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The Impact of Current Account Balance on Economic Growth in South Africa

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Abstract: This study investigates the impact of South Africa's current account balance on its economic growth from Q1 2015 to Q4 2022 using Auto Regressive Distributed Lags (ARDL) technique. This study incorporates qualitative variables like COVID-19 to understand its effect on the South African current account and economic growth rate. Generally, the results show that the South African current account deficit impacted economic growth in both the long and short run. COVID-19 also affected the current account significantly in both the long and short run, thus causing more deterioration on the South African current account and subsequently affecting the economic growth rate negatively. This study recommends more competitive export promotion and import substitution by investing in and developing domestic productivity. This study also recommends an acceleration of the tabled COVID-19 recovery initiatives through an alliance between the government and private sector.

Keywords: current account balance; economic growth; ARDL; COVID-19; South Africa

1. Introduction

Academics, researchers, and decision-makers have disagreed on the impact of the current account deficit issue, while the occurrence of the COVID-19 pandemic has aggravated the argument (Kaufman and Leigh 2021). Like the 2008 crisis, COVID-19 has led to a significant decline in demand, causing consumers to stop consuming and tourists to avoid travel. This situation is like that of the Great Depression, as studied by economist Keynes. Keynes believed that demand creates supply in the short run, and the impact of this shock is more significant if it is understood and curable through fiscal and monetary policies. It is for this reason that economies around the world provide relief packages through fiscal and monetary policies to boost the demand side of the economy.

For example, the South African government introduced Tax Relief Bills to assist businesses during the COVID-19 pandemic, offering provisional taxes, employee taxes, and an extension of the employment tax incentive (South African Revenue Services (SARS) 2020). The South African government also increased its expenditure by R18 Billion to R45 Billion during the 2020/2021 financial year (National Treasury 2021). The National Treasury stated that real expenditure was likely greater and that departments had difficulty adequately reporting their COVID-19 relief spending. In the same manner, the South African Reserve Bank (SARB) substantially reduced the repo rate to 3.5%, which happened to be the lowest since 1998 (South African Reserve Bank (SARB) 2020).

The South African economy managed to report its largest current account surplus in 2021 as import demand was discouraged by domestic demand (through the relief packages) as well as travel restrictions meant for the speedy and sustainable recovery from COVID-19 effects and/or aftermath. Furthermore, gold exports in South Africa reached their highest value since 1960, resulting in a surplus of 3.7% of GDP in the country's current account from a revised 2% in 2020, the highest since 1987, according to South African Reserve Bank (SARB) (2022). However, South African Reserve Bank (SARB) (2022) further indicates that the recorded surplus was short-lived as South Africa posted a deficit in

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2022 due to an increment in the level of imports, power shortages, and network constraints on exports, which made the South African economy vulnerable to external shocks.

Theoretically, a significant current account deficit is an indication of an imbalanced economy and might cause a devaluation in the currency; however, it is also maintained that if it is sustained by steady foreign capital inflows, a current account deficit should not be a major issue (Bajor-Rubio and Diaz-Roldan 2013). Unfortunately, for the South African economy, the capital inflows have not been steady but volatile for the period under study. Thus, Figure 1 shows the graphical plot for the South African foreign capital inflows (measured as the percentage of the GDP).

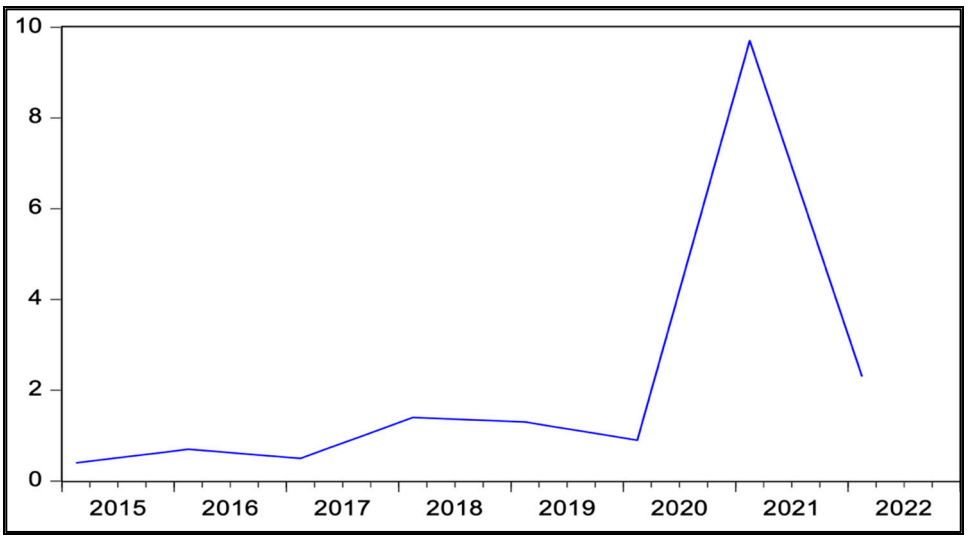

Figure 1. South African Foreign Capital Inflows for the period 1015q1–2022q4. Source: Author's own plot using SARB (2015–2022) data and EViews 12 Software.

