American Academic Scientific Research Journal for Engineering, Technology, and Sciences
ISSN (Print) 2313-4410, ISSN (Online) 2313-4402
http://asrjetsjournal.org/

An Empirical Analysis of the Effect of Foreign Direct Investment on Economic Growth in Eswatini

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Abstract

This study examined the effect of foreign direct investment (FDI) on economic growth in Eswatini over the period 1980-2018, using the autoregressive distributed lag (ARDL) bounds testing approach to cointegration and error correction model (ECM). The study showed that 59.3% of the annual variation in GDP was jointly explained by the variables included in the model. Foreign direct investment ($p<0.01$) and labour ($p<0.01$) have positive effect on economic growth, while domestic investment ($p<0.05$) and trade openness ($p<0.01$) have negative effect on economic growth in the long run. In the short run, economic growth is positively influenced by foreign direct investment ($p<0.01$) and negatively influenced by domestic investment ($p<0.01$). The study recommends that government should adopt measures that will help attract more FDI. The government should thus continue improving the investment climate through accelerating implementation of the reforms to investor roadmap to remove restrictions to FDI. The government should promote policies intended for human capital formation and skills development to enhance absorptive capacity and productivity. There is need for government to invest in building domestic manufacturing capabilities with a view to fast-tracking the country's transition towards industrialization, bolster export diversification and enhance international competitiveness.

Keywords: Eswatini; foreign direct investment; economic growth; ARDL bounds test; cointegration; error correction model.

1. Introduction

Foreign direct investment (FDI) has been globally viewed as an important factor to the economic growth and development of host countries. As noted by [1], FDI can affect economic growth through augmenting domestic capital, technology and knowledge spillover effects, increased competition and efficiency, and integrating host country into global economy. Eswatini enjoyed high rates of economic growth in the 1980s and registered the highest growth rate of 18.6% in 1986. The impressive growth rates the country experienced in the 1980s were a result of FDI influxes triggered largely by the antagonistic economic and political conditions that prevailed in South Africa and Mozambique. This led to many companies relocating to invest in Eswatini [2].

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The increase in FDI benefitted mainly the manufacturing sector which became the engine of growth as new firms were established and existing firms expanded their operations. Apart from the FDI inflows into the manufacturing sector, the growth performance was aided by more conventional external incentives, such as improved export prices for sugar, buttressed by real depreciation of the Lilangeni [3]. The impressive growth experienced in the 1980s significantly diminished in the early 1990s as real GDP growth rates plummeted to 1.76% in 1991. The downward economic growth was attributable largely to favourable political and economic changes in South Africa occasioned by the impending demise of the hostile apartheid regime and the end of civil war in Mozambique. Consequently, most companies relocated from Eswatini to take advantage of emerging business opportunities in these neighbouring countries.

Eswatini has continued to face socio-economic challenges of unemployment and poverty, and widening inequality gap due to sluggish performance of the economy. In 2011, growth plunged to 0.6% as the country suffered its worst fiscal crisis since independence due to the reduced SACU receipts which makes up to 60% of government revenue or 20% of GDP. The reduction in the SACU revenues resulted largely from the slowdown in the South African economy, Eswatini's major trading partner. The economy further recorded a subdued growth rate of 1.3% in 2016, increasing slightly from 0.4% in 2014. The decline of economic growth in 2014 was a result of poor performance of the agricultural and manufacturing sectors and the persistent low growth in FDI [5]. The real growth rate of the economy has been far lower than the 5% government target for effectively reducing poverty [4]. According to official documents, poverty is stated to be at 63% with unemployment estimated to be at 28.1%. Eswatini's economic growth prospects are clouded by low domestic savings and private investment, weak policy implementation and structural and external constraints, including the uncertainty over the country's preferential trade agreements such as AGOA.

The Eswatini Government has implemented numerous measures to improve the performance of the economy, putting more emphasis on mobilising foreign capital, especially FDI. The Eswatini Investment Promotion Authority (EIPA) was established in 1998 through an Act of Parliament to promote, coordinate, and facilitate foreign and domestic investment. Other statutory bodies were also established to support and promote investments. These include the Industrial Development Company of Eswatini, the Eswatini National Industrial Development Corporation, Eswatini Standards Authority and Small Enterprise Development Company. The Investor Roadmap Unit was established in 2015 to monitor progress in the reforms to the investor roadmap.

As a strategy to attract FDI, several tax and non-tax incentives are offered by government to approved new investments in the agricultural, manufacturing and mining sectors. These incentives include exemptions on import duties for machinery and equipment and other intermediate goods imported for manufacturing of export products, low corporate tax of up to 10% for a period of ten years including withholding tax [6]. The Eswatini Government intends to reduce corporate income tax from 27.5% to 15% in order to put the country on par with other countries in the region and enhance its competitiveness [7]. The country launched the reforms to the investor roadmap initiative in 2013 to improve the country's investment climate by addressing the regulatory and administrative impediments to investors identified in the World Bank Ease of Doing Business Report (WBEDBR). Also, the special economic zones Act was enacted in 2018 with the purpose of bolstering economic development and job creation. Importantly, the act provides special incentives to firms operating

within a special economic zone. These include a 20 years tax holiday, and exemptions from foreign exchange controls for activities performed in the special economic zone.

In 2015, the government adopted the national industrial policy to guide the country's drive toward industrialisation. This policy envisions a structurally transformed economy characterised by competitive, diversified, innovative and productive industrial sector. Among the objectives of the policy are, increasing the share of the manufacturing sector to GDP to 50%, increase manufactured exports by 5% per annum, diversification of industrial activities, utilization of local and regional raw material in production of goods for local and regional markets, and increasing participation of MSMEs in manufacturing. According to [8], the government has implemented industrial infrastructure development program to support industrialisation and attract FDI. This initiative is intended to provide serviced industrial land and factory space to potential investors at highly subsidized rates.

