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The determinants of private investment: Evidence from South Africa

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Abstract

Purpose — This paper examines the determinants of private investment. The result can help the government determine which investment drivers to consider when formulating policies to stimulate private investment.

Methodology — It uses a Nonlinear Autoregressive Distributed Lag (NARDL) estimation approach with time series data from 1965 to 2022.

Findings — The results indicate that positive shocks in economic growth lead to an increase in private investment over the long term. Conversely, both positive and negative shocks in inflation are found to positively impact private investment in the long run. Additionally, domestic credit to the private sector has a negative impact in both the short and long term.

Implications — The government should develop policies designed to create an environment conducive to private investment. These policies should focus on ensuring easy access to finance, enhancing the openness of the economy, and maintaining a low and stable inflation rate.

Originality — Few studies have fully explored the important drivers of private investment, especially in South Africa. Moreover, the studies conducted in South Africa have used other cointegration techniques, which are relatively weak compared to the NARDL used in the current study.

Keywords — Private investment, Economic growth, Government policy, NARDL approach

Introduction

The private sector is believed to contribute more than the public sector to the country's economic growth (see Ghura, 1997; Sakr, 1993). According to Seruvatu and Jayaraman (2001), the private sector is seen to have higher efficiency and less associated with corruption than the public sector. Majeed and Khan (2008) further state that countries with high participation in private investment achieve higher economic growth. Therefore, private investment is a driver of growth in developing countries. In the literature, many macroeconomic variables have been argued to be a force driving investment over the years. Studies such as Hassan and Salim, (2011), Ouédraogo et al. (2020), and Ayeni (2020), among others, have studied the determinants of private investment, but the results are inconsistent. Many studies have proposed the factors that determine private investment, such as public sector investment (Ribeiro & Teixeira, 2001), (Ayeni, 2020), external debt (Bello Ajide & Lawanson, 2012), interest rates (Akçay & Karasoy, 2020), inflation (Geddafa, 2023), economic growth (Karagöz, 2010), trade openness (Boachie et al., 2020). Despite the importance of private investment in the economic growth process, the results of the studies investigating the determinants of private investment have been mostly varied and inconclusive at best – leaving the importance of this paper undeniable.

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The study comes when the government is looking at private investment to promote economic growth and is working on policy reforms to promote private investment. The National Development Plan (NDP) mentions a fundamental change required to increase investment, expand employment, and remove constraints on economic growth (National Treasury, 2018). However, the level of private investment in South Africa has fluctuated and has been unsatisfactory since the 1980s. For example, private investment as a percentage of GDP decreased from 18.30 percent in 1980 to 10.65 percent in 2021 (World Bank, 2023).

Although several studies have been conducted on the determinants of investment in developing and developed countries, see Abbas et al. (2022); Awad et al. (2021), it has not been adequately covered in South Africa. Very few studies have fully explored the key drivers of private investment in South Africa. Moreover, the studies in South Africa have used cointegration techniques such as Johansen-Juselius, which have been found to be relatively weak when compared to the Nonlinear Autoregressive Distributed Lag (NARDL) used in the current study, see Malumisa (2013) and Molocwa et al. (2018). As far as our concern, there is no study that has examined the determinants of private investment in South Africa using the NARDL. Since the country engages with the private sector to boost the economy, the study aims to determine which macroeconomic factors prompt private investment. Since private investment is one of the determinants of economic growth, see Michael and Aikaeli (2014) and Ngoma et al. (2019), the study attempts to find the drivers of private investment so the government can know which factors they should look at to stimulate private investment. Therefore, the study will attempt to examine the determinants of private investment using the NARDL approach.

The findings of this paper will assist policymakers in developing policies and strategies for the promotion of private-sector investment as well as investment-related policies. Furthermore, the study contributes to the existing empirical literature on the macroeconomic determinants of domestic private investment in developing countries and the overall literature on private investment in general. Also, the debate on the key determinants of private investment has remained inconclusive over the years. Although many studies have examined the macroeconomic and financial determinants of private investment, few have examined the asymmetry of the determinants, and this paper tries to fill the gap.

