

# Effects of the Financial Sector on Botswana's Economic Growth

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**How to cite this paper:** Molosiwa, T., Manwa, F., & Chanza, M. (2025). Effects of the Financial Sector on Botswana's Economic Growth. *Modern Economy*, 16, 433-450.

<https://doi.org/10.4236/me.2025.163021>

**Received:** October 19, 2024

**Accepted:** March 28, 2025

**Published:** March 31, 2025

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## Abstract

The link between financial sector development and economic growth has been extensively debated in economic literature, with some researchers claiming that a well-developed financial sector promotes economic growth and others arguing that economic expansion drives financial sector development. This research looks at the causal link between financial development and economic growth in Botswana from 2000 to 2018. Given Botswana's position as an upper-middle-income nation with a thriving financial industry, knowing this link is critical for policymaking and economic planning. To examine this link, the research uses the Auto-Regressive Distributed Lag (ARDL) bounds-testing technique, which is well-suited for small sample sizes and can handle variables integrated at various orders, I (0) or I (1). Stationarity was determined using three-unit root tests: the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Kwiatkowski-Phillips-Schmidt-Shin (KPSS). The research also uses Granger causality tests to determine the direction of causation between financial development (as measured by Finance and Business Services, FBS) and GDP growth. The results show that GDP and financial development are integrated at order I (1), implying non-stationarity at levels but stationarity after initial differentiation. The ARDL limits test finds no long-run cointegration between financial development and economic growth, indicating that although they interact, their connection does not last in the long run. However, short-run findings suggest a bidirectional causal link, with financial development influencing GDP growth and vice versa. The results have significant policy consequences. The lack of long-run cointegration shows that finance sector changes may not be sufficient to produce sustainable economic development in Botswana. To promote economic resilience, policymakers should prioritise increasing financial inclusion, tightening banking rules, and encouraging capital market growth. Furthermore, the study adds to the finance-growth litera-

ture by presenting actual data from a growing African country, filling gaps in previous studies. This research emphasises the relevance of short-term banking sector actions in boosting economic development. While the financial sector contributes to economic performance, long-term growth plans in Botswana should include fundamental economic changes, regulatory improvements, and financial innovations to maximise development benefits.

### **Keywords**

Financial Development, Economic Growth, Granger Causality Test, Bounds Testing, ARDL Model, Botswana

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## **1. Introduction**

Economic literature has often discussed the link between financial sector development and economic growth. While some contend that a strong financial sector stimulates demand for financial services (Nor, 2015; Schumpeter, 1911; Choong & Chan, 2011), others claim that it efficiently allots resources and supports investments, hence fostering economic progress. This research looks at this link considering Botswana, an upper-middle-income nation with a growing finance industry.

The financial industry of Botswana, especially Finance and Business Services (FBS), has been essential in the national economic development. Still, knowing its role in development calls for thorough empirical study. The dynamic interconnections between financial development and economic growth between 2000 and 2018 are evaluated in this work using a bounds-testing cointegration method.

The paper's objectives are to determine whether Botswana's financial progress leads to economic growth or vice versa. In addition, we use econometric modeling to assess how financial development influences GDP growth. Finally, we provide empirical-based policy recommendations for improving Botswana's financial system.

### **Argument for Business Services and Finance as Indicator**

The bank of Botswana (BoB) records the operations of important financial organisations like banks, insurance businesses, and investment companies. As such the research focuses on Finance and Business Services (FBS) as a proxy for financial growth. The BoB's classification of economic activities—where financial intermediation significantly contributes to GDP—guided this decision. Lack of regular data led to exclusion of other industries, including unofficial financial services.

## **2. Literature Review**

Economic literature has seen a lot of discussion on the link between financial development and economic growth as academics suggest many ways the financial sector influences the situation. While more recent studies have looked at sector-specific contributions, financial rules, and digital financial inclusion, previous

studies focused on the part financial intermediation plays in economic development. Theoretical viewpoints and empirical results are critically reviewed in this part to point out areas for further study and present gaps.

### 2.1. Theoretical Perspectives on the Finance-Growth Nexus

Two conflicting theories—the supply-leading hypothesis and the demand-following hypothesis—formulate the theoretical explanations of the finance-growth nexus most of which first put out by *Schumpeter (1911)* and further developed by *Karimo & Ogbonna (2017)*, the supply-leading theory holds that expansion in the financial sector boosts economic growth by organising savings, enhancing capital allocation efficiency, and thus enabling investment. According to this point of view, a developed financial industry reduces transaction costs, boosts liquidity, and encourages entrepreneurship, therefore quickening the economic growth.

