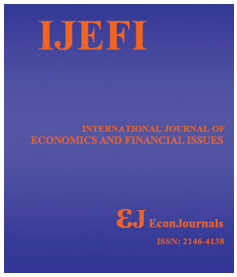

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Industrial Value Addition, Credit Growth and Economic Growth in Botswana

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ABSTRACT

The sluggish economic growth trajectory in Botswana, characterized by subdued expansion in real GDP per capita, precipitates concerns regarding the efficacy of extant macroeconomic policies. Confronted with an imperative to diversify its economy and mitigate sectoral vulnerabilities, Botswana's growth dynamics warrant scrutiny. This study endeavors to elucidate the determinants of economic growth in Botswana, identifying trade openness, savings rates, domestic credit to the private sector, and industrial value-added as pivotal factors exerting a positive influence on growth dynamics. The findings suggest that augmenting these variables can stimulate economic expansion, thereby underscoring the imperative for policymakers to craft targeted fiscal and monetary policies that foster a conducive business environment, optimize resource allocation, and catalyze sustainable economic development. By leveraging these insights, policymakers can devise evidence-based strategies to bolster Botswana's economic resilience and enhance its growth prospects.

Keywords: Economic Growth, Industrial Value Addition, Savings, Credit, ARDL, Fully Modified Ordinary Least Squares
JEL Classifications: O4, O55, L6, G2

1. INTRODUCTION

Economic growth is defined as the increase in the production of goods and services per capita over a specified period of time. Alternatively, it refers to an in the country's economy or an area's economy particularly concerning the value of goods and services produced. Numerous factors have made the study of economic growth interesting (Acemoglu, 2012). Acemoglu notes that there are still a lot of unanswered problems and significant obstacles in the field of economic growth, which is why it has drawn a lot of intellectual attention and is probably going to do so in the future. However, Nkurunziza and Bates (2003) pointed out that the intricacy of the growth process is at the heart of the debate over economic growth. They assert that most of the studies that claim to explain growth only account for only a small percentage of the variation in the rate of growth, which cannot be entirely attributed to regional or national idiosyncrasies. This study employs a country case study methodology focused on Botswana.

The mining industry is the main driver of Botswana's economy, with diamond mining acting as the cornerstone and making a substantial contribution to exports and government revenue. The services sector also plays a significant role, although agriculture accounts for a much smaller portion of the country's GDP. As a result of this reliance on diamond mining, Botswana's economy is highly dependent on diamonds.

Since the late 1960s, Botswana's economic growth has been comparable to that of several of Asia's biggest economies. Over the last 10 years, Botswana's economy has grown at one of

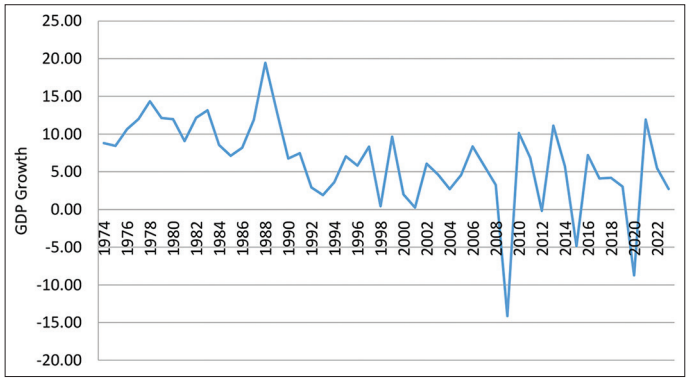
the quickest rates in the world, averaging around 5% annually (Figure 1). The last few years have seen Botswana register below average economic growth mostly as result of declining revenues from the diamond sector. As noted in the country' 2025/26 Budget statement, the decline in the diamond market has a direct impact on the weak domestic economic performance. For instance, the first three quarters of 2024 had a 3.3% fall in the domestic economy, while the same time in 2023 saw a 3.5% increase. According to the finance minister, "the mining and diamond trading sectors' respective contractions of 22.9 and 44.1% are responsible for the GDP decline." The domestic economy was slightly insulated from what would have been a far more substantial loss by the non-diamond mining sector, which increased by an average of 4.2% in the first three quarters of 2024.