The theories that examine the factors that affect investment decisions include the Keynesian theory, the Neoclassical theory of investment, Tobin's Q-Theory of investment, the Accelerator theory of investment, and the flexible accelerator model, among others. In the Neoclassical theory of investment output, the price of the capital determines the desired capital stock. The Accelerator theory assumes a linear relationship between investment and output. According to Omojolaibi et al. (2016), the accelerator model assumes that the demand for capital stock is obtained from the demand for goods. This means that if the demand increases for the goods that capital equipment produces, and the current machines cannot meet the expected demand, then new machinery will have to be bought to increase the production of the goods. Therefore, the changes in output directly affect the investment level (Omojolaibi et al., 2016). The flexible accelerator model is a modified version of the accelerator theory. This theory is based on optimal capital accumulation, assuming that investment is a function of the output level and the user cost of capital. The Tobin Q-theory of investment suggests that the decisions on investment are functions of the ratio of the addition to the firm's value due to an extra unit of capital installed to its replacement cost (Geddafa, 2023).

Over the years, the literature has shown that various macroeconomic variables have been found to be the determinants of private investment. However, the findings in the literature are mixed and inconclusive. The empirical evidence suggests that the determinants of private investment vary in each country. The evidence also shows that the determinants are largely driven by the time series or cross-sectional/panel data techniques.

Studies that have used time series data include Ribeiro and Teixeira (2001), Karagöz (2010), Michael and Aikaeli (2014), Magableh and Ajlouni (2016), and Awad et al. (2021), among others. Ribeiro and Teixeira (2001) investigated the determinants of private investment in Brazil from 1956

to 1996. The results positively impact public investment, output, and credit, while the exchange rate and inflation negatively affect private investment.

Karagöz (2010) examined the determinants of private investments in Turkey in the long run between 1979 and 2005 using the ARDL model. Their analysis shows that real GDP, the ratio of private sector credit to GDP, and private external debt are positive in the long run. In contrast, real exchange rates, inflation, and trade openness negatively and significantly impact private investment. Using the error correction model, Michael and Aikaeli (2014) found that the variables that influence private investment growth are public investment, GDP growth, and credit to the private sector in Tanzania. In Jordan, Magableh and Ajlouni (2016), using the ARDL approach, found that private investment is positively correlated to real GDP growth and is negatively associated with real interest rates and real public investment in both the long and short run. Also, Using the ARDL approach, Gondim et al. (2018) examined the relationship between outward foreign direct investment and domestic investment in Brazil and China from 1975 to 2013. The study found that outward foreign direct investment crowds are in domestic investment in both countries.

Akçay and Karasoy (2020) investigated the determinants of private investment in Turkey and found that democracy positively impacts private investment. The study also found that interest rate is an obstacle to private investment while financial development and GDP growth rate stimulate private investment in the country. Semra (2020) also found that private sector credit, GDP per capita, and exchange rate positively impact private investment, while interest rate has no significant relationship with private investment in Turkey. In Gambia, Ayeni (2020) examined the determinants of private investment in Gambia using the ARDL to cointegration approach and data from 1980 to 2019. The study found that in the long run, government investment, credit to the private sector, and interest rate have a positive influence, while real GDP and exchange rate have a negative impact. In the short run, external debt, credit to the private sector, and government investment are positive determinants. At the same time, interest rates, exchange rates, and inflation are the negative determinants of private investment. Medhioub and Makni (2020) examined the relationship between oil prices and stock market return uncertainties with private investment in Saudi Arabia. The study found a long-run relationship between private investment, oil price, and the stock market and that the stock market index has a significant positive effect on private investment in the short run.

Awad et al. (2021) examined the impact of interest rates and political instability on domestic private investment in Palestine using the ARDL technique. They found that there is no long-run relationship. Boachie et al. (2020) examined the effect of financial development and trade openness in India from 1960 to 2013. The ARDL found that financial development and trade openness significantly positively affect private-sector investment in the long and the short run. In another study for India, Shankar and Trivedi (2021) examined the relationship between public and private investment from 1981 to 2019 using the ARDL methodology. They found that the public and the private sector complement each other at the aggregate and sectoral levels. Also using ARDL, Maluleke et al. (2023) examined the determinants of domestic private investment in Malawi from 1980 to 2018. It found that inflation and interest rates are the negative determinants of private investment in the long- and short-run. At the same time, trade openness is a positive determinant in the short run. Jobir (2023) examined the factors determining private investment performance in Ethiopia using ARDL and data from 1992 to 2018. The study's findings show that growth in GDP and access to domestic credit have significant positive effects on private investment. In contrast, trade openness, external debt, and real effective exchange significantly negatively affect private investment. In another study for Ethiopia, Geddafa (2023) found that inflation rate, public investment, and real effective exchange rate have a negative effect on private investment in both the short and long run. In the long run, domestic credit to the private sector, foreign direct investment, real GDP, and trade openness were found to have a positive impact on private investment.

