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The Impact of Foreign Direct Investment (FDI) on Zambia's Banking Sector Growth: An Econometric Analysis, 2010–2023

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Abstract : This study investigates the influence of Foreign Direct Investment (FDI) on Zambia's banking sector between 2010 and 2023, with specific emphasis on credit expansion, operational efficiency, sector stability, and profitability. Recognizing the strategic importance of the financial sector in economic development, the research employs an Autoregressive Distributed Lag (ARDL) model to examine both short-run and long-run effects of FDI using time-series data. Rigorous diagnostic tests affirm the model's validity, supporting the robustness of the findings. Results reveal that FDI significantly contributes to credit growth, with domestic credit to the private sector increasing by 0.18% for every $1 billion in FDI inflows. Furthermore, FDI indirectly enhances operational efficiency, primarily through technological innovation and knowledge spillovers. However, its direct impact on banking stability and profitability is marginal, as institutional frameworks and internal management strategies remain the dominant drivers. Based on these findings, the study recommends enhancing regulatory frameworks, fostering strategic collaborations between foreign and domestic banks to strengthen knowledge transfer, and promoting digital financial services to improve financial inclusion. By situating FDI as both a catalyst for growth and a channel for modernization, the research offers actionable insights for policymakers, financial regulators, and banking executives seeking to optimize FDI's contribution to sectoral development in emerging economies.

Keywords: Foreign Direct Investment, Banking Sector, Zambia, ARDL Model, Financial Stability

I. INTRODUCTION

Foreign Direct Investment (FDI) is widely recognized as a driver of economic growth in developing economies, channeling capital, technology, and expertise into key sectors such as banking (Borensztein et al., 1998). Both theoretical and empirical research suggest that Foreign Direct Investment (FDI) plays a vital role in supporting economic growth. FDI is defined as an investment made by an entity from one country to establish a lasting interest in a business operating in another country (Msoni, 2012). Theoretically, FDI contributes to economic development by injecting capital, introducing new products and foreign technologies, and enhancing the local knowledge base through skill transfer (Elboiashi, 2011). These factors collectively strengthen the host country's economy, fostering innovation and long-term growth.

In Zambia, a landlocked Southern African nation, the banking sector has undergone significant transformation since the 1990s liberalization, with FDI playing a pivotal role in reshaping its structure and performance (Mwila & Nyirenda, 2018). Despite global FDI declines (e.g., -12% to $1.3 trillion in 2022, UNCTAD, 2023), Zambia recorded a 266% FDI surge to $108 million in 2023, reflecting renewed investor confidence post-economic reforms (IMF, 2023). Yet, the specific impact of FDI on banking sector growth measured through credit expansion, stability, efficiency, and profitability remains underexplored. Prior to the economic reforms undertaken in the early dominated by foreign owned banks and state-owned financial institutions set up by the Government for various purposes, including the provision of concessional and long-term finance to priority sectors. Three of the major banks, Barclays Bank, Standard Chartered Bank and ANZ Grindlays Bank (now Stanbic Bank), were established in the colonial era and primarily served the interests of foreign corporate entities (Brownbridge, 1996b). To redress this perceived imbalance the government established several financial institutions to serve the interests of the local population in need of small and medium scale financial services (Maimbo, 2001).
In the African context, studies have shown that FDI in the banking sector has contributed to financial deepening and inclusion. For instance, Beck, Maimbo, Faye, and Triki (2011) found that foreign banks in Africa tend to have higher levels of capitalization and better access to international financial markets, which can enhance their ability to lend and support economic activities. Additionally, foreign banks often introduce new financial products and technologies that can improve service delivery and customer satisfaction.

Foreign Direct Investment is a critical driver of economic growth in developing countries. By transferring capital, technology, and managerial expertise, FDI can bolster various sectors, including the banking industry.
Using a quantitative approach grounded in the Ownership-Location-Internalization (OLI) Framework (Dunning, 1988) and Financial Liberalization Theory (McKinnon, 1973), the study employs advanced econometric techniques to analyze 2010–2023

data. The findings offer actionable insights for policymakers and stakeholders aiming to enhance financial stability and economic growth.

1.1 Background of the study

Foreign Direct Investment (FDI) is widely acknowledged as a catalyst for economic growth in developing economies, facilitating the transfer of capital, technology, and managerial expertise into critical sectors such as banking (Borensztein et al., 1998). FDI is defined as an investment made by an entity from one country to establish a lasting interest in a business operating in another country (Msoni, 2012). Theoretically, FDI contributes to economic development by injecting capital, introducing new products and foreign technologies, and enhancing the local knowledge base through skill transfer (Elboiashi, 2011). These factors collectively strengthen the host country's economy, fostering innovation and long-term growth.