On the other hand, the demand-following theory holds that as a rising economy creates more demand for financial services, financial sector expansion is driven by economic development (*Patrick, 1966*). From this point of view, the rise of financial institutions and services results from the growing financial demands of companies and homes as they amass riches. Empirical evidence for this theory comes from studies like those by *Sibindi & Godi (2014)* and *Olayungbo (2015)*, which contend that, rather than being a main driver, financial development is typically a by-product of economic progress.

More recently, ideas as the financial liberalisation hypothesis (*McKinnon, 1973; Shaw, 1973*) stress the role deregulated financial markets play in advancing economic efficiency. But since the 2008 worldwide financial crisis, questions have been raised about the hazards of financial catastrophes brought on by unchecked credit growth. In developing nations like Botswana, the effects of financial liberalisation remain unclear and call for further research on the legislative systems required to reduce financial volatility.

### 2.2. Empirical Evidence from Botswana and Other Developing Economies

Depending on the methodological approach and factors considered, empirical research on the finance-growth link have shown conflicting conclusions. Investigating the finance-growth connection in Botswana, *Muyambiri & Chabaefe (2018)* discovered a bidirectional causal correlation implying that development of the financial sector both impacts and is impacted by economic growth. Their results coincide with those of *Sekakela (2018)*, who showed that while financial growth in Botswana increases output, its effects are limited by ineffective financial control and oversight.

More recently, research aimed at investigating sector-specific changes within Botswana's financial system has Examining customer experience management in the banking industry and its effects on economic growth, *Chiguvi, Tadu, & Mugwati (2025)* underlined how banking efficiency and customer satisfaction help to

provide financial stability and economic development. Their results imply that qualitative factors like customer confidence and institutional trust significantly contribute to financial sector development beyond conventional indicators of financial development. Their study did not, however, include macroeconomic elements as inflation, interest rates, or fiscal policies, therefore allowing space for further study on the more general economic influences of banking sector performance.

In Botswana and Cape Verde, [Mhlanga & Adegbayibi \(2024\)](#) investigated sustainable finance underlining the need of focused capacity-building initiatives to improve financial resilience. According to their research, long-term economic planning and sustainability should help one understand financial development. Their results, which lack a thorough econometric study of the finance-growth link, are essentially descriptive, nevertheless. This methodological difference emphasises the importance of empirical research using quantitative models to evaluate the causal effect of financial development on economic growth.

[Mbulawa & Chingiro \(2024\)](#) contend that banking sector reforms are very essential for economic diversification in reducing Botswana's reliance on diamond exports. Although their work offers insightful policy analysis, its relevance to the body of current finance-growth literature is limited as it does not specifically evaluate the finance-growth causation.

The introduction of digital financial services contributes yet another critical component to Botswana's financial sector development. [Modungwa \(2024\)](#) investigated the use of mobile financial services (MFS) in economic transactions and discovered that the impact on financial inclusion is increasingly being felt by small businesses and unofficial organisations. Their findings strengthen the idea that, particularly in developing nations with limited traditional banking infrastructure, financial technology advancements may serve as catalysts for economic growth. Their research, however, does not assess the long-term sustainability of mobile financial services or look at potential legal barriers to the rise of digital banking.

### **2.3. Comparative Insights from Other African Economies**

Research from other Sub-Saharan African nations provide further understanding of the link between money and growth. Mixed results were obtained by [Odo, Chukwu, & Anoke \(2016\)](#) and [Atan & Obioesio \(2015\)](#) looking at the causal link between financial development and economic growth in Nigeria. Whereas in South Africa a bidirectional causation was shown, financial development was found to precede economic expansion in Nigeria (supply-leading theory). These results imply that the link between finance-growth depends on the context and differs depending on institutional architecture and economic systems.

Likewise, while examining Southern African Development Community (SADC) economies, [Phakedi \(2014\)](#) and [Taivan & Nene \(2016\)](#) found that certain nations show weak or negligible links between finance-growth and others show high links. Sometimes institutional inefficiencies, lack of competition in the bank-

ing industry, and inadequate regulatory systems were found to limit financial growth. The differences in outcomes between nations emphasise the need of nation-specific research as generalising results from one economy to another may be deceptive.

## 2.4. Gaps in the Literature

Research on financial development and economic growth is currently accessible, but some gaps need more investigation. Current research indicates that the relationship between finance-growth and sector-specific contributions of financial development to economic performance is missing. Future research should evaluate if digital finance, insurance, capital markets, or banking services contribute differently to promote economic development. Many studies ignore macroeconomic factors such as unemployment, fiscal policy, and inflation. Including these elements into empirical models would help to provide a more complete knowledge of the finance-growth link as financial development does not work in isolation.

