IMPACTS OF EXPORT AND ECONOMIC GROWTH ON FDI INFLOWS: AN ARDL APPROACH FOR SOUTH AFRICA ECONOMY

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Abstract

FDI inflow depends on the export and economicgrowth of the economy, protection of property rights, regulatory openness, and trade liberalization are all essential to drawing inflows of foreign direct investment. Sequel to this, this study examines the impact of export and economic growth on foreign direct investment inflows in South Africa. The data for the study were obtained from World Development Indicator (WDI, 2022) which covered from 1990-2022. The ARDL methods were employed to analyze the data.The findings indicates that GDP has a positive but weakly significant influence on foreign direct investment inflows in South Africa.Exchange rates have a negative and considerable effect on foreign direct investment inflows. This is indicative of instability in the exchange rate and the low levels of economic growth in South Africa.Policies that encourage the retention of FDI inflows should be used by South Africa authorities in addition to those that draw in new investment.

Introduction

FDI influx depends on the quality of institutions and openness to the economy. Protection of property rights, regulatory openness, and trade liberalization are all conducive to drawing in high-caliber investment. It is anticipated that FDI will boost innovation, productivity, and diversification under the superior institutional setting. Macro instability, such policy uncertainty or inflation, and weak institutions limit the long-run growth benefit from FDI (Uzar, 2024; (King & Du, 2023).
Through the acquisition of innovation, the creation of jobs, and the acquisition of executive expertise, foreign direct investment (FDI) has accelerated technical growth. This is a crucial component of South Africa's development objective. The nation's economy has become more diverse throughout time, with the mining and services industries setting the standard for luring foreign direct investment (FDI). Despite the advantages of foreign direct investment (FDI), there are still questions about the extent and longevity of this impact on South Africa's long-term economic growth. This is particularly true in light of the erratic nature of foreign investment trends and home challenges such a shortage of skilled personnel and technological skills. (Aurangzeb &Stengos, 2014; Qaseem, 2023)
In essence, the world has seen tremendous advancements in international economic integration. This has made it easier for

foreign direct investment (FDI) to move between nations, making it an important factor in the integration of the world economy. Regarding the topic of this article, the primary driver of South Africa's economic growth is the inflow of foreign direct investment (FDI), which creates direct, stable, and long-lasting partnerships. Notably, economic efficiency, huge population, enormous consumer market, fast-growth economies, and various export-import policies have positioned SA as major recipients of global FDI investment. Their integration and alignment in a few areas, such as geography, demographics, and history, is what makes them appeal (Hölscher et al., 2010; Sekmen and Gökirmak, 2020).

Foreign direct investment (FDI) has long been seen as a critical component of export and economic growth, especially in developing countries like South Africa. Through the purchase of profitable assets, businesses can develop a physical presence overseas through the international strategy known as foreign direct investment (Aurangzeb &Stengos, 2014; Popescu, 2014; Subedi et al., 2024), foreign direct investment is defined as an international investment made by an investor in a foreign nation with the goal of increasing their product market, earning a higher return, and taking advantage of economies of scale. The nation has often attracted significant international investment because of its advantageous location, varied economy, and friendly business environment.

During SA's transition from an agriculture-based economy to a high-tech industrial and export-driven economy in the 1990s, foreign direct investment (FDI) continued to be the key catalyst. FDI has had a significant role in productivity growth, technology transfer, and capital formation. FDI is thought to be a more stable alternative than other capital flows, but it may potentially expose the economy to external shocks (Le et al., 2023; (Chowdhury, 2024; Mamun & Kabir, 2023; Rakshit, 2022).