In the context of Zambia, a landlocked Southern African nation, the banking sector has undergone significant transformation since the liberalization policies of the 1990s. FDI has played a pivotal role in reshaping the structure and performance of the banking industry (Mwila & Nyirenda, 2018). Despite a global decline in FDI flows—recording a 12% decrease to $1.3 trillion in 2022 (UNCTAD, 2023)—Zambia experienced a remarkable 266% surge in FDI, reaching $108 million in 2023. This surge reflects renewed investor confidence following the implementation of economic reforms (IMF, 2023).
Historically, Zambia's banking sector was dominated by foreign-owned banks and state-owned financial institutions established by the government to provide concessional and long-term finance to priority sectors. Major banks such as Barclays Bank, Standard Chartered Bank, and ANZ Grindlays Bank (now Stanbic Bank) were established during the colonial era, primarily serving the interests of foreign corporate entities (Brownbridge, 1996b). To address this imbalance, the government established several financial institutions aimed at serving the local population's needs for small and medium-scale financial services (Maimbo, 2001).

In the broader African context, studies have indicated that FDI in the banking sector contributes to financial deepening and inclusion. For instance, Beck, Maimbo, Faye, and Triki (2011) found that foreign banks in Africa tend to have higher levels of capitalization and better access to international financial markets, enhancing their lending capacity and support for economic activities. Additionally, foreign banks often introduce new financial products and technologies, improving service delivery and customer satisfaction.

This study employs a quantitative approach grounded in the Ownership-Location-Internalization (OLI) Framework (Dunning, 1988) and Financial Liberalization Theory (McKinnon, 1973). Advanced econometric techniques are utilized to analyze data from 2010 to 2023, providing actionable insights for policymakers and stakeholders aiming to enhance financial stability and economic growth.

1.2 Statement of the problem

Zambia has experienced a notable increase in Foreign Direct Investment (FDI) over the past decade, especially following financial and structural reforms aimed at attracting foreign capital (UNCTAD, 2023; IMF, 2023). Despite this growth, the banking sector continues to face challenges related to limited credit expansion, uneven profitability, and high concentration of foreign ownership. While Zambia's FDI inflows surged by 266% in 2023 to reach $108 million, a large portion of these investments have historically targeted the mining and infrastructure sectors, with relatively little focus on long-term financial sector development (World Bank, 2023).

Although theoretical models such as the OLI framework (Dunning, 1988) and financial liberalization theory (McKinnon, 1973) suggest that FDI can enhance banking sector performance through capital infusion, technological transfer, and managerial efficiency, empirical evidence remains inconclusive. Some studies report a positive impact of FDI on financial development (Beck et al., 2011; Moyo, 2013), while others find minimal or indirect effects on core banking indicators like credit availability, operational efficiency, and financial stability (Brownbridge, 1996; Elboiashi, 2011).

Given that foreign-owned banks control over 75% of Zambia's banking assets (Afreximbank, 2023), it becomes necessary to investigate the real impact of FDI on banking sector growth. There is limited empirical literature assessing whether FDI has translated into measurable improvements in the sector. This gap creates uncertainty in policymaking, highlighting the need for a focused study that assesses the actual role FDI has played in Zambia's banking sector performance between 2010 and 2023.

1.3 Research Questions

Based on the aim of the study, the following are the research questions:
1. What is the effect of FDI on the Zambian Banking sector growth as measured by Bank Capital?
2. How has FDI influenced operational efficiency in Zambia's banking sector as measured by the return on assets?
3. What is the effect of FDI on the financial stability and resilience of Zambia's banking sector as measured by asset growth?

II. LITERATURE REVIEW

2.1 Literature on Foreign Direct Investment in Zambia's Banking Sector

Foreign Direct Investment (FDI) is a critical driver of economic development, particularly in emerging markets where capital, technology, and expertise are scarce. Defined as investments conferring significant control over host-country entities (United Nations Conference on Trade and Development [UNCTAD], 2023), FDI in the banking sector has transformative potential, enhancing credit availability, operational efficiency, financial stability, and inclusion. In Zambia, a landlocked Southern African nation, FDI has reshaped the banking sector since 1990s liberalization, yet its specific impacts on growth remain underexplored. This literature review synthesizes global, regional, and Zambia-specific scholarship from the past 10–15 years, organized thematically to examine FDI's effects on banking sector growth, stability, efficiency, and inclusion. By critically evaluating

theoretical frameworks and empirical evidence, it identifies gaps that this study addresses through an econometric analysis of Zambia's banking sector from 2010 to 2023.