Although digital banking and mobile financial services have expanded financial access, few studies have examined the rules necessary to foster financial innovation while mitigating systemic hazards. Studies on Botswana's banking laws, consumer protection legislation, and financial literacy may give useful policy recommendations. Even though Botswana's financial sector is distinct, comparative studies with similar economies may give insights into best practices and policy lessons. Research comparing Botswana's financial condition to that of other SADC or upper-middle-income African nations might help to better understand regional financial dynamics.

The direction and intensity of causation are still debatable, though the literature on financial development and economic growth offers convincing evidence that the two variables are related. Some research supports the demand-following theory, some the supply-leading idea, while yet others discover a bidirectional link.

Although recent studies underline the increasing relevance of digital financial services, sustainable financing, and consumer satisfaction in banking, macroeconomic context, sector-specific research, and more thorough econometric analysis are still much needed. Future studies should concentrate on creating policy-oriented studies able to direct changes in the banking industry and improve Botswana's long-term economic resilience.

## 3. Methodology

The analytical technique utilised to investigate the relationship between financial development and economic growth in Botswana between 2000 and 2018 is presented. Given the complexities of financial sector interactions with macroeconomic variables, this method uses a quantitative econometric approach, specifically the Auto-regressive Distributed Lag (ARDL) bounds-testing cointegration method developed by [Pesaran et al. \(2001\)](#), to provide insights on the interde-

pendence between financial sector development and economic growth, allowing for the evaluation of both short-run and long-run links between the two.

### 3.1. Data Sources and Variable Selection

This study draws on secondary data from two major sources, the Bank of Botswana Annual Reports (2000-2018) and the Central Statistics Office of Botswana (Statistics Botswana). Statistics Botswana provides official GDP estimates, sectoral economic growth rates, and macroeconomic indicators, whilst the Bank of Botswana provides vital financial sector statistics such as financial intermediation, banking sector contributions, and credit market trends. These sources ensure that the data utilised in this study is consistent with financial reports and national accounts.

The study uses Finance and Business Services (FBS) as a proxy for financial development and Gross Domestic Product (GDP) growth rate as an indicator of economic performance for empirical analysis. The Finance and Business Services industry, which has a significant impact on Botswana's economy, includes banks, insurance firms, investment enterprises, real estate, and business support services. FBS' direct portrayal of official financial sector activity supports its use as a financial development indicator since it has a direct impact on loan availability, investment flows, and financial intermediation. Comparable criteria employed in comparable studies on financial sector development in developing countries demonstrate their importance in assessing finance-growth relations (Muyambiri & Chabaele, 2018; Modungwa, 2024).

Additional indicators, such as stock market capitalisation, interest rate spreads, and credit-to-GDP ratios, were eliminated despite being considered due to data availability constraints and inconsistent historical reporting. Macroeconomic elements such as inflation, currency rates, and unemployment rates were first explored but eliminated due to multicollinearity concerns, ensuring that the model remains focused on the direct relationship between finance and growth. The lack of these characteristics is consistent with previous study aimed at distinguishing sector-specific financial impacts on economic growth (Karimo & Ogbonna, 2017).

### 3.2. Model Selection and Justification

The research uses the ARDL bounds-testing approach, which has many advantages over traditional cointegration techniques, to investigate the relationship between financial development and economic growth. Unlike the Engle-Granger two-stage approach utilized by Kaushal (2023) or Johansen's cointegration test cited in Jalil & Rao (2019), the ARDL model allows for mixed orders of integration, making it applicable whether the variables are  $I(0)$ ,  $I(1)$ , or a combination of both. Given macroeconomic and financial variables often showing differing degrees of stationarity, this flexibility is especially crucial. Furthermore, appropriate for small sample sizes is the ARDL approach, which will help given the tiny 19-year dataset employed in this work (Pesaran et al., 2001).

Whether a long-run equilibrium link exists between financial development and economic growth is found by use of the limits test for cointegration. The following is the hypothesis:

$H_0$ : No cointegration ( $\alpha_3 = \alpha_4 = 0$ )

$H_1$ : Cointegration exists ( $\alpha_3 \neq 0$  or  $\alpha_4 \neq 0$ )

Should the F-statistic surpass the upper limit critical value, the null hypothesis of no cointegration is disproved, therefore validating a long-run correlation between financial development and GDP growth. On the other hand, inadequate data supports long-run equilibrium if the F-statistic is below the lower limit. The investigation concentrates on the short-run dynamics by estimating the ARDL short-run model because the limits test results in research failure to establish long-run cointegration.