The above observation is a cause of concern for the Botswana economy with the policy recommendation of diversifying away from the diamond sector. The current study seeks to understand the other growth drivers in Botswana during the period 1974-2023, a 50-year period. The point of departure and the novelty of the study lies in the inclusion of the industrial value addition variable alongside private savings and domestic credit to the private sector as potential determinants of economic growth in Botswana. To the researcher's knowledge, no study has been conducted along these lines in Botswana. Methodologically, the study is of interest as it uses both the autoregressive distributed lag model and the full modified least squares method.

2. LITERATURE REVIEW

There has been a proliferation of studies on the determinants of economic growth in both the developed and developing countries (Joshi, 2022; Mekonnen, 2021; Ribaj and Mexhuani, 2021; Chirwa and Odhiambo, 2016; Malešević-Perović et al., 2014). There has been quite an array of factors that have been identified to cause economic growth though with different impact depending on circumstances, different jurisdictions and also depending on the research approach adopted by the researchers. Chirwa and Odhiambo (2016) carried out a qualitative narrative assessment of the body of empirical research on the major macroeconomic drivers of economic growth in both developed and developing nations. The review shows that foreign aid, foreign direct investment, fiscal policy, trade, human capital development, demographics, monetary policy, natural resources, reforms, and geographic, regional, political, and financial factors are the main macroeconomic drivers of economic growth in developing nations. Physical capital, trade, demography, monetary policy, human capital, fiscal policy, and financial and technology elements are the main macroeconomic factors linked to economic growth in industrialized nations, according to the study. A number of qualitative factors have been identified in literature; role of governance (Arusha, 2009), frameworks including property rights, regulatory institutions, institutions for macroeconomic stabilization, institutions for social insurance and institutions of conflict management (Rodrik, 2018); impact of corruption (Shera et al., 2014); political factors like political regimes, political instability, civil freedom, the perception of politics play also an important role in fostering economic growth (Lensink et al., 1999), and importance of geography on growth has been well researched (Crosby, 1986; Diamond, 1997). Acemoglu (2009) affirmed that geography can affect in many ways economic growth.

Figure 1: Botswana GDP growth



Source: Authors' compilation.

The majority of the research done to ascertain the determinants of economic growth are quantitative in nature (Mekonnen, 2021; Ribaj & Mexhuani, 2021; Chirwa & Odhiambo, 2016; Malešević-Perović et al., 2014) and established several factors to be the determinants of economic growth. Zieba et al. (2022) identified the elements impacting economic growth in developing nations when conducting a study estimating a fixed-effect model using a panel dataset for 62 developing nations between 2010 and 2018. They found out that government expenditure and natural resource rents have a positive effect on per capita GDP growth. On the other hand, inflation and growing labor force participation hinder economic growth in these nations. Similarly, Bostan et al. (2022) used panel data analysis to examine the impact of domestic, foreign, and human capital on economic growth when determining the economic growth determinants. The primary findings indicate that local investment and trade openness have a greater impact on economic growth than foreign capital inflows. In another study by Rahman and Alam (2021) evaluating the drivers of economic growth among top 20 economies, the results showed that economic growth is positively and significantly impacted by energy use, commerce, capital, labor, human capital development, and foreign direct investment. While trade, money, and energy usage all have noteworthy and beneficial short-term benefits, human capital has a detrimental impact on economic growth. Rahman also found economic growth to have a unidirectional causal relationship with energy use and foreign direct investment, as well as a bidirectional causal relationship with commerce, capital, labor, and human capital. Whilst the elements influencing South Africa's economic growth are examined by Hlapi et al. (2023). The analysis found that capital formation, labor, power supply, and technological advancement are all strongly correlated with South African economic growth. They found that whereas power supply and human capital have a negative correlation with economic growth, labor and technical progress factors have a positive correlation over the long term.