Figure 1 shows that South African foreign capital inflows increased between 2015 and 2018, decreased between 2018 and 2020, increased again between 2020 and 2021, and decreased further between 2021 and 2022. The observed pattern simply shows the volatility of South African foreign capital inflows for the period of this study. This is really concerning since steady foreign capital inflows are typically meant to sustain or supplement the widening current account deficit for the benefit of the economy by sustaining investment spending (Bajor-Rubio and Diaz-Roldan 2013). Thus, sluggish or volatile foreign capital inflows in the midst of a significantly widening current account deficit can lead to increased domestic unemployment in specific industries due to higher imports or overseas manufacturing. This ideology is guided by the savings-gap perspective, which implies that the relationship between the current account balance and net foreign capital inflows influences international trade, domestic employment, and eventually the economic growth rate. For instance, the South African economic growth rate declined to 2% in 2022 from 4.9% in 2021 (African Development Bank (AfDB) 2023).

In addition to the effects of the COVID-19 pandemic, the African Development Bank (AfDB) (2023) reports issues such as electricity shortages, flooding, transport constraints, and the global downturn following Russia's invasion of Ukraine as the factors that affected the South African economic growth rate negatively. Inflation also increased to 6.9% in 2022 due to higher food and fuel prices (South African Reserve Bank (SARB) 2023). Despite low economic growth, developing economies like South Africa typically record a current account surplus or lower deficit, which is currently not the case in South Africa. For this reason, this research aims to empirically investigate the impact of the South African current account balance on economic growth, with a bit of a focus on COVID-19 effects.

The layout of this research paper consists of seven sections. The first section is titled "Introduction". The second section provides a review of this research literature, which is

broken down into two parts: the theoretical framework and the empirical literature. This study's methodology is discussed in the third section. The fourth and fifth sections present the results and discussion of the results, as well as policy considerations/implications, respectively. This study's conclusions and policy recommendations are discussed in the sixth section. The last section presents this study's limitations and suggestions for further research.

2. Literature Review

This section explores some theories and previous empirical studies on current account balance/associated economic variables, and economic growth.

2.1. Theoretical Framework

2.1.1. Absolute and Comparative Advantage Theory

Adam Smith's (1776) book 'The Wealth of Nations' introduced the theory of absolute advantage, which David Ricardo expanded in 1819 to include comparative advantage. Jones (1961) explains that comparative advantage focuses on the reasons for and benefits of trade among economies. The absolute advantage theory asserts that a country with superior production efficiency in a specific good or service has an absolute advantage over another. Machado and Trigg (2021) outline the following as assumptions of the theory:

- The inability of the production factors to move around.

Adam Smith's hypothesis suggests that production elements remain stationary across national borders, implying no changes to the Production Potential Frontier in any involved countries.

- Trade barriers.

Governments establish trade barriers to limit or dampen the import or export of a specific good, while commercial impediments do not impede the buying and selling of goods.

- Trade balance.

Adam Smith's principle states that imports and exports must be equal, preventing trade imbalances, deficits, or surpluses as imports surpass exports.

- It is always returning to scale.

The expectation is that the same rewards will be received regardless of the quantity produced; for example, if Sam takes two hours to make one computer, constructing four would take eight hours.

Critics initially criticized bilateral trade for limiting trade to two items. However, as commerce volume and individual nation needs increased, the concept was challenged for not considering international trade opportunities. The theory assumed unrestricted trade between states but failed to consider global government restrictions, technological barriers, and environmental or public policy measures.

On the other hand, Comparative Advantage Theory, also established by Adam Smith, suggests that countries with a comparative advantage in producing goods or services are generally more capable than others (Ukirandu 2015). The theory further suggests that countries with limited resources and technology specialize in producing goods and services due to the opportunity cost associated with different productions (Myint 1977). This is 'global division of work' ideology, which emphasizes the importance of comparative advantage in economic growth.

Buchanan and Yoon (2002) indicate that the comparative advantage theory assumes complete competition in markets and labor as the sole production factor. They also argue that labor costs are comparable in industrialized and developing countries, and labor is stationary across borders with no taxes or barriers to international trade.

Ukirandu (2015) criticized the comparative advantage theory, stating that it overlooks the reality of international trade and production, which involve multiple countries and

goods. Additionally, transportation expenses are crucial in international trading, which can impact selling prices and negate the opportunity cost differential. Furthermore, capital, natural resources, and entrepreneurship are also critical components of production, with capital enabling faster output than manual labor. Therefore, the theory's assumptions are not accurate due to the complexity of international trade.

Worker mobility in the domestic market is limited due to time-consuming job search processes and migration between countries. Specialized countries often leave workers immobile, unable to transition between sectors due to industry closures. This lack of skills and relocation process can lead to structural unemployment and indefinite unemployment, particularly in the agriculture sector, where mechanization has resulted in layoffs.

This study focuses on the theory that economies with an absolute advantage in manufacturing goods or services gain foreign income, which positively impacts the current account balance of payments and economic growth. However, developing economies without such advantages often import goods or services, leading to a negative impact on the trade balance and a deficit in the current account, negatively affecting economic growth. Furthermore, there are factors that force economies (especially developing economies) to import goods and services from economies with comparative advantage rather than producing them domestically.

These factors, among others, include costs associated with producing final goods/ services, domestic technological effects, higher opportunity costs, and limitations of resources and specialized labor. Consequently, the economies that import those efficient goods and services will tend to run on a trade deficit, which in turn will affect the current account and negatively impact economic growth.

