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The Impact of Financial Intermediation on Economic Development in Zambia (1991-2021)

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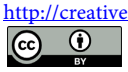


Abstract

Background: Financial intermediation is the practice of linking an investor and borrower. They function as a third party, an intermediary aiming to meet the financial needs of both parties to mutual satisfaction. Financial intermediaries help consumers and businesses alike by offering services on a larger economy of scale than would otherwise be possible as such financial intermediation is very crucial in any economy. A financial intermediary serves two fundamental purposes, which are creating funds and managing the payment systems. **Methodology:** The study used an ex post facto research design to analyze the effects of financial intermediation on the economic development of Zambia from the data collected from 1991 to 2021. The research empirically investigated the strength and the direction of the relationship between the endogenous components of financial intermediation and economic development in the long run by using the Engle-Granger and Johansen co-integration methodology. **Results:** The result of the model shows that all the variables, except bank overdrafts, are statistically significant in explaining the impact of the endogenous component of financial intermediation on economic development in Zambia. This is surprising since it is expected that a rise in bank overdrafts will lead to a rise in economic development. As indicated by the result, a unit increase in demand deposits and time savings resulted in about 0.006% and 0.171% increase in real gross domestic product, respectively, in the short run, while a unit increase in loans resulted in about 0.062% reduction in gross domestic product in the short run for the period under consideration (1991 to 2021). **Conclusion:** Endogenous component of financial intermediation impact positively impacts economic development through demand deposits and time savings and negatively through Loans. There is no evidence of the existence of long-run relationships and directional causal relationship between economic development and endogenous components of financial intermediation. The absence of long-run and directional causal relationships between economic development and endogenous financial intermediation may suggest that

short-term macroeconomic volatility, policy inconsistencies, or weak institutional frameworks disrupt the sustained impact of financial variables on growth. Additionally, the financial system may not have been sufficiently mature or efficient during the study period to translate financial intermediation consistently into long-term economic outcomes.

Subject Areas

Development Economics

Keywords

Endogenous, Financial Intermediation, Time Savings Deposit, Demand Deposit

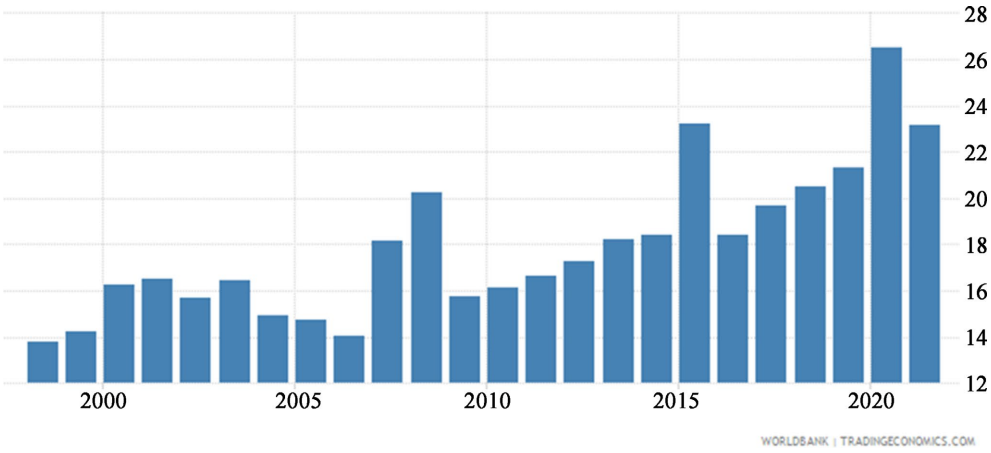
1. Introduction

Financial intermediation involves linking investors and borrowers through intermediaries, such as banks, to facilitate efficient fund allocation and payment systems [1]. These intermediaries accept deposits at lower interest rates and lend at higher rates, improving market efficiency and contributing to domestic revenue [2]. Financial intermediation has two components: endogenous (e.g., deposits, savings, loans, etc.) and exogenous (e.g., inflation, interest rates, etc.).

Financial intermediaries (like banks) rely on endogenous components, *i.e.* internal factors they control to function efficiently. Among these, demand deposits, savings deposits, and loans play critical roles in shaping liquidity, profitability, and risk. While exogenous components are external forces beyond their direct control. Key among these are inflation, interest rates, and other macroeconomic variables [3].

Finance is crucial for economic growth, particularly in developing economies like Zambia, where financial systems mobilize funds for development [3]. Financial intermediaries enhance liquidity, risk management, and resource allocation, fostering economic expansion [4]. They also promote savings mobilization and long-term investments, stimulating growth [4]. Four hypotheses explain the finance-growth relationship: 1) supply-leading (finance drives growth), 2) demand-following (growth drives finance), 3) bidirectional causality, and 4) no relationship [5].

Zambia faces challenges like low domestic savings, high lending rates, and limited rural financial access [6]. Financial liberalization in 1991 shifted interest rate determination to market forces, but high default risks persist [7]. The Bank of Zambia has introduced credit reference bureaus and increased banking competition to reduce lending rates and improve intermediation [8]. Government efforts, such as the Financial Sector Development Plan and National Financial Inclusion Strategy [9], aim to expand rural financial access [10]. Despite progress, Zambia's financial intermediation remains constrained, requiring further policy interventions for sustainable economic growth.