2.1 FDI and Banking Sector Growth

FDI fosters banking sector growth by injecting capital, spurring competition, and expanding financial intermediation. Claessens et al. (2001) demonstrate that foreign bank entry reduces interest margins and increases credit availability, a finding echoed in Sub-Saharan Africa, where FDI boosted private credit by 10% in urban markets from 2005 to 2015 (Fanta & Makina, 2019). In Zambia, FDI inflows surged from $616 million in 2006 to $1.3 billion in 2007, fueling domestic credit growth to $3.6 billion by 2023 (Bank of Zambia, 2023; International Monetary Fund [IMF], 2023b). Foreign banks like Standard Chartered and Absa have driven this expansion, leveraging global networks to enhance liquidity (Mwila & Nyirenda, 2018).

However, growth benefits are not universal. Rau (2023) finds that in India, FDI inflows of $1.6 billion in 2022 increased private credit by 12% but strained local banks through profit repatriation, with $500 million annually diverted abroad (Reserve Bank of India, 2023). Zambia faces similar risks, with $50 million in profits repatriated in 2022, potentially limiting reinvestment (Bank of Zambia, 2023). The Financial Liberalization Theory (McKinnon, 1973) posits that FDI enhances efficiency through market openness, yet Rau (2023) notes that India's benefits diminished over time due to regulatory gaps. Zambia's volatile FDI flows $108 million in 2023 after a $65 million outflow in 2022 (UNCTAD, 2023) suggest that sustained growth requires robust governance, a gap this study addresses by quantifying FDI's long-term impact on credit expansion.

2.2 FDI and Financial Stability

FDI's impact on banking stability is debated, with studies highlighting both stabilizing and destabilizing effects. Barajas et al. (2013) argue that foreign banks bolster stability during crises, citing Mexico's 1994 crisis, where $2 billion in FDI reduced non-performing loans (NPLs) by 5% within two years (IMF, 2021). Similarly, Claessens and Van Horen (2012) find that foreign banks' higher capitalization mitigates systemic risks in emerging markets. In Zambia, a 23% capital adequacy ratio in 2022 reflects resilience, partly attributed to FDI (IMF, 2023a).

Conversely, volatility in FDI flows can undermine stability. Lu Chi Huu (2022) analyzes 96 ASEAN banks from 2008 to 2019, finding that portfolio investments increase NPLs due to rapid withdrawals, while direct FDI has a weak positive effect. In Zambia, NPLs spiked to 12% in 2020 despite FDI inflows, suggesting that foreign banks' risk management tools, such as Basel III frameworks, require local adaptation (IMF, 2021). Lensink and Hermes (2004) caution that excessive foreign ownership 75% of Zambia's banking assets (Afreximbank, 2023) heightens exposure to global shocks, as seen in a $65 million FDI outflow in 2022 (UNCTAD, 2023). Abaidoo and Agyapong (2022) note that Sub-Saharan African banks benefited from $1.8 billion in FDI by 2018, but Zambia's 15% inflation rate in 2022 eroded liquidity by 3% (Bank of Zambia, 2023), highlighting macroeconomic constraints. This study fills a gap by examining whether FDI structurally enhances Zambia's banking stability or exacerbates vulnerabilities.

2.3 FDI and Operational Efficiency

FDI enhances banking efficiency through technological innovation and governance improvements. Goldberg (2004) argues that foreign banks introduce advanced systems, reducing operational costs and improving service delivery. In Zambia, Stanbic's core banking platform and Atlas Mara's digitization of Zanaco cut transaction costs by 30% (Bank of Zambia, 2023), aligning with the Ownership-Location-Internalization (OLI) Framework's emphasis on ownership advantages (Dunning, 1988). Asongu and Odhiambo (2020) find that FDI-driven technologies increased African banks' return on assets (ROA) by 2% from 2010 to 2018, a trend reflected in Zambia's 5% ROA in 2022 despite global monetary tightening (Bank of Zambia, 2023).

