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EXAMINING THE IMPACT OF ABSORPTIVE CAPACITY ON ECONOMIC GROWTH IN NAMIBIA

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Abstract

Using annual time series data running from 1990 to 2023, this study focused on the Impact of Absorptive Capacity on Economic Growth in Namibia using an Autoregressive Distributed Lag (ARDL)-Error Correction Model Framework (ARDL-ECM) and Granger causality approaches. The results indicated a long-run and short-run relationship between absorptive capacity and economic growth. However, the study finds no significant causal relationship between absorptive capacity and economic growth in Namibia. Policymakers in Namibia should focus on enhancing the country's absorptive capacity. It is also advisable that the policy makers focus on other macroeconomic variables for them to promote economic growth instead of absorption capacity.

Keywords

Absorptive Capacity, Economic growth, ARDL,Granger causality

1. Introduction

1.1. Orientation of the study

The absorptive capacity concept has received much attention in recent years. The motivation for this line of research stems from the belief that the presence of significant FDI spillovers to the host economy depends on the economy's ability to capitalise on the opportunity (Khordagui & Saleh, 2016). To absorb FDI spillovers, host economies must meet certain conditions that define a country's absorptive capacity (Farkas, 2012). Absorptive capacity is the capacity or ability of a country to absorb the benefits that foreign direct investment can provide. An economy can absorb the benefits spilt over by FDI. Human capital, financial development, trade openness, quality of institutions, and infrastructure are all examples of absorptive capacity factors examined previously by the literature (Khordagui & Saleh, 2016).

According to economic theory, FDI promotes economic growth by increasing capital and labour productivity and capital stock, subject to the host country's absorptive capacity. Because developing countries lack the conditions to innovate, technological transfer (and thus FDI) is critical to achieve growth through convergence. Foreign direct investment (FDI) is the transfer of capital stock, knowledge, and technology between countries, which frequently occurs through multinational enterprises (MNEs) operating across borders (Hytenget, 2014). On the other hand, growth is the process by which economies collect more capital equipment, push the boundaries of technological knowledge, and become gradually more productive (Parkin, Powell & Mathews, 2008).

Many developing countries strive to attract more FDI but fail to recognise that they must first create the conditions for FDI to be beneficial. According to Nguyen et al. (2009), host countries provide numerous incentives, such as reduced taxation, tax exemptions, and comparative advantages, to attract more and more FDI; thus, host countries provide international investors with the best opportunities for

promotion and the highest returns. For this motive, absorption is more important than attractiveness, as FDI absorptive capacity directly influences economic growth. In return, the absorptive capacity will increase the attractiveness of both the quantity and quality of FDI inflows (Nguyen et al., 2009). To summarise, the host country must first develop related knowledge and capacities to absorb new knowledge and reap the most significant benefits from FDI.

Namibia has done an excellent job of creating an environment conducive to attracting foreign direct investment since its independence in 1990. The Foreign Investment Act 27 of 1990 was passed to attract foreign investment through a favourable investment climate and different tax benefits. In the beginning, FDI inflows were modest. However, after the establishment of the Export Processing Zone6 (EPZ) system in 1996, they increased dramatically (Bank of Namibia, 2020).

FDIs are expected to have a favourable impact on GDP. In economic literature, the link between these factors is hotly contested. Many studies have shown opposing viewpoints on the role of foreign direct investment in economic growth. Some say that FDI boosts economic growth (Biswas, 2002; Blonigen and Wang, 2005; Li and Liu, 2005; and Ayanwale, 2007), while others disagree and argue that it drains the economy (Vu & Noy, 2009; Chaitanya and Tamazian, 2010; Aga, 2014; Tang, 2015; Maliwa & Nyambe, 2015).

Despite the contradictory findings in the literature, most developing countries continue to view FDI as a powerful tool for promoting and accelerating economic growth in their economies. Considering this, the Namibian government has enacted and implemented many essential laws, regulations, and initiatives that nurture and support the attraction and retention of FDIs to facilitate economic growth and job creation. The Namibian government also developed a strategy and framework for reaching the MDGs by 2015 under the New Partnership for Africa's Development (NEPAD), launched by the United Nations in 2001, which prioritised the promotion of FDI and trade. As a result of these laws, regulations, initiatives and strategies aimed at attracting and retaining FDI, BON (2006) justified that Namibia has seen quick growth in FDI inflows compared to other African countries. Despite the country's plans for attracting FDI, the country's FDI transition to drive economic growth has been slow (Bank of Namibia, 2006). As a result, the anticipation that FDI would complement domestic investment has not materialised, resulting in stagnant economic growth.