Source: [11].

Figure 1. Aggregated demand, time and saving deposits in deposit money banks as a share of GDP in percentage in Zambia from 2000 to 2021.

The Zambian economy recovered in 2021, with real GDP growing by 2.4% after a −2.8% contraction in 2020, driven by strong performance in agriculture, mining, construction, and a rebound in tourism [12]. Despite exceeding growth targets, Zambia faces challenges due to low domestic savings and excessive reliance on foreign investment, which is unsustainable for long-term development. This highlights the need for increased domestic resource mobilization to support economic growth. (See **Figure 1**)

1.1. Problem Statement

The relationship between financial intermediation and economic growth has been widely studied, with scholars like Levine (2020) highlighting the role of intermediaries in capital allocation, risk management, and savings mobilization. However, findings remain mixed, with some studies supporting a growth impact [13] and others identifying adverse effects [14]. Despite extensive research, Zambia-specific studies are scarce, particularly on how endogenous components of demand deposits, savings deposits, and loans influence growth. This study fills that gap by focusing on Zambia's endogenous financial intermediation, aligning with its 2030 middle-income aspirations [15].

1.2. Research Objective

The main objective of this research is to assess the effects of financial intermediation on economic development in Zambia using the endogenous components of financial intermediation, which are demand deposits, time/savings deposits and credits (loans and overdraft) for the period 1991 to 2021.

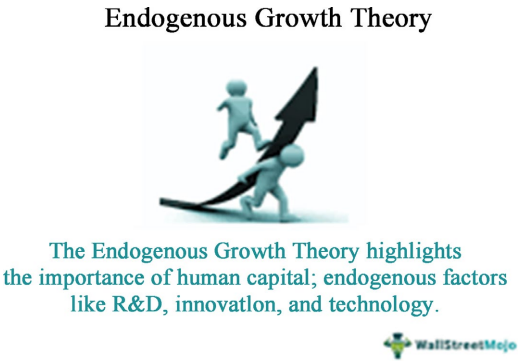
2. Literature Review

2.1. Financial Intermediation Theory

Modern financial intermediation theory highlights that financial intermediaries

exist due to market imperfections, which hinder the best direct transactions between savers and investors [16]. They bridge this gap by mitigating informational asymmetries, resolving maturity mismatches, and easing payment systems, thereby fostering economic development [16]. While banks play a direct role, non-banking intermediaries such as insurance companies, investment firms, and pension funds also channel funds from surplus to deficit units, further supporting economic growth [16].

2.2. Endogenous Growth Theory



Source: https://www.wallstreet.com/endogenous-growth-theory.

Figure 2. Illustration of endogenous growth theory.

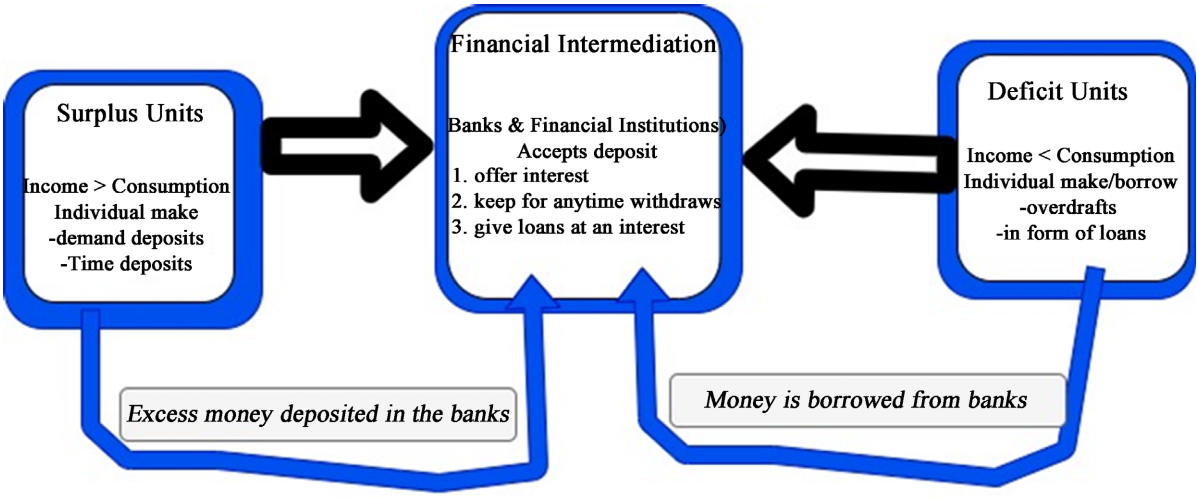
The endogenous growth theory explains how internal processes, such as financial intermediation activities (demand deposits, savings, and credit), drive long-term economic development [17]. This theory emphasizes that growth stems from factors like technological innovation, human capital, and research, which enhance productivity [17]. Applying this framework, the endogenous components of financial intermediation such as banking and non-banking services can sustain economic growth by improving capital allocation and fostering innovation. (See **Figure 2**)