### 3.3. Model Specification

The general ARDL (p, q) model used in this study is expressed as follows:

$$\Delta GDP_t = \alpha_0 + \sum \beta_i \Delta GDP_{t-i} + \sum \gamma_j \Delta FBS_{t-j} + \lambda_1 GDP_{t-1} + \lambda_2 FBS_{t-1} + \epsilon_t \quad (1)$$

where:

- $\Delta GDP_t$  represents the first-differenced GDP growth rate (dependent variable).
- $\Delta FBS_t$  represents the first-differenced financial development indicator (independent variable).
- $\alpha_0$  is the constant term.
- $\beta_i$  and  $\gamma_j$  are short-run coefficients.
- $\lambda_1$  and  $\lambda_2$  are long-run coefficients.
- $\epsilon_t$  is the white-noise error term.

Additionally, the model is restructured as an Error Correction Model (ECM) to estimate the speed of adjustment back to equilibrium in the event of short-run deviations:

$$\Delta GDP_t = \alpha + \sum \beta_i \Delta GDP_{t-i} + \sum \gamma_j \Delta FBS_{t-j} + \delta ECT_{t-1} + \epsilon_t \quad (2)$$

where  $ECT_{t-1}$  represents the error correction term capturing long-run disequilibrium, and  $\delta$  is the speed of adjustment coefficient, which should be negative and statistically significant if convergence occurs.

Equation (1) can be viewed as an error correction model, using a linear combination of lagged variables instead of an error correction term. To determine cointegration, we test the null hypothesis that all long-run coefficients are zero ( $H_0$ :  $\alpha_3 = \alpha_4 = 0$ ). Pesaran et al. (2001) advise using an F-test with modified critical values depending on whether all variables are integrated of order one or zero. In line with this reasoning, we pre-test all variables for unit roots and find them to be integrated of order zero or one. We use 1 lag in each and note that the chosen lag length is enough to approximate the data-generating process using the Akaike Information Criterion.

The study also performed Granger Causality Tests on the variables to under-

stand the nature of the interactions and feed-in effects between the economy and financial development. According to the causality tests, a variable  $Y_1$  is said to Granger cause variable  $Y_2$  if the inclusion of the lagged values of  $Y_1$  in the regression will improve the prediction of the current value  $Y_2$ .

### 3.4. Lag Length Selection Criteria

Using the Akaike Information Criteria (AIC), one finds the suitable lag structure for the ARDL model. Selected over the Schwarz Criteria (SC), the AIC minimises information loss while balancing model complexity and fit and is more appropriate for small samples. The AIC indicates that one lag (1, 0) is the ideal lag length for the model, therefore assuring that the model efficiently captures both long-run dynamics and short-run changes (Pesaran et al., 2001).

### 3.5. Granger Causality Testing

The Granger causality test is used in the research to determine the direction of causation between financial development and economic growth by use of formulations:

$$GDP_t = \alpha + \sum \beta_i GDP_{t-1} + \sum \gamma_j FBS_{t-j} + \epsilon_t$$

$$FBS_t = \alpha + \sum \beta_i FBS_{t-1} + \sum \gamma_j GDP_{t-j} + \epsilon_t$$

While GDP growth Granger-causes financial development supports a demand-following theory, financial development Granger-causes shows a supply-leading impact (Patrick, 1966).

### 3.6. Diagnostic and Stability Tests

Several diagnostic tests are carried out to guarantee the strength of the ARDL model:

- Serial correlation is confirmed absent by the Breusch-Godfrey LM test.
- There is no indication of heteroskeasticity using White's test.
- Model stability during the research period is shown by CUSUM stability test.

The strategy used in this research guarantees a thorough examination of the link between finance-growth in Botswana. The work acknowledges the lack of long-term cointegration by using ARDL bounds testing, ECM estimate, and Granger causality tests, therefore offering strong empirical insights into short-run interactions. Diagnostic and stability tests validate the dependability of the model, thereby reinforcing the need for financial sector reforms to concentrate on improving short-run financial stability while building long-term financial structures to enable continuous economic development.

## 4. Findings and Discussions

This section shows the empirical research findings including the stationarity tests, cointegration analysis, autoregressive distributed lag (ARDL) short-run model results, and policy suggestions. The results are critically examined con-

sidering past research to help to place Botswana's financial growth in larger economic contexts.

#### 4.1. Stationarity Tests and Cointegration Analysis

Before conducting the ARDL model estimate, one may determine the order of integration of the variables by means of stationarity testing. This work applies three-unit root tests: the Augmented Dickey-Fuller (ADF), the Phillips-Perron (PP), and the Kwiat-kowski-Philippines-Schmidt-Shin (KPSS). The results reveal that, at order I (1), GDP and Finance and Business Services (FBS) are integrated and thus non-stationary at levels but become stationary after first differencing.