Eswatini as a relatively small economy has a limited domestic market and is largely dependent on international trade for economic expansion and development. Consequently, the country has signed numerous regional and international trade agreements which provide goods from Eswatini access to extended markets and attract FDI. Thus, Eswatini has membership and a party to several trading blocs including the Southern African Customs Union (SACU), the SACU-European Free Trade Association (EFTA), the Southern African Development Community (SADC), the EU and SADC-EU Economic Partnership Agreement (EPA), the Common Market for Eastern and Southern Africa (COMESA), and the US through the AGOA as well as the Generalised System of Preferences (GSP). Recently, the country has signed the Africa Continental Free Trade Area (AfCFTA) which provides new opportunities for trade and investment expansion within the African continent.

Considering the sluggish performance of the economy and the FDI-led growth strategy adopted by the Eswatini Government, it is important to determine the effect of FDI on economic growth. This is essential for guiding and designing evidence-based investment promotion policies and strategies for stimulating economic growth. To the researcher's knowledge, no empirical study in Eswatini that has applied the autoregressive distributed lag (ARDL) model to analyse the effect of FDI on economic growth. This study contributes by filling this knowledge gap in literature for Eswatini. The leading question for this study is: What is the effect of foreign direct investment on economic growth in Eswatini during the period 1980 – 2018?

1.1. Problem Statement

The economy of Eswatini has over the past decade significantly slowed down and ultimately stagnated, characterised by over 28.1% unemployment rate and poverty rate of 63% with a persistently widening inequality gap. Official statistics show that the economy recorded an average growth rate of just above 3% between 2000 and 2018. An impressive improvement of 6.4% growth rate was achieved in 2013. However, this was short-lived as real GDP growth sharply declined to 1.3% in 2016[9]. The downward growth trend in 2016 was a reflection of low demand for Eswatini's key exports as a result of erosion of the country's preferential trade agreements, especially the loss of AGOA in 2015[10], and low productivity in the agricultural and manufacturing sectors which was exacerbated by the drought the country experienced in 2015[9]. The

persistently slow growth of the economy has adverse implications on the challenges of poverty and unemployment, a situation worsened by prevalence of HIV/AIDS [4].

On the other hand, Eswatini enjoyed an upsurge in the volumes of FDI inflows between 2001 and 2003 particularly in the textile and clothing industry when the country became a member of AGOA [4]. During this period, the country managed to attract significant FDI even beyond the traditional resources extraction activities. However, since the 2008 global financial crisis, FDI inflows into the country has been low and mostly characterised by fluctuations. FDI inflows were $135.6 million in 2010 falling to $ 26.5 in 2012, continued to fluctuate and reached $-57.8 million in 2017[6]. The low FDI inflows highlight the heightened competition for FDI in the region, weak implementation of economic reforms and lack of competitiveness.

1.2. Objectives of the Study

The main objective of the study was to examine the effect of foreign direct investment on economic growth in Eswatini for the period 1980- 2018. The specific objectives of the study were:

i. To determine the magnitude and direction of short run and long run effects of foreign direct investment on economic growth.
ii. To suggest policy initiatives related to foreign direct investment and economic growth.

1.3. Limitations of the study

Although the study provides important findings, it does have some limitations as it is always the case with most empirical studies. The study focused on total FDI and the overall economic growth. FDI is undertaken in various sectors of the economy such as agriculture, manufacturing and services sectors. However, the study did not disintegrate FDI according to sectors in order to assess the growth performance effect of FDI in the different sectors of the economy. This is due to the challenges associated with data availability especially in developing countries like Eswatini. Additionally, there are many variables in literature that are vital determinants of economic growth. Yet, the study used few variables that were selected based on theory and their relevance particularly for Eswatini and the purpose of the study.

2. Literature Review

2.1. Theoretical Framework

Foreign direct investment (FDI) is simply defined as the international movement of capital whereby a resident in one country invest to acquire a long-term management control in an enterprise resident in another country According to [4], it is a situation where a foreign country creates a subsidiary for the purpose of providing goods and services. De Mello [11] viewed FDI as a bundle of physical capital, production techniques, managerial skill, products and services, marketing expertise and business organizational processes. The definition supplied by [12] reflects that FDI is an investment to acquire a lasting management interest (normally 10% of voting stock) in a business enterprise operating in a country other than that of the investor. FDI may take two forms as either Greenfield investment or Mergers and Acquisitions (M&As). Greenfield investment entails injection of fresh

capital for the establishment of an entirely new business operation in a foreign country. M&As, on the other hand, involves acquisition or merging with an already existing interest of a firm in a foreign country.

The theoretical relationship between FDI and economic growth can be explained by two main theories. The neoclassical growth theory by [13] argues that FDI can affect growth through augmenting the per capita capital. However, the theory predicts that FDI's potential impact on economic growth is only restricted in the short run due to diminishing marginal returns to capital, leaving the long run growth unchanged[14]. In the neoclassical framework, long run growth can only arise from technological progress and population growth which are assumed to be completely exogenously determined. Contrary to the neoclassical framework, the endogenous growth theory by [15] and its variants argues that FDI can influence long run growth endogenously through generating increasing returns in production as a result of externalities and productivity spillovers [14]. According to the endogenous growth theory, FDI impact economic growth through two critical channels. First, it affects growth by impacting on a range of available products; and secondly through the impact of stock of knowledge accessible for research and development.

According to [16], multinational firms are more technologically advanced and frontrunners in all research and development (R&D), and are major source of technology dispersion and its presence in various parts of the world. In developing countries, the growth of the economy largely depends on the application of more advanced technology brought by foreign investors [17]. Hence technologies and innovations are some of the areas where FDIs serve as a catalyst of maximum growth in these countries. On the whole, FDI can affect economic growth through augmenting domestic capital, technology and knowledge spillover effects, increased competition and efficiency, and integrating the host country into the global economy [1].