In Nepal, Joshi, (2022) evaluated factors influencing economic growth using GDP growth as the dependent variable, while the explanatory variables were import, export, foreign currency

reserve, exchange rate, gross capital creation, and broad money supply. The study established a one-way causal relationship between exports and imports and economic growth, as well as a two-way causal relationship between foreign currency reserves and broad money and economic growth. However, an inverse causal relationship was seen between economic growth and exports was established. The study verified that the factors influencing Nepal's economic growth are imports, exports, the exchange rate, foreign exchange reserves, gross capital formation, and the country's wide money supply. The factors affecting economic growth in Ethiopia were assessed (Mekonnen, 2021). The study revealed that economic growth was impacted by banking sector expansion and financial liberalization. The results also showed that private sector investment, inflation, trade balance, and exchange rates were all statistically significant and positively correlated with economic growth. Conversely, the trade balance had a negative correlation with economic growth and was statistically significant. Similarly, Ribaj and Mexhuani (2021) assessed the variables influencing Kosovo's economic expansion. The findings demonstrated that deposits significantly boost Kosovo's economic growth since savings encourage investment, output, and job creation, all of which lead to more sustainable economic growth. Furthermore, because they directly affect investment, loans and remittances also contribute to Kosovo's economic growth. Globally, a study of the elements impacting growth in Europe, Asia, Africa, and America was conducted (Aslan and Altinoz, 2021). The study found that while capital formation has a negative effect on economic growth, natural resources and globalization have a favorable effect on growth in European, Asian, and American nations. Globalization and gross capital formation have a favorable effect on GDP in African nations, whereas natural resources have the opposite effect. Evidence from every continent shows that globalization and economic growth are causally related in both directions.

Malešević-Perović et al. (2014) looked at the relationship between economic growth and trade and financial openness. The findings support the notion that trade and financial openness (FDI) have a substantial effect on growth. They also showed that institutional openness has an indirect effect on the economy through trade and FDI, which are the primary drivers of economic growth. Anyanwu (2014) examined the factors that influence economic expansion in Africa. According to the findings, Africa's economic growth is favorably and strongly impacted by domestic investment, net ODA inflows, education, government efficacy, urban population, and metal prices. Safitri et al. (2023) examined the variables affecting Indonesia's economic expansion, joblessness, and poverty. The findings of the study demonstrate that factors related to investment, inflation, and unemployment significantly boost economic growth. In both short- and long-term evaluations, Muqorrobin (2015) shown that labor force participation, bank lending, and foreign direct investment had a favorable and significant impact on Indonesia's economic growth. However, both in the short and long term, foreign debt has a detrimental and substantial impact on Indonesia's economic growth. Zhou and Luo (2018) examined the connection between economic growth, technological innovation, and China's higher education input. The findings demonstrate how technology advancement, economic expansion, and educational input interact to create a dynamic circulatory system. Two key elements impacting economic growth are technology innovation and higher education input. Upreti (2015) conducted a study to determine the elements influencing economic expansion in developing nations. The study showed that the rise of the gross domestic product per capita in emerging nations is positively impacted by a high volume of exports, an abundance of natural resources, longer life expectancy, and greater investment rates. To identify the factors that contribute to growth in emerging nations, a great deal of study is required, as the scope of current studies is constrained by a dearth of trustworthy data.

The other controversial issues around the study of determinants of economic growth also has a methodological dimension given that different authors have applied different method. These methods include Johansen Cointegration Test (Joshi, 2022; Ribaj and Mexhuani, 2021), Autoregressive distributed lag model (Hlapi et al., 2023; Mekonnen, 2021), panel vector autoregression (Zhou and Luo, 2018; Aslan and Altinoz (2021), simultaneous model (Safitri et al., 2023), three Stage Least Square (3SLS) method (Safitri et al., 2023), and Error Correction Model (Muqorrobin, 2015), among others. The various methods have been applied in different circumstances including in panel data and single country cases. This then informs researchers that there are various ways that can be adopted to resolve the econometrics problems. The current study is informed by these previous studies in the choice of the model to be adopted since it is meant to ascertain the determinants of economic growth in a single country of Botswana.

3. METHODOLOGY

The methodology of the study is inspired by the prior work of other authors (Joshi, 2022; Ribaj and Mexhuani, 2021) who investigated the determinants of economic growth. The current study modifies the works of the above by including other variables such industrial value addition, savings and credit to the private sector. The econometric model adopted is specified as:

$$Y_t = \alpha_1 + \alpha_2 IVA_t + \alpha_3 SAVS_3 + \alpha_4 CRED_t + \alpha_5 GFCF_t + \alpha_6 TRADE_t + \alpha_6 FDI_t + \varepsilon_t \quad (1)$$

Where, growth in national income is used to proxy economic growth (GDPG). The study integrates the following dependent variables: Industrial value addition (IVA), gross fixed capital formation (GFCF), trade openness (TRADE), foreign direct investment (FDI), private savings (SAVS) and credit to the private sector. These variables are discussed below:

3.1. Industrial Value Addition

A strong industrial sector is essentially a major driver of economic development. Industrial growth has a significant positive impact on economic growth because it usually results in increased productivity, job creation, technological advancement, and higher production of value-added goods, all of which contribute to a country's overall GDP and economic prosperity. According to empirical findings, economic growth and industrialization are positively correlated in the short and long run (Bokosi, 2022).

