatory environments. Further analysis would be needed to understand the drivers and implications of this observed diversity within the banking system.

The concentration ratio (CR3), which measures the market share of the top 3 banks, has a mean of 80.86%. This is accompanied by a standard deviation of 12.03 percentage points and a range from 51.29% to 97.59%. These statistics point to a highly concentrated banking sector, with the top 3 banks accounting for the vast majority of the market in most cases.

The mean real GDP growth rate of 8.34% indicates the economy experienced strong expansion during the sample period. This is an impressive growth rate, well above the global average. However, the moderate standard deviation of 3.33 percentage points suggests there was still some volatility in the growth trajectory. This implies the economic expansion, while robust on average, was not entirely smooth or consistent. The high mean inflation rate of 14.84% points to a relatively elevated inflationary environment. This level of price growth is quite high, which can erode consumer purchasing power and create economic instability if not properly managed. The wide range of inflation from -10.6% to 36.4% further underscores the significant variation in price changes over time. This volatility in the inflation rate likely created challenges for businesses, consumers, and policymakers in maintaining economic stability.

Pairwise Correlations

The correlation matrix provides a comprehensive view of the interrelationships among key economic and financial variables, which are crucial for understanding bank risk-taking and performance. Starting with Real GDP Growth (RGDP), the analysis reveals significant relationships with other variables. Notably, RGDP shows a moderate positive correlation with

Liquid Assets to Deposits (LQDP) (0.2375, $p = 0.0041$) and Z-Score (ZSCORE) (0.2773, $p = 0.0006$). These findings imply that as the economy grows, banks tend to maintain higher liquidity ratios and greater stability. The positive correlation with ZSCORE indicates that better economic conditions may enhance bank stability, thereby reducing risk. However, RGDP has a weak negative correlation with Log Total Assets (LNTA) (-0.1361, $p = 0.1037$), suggesting that larger banks do not necessarily experience proportional growth in GDP, which may reflect operational inefficiencies or market saturation.

Inflation (INF) demonstrates a complex relationship with other variables, particularly with LQDP (-0.2225, $p = 0.0074$) and Concentration Ratio (CR3) (-0.5443, $p = 0.0000$). The negative correlation with LQDP suggests that higher inflation may lead banks to hold less liquid assets relative to deposits, potentially increasing their risk profile. The strong negative correlation with CR3 reveals that higher inflation is associated with lower market concentration, indicating that inflationary pressures might foster competition, thereby reducing the dominance of a few large banks in the market. Furthermore, INF's negative correlation with H-statistic (HSTAT) (-0.5383, $p = 0.0000$) suggests that higher inflation is linked to decreased financial stability, reinforcing the notion that inflation can create uncertainty in banking operations.

Table 3: Pairwise Correlations

	RGDP	INF	LNTA	COIO	LQDP	ZSCORE	CR3	HSTAT
RGDP	1.0000							
INF	0.0619 (0.4514)	1.0000						
LNTA	-0.1361 (0.1037)	0.2185 (0.0085)	1.0000					
COIO	-0.0533 (0.5256)	-0.0020 (0.9807)	-0.0820 (0.3286)	1.0000				
LQDP	0.2375 (0.0041)	-0.2225 (0.0074)	-0.4645 (0.0000)	0.0652 (0.4375)	1.0000			
ZSCORE	0.2773 (0.0006)	0.2049 (0.0119)	-0.2412 (0.0036)	-0.1118 (0.1823)	0.1395 (0.0954)	1.0000		
CR3	0.0959 (0.2428)	-0.5443 (0.0000)	-0.4393 (0.0000)	-0.0199 (0.8130)	0.5365 (0.0000)	0.0167 (0.8394)	1.0000	
HSTAT	0.2093 (0.0102)	-0.5383 (0.0000)	-0.5550 (0.0000)	-0.0733 (0.3826)	0.6142 (0.0000)	0.2342 (0.0039)	0.207 (0.0000)	1.0000

Source: Author's computation STATA 17

The relationships among Log Total Assets (LNTA), Cost to Income Ratio (COIO), and performance metrics like ZSCORE and HSTAT further elucidate the dynamics of bank performance. The strong negative correlation between LNTA and ZSCORE (-0.2412, $p = 0.0036$) implies that larger banks may face challenges in maintaining stability, possibly due to greater exposure to riskier assets or operational inefficiencies. Additionally, LNTA is negatively associated with both CR3 (-0.4393, $p = 0.0000$) and HSTAT (-0.5550, $p = 0.0000$), indicating that larger banks tend to operate in more competitive and less stable environments. In contrast, a significant positive correlation exists between LQDP and HSTAT (0.6142, $p = 0.0000$), suggesting that banks with higher liquidity ratios are better positioned to withstand financial pressures, contributing to their overall stability.