Studies that used cross-sectional and panel data techniques include Misati and Nyamongo (2011), Al-Sadig (2013), Ngoma et al. (2019), Mose et al. (2020), Fonchamnyo et al. (2021). In a study of 18 sub-Saharan African countries, Misati and Nyamongo (2011) examined the relationship between financial sector development and private investment from 1991 to 2004. The results

revealed a negative relationship between interest rates on deposits and private investment, while the credit to the private sector has a positive impact. The study also found that the informal sector positively influences private investment and that in Africa, institutional variables play an important role in determining the level of private investment. In 91 developing host countries, Al-Sadig (2013) examined the effects of FDI inflows on private investment, using data from 1970 to 2000. The results reveal that FDI stimulates private domestic investment. Furthermore, the findings reveal that in low-income countries, the positive effects of FDI on private investment depend on the availability of human capital. Ngoma et al. (2019) investigated the macroeconomic determinants of private investment for 35 sub-Saharan African (SSA) countries using panel data covering 2000 to 2017. The study's findings reveal that GDP growth rate, interest rate, inflation rate, and public investment are the determinants of private investment in the 35 SSA countries.

In Kenya, Rwanda, and Burundi, Mose et al. (2020) examined the macroeconomic determinants of domestic-private investment from 2009 to 2018. They found that credit to the private and real GDP per capita has a positive and significant impact, while public investment has a negative and significant effect on private investment. Fonchamnyo et al. (2021) investigated the effects of external debt and foreign direct investment on domestic investment in sub-Saharan Africa using data from 1990 to 2017. The study found that in the short-run, foreign direct investment positively affects domestic investment. However, foreign direct investment and public debt crowd out domestic investment in the long run.

The studies reviewed show that the determinants of private investment vary across different countries and the techniques used, whether time-series or cross-sectional/panel data. Most of the previous studies have found that private investment is determined by credit to the private sector, interest rates, public investment, inflation, GDP growth, terms of trade, external debt, and exchange rate. However, the findings are inconclusive in some countries, and the determinants are found to have a negative effect. In contrast, in others, the same determinants positively affect private investment in developed and developing countries.

Methods

Following Mutenyo and Asmah (2010) and Shankar and Trivedi (2021), the study adopts a flexible accelerator theory to establish factors that determine private investment. The general empirical model of domestic private investment as a function of the desired level of output and other determinants is specified as follows:

$$PrvI_t = f(Y_t, Cred_t, Int_t, Inf_t, TO_t) \quad (1)$$

Where: $PrvI$ - the private investment; Y - the economic growth; $Cred$ - the credit to the private sector; Int - the real interest rate; Inf - the inflation rate and TO - the trade openness.

The independent variables selected for the study are supported by theoretical and empirical literature; therefore, their coefficients are expected to be statistically significant. When there is development in the economy, there will be an increase in economic activities, and businesses will invest more. This suggests that economic growth will have a positive effect on private investment. Domestic credit to the private sector is included in the model to account for the effect of financial development. Studies such as Boachie et al. (2020) have found that financial development positively affects private investment. The real interest rate is included to measure the user's capital cost. For example, an increase in interest rate is expected to raise the cost of borrowing, leading to a decrease in investment. Therefore, the real interest rate is expected to influence private investment. Inflation is used to proxy uncertainty in the economy. This suggests that inflation is expected to have an influence on private investment. Lastly, trade openness is included to capture how a country's openness influences the level of private investment. Bello Ajide and Lawanson (2012) suggested that trade openness positively impacts private investment. As a result, trade openness is anticipated to impact private investment positively.