On the other hand, the region's technological and environmental dynamics influence South Africa's GDP growth in relation to foreign direct investment. Based on this context, the EKC hypothesis pertains to a nonlinear relationship in which economic expansion initially increases environmental deterioration before improving environmental quality at a threshold. FDI has been essential to Malaysia's economic growth and is frequently correlated with the country's levels of infrastructure and technology advancement. However, to achieve sustainability in terms of economic development, strategic management at the environmental level will be required (Othman et al., 2024; (Elimam&Alattas, 2025; Hobbs et al., 2021; Kenh& Wei, 2025)

One of the most significant measures of a nation's economic performance is foreign direct investment, and effective governance requires an understanding of its drivers. Openness to trade, GDP growth, and inflation stand out among the many variables that influence FDI influx, especially in South Africa. Access to larger markets, improved competition, and better technology transfer are all benefits of trade-openness, which may boost economic growth. Through increasing domestic capital, the introduction of new technologies, and the creation of jobs, FDI boosts GDP. By reducing purchasing power, skewing investment options, and undermining investor and consumer confidence, inflationespecially high or uncertain inflationcan undermine economic stability. More precisely, factors like capital, GDP growth rate, and inflation rate have a significant impact on micro and

macroeconomic variables (Amin et al., 20147;(Huynh Thi Dieu Linh et al., 2023; Majumder et al., 2022; NGUYEN, 2020; Pandya & Sisombat, 2017). Using South Africa as a case study, this paper examines how trade openness, GDP, and inflation affect FDI influx to better understand their roles in the dynamics of economic growth. forecasts better help us to comprehend the long-term effects of FDI inflow in an open economy. This is especially pertinent to South Africa, whose national development objectives call for the country to become a high-income, investor-driven economy. Therefore, by bridging the gap between empirical analysis and economic projections, this research makes an unprecedented contribution and provides results that are both academically and practically significant.

Literature Review

Many studies have looked at how exchange rate volatility and economic growth affect foreign direct investment (FDI) inflows, either globally or across economies. Thus far, it has been acknowledged that FDI inflows to host economies are mostly dependent on economic growth. However, due to differences in econometric methods, time periods, exchange rate volatility measurements, model misspecification, and the choice of countries for research, the findings about the relationship between growth and FDI are inconsistent (Akinlo and Gbenga Onatunji, 2021).

Among the several empirical research they examined, Iamsiraroj and Ulubaşoğlu (2015) discovered that 40% reported a statistically insignificant effect, 17% reported a substantial negative effect, and 43% reported a positive and significant effect on FDI on growth. On the other hand, Hanusch et al. (2018) found that exchange rate volatility had a detrimental effect on FDI inflow. Latief and Lefen (2018) concluded that in nations connected to the "One Belt and One Road" (OBOR) initiative, exchange rate volatility has a substantial and detrimental impact on both international FDI and trade.Balaban et al. (2019), different sectors in transition economies see different effects from exchange volatility on foreign direct investment. According to Asmae and Alam et al. (2019) empirical findings, FDDI flows in Bangladesh are greatly impacted by real exchange rate volatility. Using a variety of econometric methods and time periods, numerous empirical studies have examined the connection between foreign direct investment (FDI) and economic growth in Nigeria.

Using ARDL as well, Oloyede et al. (2018) found that FDI had a negative short-term but favorable long-term impact on economic performance, underscoring the necessity of a persistent, long-term policy emphasis. The body of research demonstrates that sanctioned nations frequently suffer grave economic consequences. For example, sanctioned nations may see a decline in trade (Afesorgbor and Mahadevan, 2016; Crozet and Hinz, 2020), foreign aid (Early and Jadoon, 2016), aggregate economic growth (Gutmann et al., 2023), financial crises (Peksen, 2019), and an increase in poverty (Neuenkirch and Neumeier, 2016). The relationship between sanctions and total FDI flows has been the subject of a few empirical studies, with varying degrees of success. Here is a quick review of these. Biglaiser and Lektzian (2011) empirically examined whether sanctions implemented by the United States (US) had an impact on aggregate foreign direct investment (FDI) inflows from US investors into the targeted nations in one of the first and most prominent research on this subject. By employing a monadic country-level panel-

data comprising 171 nations from 1965 to 2000, the study demonstrated a strong negative link between sanctions and FDI. It was discovered that US investors had pulled their money out of the targeted nations before the sanctions were put in place because the increased risk of the sanctions outweighed the potential returns.