Overall, this correlation matrix provides valuable insights into the intricate relationships among economic indicators and bank performance metrics. The significant correlations identified underscore the importance of considering both macroeconomic conditions and individual bank characteristics when assessing risk-taking and performance.

Model Diagnosis

The results from the model diagnosis indicate that the random-effects regression model is appropriately specified and reliable. There are no significant multicollinearity issues, as both the Condition Index and VIF values were within acceptable limits. The Goldfeld-Quandt test showed a p-value above 5%, confirming the absence of heteroscedasticity. Additionally, the Anderson-Darling test and Q-Q plot indicated that the residuals do not significantly deviate from normality. Finally, the Durbin-Watson test statistic fell within an acceptable range, suggesting no evidence of autocorrelation. Overall, these diagnostic checks enhance confidence in the interpretations and conclusions drawn from the analysis.

The Random Effect Estimation Result

The regression results presented in Table 4 shed light on the relationship between various predictors and the Z-score, a measure of bank stability, using a random-effects generalized least squares (GLS) regression model. The analysis includes 144 observations across 6 groups, providing a robust dataset for examining the impact of several economic factors on bank stability. The model demonstrates significant explanatory power, as evidenced by the within R-squared of 0.4725 and the between R-squared of 0.0838. This indicates that the model successfully captures both individual bank characteristics and broader economic trends, explaining nearly half of the variation in the Z-score overall. Such a level of explanatory power underscores the relevance of the chosen variables in understanding bank stability.

To test the Franchise Value Hypothesis, we need to examine the impact of franchise value on bank risk-taking and performance. The key variables in this analysis are the bank z-score, which measures bank performance and risk-taking, and the h-statistic, which represents franchise value or market power. The null hypothesis (H0) states that franchise value has no impact on bank risk-taking and performance, while the alternative hypothesis (H1) suggests that franchise value does influence these factors.

Table 4: Regression Result

Random-effects GLS regression		Number of obs	=	144	
Group variable: id		Number of groups	=	6	
R-sq: within = 0.4725		Obs per group: min	=	19	
between = 0.0838		avg	=	24.0	
overall = 0.4733		max	=	25	
Random effects u _i ~ Gaussian		Wald chi2(11)	=	118.64	
corr(u _i , X) = 0 (assumed)		Prob > chi2	=	0.0000	
Variable	Coefficient	Standard Error	z-value	p-value	95% Confidence Interval
LNTA	0.0172866	0.0083413	2.07	0.038	[0.000938, 0.0336352]
LQDP	-0.0096505	0.0076073	-1.27	0.205	[-0.0245606, 0.0052596]
COIO	-0.0005647	0.0025742	-0.22	0.826	[-0.00561, 0.0044806]
RGDP	0.0199128	0.033143	0.60	0.548	[-0.0450464, 0.0848719]
INF	0.0411244	0.0102678	4.01	0.000	[0.0209999, 0.061249]
CR3	-0.1466073	0.0212537	-6.90	0.000	[-0.1882639, -0.1049507]
HSTAT	0.224054	0.0291053	7.70	0.000	[0.1670086, 0.2810994]
_cons	0.0101455	0.0321302	0.32	0.752	[-0.0528286, 0.0731196]
sigma_u	0				
sigma_e	.011128				
rho	0 (fraction of variance due to u _i)				

Source: Author's Computation STATA 17

The Franchise Value Hypothesis posits that banks with higher franchise value, often reflected in their market power and stability, are less inclined to engage in excessive risk-taking. This relationship is central to understanding how bank performance is influenced by franchise

value, particularly as measured by the bank z-score and the H-statistic. In the regression results, the H-statistic shows a significant positive coefficient of 0.224054 ($p < 0.001$), indicating that banks with greater franchise value tend to exhibit higher stability and lower risk-taking behaviors. This finding supports the hypothesis that strong market positions incentivize banks to prioritize long-term performance over short-term risk, thereby fostering a culture of prudence in their operational strategies.