The study will first test the variables for stationarity using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. This is to ensure that the variables included in the model are

not integrated of order 2 or higher. After determining the order of integration for each variable, the study performs the cointegration test and, as a result, determines the validity of the ARDL approach. There are many techniques to test for cointegration, such as the Engle-Granger approach and the Johansen-Juselius (Johansen & Juselius, 1990) approach. However, these methods have a low testing power, among other problems (Shrestha & Chowdhury, 2007). Therefore, this paper uses a nonlinear autoregressive distributed lag (NARDL) developed by Shin et al. (2014) to examine the cointegration relationship between private investment and its determinants. The NARDL is an extension of the ARDL model that can decompose a variable into positive and negative shocks. The NARDL decomposed X_t into its positive and negative partial sums as:

$$X_t = \alpha_0 + X_t^+ + X_t^- \tag{2}$$

where

$$X_t^+ = \sum_{J=1}^{t} \Delta X_t^+ = \sum_{j=1}^{t} \max(\Delta X_j; 0)$$

$$X_t^- = \sum_{J=1}^{t} \Delta X_t^- = \sum_{j=1}^{t} \min(\Delta X_j; 0)$$

Therefore, following Shin et al. (2014) economic growth, credit to the private sector, interest rate, inflation, and trade openness can be decomposed into partial sums of positive and negative shocks. The NARDL model aims to capture both short- and long-run asymmetries in the variables included in the study while reserving all merits of the standard ARDL approach (Cheah et al., 2017). The empirical model to examine the determinants of private investment is specified as follows:

$$PrvI_t = \alpha_0 + \beta_1^+ Y_t^+ + \beta_2^- Y_t^- + \beta_3^+ Cred_t^+ + \beta_4^- Cred_t^- + \beta_5^+ Int_t^+ + \beta_6^- Int_t^- + \beta_7^+ Inf_t^+ + \beta_8^- Inf_t^- + \beta_9^+ TO_t^+ + \beta_{10}^- TO_t^- + \mu_{1t} \tag{3}$$

The NARDL model from equation 3 is expressed as follows:

$$\begin{aligned}\Delta PrvI_t = {} & \alpha_0 + \textstyle\sum_{i=1}^{n} \alpha_{1i} \Delta PrvI_{t-i} + \sum_{i=0}^{n} \alpha_{2i}^+ \Delta Y_{t-i}^+ + \sum_{i=0}^{n} \alpha_{3i}^- \Delta Y_{t-i}^- + \\ & \sum_{i=0}^{n} \alpha_{4i}^+ \Delta Cred_{t-i}^+ + \sum_{i=0}^{n} \alpha_{5i}^- \Delta Cred_{t-i}^- + \sum_{i=0}^{n} \alpha_{6i}^+ \Delta Int_{t-i}^+ + \\ & \sum_{i=0}^{n} \alpha_{7i}^- \Delta Int_{t-i}^- + \sum_{i=0}^{n} \alpha_{8i}^+ \Delta Inf_{t-i}^+ + \sum_{i=0}^{n} \alpha_{9i}^- \Delta Inf_{t-i}^- + \sum_{i=0}^{n} \alpha_{10i}^+ \Delta TO_{t-i}^+ + \\ & \sum_{i=0}^{n} \alpha_{11i}^- \Delta TO_{t-i}^- + \beta_1 PrvI_{t-1} + \beta_2^+ Y_{t-1}^+ + \beta_3^- Y_{t-1}^- + \beta_4^+ Cred_{t-1}^+ + \\ & \beta_5^- Cred_{t-1}^- + \beta_6^+ Int_{t-1}^+ + \beta_7^- Int_{t-1}^- + \beta_8^+ Inf_{t-1}^+ + \beta_9^- Inf_{t-1}^- + \beta_{10}^+ TO_{t-1}^+ + \\ & \beta_{11}^- TO_{t-1}^- + \mu_{1t}\end{aligned} \tag{4}$$

Like the ARDL approach, the computed F-statistic is compared to the upper and lower critical values by (Pesaran et al., 2001) to confirm the asymmetrical cointegration in the long run. The null and alternative hypothesis to test cointegration for model 2a is expressed as follows:

$$H_0: \beta_1 = \beta_2^+ = \beta_3^- = \beta_4^+ = \beta_5^- = \beta_6^+ = \beta_7^- = \beta_8^+ = \beta_9^- = \beta_{10}^+ = \beta_{11}^- = 0$$

$$H_1: \beta_1 \neq \beta_2^+ \neq \beta_3^- \neq \beta_4^+ \neq \beta_5^- \neq \beta_6^+ \neq \beta_7^- \neq \beta_8^+ \neq \beta_9^- \neq \beta_{10}^+ \neq \beta_{11}^- \neq 0$$