Despite the significant increase in FDI inflows over the last decade, the transition of FDI to drive economic growth in Namibia has been slow (Bank of Namibia, 2006). This raises the question of whether Namibia has sufficient capacity or ability to absorb the benefits that foreign direct investment can provide. This is because empirical evidence shows that foreign direct investment only impacts economic growth once a specific absorptive capacity is attained (Polpat, 2010).

Some extant research studies on foreign direct investment are extremely narrow in scope, focusing solely on the causal relationship between foreign direct investment and economic growth (IIta 2019; Ingo, 2015). The effect of absorptive capacity on foreign direct investment and economic growth in Namibia has received little consideration. Therefore, there was a need for this study to be undertaken.

2. Literature Review

There is theoretical evidence of the connections between absorptive capacity and economic growth. One of such theories is the Exogenous growth theory. According to Solow (1956), economic growth is produced by the build-up of exogenous production sources like capital stock, technological advancements, and a nation's labour force. It has been demonstrated that this paradigm directly links capital accumulation to economic growth in terms of the proportion of capital to national production. Expanding the labour force and technological advancements are also important for economic growth. This idea holds that FDI boosts the capital stock in the host nation, which will help the economy of that nation flourish.

De Jager (2004), as cited by Mahembe and Odhiamo (2014), indicated that FDI would eventually result in a rise in both capital and labour productivity if new technologies were introduced (labour productivity and capital productivity). This might lead to more reliable returns on investment, which would cause labour to increase exogenously. FDI inflows must first have a direct impact on economic growth, which in return enhances the country’s absorptive capacity, which will enable FDI to contribute to economic growth through spillovers.

Contrary to the exogenous growth theory, endogenous growth theory asserts that economic growth in developing countries is determined by their ability to imitate and assimilate new technologies and absorptive capacity. Foreign direct investment is thus seen as one of the mediums through which

technological transfer can occur (Barro and Sala-i-Martin, 1995). This transfer is explained at a microeconomic level as occurring between multinational enterprises (MNEs)/MNE affiliates and domestic firms through technological spillovers that can occur through imitation, linkages (truncated operations), and training. However, it is argued that these spillovers can only occur if the host country has adequate absorptive capacity. Everything else being equal, increased absorptive capacity would result in increased labour and capital productivity (Borensztein et al.1998).

Moreover, the dependence theory assumes that the world is capitalist, foreign investments flow from established economies to developing ones, and developed nations take resources out of developing nations (Scott, 1995 and So, 1990). Dependency theorists contend that FDI does not ultimately result in economic growth. They contend that industrialized nations deprive developing nations of the natural resources they require to flourish by encouraging foreign investment, leaving them reliant on these nations or companies for economic progress. As a result, they establish themselves as monopolies and dominate the local markets unfairly (Adams, 2009). This has a negative effect on the host country as it will not be able to enhance its absorptive capacity. As a result, the foreign direct investment will not significantly impact economic growth. This is because empirical evidence on the impact of absorptive capacity on the relationship between FDI and economic growth shows that foreign direct investment only has an impact on economic growth once a certain level of absorptive capacity is attained (Onayem et al., 2019).

There are empirical studies that investigated the dynamics of absorptive capacity and economic growth, in addition to the theoretical literature. Scholars such as Roy (2021) investigated the Absorptive Capacity Effect on FDI in Selected Asian Economies using data from 1982 to 2017 and employed the Generalized Method of Moments (GMM) estimation technique. According to the empirical findings, the infrastructure variable appears to be the most important absorptive capacity factor for both groups of countries. In contrast, the health indicator can help reap the benefits of inward FDI, but only if the threshold level is met. Thus, to reap the benefits of FDI, the selected economies must reach this threshold level. Hence, the study recommended that Countries must be proactive in providing sound infrastructure and implementing proper healthcare measures to reap the benefits of inward FDI.

Liu and Fan (2020) investigated the threshold effect of international technology spillovers on China's regional economic growth using China's provincial panel data for 2003–2016. The study used a double-threshold regression model to test the threshold characteristics of absorptive capacity factors influencing international technology spillovers and estimate the threshold values of both forward and reverse spillovers in terms of knowledge context, economic development, opening degree, and human resource infrastructure. Hence, the study found that the effect of absorptive capacity factors on international spillovers is nonlinear; that is, technology spillovers are maximized when absorptive capacity factors are between the two threshold values.

Hobbs, Dimitrios and Mostafa (2021) investigated the links between FDI, trade, and economic growth in Albania using annual time series data from 1996 to 2016. The study deployed the unit root test, Johansen cointegration analysis, the error correction model, and the Granger causality test to analyse the data. The findings revealed a long-term relationship between foreign direct investment, trade, and economic growth. The Granger causality tests revealed that there was unidirectional causality. In the short term, economic growth resulted in exports and FDI, not vice versa. Hence, the study recommended that policymakers devise policies that encourage technology-based, export-oriented FDI to meet the needs of the economy and develop specialized sectors that are competitive in the global market. Furthermore, the key takeaway is that export market penetration should be encouraged just as much as FDI expansion.