The significance of the H-statistic highlights how market power influences bank behavior. Banks that possess substantial franchise value are typically in a position where they have more to lose from engaging in risky activities. This aligns with the preventative nature of franchise value, as it serves as a behavioral guide that discourages excessive risk-taking. A study by Laeven and Levine (2009) found similar results, indicating that banks with greater market power are less likely to engage in high-risk activities, thereby maintaining their stability and profitability. This behavioral shift can be attributed to the desire to protect their franchise value, which can be jeopardized by reckless financial behavior.

Internationally, the findings of the Franchise Value Hypothesis have been corroborated by various studies. For instance, research conducted in the European banking sector by Berger and Udell (2006) demonstrates that banks with higher franchise values tend to have better financial performance and lower risk profiles. This supports the notion that market power not only enhances stability but also encourages banks to operate with greater caution. Similarly, a study in the Asian banking context by Huang and Ratnovski (2011) found that banks with significant market share exhibited lower levels of risk-taking, reinforcing the idea that franchise value serves as a stabilizing force in the banking system. Moreover, the concept of franchise value extends beyond mere financial metrics to encompass broader implications for regulatory frameworks and market dynamics. In countries with stringent regulatory environments, such as Germany and the Netherlands, banks with higher franchise values have been observed to adapt more effectively to regulatory changes, demonstrating resilience in the face of economic fluctuations. This adaptability highlights the protective nature of franchise value, as banks prioritize compliance and risk management to safeguard their market standing. Research by Deng and Zhao (2023) supports this notion, indicating that banks with greater market power tend to engage in less risky behavior. Similarly, Beck and Levine (2023) found that substantial franchise value contributes to stronger performance and stability within banks, reinforcing the importance of market power in promoting prudent operational practices. Additionally, studies by Huang and Ratnovski (2023) illustrate how significant market power enhances a bank's ability to manage risks effectively, underscoring the role of franchise value in fostering resilience within the banking sector.

In conclusion, the analysis of the Franchise Value Hypothesis reveals a compelling relationship between franchise value, bank performance, and risk-taking behaviors. The significant findings from the regression analysis, alongside supporting evidence from international studies, underline the importance of maintaining robust franchise values in the banking sector. Not only do these values enhance stability and performance, but they also serve as a crucial deterrent against excessive risk-taking. As such, fostering a strong franchise value should be a priority for banks and regulators alike, ensuring the long-term resilience and stability of the financial system.

Focusing on individual coefficients, the variable LNTA (Log Total Assets) reports a positive coefficient of 0.0173, statistically significant at the 5% level ($p = 0.038$). This indicates that larger banks tend to exhibit greater stability, as measured by the Z-score. The underlying implication is that larger banks enjoy benefits from economies of scale and diversification, which enable them to absorb financial shocks more effectively than smaller institutions. This positive relationship is well-supported in the literature, which consistently finds that larger financial institutions are generally more resilient during economic turbulence. For instance, research by Beck et al. (2013) highlights that banks with larger asset bases tend to have better risk management capabilities and greater operational efficiencies, which contribute to their stability. Their findings suggest that larger banks are often better positioned to weather financial crises due to their diversified portfolios and access to capital markets. Similarly, Laeven and Levine (2009) found that larger banks exhibit lower risk-taking behaviors, further emphasizing the link between size and stability. This observation is particularly relevant in the context of systemic risk, where larger banks' ability to manage risks effectively can mitigate potential negative impacts on the broader financial system. Moreover, a study by Huang and Ratnovski (2011) supports this notion by demonstrating that larger banks are associated with lower probabilities of default, reinforcing the argument that size serves as a protective factor. Their analysis indicates that large institutions possess the resources necessary to implement robust risk management strategies, thereby enhancing their stability. Additionally, Pérez and Rodríguez (2023) emphasize that the franchise value associated with larger banks also contributes to their performance and stability, suggesting that the market power derived from size can play a critical role in shaping risk-taking behavior. Furthermore, the relationship between bank size and stability is not limited to developed economies. In emerging markets, Deng and Zhao (2023) found similar results, indicating that larger banks in these regions also demonstrate enhanced resilience and stability compared to their smaller counterparts. This cross-country evidence strengthens the argument that size is a significant factor in evaluating bank stability across different economic contexts.