2.3. Financial Intermediation Process

Financial intermediation bridges deficit and surplus units in an economy, facilitating consumption smoothing and efficient fund allocation through banks and financial institutions [18]. The process enhances financial system stability and economic development by improving investment skills and fostering productive capital allocation [19]. This study is anchored in financial intermediation theory, which links intermediary development to economic growth, and endogenous growth theory, which emphasizes internal processes as growth drivers [20]. The discussion connects endogenous financial intermediation components such as deposits and loans to economic development, setting the stage for further literature review and gap analysis. (See **Figure 3**)

2.4. Financial Intermediation and Economic Development

The financial system is vital for economic growth, with well-developed financial



Source: Author's compilations

Figure 3. Theoretical framework for financial intermediation process.

intermediaries and markets leading to higher growth rates by improving efficiency, stability, and access to credit [17] [18]. Studies confirm that financial intermediation through deposits, loans, and capital allocation positively affects growth, as seen in Cameroon [21] [22], Rwanda [23], and Ethiopia [24]. However, the effect varies by development level: productivity drives growth in advanced economies, while capital accumulation matters more in developing ones [25] [26].

Despite broad consensus, some studies challenge this view, finding negative [27] or neutral [28] [29] effects of intermediation on growth. Discrepancies arise from methodological differences, proxies used, and regional contexts, suggesting the need for deeper analysis of intermediation components (endogenous vs. exogenous) to clarify their distinct impacts. Policymakers must balance financial sector development with regulations to ensure stability and growth [30] [31].

2.5. Causal Relationship between Financial Intermediation and Economic Development

The relationship between financial intermediation and economic growth can be categorized into three directions: supply-leading (financial development drives growth), demand-following (growth increases demand for financial services), or bi-directional (mutual influence) [32]. Empirical studies present mixed findings:

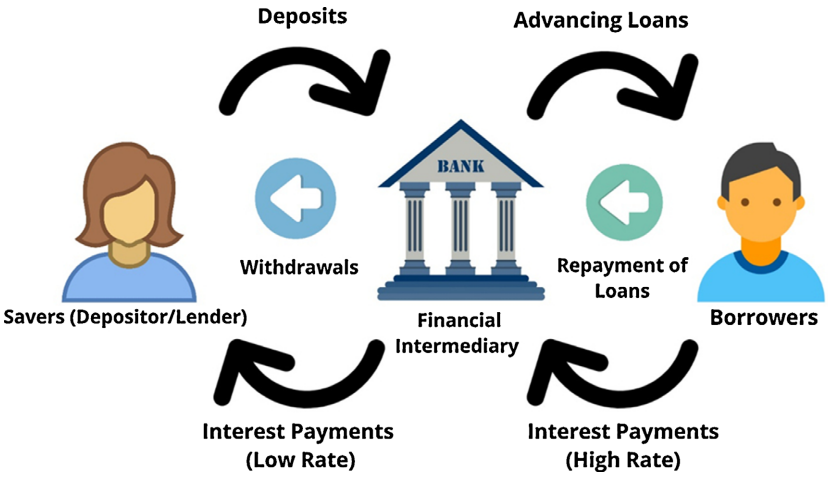
King & Levine (2015) found a supply-leading relationship in 80 countries (1960-2014), where financial intermediation spurred growth.

Beck *et al.* (2000) supported this using instrumental variables, while Demetriades & Hussein (2000) showed causality varied by country, with some cases of demand-following effects.

Favara (2003) found no consistent pattern across 85 countries, and Koivu (2002) argued that in transition economies, growth often drives financial expansion rather than vice versa.

These discrepancies highlight that causality depends on country-specific policies, institutional efficiency, and methodological differences [33] [34]. Thus, no universal consensus exists on the direction of this relationship.

2.6. Conceptual framework (See Figure 4)



Source: https://www.mbaknol.com/role-of-financial-intermediaries-in-economic development/.

Figure 4. Conceptual framework for the financial intermediation processes.

Financial intermediation refers to the process where financial intermediaries, such as banks, facilitate the flow of funds between savers (lenders) and borrowers (spenders) through indirect finance [35]. Savers deposit surplus funds into financial institutions, which then lend them to businesses, households, or governments in need of capital. This process involves issuing liabilities (e.g., savings accounts) to gather funds and acquiring assets (e.g., loans or bonds) to allocate them efficiently, ensuring smooth capital transfer [35].

The financial system comprises institutions, markets, and regulatory bodies that work together to mobilize savings and direct them toward productive investments [36]. By channeling funds from surplus to deficit units, financial intermediation supports economic growth, as the availability of credit influences GDP expansion [37].

3. Methodology

3.1. Introduction

The study revealed the financial intermediation factors that influence well-sustained economic development. The study covered the period spanning from 1991 to 2021. 1991 was used as the base year because financial liberalization reform took place that year in Zambia. All the analyses will be conducted using E-VIEWS 13.0.

3.2. Research Design

This study used ex post facto research design in analyzing the effects of financial

intermediation on economic development of Zambia. An ex post facto research design is a method in which variables with quantities that already exist are compared on the dependent variable(s).

3.3. Location of the Study, Variables, Data Source and Type

This study analyzed Zambia's economy using historical secondary data from 1991 to 2021 (31 annual observations) sourced from the Bank of Zambia, IMF International Financial Statistics, and Central Statistics Office. The dataset included five key variables: Real GDP (in constant 1991 Kwacha), Demand deposits, Time/savings deposits, Loans, and Overdrafts (all measured in millions of Kwachas). This empirical analysis will examine the relationship between these financial variables and economic development over the three-decade period.