Gupta, Yadav and Jain (2022) also, investigated the connection between absorptive capacities, FDI and economic growth in India. The study employed the autoregressive distributed lag (ARDL) model and threshold analysis for empirical analysis. The findings suggest that absorptive capacities, such as financial development, institutional quality, technological capability, and trade openness, influence the link between FDI and economic growth indirectly. However, when examining the linear FDI-growth nexus, the study discovered that human capital and infrastructure did not affect the relationship; when the non-linearity in the link is considered, the study discovered that all absorptive capacities (including human capital and infrastructure) have a positive effect on growth when interacted with FDI. Furthermore, FDI stimulates growth if absorptive capacities exceed a certain threshold. Hence, the study recommended that improving absorption capacities is critical to perceive FDI as a growth driver.

Ben, Hedi and Ali (2022) evaluated the relationship between industrialization, FDI and absorptive capacities in African Countries using a panel of 46 countries from 1998 to 2019. According to the SGMM estimates, there is a two-threshold relationship between FDI and industrial output. The study found that to

affect domestic industries positively, FDI should fall between an upper and lower bound. The study findings also suggest that weakly industrialized countries and countries with high absorptive capacities are the ones benefiting from FDI spillover effects. Finally, the results of the study show that the main channels through which FDI contributes to the industrialization process in Africa are financial development, human capital, infrastructure, and the legal framework.

Moreover, Chengying et al. (2023) investigated the moderating role of national absorptive capacity in the relationship between institutional quality and FDI inflows in developing countries using a panel data set of 113 developing countries. The study used the Hausman fixed-effect and random-effect estimation to analyze the data. According to the findings of the study, national absorptive capacity (AC) moderates the relationship between FDI inflow and institutional quality dimension. To test robustness, the study used principal component analysis (PCA) to create an index of institutional quality (OIQ) dimensions and regressed it, demonstrating that AC moderates the relationship between OIQ and FDI. Using BRICS Pakistan as a sample, the study found that the results hold.

Similarly, Haq (2023) investigated the Impact of FDI and its absorption capacity on the national innovation ecosystems: evidence from the largest FDI recipient countries of the world using data from 1990 to 2016. The study discovered that the number of patents, trademarks, industrial design applications, researchers in the host nation, and research and development expenditures are all positive drivers of the national innovation systems through two-stage analysis (DEA and Tobit regression). Furthermore, the host countries' innovation efficiency is positively impacted by FDI inflows. However, the availability of FDI absorption capacity in the host nation determines how strong this association is. The study concluded that the development of national innovation ecosystems depends critically on FDI inflows and the strength of the nation's domestic absorption capability.

In the same vein, Chengying, Wang, Shah, Chang and Zhou (2023) conducted a study on the moderating role of national absorptive capacity between institutional quality and FDI inflow: evidence from developing countries on a panel of 113 developing countries using data from 2000 to 2019. The study examined the moderating role of national absorptive capacity between FDI inflow and institutional quality (control of corruption, government effectiveness, political stability and the absence of violence, regulatory quality, rule of law, voice, and accountability). The study used both Hausman fixed-effect and random-effect estimation. The findings indicate that the connection between FDI inflow and the institutional quality component is moderated by national absorptive capacity (AC).

Moreover, Tsaurai (2023) investigated the relevance of absorptive capacity on the Foreign Direct Investment-Growth Nexus in BRICS. The study used modified entirely ordinary least squares (FMOLS), dynamic ordinary least squares (DOLS), and panel data from 1991 to 2019 was used. The same study investigated whether the development of the financial sector and human capital are essential absorption capacities that support economic growth in the BRICS. The study found that foreign direct investment boosts economic growth through the channel of financial development. Human capital development enhanced the effect of foreign direct investment on economic growth even though the influence was shown to be non-significantly negative. Therefore, the study recommended that BRICS authorities put policies in place to boost financial development and human capital to guarantee that considerable foreign direct investment has a favourable impact on economic growth.

Furthermore, a study was conducted by Yahaya, Bakar, Mansor and Ahamat (2024) on Absorptive Capacity Effects on the Relationship between Foreign Direct Investment and Economic Growth in Malaysia. The results were obtained using Automated Regression Distributed Lag (ARDL) techniques. The study's findings indicated no clear correlation between foreign direct investment (FDI) and economic growth, as evidenced by the ambiguous results between FDI and GDP. Absorptive ability apparently contributes to both the long- and short-term effects of GDP and FDI. These findings demonstrated that the correlation between foreign direct investment (FDI) and economic growth in Malaysia can only be established in the presence of a minimum absorptive capacity threshold.