2.2. Empirical Literature

Many studies (18-29) that have been undertaken worldwide to investigate the effect of FDI on economic growth have produced mixed results. A study by [18] investigated the effect of FDI on economic growth in South Africa for the period 1980-2010. The study applied the Johansen cointegration test and vector error correction model (VECM). The study analysed annual time series data on gross domestic product, foreign direct investment, domestic investment, and real exchange rate. The results revealed that FDI has a negative impact on economic growth in the long run. However, domestic investment had a positive effect. This contradicted the view that FDI can discourage domestic savings and crowd out domestic investment. Applying pairwise correlation matrix the study found that both FDI and domestic investment were found to be positively correlated with economic growth with FDI highly correlated than domestic investment.

In another study, [19] applied the granger causality technique to estimate the impact of FDI on economic growth and employment in South Africa from 1990 to 2013. The author employed econometric techniques including unit root and cointegration test check the stationarity property and long run relationship of the variables. The findings of the study show that FDI causes economic growth and employment. The results support the theory that FDI has a positive impact on economic growth and employment. The author opined that the finding calls for policies and incentives aimed at foreign investment to enhance sustainable growth and employment in South

Africa. Using the vector autoregressive (VAR) model, [20] studied the effect of FDI on economic growth in Turkey covering the period 1980 -2012. He used GDP as dependent variable, and foreign direct investment, domestic investment and trade liberalisation as explanatory variables. The augmented Dickey-Fuller (ADF) unit root test was conducted to determine stationarity of the variables. The Johansen rank test was employed to test for cointegration. The variables were found to be cointegrated. The findings of the study showed no evidence of granger causality between FDI and GDP growth. However, trade liberalisation had a negative and significant effect on economic growth, and that it granger causes economic growth in Turkey.

Furthermore, [21] examined the dynamic causal relationship between FDI and economic growth in Zimbabwe using the autoregressive and distributed lag (ARDL) model and error correction-based causality tests to capture the short run and long dynamics over the period 1980-2010. The findings of the study showed that FDI is positively related to economic growth. The study also found a distinct causal flow from economic growth to foreign direct investment. The authors concluded that FDI drives the development of the real sector and they also argue that it is the real sector that spurs FDI.

A study by [22] estimated the endogenous growth model to investigate the impact of FDI on economic growth in Pakistan over the period 1972 -2005. The results of the study revealed that in the short run, economic growth is caused by FDIs, domestic savings, human capital index, employed labour force and balance of trade. According to the results, employed labour is caused by FDI and human capital index. The also study found that balance of trade is caused by human capital index while physical capital stock is caused by economic growth. Another study by [23] evaluated the determinants of economic growth in Pakistan using the Johansen and Juselius maximum likelihood estimation approach to cointegration and vector error correction model (VECM). The authors used the variance decomposition and granger causality to examine causality among the variables. The study found that foreign direct investment had a significant and positive impact on GDP in the long run. However, in the short run, the study found that FDI has negative impact.

Again, [24] investigated the nexus between FDI and economic growth in Pakistan. Applying the autoregressive distributed lag (ARDL) bounds approach to cointegration and the granger causality test the study established a unidirectional causality from economic growth to FDI. The study also found a one-way causality from human capital and to labour force and physical capital. Bi-causality was found between physical capital and foreign direct investment, and between physical capital and human capital. FDI, fixed capital and human capital were found to have significant and positive relation with economic growth in the short run. The researchers conclude that FDI is attracted to those countries where human capital is strong, and that with the help of FDI host countries can reduce unemployment by creating more job opportunities. A study by [25] applied the ARDL model and the error correction (ECM) method to investigate the long run and short run relationship between inclusive growth and its determinants in Nigeria. The findings of the study revealed that initial capital and FDI showed a negative effect on inclusive growth in the short run, but showed a positive and significant contribution to inclusive growth in the long-run.

Applying panel cointegration analysis in the endogenous growth model, [26] investigate the effect of FDI on economic growth among 15 East Asian Countries from 1990 to 2009. The results of the study showed that FDI

had a positive effect on economic growth in high and middle income countries which have appropriate economic factors such as well-educated workforce, investment in infrastructure, and trade openness. FDI was found not to have a positive relationship with economic growth in low middle income countries which had inappropriate facilities for investment and low degree of openness and investment on education. The authors concluded that low income countries have weak absorptive capacity for FDI benefits as a channel for technology transfer from developed countries to host countries. The findings of the study confirmed the theory that FDI promote economic development in countries which have which have the appropriate economic factors such as high level of human capital, financial development and high degree of trade openness. In a study on relationship between FDI, domestic investment and economic growth in Malaysia, [27] applied vector error correction model (VECM). They also investigated the presence of complementarity and/or substitution effect between FDI and domestic investment using the impulse response function and variance decomposition analysis. The study found a long run bilateral causality between economic growth and domestic investment with no evidence of causality between FDI and economic growth. The authors noted a short run crowding-in between FDI and DI and temporary impact of FDI on economic growth. A study by [28] assessed the growth effects of FDI in European countries when controlling for other determinants for the period1986 –1996. The findings of the study indicated that country-specific estimates of growth determinants vary across EU members and that only past FDI inflows have significant effect on growth. When the data was pooled, FDI was found to have a positive effect on the growth rate of European economies both directly and indirectly. Growth effects of FDI was also found to be unconditional upon the level of human capital in developed host countries, unlike in developing countries. By employing panel data over the period 2000-2014, [29] examined the short run and long run impact of FDI on economic growth in developing countries of the lower-middle-income group. They found that FDI stimulates economic growth in the long run but a negative effect on economic growth in the short run. The authors concluded that foreign direct investment is an important factor for economic growth in especially for emerging and developing economies. The researchers further argued that the impact of FDI depends on, among others, characteristics of the FDI, such as type, sector, scope, duration, proportion of domestic businesses in the sector. They further observed that improving the quality of human resources and labour skills is important for utilizing new technology and positive technological diffusion effect.

3. Research Methodology

3.1. Research Design

The study employed an *ex post facto* quantitative research design with time series data spanning a period of thirty-nine years from 1980 to 2018. The data used in the study were obtained from the Central Statistical Office (CSO) and the Central Bank of Eswatini (CBE). The data collected included annual observations of real gross domestic product, domestic investment, labour, foreign direct investment and trade openness.