3.5. Model Specification

The empirical equation is based on an endogenous growth model derived from the AK model framework developed by Pagano (1993) where the aggregate output (Y_t) is a linear function of the aggregate capital stock (K_t). Therefore, the functional form of the specified model is suggested as follows:

$$\mathrm{RGDP} = f\left(\mathrm{DD}, \mathrm{TSav}, \mathrm{LN}, \mathrm{OV}\right) \tag{1}$$

Explicitly, Equation (1) can be written as:

$$\mathrm{RGDP}_t = \beta_0 + \beta_1 \mathrm{DD}_t + \beta_2 \mathrm{TSav}_t + \beta_3 \mathrm{LN}_t + \beta_4 \mathrm{OV}_t + \varepsilon_t \tag{2}$$

The log and operational form of equation 2 is stated thus:

$$\mathrm{RGDP}_t = \beta_0 + \beta_1 \mathrm{L\_DD}_t + \beta_2 \mathrm{L\_TSav}_t + \beta_3 \mathrm{L\_LN}_t + \beta_4 \mathrm{L\_OV}_t + \varepsilon_t \tag{3}$$

where: RGDP = real gross domestic product at time t, DD = demand deposits at time t, T/Sav = time/savings deposits at time t, LN = loans at time t, OV = overdrafts at time t, ε = error term at time t, β_0 = intercept.

The priori expectation: $\beta_0>0$; β_1, β_2, β_3, $\beta_4<0$ are coefficients.

L_RGDP = LogRGDP, L_DD = LogDD, L_TSav = LogTSav, L_LN = LogLN and L_OV = LogOV

3.5.1. Exploratory Data Analysis

This section employs graphical and descriptive statistical techniques to analyze the dataset, identify key variables, and detect anomalies. Time-series variables are log-transformed to achieve symmetric residuals and address heteroscedasticity, ensuring homoscedasticity. Normality is assessed using skewness, kurtosis, Jarque-Bera tests (where JB = 0 indicates normality), and Q-Q plots, with skewness = 0 and kurtosis = 3 representing ideal normal distribution [38] [39].

3.5.2. Statistical Methodology

To examine the relationship between endogenous financial intermediation components and Zambia's economic development, the study used a log-log linear regression model to normalize data and analyze continuous economic growth

variables, with significance set at $p < 0.05$. For assessing long-run versus short-run relationships, time series methods Augmented Dickey-Fuller, Philip Perron (unit root tests), and Johansen co-integration were employed. To determine causality direction, the study applied the Granger causality test to evaluate whether the relationship is unidirectional or bidirectional.

3.5.3. Diagnostic Tests

The study employed Ordinary Least Squares (OLS) regression and verified its key assumptions, including homoscedasticity, no serial correlation, no multicollinearity, normally distributed errors with zero mean, and efficient estimators [38]. Diagnostic tests such as Augmented Dickey-Fuller, Philip Perron, Johansen co-integration, Breusch-Godfrey, L.M. White, and Durbin-Watson will assess stationarity, heteroscedasticity, autocorrelation, and normality. Meeting these assumptions ensures unbiased, efficient estimates, valid hypothesis testing, and reliable confidence intervals, making OLS the optimal linear estimator when conditions are satisfied.

3.5.4. Granger Causality Test

Before conducting Ordinary Least Squares (OLS) regression, the study determines the optimal lag length for the Vector Autoregression (VAR) model using information criteria like Akaike (AIC), Bayesian (BIC), Final Prediction Error (FPE), and Hannan-Quinn (HQ), with AIC selected to ensure white noise errors [39]. Since VAR coefficients alone are hard to interpret, Granger causality tests, impulse responses, and forecast error variance decompositions are used to analyze relationships between financial intermediation and Zambia's economic growth [38]. The Granger causality test examines whether lagged values of financial intermediation predict economic growth, helping establish causal direction while addressing the limitation that correlation does not imply causation [40].

3.5.5. Co-Integration Test

A co-integration test is employed to examine whether there is no long-run or short-run relationship between financial intermediation and economic development in Zambia. The null hypothesis states no co-integrating equations exist, while alternative hypotheses (trace and maximum eigenvalue tests) suggest at least one co-integrating relationship [41] [42]. Co-integration, developed in the 1980s–90s, addresses non-stationary I (1) variables by identifying stable long-run relationships, preventing spurious regressions [42] [43].

The Engle-Granger method tests for co-integration by regressing I (1) variables via OLS and checking if residuals are I (0). If residuals remain non-stationary, first-differenced models or the Augmented Engle-Granger (AEG) test are used [42]. Unit root tests further ensure variables are stationary before modelling, as regressions on non-stationary data risk false inferences [43]. Co-integration confirms meaningful economic linkages when a linear combination of I (1) variables yields I (0) residuals, enabling error correction models (ECM) for short-run dynamics [41].

4. Results

4.1. Presentation of the Pre-Estimation Findings

Table 1. Descriptive statistics.