The rejection of the null hypothesis confirms the asymmetric long-run association between the determinants and private investment. Afterward, the Wald test is used to identify the asymmetrical effects of public investment on private investment. The presence of long- and short-run asymmetry is confirmed by rejecting the null hypothesis. In the presence of cointegration, an error correction model (ECM) is specified is specified as follows

$$\begin{aligned}\Delta \mathrm{PrvI_t} = {} & \alpha_0 + \textstyle\sum_{i=1}^{n} \alpha_{1i} \Delta PrvI_{t-i} + \sum_{i=0}^{n} \alpha_{2i}^+ \Delta Y_{t-i}^+ + \sum_{i=0}^{n} \alpha_{3i}^- \Delta Y_{t-i}^- + \\ & \sum_{i=0}^{n} \alpha_{4i}^+ \Delta Cred_{t-i}^+ + \sum_{i=0}^{n} \alpha_{5i}^- \Delta Cred_{t-i}^- + \sum_{i=0}^{n} \alpha_{6i}^+ \Delta Int_{t-i}^+ + \\ & \sum_{i=0}^{n} \alpha_{7i}^- \Delta Int_{t-i}^- + \sum_{i=0}^{n} \alpha_{8i}^+ \Delta Inf_{t-i}^+ + \sum_{i=0}^{n} \alpha_{9i}^- \Delta Inf_{t-i}^- + \sum_{i=0}^{n} \alpha_{10i}^+ \Delta TO_{t-i}^+ + \\ & \sum_{i=0}^{n} \alpha_{11i}^- \Delta TO_{t-i}^- + \theta_1 ECM_{t-1} + \mu_t\end{aligned} \tag{5}$$

where ECM_{t-1} is the error correction term, which indicates the speed of adjustment back to long-run equilibrium. The coefficient of the lagged error correction term is expected to be negative and statistically significant to confirm a cointegration relationship further.

The study used time series annual data from 1965 to 2022. The data for all the variables included in the study is obtained from the World Development Indicators (WDI). The availability of reliable data on the key drivers of private investment in South Africa largely drove the selection of the study period.

Results and Discussion

Table 1 presents a descriptive statistics summary of the data. The table shows the mean, median, maximum, minimum, and standard deviation, among other things. Economic growth (Y) has the highest mean, as well as a maximum and minimum. On the other hand, interest rate (Int) has the lowest mean, minimum, and standard deviation of 4.116. The highest value for private investment (PrvI) is 18.908.

Table 1. Descriptive Statistics

	PrvI	Y	Cred	Int	Inf	TO
Mean	14.197	5282.860	89.137	3.201	8.162	48.012
Median	13.985	5180.579	93.176	3.567	6.881	47.428
Maximum	18.908	6263.104	142.422	12.691	18.654	65.975
Minimum	10.768	4269.700	50.085	-11.009	-0.692	34.321
Std. Dev.	2.070	603.073	30.166	4.116	4.393	7.160
Skewness	0.562	0.240	0.093	-0.704	0.432	0.344
Kurtosis	2.459	1.905	1.393	5.279	2.274	2.602
Jarque-Bera	3.692	3.395	6.218	17.038	3.022	1.500
Probabilty	0.158	0.183	0.045	0.000	0.221	0.472
Observations	57	57	57	57	57	57

The study utilizes the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to check for stationarity in the data. The stationarity tests conclude that all the variables are stationary and integrated of I(0) or I(1); therefore, the analysis can be performed using the NARDL bounds testing approach. The results of the stationarity tests for all the variables in levels and the first difference are presented in Table 2.

Table 2. Stationarity Test of all Variables

	ADF Test		PP Test	
Variable	Level	First Difference	Level	First Difference
PrvI	-2.836	-5.039***	-2.060	-4.712***
Y	-1.382	-5.300***	-1.368	-5.291***
CRED	-0.381	-4.811***	-0.316	-6.192***
INT	-4.038**	---	-4.038**	---
INF	-2.322	-6.897***	-2.162	-8.186***
TO	-2.463	-6.892***	-2.418	-7.423***

Notes: *** and ** indicate stationarity at 5% and 10% significance levels respectively

The cointegration test was performed after the variables were found to be stationary. The F-statistic is found to be 4.421, which indicates that the variables used in the study are cointegrated. This is shown by the F-statistic, which is higher than the critical values. Therefore, the study rejects the null hypothesis of no cointegration and concludes a long-run relationship between private investment and its determinants, i.e., economic growth, credit to the private sector, interest rate, inflation, and trade openness. The results of the cointegration test are reported in Table 3.