3.2. Gross Fixed Capital Formation (GFCF)

The amount of capital needed for a country's productive activities is captured by gross fixed capital formation, which is a stand-in for physical capital or investment. Investment is expected to have a positive relationship with economic growth, and it is expected that the higher the GFCF, the higher economic growth (Pasara & Garidzirai, 2020; Makaringe and Khobai 2018; Saungweme et al. 2019).

3.3. Private Savings (SAVS)

Since higher savings rates result in more investment capital, which can boost economic activity and raise GDP growth rates, private savings typically have a positive impact on economic growth. In other words, when people save more money, it can be transferred into businesses through loans, allowing them to grow and add jobs, which in turn spurs economic growth. It has been established that savings have a significant positive impact on economic growth, because savings stimulate investment, production, and employment and consequently generate greater sustainable economic growth (Ribaj and Mexhuani, 2021).

3.4. Trade Openness (TRAD)

The openness of a nation which is calculated as the total of imports and exports divided by GDP, captures the impact of international trade on growth (Levine, Loayza & Beck 2000). Since commerce brings in a flow of ideas, talents, and specialization, its effects are anticipated to be favorable. Its net impacts, however, may only be ascertained empirically because it might be either positive or negative. Economic growth can be impacted by trade openness in both positive and negative ways (Keho, 2017; Malefane and Odhiambo, 2018).

3.5. Domestic Credit to the Private Sector (GRED)

In developing nations, credit is a key factor in economic progress. It has an impact on the entire economy by raising the purchasing power of households and people (Evans, 2013). A strong financial system is necessary to foster technical innovation and efficient money distribution through financial intermediation, both of which are critical for reaching targeted growth goals (Awad and Karaki, 2019).

3.6. Foreign Direct Investment (FDI)

The neoclassical growth theories asserts that foreign direct investment (FDI) can boost economic growth by increasing capital creation (Neusser, 1991). FDI also ensures improvements in various types of capital and research and development (R&D). Through technological transfer and its effects in the host country, multinational corporations (MNCs) can increase industrial production, improve human capital, and improve R&D cooperation (Ikiara, 2003). FDI could significantly boost sustainable growth in comparison to local investment at any time (Evans, Samuel & Mike (2021).

To assess the determinants of economic growth the estimation technique adopted for the study is autoregressive distributive lag model (Pesaran et al., 2001). The choice of the method is due to its easy applicability in small samples. The method is applicable when the variables are integrated of order zero and one or the mixture of the two orders (Shrestha and Bhatta, 2018). It is not applicable when variables are integrated of higher orders more than one. It can be utilised when the sample is small (Ghatak and Siddiki, 2001). The method resolves the challenges of serial correlation and indigeneity when modeled with appropriate lags (Pesaran et al., 2001). The ARDL method is useful when estimating the long-run and short-run relationships (Pesaran et al., 2001). In light of the above advantages of the method, the study examines both the short run and long run determinants of economic growth in Botswana.

The ARDL technique estimates $(P+1)^k$ number of regressions to determine the optimal lags for each variable. The highest number of lags to be used is $P+1$ and k is the number of variables in the equation. The model is selected based on the Schwartz-Bayesian Criterion (SBC) that uses the smallest possible lag length and is therefore described as the parsimonious model.

