The linkage between foreign direct investment, external debt and economic growth of South Africa

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ABSTRACT

Purpose: A country's level of external debt and economic growth trends are regarded as imperative factors in attracting foreign direct investments of a country. Most developing countries are faced with high levels of external debt and lower growth. Due to such concerns, South Africa is among the developing countries that attract limited foreign direct investment. The study at hand examines the linkage between foreign direct investment, external debt, and economic growth of South Africa, using secondary time series data spanning from the periods of 1994 to 2021.

Method: The study employed the following econometric techniques, unit root tests, autoregressive distributed lag cointegration bound test, diagnostic tests, and stability tests.

Results: The results showed that foreign direct investment and external debt have a negative effect on economic growth in the short and long run. Thus, the study distinguished a long-run link between foreign direct investment, external debt, and the economic growth of South Africa during the study period.

Originality/relevance: The study contributes to existing literature on foreign direct investment, external debt and economic growth, and offers new recommendations from the South African context from 1994 to 2021. Hence, the analyses in this study are important in guiding policies on foreign direct investment, external debt, and economic growth.

Keywords: South Africa; Foreign direct investment; External debt; Economic growth; Autoregressive distributed lag.

Le lien entre l'investissement direct étranger, la dette extérieure et la croissance économique de l'Afrique du Sud

RÉSUMÉ

Objectif : Le niveau de la dette extérieure d'un pays et les tendances de la croissance économique sont considérés comme des facteurs impératifs pour attirer les investissements directs étrangers d'un pays. La plupart des pays en développement sont confrontés à des niveaux élevés de dette extérieure et à une croissance plus faible. En raison de ces préoccupations, l'Afrique du Sud fait partie des pays en développement qui attirent peu d'investissements directs étrangers. L'étude en question examine le lien entre l'investissement direct étranger, la dette extérieure et la croissance économique de l'Afrique du Sud, en utilisant des données de séries chronologiques secondaires couvrant les périodes de 1994 à 2021.

Méthode : L'étude a utilisé les techniques économétriques suivantes : tests de racine unitaire, test de cointégration à décalage distribué autorégressif, tests de diagnostic et tests de stabilité.

Résultats : Les résultats ont montré que l'investissement direct étranger et la dette extérieure ont un effet négatif sur la croissance économique à court et à long terme. Ainsi, l'étude a établi un lien à long terme entre l'investissement direct étranger, la dette extérieure et la croissance économique de l'Afrique du Sud au cours de la période étudiée.

Originalité/pertinence : L'étude contribue à la littérature existante sur l'investissement direct étranger, la dette extérieure et la croissance économique, et propose de nouvelles recommandations issues du contexte sud-africain de 1994 à 2021. Par conséquent, les analyses de cette étude sont importantes pour orienter les politiques sur l'investissement direct étranger, la dette extérieure et la croissance économique.

Mots-clés : Afrique du Sud ; Investissement direct étranger ; Dette extérieure ; Croissance économique; Retard distribué autorégressif.

1. Introduction

Economic growth is one of the main goals of developing countries. Hence, most countries are concerned and faced with predominant unsustainable economic growth and burgeoning fiscal deficits. Burgeoning fiscal deficits that are driven by higher levels of external debt servicing and expanded current account deficits (Senadza et al., 2017). Since the 1980s, numerous developing countries' debt had been extended. This has created some problems and amplified developing countries' dependence in order to finance their domestic investment (Tanna et al., 2018). Economic growth must be influenced by external debt through investment and productivity of the labour force (Shkolnyk & Koilo, 2018).