2.1.2. Keynesian Open Economy Model

This study also makes use of basic national accounting identities to shed light on the macroeconomic aspects of current account movements. The ingesting theory of the balance of payments, which is based on Kennedy (1966), claims that the current account equals the difference between domestic spending (S) and gross domestic production (Y):

$$Y = C + I + G + NX \tag{1}$$

where Y denotes output, C household consumption, I private investment by firms and households, G government spending, and NX net exports (the sum of imports and exports). After some rearrangement, Equation (1) can be written as:

$$NX = Y - (C + I + G) = Y - S \tag{2}$$

Equation (2) demonstrates that in an open economy, domestic spending cannot be equal to the output of goods and services. The difference is exported (positive net exports) if output exceeds domestic expenditure and imported (negative net exports) if output falls short of domestic spending.

$$NX + I = Y - (C + G) \tag{3}$$

$$NX = S - I \tag{4}$$

Equation (3) illustrates that an economy's net exports are the difference between national savings and investment, representing the trade balance of the trade account and the investment balance of the investment account (Kennedy 1966). Consequently, the current account is the sum of trade and investment/capital, with surpluses occurring when national savings exceed investment and deficits occurring when investment exceeds national savings.

When an economy has a current account deficit, policymakers should determine if it is a deficit in private funds or an increase in investment. If the deficit is due to lower private savings funds, the country is borrowing abroad or depleting foreign assets for

consumption, disregarding the private or public sector. Conversely, if the deficit is due to increased investment, the economy is increasing its capital stock and future output.

The Keynesian macroeconomic model assumes that an expansionary fiscal policy in a large open economy would lead to higher global interest rates and reduced national investment (Bajor-Rubio and Diaz-Roldan 2013). In a small, open economy like South Africa, net exports and real exchange rates increase, while current account surpluses and capital account deficits occur. Disposable income positively influences consumption, leading to increased spending due to stock prices. This increases household options for saving or spending, thereby increasing consumption levels.

2.2. Empirical Literature

The study by Ogunniyi et al. (2018) compared the impact of current account balance on economic growth in South Africa, Algeria, Nigeria, and Egypt using Panel Auto Regressive Distributed Lags and Fully Modified Ordinary Least Squares. Results showed that current account balance negatively impacts economic growth in Algeria, Egypt, and Nigeria, while in South Africa, it was positive and statistically significant. The study recommends focusing on diversifying export bases.

Telatar and Terzi (2009) examined Turkey's relationship between current account balance and economic growth using quarterly data from 1991q1 to 2005q4, using Granger causality and Vector Auto Regression (VAR) methods. Results showed that higher economic growth led to a higher current account deficit.

Using the Auto Regressive Distributed Lags (ARDL) method, Eita et al. (2019) found evidence of the twin deficit hypothesis in Namibia, suggesting that an increase in real GDP or per capita GDP leads to a deterioration of the current account, while an increase in interest rates, commodity prices, and population causes an increase.

The study by Oshota and Badejo (2015) examined the factors influencing the current account balance in West African countries using the panel ARDL method. Results showed that GDP per capita, domestic investment, financial deepening, and dependency ratio positively impacted the current account, while the real effective exchange rate negatively affected it.

Reddy and Ramaiah (2020) studied the impact of India's current account balance on economic growth from 1976 to 2019 using the ARDL method. Results show that imports accelerate India's growth, while external debt positively affects the current deficit. The exchange rate does not affect the current account deficit.

Ozer et al. (2018) used the ARDL method to analyze the relationship between Montenegro's current account deficit and economic growth from 2011q1 to 2016q4. The results showed a negative bidirectional causal relationship in both the short-run and long-run.

Musisinyani et al. (2017) examined the impact of Zimbabwe's current account deficit on economic growth from 1980 to 2013 using the Ordinary Least Squares (OLS) method. Results showed a positive correlation between the deficit and economic growth, with foreign direct investment, external debt, and foreign aid also positively influencing it. The study by Altayligil and Cetrez (2020) examined the macroeconomic, institutional, and financial factors affecting current accounts in 97 developing and developed countries from 1986 to 2013. It found a negative correlation between growth and current account balances, with factors such as growth rate, fiscal deficit, financial market development, trade openness, institutional quality, and development stage causing larger deficits.

Sanni et al. (2019) explored the correlation between Nigeria's current account balance and economic growth using the ARDL method. It revealed a long-term relationship between current account balance, real GDP, and the bilateral real exchange rate, with a positive correlation indicating growth leads to increased current account balance.

Yurdakul (2015) explored Turkey's current account deficit and economic growth using Granger causality and VAR analysis, revealing a unidirectional relationship between growth rate and current account deficit and that economic growth increases the deficit.

Mugo et al. (2021) studied the impact of Kenya's current account deficit on economic growth using unit roots, cointegration analysis, dynamic vector error correction, and Granger-Causality from 1980 to 2016. Results showed a positive long-term relationship between deficits and economic growth, with a bidirectional causality suggesting a positive correlation between deficits and economic growth.

Yurdakul and Ucar (2015) used Granger causality and the VAR technique to examine the relationship between Turkey's current account deficit and economic growth. Results showed that economic growth increased the current account deficit, with a negative correlation between growth and the balance of payments. The study also found a unidirectional association between economic growth rate and current account deficit and a negative reaction of the current account to a one standard deviation shock.

Using panel data, Akbas et al. (2014) found a bidirectional causal relationship between economic growth and the current account deficit in emerging market nations and a unidirectional causal relationship between short-term capital flows, the current account deficit, and GDP. It also revealed a positive relationship between developing country current account deficits and GDP. This was found to be compatible with research conducted by Bagnai and Manzacchi (1999) on 49 developing nations. The study of Debelle and Farugee (1996) also found a causal association between economic growth and current account deficits, revealing an inverse relationship between current account deficits and macroeconomic variables in over 20 industrialized countries using a panel-data regression approach.