	RGDP*	DD*	TSav*	LN*	OV*
Mean	3.318	20.025	3.155	5.762	2.058
Median	3.171	20.700	3.063	7.355	2.994
Maximum	3.957	28.850	5.211	9.058	4.730
Minimum	2.997	13.718	1.861	−0.237	−2.298
Std. Dev.	0.319	4.281	0.947	3.253	2.240
Skewness	0.899	0.045	0.546	−0.740	−0.947
Kurtosis	2.375	2.039	2.421	1.926	2.346
Jarque-Bera	5.445	1.398	2.293	5.017	6.025
Probability	0.066	0.497	0.318	0.081	0.059
Observations	31	31	31	31	31

*All the values were log transformed.

After log transformation, the variables (real GDP, demand deposits, time savings, bank loans, and bank overdrafts) approximate a normal distribution, with means and standard deviations provided for each. The Jarque-Bera test failed to reject the null hypothesis of normality for all variables (p-values > 0.05), except bank loans (p = 0.081) and overdrafts (p = 0.059), which were still considered normally distributed. The median and mean were close for all variables except log-transformed loans. (See Table 1)

4.1.2. Unit Root Test

The study examines stationarity using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, with the PP test being less restrictive. Both tests confirm all variables are integrated of order one, as their p-values are below 0.05, rejecting the null hypothesis of non-stationarity. The results, shown in Table 2, ensure robustness regardless of the test used.

Table 2. Unit root test results.

Augmented Dickey-Fuller Test					
Variable	Level	1st Difference	5% Critical value	Order of integration	Prob.
RGDP	1.606	−4.353*	−3.548	I (1)	0.008
DD	−2.712	−3.918*	−3.588	I (1)	0.025
TSav	−3.644	−8.030*	−3.548	I (1)	0.000
LN	−2.166	−5.116*	−3.553	I (1)	0.001
OV	−2.744	−6.263*	−3.553	I (1)	0.000

Note: * denotes the rejection of null hypothesis of a unit root for the ADF test. The lag order for the series was determined by the AIC and SIC.

Phillips-Perron Test					
Variable	Level	1st Difference	5% Critical value	Order of integration	Prob.
RGDP	−1.223	−4.425	−3.548	I (1)	0.007
DD	−2.093	−2.750	−2.951	I (1)	0.036
TSav	−1.091	−7.916	−3.548	I (1)	0.000
LN	−2.164	−5.116	−3.548	I (1)	0.002
OV	−2.690	−10.877	−3.548	I (1)	0.000

Note: * denotes the rejection of null hypothesis of a unit root for the ADF test. The lag order for the series was determined by the AIC and SIC.

The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests check if a time series is stationary at level (order 0) or first difference (order 1). Table 2 shows all variables are integrated of order 1 (p-values < 0.05), requiring co-integration analysis using the Johansen method to assess long-run relationships.

4.1.3. Co-Integration Analysis

The researchers checked if the variables were stationary and then used the Johansen method to test for long-run relationships. This method estimates co-integration relationships in a vector autoregressive model using maximum likelihood. The results, including Maximum Eigenvalue and Trace Statistic, are shown in Table 3.

The Johansen Co-integration test results show that both the trace and

Table 3. Multivariate Johansen co-integration results.

Co-integration Vector (series) = (RGDP, DD, TSAV, LN, OV)					
Null hypothesis	Alternative hypothesis	Eigen value	Trace statistic	0.05 Critical value	Probability
r = 0	r = 1	0.542	46.967	47.856	0.061
r ≤ 1	r = 2	0.315	21.194	29.797	0.346
r ≤ 2	r = 3	0.224	8.702	15.495	0.394
r ≤ 3	r = 4	0.010	0.323	33.841	0.570

Trace test indicates no co-integration at the 0.05 level. *Denotes rejection of the hypothesis at the 0.05 level.

Null hypothesis	Alternative hypothesis	Eigen value	Max-Eigen statistic	0.05 Critical value	Probability
r = 0	r = 1	0.542	25.773	27.584	0.309
r ≤ 1	r = 2	0.315	12.492	21.132	0.500
r ≤ 2	r = 3	0.224	8.379	14.265	0.342
r ≤ 3	r = 4	0.010	0.323	3.841	0.570

Max-eigenvalue test indicates no co-integration at the 0.05 level. *Denotes rejection of the hypothesis at the 0.05 level.

max-Eigen value tests fail to reject the null hypothesis of no co-integration at the 5% significance level. This means there are no long-run relationships between economic development and financial intermediation in the analysed data. Both tests confirm the absence of co-integrating equations among the variables.

Table 4. The impact of endogenous component of financial intermediation on economic growth.

Dependent Variable: RGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.618	0.319	11.341	0.000
DD	0.006	0.018	−0.340	0.036
TSAV	0.171	0.035	−4.866	0.000
LN	−0.063	0.022	2.809	0.008
OV	−0.048	0.049	0.992	0.330
R-squared	0.740			
Prob(F-statistic)	0.000			

$$RGDPt = 3.618 - 0.063LNt + 0.171TSAVt + 0.006DDt + 0.048OV$$

The study finds that Zambia's financial intermediation has mixed effects on economic growth (See **Table 4**): loans negatively impact growth, while demand deposits and time savings have positive effects; overdrafts show no significant influence. The model is statistically significant (prob F-stat = 0.00) and explains about 74% of economic growth variation ($R^2 \approx 0.740$), with the remaining 26% attributed to other factors. Detailed results, including lag selection and VAR estimates, are provided in the appendices 1.1 to 1.3.