Table 3. Bounds F-test for Cointegration Results

Null Hypothesis: No cointegration		
F-statistic	4.421	
	Critical Values	
Significance level	I(0)	I(1)
10%	1.83	2.94
5%	2.06	3.24
1%	2.54	3.86

The results of the Wald test indicate that economic growth and domestic credit to the private sector have an asymmetric relationship with private investment in South Africa in the long and short run. However, the asymmetric relationship between interest rate, inflation, and trade openness with private investment was found only in the long run. In other words, the impact of the positive and negative shocks of the determinants on private investment are different. The results of the long-run and short-run asymmetry tests are presented in Table 4.

Table 4. Long-run and short-run asymmetry results

Variable	Test	F-statistic	P-value	Decision
Y	W_{LR}	6.101 **	0.019	Asymmetric
	W_{SR}	3.454*	0.072	Asymmetric
CRED	W_{LR}	11.145***	0.002	Asymmetric
	W_{SR}	5.961**	0.020	Asymmetric
INT	W_{LR}	4.534**	0.041	Asymmetric
	W_{SR}	0.175	0.679	symmetric
INF	W_{LR}	10.362***	0.003	Asymmetric
	W_{SR}	2.267	0.141	symmetric
TO	W_{LR}	3.660*	0.064	Asymmetric
	W_{SR}	0.024	0.878	symmetric

Notes: W_{LR} is long-run asymmetric test; W_{SR} is short-run asymmetric test; *, ** and *** indicate statistical significance at 10%, 5% and 1% levels, respectively; the value in parenthesis is p-values

After cointegration and asymmetry have been established, the next step is to estimate the short—and long-run relationship between private investment and its determinants using the NARDL approach. The short—and long-run results are presented in Table 5.

The results presented in Table 5 show that in the long and short run, the positive shock in economic growth has a significant and positive effect on private investment, as expected. Therefore, increased economic growth will increase domestic private investment in South Africa. The findings are consistent with other studies that have found that economic growth positively impacts private investment, (see Karagöz, 2010; Tan & Tang, 2011). The negative shocks in economic growth are statistically insignificant in both the long and short run.

The positive shocks in domestic credit to the private sector are found to have a negative impact on private investment in the long and short run. The negative shocks on the domestic credit to the private sector led to a decline in private investment in both the long and short run. In the long run, the positive shocks in interest rates are statistically insignificant in determining private investment. The findings imply that an interest rate increase will not impact private investment. On the other hand, the negative shock findings indicate that a decrease in interest rates leads to a decrease in private investment.

The positive and negative inflation shocks are statistically significant and increase private investment in the long run. The study's findings are similar to those of Benlarbi and Hachi (2023), who also found that positive inflation shocks are more influential in promoting private investment. Lastly, the positive shocks in trade openness are insignificant in determining long-term and short-term private investment. However, the negative shocks in trade openness led to decreased private investment in South Africa. The major findings indicate that changes in economic growth, credit

to the private sector, interest rates, inflation, and trade openness have an asymmetrical impact on private investment.

Table 5. Results of Long and Short Run Estimation

Long-Run Results			
Regressor		Coefficient	t-statistic [p-value]
Y^+		0.014***	4.356 [0.000]
Y^-		0.001	0.618 [0.541]
$CRED^+$		-0.231***	-3.869 [0.001]
$CRED^-$		0.144***	3.444 [0.002]
INT^+		0.033	0.430 [0.670]
INT^-		0.232**	2.615 [0.013]
INF^+		0.280*	1.924 [0.063]
INF^-		-0.318*	-1.869 [0.070]
TO^+		-0.021	-0.219 [0.828]
TO^-		0.228**	2.686 [0.011]
Short-Run Results			
Regressor		Coefficient	t-statistic
C		5.977***	7.694 [0.000]
ΔY^+		0.008***	4.915 [0.000]
ΔY^-		0.0003	0.258 [0.798]
$\Delta CRED^+$		-0.070**	-2.657 [0.012]
$\Delta CRED^-$		0.068***	3.421 [0.002]
ΔINT^+		0.053	1.662 [0.106]
ΔINT^-		0.092**	2.300 [0.028]
ΔINF^+		0.124	1.609 [0.117]
ΔINF^-		-0.135**	-2.033 [0.050]
ΔTO^+		0.046	1.113 [0.273]
ΔTO^-		0.030	0.946 [0.351]
ECM (-1)		-0.625***	-7.933 [0.000]
R- Squared	0.750	Normality	2.922 [0.232]
R-Bar-Squared	0.688	Serial Correlation	0.157 [0.855]
F-Statistic [Prob]	12.021 [0.000]	Heteroscedasticity	0.868 [0.627]
DW Statistic	2.047	Functional form	0.341 [0.564]