Using the VAR technique, Oshota and Adeleka (2015) analyzed current account balance drivers in Nigeria, Ghana, and Cote d'Ivoire, finding that real income significantly influences it and demonstrating a long-term relationship between real income and current account balance in all three economies.

The above empirical work shows mixed results on the impact of current account deficits/balances on economic growth. Most studies suggest that developing economies typically run on current account deficits to accelerate growth, while few suggest that running on a deficit hampers growth. To increase economic growth, the current account balance must improve or record a continuous surplus, while the capital account experiences steady foreign capital inflows. This study aims to investigate the relationship between current account balance and economic growth in South Africa using the ARDL technique, as there is limited empirical research on this topic. The ARDL technique, with the inclusion of a qualitative variable like COVID-19, is deemed relevant in this study because the recent pandemic requires us to acknowledge its effects on the current account since trade and movement restrictions were enforced across the globe. That is, this study strongly believes that the explanatory or predictor variable, like the current account balance, needs to interact with the COVID-19 effects.

3. Methodology

This section presents the empirical model specification (informed by the existing empirical work), description/time span and sources of data, and econometric technique to be used by this study to estimate the results.

3.1. Empirical Model Specification

This study adopts the empirical model used in the study of Ogunniyi et al. (2018). The model is adopted because of its relevance to the Keynesian open economy model framework, discussed fully under the 'theoretical framework' subsection of literature review. Mathematically, the empirical model is expressed as follows:

$$RGDP_t = \varphi_0 + \varphi_1 CAB_t + \varphi_2 REER_t + \varphi_3 RIR_t + \varphi_4 TRO_t + \varphi_5 FO_t + e_t \quad (5)$$

where RGDP denotes economic growth rate, CAB current account balance/deficit, REER real effective exchange rate, RINR real interest rate, TRO trade openness, and FO financial openness. Furthermore, e and $\varphi_{0,\ldots,5}$ are the error term and linear parameters, respectively.

This study modifies the empirical model expressed by Equation (4) by incorporating the dummy variable D, where '0' indicates the absence of the COVID-19 pandemic and '1' indicates the presence of the COVID-19 pandemic. Briefly, the dummy variable D is incorporated in this study to capture the influence of the COVID-19 pandemic on the South African growth rate. Furthermore, this study also believes that the South African current account experienced shocks due to the travel and trade restrictions that were imposed by governments across the globe to combat the spread of COVID-19 (South African Reserve Bank (SARB) 2020). For this reason, this study sees the need for the inclusion of a variable that accounts for the interaction of the current account balance with the effect of COVID-19 (the variable LCAB*D). Thus, Equation (6) presents the final empirical model of this study.

$$LRGDP_t = \varphi_0 + \varphi_1 LCAB_t + \varphi_2 LREER_t + \varphi_3 LRIR_t + \varphi_4 LTRO_t + \varphi_5 LFO_t + \varphi_6 D_t + \varphi_7 LCAB * D_t + e_t \quad (6)$$

3.2. Description and Time Span of Data

This study used quarterly time series data covering the period of 2015q1–2022q4 for the variables indicated in the empirical model 5. The period of 2015–2022 is chosen on the basis that the South African economy experienced several supply shocks. Firstly, a significant economic meltdown between 2015 and 2016 was caused by underperformance in the agriculture industry (−8.4% growth rate, the largest production decline since 1995) due to severe drought conditions (Statistics South Africa (Stats SA) 2016). Statistics South Africa (Stats SA) (2016) also indicates that the South African trade balance was negatively affected since South Africa's agricultural products account for the second-largest portion of the country's exports, after minerals (mostly gold and platinum).

Secondly, South Africa also experienced a technical recession in 2018 that was caused by a significant decline in agriculture, transport, trade, government, and manufacturing industries (South African Reserve Bank (SARB) 2019). Lastly, amid these unpleasant events in South Africa, the COVID-19 pandemic hit in the last quarter of 2019, making the situation even more devastating. South Africa is still weathering the aftermath effects like any other developing economy since the economy is still sluggishly recovering from the pandemic effects. Hence, it is for this reason that this study reflects its focus on the recent significant economic supply and demand shock (the COVID-19 pandemic) by entertaining the dummy variable D. The period of 2015q1–2019q3 for the dummy variable is allocated the number '0' to symbolize the absence of the COVID-19 pandemic, while the remaining period (2019q4–2022q4) is allocated the number '1' to symbolize the presence and aftermath effects of the COVID-19 pandemic.

3.3. Data Sources

The quarterly data for the variables indicated in the empirical model presented by Equation (5) is sourced from the South African Reserve Bank (SARB) and World Bank online databases.

3.4. Econometric Technique

This study's time span of data informed the choice of the econometric technique suitable for the analysis. The time span of the data involves 32 observations for each variable, which classifies this study as a 'small sample' study. It is for this reason that the Auto Regressive Distributed Lags (ARDL) technique seems to be the most appropriate.

According to the technique, the variables under study must be stationary at level or after the first difference. This study tested for stationarity on the variables included in the empirical model given by Equation (4) using the Dicky–Fuller generalized least square (DF-GLS) by Elliot et al. (1996) as well as the Ng and Perron (2001) tests. The Ng and Perron (2001) test is an adaptation of the Phillips-Perron (PP) test, while the DF-GLS test is a variation of the Augmented Dickey Fuller (ADF) test. The reason for the selection

of DF-GLS and Ng and Perron (2001) stationarity/unit root tests in this study is their exceptional performance on small sample datasets or studies.