4.1.4. Granger Causality Test

Table 5 shows the Granger causality relationship between economic growth and financial intermediation's endogenous component. The null hypothesis of no causality is rejected if the p-value is below 0.05. The table's first column states the null

Table 5. Summary of results of granger causality test.

Null Hypothesis	Obs	F-Statistic	Prob.	Decision.
DD does not Granger Cause L_RGDP	31	2.191	0.149	Accept
RGDP does not Granger Cause L_DD		0.766	0.388	Accept
TSAV does not Granger Cause L_RGDP	31	0.579	0.452	Accept
RGDP does not Granger Cause L_TSAV		4.290	0.067	Accept
LN does not Granger Cause L_RGDP	31	2.870	0.100	Accept
RGDP does not Granger Cause L_LN		1.434	0.240	Accept
OV does not Granger Cause L_RDGP	31	0.032	0.826	Accept
RGDP does not Granger Cause L_OV		5.456	0.457	Accept

hypothesis, while columns 3 and 4 display the F-statistics and p-values, respectively.

Table 5 presents the Granger causality test results, examining whether one variable cause another, addressing research question three. The null hypothesis states that one variable does not Granger cause the other. The findings indicate no causal relationship between the following pairs: DD and RGDP, TSAV and RGDP, LN and RGDP, OV and RGDP, as well as the reverse (RGDP and DD, RGDP and TSAV, RGDP and LN, RGDP and OV). This is confirmed by statistically insignificant p-values (above 5%), leading to the acceptance of the null hypothesis. Consequently, the study suggests a non-directional causal relationship between economic development (RGDP) and the endogenous components of financial intermediation (DD, TSAV, LN, OV), implying that neither directly influences the other in the tested model.

4.2.1. Economic Criteria

The study used a model (Equation (3)) to assess how endogenous financial intermediation affects Zambia's economic development from 1991 to 2021. Results showed all variables except bank overdrafts were statistically significant, contrary to expectations that overdrafts would boost development. In the short run, demand deposits and time savings increased real GDP by 0.006% and 0.171% per unit, respectively, while loans reduced GDP by 0.062% per unit. (See Table 6)

Table 6. Residual correlation matrix Test for multicollinearity.

	RGDP	LN	OV	TSAV	DD
RGDP	1.000	−0.211	−0.001	0.136	0.124
LN	−0.211	1.000	−0.001	0.635	0.028
OV	−0.001	−0.001	1.000	−0.002	−0.001
TSAV	0.136	0.635	−0.002	1.000	0.395
DD	0.124	−0.028	−0.003	−0.039	1.000

Since all the values are less than 0.85 in the correlation matrix, there is no multicollinearity.

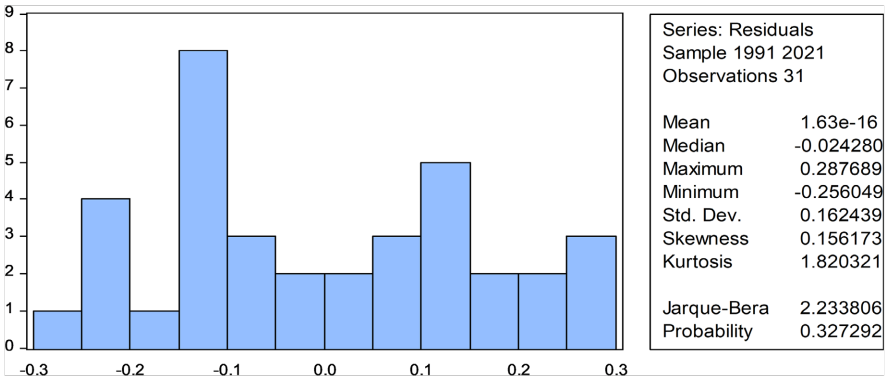


Figure 5. Test for normality.

This test is carried out to check whether the error term follow a normal distribution. As shown in the test above the normality test adopted the Jarque-Bera (JB) Test of Normality. Result shows the residuals are also normally distributed as Jarque-Bera test of normality fails to reject the null of normally distributed residuals. The same conclusion can be derived using Histogram-Normality test. (See Figure 5)

Table 7. Breusch-Godfrey Serial Correlation LM Test: Ho: no residual Serial correlation.

F-statistic	0.541	Prob. F (4, 22)	0.707
Obs * R-squared	3.044	Prob. Chi-Square (4)	0.551

To test for autocorrelation in the research model, the study makes use of the Breusch-Godfrey.

Serial correlation LM test for autocorrelation. As shown in Table 7, there is no problem of autocorrelation in the model as the null of no serial correlation cannot be rejected. Breusch Godfrey Correlation LM test indicates that the residuals of the estimated model do not suffer from autocorrelation.

Table 8. Heteroscedasticity Test: Breusch-Pagan-Godfrey.

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.267	Prob. F (3, 32)	0.100
Obs * R-squared	6.310	Prob. Chi-Square (3)	0.098
Scaled explained SS	2.045	Prob. Chi-Square (3)	0.563

Above test is basically on the variance of the error term. The test helps to ascertain whether the variance of the error term is constant. Table 8 shows that the null of homoscedastic residuals cannot be rejected and implying that the residuals of the model are homoscedastic.