Over the past decades, developing countries' foreign direct investment (FDI) has increased. Approximately half of the worldwide FDI inflows was absorbed for the first time in developing economies in 2010. Africa grew their annual FDI to a rate of 10.5% between the years 1990 and 2010 (Nkuna, 2017). FDI shows a significant function in the dependence on economic growth and development in both the developed and developing countries (Ali et al., 2018). FDI as one of the macroeconomic variables is explained as the direct investment that non-resident investors make in the reporting country. Direct benefits from FDI further include investment, foreign exchange, and job creation. In developing economies, policymakers strive to attract FDI to create job opportunities (Mkombe et al., 2021). Although FDI benefits rely on various factors such as political stability, natural resources, trade openness, market size, and foreign capital time horizon, and good infrastructure (Ali et al., 2018). FDI growth benefits and absorptive capacity are also noticed in countries depending on the adapted gains from technological transfer and their spillover effects (Tanna et al., 2018).

The external debt problem is also experienced around the globe, and it has continued to affect the current and future development of most countries. External debt levels have been on the rise in Sub-Saharan Africa (SSA) countries and is a major source of public receipts. External debt, in developing countries, constitutes a greater share of the public debt structure. Assessment of external debt by developing and emerging countries is due to the lack of saving and investment (Kharusi & Ada, 2018). Debt is created through borrowing. According to Mkombe et al. (2021) the external debt is comprised of a country's total debt that is owed to institutions, firms, and foreign citizens. Public debt can either be domestic or external debt (Ndubuisi, 2017). South Africa's debt is managed through a macroeconomic framework since the year 1994, as revealed by Magubu et al. (2015). The government borrows money to gratify its expenditures and for investment purposes (Majam, 2017).

Developed and developing countries require a balanced level of debt that should help them in enhancing economic growth (Kharusi & Ada, 2018). Economic growth can be impacted negatively or positively by government external borrowing. Government borrowing is well-administrated when the predictable government income falls short of the expected expenditure and by repaying off maturing public debt in advance (Babu et al., 2015; Kharusi & Ada, 2018). Kharusi and Ada (2018) stipulated that due to developing countries' poor management and leadership, countries suffer the negative consequence that is exhibited between the level of debt and economic growth. Hence, it is crucial to preserve healthy levels of government external debt and to utilize available savings, investments, and reserves.

When debt is utilized effectively there could be an improvement in socio-economic growth and the standards of living in a country. Economic growth can further be enhanced through capital accumulation and productivity growth. However, reasonable levels of borrowing should be monitored within a country to influence productive investments and the country not suffering from macroeconomic instability (Babu et al., 2015). The study addresses the following research question: What kind of effect does FDI, and external debt have on economic growth in the short- and long run?

Thus, the study aims to analyse the linkage between FDI, external debt and economic growth in South Africa.

2. Literature review

The literature review section provides the theoretical and empirical linkage between FDI, external debt and economic growth.

2.1. Theoretical literature

According to Sandow et al. (2022), the imposition of higher marginal tax by external creditors (funders), decreases a country's growth. Moreover, if the country accumulated higher debt, it chases away investors and reduces economic growth as outlined in the debt and economic growth theory. Turan and Yanikkaya (2021), supported this theory by revealing that developing countries can increase their private investment and economic growth by lowering or reducing higher levels of public debt.

The public debt, and economic growth theory, should be utilized to improve the level of a country. This study also utilizes the public choice theory as referred to by Megersa and Cassimon (2015). This theory exposes individuals or officials who utilize society's benefits to maximize their personal desire. The theory is relevant as it reveals developing countries' official tendency of redirecting public funds to their private needs which wanes economic growth and magnifies public debt. Furthermore, in 1988, Krugman also introduced the debt overhang theory to advance developing countries' level of debt repayment and to provide relief from the long debt process.

The debt overhang theory was established to assist countries during the external debt repayment process. This theory promotes that a country's repayment process should be predetermined in order to fall lower than or within the value of public debt. This theory was advanced to assist developing countries to repay the public debt burdens since most developing countries' investments are done with lower returns in comparison to the interest charged for the debts. This approach aimed to align the country's debt to its economic growth instead of opposing the structured debt rules.