3.2. Model Specification and Variables

The main purpose of the study was to examine the effect of FDI on economic growth for the period 1980-2018. The study was based on the assumption that FDI influences long run economic expansion endogenously through technology transfer and knowledge spillover effects. The study used augmented aggregate production function

based on the endogenous growth theory. The endogenous growth theory advanced by [15] predicts that output is a function of capital stock, labour productivity and total factor productivity. Following the theoretical relationship advanced, the study assumes the following basic aggregate production function.

$$Y_t = A_t K_t^{\beta} L_t^{\alpha} \quad (1)$$

Where; Y_t represents the national output at time t, A_t is total factor productivity(TFP) which represents the stock of knowledge and technology at time, t. K_t and L_t are the conventional factors of production representing the amount of stock of capital and labour, respectively at time, t. The linear form of the production equation (1) after taking natural logarithm (log) can be specified as:

$$logY_t = logA_t + \beta logK + \alpha logL \quad (2)$$

Since FDI can impact the level of growth through technology transfer and spillover effects in the endogenous growth model, A can be endogenised as a function of FDI and other various control and policy variables influencing the level of productivity in the economy [16]. Following [28], the study expressed TPF(A_t) as a function of FDI and trade openness to capture the effect of liberal trade policy on economic growth. Therefore, the technology function can specified as follows:

$$A_t = \beta_O FDI_t^{\gamma} TOP_t^{\omega} e^{\mu_t} \quad (3)$$

Where; β_O is a constant term, FDI is foreign direct investment, TOP denotes trade openness,γ and ω are parameters, e^{μ_t} is the error term. Combining the production function (1) and technology function (3), and using GDP as a dependent variable and a function of domestic investment (DI) representing capital stock, labour (LAB), foreign direct investment (FDI) and trade openness (TOP), the aggregate production function can be reformulated as:

$$GDP_t = \beta_O DI_t^{\beta} LAB_t^{\alpha} FDI_t^{\gamma} TOP_t^{\omega} e^{\mu_t} \quad (4)$$

For estimation purposes and ease of interpretation of coefficients as elasticities, equation (4) was transformed into its log-linear form by taking natural logarithm (log) on both sides to obtain the econometric equation of the following form:

$$log(GDP_t) = \beta_0 + \beta log(DI_t) + \alpha log(LAB_t) + \gamma log(FDI_t) + \omega log(TOP_t) + \mu_t \quad (5)$$

Where; GDP_t, is real gross domestic product at time, t. It is used as a proxy for economic growth and a response variable in this study. Real GDP was preferred to nominal GDP because it allows for understanding how much the economy has grown or contracted independent of changes in inflation [30]. β_0, is the intercept,$\beta, \alpha, \gamma, \omega$, are the parameters to be estimated. They measure the elasticities of GDP as the data was converted into logarithms for ease of interpretation of the coefficients as elasticities; μ_t is the error term assumed to be identically and independently distributed with mean zero and constant variance. DI_t, is domestic investment at time, and is proxied by gross fixed capital formation in this study. It measures the value of acquisitions of new or existing

assets by business sector, government and households [31]. This variable is a traditional factor of production in the aggregate production function. Theory postulates increase in output with an increase in capital stock. The coefficient of domestic investments is expected to be positive. LAB_t, is total labour force at time, t, and a conventional factor of production. This variable is measured by the total number of persons actively employed in the economy and it is used as proxy for human capital. In theory, labour is positively related to output growth. Thus, the coefficient of this variable is expected to be positive. FDI_t, is foreign direct investment stock at time, t. FDI stock was preferred to FDI flows because it captures the accumulative value of an investment at a single point in time [4,32]. In line with the objective of the study, FDI enters the model as an explanatory variable. The endogenous growth theory suggests that FDI positively affects growth through technology and knowledge spillovers. Thus, the coefficient of FDI is expected to be positive. TOP_t, is trade openness at time, t. It is an indicator of level of openness to foreign trade or level of trade liberalisation of a country. It entails removal of tariffs and no-tariff barriers imposed by governments to restrict trade [30]. This variable is measured as a ratio of the sum of exports and imports to GDP. Economic theory postulates openness enables countries to increase efficiency and productivity by using new technology available outside the country [31]. The coefficient of this variable is thus expected to be positive.

3.3. Stationarity and Integration

A stationary time series variable has a constant mean, variance and autocovariance over time. Stationary series has a tendency to frequently revert and fluctuate around its mean value with limited memory of its past behaviour. In this case, effects of shocks are merely short-lived. A non-stationary time series, on the other hand, tends to exhibit deterministic trend with mean, variance and covariance changing with time. Non-stationary series wanders extensively without frequent return to a particular mean value and shocks have permanent effects [33]. Using non-stationary time series in the estimation process may yield spurious regression results [34, 35]. Thus, stationarity tests are pre-tests for avoiding spurious regressions and the starting point in any cointegration analysis as well as estimation of error correction models [36].

A time series variable needs to be appropriately differenced in order to become stationary [37]. The order of integration of a series is thus determined by the number of times a variable has to be differenced to achieve stationarity. For instance, a nonstationary variable Y_t is said to be integrated of order *d* if it has to be differenced *d* times before it becomes stationary. A time series that integrated of order zero is stationary at level, that is, I (0) series while a series integrated of order one, I (1) is nonstationary but stationary at first difference. If two variables are integrated of the same order, there exists a possibility to estimate a linear relationship between them [38, 34]. This study employed the commonly used augmented Dickey-Fuller (ADF) unit root test by [39] and the Phillips-Perron [40] test to assess the stationarity of the variables. The ADF test is based on the following test regression:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \delta Y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \varepsilon_t \quad (6)$$

The general PP test is estimated by the following test regression:

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \delta Y_{t-1} + \varepsilon_t \quad (7)$$

Where; Δ is the difference operator, Y_t is the series under consideration, t is the time or trend variable, p is the optimal lag empirically determined. The lag length in the ADF test regression is included to deal with the problem of autocorrelation and to enhance the robustness of the result, α_0, α_1, δ, and β_i are parameters; ε_t is the disturbance term. The PP test differs from the ADF test mainly in how it deals with serial correlation and heteroscedasticity in the errors. The ADF uses parametric autoregression to approximate the RMA structure of the errors in the test regression, while the PP is a non-parametric test and it ignores any serial correlation in the test regression. For both ADF and PP tests, the test was performed at level and at first difference using the test regression specified with constant, and with constant and trend. In each case, the null hypothesis is that the series has unit root (i.e. $H_O: \delta = 0$).