4.3. Evaluation of Working Hypothesis

The model results show that all variables except bank overdrafts significantly impact economic development in Zambia. Endogenous financial intermediation components- demand deposits and time savings positively influence economic growth, while loans have a negative effect. However, no long-run relationship exists between these financial intermediation components and economic development, as indicated in Table 3. The causal relationship was found to be non-directional (See Table 5), meaning no clear causality flows between demand deposits, time savings, loans, and economic growth.

The study rejected the null hypothesis, concluding that Zambia's economic development is partially driven by demand deposits, time savings, and bank loans (See Table 4). Policymakers should prioritize demand deposits and time savings due to their strong endogenous influence. However, no significant causal direction

was found between these financial variables and economic growth at a 5% significance level, suggesting independence or bidirectional neutrality among them.

5. Discussion

5.1. Summary of the Findings

This study investigated the impact of endogenous financial intermediation components—demand deposits, time savings, bank loans, and bank overdrafts on Zambia's economic development from 1991 to 2021. Using co-integration and Granger causality tests on secondary data from the Zambian Ministry of Finance, World Bank, and Bank of Zambia, the study assessed long/short-run relationships and causality direction.

Key findings revealed a non-directional causality between financial intermediation variables and economic development. Demand deposits and time savings significantly boosted Zambia's economic growth, while bank loans had a negative relationship. Surprisingly, bank overdrafts showed little to no impact. These results partially aligned with prior literature but also presented contradictions.

The absence of long run and directional causal relationships between economic development and endogenous financial intermediation may suggest that short-term macroeconomic volatility, policy inconsistencies, or weak institutional frameworks disrupted the sustained impact of financial variables on growth. Additionally, the financial system may not have been sufficiently mature or efficient during the study period to translate financial intermediation consistently into long-term economic outcomes.

The negative impact of bank loans on Zambia's economic development from 1991 to 2021 can be attributed to several structural and policy-related factors. Primarily, a significant portion of loans may have been allocated to non-productive sectors or used for consumption rather than investment in growth-enhancing activities like infrastructure, agriculture, or manufacturing. This misallocation reduces the developmental impact of credit and increases the risk of non-performing loans. Additionally, weak financial regulation and inadequate credit risk assessment during parts of the period may have led to poor loan quality, resulting in banking instability and reduced investor confidence. High interest rates, often influenced by macroeconomic volatility, may have also discouraged borrowing for productive purposes. In contrast, demand deposits and savings likely contributed positively because they reflect financial discipline, liquidity for investment, and confidence in the financial system-factors that support long-term economic development.

The study recommends strengthening Zambia's financial intermediation through sound economic and political policies to stabilize macroeconomic fluctuations. Enhancing banking sector investment, fostering consumer and investor confidence, and ensuring policy consistency are crucial for long-term growth. Additionally, creating an incentive structure for macroeconomic stability and higher growth rates through effective policy implementation is essential for improving

Zambia's global competitiveness. However, these findings only considered some of the banking sector endogenous components of financial intermediaries which does not fully reflect the whole financial intermediaries and therefore, should be interpreted with caution.

5.2. Conclusion and Lessons for Policy Issue

This study provides empirical insight into the nuanced role of financial intermediation in Zambia's economic development from 1991 to 2021. The findings reveal that while demand deposits and time savings significantly contribute to GDP growth, bank loans have had a negative effect, likely due to misallocation of credit, high lending costs, or weak institutional oversight. The absence of long-run cointegration and directional causality further indicates that Zambia's financial intermediation system has not matured to consistently drive long-term growth. These findings call for more targeted policy interventions that align financial sector activity with developmental objectives.

To improve outcomes, policymakers should enhance the credit allocation framework by prioritizing lending to productive sectors, particularly agriculture, manufacturing, and SMEs, which have the greatest potential to stimulate inclusive growth. The Bank of Zambia should strengthen supervisory mechanisms to reduce non-performing loans and improve credit quality [45] [46]. Additionally, incentivizing savings through policy instruments such as interest rate liberalization, deposit insurance, and digital financial inclusion can bolster deposit mobilization and capital formation. Ensuring financial intermediation supports economic development in Zambia requires a system that not only mobilizes resources but allocates them effectively toward growth-enhancing investments [47].

5.3. Limitation of the Study

The study is limited to studying the relationship between endogenous components of financial intermediation, such as demand deposits, time/savings deposits and credit/loans and economic development of Zambia. Using this single measure is quite narrow and does not fully reflect financial intermediation activities. The study also did not include non-banking financial intermediaries (e.g., microfinance or mobile money, etc.).

5.4. Policy Recommendation

Considering the study's finding that bank loans have negatively impacted Zambia's economic development between 1991 and 2021, while demand deposits and savings contributed positively, the government and financial regulators should prioritize strengthening credit allocation efficiency and fostering a more savings-driven economy. Specifically, the Bank of Zambia should implement stricter oversight and credit risk assessment frameworks to ensure that loans are channelled into productive sectors such as agriculture, manufacturing, and small-to-medium enterprises (SMEs), rather than consumption or speculative investments. At the

same time, policies that incentivize savings such as offering tax benefits on interest earnings, promoting financial literacy, and expanding access to savings instruments through digital and rural banking should be expanded. Encouraging domestic savings not only supports financial stability but also provides a more sustainable base for long-term investment and inclusive economic growth.