Lektzian and Biglaiser (2013) examined the impact of US sanctions on international foreign direct investment (FDI) using a similar monadic panel structure that covered 171 countries between 1969 and 2000. The study focused on how foreign multinational corporations react when the US imposes economic sanctions on targeted countries. This was one of the first studies to examine the global spillover effects of such sanctions, specifically determining whether foreign companies would be reluctant to make more investments in the sanctioned nations or would be shrewd enough to fill the investment gap left by US companies. The findings suggested that third countries reacted more opportunistically to such instances of penalty, as global FDI grew dramatically. In a similar vein, Shin et al. (2016) evaluated the effects of sanctions imposed between 1970 and 2005 on trade and capital flows (including FDI and FPI) by a cross-country panel analysis comprising 133 developing nations. The authors concluded that MNEs do not always "rally around the flag" because the empirical results did not reveal any significant effects of penalties on any of the outcome variables.

Mirkina (2018) investigated the temporal dynamics of the influence of sanctions on aggregate FDI in another widely referenced study. Using data covering 184 nations from 1970 to 2010, the study examined the short-run and long-run effects of punishment application on FDI. According to the results, punishments typically have significant short-term consequences but less long-term ones.

In conclusion, the empirical evidence is still inconsistent and highly context-dependent, despite substantial studies highlighting the importance of FDI and industrialization as drivers of economic growth. For South Africa to create policies that capitalize on their synergistic impacts, it is essential to comprehend the intricate link between export, economic growth and FDI inflow.

METHODS

This study examines the relationship between exports, economic growth and exchange, inflation, and foreign direct investment (FDI) inflow in South Africa using secondary datasets from 1990 to 2024. The World Bank's World Development Indicator Database provided information on inflation, exports, FDI inflow, and economic growth. Descriptive statistics, bound testing, and Auto-Regressive Distributed Lag (ARDL) were the statistical methods used in the study to accomplish its goals. Understanding the comprehensive economic dynamics influencing FDI inflow into SA will also result from this.

$$FDII = f(GDP, EXR, EXP, INF, EXD) \quad (1)$$

FDII = Foreign direct investment inflow
EXR = Exchange rate
GDP = Economic growth
EXP = Export
INF = Inflation rate
EXD = External debt

Expression (1) as shown above can be modelled below

$$FDII_{.} = \emptyset_0 + \emptyset_1 \text{EXR} + \emptyset_2 \text{GDP} + \emptyset_3 \text{EXP} + \emptyset_4 \text{INF} + \emptyset_5 \text{EXD} + \mu \quad 2$$

$$\Delta FDII_{.} = \emptyset_0 + \sum_{s=1}^{J} . \emptyset_{1s} \Delta FDII_{.2t-n} + \sum_{s=1}^{J} . \emptyset_{2j} \Delta EXR_{.t-n} + \sum_{s=0}^{J} . \emptyset_{3j} \Delta GDP_{.t-n} + \sum_{s=0}^{J} . \emptyset_{4j} \Delta EXP_{.t-n} + \sum_{s=0}^{J} . \emptyset_{5s} \Delta INF_{.t-n} + \sum_{s=0}^{J} . \emptyset_{6s} \Delta EXD_{.t-n} + \partial_1 FDII_{2t-1} + \partial_2 EXR_{t-1} + \partial_3 GDP_{t-1} + \partial_4 EXP_{t-1} + \partial_5 INF_{t-1} + \partial_6 EXD_{t-1} + \mu \quad 3$$

$$\Delta FDII_{.} = \emptyset_0 + \sum_{s}^{J} . \emptyset_{1j} \Delta FDII_{.2t-n} + \sum_{j}^{J} . \emptyset_{2j} \Delta EXR_{.t-n} + \sum_{j}^{J} . \emptyset_{3j} \Delta GDP_{.t-n} + \sum_{.}^{J} . \emptyset_{4m} \Delta EXP_{.t-n} + \sum_{m}^{J} . \emptyset_{5m} \Delta \text{INF}_{.t-n} + \sum_{m}^{J} . \emptyset_{6m} \Delta \text{EXD}_{.t-n} + \partial_1 FDII_{2_{t-1}} + \partial_2 EXR_{t-1} + \partial_3 GDP_{t-1} + \partial_4 EXP_{t-1} + \partial_5 INF_{t-1} + \partial_5 EXD_{t-1} + \in ECT_{t-1} + \in_t \quad 4$$