The public interest theory which is also known as the market failure notion miscarried its function due to structural limitations (Ayee, 2005; Megersa & Cassimon, 2015). The natural monopolies, externalities, transaction costs, and collective action problems were the main weaknesses that hinder the market theory functionality. The public interest theory was suggested in the 1930s and became active or an accepted view as late as the 1970s. The public interest theory was introduced with the three, key imperfections or failures. Firstly, the public interest theory defends government intervention and attacks markets operation whereas the government was implying inconsistent and faulty procedures. Officials use the political procedure to rectify market encountered problems. These procedures have widened and amplified the market problems and targeted certain markets. This resulted in various market sectors such as airline pricing freedom around the 1980s. This procedure was implemented with difficult legislations and law that does not weaken or expire.

Secondly, the public interest theory was utilized incorrectly in order to overemphasize the motives of public officials. This theory affirms that public officials should continually act on behalf of the nation's interest even though the proposition is disagreeing. This behaviour was contradicted with real-world phenomena and continue to establish a new exclusive ruling. The public interest theory was positioned as an empty policy, since to account for public interest requires bribes.

Lastly, the public interest theory failed to investigate and control government officials on their service delivery (Megersa & Cassimon, 2015). However, new contributions were amended to the public interest theory, and it was renamed to be the public choice theory. The public choice theory promotes clear business regulations against the public interest theory which regulated consumers. It was then

clarified that public office should elect officials with normal character against the self-centred officials who were appointed under the public interest theory. Even if the public choice theory has its limitations like other theories, it was practical in practising its perspective of allowing public participation in the policymaking arena. Moreover, the public choice theory has clarified to the public that policymaking processes are structured to make improvements through the reformed political process and law reviews.

The study further adopted the eclectic paradigm theory to analyse FDI, as alluded to by Maboa and Ncanywa (2020). During the year 1976, Stockholm becomes the first scholar to present the eclectic paradigm theory in order to generalize and rank how firms should initiate foreign production. The eclectic paradigm theory uses the multinational corporation (MNC), to absorb FDI returns through ownership, location, and internalization. Due to the eclectic paradigm theory boundaries, the study further employed the industrial organization theory to make clear implications on decisions made by larger market opportunities and investment to a foreign country that should benefit internal businesses. The industrial organization theory promotes that internal businesses should take advantage by making use of some of the resources that were not allocated by the domestic economy such as product variation, ownership benefit, low rate of production, and government attractions to mention a few as discovered by Kok and Ersoy (2009); and Maboa and Ncanywa (2020). The study also utilized this theory as it was applied by Vijayakumar et al. (2010), and Maboa and Ncanywa (2020), to retort to the condemnation of international trade theory. Apart from that, modernization theory was also applied to check the benefits associated with FDI.

The modernization theory contends that FDI benefits towards the host country are exclusive. Those benefits are experienced within the developing economies who have the ability to influence the spread of their technological advancement and human capital development as noticed by Li and Liu (2005), and Joshua et al. (2020). This theory believes that openness to FDI inflows has a key to advancing the host country's participation in economic growth expansion. However, this view also emphasizes that FDI inflow is not assured to be always positive because sometimes its benefits may outweigh the costs or not. This theory was challenged by the dependency theory that associated the FDI inflow with an engine used for capital flight (Adams, 2009). The broadcasters of the dependency theory contend that FDI inflow is capable of also loosening the course of development by crowding out domestic investment. Moreover, FDI inflow benefits the foreign firms in return and also utilizes developing country capital transfer by facilitating the original source of investment (Adedoyin et al., 2020; Joshua et al., 2020).