The ARDL model for the study is specified in equations 2. The equation incorporates both short-run and long-run dynamics of the variables.

$$\begin{aligned}\Delta GDP_t &= \alpha_0 + \alpha_1 GDP_{t-1} + \alpha_2 IVA_{t-1} + \alpha_3 SAV_{t-1} \\ &+ \alpha_4 CRED_{t-1} + \alpha_5 GFCF_{t-1} + \alpha_6 TRAD_t + \alpha_7 FDI_{t-1} \\ &+ \sum_{t=1}^{p} \theta_t \Delta GDP_{t-1} + \sum_{t=1}^{p} \vartheta_t \Delta IVA_{t-1} + \sum_{t=1}^{p} \mu_t \Delta SAV_{t-1} \\ &+ \sum_{t=1}^{p} \mu_t \Delta CRED_{t-1} + \sum_{t=1}^{p} \varphi_t \Delta GFCF_{t-1} \\ &+ \sum_{t=1}^{p} \omega_t \Delta TRAD_{t-1} + \sum_{t=1}^{p} \dot{o}_t \Delta FDI_{t-1} \end{aligned} \quad (2)$$

Where α_1 to α_7 are long-run parameters and θ, ϑ, μ, φ, ω and are short run parameters. The model hypothesizes that there is no cointegration $[\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = = \alpha_7]$ and in case this fails the alternative is $[\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq \alpha_6 \neq \alpha_7]$. When the null hypothesis is rejected based on the F-statistic implies there is cointegration. The rejection criterion is premised on the Bounds test.

The cumulative sum of squares of recursive residuals (CUSUMSQ) stability test was used to evaluate the ARDL model's goodness of fit. The various World Bank Development Indicators for the years 1974-2023 provided the statistics for the various variables.

4. RESULTS PRESENTATION AND ANALYSIS

This section presents and analyses the results of the study. The section starts by presenting the descriptive statistics of the variables, correlation matrix and unit root results. This is then followed by the presentation and discussion of the ARDL short and long run results, followed by the robustness test shown by the fully modified ordinary least squares (FMOLS) method. The descriptive statistics for the variables used to estimate the determinants of economic growth equation are presented in Table 1.

Table 1: Descriptive statistics

Measurement	GDP	IVA	SAVS	CRED	GFCF	TRAD	FDI
Mean	6.3428	6.3524	33.8378	19.9634	22.2145	101.7302	18.4022
Median	6.9350	6.6200	33.3500	17.4900	22.6784	99.2850	18.4002
Maximum	19.4500	22.4900	49.8200	39.6300	25.1048	125.7800	20.3803
Minimum	−14.1400	−31.7500	19.4100	6.6400	18.4162	68.8600	11.15625
Standard deviation	−1.0409	10.3563	7.3189	9.5114	2.0679	14.8513	1.5723

Source: Authors' compilation

The mean, maximum, minimum and the standard deviation of the variables; GDP growth, domestic credit to the private sector, savings, trade openness, foreign direct investment, and gross fixed capital formation are shown in Table 1. The variation of the data set is minimal, as reflected by the low standard deviations of the variables except rainfall which has a higher variability.

The correlation matrix is presented in Table 2.

The findings of testing the correlation between the explanatory variables are shown in Table 2 correlation matrix. When there is a high correlation (over 0.8) between the explanatory variables, multicollinearity becomes an issue (Gujarati, 2013). Table 2's findings demonstrate that multicollinearity is not an issue with the variables employed in this investigation have correlation <0.8.

The study aimed to assess the existence of cointegration among the variables economic growth, industrial value addition, domestic credit to the private sector, savings, trade openness, foreign direct investment, and gross fixed capital formation to establish if the variables were suitable candidates for the ARDL approach. The augmented dickey fuller test was used to do a stationarity test in order to make sure that there is no spurity among the variables. Since its introduction by Dickey and Fuller in 1981, the unit root test has become widely used. The Dickey-Fuller (DF) technique was created for the test, which is based on a parametric approach. Accordingly, the variable GDP, IVA, FDI, and SAVS are stationary in levels, I(0) while CRED, GFCF and TRAD are stationary after first difference, I(1). Give the variables are I(0) and I(1) there can be used for an ARDL model.

The Bound test for cointegration by Pesaran et al. (2001) was used to assess the process. Table 3 displays the results of the bound test.

The critical values for the bounds test are provided in Table 3. These are compared with the calculated F-statistic. The results show that the F-statistic is greater than both the lower critical bound and upper critical bound at all levels of significance. This then confirms the existence of cointegration among economic growth, industrial value addition, domestic credit to the private sector, savings, trade openness, foreign direct investment, and gross fixed capital formation. This implies that there is a long run relationship among the variables of interest.