RESULTS AND DISCUSSION

The descriptive statistics for the variables utilized in the study that indicate their statistical features are presented in Table 1. The standard deviations of all the variables are low, except for GDP and EXR. The gaps between the ranges were found to be rather narrow

	FDI	GDP	EXR	EXPORT	INFL	FDB
Mean	2.99E+09	81.47707	109.3213	4.39E+10	6.653553	4.209955
Median	2.01E+09	81.88251	100.5035	3.99E+10	5.780169	3.450091
Maximum	8.84E+09	115.3179	273.0098	1.02E+11	15.33478	8.361978
Minimum	3.35	36.54339	49.77629	2.81E+09	-0.69204	1.413754
Std. Dev.	2.62E+09	20.28347	48.82323	3.16E+10	3.382352	2.204725
Skewness	0.883935	-0.63519	1.8185	0.329587	0.774788	0.38718
Kurtosis	2.60041	2.903027	6.328555	1.847562	3.933814	1.703507
Jarque-Bera	4.516922	2.231975	33.42219	2.423606	4.500638	3.135723
Probability	0.104511	0.327592	0	0.29766	0.105366	0.208491
Sum	9.87E+10	2688.743	3607.603	1.45E+12	219.5673	138.9285
Sum Sq. Dev.	2.20E+20	13165.41	76278.64	3.20E+22	366.0899	155.5459
Observations	33	33	33	33	33	33

The bound testing provided below indicates the presence of cointegration as outlined in Table 2. The Cointegration test shows that the F statistics for the ARDL test to check

cointegration of model variables are 3.94, that is, >I(0) and I(1) at all levels confirm a long-term correlation between the parameters. This reveals that across the 1990–2023 research period, FDII is cointegrated with a subset of the variables in our model at the 5% significance level.

Table 2: Cointegration Test

Test Statistic	Value	k
F-statistic	3.945594	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Table 3 indicate a growth in GDP (lag1 and 2) has a positive but weakly significant influence on foreign direct investment inflows in South Africa. Awolusi and Adeyeye (2016) observed that FDI influx had a favorable but weakly significant influence on economic growth. The coefficient of GDP at current period also shows a negative component of FDI inflow, which is negative and significant. This shows that GDP can be damaging to FDI inflows in South Africa. The findings confirm the notion from the various growth theories as a decline in FDI inflows will impede the pace of technology diffusion, innovation and knowledge acquisition which in turn affect negatively on economic growth. The outcome of the study is in line with that of Khaing (2016) who concluded that divestiture has a negative and significant influence on economic growth in Myanmar. The findings contrast those of Glomsrod and Wei (2018) concluded that divestment in fossil fuels will improve economic growth and FDI by 2030. It should be underlined that because of South Africa's reliance on FDI, notably in the mining industry, divestment may harm economic growth if done prematurely.

Exchange rates have a negative and considerable effect on foreign direct investment inflows. This is indicative of instability in the exchange rate and the low levels of economic freedom in South Africa as the country was placed 83rd out of 162 countries in 2018. Export and inflation have a positive and significant effect on FDII which confirms a priori expectations. Inflation as a metric of macroeconomic stability is positively signed which supports theoretical expectations.

The effect of FDB on FDII matches the detrimental shift in FDB largely reduces FDII and the outcome is noticeable at the 5% level. The finding contradicts that of Magombeyi and Odhiambo (2018) who found that the effect of FDB on FDII in South Africa is inconclusive. The coefficient of the negative change in FDB is negatively indicated showing that an increase in FDB reduces FDII. In line with the findings in the GDP divestment nexus, the effect of FDB outweighs that of an increase in FDII. Therefore, FDB is adverse to the purpose of

FDII probably because of the reduction in economic growth, employment and incomes linked with closures of enterprises or a scale down of operations.