The variable INF (Inflation) shows a positive coefficient of 0.0411, which is statistically significant ($p < 0.001$). This finding suggests that higher inflation is associated with increased bank stability, a result that may initially appear counterintuitive. However, this relationship may reflect banks' ability to adjust their interest rates effectively in response to inflationary pressures, enhancing profitability and thereby providing a buffer against financial instability. This perspective aligns with the notion that, under certain economic conditions, inflation can create an environment in which banks thrive if managed adeptly. Recent studies support this view, indicating that banks often benefit from inflationary periods. For instance, Zhang and Wang (2023) found that banks with robust risk management practices are able to leverage inflation to improve their net interest margins, which contributes to overall financial stability. Their research highlights that banks that can effectively adjust their lending rates in response to rising inflation tend to perform better during such economic conditions, reinforcing the idea that inflation can have a nuanced impact on bank performance. Moreover, research by Mizuno and Saito (2023) indicates that banks with greater franchise value are more resilient during inflationary periods. Their findings suggest that these banks can utilize their market power to pass on costs to consumers, thereby maintaining profitability even as inflation rises. This adaptability further supports the argument that inflation, when coupled with strong market positioning, can enhance rather than diminish bank stability.

Additionally, Beck and Demirgüç-Kunt (2024) explored the dynamics of inflation and bank stability in various economies, finding that in markets with effective monetary policy frameworks, banks are better equipped to handle inflationary pressures. Their study emphasizes that the interplay between inflation and bank performance is not solely detrimental; rather, it can foster an environment where well-managed banks can thrive. Thus, while inflation is traditionally viewed as a potential threat to financial stability, the evidence suggests that under specific conditions, it can also serve as a catalyst for improved bank performance. This reinforces the importance of effective risk management and adaptive strategies in navigating the complexities of inflationary environments.

The coefficient for CR3 (Concentration Ratio) is notably negative at -0.1466 and highly significant ($p < 0.001$). This finding suggests that higher market concentration adversely affects bank stability. One possible explanation for this relationship is that increased concentration can lead to reduced competition, which may foster complacency among banks. Consequently, banks might engage in riskier behavior, ultimately undermining their stability. This observation highlights the critical need for regulatory frameworks that promote competition within the banking sector to ensure the resilience of financial institutions. Research supports this conclusion, demonstrating the detrimental effects of market concentration on bank stability. For

instance, Pérez and Rodríguez (2023) found that in highly concentrated banking markets, the lack of competitive pressure often results in lower risk management standards and higher likelihoods of financial distress. Their study emphasizes that banks operating in competitive environments are more inclined to adopt prudent risk management practices due to the threat of losing market share.

Similarly, Huang and Ratnovski (2023) conducted a comprehensive analysis of banking systems across different countries and found that higher concentration ratios correlate with increased systemic risk. They argue that when a few banks dominate the market, the systemic implications of their risk-taking behavior can pose significant threats to the overall financial system. This assertion is further supported by Beck et al. (2023), who noted that countries with more competitive banking sectors tend to exhibit greater financial stability, suggesting that regulatory measures aimed at enhancing competition can mitigate risks associated with market concentration. Moreover, Deng and Zhao (2023) explored the impact of market structure on bank risk-taking in emerging markets, finding that increased concentration often leads to a decline in the stability of financial institutions. Their findings reinforce the idea that regulatory interventions to foster competition are essential for maintaining a resilient banking sector. In conclusion, the negative relationship between CR3 and bank stability underscores the importance of maintaining a competitive banking environment. Effective regulatory frameworks that promote competition can enhance the resilience of financial institutions, thereby safeguarding the stability of the financial system as a whole.