3.4. ARDL Bounds Test for Cointegration

Testing for cointegration is the next step after the establishing the order of integration of the variables. The cointegration test is performed to determine whether time series variables have a long run relationship or not. Engle and Granger [36] argued that even though economic time series may have the characteristic of nonstationarity in their level, there could be a linear combination of these variables that converges to a long run relationship over time. Variables are said to be cointegrated when they are, individually, stationary only after differencing but the linear combination of their levels is stationary. Cointegration implies the variables have a long run relationship [41].

There are three methods in literature that are commonly used to test for cointegration. These are (i) the Engle and Granger [38] two-step procedure; (ii) the Johansen and Juselius [42] rank method; and, (iii) the ARDL bounds testing approach by [43]. The study employed the ARDL bounds testing approach to cointegration to test for long run relationship between the variables. This method was preferred because it is applicable to variables that are I(0) and I(1) or mutually cointegrated compared to the other methods which require the variables to be strictly I(1) and a large sample. The ARDL is also suited to small samples while allowing different optimal lags of variables [44]. However, the bound test procedure collapses with I(2) series. The ARDL model specification of equation (5) is represented as an unrestricted error correction model (UECM) and following [44] test for cointegration between the variable as follows:

$$\Delta(log\ GDP)_t = \beta_O + \psi(logGDP)_{t-1} + \beta(logDI)_{t-1} + \alpha(log\ LAB)_{t-1} + \gamma(logFDI)_{t-1} + \omega(logTOP)_t + \sum_{i=1}^{p} \phi_1 \Delta(logGDP)_{t-i} + \sum_{j=0}^{q1} \phi_2 \Delta(logDI)_{t-j} + \sum_{j=0}^{q_2} \emptyset_3 \Delta(logLAB)_{t-j} + \sum_{j=0}^{q_3} \phi_4 \Delta(logFDI)_{t-j} + \sum_{j=0}^{q\_4} \phi_5 \Delta(logTOP)_{t-j} + \varepsilon_t \quad (8)$$

Where; β_O is a drift component, Δ is a difference operator, p, q_1, q_2, q_3, q_4 are optimal lag lengths, empirically determined using the Akaike Information criteria(AIC), Schwarz Bayesian information criterion(SBIC),Hanan-Quinn information criterion(HQIC) and Final Prediction(FPE),the coefficients $(\psi, \beta, \alpha, \gamma, \omega)$ of the lagged variables are long run parameters while coefficients $(\phi_1, \phi_2, \phi_3, \phi_4, \phi_5)$ of the differenced variables are short-run dynamics, ε_t is the error term . The cointegration hypothesis tested by the ARDL bounds test technique is:

H_0: $\psi = \beta = \alpha = \gamma = \omega = 0$ *(there is no cointegration)*

H_1: $\psi \neq \beta \neq \alpha \neq \gamma \neq \omega \neq 0$ *(there is cointegration)*

The ARDL bound test is based on the F-statistic of the Wald criterion and uses two critical values: lower bound and upper bound critical values. The lower bound critical value assumes that the variables are I(0) and are not cointegrated, while the upper bound critical value assumes that all variables are I(1) and are cointegrated. The computed F-statistic is then compared to the lower bound or I(0) and upper bound or I(1) critical values. The null hypothesis (H_0) is rejected if the computed F-statistic falls above the upper bound critical value, implying that the variables are cointegrated. If the computed F-statistic falls beneath the lower bound critical value, the null hypothesis (H_O) fails to be rejected, suggesting that the variables are not cointegrated. However, the result is said to be inconclusive if the calculated F-statistic falls within the lower and upper bound critical values.

Once cointegration has been established, the next step is to estimate the error correction model (ECM) which captures the short run dynamics and the speed of adjustment to equilibrium. The ECM is estimated using the differenced variables and the lagged residuals of the cointegrating relationship of the variables. The error correction model derived from equation (8) is specified as follows:

$$\Delta log(GDP)_t = \phi_0 + \sum_{i=1}^{p} \phi_1 \Delta(log\ GDP)_{t-j} + \sum_{j=0}^{q1} \phi_2 \Delta(logDI)_{t-j} + \sum_{j=0}^{q_2} \emptyset_3 \Delta(logLAB)_{t-j} + \sum_{j=0}^{q_3} \phi_4 \Delta(log\ FDI)_{t-j} + \sum_{j=0}^{q_4} \emptyset_5 \Delta(logTOP)_{t-j} + \lambda ECM_{t-1} + \mu_{it} \quad (9)$$

Where, ECM is the lagged error correction term(residuals), λ is the coefficient of the ECM_{t-1} measuring the speed of adjustment to equilibrium after an external shock [45].This coefficient is expected to be significant and negative to show that there is adjustment to equilibrium; μ_{it} is the error term.