Fazaalloh (2024) also studied FDI and economic growth in Indonesia using data from 2010 and 2019. The study findings found that FDI generally positively impacts economic growth in the Indonesian provinces based on the fixed effects estimator. Moreover, the study found that foreign direct investment (FDI) significantly boosts economic growth in mining, manufacturing, water, gas, electricity, hotel and restaurant, and real estate. In contrast, in the agriculture sector, FDI significantly harmed things. Furthermore, the study revealed that foreign direct investment (FDI) makes a significant and favourable contribution to the manufacturing sector. The outcomes hold up well to the endogeneity problem-aware GMM System estimator.

Choi and Kim (2024) conducted a study to ascertain if foreign direct investment and foreign aid accelerate economic growth in developing countries. The study uses a two-stage least squares (2SLS) estimator to assess panel data on 93 nations from 1981 to 2020 sourced from the OECD and the World Bank database. According to the study, FDI inflows typically quicken the rise of per capita GDP in both the sample nations and in each of the two categories of countries. Second, only low-income developing nations see a substantial increase in per capita GDP growth due to official development assistance (ODA). This finding suggests that ODA appears to be especially significant for developing nations with low incomes. The study recommended that low-income developing nations improve their own countries' reputation and efficacy to attract more official development assistance (ODA). It also has consequences for ODA donors, who should concentrate their resources on low-income developing nations to support these nations' economic progress more successfully.

For the Namibian economy, there are scholars such as Ingo (2015) Ogbokor (2016), IIta (2019) Adjasi, Sherif and Graham (2019) who carried out studies on the relationship between FDI and economic growth in Namibia. Recently, Sunde (2023) investigated the impact of foreign direct investment on Namibia's economic growth. The study used data from 1990 to 2020 and analysed the data using the ARDL cointegration approach. The findings of the study show that Namibia's economic growth may be attributed to foreign direct investment (FDI), the interacting variable between FDI and trade openness, and other macroeconomic factors such as domestic investment, government consumption spending, human capital, a stand-in for economic stability, and return on investment. The FDI and the interacting variable of FDI and trade openness demonstrate that the study supports Namibia's Bhagwati and FDI-led growth hypotheses. To fully profit from foreign direct investment (FDI) in Namibia's economic growth, the government must prioritize enhancing the country's physical infrastructure and human resource quality. To speed up economic growth and development, it should also make it easier for an entrepreneurial culture to flourish, establish a stable macroeconomic environment, and enhance the circumstances for profitable investments.

3. Methodology

3.1. Model Specification

This study used a model like the model used by (1998), Polpat (2010) and Onayemi et al. (2019**),** stated as follow:

$$\boldsymbol{GDP = f(FDI, OPENNES, FDev)} \quad \textbf{(1)}$$

Where: GDP- is denoted as GDP Growth (annual %); FDI -as Net Inflow of Foreign Direct Investment (% of GDP); FDev- as Financial Development (1st measure of Absorptive capacity, proxied by Domestic credit to the private sector by banks (% of GDP)) and OPENNES- as Trade Openness (% of GDP, 2nd measure of Absorptive capacity). Equation (1) is then expressed in its econometric form as:

$$\mathbf{lnGDP_t = f(}\boldsymbol{ln}\mathbf{FDI_t, lnOPENNES_t, lnFDev_t)} \quad \textbf{(2)}$$

Where the operator for the natural logarithm is *ln*. For the sake of the current investigation, all three variables have been converted to logarithms. This study followed a three steps procedure. First, the data was tested for stationarity using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. Secondly, the ARDL model was used to analyse the effect of absorptive capacity on the causal relationship between foreign direct investment and economic growth in Namibia. Methods from Pesaran et al. (2001) will be used in this investigation to investigate the long-run relationship in the form of an unrestricted error correction model as follows:

$$\boldsymbol{\Delta lnGDP_t = \alpha_0 + \varphi_1 lnGDP_{t-1} + \varphi_2 lnFDI_{t-1} + \varphi_3 lnOPENNES_{t-1} + \varphi_4 lnFDev_{t-1} + \sum_{i=1}^{\vartheta} \delta_1 \Delta lnGDP_{t-i} + \sum_{i=1}^{\vartheta} \delta_2 \Delta lnFDI_{t-i} + \sum_{i=1}^{\vartheta} \delta_3 \Delta lnOPENNES_{t-i} + \sum_{i=1}^{\vartheta} \delta_4 \Delta lnFDev_{t-i} + \mu_t} \quad \textbf{(3)}$$

Thirdly and finally, the Granger causality tests were used in the study to conduct causality testing. The study used secondary time series annual data covering 1990 - 2023. Secondary data will be sourced from the World Bank's world development indicators.