Table 3: Long run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FDII(-1)	0.90873	0.272209	3.338355	0.0124
FDII(-2)	-0.993377	0.440474	-2.255248	0.0587
FDII(-3)	-1.466292	0.475159	-3.0859	0.0177
GDP	-8.86E+08	2.50E+08	-3.548857	0.0094
GDP(-1)	2.53E+08	1.06E+08	2.392225	0.048
GDP(-2)	2.32E+08	1.17E+08	1.985175	0.0875
GDP(-3)	2.79E+08	91330081	3.05527	0.0184
EXR	-6.424930	7.469514	-0.860154	0.4182
EXR(-1)	1.484970	8.107886	1.838093	0.1086
EXR(-2)	-1.268929	6324311	-2.006431	0.0448
EXPORT	0.10507	0.036189	2.903366	0.0229
EXPORT(-1)	0.078015	0.039367	1.981741	0.088
EXPORT(-2)	0.003017	0.032667	0.092348	0.929
EXPORT(-3)	0.102606	0.044584	2.301417	0.0549
INFL	7.11E+08	2.17E+08	3.278249	0.0135
INFL(-1)	13046619	1.74E+08	0.07497	0.9423
INFL(-2)	5.68E+08	2.42E+08	2.348984	0.0512
INFL(-3)	5.03E+08	2.13E+08	2.363617	0.0501
FDB	1.51E+08	2.96E+08	0.509301	0.6262
FDB(-1)	-1.88E+08	3.25E+08	-0.577061	0.0572
FDB(-2)	34721040	3.53E+08	0.098354	0.9244
FDB(-3)	-3.49E+08	2.53E+08	-1.382921	0.2092
C	-2.56E+08	6.48E+09	-0.039494	0.9696

The results imply that FDB are adverse to economic growth and development in South Africa. The country relies on foreign direct investments, and this is particularly emphasized by the government's desire to obtain substantial inflows of FDI by 2030.

Table 3: Short run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDII(-1))	2.45967	0.774052	3.177654	0.0155
D(FDII(-2))	1.466292	0.475159	3.0859	0.0177
D(GDP)	-886115246	249690320	0	0
D(GDP(-1))	-231886141	116808892	0	0
D(GDP(-2))	-279038089	91330081	0	0
D(EXR)	-6424930.08	7469514.2	0	0
D(EXR(-1))	12689296.2	6324310.8	0	0
D(EXPORT)	0.10507	0.036189	2.903366	0.0229
D(EXPORT(-1))	-0.003017	0.032667	-0.092348	0.929
D(EXPORT(-2))	-0.102606	0.044584	-2.301417	0.0549
D(INFL)	711009585.6	216886966	0	0
D(INFL(-1))	-567982590	241799264	0	0
D(INFL(-2))	-503261111	212919914	0	0
D(FDB)	150702785.8	295901251	0	0
D(FDB(-1))	-34721040	353020539	0	0
D(FDB(-2))	349282053.7	252568406	0	0
CointEq(-1)	-2.550939	0.70138	-3.637031	0.0083

The error correction term, which is negative in all models and represents the long-term convergence of the variables, is the rate of adjustment along the temporal path of the variables to the long-run equilibrium. However, only for the two models that include regulatory quality and corruption control is it negative and statistically significant at the one percent significance level. The coefficients (-2.55) show that around 255% of this disequilibrium is rectified each year in the long term, which is a good pace of adjustment.

Stability Test

The CUSUM and CUSUMSQ graphs (red lines) in Figures 1 and 2 were created to confirm parameter stability at the 5% significance level. Plots frequently show that the long-term coefficients are within five percentiles and are steady.