The ARDL bound test approach was developed by Pesaran et al. (2001); Pesaran and Smith (1999); and Pesaran and Pesaran (1997). It has various advantages over the Johansen cointegration method. Unlike the Johansen method, which calls for large data samples that are frequently unavailable in emerging economies, the ARDL method helps determine cointegration in small samples in a realistic manner. Additionally, variables that are *I* (*I*), *I* (0), or a mix of the two can be employed with the ARDL technique.

Pesaran et al. (2001) contend that because the ARDL methodology can handle deterministic components, the order of the VAR, and the optimal lag length, it is a better method for cointegration than the Johansen method. Additionally, unlike the Johansen technique, ARDL permits variables to have different lag lengths. The F-test is the first step of the two-step ARDL approach, which looks for long-run relationships between variables.

The short-run coefficients of variables are estimated using the ARDL model's error correction framework, and then the long-run coefficients are estimated. The speed of equilibrium adjustment is ascertained using the Error Correction Model (ECM) version.

- **ARDL Model Specification**

The long-run linkages and dynamic interactions between the dependent and independent variables displayed in this study's final empirical model, which is given in Equation (6), are illustrated using the ARDL model specification. Thus, the following equation presents the ARDL model specification of this study.

$$\begin{aligned}\Delta LRGDP_t = {} & \gamma_0 + \sum_{i=1}^{p} \gamma_i \Delta LRGDP_{t-i} + \sum_{i=1}^{p} \gamma_i \Delta LCAB_{t-i} + \sum_{i=1}^{p} \gamma_i \Delta LREER_{t-i} + \\ & \sum_{i=1}^{p} \gamma_i \Delta LRIR_{t-i} + \sum_{i=1}^{p} \gamma_i \Delta LTRO_{t-i} + \sum_{i=1}^{p} \gamma_i \Delta LFO_{t-i} + \sum_{i=1}^{p} \gamma_i \Delta D_{t-i} + \\ & \sum_{i=1}^{p} \gamma_i \Delta LCAB * D_{t-i} + \varnothing_1 LRGDP_{t-1} + \varnothing_2 LCAB_{t-1} + \varnothing_3 LREER_{t-1} + \varnothing_4 LRIR_{t-1} + \\ & \varnothing_5 LTRO_{t-1} + \varnothing_6 LFO_{t-1} + \varnothing_7 D_{t-1} + \varnothing_8 LCAB * D_{t-1} + v_t\end{aligned} \quad (7)$$

where:

LRGDP = Log of gross domestic product growth rate
LCAB = Log of current account balance
LREER = Log of real effective exchange rate
LRIR = Log of real interest rate
LTRO = Log of trade openness
LFO = Log of financial openness
D = Dummy variable, where '0' indicates the absence of COVID-19 and '1' the presence of COVID-19.
LCAB*D = Log of current account balance interacted with the dummy
p = lag length for the unrestricted error-correction model (UECM)
Δ = first differencing operator
γ_0 = constant
γ_i = short run coefficients
$\varnothing_i$ = long run coefficients
v = white noise disturbance error term

- **ARDL Bound Test Approach**

The bound test approach uses the Wald test to analyze the long-run relationship between dependent and independent variables. It restricts the estimated coefficients of one period lagged level to zero, or H0: $\varnothing_i = 0$, for $i = 1, \ldots, 8$. The critical value in Pesaran et al. (2001) is compared with the computed F-statistic, with lower bounds assuming independent variables are integrated of order zero and upper bounds assuming they are integrated of order one.

The null hypothesis of no co-integration cannot be rejected if the estimated F-statistic is less than the lower bound value, *I* (0). Otherwise, co-integration between dependent and independent variables can be determined if the calculated F-statistic is greater than *I* (1).

- **ARDL Model Diagnostic Checks**

The ARDL model to be estimated is diagnosed using the assumptions of the conventional linear regression model. This is because the Ordinary Least Squares (OLS) estimator, which is used in the ARDL approach to estimate both long- and short-run coefficients, is used (Pesaran et al. 2001). Accordingly, the linear regression model should have no serial correlation, heteroscedasticity, or multicollinearity, and the residuals should have a normal distribution, according to Gujarati (2003) and Brooks (2008).

4. Results

Building an appropriate ARDL model involves several steps. The first step is to test predictors/independent variables for multicollinearity, which is a term used to describe a situation where independent variables are highly collinear with each other (Brooks 2008). Pesaran and Pesaran (1997) indicate that independent variables are highly collinear (presence of multicollinearity) if the correlation among themselves is ±0.80. The authors further indicate that running an ARDL model with highly collinear predictor variables would result in spurious results. Thus, Table 1 gives the correlation matrix for the independent variables of this study.

Table 1. Correlation Matrix for Independent Variables.

	LCAB	**LREER**	**LRIR**	**LTRO**	**LFO**	**D**	**LCAB_D**
LCAB	1						
LREER	−0.3192	1					
LRIR	−0.2305	0.4051	1				
LTRO	0.3639	0.1381	−0.1684	1			
LFO	−0.4503	−0.5279	0.1124	0.3991	1		
D	−0.4325	0.4186	−0.3865	0.2831	−0.3504	1	
LCAB_D	0.4403	−0.3771	−0.4656	−0.1369	−0.4735	0.4562	1

Source: Author's own computations using Eviews 12 Software.