Unit roots in financial and economic variables are not exceptional; investigations on other emerging nations have shown same trends. For example, [Mbulawa & Chingoiro \(2024\)](#) in their analysis of the drivers of Botswana's financial and economic development also noted GDP and financial sector indicators as I (1) variables, hence requiring cointegration tests. Similar findings in Nigeria's banking sector by [Karimo & Ogbonna \(2017\)](#) also point to the necessity of cointegration methods to ascertain the long-term link between finance and economic development.

Using the bounds-testing method suggested by [Pesaran et al. \(2001\)](#), this work investigates whether a long-run equilibrium connection exists between financial development and economic growth. The computed F-statistic shows that there is no long-run cointegration between GDP and FBS as it goes below the lower limit at the 5% significance level. This result suggests that while financial development and economic growth may interact, they may not sustain a consistent long-term link.

These findings contradict other studies on Botswana, like [Muyambiri & Chabaele \(2018\)](#), who discovered a long-standing correlation between GDP growth and financial intermediation. The difference might come from data periods, financial sector developments, or analytical methods. More recent re-search, such as [Modungwa \(2024\)](#), suggest that digital financial services and mobile banking technologies have been progressively impacting the financial sector's impact on economic development in Botswana, which may not have been sufficiently reflected in traditional cointegration studies.

This paper uses an ARDL short-run model estimate in the absence of long-run cointegration to enable the analysis of short-run interactions between financial development and economic growth.

According to the results, there is a strong correlation between GDP and financial development as seen in [Figure 1](#). [Figure 2](#) displays the time series plot of the two variables.

The unit root tests considered are the ADF, PP and KPSS, as shown by the stationarity tests in [Table 1](#).

##### Bounds Testing Results (Cointegration Test)

The Bounds testing procedure helps us determine if there is cointegration

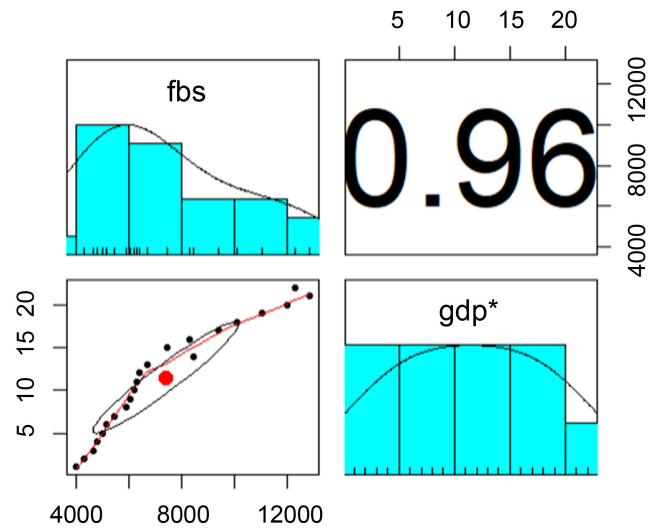


Figure 1. Correlation analysis.

Table 1. Stationarity tests.

Variable	Level			First Difference			Decision
	ADF	PP	KPSS	ADF	PP	KPSS	
LOGGDP	-4.1289	-4.1289	0.0474	-5.6255***	-5.6255***	0.3217***	I (1)
LOGFBS	-1.4388	-1.6720	0.1318	-3.6448***	-3.6448***	0.0939***	I (1)

\*\*\*Significant at the 5% level.

Table 2. Bounds test with log GDP as dependent variable.

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I (0)	I (1)
F-statistic	2.451634	10%	4.04	4.78
k	1	5%	4.94	5.73
		2.5%	5.77	6.68
		1%	6.84	7.84
t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I (0)	I (1)
t-statistic	-2.062702	10%	-2.57	-2.91
		5%	-2.86	-3.22
		2.5%	-3.13	-3.5
		1%	-3.43	-3.82

between GDP and FSB. Tables 2-4 display the bounds testing results. The decision rule is that if the F-statistic < I (0) bound we do not reject H<sub>0</sub>. In both cases, the F-statistic is <I (0) bound, and hence we do not reject H<sub>0</sub> Furthermore, it

concludes that there is no cointegration between GDP and FSB. Hence, we estimate the ARDL short-run model. Also, if the F-statistic > I (1) bound, we reject  $H_0$ , in both cases, the F-statistic is > I (1) bound and hence we reject  $H_0$ . Moreover, it concludes that there is no cointegration in the variables. When log GDP and log FSB are the dependent variables, there is no cointegration in the variables (Table 2 and Table 3). Table 4 summarises the tests when log GDP is a dependent variable and log FBS is a dependent variable. We then estimate the ARDL short-run model in Table 5.