4. Empirical Results

4.1. Unit Root Test Results

The unit root tests are conducted to indicate whether the data has unit root or not. The decision rule of the unit root test is made by comparing the t-statistics value against the critical value. The null hypothesis of non-stationarity (e.g H_0 of no stationarity). The results of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests are presented in Table 1 below:

Table 1: Unit Roots tests results

Variable	Model Specification	ADF	PP	ADF	PP	Integration Order
		Levels	Levels	First Difference	First differences	
GDP	Intercept & Trend	-4.57***	-4.59***	-8.24***	-10.80***	I(0)
FDI	Intercept & Trend	-2.98	-3.031	-5.86***	-6.21***	I(1)
OPENNES	Intercept & Trend	-1.89	-2.23	-3.63***	-3.51***	I(1)
FDEV	Intercept & Trend	-9.28***	-4.11***	-3.83***	-5.20***	I(0)

Sources: A*uthor's computation using Eviews. The figures shown are test statistics and significantly differ from zero at 5% and 10% levels when asterisked with *** and **, respectively.*

Only two variables (GDP and FDEV) were stationary at levels, and the other two variables (FDI and OPENNES) with all the variables becoming stationary after first difference. Overall, the ADF and PP unit root tests revealed a mixture or combination of order or integration ranging from zero to one. After stationarity had been established, the next step was to test for to choose the lag length for the model.

4.2. Lag Selection Results

The optimal lag selection test provide critical insights into determining the appropriate lag length for the econometric model in this study. Lag length is essential as it influences the accuracy and reliability of model estimations, particularly in autoregressive models such as ARDL. The results are presented in Table 2 below:

Table 2: Results of Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-26.70	NA	8.01e-05	1.92	2.10	1.98
1	55.70	139.06*	1.27e-06*	-2.23*	-1.32*	-1.93*
2	66.70	15.80	1.84e-06	-1.92	-0.27	-1.37

*Source: Author's compilation using Eviews. Notes: ** indicates the lag order selected by the criterion*

The lag that was selected by the majority of the tests, was the one that was selected and used in the ARDL. However, theory informs us that the AIC and SIC tests are mostly used, especially the SC for its consistency. Table 2 indcates that 1 Lag is the optimal lag across all criteria, including the Akaike Information Criterion (AIC) and the Schwarz Criterion (SC). After the lag length test, the ARDL model was conducted.

4.3. Bounds Test of Cointegration Results

One of the reasons for running the ARDL is to get the Bound test cointegration results. The Bounds test of cointegration results provides insight into whether a long-run relationship exists among the variables in the study. The null hypothesis was that there was no cointegration, while the alternative hypothesis was that there was cointegration. The decision rule was made by comparing the calculated F-statistic with the two sets, the lower and the upper bound critical values (Peša, Wrońska-Bukalska, & Bosna, 2017). If the F-statistic value were more than the upper bound critical value, the null hypothesis would have been rejected. If the F-statistic was below the upper bound critical value, then the null hypothesis of no cointegrating would not be rejected. The results are presented in Table 3 below:

Table 3: Bounds Test of Cointegration Results

Test statistic	Value	Level of significance	Lower Bound	Upper Bound
F	3.89	10%	2.45	3.52**
K	4	5%	2.86	3.66**
		1%	3.74	3.86**

*Source: Author's compilation using Eviews. ** means the rejection of the null hypothesis at 5% level of confidence*

The results in Table 3 shows that the F-statistic value is 3.89. To determine whether this value indicates cointegration, we compare it against the critical values for the lower and upper bound, at 5% level of confidence. In this case, the F-statistic (3.89) is higher than the upper bound at the 5% significance level (3.66), allowing us to confidently reject the null hypothesis and conclude that there is a long-run cointegrating relationship among the variables. The same conclusion holds across the other significance levels. At the 10% significance level, the lower and upper bounds are 2.45 and 3.52, respectively, and at the 1% significance level, the bounds are 3.74 and 3.86. In all cases, the F-statistic exceeds the upper bound, further confirming the presence of cointegration.