2.2. Empirical literature

Relevant studies connected to the linkage between FDI, external debt and economic growth are provided under the empirical literature. Kharusi and Ada (2018) applied the autoregressive distributed lag (ARDL) cointegration method to reveal the short-run relationship between external debt and economic growth. The study discovered the negative and significant effects between external debt and economic growth. Furthermore, Senadza et al. (2017) revealed SSA country's external debt has negatively affected its economic growth. Shkolnyk and Kolio (2018) analysed the linkage between economic growth and external debt in Ukraine and other evolving economies making use of the ARDL model and correlation analysis. The findings showed that for emerging economies there is a debt burden, as the marginal impact of the external debt on economic growth becomes negative. The study of Serrão (2016) also revealed a negative relationship between public debt and real GDP growth. Karadam (2018) tried to reveal that debt effects fluctuate within economies. The effects of debt on economic growth moved from positive to become negative if the country's debt increased. Solomon (2017) found that there is a negative impact between foreign debt and FDI in Zambia between 1980-2015. In the long run, a negative and statistically significant relationship was revealed.

Ndubuisi (2017) analysed the Nigerian emerging economy looking at how external debt affected economic growth from 1985 to 2015. The test revealed a long-run relationship between external debt

and GDP. Jilenga et al. (2016) utilized ARDL to emphasize that external debt has positive effects on Tanzania's economic growth. In the study of Asafo and Matuka (2019), public debt has provided a positive and statistically significant impact on Ghana's economic growth between 1970 to 2009. Public debt was noted as an important key to sustaining and managing economic growth. Babu et al. (2015) studied the effects of domestic debt on economic growth in the East African Community between 1990 to 2020. It was found that domestic debt has a positive significant impact on the per capita GDP growth rate. Megersa and Cassimon (2015), found that public debt has a negative relationship with economic growth between 2005 to 2011 in developing countries.

Fatoki and Muoki (2021) applied Macro panel regression to determine how public debt influences the economic growth in Kenya, Uganda, and Tanzania. The outcomes reveal that external commercial debt has a significant and positive effect on economic growth, whereas domestic debt reveals a significant and negative stimulus toward economic growth. According to Liu and Lee (2018), the weaknesses attached to public debt and economic growth such as the concepts of crowding out or debt extension are not explained in advance.

The ARDL bounds testing method was used by Udi et al. (2020) to investigate the contribution of industrialization to South Africa's energy-growth-FDI nexus between 1970 and 2018. The study's findings indicate that both in the long and short runs, FDI has a large positive impact on economic growth. Additionally, Anetor (2020) discovered that once the model was brought to the communicating term, FDI and human capital had a large and positive impact on the economic growth of SSA. However, Fatoki and Muoki (2021) and Joshua et al. (2020), studies found that there is a negative relationship between FDI and economic growth. Given the discussions of the reviewed literature, it is necessary to carry out this study in order to close the gap and offer new recommendations for the South African context from 1994 to 2021.

In summary, the literature reviewed confirms a positive linkage between FDI and economic growth. Yet the size of such linkage or impact varies across countries and depends on the period of the study. Even so, some recent literature reviewed, especially from 2020 up to date revealed contradicting results on FDI and economic growth. On the other hand, external debt as one of the sources of finance has a crowding out effect on economic growth, hence the current study is interested in investigating the linkage between the two sources of FDI inflows through government external debt and economic growth particularly in South Africa from 1994 to 2021.

3. Research methodology

The research methodology is discussed in this section of the study. Data source, model specifications and estimation methods are presented and discussed in this section. The study employed the ARDL approach to analyse the linkage between external debt, FDI and economic growth.

3.1. Data

The South African yearly, secondary time series data ranging from the period 1994 to 2021 was employed. The World Bank database was useful to acquire data for the gross domestic product (GDP), FDI, external debt and the real interest rate (RIR). These variables were used to link the theoretical and empirical literature based on the linkage between FDI, external debt and economic growth. In this regard, GDP was used as a proxy for economic growth, which is the dependent variable. Whereas FDI and external debt were employed as the independent variables of this study, and the RIR was used as a control variable.