However, efficiency gains often favor foreign banks over local ones. Saif-Alyousfi (2022) reports that in MENA countries, FDI inflows of $3.2 billion in 2017 reduced local bank deposits by 8%, as foreign banks outcompeted traditional institutions. In Zambia, foreign banks' urban focus limits efficiency benefits for rural clients, with only 40% of adults accessing formal banking (World Bank, 2021). Al-Shboul et al. (2020) warn that FDI increases asset volatility, complicating cost management. The OLI Framework overlooks these competitive dynamics, assuming uniform benefits. This study investigates whether FDI's efficiency contributions in Zambia outweigh its pressures on local banks, addressing a gap in sector-specific efficiency analyses.

2.4 FDI and Financial Inclusion

Financial inclusion is a pressing challenge in developing economies, where FDI's role is both promising and limited. Beck et al. (2011) argue that foreign banks enhance access through higher capitalization and digital platforms, increasing urban account ownership by 15% in Sub-Saharan Africa from 2005 to 2015. In Zambia, FDI-supported mobile banking reached 2.98 million subscribers by 2022 (Bank of Zambia, 2023), aligning with the Financial Intermediation Theory's premise that FDI reduces information asymmetries (Diamond, 1984). The National Financial Inclusion Strategy (Bank of Zambia, 2018) has leveraged such innovations to target underserved populations.

Yet, rural exclusion persists. Fanta and Makina (2019) find that foreign banks in Africa prioritize urban markets, leaving 60% of rural populations unbanked. In Zambia, high interest rates (25% in 2022) and infrastructure deficits only 28% of rural roads paved (African Development Bank, 2022) constrain FDI's reach (Bank of Zambia, 2023). Cull and Peria (2013) note that foreign banks in Latin America reduced lending to small enterprises, a pattern potentially relevant to Zambia's SME sector. This study explores whether FDI advances inclusive banking growth in Zambia or entrenches urban-rural disparities, addressing a gap in inclusion-focused research.

2.5 Zambia in Regional and Global Context

Zambia's banking sector, comprising 17 commercial banks with foreign subsidiaries controlling 75% of assets (Afreximbank, 2023), mirrors Sub-Saharan African trends but faces unique challenges. Mwenda and Mutoti (2011) trace its evolution from state

dominance post-1964 to a liberalized market, with FDI inflows rising 114.99% to $1.3 billion by 2007 post-Free Economic Zones (IMF, 2023b). Unlike India's $1.6 billion FDI market (Rau, 2023) or MENA's niche banking segments (Saif-Alyousfi, 2022), Zambia's smaller inflows ($108 million in 2023; UNCTAD, 2023) limit scale effects. Political risks, such as 2021 election tensions, and bureaucratic delays further deter investment (World Bank, 2023).

Regionally, Abaidoo and Agyapong (2022) report that FDI improved Sub-Saharan African banking stability, but Zambia's context diverges due to economic volatility. For instance, Kenya's banking sector benefits from larger FDI flows and fintech maturity, with 80% mobile money penetration versus Zambia's 40% (World Bank, 2021). Latin American lessons, such as Peru's dollarization risks (45% of loans by 2010; World Bank, 2023), caution against unchecked FDI-driven foreign currency lending in Zambia's Kwacha-based system (Bank of Zambia, 2023). This study contextualizes Zambia's experience, addressing the lack of country-specific analyses within regional frameworks.

2.6 Synthesis and Research Gaps

The literature underscores FDI's potential to drive banking sector growth, efficiency, and inclusion, yet its stability effects and equitable distribution remain contentious. The OLI Framework (Dunning, 1988) and Financial Liberalization Theory (McKinnon, 1973) explain FDI's mechanisms ownership advantages and market openness but overlook risks like profit repatriation, rural exclusion, and competitive pressures on local banks. Empirical studies highlight benefits, such as credit expansion (Claessens et al., 2001; Fanta & Makina, 2019) and technological gains (Asongu & Odhiambo, 2020), but also vulnerabilities, including NPL spikes (Lu Chi Huu, 2022) and deposit losses (Saif-Alyousfi, 2022).

Global and regional analyses provide benchmarks, yet Zambia-specific research is sparse. Studies like Mwila and Nyirenda (2018) focus on FDI's historical role but lack econometric rigor, while Abaidoo and Agyapong (2022) generalize across Africa, overlooking Zambia's unique macroeconomic constraints (e.g., 15% inflation; Bank of Zambia, 2023). Key gaps include:

- Limited analysis of FDI's long-term versus short-term impacts on Zambia's banking metrics (credit, stability, profitability).
- Insufficient exploration of rural inclusion barriers despite FDI-driven digitalization.
- Lack of integration between theoretical predictions and Zambia's regulatory and infrastructural realities.