#### 4.2. ARDL Short-Run Model Results

ARDL short-run parameter results are reported in Table 5 and Table 6. In both cases, when GDP is the dependent variable and when FSB is the dependent

**Table 3.** Bounds test with log FSB as dependent variable.

Levels Equation				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGGDP	1.283545	0.090976	14.10861	0.0000
EC = LOGFBS – (1.2835 * LOGGDP)				
F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I (0)	I (1)
F-statistic	2.871584	10%	4.04	4.78
k	1	5%	4.94	5.73
		2.5%	5.77	6.68
		1%	6.84	7.84
t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I (0)	I (1)
t-statistic	-2.353169	10%	-2.57	-2.91
		5%	-2.86	-3.22
		2.5%	-3.13	-3.5
		1%	-3.43	-3.82

**Table 4.** Bounds testing results summary.

Dependant Variable	F-Statistic	Cointegration	Decision
Loggdp	F_loggdp = 2.452 T_loggdp = -2.063	No Cointegration	Estimate ARDL short run model
LogFBS	F_logfbs = 2.872 T_logtbs = -2.353	No Cointegration	Estimate ARDL short run model

**Table 5.** ARDL results with GDP as the dependent variable.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOGGDP (-1)	0.680697	0.154798	4.397319	0.0003
LOGFBS	0.606455	0.242250	2.503433	0.0211
LOGFBS (-1)	-0.367175	0.253797	-1.446724	0.1635
C	1.380366	0.619192	2.229302	0.0374
R-squared	0.988898	Mean dependent var		10.99920
Adjusted R-squared	0.987233	S.D. dependent var		0.310749
S.E. of regression	0.035112	Akaike info criterion		-3.709520
Sum squared resid	0.024657	Schwarz criterion		-3.513178
Log likelihood	48.51424	Hannan-Quinn criter.		-3.657430
F-statistic	593.8263	Durbin-Watson stat		2.059881
Prob (F-statistic)	0.000000			

variable, the ARDL (1, 0) is fitted. This model has a lag of the dependent variable and no lags of the independent variable. As observed from the parameter estimation results, the p-values of the t-statistics of the independent variables are <5% level of significance in both cases, indicating a bidirectional short-run causality. This means that GDP Granger causes FSB, and FSB Granger causes GDP.

Significant short-run coefficients in both directions imply that the ARDL short-run model estimates bidirectional causation between GDP and financial development is present. Further supporting this conclusion are the Granger causality tests, which strengthen the case that short-term effect of financial development and economic growth depends on one another.

**Table 6.** ARDL results with FBS as the dependent variable.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOGFBS (-1)	0.786496	0.090731	8.668479	0.0000
LOGGDP	0.274042	0.114382	2.395862	0.0260
C	-1.060427	0.481216	-2.203642	0.0388
R-squared	0.995231	Mean dependent var		8.953174
Adjusted R-squared	0.994776	S.D. dependent var		0.393274
S.E. of regression	0.028424	Akaike info criterion		-4.166700
Sum squared resid	0.016966	Schwarz criterion		-4.019443
Log likelihood	53.00040	Hannan-Quinn criter.		-4.127633
F-statistic	2191.003	Durbin-Watson stat		1.381196
Prob (F-statistic)	0.000000			

#### 4.2.1. Diagnostic Checking

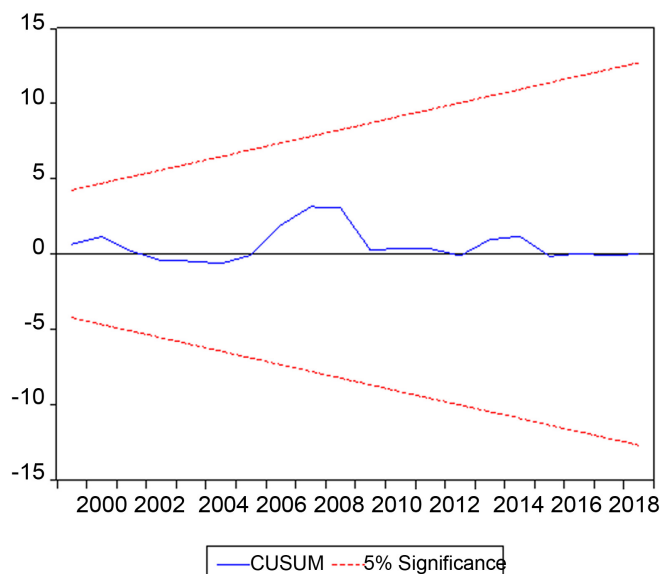
Serial correlation was conducted for the two short-run models. No serial correla-

tion was found in the model when GDP is the dependent variable, and FBS is the dependent variable. **Table 7** displays the LM-test results.