4. Empirical Results and Discussion

4.1. Descriptive Analysis

Descriptive statistics were used to describe the basic features of the data. These included mean, median standard deviation, maximum and minimum. Table 1 show that the average value of GDP is E32574.43 million with a standard deviation of E13035.31 million. This shows that there has been small GDP disparity between the years. During the period of the study, the minimum GDP value was E12840 million and a maximum value of E54959.62 million. The annual FDI stock in Eswatini averaged $537.5 million over the study period with a standard deviation of $261 million, demonstrating small FDI variance stock between years. FDI stock had a minim value of $104.24 million and a maximum value of $931.97 million. Over the years, domestic investment had an average value of E7863.47 million with a standard deviation of E2246.96 million. The least value of capital stock was E4827.63 million and reached its highest at E12182.87 million. Over the study period, the average number of actively employed persons was 0.233 million with a standard deviation of 0.061 million. The total number of persons actively employed fluctuated between a minimum of 0.133 million and maximum of 0.343 million. The level of trade openness had a mean of 99 and standard variation of 18.01. The degree of trade openness ranged between 69.6 and 140, indicating that Eswatini is a highly open economy. The probability

value of the Jarques-Bera statistic determined the distribution nature of the variables. The probability value of the Jarques-Bera statistic confirmed that the variables are normally distributed.

Table 1: Descriptive statistics.

Variable	GDP	DI	LAB	FDI	TOP
Mean	32574.43	7863.469	0.233	537.492	99
Median	31762.82	6626.659	0.241	520.926	96.718
Std. Dev.	13035.315	2246.955	0.061	261.002	18.01
Maximum	54959.621	12182.875	0.343	931.794	139.966
Minimum	12840.004	4827.63	0.133	104.241	69.587
Jarques-Bera	2.139	4.628	1.422	2.581	1.95
Probability	0.3432	0.0989	0.4912	0.2751	0.3772
Observations	39	39	39	39	39

4.2. Stationarity Test

The ADF and PP test were performed to determine stationarity of the variables to ensure none of the variables were I(2). Both tests assessed the null hypothesis that the series has unit root against the alternative hypothesis that the series is stationary. The results of stationarity test in Table 2 indicate that both the ADF and PP tests failed to reject the null hypothesis. This implied that the variables are nonstationary at levels but stationary at first difference, suggesting that the variables are integrated of order one, I(1). Since none of the variables were I(2), the use of ARDL bounds testing approach to cointegration as advanced by [43] was appropriate.

Table 2: Stationarity test results.

	Augmented Dickey-Fuller Test		Phillips-Perron Test	
Variable	constant	constant & trend	constant	constant & trend
LogRGDP	-1.4888	-1.5198	-1.9231	-1.3632
LogDI	-1.9301	-2.2039	-2.1728	-2.4555
LogLAB	-1.9489	-1.6174	-1.8323	-1.7808
LogFDI	-1.2873	-2.9199	-1.2721	-2.6516
LogTOP	-2.8699	-2.7758	-2.3979	-2.2648
ΔLogGDP	-3.0932**	-3.52**	-4.0033***	-4.149**
ΔLogDI	-4.7836***	-4.6912***	-5.7156***	-5.5491***
ΔLogLAB	-4.1998***	-4.5468***	-8.4801***	-8.9543***
ΔLogFDI	-4.8257***	-4.7476***	-5.8597***	-5.7649***
ΔLogTOP	-4.0823***	-4.0549**	-4.6661***	-4.6969**

Note:*/** / *** denote significant at 10%/5% /1% level, respectively; Δ indicates 1st difference of the variables

4.3. ARDL Bounds Test for Cointegration

The first step in conducting the ARDL bounds test was to determine the optimal lag length. The results as presented in Table 3 indicate that the minimum of FPE, HQIC and SBIC chose lag one while the minimum of AIC selected lag two and LR selected lag three. Most of the criteria selected lag one as the optimal lag length, thus the lag order of one (1) was used in conducting the analysis.

Table 3: Lag length selection criteria.

Lag Order	LL	LR	FPE	AIC	HQIC	SBIC
0	71.7328		1.7e-08	3.70738	-3.63061	3.06712
1	238.091	332.72	6.7e-12*	-11.5606	-11.1*	-10.241*
2	263.802	51.422	7.0e-12	-11.6001*	-10.7557	-9.18084
3	286.633	45.662*	9.9e-12	-11.4796	-10.2514	-7.96068

Note: * Indicates lag length selected by criterion

Table 4 presents the results of the ARDL Bound test for cointegration. The SBIC selected ARDL (1, 0, 0, 0, 1) model as the best model. The lower and upper bound critical values were obtained from [43] Table C1.iii: Case III with unrestricted intercept with no trend, K= 4. The null hypothesis of no cointegration was tested against the alternative hypothesis of cointegration. The computed value of the F-statistic is 8.981 and is greater than the 1% lower bound critical value of 3.74 and upper bound critical value of 5.06. Thus, the null hypothesis of no cointegration was rejected at 1% significance level, implying that there is cointegration between the variables. The conclusion is that the variables included in the model have a long run relationship.

Table 4: ARDL bounds test result.

Model: ARDL(1,0,0,0,1)	Bounds Critical Values		
Significance level	Lower Bound I(0)	Upper Bound I(1)	Computed F-statistic
10%	2.45	3.52	
5%	2.86	4.01	8.981***
1%	3.74	5.06	

Note: */**/*** indicates significant at 10%/5%/1% level

4.4. Estimation Results

4.4.1. Long Run Coefficients

The results of the normalised long run coefficients of the ARDL (1, 0, 0, 0, 1) model are presented in Table 5. The coefficients were treated as elasticities and interpreted as percentage response of the dependent variable due to percentage change in the explanatory variable. The results show that the R-Squared (R^2) was 0.593. This implies that about 59.3% of the annual variation in GDP was jointly explained by the variables in the model. The results also indicate that all the coefficients of the variables investigated were significant. This implies that all variables have significant effect on economic growth. The coefficients of labour and foreign direct investment had the expected signs while the coefficients of domestic investment and trade openness had unexpected signs. The results show that domestic investment (DI) had a negative and significant effect on economic growth in Eswatini in the long run. The estimated coefficient on domestic investment had a negative value of -0.236, which was statistically significant at 5% significance level. This result is contrary to *a priori* expectation which forecasted a positive coefficient as per growth theory which states that output increases with an increase in capital stock. The result means that a 1% increase in domestic investment will lead to 0.24% average decrease in GDP, assuming other variables remain constant. The result is inconsistent with the finding