Conflicts of Interest

The authors declare no conflicts of interest.

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Appendices

1.1. VAR Lag Order Selection Criteria

Endogenous variables:DD LN TSav OV
Exogenous variables: RGDP
Included observations: 31

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−157.7522	NA	13.10254	11.08636	11.22780	11.13065
1	−55.57435	176.1686*	0.021322	4.660300	5.226078*	4.837495
2	−45.95212	14.59925	0.020919	4.617387	5.607498	4.927478
3	−34.01562	15.64092	0.018127	4.414870	5.829314	4.857857
4	−26.34992	8.458705	0.022345	4.506891	6.345668	5.082773
5	−11.90078	12.95440	0.018916	4.131088	6.394199	4.839866
6	3.204332	10.41732	0.017796*	3.710046	6.397490	4.551720
7	17.08850	6.702702	0.023887	3.373207*	6.484984	4.347777*

*Indicates lag order selected by the criterion.
LR: sequential modified LR test statistic (each test at 5% level).
FPE: Final prediction error.
AIC: Akaike information criterion.
SC: Schwarz information criterion.
HQ: Hannan-Quinn information criterion.

1.2. Vector Autoregression Estimates

Standard errors in ( ) & t-statistics in [ ]

	RGDP	DD	TSav	LN
RGDP (−1)	1.145545	−0.728402	−3.774840	−2.272174
	(0.21327)	(8.72950)	(2.06303)	(1.33130)
	[5.37139]	[−0.08344]	[−1.82975]	[−1.70673]
RGDP (−2)	−0.198151	−0.384264	3.975629	2.727779
	(0.22064)	(9.03108)	(2.13431)	(1.37730)
	[−0.89809]	[−0.04255]	[1.86273]	[1.98053]
DD (−1)	−0.003022	0.526025	−0.007487	−0.003385
	(0.00426)	(0.17445)	(0.04123)	(0.02661)
	[−0.70898]	[3.01526]	[−0.18160]	[−0.12723]
DD (−2)	0.002049	−0.465855	0.017107	−0.004609
	(0.00422)	(0.17279)	(0.04084)	(0.02635)
	[0.48546]	[−2.69602]	[0.41892]	[−0.17490]
Tsav (−1)	0.006895	0.477695	1.045015	0.264626

Continued

	(0.02307)	(0.94431)	(0.22317)	(0.14401)
	[0.29886]	[0.50587]	[4.68264]	[1.83751]
Tsav (−2)	−0.017688	−1.106577	−0.040793	−0.070365
	(0.01903)	(0.77876)	(0.18404)	(0.11877)
	[−0.92972]	[−1.42095]	[−0.22165]	[−0.59246]
LN (−1)	0.003069	0.112578	−0.710900	1.015118
	(0.03858)	(1.57918)	(0.37321)	(0.24084)
	[0.07956]	[0.07129]	[−1.90484]	[4.21499]
LN (−2)	0.005799	1.035765	0.634054	−0.045972
	(0.03863)	(1.58125)	(0.37370)	(0.24115)
	[0.15010]	[0.65503]	[1.69671]	[−0.19063]
R-squared	0.990295	0.901724	0.898094	0.995679
Adj. R-squared	0.987190	0.870276	0.865485	0.994296
Sum sq. residuals	0.032741	54.85525	3.063743	1.275834
S.E. equation	0.036189	1.481287	0.350071	0.225906
F-statistic	318.8843	28.67321	27.54063	720.1057
Log likelihood	69.82944	−56.37564	−7.329617	7.563021
Akaike AIC	−3.578203	3.845626	0.960566	0.084528
Schwarz SC	−3.174166	4.249663	1.364602	0.488565
Mean dependent	3.335496	20.39362	3.201830	6.112388
S.D. dependent	0.319740	4.112713	0.954487	2.991255
Determinant resid covariance (dof adj.)		9.11E−06		
Determinant resid covariance		2.66E−06		
Log likelihood		25.24127		
Akaike information criterion		0.632866		

1.3. VAR Granger Causality/Block Exogeneity Wald Tests

Sample: 1991 2021
Included observations: 31
Dependent variable: RGDP

Excluded	Chi-sq	df	Prob.
DD	4.573312	6	0.5996
TSav	13.53000	6	0.0354
LN	10.03814	6	0.1231
All	20.87630	18	0.2857

Continued

Dependent variable: DD			
Excluded	Chi-sq	df	Prob.
RGDP	7.205024	6	0.3023
TSav	7.107254	6	0.3110
LN	12.61739	6	0.0495
All	21.72029	18	0.2446
Dependent variable: TSav			
Excluded	Chi-sq	df	Prob.
RGDP	5.918309	6	0.4324
DD	11.92064	6	0.0638
LN	14.83683	6	0.0216
All	41.20566	18	0.0014
Dependent variable: LN			
Excluded	Chi-sq	df	Prob.
RGDP	13.56338	6	0.0349
DD	6.018772	6	0.4211
TSav	9.404515	6	0.1521
All	25.80748	18	0.1042