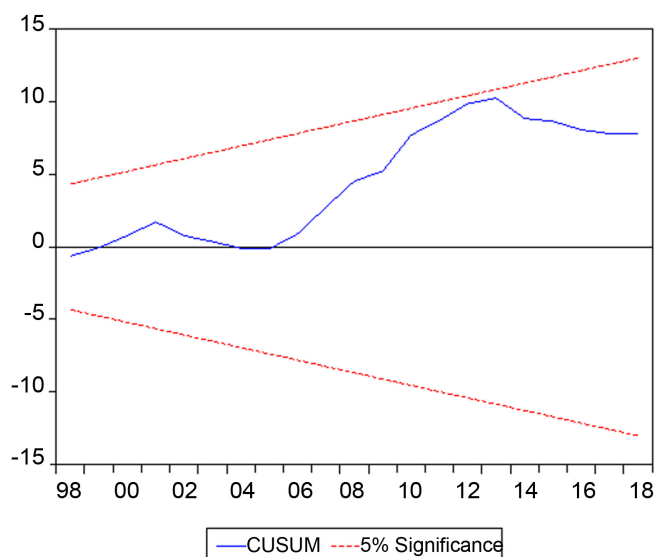
The short-run models were tested for parameter stability using the cumulative sum of recursive residuals CUSUM test, as shown in **Figure 2** and **Figure 3**. The test plot falls within the 5% significance level in both cases, indicating stability in

**Table 7.** Serial correlation LM Test—LOGGDP.

Dependant Variable	Breusch-Godfrey Serial Correlation LM Test:			
LOGGDP	F-statistic	0.044591	Prob. F (1, 19)	0.8350
LOGFBS	F-statistic	2.055210	Prob. F (1, 20)	0.1671



**Figure 2.** LOGGDP and LOGFBS model stability—CUSUM test.



**Figure 3.** LOGGDP and LOGFBS model stability—CUSUM test.

the short-run parameters.

#### 4.2.2. Short-Run Causality between Financial Development and Economic Growth

Measuring financial development using Finance and Business Services (FBS), the findings reveal that GDP growth in the near term is statistically significantly influenced. This fits the supply-leading theory, which holds that a well-developed financial sector lowers transaction costs, organises savings, and supplies money for investment, hence promoting economic development (Schumpeter, 1911; Karimo & Ogbonna, 2017).

Simultaneously, economic expansion also stimulates financial development, hence validating the demand-following concept (Patrick, 1966). This implies that demand for financial services rises as Botswana's economy grows, which fuels further growth in the financial industry. Similar short-run correlations were discovered by Chiguvu et al. (2025) in Botswana's banking industry, where financial innovation and expansion were demonstrated to be driven by economic development.

#### 4.2.3. Model Diagnostic Test Robustness

The research runs various diagnostic tests including several to guarantee the dependability of the ARDL short-run model:

- The test for serial correlation in the residuals, the Breusch-Godfrey LM test, shows no indication of serial correlation.
- White's test, the homoskedasticity test, shows no evidence of heteroskedasticity, implying that variance is consistent across observations.
- The model parameters stay constant across the sample period according to CUSUM stability test.

These diagnostic tests validate the model's resilience, therefore enhancing the trust in the short-term results.

The bidirectional causation shown in this research is compatible with those of other Sub-Saharan African countries. For instance, Odo et al. (2016) in Nigeria and Atan & Obioesio (2015) in South Africa similarly discovered bidirectional connections, implying that in developing nations financial development and economic growth are mutually beneficial. But unlike research in more economically liberalised nations like Mauritius (Bara et al., 2016), Botswana's finance industry is still under development, so its influence is more erratic over the short term.

#### 4.3. Policy Implications and Regulatory Recommendations

Botswana's policymakers should utilise targeted tactics to ensure that financial sector changes meet sustainable economic growth, since the findings reveal that, although short-term financial development and economic growth are interconnected, they lack a solid long-term connection. The results suggest that, without other measures, financial development may be insufficient to drive long-term economic transformation, even if it aids in immediate economic growth. The following section discusses important policy implications and recommendations for in-

creasing the financial sector's contribution to economic development.

#### **4.3.1. Strengthening of Banking Laws to Improve Financial Stability**

Economic development is contingent upon financial stability, since a robust banking system efficiently mobilises savings and credit, hence enhancing economic resilience. The Bank of Botswana, as the principal financial regulator, must enhance risk-based banking regulations to mitigate financial instability, particularly during economic crises. One may mitigate the risks associated with excessive credit growth and non-performing loans by enhancing responsible oversight and addressing financial crises that threaten economic development.