This result implies a long-run equilibrium relationship between the variables under investigation, particularly between foreign direct investment (FDI), absorptive capacity and economic growth in Namibia. The long-run coefficients from the cointegration equation are presented in Table 4 below:

Table 4: Estimated Long-run Coefficients

Variable	Coefficient	Standard Error	t-statistic	Prob
GDP	0.09	0.20	0.47	0.64
FDI	0.28	0.22	1.28	0.21**
OPENNES	9.30	35.03	0.27	0.79
FDEV	-7.44	12.71139	-0.59	0.56
C	25.85	32.51	0.80	0.43**

*Source: Author's compilation using Eviews. ** denotes statistical significance at 5% level of confidence*

The results in Table 4 above indicates that FDI and OPENNES have a positive impact on economic growth in Namibia. This finding aligns with studies by Silajdzic and Mehic (2016) and those of (Gupta, Yadav & Jain, 2022). FDEV is the only variable that has a negative impact on economic growth. A 1% increase in FDI will improve economic growth by 0.28%, whilst a 1% increase in OPENNES will improve economic growth by 9.30%. FDEV on the other hand will bring a reduction in economic growth by 7.44% if it improves by 1%. This quantifies the long run negative and positive relationship between economic growth and absorptive capacity in Namibia. Since cointegration has been established, an ARDL Error Correction Model (ARDL-ECM) was conducted to get the observe whether the absorptive capacity variables drove economic growth towards the long-run from the short-run. The short-run results are presented in Table 5 below:

Table 5: The ARDL-ECM short-run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.05	0.21	-0.25	0.80
D(FDI(-1))	-1.03	5.37	-0.19	0.85
D(OPENNES(-1))	11.09	13.78	-0.80	0.43**
D(FDEV(-1))	-0.18	0.34	-0.53	0.59
ECM(-1)	-0.88	0.22	-4.09	0.00**
R-squared	0.43	**Mean dependent var**		0.10
Adjusted R-squared	0.33	**S.D. dependent var**		4.35
S.E. of regression	3.57	**Akaike info criterion**		5.56
Sum squared resid	319.48	**Schwarz criterion**		5.84
Log likelihood	-80.14	**Hannan-Quinn criter.**		2.04
Durbin-Watson stat	2.04			

*Source: Author's compilation using Eviews. ** denotes statistical significance at 5% level of confidence*

The results in Table 5 indicate that the ECM coefficient (-0.88) is negative and statistically significant at 5%. This is an indication that, if economic growth deviates from the equilibrium in the current period, it will be corrected by 88% in the next period. This is consistent with Hobbs, Dimitrios, and Mostafa's (2021) findings, who reported a similar error correction mechanism in Albania's economy, suggesting that despite short-term fluctuations, economies tend to correct themselves over time. The coefficient of R-square shows that 33% of innovations in economic growth are explained by foreign direct investment, trade openness and financial development in Namibia. The remaining 67% is explained by other absorptive capacity variables. The Durbin-Watson value is 2.04, showing that there was no autocorrelation in this model.

In the short-run, trade openness is the only variable that has a positive and statistically significant impact on economic growth. It means that a 1% change in trade openness will improve economic growth by 11.09%. All the other variables have a negative and statistically insignificant impact on economic growth, in the short run.

Diagnostic tests were conducted to test the fitness of the model. The Autocorrelation, Heteroscedasticity, the Normality, and the Ramsey RESET tests were conducted. The results are presented in Table 6 below:

Table 6: ARDL Diagnostic Test Results

Name of Diagnostic Test	Test Statistic	Value of Probability
Breusch-Godfrey LM test for autocorrelation	0.04	0.83
Heteroscedasticity	33.00	0.42
Normality (Skewness)	11.26	0.26
Normality (Kurtosis)	0.46	0.49
Ramsey RESET test	2.99	0.21

Source: Author's compilation using Eviews

The Breusch-Godfrey LM test for autocorrelation assesses the presence of serial correlation in the residuals of the ARDL model. The null hypothesis for this test is that there is no serial correlation in the model. In the results provided, the test statistic value is 0.04, with a probability value of 0.83. Since the probability value exceeds the conventional 5% significance level (0.05), we fail to reject the null hypothesis. This means that there is no serial correlation in the model's residuals, indicating that the model is well-specified with respect to autocorrelation and the residuals are independent across time.