3.2. Model specification

The purpose of the study is to analyse the connection between economic growth, external debt, FDI, and RIR. Econometric techniques are used in this study to run multiple regression analyses

between external debt, FDI, economic growth and the RIR. To achieve the purpose of the study, the current study model is specified as thus:

GDP is a function of FDI, External debt and RIR in the model. Which can be written in a functional form as follows:

$$GDP = f(FDI, External\ debt, RIR) \quad (1)$$

The Linear form can be written as follows:

$$LGDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 ExtDebt_t + \beta_3 RIR_t + \varepsilon_t \quad (2)$$

Equations (1 and 2) describes the relationship between the dependent variable (GDP) which was logarised and the independent variables (FDI, external debt and RIR). Where $ExtDebt$ represents external debt, β_0 denotes the constant and ε_t the error term.

3.3. Estimation techniques

The methods used for estimation in this study and to achieve the objective of the study, was the unit root test, ARDL cointegration bounds test, the diagnostic and stability tests. The short- and long-term impacts of external debt and FDI on economic growth are observed using an ARDL-based ECM from Pesaran et al. (2001).

3.3.1. Unit root test

Determining stationarity of the various variables used in the study is crucial in econometric analyses. Gujarati and Porter (2009) postulated that a series that is nonstationary is problematic as we can only be able to study its behaviour for the time period under consideration. Furthermore, to avoid occurrence of spurious regressions in unit root tests, the current study carried out the Augmented Dickey-Fuller (ADF), as endorsed by Dickey and Fuller (1979) and Phillips-Perron as recommended by Phillips and Perron (1988), and Gujarati and Porter (2009). Once the presence of stationarity has been confirmed among the variables, the ARDL cointegration bounds test can be conducted if the series is integrated of order zero or one.

3.3.2. ARDL cointegration bounds test

After ascertaining the integration order of the investigated variables. The study employed the ARDL approach to detect the level of cointegration. The ARDL technique concurrently captures long- and short-run estimates. The speed of adjustment and cointegration of variables is also captured (Johansen & Juselius, 1990). The ARDL approach is also known as the bounds test which determines if the series exhibits a long run cointegrating relationship. The null hypothesis of no cointegration is rejected if the computed F-statistics lies above the lower and upper critical bounds, meaning that cointegration exists among the variables. In a circumstance where F-statistics lies in between the below and upper critical bounds, cointegration becomes inconclusive (Pesaran et al., 2001)

3.3.3. Diagnostic tests

The diagnostic tests are performed to check the efficiency and consistency of the model. Moreover, the time series model should gratify the assumptions of the classical regression model (Gujarati & Porter, 2009). For the purpose of this study, Breusch–Godfrey serial correlation Lagrange Multiplier (LM) test will be used to check if the variables are not serially correlated. The Kurtosis will be utilized to check the distribution of the residuals and lastly, the heteroskedasticity will be carried out using the heteroscedasticity ARCH test.

3.3.4. Stability test

To check if the model is stable, the Cumulative Sum (CUSUM) and CUSUM of Squares was adopted to test the stability of the model as alluded by Okunola (2016), and Emir and Bekun (2019). The CUSUM and CUSUM of squares are based on recursive residuals (Brooks, 2008). For the series to be stable, both tests must remain within the 5% level of significance, that is illustrated by straight lines in the CUSUM and CUSUM of squares figures (Brown et al., 1975; Afzal et al., 2010).

4. Results and discussion

The estimation techniques were discussed in the previous section. The findings of the study are presented and discussed in detail in the current section.

4.1. Unit root results

The following unit root tests were conducted, namely the ADF and PP tests. Both the ADF and PP unit root tests were performed to check if the series was stationary or non-stationary. Furthermore, confirming the order of integration. The results of the ADF and PP unit root tests are presented in table 1.