The correlation coefficients estimated in Table 1 are less than ±0.80, indicating an absence of multicollinearity among the independent variables of this study. With fair-correlated predictor variables, the unit root/stationarity tests may be applied to ensure the stationarity condition of the key variables of this study.

DF-GLS and Ng and Perron's (2001) stationarity/unit root tests are used in this study with an 'intercept and trend' specification for better and more reliable results. Table 2 gives the results for the DF-GLS and Ng and Perron (2001) unit root tests.

Table 2. DF-GLS and Ng and Perron (2001) Unit Root Test Results.

Variable	Test	Model	Integration Phase		Conclusion
			Level	1st Difference	
LRGDP	DF-GLS	Intercept & Trend	−3.341197 *	N/A	*I (0)*
	Ng-Perron (MZa)		−25.6545 *	N/A	*I (0)*
LCAB	DF-GLS	Intercept & Trend	−1.401852	−5.04375 *	*I (1)*
	Ng-Perron (MZa)		−4.31102	−14.9247 *	*I (1)*
LREER	DF-GLS	Intercept & Trend	−1.160657	−4.25451 *	*I (1)*
	Ng-Perron (MZa)		−12.30401	−15.5214 *	*I (1)*
LRIR	DF-GLS	Intercept & Trend	−2.832101 **	N/A	*I (0)*
	Ng-Perron (MZa)		−16.4463 *	N/A	*I (0)*
LTRO	DF-GLS	Intercept & Trend	−1.831852 ***	N/A	*I (0)*
	Ng-Perron (MZa)		−6.39433	−11.2215 *	*I (1)*
LFO	DF-GLS	Intercept & Trend	−1.554262	−2.329892 **	*I (1)*
	Ng-Perron (MZa)		−68.5137 *	N/A	*I (0)*
D	DF-GLS	Intercept & Trend	−2.020593 ***	N/A	*I (0)*
	Ng-Perron (MZa)		−6.01440	−14.9755 *	*I (1)*
LCAB_D	DF-GLS	Intercept & Trend	−1.315646	−5.311745 *	*I (1)*
	Ng-Perron (MZa)		−4.16313	−14.9849 *	*I (1)*

Notes: */**/*** reflects statistical significance at 1%, 5%, and 10%, respectively. Source: Author's own computations using Eviews 12 Software.

Table 2 shows that the variables under study are either stationary at level or after the 1st difference, meaning that a combination of *I* (0) and *I* (1) variables is realized. This is simply the satisfaction of the core condition of the ARDL methodology, the condition that the variables under study should either be *I* (0)s, *I* (1)s, or a mixture of the two (Pesaran et al. 2001).

The ARDL methodology requires the optimal lags for the variables, just like the Vector Auto Regression (VAR) or Vector Error Correction Model (VECM). Thus, each variable needs to be assigned optimal lags using the VAR/VECM approach. As a result, Table 3 gives the results for the selection of optimal lags for each variable of this study. The study used the Schwarz Bayesian Information Criterion (SBIC) to select optimal lags for all the variables under study, with a maximum of 2 lags because of the small data's time span.

Table 3. Model Variables Optimal Lags Results.

Variable	Optimal Lag Selected by SBIC
LRGDP	1
LCAB	2
LREER	2
LRIR	1
LTRO	2
LFO	2
D	2
LCAB_D	2

Source: Author's own computations using Eviews 12 Software.

Table 3 shows that variables such as LRGDP and LRIR are optimal at lag 1, while the rest of the variables are optimal at lag 2. This motivates an estimation of the model of ARDL (1,2,2,1,2,2,2,2). Thus, Table 4 gives the results for the ARDL bounds test under the 'constant' trend specification.

Table 4. ARDL Bounds Test Results.

Computed F Stat.	Significance Level	*I* (0) Critical Limit	*I* (1) Critical Limit
8.1642 *	10%	2.03	3.13
	5%	2.32	3.50
	1%	2.96	4.26

Notes: * reflects statistical significance at 1%. Source: Author's own computations using Eviews 12 Software.

The result presented in Table 4 shows that the computed F statistic is greater than the upper (*I* (1)) critical limit of 1% level of significance (statistically significant), indicating the presence of a cointegrating relationship between dependent and independent variables in this study. As a result, Table 5 gives the estimates for both long- and short-run coefficients.

Table 5. ARDL (1,2,2,1,2,2,2,2) Long and Short Run Coefficients' Estimates Results.

Long Run Coefficients' Estimates		Short Run Coefficients' Estimates	
LCAB	−0.603134 (0.0000) *	Δ LCAB	−0.469436 (0.0241) **
LREER	−0.511433 (0.0401) **	Δ LREER	−0.258852 (0.0000) *
LRIR	−0.508042 (0.0141) **	Δ LRIR	−0.410206 (0.0811) ***
LTRO	−0.901421 (0.0001) *	Δ LTRO	−0.764161 (0.0946) ***
LFO	−0.461261 (0.0931) ***	Δ LFO	−0.116613 (0.0256) **
D	−0.401623 (0.0617) ***	Δ D	−0.764671 (0.0000) *
LCAB_D	−0.806855 (0.0001) *	Δ LCAB_D	−0.447701 (0.0461) **
Constant	2.046123 (0.0761) ***	ECT	−0.748328 (0.0000) *
P (F Stat.) = 0.0000 *		R-Squared = 0.79	

Notes: */**/*** reflects statistical significance at 1%, 5%, and 10%, respectively; Value inside the parentheses reflects the probability value for the corresponding *t* statistic. Source: Author's own computations using Eviews 12 Software.