Figure 1: Cusum

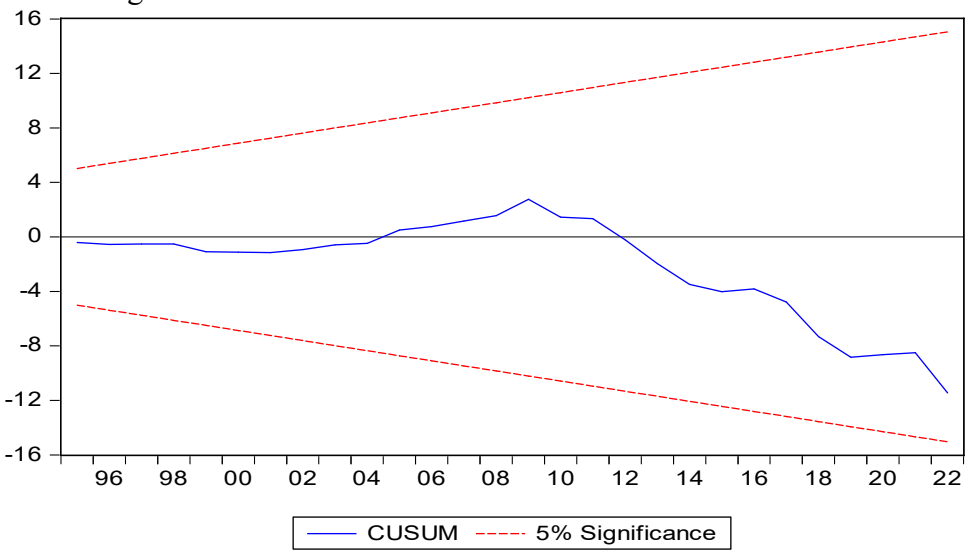
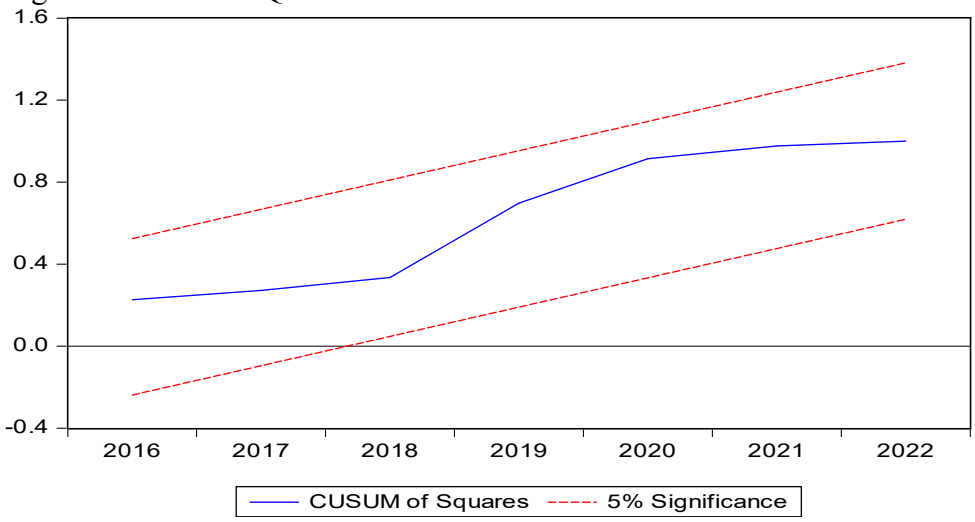
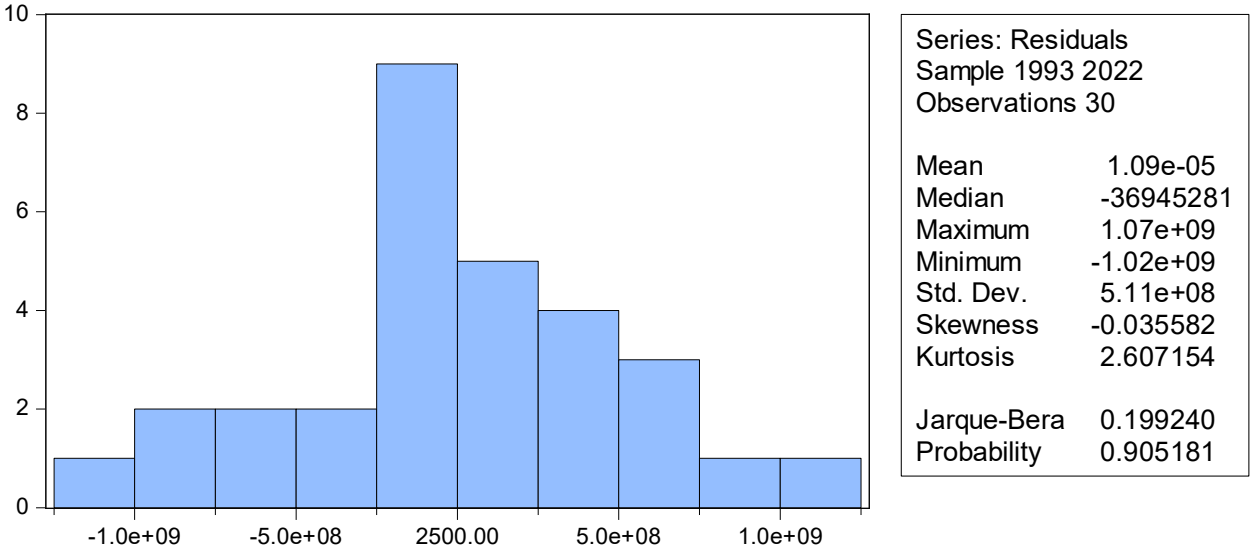