The next step after determining the long-term relationship is to use the ARDL approach to estimate the coefficients of the long-term relationships and the associated error correction model. The Akaike Information Criterion (AIC) was used to choose the best lags on variables. Because the data series was short, two lags were used to pick the model. The long-run and error correction results are shown in Table 4.

Table 2: Correlation matrix

	IVA	SAVS	CRED	GFCF	TRAD	FDI
IVA	1					
SAVS	−0.1825	1				
CRED	−0.3536	−0.2588	1			
GFCF	−0.3235	−0.0301	0.6667	1		
TRAD	0.5145	−0.2397	−0.3982	−0.5259	1	
FDI	−0.2164	0.1640	0.3781	0.4535	−0.2786	1

Source: Authors' compilation

Table 3: ARDL bounds test

Test statistic	Value	Significance (%)	I (0)	I (1)
F-statistic	50.4196	10	1.99	2.94
K	6	5	2.27	3.28
		2.5	2.55	3.61
		1	2.88	3.99

Source: Authors' compilation

Table 4: Full modified least squares (FMOLS)

Variable	Coefficient (P-value)
IVA	0.4467 (0.0000)
SAVS	0.1571 (0.0258)
CRED	−0.0698 (0.4619)
GFCF	0.00027 (0.5650)
TRAD	0.0566 (0.0616)
FDI	0.00849 (0.6094)
Cons	−6.3147 (0.1211)
R-squared	0.8783
Adjusted R-squared	0.8575

Source: Authors' compilation

The long run and short-run results are reported in Table 5. The coefficient on the lagged error correction term is significant with the correct sign, supporting the evidence of a stable long-run relationship among the variables. This coefficient suggests that a deviation from the long run equilibrium level of output in 1 year is corrected by 89% over the following year. The study does establish that on credit to the private sector influences economic growth in the short run.

The results of the study show that industrial value addition has a positive effect on economic growth in the long run. This means that as the government increases its expenditure on industrialization increase in Botswana the growth rate of the economy also increases. This result is important for a country such as Botswana which had been reliant mostly on diamond mining to spur its growth. The call for diversification is supported by the results because a single industry cannot be the only source and revenue

for an economy but need to rely on a sophisticated industrial base made up of diverse industries. The recent call by the government to diversify the economy is a good clarion call for spurring economic growth which has the potential to also increase employment creation. According to other empirical findings, economic growth and industrialization are positively correlated in the short and long run (Bokosi, 2022). The result is not in isolation but supports previous studies.

Savings has a positive effect on economic growth in the long run. The results imply that savings enhances economic growth in the long run. As private savings increase in the economy ultimately, its leads to an increase economic activities in an economy. The result implies that for the economy to enjoy higher growth rates, policies should be put in place that enhances savings. The result is in line with the financial inclusion strategies by the financial system where they are trying to capture all potential savers through offering banking products which will help the populace to save. Savings are a cheaper form of funds for productive investment and hence leading to economic growth. The results of the study are supported by other similar studies which found that investment was growth enhancing (Jagadeesh, 2015; Oladipo, 2009). Jagadeesh established the same result for Botswana and concluded that there is significant relationship between Savings and Economic growth.

Domestic credit has a composite positive effect on economic growth in the long run. This implies that as the credit advanced to the private sector by banks increases, it also enhances economic growth. An increase in the amount banks lend to the private sector increase resources at the disposal of firms and organizations' for buying capital equipment and working capital purposes. This supports the notion that domestic resources can enhance economic growth in the long run. There is need for the government and the central bank to ensure there is deliberate policies that encourages domestic resource mobilisation which would then be advanced to the firms and industry in the country. This would then help improve the rate of the country. This is in support of the study which established that credit to the private sector has a positive impact on GDP (Iqbal, Ahmad & Hussain 2012). Whilst, the results show that domestic private credit has a negative effect on the short run economic growth. This implies that domestic credit harms economic growth but only in the short run.

Trade openness has a positive effect on economic growth. This means that as the country becomes more open to international trade, economic growth also increases. The result makes sense for a country like Botswana whose industrial base is too small and relies mostly from goods produced in other countries. The result means that the country should improve its competitiveness for it to improve on its exports and limit imports. The result supports Keho (2017) who found that trade openness has positive effects on economic growth both in the short and long run. Whilst an opposing view was established by Nam and Ryu (2024) who argues that that higher trade tariffs and taxes on international trade positively impact GDP, implying that increasing trade openness may not always promote economic growth in developing economies.