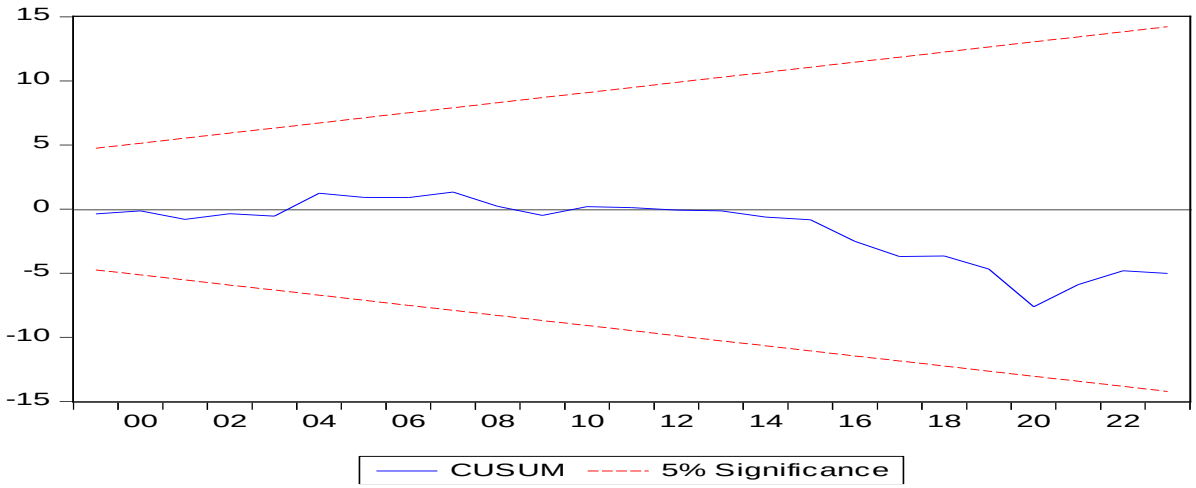
The heteroscedasticity test examines whether the variance of the residuals is constant, which is a key assumption in regression analysis. This test's null hypothesis is that the residuals' variance is homoscedastic (i.e., constant variance). In this case, the test statistic value is 33.00, with a probability value of 0.42. Since the probability value is greater than the 5% significance level, we fail to reject the null hypothesis. This suggests that there is no evidence of heteroscedasticity, meaning that the variance of the residuals is constant, and the assumption of homoscedasticity holds in the model.

The normality test checks whether the model's residuals are normally distributed, which is important for making valid statistical inferences. The null hypothesis is that the residuals follow a normal distribution. In the results, the test statistic for skewness is 11.26, with a probability value of 0.26, and for kurtosis, the test statistic is 0.46, with a probability value of 0.49. Both probability values are higher than the 5% significance level, indicating we failed to reject the null hypothesis. Thus, the residuals appear to be normally distributed with respect to both skewness and kurtosis. This suggests that the model's residuals follow a normal distribution, satisfying another key assumption for valid inferences.

The Ramsey RESET test assesses whether the model's functional form is correctly specified. The null hypothesis is that the model is correctly specified, meaning no omitted variables or incorrect functional forms exist. The test statistic is 2.99, with a probability value of 0.21. Since the probability value is greater than the 5% significance level, we fail to reject the null hypothesis. This implies that the model is correctly specified, and no significant issues exist with the functional form or omitted variables.

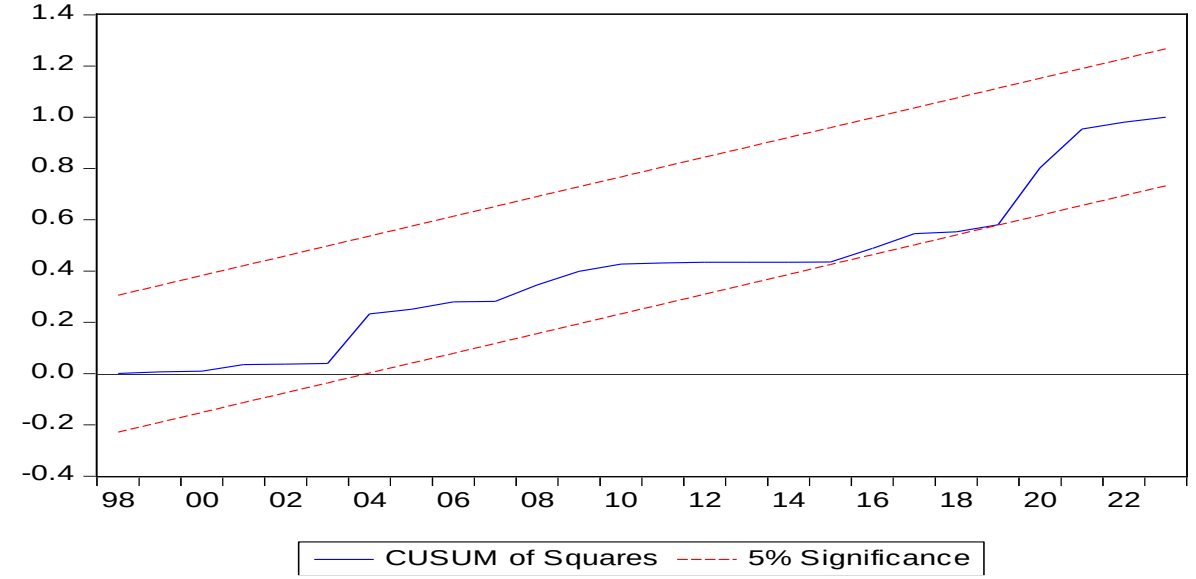
To test for the stability of the model, the CUSUM and CUSUM square tests were conducted. The CUSUM tests shown in Figure 1 and Figure 2 is used to check the stability of the coefficients in an ARDL model over time. This test is especially important to determine whether the model remains consistent throughout the sample period.