of study by [18] who found that domestic investment had a positive and significant effect on economic growth in South Africa in the long run. The estimated coefficient of labour (LAB) is positive with a value of about 0.760, statistically significant at 1% significance level. This result is consistent with *a priori* expectation of positive coefficient as per endogenous theory that an increase in labour increases output. This implies that a 1% increase in labour will result to average increment of 0.76% in GDP, holding other variables constant. Eswatini has a literacy rate of 89% which means that there is abundance of skilled and easily trainable workforce in the country. This has improved the economy's absorptive capacity. The higher the number of skilled people employed, means the higher the production efficiencies which transform into increased output. The result is supported by [15) who observed that the quality of human resources and labour skills is important for utilizing new technology and positive technological diffusion effect which in turn enhances economic growth. This result is also consistent with the finding of [28] study on the impact of FDI on economic growth in Pakistan. In this study, labour was found to be among the factors that had significant effect on economic growth in the long run. Foreign direct investment (FDI) , which was the main variable of interest for the study was found to be positive and significant. This is evidenced by the estimated coefficient of FDI with a positive value of 0.281, statistically significant at 1% level of significance. This result is consistent with theoretical expectation of the endogenous growth model which postulates that GDP will increase with a rise in FDI. The result reveals that, holding other factors constant, a 1% increase in FDI will lead to 0.28% average increase in GDP. A higher amount of FDI stock means a higher stock of available technology and knowledge which improve production capacity. This in turn translates into the ability of the economy to increase output through externalities and productivity spillovers. The result is consistent with the finding of [26] study on the impact of FDI on economic growth in 15 East Asian countries. The study used panel cointegration analysis with endogenous growth model and fund that FDI had positive and significant effect on economic growth of only countries that have appropriate economic conditions. A study by [24] on the impact of FDI on economic growth in Pakistan also obtained very similar results. Using the ARDL bounds approach, the study found that FDI had a positive and significant influence on the economic growth of Pakistan.

Table 5: Normalised long run coefficients.

Variable	Coefficient	Std. Error	t-statistic	P-value
LogDI	-0.236	0.109	-2.160	0.039**
LogLAB	0.760	0.261	2.910	0.007***
LogFDI	0.281	0.088	3.190	0.003***
LogTOP	-0.698	0.244	-2.860	0.008***
R-Squared	0.593			

Note: */**/*** indicate significant at 10% /5%/1% level, respectively

The estimated coefficient of trade openness (TOP) is -0.698 with statistical significance at 1% level, implying that a 1% increase in trade openness will result to roughly 0.7% decrease in GDP, *ceteris paribus*. The result suggests that a higher level of trade openness has a negative and significant effect on economic growth in the long run. This is against theoretical expectation of a positive coefficient as per economic theory which predicts that trade openness improves efficiency which in turn leads to increase in production. Exporting primary commodities and production of low quality finished products may be the possible explanation for the negative

effect of trade openness on Eswatini's economic growth. The primary nature of the country's main export commodities erodes the economy's net gains from international trade as Eswatini's import basket constitutes more expensive products. In this context, there is a risk of negative trade balance where trade is most likely to adversely impact on growth. The result is consistent with the finding of the study by [20] on the impact of FDI on economic growth in Turkey. The study found that trade liberalisation had a negative and significant effect on economic growth.

4.4.2. Short Run Coefficients

The results of the error correction model (ECM) as explained in equation (9) related to the ARDL (1, 0, 0, 0,1) model are presented in Table 6. The ECM captures the short run dynamics and the speed of adjustment to equilibrium. True to *a priori* expectation, the coefficient of the lagged error correction term (ECM_{t-1}) is negative and significant. The value of the ECM_{t-1} coefficient is -0.208.This implies that 20.8% of short run disequilibrium in the model due to external shocks is corrected in each year.

Table 6: Short run coefficients**.**

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	3.160	0.819	3.860	0.001***
ΔLogDI	-0.049	0.018	-2.780	0.009***
ΔLogLAB	0.158	0.098	1.610	0.118
ΔLogFDI	0.059	0.017	3.440	0.002***
ΔLogTOP	-0.052	0.040	-1.040	0.307
ECM_{t-1}	-0.208	0.066	-3.160	0.003***

Note: */**/*** denote significant 10%/5%/1% level respectively; Δ is 1st difference operator

The short run coefficient of FDI was found to be positive with a value of about 0.059, statistically significant at 1% level. This implies that a 1% increment in FDI will lead to a roughly 0.06% increase in GDP in the short run. The results further reveal that the short run coefficient of domestic investment was negative (-0.049), and is statistically significant at 1% level. This implies that 1% increase in domestic investment will result to 0.05% decrease in GDP in the short run. Trade openness (TOP) had a negative coefficient (-0.052) that was statistically insignificant since it had a p-value of 0.307 (30.7%) which is greater than the 5% significance level. The short run coefficient of labour (LAB) was a positive with a value of 0.158, but it was not statistically significant with a p-value of 0.118(11.8%) which is greater than the 5% critical value. The results imply that Trade openness and labour are insignificant factors in explaining economic growth in the short run.

4.5. Diagnostic Tests

The study conducted some post estimation diagnostic tests to assess the validity and robustness of the estimated model. These are the Breusch-Godfrey (B-G) LM test for serial correlation, the Breusch-Pagan (B-P) test for heteroscedasticity, Ramsey RESET (RR) test misspecification and the Jargques-Bera (J-B) test for normality. The B-G statistic tested the null hypothesis of no serial correlation and the B-P and J-B test statistics checked

the null hypotheses of no heteroscedasticity and normality, respectively. With the RESET statistic test, the null hypothesis of no model misspecification (no omitted variables) was tested. For all cases, the null hypothesis was rejected if the p-value of the calculated test statistic was less than 5% critical level; otherwise the hull hypothesis is accepted. The results are presented in Table 7.