Figure 2: CUSUMSQ



Tables 5 and 6 additionally contain a range of diagnostic tests conducted on the ARDL model. The Breusch-Godfrey and ARCH tests are used to assess the serial correlation of the model. The model exhibits no evidence of serial correlation because both tests provide P-values of 0.78, above the significance level of alpha=0.05.

Fig. 3: Normality Test



The homoskedasticity assumption is upheld when applying the Breusch-Godfrey Test for heteroskedasticity, which is shown by a P-value greater than 5%.

Table 4: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.991747	Prob. F(2,5)	0.2311
Obs*R-squared	13.30271	Prob. Chi-Square(2)	0.0013

Table 5: Heteroskedasticity Test: ARCH

F-statistic	1.272903	Prob. F(1,27)	0.2691
Obs*R-squared	1.305638	Prob. Chi-Square(1)	0.2532

Conclusion and Recommendations

The study uses the paradigm created by Worrell (1976) to explain the relationships between exports, economic growth, and FDI inflows to South Africa. FDII insufficiency is always a possibility because economic growth is one of the factors that affects FDII growth. According to Worrell (1976), knowledge of the macroeconomic structure of the economy under study is the foundation for the variables that determine FDII. The primary elements influencing the FDII in the context of the South African economy are the exchange rate, inflation, exports, and urbanization. To prevent economies from holding onto excess reserves and losing out on emerging industries that are lagging, FDII offers advice on the ideal number of reserves to hold.

The analysis supports the wealth of research showing that foreign direct inflows are essential for attracting foreign direct investors, boosting exports, and protecting against unforeseen shocks. As a result, it is imperative that the nation review its exchange rate strategy and track how it affects reserves.

Additionally, SA economy is open and thus based on the relevance of exports and exchange rate, the countries are urged to focus on export-oriented projects to improve their foreign exchange revenues. Maintaining price stability is urged as most of the SA are characterized by high inflation rates, and so this study urges monetary authority to participate in robust steps to ensure that consumers are safeguarded against effects of high inflation.

The research makes several recommendations; Policies that encourage the retention of FDI inflows should be used by South African authorities in addition to those that draw in new investment. Attracting foreign direct investment (FDI) inflows has been the primary emphasis of policymakers, with retention of foreign capital receiving less attention. World Bank (2019) demonstrated that policymakers need to increase retention of FDI inflows by removing irregular activity involving adverse regulator changes as well as transfer and convertibility constraints. In South Africa, it is crucial to improve economic freedom, which includes commercial freedom, tax laws, regulatory frameworks, and political stability.

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