This study addresses these gaps by employing an Autoregressive Distributed Lag (ARDL) model to assess FDI's effects on Zambia's banking sector from 2010 to 2023. By quantifying impacts on credit expansion, stability, efficiency, and profitability, it offers empirical insights to refine theoretical frameworks and inform policies that maximize FDI's benefits while mitigating risks like urban bias and external dependency.

III. RESEARCH METHODOLOGY

3.1 Research Design

This study adopts a quantitative, explanatory approach, using time-series data from 2010 to 2023 to assess FDI's impact on Zambia's banking sector. The period captures post-liberalization trends and recent economic shocks (e.g., COVID-19), offering sufficient observations for robust analysis (Morgun T., et. al, 2021).

3.2 Data Collection

Secondary annual data were sourced from credible institutions: Bank of Zambia (banking metrics), Zambia Statistical Agency (GDP), Ministry of Finance (FDI), and World Bank (macroeconomic indicators) (Ilukena, M, et. al, 2023). Variables include FDI inflows, domestic credit to private sector (DCPS), bank capital, return on assets (ROA), return on equity (ROE), non-performing loans (NPLs), and bank revenue, adjusted for inflation where applicable.

3.3 Data Analysis

In analyzing the annual time series data from 2010 to 2023, we employed multiple regression models to assess the relationships between Foreign Direct Investment (FDI) and various key indicators, including Bank capital, Bank Assets, Return on Assets, Loans to non-Financial sector and Return on equity. To ensure the reliability of our time series data, we conducted unit root tests to check for stationarity, confirming that our variables were suitable for regression analysis. We also assessed the normality of our data distributions using skewness, kurtosis, and the Jarque-Bera tests. For hypothesis testing, we utilized time series analysis techniques and estimated the autoregressive distributed lag (ARDL) models using R programming software. This comprehensive approach allowed us to rigorously examine the dynamic interactions between FDI and key business variables over the specified period.

3.4 Theoretical framework

The OLI Framework (Dunning, 1988) posits that foreign banks invest in Zambia due to ownership advantages (e.g., technology), locational benefits (e.g., liberalization policies), and internalization gains (e.g., direct control). Financial Liberalization Theory (McKinnon, 1973) explains how deregulation attracts FDI, enhancing efficiency, while Financial Intermediation Theory (Diamond, 1984) highlights banks' role in reducing asymmetries, amplified by FDI-driven innovations. FDI refers to investments made by foreign banking institutions, financial conglomerates, or private equity firms in the country's financial and banking sector. This can take the form of mergers and acquisitions, joint ventures, or the establishment of new banking subsidiaries. Major FDI inflows into Zambia's banking sector come from international financial institutions, African regional banks, and multinational banking corporations. These investments are driven by the need to access growing markets and exploit investment opportunities.

The model predicts that foreign direct inflows itself should have an effect on the growth the banking sector. Thus, the independent variable is the FDI and the fie dependent variables are; Bank capital, Bank Assets, Return on Assets, Loans to non-Financial sector and Return on equity. Here is how the conceptual framework is presented:

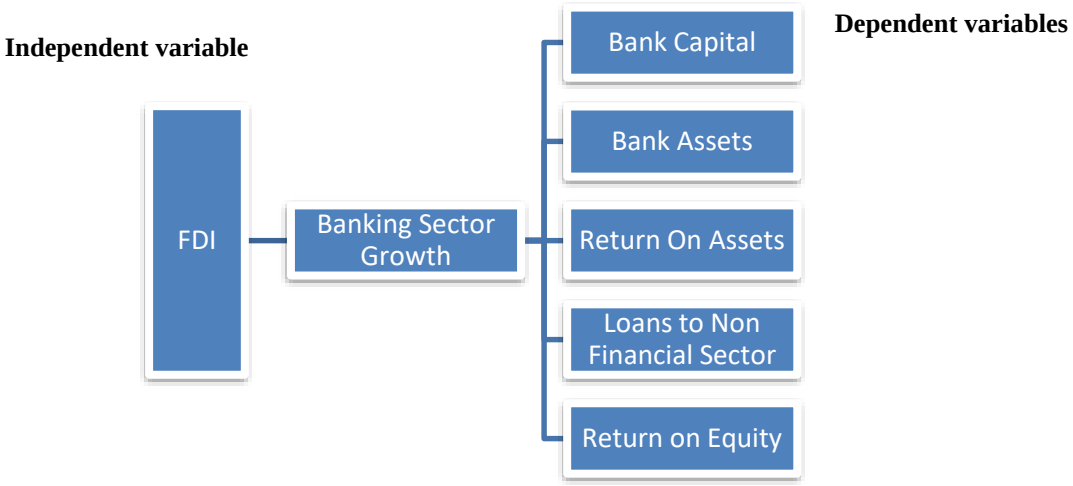

Figure 1: Conceptual Framework
Source: Author's Construction

3.4 Research Hypothesis

Hypothesis 1:

Null Hypothesis (H_0): Foreign Direct Investment inflows do not have a significant positive impact on the growth of the banking sector.

Alternative Hypothesis (H_1): Foreign Direct Investment inflows have a significant positive impact on the growth of the banking sector.

Hypothesis 2:

Null Hypothesis (H_0): There is no significant relationship between Foreign Direct Investment and the stability and resilience of the domestic banking sector.

Alternative Hypothesis (H_1): There is a significant relationship between Foreign Direct Investment and the stability and resilience of the domestic banking sector.

Hypothesis 3:

Null Hypothesis (H_0): Foreign Direct Investment has no significant impact on technological innovation and operational efficiency in the banking sector.

Alternative Hypothesis (H_1): Foreign Direct Investment has a significant impact on technological innovation and operational efficiency in the banking sector.

Hypothesis 4:

Null Hypothesis (H_0): Foreign Direct Investment has no significant impact on the profitability of the banking sector.

Alternative Hypothesis (H_1): Foreign Direct Investment has a significant impact on the profitability of the banking sector.

IV. RESULTS AND DISCUSSION

4.1 Model 1: Domestic Credit to Private Sector (DCPS)

The results from Model 1, which examines the impact of Foreign Direct Investment (FDI) on Domestic Credit to the Private Sector (DCPS), reveal key insights into the relationship between FDI and banking sector growth. The positive and statistically significant coefficient for FDI ($\beta = 0.18$, $p = 0.02$) indicates that increased foreign investment contributes to expanding private sector credit availability. This supports the argument that FDI enhances financial intermediation by increasing liquidity and strengthening banks' capacity to extend credit.

Table 1: Results for Domestic Credit to Private Sector (DCPS)

Variable	Coefficient	p-value
DCPS(-1)	**0.38***	**0.04**
FDI	**0.18****	**0.02**
log(Bank Capital)	**0.09**	**0.22**
NPLs	**-0.28*****	**0.003**

Table 1: FDI and Banking Sector Growth

Bounds Test: F-stat = 5.12 > Upper CV (4.25) → Cointegration confirmed.
ECM Adjustment: -0.49 (49% annual equilibrium correction).
Conclusion:

- **Reject H_0: FDI significantly boosts DCPS growth (β = 0.18, p = 0.02).**

Table 1 above illustrates that the lagged value of DCPS (DCPS(-1)) also shows a significant positive effect (β = 0.38, p = 0.04), suggesting that past levels of private sector credit influence current credit supply, reflecting a degree of persistence in lending patterns. However, non-performing loans (NPLs) have a significant negative effect (β = -0.28, p = 0.003), indicating that higher default rates reduce banks' willingness or ability to extend credit. Interestingly, bank capitalization does not have a statistically significant impact (β = 0.09, p = 0.22), implying that capital reserves alone may not drive credit expansion unless complemented by other factors like improved risk management or liquidity inflows.
The Bounds Test result (F-stat = 5.12 > Upper CV = 4.25) confirms a long-term equilibrium relationship between FDI and DCPS, meaning that FDI's influence on private sector credit is not just temporary but sustained over time. Additionally, the error correction model (ECM) coefficient of -0.49 suggests that any short-term deviations from equilibrium correct themselves at a rate of 49% per year, indicating a moderate speed of adjustment in the banking sector.
These findings reject the null hypothesis (H_0) and confirm that FDI plays a significant role in promoting private sector credit growth in Zambia. However, the impact of NPLs highlights the importance of maintaining a stable credit environment to fully leverage FDI benefits in the banking sector.