Notes: *, ** and *** indicate statistical significance at 10%, 5% and 1% levels, respectively; the value in parenthesis is p-values

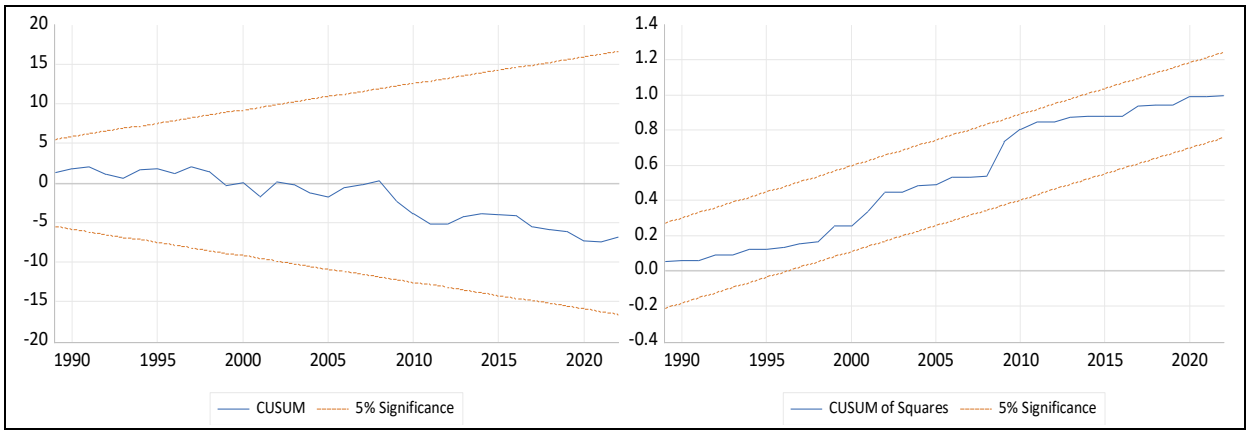

Figure 1: Plot of CUSUM and CUSUMQ

As anticipated, the coefficient of the error correction term is negative and statistically significant. The results of the diagnostic tests confirm that the estimated model passes all the diagnostic tests for serial correlation, normality, heteroscedasticity, and functional form.

The cumulative sum of recursive residuals (CUSUM) and the sum of squares of recursive residuals (CUSUMQ) are conducted to establish whether the model parameters are stable. The CUSUM and CUSUMQ results in Figure 1 suggest that the estimated models are stable, as confirmed by the plots within the confidence band at a 5 percent significance level.

The dynamic multiplier graph checks for asymmetry due to positive and negative shocks. The black line shows the adjustment of private investment to positive shock in the determinants, while the dotted black line shows the adjustment of private investment to negative shock. The red dotted line represents the asymmetric line, which indicates the difference between the positive and negative shocks in the determinants. The results of the dynamic multipliers, displayed in Figure 2, confirm the asymmetrical effect of the determinants on private investment in South Africa.