Table 7: Diagnostic tests result.

Type of Test	Test Statistic	P-value	Decision
Breusch-Godfrey LM test for serial correlation	0.174	0.6766	Fail to Reject H_O
Breusch-Pagan test for heteroskedasticity	1.76	0.1841	Fail to Reject H_O
Ramsey RESET test for misspecification	1.66	0.1991	Fail to Reject H_O
Jarques-Bera test for normality	0.476	0.7881	Fail to Reject H_O

As shown in Table 7, the BG test statistic is 0.174 with a p-value of 0.6766, which is greater than 5%, indicating the test failed to reject the null hypothesis. The p-value of the B-P test statistic (1.76) is 0.18841indicating that the null hypothesis cannot be rejected. The RR statistic (1.66) has a p-value of 0.1991, failing to reject the null hypothesis of no misspecification. The J-B test fails to reject the null hypothesis of normality as the J-B statistic (0.476) has p-vale of 0.7881 and it greater than 5%. The results indicate that the estimated model is free from the problems of serial correlation, heteroscedasticity, misspecification and abnormality of residuals

4.6. Stability Test

After having established the validity and robustness of the model, it becomes necessary to test the stability of the long run coefficients. If the constancy of the parameters is violated, inference about the parameters and policy implications drawn from the model may be misleading [46]. The study used the cumulative sum of recursive residuals (CUSUM) test proposed by [47] to assess the stability of the long run coefficients. The results of the stability test are displayed in Figure 1. The result indicates that the plot of the CUSUM falls within the critical bounds confirming the stability of the long run coefficients. Therefore, this model can be applied to explain the relationship between FDI and economic growth in Eswatini.

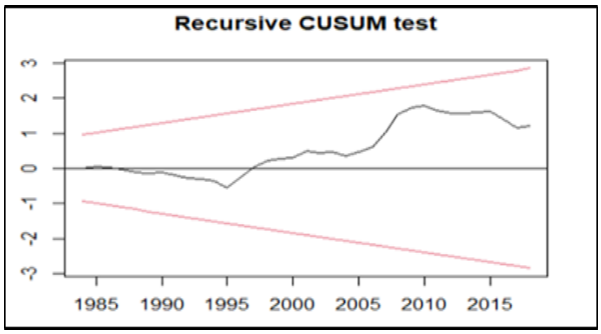

Figure 1: CUSUM plot**,**

5. Summary, Conclusion and Policy Implications

5.1. Summary

The study examined the effect of FDI on economic growth in Eswatini over the period 1980-2018. Using the ARDL bound testing approach to cointegration and error correction model (ECM), the study estimated the magnitude and direction of the short and long run effects of FDI on economic growth. The study utilised an *ex post facto* research design with annual time series data on real gross domestic product, domestic investment, labour, foreign direct investment, and trade openness. The ADF and the PP unit root tests were performed to determine stationary of the variables and their order of integration. The variables were found to be nonstationary at level but stationary at first difference, denoting that the variables are integrated of order one, I(1). The results of the ARDL bounds test showed that the variables were cointegrated. The study was informed by the endogenous growth theory. The findings of the study indicate that foreign direct investment and labour have positive and significant effect on economic growth in the long run, while domestic investment and trade openness have negative and significant effect. In the short run the study found that GDP growth is positively and significantly influenced by FDI and negatively and significantly impacted by domestic investment. The variables in the model jointly explain 59.3% of the annual variation in GDP. The error correction model indicated that 20.8% of short run disequilibrium is corrected each year. The post model estimation diagnostic tests were conducted to assess the validity of the results. These tests included the Breusch-Godfrey test for serial correlation, Breusch-Pagan test for heteroscedasticity, and the Jacques-Bera test for normality, and the Ramsey test for functional form. The results showed no evidence of serial correlation, heteroscedasticity, model misspecification and non-normality. The cumulative sum of recursive residuals (CUSUM) was used to test the stability of the long run coefficients and the results of which confirmed the stability of the model.

5.2. Conclusion

Based on the findings, it can be concluded that foreign direct investment is a significant contributing factor to the economic growth of Eswatini both in the short run and long run. Economic performance improves with an increase in foreign direct investment as predicted by the endogenous growth theory. A higher amount of FDI stock increases the stock of available technology in the country which translates into the ability of the economy to increase output through externalities and productivity spillover effects. This means that Eswatini can attain high economic growth by increasing the stock of FDI in the economy. However, FDI is not the only significant factor to the country's economic growth. The findings of the study also indicate that economic growth increases with higher level of human capital (skilled labour) , implying that that human capital is also a significant factor in explaining positive economic growth in Eswatini. A highly skilled labour force does not only enable firms to increase production, but also critically important for the country's capacity to absorb new technology. From this study, Eswatini's economic growth is negatively influenced by domestic investment and trade openness. However, it would be a fallacy to conclude that domestic investment and trade openness plays a negative role in economic growth. Capital and openness are important contributors to economic growth.

5.3. Policy Implications

The findings of the study imply that the Government of Eswatini needs to adopt measures that will lead to the attraction and increase of foreign direct investment into the country in order to stimulate economic growth. The government should thus continue improving the investment climate through accelerating implementation of the

reforms to the investor roadmap to remove restrictions to FDI inflows. The government is also advised to formulate policies intended for human capital formation and skills development to enhance absorptive and productivity. The Eswatini Investment Promotion Authority (EIPA) in collaboration with the Small Enterprise Development Company (SEDCO) should encourage linkages between foreign and domestic firms, especially small and medium industries (SMIs) for transfer of technology and skills. Finally, there is need for government to invest in building domestic manufacturing capabilities with a view of fast-tracking the country's transition towards industrialization. Policies that encourage domestic production and exportation of advanced high-end value products, diversification of exports and enhance international competitiveness should be promoted. Therefore, the implementation of the industrial upgrading and modernization programme, and the agro-value chains development strategy would play a vital role in improving productivity and competitiveness.

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