Table 5: ARDL regression - Long Run

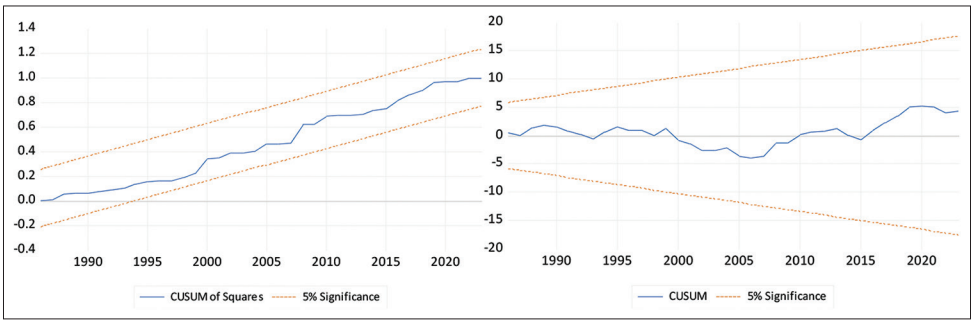
Variable	Coefficient (P-value)
GDP(−1)	−0.020843 (0.7750)
IVA	0.4109 (0.0000)
SAVS	0.2162 (0.0072)
CRED	−0.0698 (0.0212)
CRED(−1)	0.3954 (0.0133)
GFCF	−0.4418 (0.3755)
TRAD	0.05352 (0.0739)
FDI	0.0217 (0.9038)
Cons	0.4899 (0.9599)
R-squared	0.8957
Adjusted R-squared	0.8743
Short run regression	
D (CRED)	−0.4078 (0.0028)
ECM(−1)	−0.8914 (0.0000)

Source: Authors' compilation

As a robustness the regression was also estimated using the full modified least squares (FMOLS) method. The results are shown in Table 4.

The results presented in Table 4 confirm the results produced using the ARDL method for industrial value addition, savings and trade openness. The results show that these variables are positively related to economic growth. This implies that an increase in industrial value addition, savings and trade openness leads to an increase in economic growth in the long term. These variables are growth enhancing. Contrary to the previous results under ARDL, domestic credit to the private sector have a negative effect on economic growth in the long. This diverges from the previous result under ARDL method where the domestic credit to the private sector has a growth enhancing effect in the long run but harming

Figure 2: CUSUM square and CUSUM plots



Source: Authors' compilation.

growth only in the short run. The FMOLs hence mostly confirms the results of ARDL hence can conclude there is consistence among the results of the two methods in the long run.

The CUSUM and CUSUM of square for testing the stability of the model are shown in Figure 2.

The results confirm that the ARDL model is stable. This is established through the plots of CUSUM and CUSUM of square lying within the 5% significance level. This implies that the long-run and short-run estimates are stable and efficient.

5. CONCLUSION AND RECOMMENDATIONS

Since the late 1960s, Botswana's economic growth has been comparable to that of several of Asia's biggest economies. Over the last 10 years, Botswana's economy has grown at one of the quickest rates in the world, averaging around 5% annually. The African Development Bank has commended Botswana's economy for maintaining one of the longest economic booms in history. The last few years has seen Botswana register below average economic growth mostly as result of declining revenues from the diamond sector. This has been a cause of concern since this translates to declining employment, social welfare grants and general standards in the country. There is need to diversify the economy and make it rely not only on one sector through diversification. In light of these developments the study sought evaluate the potential drivers of economic growth. The study has established that industrial value addition, savings, domestic credit to the private sector and trade openness are some of the drivers of economic growth. They positively influence economic growth, i.e. an increase in these variables leads to an increase in economic growth. This calls for the government to craft monetary and fiscal policies which deliberately targets these variables. Monetary policy should ensure banks are able to advance funds to the industry at lower rates of interest while savings should attract modest interest rates. Fiscal policy should help by targeting the growth of the industrial base of the economy hence resources should be availed to ensure diversification of the economy. The limitation of the current study is lack of data for variables such as climate related variables, regional data, and qualitative data including governance indicators to enrich the study.

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