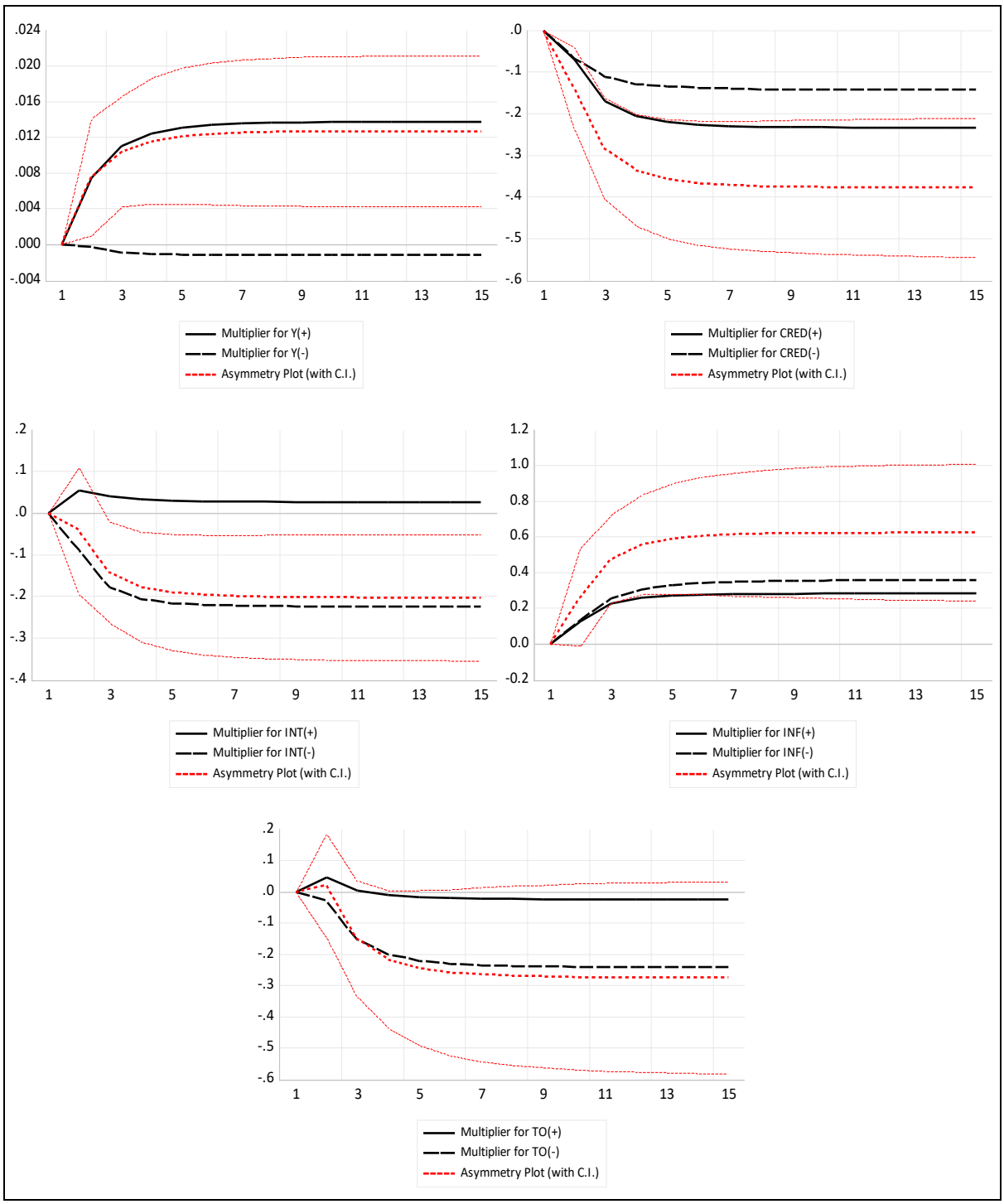

Figure 2: Dynamic multiplier graph

Conclusion

The study examined factors determining private investment in South Africa from 1965 to 2022. Although many papers have analyzed the determinants of private investment, the findings have been mostly varied and inconclusive. The study used the ECM-based NARDL bounds testing approach, decomposing the determinants into positive and negative shocks. The findings show that the positive shock in economic growth positively affects private investment in the long and short run. The positive and negative shocks in domestic credit to the private sector are found to have a negative impact on private investment in the long and short run. The positive and negative inflation shocks are statistically significant and increase private investment in the long run.

Based on the findings, the study recommends that policymakers develop policies and strategies to promote the economy's growth and encourage investment from both local and foreign private investors into the country. The government should also formulate policies to create an environment that will stimulate private investment in the economy, such as easy access to finance, openness of the economy, and a low and stable inflation rate.

The study has some limitations, as it did not include all the macroeconomic variables that could be the determinant of private investment. However, other macroeconomic variables could be included in future studies. It would be ideal for future studies to investigate and establish if the findings would differ from the current study's findings. As the macroeconomic determinants could have different effects on the different sectors of the economy, future studies could also examine the determinants of disaggregated private investment into different sectors, such as manufacturing, construction, technology, and so forth.

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