The results in Table 5 indicate that a 1 percent increase in the South African current account balance (deficit) leads to a 0.60 and 0.47 percent decrease in the economic growth rate in the long and short run, respectively. Both long- and short-term relationships are statistically significant. The studies of Musisinyani et al. (2017), Ogunniyi et al. (2018), and Reddy and Ramaiah (2020) established similar results in the case studies of Zimbabwe, Algeria, Nigeria, Egypt, and India. However, the study of Ozer et al. (2018) and that of Altayligil and Cetrez (2020) got opposite results in the same economies, especially in the long run.

The results further indicate that a 1 percent increase in the South African real effective exchange rate leads to a 0.51 and 0.26 percent decrease in the economic growth rate in the long and short run, respectively. However, only the long-run relationship is statistically significant. The studies of Oshota and Badejo (2015); Eita et al. (2019); and Altayligil and Cetrez (2020) obtained similar long-run results in the case studies of West African countries, Namibia, and some developing countries. A statistically insignificant short-run relationship between the real effective exchange rate and economic growth rate was also realized in the study of Reddy and Ramaiah (2020), as they could not find any significant relationship between the real effective exchange rate and economic growth in India.

The results also indicate that a 1 percent increase in the South African real interest rate leads to a 0.51 percent decrease in the economic growth rate in the long run and

a 0.41 percent decrease in the short run. Both long- and short-term relationships are statistically significant.

South African trade openness is negatively related to the economic growth rate in the long and short run. Thus, a 1 percent increase in South African trade openness leads to a 0.90 percent decrease in economic growth rate in the long run and a 0.76 percent decrease in economic growth rate in the short run. Both long- and short-term relationships are statistically significant. Kim and Lin (2009) found similar results in the case study of 61 countries. However, these findings are challenged by Keho (2017), whose study found a positive impact of trade openness on Economic growth in Cote d' Ivoire. It is also notable that South African financial openness is negatively related to the economic growth rate in both the long and short run. Thus, a 1 percent increase in South African financial openness leads to a 0.46% decrease in the economic growth rate in the long run and a 0.12 percent decrease in the economic growth rate in the short run. Both long- and short-term relationships are statistically significant. However, Ersoy (2011) got different results in the case study of Turkey.

In the long run, the estimated coefficient for the dummy is −0.40, and it is statistically significant. This simply means that the South African growth rate falls significantly to 1.65 percent (adding the dummy variable's slope and constant) from 2.05 percent if the COVID-19 effects are considered. In the short run, the estimated coefficient for the dummy is −0.76, which indicates that the presence of COVID-19 effects significantly decreased the South African growth rate from 2.05 to 1.29 percent. This indicates that the South African economy suffered more from the outbreak of COVID-19 in the short run than in the long run.

Furthermore, the South African current account balance interacted with COVID-19 effects (LCAB_D) and impacted the economic growth rate negatively in both the long and short run. In the long run, a 1 percent increase in the South African current account balance interacted with COVID-19 effects, decreasing the economic growth rate to 0.81 percent. In the short run, the South African growth rate decreased to 0.45 percent due to a 1 percent increase in the South African current account balance, which interacted with COVID-19 effects. Both long- and short-term relationships are statistically significant.

The estimated Error-Correcting Term (ECT) is −0.75, and it is statistically significant. This implies that 75 percent of the disequilibrium in the model is corrected in the period (quarter), hence the model adjusts very quickly towards an equilibrium steady state. This is satisfactory, as 75 percent is greater than 50 percent.

The estimated ARDL model's goodness of fit is evaluated with a 0.79 coefficient of determination (R-squared), indicating that 79 percent of the variation in the South African GDP growth rate is explained by the variation in the South African current account balance, real effective exchange rate, real interest rate, trade openness, financial openness, the dummy for the COVID-19 effects or aftermath, and the current account balance interacted with COVID-19 effects/aftermath. The R-squared is reasonably high with the significant F statistic and individual T statistics, meaning that the chosen predictor variables provide meaningful statistical insight on the variation in the South African GDP growth rate for the period under study.

To diagnose the estimated ARDL model, Table 6 presents the results for residuals and model stability diagnostic tests.

Table 6. Residuals and Model Stability Test Results.

Test	Hypothesis under Test	P (Test Stat.)	Conclusion
Ramsey Specification Error (Stability)	No specification error	0.5523	No specification error
Normality	The residuals are normal	0.6589	The residuals are normal.
Serial Correlation	There is no serial correlation	0.4398	No serial correlation.
Heteroscedasticity	The residuals are homoscedastic	0.6525	No heteroscedasticity

Source: Authors' computations using EViews 12 Software.

Table 6 shows that the probability value for the stability test statistic of the Ramsey Specification Error test is 0.5523, which is greater than the significance levels of 0.01, 0.05, and 0.10, indicating that the estimated ARDL model is well-specified. Furthermore, the probability value for the test statistic of all residuals' diagnostic tests is greater than 0.01, 0.05, and 0.10 levels of significance, implying that the estimated residuals are free of heteroscedasticity and serial correlation, and they are also normally distributed. Figure 2 shows the CUSUM of squares plot diagram to assess the consistency of the estimated ARDL model stability.