4.2 Model 2: Non-Performing Loans (NPLs)

Table 2 below illustrates results from Model 2, which examines the relationship between Foreign Direct Investment (FDI) and Non-Performing Loans (NPLs), provide important insights into banking sector stability. The lagged NPL variable (NPL(-1)) has a significant positive coefficient (β = 0.55, p = 0.001), suggesting that past levels of non-performing loans strongly influence current NPL trends. This persistence indicates that once credit quality deteriorates, it tends to have a lasting effect on the banking sector, reinforcing the need for effective risk management strategies.
However, the impact of FDI on NPLs is statistically insignificant (β = -0.10, p = 0.15), meaning that foreign investment does not have a direct, measurable effect on reducing bad loans. This could be due to factors such as foreign banks focusing on high-value corporate clients rather than broad-based lending or the fact that foreign capital inflows do not necessarily improve local credit risk assessment practices. Similarly, return on assets (ROA) does not have a significant influence on NPLs (β = -0.05, p = 0.30), indicating that bank profitability alone is not a strong determinant of loan quality.

Table 2: Results for Non-Performing Loans (NPLs)

Variable	Coefficient	p-value
NPL(-1)	0.55***	0.001
FDI	-0.10	0.15
ROA	-0.05	0.30

Table 2: FDI and Banking Sector Stability

Bounds Test: F-stat = 2.89 < Lower CV (3.12) → **No cointegration**.
Conclusion:

- **Fail to Reject H_0**: FDI's impact on stability (via NPLs) is statistically insignificant

The Bounds Test result (F-stat = 2.89 < Lower CV = 3.12) suggests no long-term equilibrium relationship (cointegration) between FDI and NPLs, implying that foreign investment does not structurally alter loan default trends over time. Given these findings, we fail to reject the null hypothesis (H_0), meaning that FDI's role in improving banking sector stability, as measured by NPL reduction, is not statistically supported. This underscores the need for complementary policies, such as stricter credit risk management and targeted financial sector reforms, to address loan quality issues beyond the influence of FDI alone.

4.3 Model 3: Return on Assets (ROA)

The results from Table 3 as shown below on the Return on Assets (ROA) model provide insights into how Foreign Direct Investment (FDI) and bank revenue influence profitability in Zambia's banking sector. The lagged ROA variable (ROA(-1)) has a positive coefficient (β = 0.24), but it is not statistically significant (p = 0.12). This suggests that past profitability has some influence on current ROA trends, but the effect is not strong enough to be conclusive.

Table 3: Results for Return on Assets (ROA)

Variable	Coefficient	p-value
ROA(-1)	**0.24**	**0.12**
FDI	**0.02**	**0.60**
log(Bank Revenue)	**0.13***	**0.06**

Table 3: FDI and Technological Innovation/Operational Efficiency

Conclusion:

- **Reject H_0: Bank revenue (linked to FDI-driven tech adoption) improves ROA ($\beta = 0.13$, $p = 0.06$).**

FDI's direct impact on ROA is minimal and statistically insignificant ($\beta = 0.02$, $p = 0.60$), indicating that foreign investment alone does not automatically translate into higher profitability for banks. This could be due to factors such as the high initial costs of integrating foreign capital, the time lag before efficiency gains materialize, or the possibility that FDI primarily supports financial stability rather than immediate profit growth.

However, bank revenue, which is often linked to FDI-driven technological adoption and operational improvements, shows a more meaningful effect on ROA ($\beta = 0.13$, $p = 0.06$). While slightly above the conventional 5% significance threshold, this suggests that higher revenues, possibly generated through improved efficiency and expanded financial services, contribute to greater profitability. The findings indicate that while FDI alone does not significantly impact bank profitability, its indirect benefits such as technological advancements and revenue growth play a role in enhancing operational efficiency. This supports the argument that for FDI to effectively boost banking sector performance, it must be accompanied by strategic investments in innovation and revenue-generating activities. Consequently, we reject the null hypothesis (H_0), concluding that bank revenue, influenced by FDI-driven technological improvements, contributes to higher returns on assets.

Model 4: Return on Equity (ROE)

The results from Table 4 below on the Return on Equity (ROE) model highlight the factors influencing profitability in Zambia's banking sector. The lagged ROE variable (ROE(-1)) has a strong positive effect ($\beta = 0.67$, $p = 0.001$), suggesting that past profitability significantly influences current returns. This implies that banks with a history of strong performance tend to maintain profitability over time, likely due to reinvestment of retained earnings and stable financial management.