Figure 1: CUSUM Test



Source: Author's compilation using Eviews

Figure 2: CUSUM of Squares Test



Source: Author's compilation using Eviews

From the Figures, it can be observed that the CUSUM line stays within the 5% significance bounds for the entire sample period. This indicates no significant structural breaks or instability in the model during the estimation period. Therefore, based on the CUSUM results, we can conclude that the ARDL-ECM model is stable and that the estimated coefficients are reliable for the sample period analysed.

4.4. The Granger Causality Test

To assess the causal relationship between absorptive capacity and economic growth in Namibia, the Granger causality test was conducted. The conclusion from the Granger causality results is made based on the comparisons between the probability variable and the level of confidence at 5%. If the probability value was less than the level of confidence, then the null hypothesis of Granger causality could not be accepted. The results of the causality test are presented in the Table 7 below:

Table 7: Granger Causality Test Results

Null Hypothesis	chi2 statistics	Prob > chi2
FDev does not granger cause GDP	1.89	0.39
OPENNES does not granger cause GDP	0.46	0.79
GDP does not granger cause FDI	3.81	0.15
FDI does not granger cause GDP	1.08	0.58

*Source: Author's compilation using Eviews. Notes: ** means the rejection of the null hypothesis at 5%*

The results in Table 7 shows that there is no causal relationship between the absorption capacity variables and economic growth in Namibia. The insignificance of trade openness and financial development in causing GDP growth points to a broader issue in the Namibian economy. While these factors are theoretically important for promoting economic growth, they may not yet be robust enough to drive growth in a significant way. Studies like Silajdzic and Mehic (2016) found that countries with greater absorptive capacity, particularly in terms of financial development and technological innovation, were better able to leverage FDI for economic growth. Namibia's relatively low absorptive capacity could explain why financial development and trade openness do not Granger cause GDP growth. This suggests that these areas need improvements before Namibia can fully realize the benefits of increased FDI and trade openness.

GDP does not Granger cause FDI, since the probability is greater than 5%, we again fail to reject the null hypothesis. This suggests that past changes in GDP do not Granger cause future inflows of FDI in Namibia. In other words, economic growth does not lead to increased FDI inflows. The result that GDP does not Granger cause FDI could indicate a lack of feedback loop between economic growth and investment inflows. In contrast to Bakir and Eryilmaz (2015), who observed that economic growth leads to higher FDI inflows in Turkey, Namibia may not have developed the requisite conditions, such as robust institutional frameworks or a stable business environment, to attract FDI based on its economic performance. This is consistent with Loukil (2016), who emphasized that merely attracting FDI is not enough—domestic firms and institutions must develop the capacity to absorb and utilize foreign investments effectively.

These empirical results align with Onayemi et al. (2019), who argued that FDI alone cannot drive economic growth without sufficient absorptive capacity, including financial development and infrastructure. Therefore, the lack of causality between FDI and GDP in Namibia could reflect inadequate absorptive capacity, consistent with Silajdzic and Mehic (2016), who found that countries with strong absorptive capabilities benefit significantly more from FDI inflows. Namibia may require targeted improvements in infrastructure, human capital, and institutional quality to unlock the growth-enhancing potential of FDI.

5. Conclusion

The study investigated the Impact of Absorptive Capacity on Foreign Direct Investment and Economic Growth in Namibia, between 1990 and 2023. The ARDL model revealed that there is a long run relationship between absorption capacity and economic growth in Namibia. The results further indicated that the absorption capacity variables correct economic growth in cases where it deviates from the steady state. This was an indication that the relationship between absorption capacity and economic growth starts from the short-run, towards the long-run. The Granger causality test, however, indicated that the absorption capacity and economic growth do not cause each other. This means that they depend on other external factors.

Policymakers in Namibia should focus on enhancing the country's absorptive capacity, particularly in financial market development, infrastructure, and human capital. This could be done by investing in education and infrastructure. Institutional reforms could also help the country build the capacity to attract and benefit from FDI. It is also advisable that the policy makers focus on other macroeconomic variables for them to promote economic growth instead of absorption capacity. Further research could explore other components of absorptive capacity in Namibia, such as institutional quality and technology, to understand better their role in moderating FDI's impact on economic growth.

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