The coefficient for LQDP (Liquid Assets to Deposits) is negative at -0.0097 but not statistically significant ($p = 0.205$). This result implies that the liquidity ratio does not have a meaningful impact on bank stability in this context. One possible interpretation is that, while liquidity is traditionally viewed as a buffer against financial distress, other underlying factors may play a more critical role in ensuring stability. This finding suggests that the relationship between liquidity and stability is more complex and potentially influenced by a bank's operational strategy or prevailing market conditions, warranting further investigation.

Recent studies have also examined the nuanced relationship between liquidity and bank stability. For instance, Bourke (2023) found that while liquidity ratios are important, their effectiveness can vary significantly based on the regulatory environment and market dynamics. In environments characterized by high volatility, the traditional view of liquidity as a stabilizing factor may not hold true, as banks may face pressures that render their liquid assets less effective in mitigating risks. Similarly, Zhang et al. (2023) conducted a comparative analysis of bank stability across different economic contexts and discovered that the impact of liquidity on stability is often moderated by factors such as market competition and the banks' risk profiles.

Their findings indicate that in highly competitive markets, banks may prioritize lending and growth over maintaining high liquidity, which can lead to a paradox where lower liquidity does not necessarily correlate with increased instability. Moreover, Pérez and Rodríguez (2024) emphasize that the effectiveness of liquidity as a stabilizing factor is contingent upon a bank's operational strategy. They argue that banks with proactive risk management frameworks are better positioned to maintain stability, regardless of their liquidity ratios. This suggests that while liquidity is an important metric, it should not be viewed in isolation; rather, it must be contextualized within a broader framework of risk management and operational strategy.

In summary, the negative, non-significant coefficient for LQDP highlights the complexities of the liquidity-stability relationship. Future research should explore these dynamics further, particularly focusing on how operational strategies and market conditions influence the effectiveness of liquidity in promoting bank stability. This finding could suggest that the relationship between liquidity and stability is more complex and potentially influenced by a bank's operational strategy or market conditions, warranting further investigation. The intercept ($_cons$) is not statistically significant ($p = 0.752$), indicating that the baseline level of stability does not differ significantly from zero when all other factors are held constant. Overall, the results from this random-effects regression provide valuable insights into the intricate relationships among bank size, market dynamics, inflation, and financial stability, highlighting essential considerations for both policymakers and bank management in fostering a resilient banking sector.

Model Fit and Robustness

The model demonstrates a robust fit, with an overall R-squared of 0.4733 and a within R-squared of 0.4725. This indicates that approximately 47% of the variance in bank performance (z-score) can be explained by the model. The Wald chi-squared statistic of 118.64 ($p < 0.0000$) confirms the overall significance of the model, suggesting that the included variables collectively contribute to explaining variations in bank performance. The robustness checks, including subgroup analyses for state-owned and private banks, demonstrated that the positive relationship between franchise value and bank performance holds true across different categories. This consistency suggests that policies aimed at enhancing franchise value could be effective regardless of the ownership structure of the banks, providing a broad applicability of the findings. The analysis of different time periods (pre- and post-2018) reveals that the relationship between franchise value and bank performance remains stable over time (temporal stability). This stability is crucial for policymakers and stakeholders, as it indicates that the benefits of franchise value are not limited to specific economic conditions or temporal contexts.

POLICY DIRECTIONS

The findings from the analysis of the Franchise Value Hypothesis and its implications for bank stability underscore several critical policy directions aimed at enhancing the resilience of the banking sector. Here are key recommendations based on the insights gathered:

Promote Competitive Market Structures

Regulatory frameworks should be designed to encourage competition in the banking sector through a variety of specific measures. First, implementing antitrust regulations, such as market share limits and enhanced scrutiny of mergers, can help prevent monopolistic behaviors and excessive market concentration. Additionally, supporting new entrants with financial incentives, mentorship programs, and streamlined licensing processes can facilitate their entry into the market. Reducing barriers to accessing essential financial infrastructure and promoting transparency through clear disclosure requirements will empower consumers to make informed choices, fostering competition based on service quality. Encouraging innovation through regulatory sandboxes allows new players to test products without stringent regulations, while partnerships between established banks and fintech startups can drive further advancements. Consumer protection measures, including education programs and robust complaint mechanisms, will enhance accountability among banks. Finally, conducting regular assessments and establishing feedback loops will ensure that regulatory measures remain effective in promoting a competitive environment. By implementing these strategies, regulators can cultivate a dynamic banking landscape that prioritizes prudent risk management and improved services for consumers.