Recent study by Mhlanga & Adegbayibi (2024) emphasises the need of a well-regulated financial sector for fostering economic stability. Their findings indicate that the enhancement of Botswana's financial system's efficiency is contingent upon the establishment of robust banking regulations and effective credit risk management. In this context, authorities should enhance banks' supervision, enforce stricter capital adequacy standards, and establish mechanisms to mitigate systemic risks. Botswana should prioritise financial consumer protection laws to promote transparency and mitigate exploitative lending practices. These improvements would enhance the banking industry's efficacy in facilitating long-term economic growth and augment trust in it.

#### **4.3.2. Increasing Financial Inclusion to Advance Access to Banking Facilities**

The results of this study suggest that, although many rural regions remain unbanked, limiting the potential benefits of financial sector expansion, financial development influences economic growth. Financial inclusion is crucial for ensuring that households, small businesses, and informal entrepreneurs have access to loans, savings, and payment systems to participate in economic activity. High banking fees, inadequate infrastructure, and financial illiteracy continue to be significant barriers to financial inclusion in Botswana.

As Modungwa (2024) notes, new innovations in mobile banking and digital financial services hint to mobile financial inclusion policies that may help bridge this gap. Mobile banking services may improve financial access, especially in remote areas where traditional banking infrastructure is absent. To ensure widespread acceptability, governments and financial institutions should prioritise expanding mobile banking networks, cutting banking fees for low-income individuals, and merging digital financial literacy campaigns.

To help small enterprises that may not be eligible for typical bank loans, policymakers should promote community-based savings projects and microfinance initiatives. Strengthening financial inclusion reduces income disparities while increasing economic productivity.

#### **4.3.3. Developing Capital Markets to Boost Prospective Investment Sources**

A functional capital market is required to mobilise long-term finance, which is

critical for sustaining economic development. With limited activity in the stock and debt markets, banks continue to dominate Botswana's financial industry. additional diverse financial markets may give enterprises and investors with additional financing choices, reducing dependence on short-term bank loans and increasing economic resilience.

The study's findings suggest that short-term fluctuations in the financial sector have a significant impact on GDP growth, emphasising the significance of upgrading capital markets to create more stable investment opportunities. [Munodawafa & Naude's \(2024\)](#) study underlines the benefits of diversifying financial products in Botswana's financial system. Policymakers should prioritise expanding stock market participation, increasing corporate bond issuance, and improving the attractiveness of foreign direct investment (FDI).

Legislative adjustments are required in developing capital markets to boost investor confidence, expand market liquidity, and improve corporate governance. Policymakers should also assist small and medium-sized firms (SMEs) in being listed on the Botswana Stock Exchange (BSE), therefore giving them access to equity finance. Strengthening the legal and institutional framework that governs securities trading would encourage local and international investors to participate in Botswana's financial markets even more.

#### **4.3.4. Using Focused Policies Will Help to Match Financial Sector Reforms with Economic Development**

Policymakers must ensure that financial changes match long-term economic sustainability goals, given the evidence of short links between financial development and economic growth. Financial policies should be tailored to address key difficulties in Botswana's economy, such as insufficient industrial diversification, limited access to credit for small businesses, and regulatory inefficiencies in the financial sector.

Improving financial literacy and education is one of the primary tactics since it will assist businesses and individuals in correctly using financial services. [Mbulawa & Chingoiro's \(2024\)](#) research emphasises the importance of public-private partnerships (PPPs) in improving competitiveness and banking efficiency. To advance financial deepening, governments should focus on reducing bureaucratic barriers to company finance, streamlining credit approval processes, and promoting private sector-led financial innovations.

Furthermore, the government should provide targeted incentives to encourage the establishment of fintech businesses, venture capital funds, and alternative financial institutions, therefore stimulating financial sector innovation. Combining digital finance, mobile banking, and blockchain-based financial solutions may further improve the accessibility and efficiency of financial services, promoting long-term economic development.

## **5. Conclusion**

The results of this research provide an insightful analysis of Botswana's short-run

link between economic growth and financial development. The lack of long-run cointegration implies that, while the financial sector is very important for the performance of the economy, structural changes, improved regulatory systems, and more financial inclusion projects are needed to attain continuous increase. Key policies that legislators should prioritise to improve the financial sector's contribution to Botswana's long-term economic prosperity are strengthening banking regulations, increasing financial access, developing capital markets, and matching financial sector policies with more general economic objectives.

The policy proposals presented in this paper act as a road map for financial sector changes, therefore ensuring that financial development is not only a result of economic growth but also a driver of sustainable economic transformation. Examining the function of digital financial services, alternative economic indicators like inflation, employment, and trade policies, and regional financial integration in forming Botswana's financial sector growth should be the main priorities for future studies. These strategic changes will help Botswana improve financial resilience, increase economic diversification, and build a more inclusive and dynamic financial system supporting long-term development.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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