Table 1: Unit root ADF and PP Results

		Stationarity at level, $I(0)$		**Stationarity at first difference, $I(1)$**	
Variables	**Model specification**	**ADF test statistic**	**PP test statistic**	**ADF test statistic**	**PP test statistic**
LGDP	Intercept	-2.233578	-2.233578	-3.961705**	-3.961705***
	Trend and intercept	-0.013696	0.028522	-4.643096**	-4.643096***
	None	4.949001	4.327838	-1.654737*	-2.314908**
FDI	Intercept	-3.223277**	-2.962826*		
	Trend and intercept	-3.250495*	-3.223707		-5.072992***
	None	-1.223603	-1.223603	-5.356997***	-5.151852***
ExtDebt	Intercept	-0.951843	-0.874351	-4.927614***	-4.789178***
	Trend and intercept	-2.340782	-2.318632	-4.706716***	-4.482756***
	None	0.741047	1.013199	-4.619534***	-4.615419***
RIR	Intercept	-1.909978	-1.999171	-5.984882***	-5.984882***
	Trend and intercept	-3.321530*	-3.397063*		
	None	-1.106539	-1.114625	-6.055635***	-6.055635***
Note: *, **, *** denotes rejection of the null hypothesis at 10%, 5% and 1%					

Authors own computations.

The unit root results were conducted based on the ADF and PP test statistic and the intercept, trend and intercept and none assumptions. The results of the four variables tested for stationarity are indicated in table 1, namely economic growth, FDI, external debt and real interest rate. The null hypothesis of the study is that there is unit root, variables are nonstationary, and the alternative hypothesis is that there is no unit root and the variables are stationary. Economic growth and external debt are found not to be stationary at levels and were differenced once to induce stationarity.

FDI was found to be stationary at intercept and, at trend and intercept at levels in the ADF test, but for PP test it was stationary at intercept. In this case the null hypothesis of unit root was rejected

at 5% and 10% significance level. While the real interest rate was found to be stationary at levels only at the trend and intercept, therefore the null hypothesis of unit root was rejected at 10% significance level. However, with the FDI, trend and intercept (PP test statistic) and None (ADF and PP test statistic), had to be differenced once to induce stationarity. With the real interest rate, the variable was differenced once at intercept and at None for both the ADF and PP test statistic, to be stationarity. Generally, it can be concluded that, all the four variables were differenced once to induce stationarity in some model specifications or procedures. Thus, the variables are integrated of order zero and one. The null hypothesis of non-stationarity is therefore rejected, and the alternative hypothesis of stationarity is accepted.

4.2. ARDL cointegration bounds results

To determine whether there is an indication of a long-term equilibrium relationship between the variables, the ARDL cointegration test was performed on the data. The ARDL F-bounds results are presented first, followed by the ARDL long- and short-run results.

Table 2: ARDL cointegration F-bounds results

Test Statistic	Value	Significance	I(0)-Lower bound	I(1)-Upper bound
				Asymptotic: n=1000
F-statistic	10.86009	10%	3.47	4.45
k	3	5%	4.01	5.07
		2.5%	4.52	5.62
		1%	5.17	6.36

Authors own computations.

As the unit root results showed that the variables are integrated of order zero and one, progression to the ARDL cointegration bound test is allowed. The ARDL F-bounds results show a cointegrating relationship among the variables, as the F-statistic is 10.86009 which is greater than the 5.17 in the lower bound and 6.36 at the upper bound test, which is at the 1% significance level. The ARDL cointegration results suggest that the null hypothesis of no cointegrating relationship is to be rejected and alternative hypothesis accepted as there is a cointegrating relationship.

Table 3: ARDL long run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	-0.036198	0.011804	-3.066598	0.0279
EXTDEBT	-0.006263	0.000734	-8.528203	0.0004
RIR	-0.009134	0.004168	-2.191630	0.0799

Authors own computations.