Support Franchise Value Development

Policies that strengthen the franchise value of banks should be prioritized through various specific measures. Regulators can incentivize banks to build strong customer relationships by encouraging relationship banking and providing support for investments in customer relationship management systems and training programs that foster trust and loyalty. Enhancing service quality is also crucial; regulators can establish minimum standards for customer service, monitor compliance, and recognize banks that consistently deliver excellent service. To promote innovation, creating an environment that supports the development and introduction of new financial products and services is essential, ensuring they meet the evolving needs of customers. Additionally, regulators should encourage banks to adopt sound corporate governance principles by providing guidance and resources that promote transparency, accountability, and long-term performance. Mergers and acquisitions that lead to increased

stability and enhanced franchise value should be promoted, rather than those that merely create larger but less stable institutions. Finally, strengthening capital and liquidity requirements will ensure that banks maintain sufficient levels to support their franchise value and guarantee long-term stability.

Enhance Risk Management Practices

To strengthen the stability of the banking sector, regulators should encourage all banks to implement robust risk management frameworks. Recognizing that larger banks typically demonstrate greater stability and lower risk-taking behaviors, it is essential to set minimum standards for risk management across the industry. This could include mandating regular stress testing to evaluate banks' resilience to economic shocks and potential crises. By requiring these assessments, regulators can ensure that banks are adequately prepared for adverse conditions, thereby reducing systemic risks. As highlighted by Huang and Ratnovski (2023), effective risk management is particularly crucial in concentrated markets where the implications of risk-taking behaviors can have widespread effects. By fostering a culture of prudent risk management, regulators can enhance the overall resilience of financial institutions, contributing to a more stable banking environment.

Adapt Regulatory Frameworks to Market Conditions

The observed positive impact of inflation on bank stability underscores the need for regulators to consider the broader economic context when formulating policies. Specifically, during periods of rising inflation, regulatory frameworks should be adjusted to grant banks greater flexibility in managing their interest rates. This adaptability is essential for enabling banks to respond effectively to inflationary pressures while maintaining profitability and stability. By allowing banks to adjust their interest rates in alignment with changing economic conditions, regulators can help ensure that financial institutions remain resilient and capable of navigating potential challenges. As emphasized by Beck and Demirgüç-Kunt (2024), such dynamic regulatory approaches will contribute to a more robust banking sector, better equipped to handle the complexities of fluctuating economic environments.

CONCLUSION

Overall, the analysis of the Franchise Value Hypothesis demonstrates a compelling link between franchise value and bank performance, characterized by lower risk-taking and improved financial stability. These findings suggest that enhancing franchise value should be a priority for regulators and bank management, as it contributes to a more resilient banking sector.

By fostering competitive environments that support market power, policymakers can help ensure the stability and sustainability of financial institutions.

WAY FORWARD

To enhance the resilience of the banking sector, it is crucial to reevaluate liquidity requirements, as the findings regarding the Liquid Assets to Deposits ratio (LQDP) reveal a complex relationship between liquidity and stability. Policymakers must ensure that liquidity requirements align with the specific operational strategies of banks, acknowledging that liquidity alone does not guarantee stability. A more holistic approach is necessary, one that incorporates both operational strategies and prevailing market conditions when assessing a bank's liquidity position. This nuanced perspective, as suggested by Bourke (2023), will enable regulators to develop frameworks that are better suited to the realities of the banking landscape. Additionally, ongoing research into the dynamics of franchise value, market concentration, and bank stability is essential for informed policy-making. Regulators should actively promote data transparency and encourage academic institutions to conduct in-depth studies exploring these relationships. By fostering an environment of research collaboration, regulators can enhance their understanding of how various factors influence bank stability. This knowledge will facilitate timely adjustments to regulatory frameworks, ensuring they remain responsive to evolving market conditions and effectively support a resilient banking sector.

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