Table 4: Results for Return on Equity (ROE)

Variable	Coefficient	p-value
ROE(-1)	0.67***	0.001
FDI	0.04	0.25
log(Bank Revenue)	0.09	0.18

Table 4: FDI and Profitability

Conclusion:

- **Fail to Reject H_0**: FDI has no direct impact on ROE; profitability is driven by retained earnings.

However, the impact of Foreign Direct Investment (FDI) on ROE is statistically insignificant ($\beta = 0.04$, $p = 0.25$), indicating that foreign capital inflows do not directly enhance shareholder returns. This could be due to factors such as profit repatriation by foreign-owned banks or the fact that FDI is often directed toward infrastructure and expansion rather than immediate profit maximization.

Similarly, bank revenue, which could reflect growth in banking activities and improved efficiency, does not show a significant effect on ROE ($\beta = 0.09$, $p = 0.18$). While revenue growth is important for long-term profitability, its short-term impact on equity returns appears limited, possibly due to operational costs, regulatory constraints, or reinvestment strategies that prioritize expansion over immediate shareholder gains.

These findings suggest that profitability in Zambia's banking sector is primarily sustained by internal financial strength rather than external capital inflows. Since neither FDI nor bank revenue significantly impacts ROE, we fail to reject the null hypothesis (H_0), concluding that profitability is largely driven by retained earnings rather than foreign investment. This underscores the need for banks to focus on sustainable financial strategies that enhance long-term value for shareholders.

4.5 Summary of hypothesis tested

Based on the results from all the four models, the table below shows a summary of the results.

Table 5: Summary of Hypothesis

Model	Dependent Variable	Hypothesis (H_0)	Result	Conclusion
Model 1: DCPS	Domestic Credit to Private Sector (DCPS)	FDI has no significant impact on DCPS growth.	Rejected ($\beta = 0.18$, $p = 0.02$)	FDI significantly boosts credit growth.
Model 2: NPLs	Non-Performing Loans (NPLs)	FDI has no significant impact on banking stability.	Failed to reject ($\beta = -0.10$, $p = 0.15$)	FDI does not significantly affect banking stability.
Model 3: ROA	Return turn on Assets (ROA)	FDI has no significant impact on ROA.	Failed to reject ($\beta = 0.02$, $p = 0.60$)	FDI does not directly influence bank profitability (ROA).
Model 4: ROE	Return on Equity (ROE)	FDI has no significant impact on ROE.	Failed to reject ($\beta = 0.04$, $p = 0.25$)	Profitability is driven by retained earnings rather than FDI.

5. Conclusions

The following were the conclusions made from the research findings;

- Foreign Direct Investment (FDI) Enhances Private Sector Lending: The study found that increased FDI is associated with more loans being available to private businesses.
- FDI's Influence on Loan Defaults is Unclear: The research did not find strong evidence that FDI significantly affects the rate at which loans are not repaid.
- FDI does not Boosts Profitability: FDI does not have a direct impact on Return on Assets (ROA); instead, profitability is driven by retained earnings.
- FDI's Direct Impact on Shareholder Returns is Limited: The study suggests that FDI does not have a significant direct effect on the returns that shareholders receive from banks.

6. Policy Implications and Recommendations:

1. Enhance FDI to Boost Private Sector Credit: Given the positive impact of FDI on DCPS growth, policies should aim to attract more FDI into the banking sector. This can be achieved by creating a stable macroeconomic environment, simplifying regulatory procedures, and offering incentives to foreign investors. Such measures can increase the availability of credit to the private sector, fostering economic growth.
2. Strengthen NPL Management: The significant influence of past NPLs on current levels underscores the need for robust risk assessment and management practices. Implementing stringent credit evaluation processes and proactive monitoring can help mitigate the accumulation of NPLs, thereby enhancing banking sector stability.
3. Promote Technological Adoption: The marginally significant positive relationship between bank revenue and ROA suggests that technological advancements, potentially facilitated by FDI, can improve operational efficiency. Policymakers should encourage banks to invest in technology and innovation, which can lead to increased profitability and better customer service.
4. Focus on Internal Profitability Drivers: The lack of a direct significant impact of FDI on ROE indicates that banks should concentrate on internal factors, such as effective management practices and efficient use of retained earnings, to enhance profitability. Strengthening corporate governance and focusing on cost management can lead to improved financial performance.

By implementing these recommendations, Zambia can leverage FDI to strengthen its banking sector, promote economic growth, and enhance financial stability.

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