ARDL long run equations:

$$LGDP = -0.036198\text{FDI} - 0.006263\text{ExtDebt} - 0.009134\text{RIR} \quad (3)$$

The ARDL long-run equation reveals that FDI has a negative impact on GDP and is significant at 5% level. Implying that when the country's FDI increases by 1% the country's economic growth is expected to decline by 3.62%. The results found are similar to that of Jilenga et al. (2016) who found that FDI negatively affects economic growth. Furthermore, they stressed out that it was also insignificant and contradicting with their prediction that FDI significantly and positively affects economic growth. The study findings are further supported by Joshua et al. (2020), and Fatoki and Muoki (2021), studies that found that there is a negative relationship between FDI and economic growth. Contradictions were picked on the industrial organization theory that reveals that internal businesses have an advantage during foreign investment inflows as mentioned by Morgan and

Katsikeas (1997), Kok and Ersoy (2009), and Maboa and Ncanywa (2020). South Africa fails to reveal FDI benefits associated with spillover from productivity gain, diffusion of knowledge and technology from foreign investors to local firms and labourers, efficient resource allocation and lower prices during the study period as emphasized by Demena and van Bergeijk (2019), and Mkombe et al. (2021).

External debt and the real interest rate also indicate a negative effect on the country's GDP. The findings are supported by Megersa and Cassimon (2015), who found that public debt has a negative relationship with economic growth between the periods of 2005 to 2011 in developing countries. When external debt is expected to increase by 1% the country's GDP will decline by 0.63%. Furthermore, if the real interest rate was to increase by 1%, GDP will decrease by 0.91%. The findings contradict with the study of Babu et al. (2015), Jilenga et al. (2016) and Ndubuisi (2017), who revealed that there is a long-run relationship between external debt and GDP. However, these study findings are in accordance with Kharusi and Ada (2018), who revealed that there is a negative and significant influence of external debt on economic growth. According to Sandow et al. (2022), the imposition of higher marginal tax by external creditors (funders), decreases a country's growth. If the country accumulated higher debt, it chases away investors and reduces economic growth as outlined in debt and economic growth theory. Turan and Yanikkaya (2021), supported this theory by revealing that developing countries can increase their private investment and economic growth by lowering or reducing higher levels of public debt.

Table 4: ARDL short run results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDI)	-0.002873	0.000805	-3.568455	0.0161
D(EXTDEBT)	-0.000691	0.000298	-2.320141	0.0680
D(RIR)	-4.09E-05	0.000572	-0.071537	0.9457
CointEq(-1)	-0.920858	0.110455	-8.336940	0.0004

Authors own computations.

Having established the long run cointegration of the variables as well as the level of stationarity, it is a necessity to check the error correction mechanism (ECM). The speed of adjustment (CointEq (-1)) is the main focus in the short run. The ECM that is the speed of adjustment is statistically significant, with a speed of adjustment of -0.920858. The ECM results imply that the estimated model will be able to return to equilibrium at the speed of 92%.

4.3. Diagnostic test results

Only three diagnostic tests were conducted in the study, namely the Jarque-Bera normality test, Breusch-Godfrey Serial Correlation LM Test and the Heteroskedasticity ARCH test, as indicated in table 5.

Table 5: Diagnostic results

TEST	Null hypothesis (H_0)	Probability	Results
Jarque-Bera normality test	Normally distributed	0.577357 > 0.05	The series is normally distributed. H_0 is accepted and not rejected.
Breusch-Godfrey Serial Correlation LM Test	No serial correlation	0.7447 > 0.05	There is no serial correlation in the model. H_0 is accepted and not rejected
Heteroskedasticity Test: ARCH	No heteroskedasticity	0.1764 > 0.05	There is no heteroskedasticity in the model. H_0 is accepted and not rejected

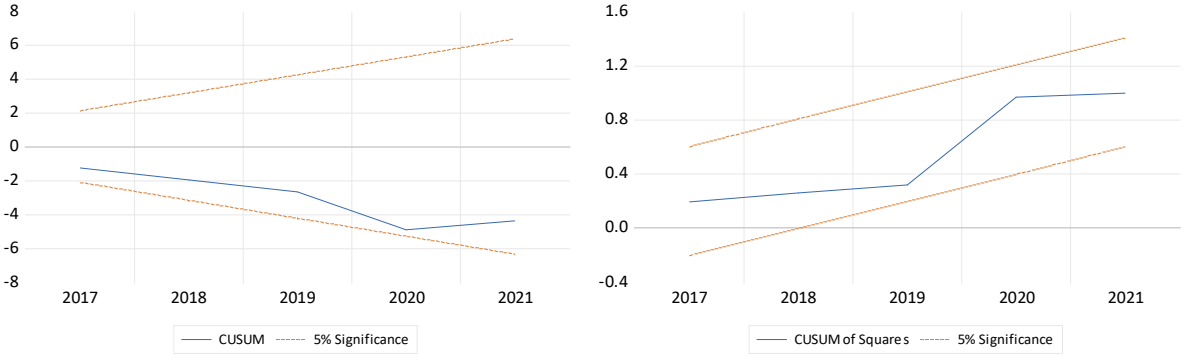
Authors own computations.

The Jarque-Bera normality test revealed that the series is normally distributed as the probability value was found to be 0.577357 and greater than 0.05. Breusch-Godfrey Serial Correlation LM had a probability value of 0.7447 which indicates that there is no serial correlation in the model as the probability value is greater than 0.05. Lastly, the ARCH heteroskedasticity test was also conducted, which found that there is no heteroscedasticity in the model as the probability value of 0.1764 is greater than 0.05. From the diagnostic results it can be stated that the model does not suffer from serial correlation and heteroskedasticity problems.

4.4. Stability results

The CUSUM and CUSUM of squares stability tests were conducted to check if the model is stable, as illustrated in figure 1.

Figure 1: CUSUM and CUSUM of squares



Authors own computations.

The CUSUM and CUSUM of squares trend within the 5% significance line. The results indicate that the CUSUM and CUSUM of squares model is stable at 5% significance level as alluded to by Emir and Bekun (2019), and Okunola (2016).

5. Conclusion and recommendations

The study aim was to examine the linkage between FDI, external debt and economic growth in South Africa, for the periods of 1994 to 2021. The ARDL cointegration bound test was utilized as the approach to examine the linkage between the variables. The variables were determined to have a long-run link since there was a cointegrating relationship according to the ARDL bound test. In both the long- and short-run of this study, real interest rates, external debt, and FDI all had a negative impact on economic growth. The findings of this study demonstrate that real interest rates, external debt, and FDI do not stimulate economic growth in South Africa. These results concur with those of Joshua et al. (2020), who claimed that FDI does not necessarily lead to economic growth in South Africa. Furthermore, the findings contradict our priori expectations that FDI causes economic growth. These findings further contradict with the modernization theory that contends that FDI provides improvement to the host country through technological advancement and human capital development.

Moreover, these study findings are backed by Fatoki and Muoki (2021) study, which emphasized that Kenya, Uganda, and Tanzania's domestic debt revealed significant and negative stimulus on economic growth between 1963 to 2019. These findings were also noted by Liu and Lee (2018), who emphasized that public debt and economic growth are applied without full knowledge or clarity about the concepts of crowding out or debt overhanging process. This made developing countries to be despondent with no way out, while their economic growth continues to deteriorate. There is a need

for South Africa to restructure its FDI and public debt policy to align with Krugman's (1988), debt overhang theory. This will aid the country to attract relevant and enough FDI and assist the country during the external debt repayment process. This will promote the country's repayment process to fall within the predetermined value of public debt, attract FDI and further sustain the country's economic growth.

Future research on the relationship between FDI, external debt, and South Africa's economic growth, including financial institutions, can be done to determine whether the country should continue to accept recent FDI or should look for new FDI inflow.

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