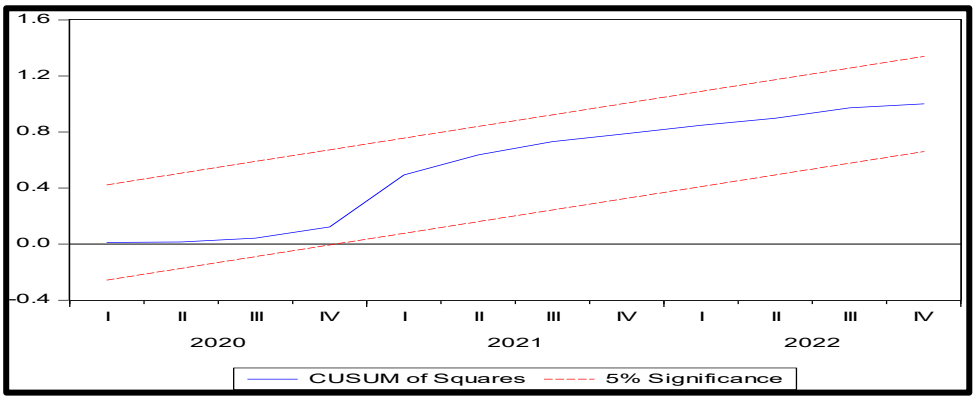

Figure 2. The CUSUM of squares stability plot diagram. Reference: Authors' own plot using EViews 12 Software.

Figure 2 shows that the estimated ARDL model is consistent/stable at the 5% significance level, as the CUSUM of squares line is between the 5% significance bound. All diagnostic tests for coefficients and residuals were passed, allowing for reliable statistical and economic inferences.

5. Discussion of Results and Policy Considerations/Implications

The long- and short-run coefficients were essentially the same in terms of estimated signs. The current account balance, real effective exchange rate (how much of the actual goods and services in the domestic economy can be exchanged for the goods and services in the counterpart foreign economy), real interest rate, trade openness, and financial openness coefficients are negative in both the long and short run, indicating a negative relationship between the afore-mentioned variables and economic growth in South Africa.

Firstly, and most importantly, an increase in the South African current account deficit induced a decrease in economic growth rate, thus leading to an increased demand for foreign currency, which put the rand under pressure and eventually depreciated. It could be for this reason that a negative relationship between the real effective exchange rate and

economic growth was established in this study, implying that a depreciation of the rand would decrease the South African economic growth rate in both the short and long run.

This is not surprising since South Africa has been running on a widening current account deficit for the past two years, which has also led to the struggling rand currency in the foreign market, especially after the COVID-19 era. Although widening the current account can be carefully maintained, the acts of the South African government have really made the situation worse due to wasteful, huge expenditures, inefficient government revenues (fiscal deficit), maladministration, and corruption, which explain most of the sources of unsustainable domestic and international borrowing (Statistics South Africa (Stats SA) 2022). Statistics South Africa (Stats SA) (2022) further indicates that these acts and the significant import bill with low export promotion put pressure on the current account. Fiscal and current account deficits put pressure on the economy, and the South African Reserve Bank would increase the interest rate to control the money supply, though it would cause a decrease in the South African growth rate, according to the results. This is normally a conflict that arises between fiscal and monetary policy. These events, including low promotion of exports, increasing import bills, and capital flight, affected trade and financial openness negatively, which eventually decreased the South African economic growth rate (Statistics South Africa (Stats SA) 2022). This is also supported by the established statistically significant relationship between trade openness, financial openness, and the economic growth rate.

Lastly, the results indicate that COVID-19 affected the South African growth rate negatively, as accounting for the COVID-19 effects/aftermath decreased the economic growth rate to 1.65 percent from 2.05 percent in the long run. In the short run, the economic growth rate decreased to 1.29 percent from 2.05 percent. This indicates that the COVID-19 pandemic hit the South African economy harder in the long run than in the short run. Furthermore, the South African current account was negatively affected by COVID-19, as the current account balance interacted with the COVID-19 effects variable, which is statistically significant, and it also negatively affected South African economic growth. The effect of current account balance interacted with COVID-19 effects on the South African economic growth rate is more severe in the long run than in the short run. This motivates a need to review the recovering policies or initiatives developed by the South African government and alliance partners.

6. Conclusions and Policy Recommendations

The objective of this study has been to investigate the empirical impact of current account balance on economic growth in South Africa using an ARDL technique. This study is informed by literature on the selection of variables such as economic growth rate, current account balance, real effective exchange rate, trade openness, financial openness, real interest rate, and COVID-19 (through the dummy). There is a significant negative relationship between the South African current account balance and the economic growth rate in both the long and short run. Thus, this study recommends the promotion of import substitution and exports. Substituting imports with local production and promoting exports, provided that the high standard of quality for the furnished goods and services is maintained, could discourage importing from other economies. This could create sustainable jobs locally, leading to reduced unemployment and eventually expanded economic growth. As already shown in the policy implications section in the previous section, this policy action could also improve the competitiveness of the South African real effective exchange rate since it is directly and significantly affected by the current account deficit.

This study also established a statistically significant and negative relationship between South trade openness, financial openness, real interest rate, and economic growth rate in both the long and short run. As far as trade openness is concerned, this study recommends an improvement in export promotion and an encouragement of international trade and travel initiatives to improve both the balance of trade and net income from abroad, as economies are gradually recovering from COVID-19 aftermath effects.

On a statistically significant and negative relationship between South African financial openness and economic growth rate in both the long and short run, this study recommends government intervention by employing necessary resources to ensure satisfactory development of financial markets. This could promote continued adequate financial infrastructure development in South Africa, thus bringing in sustainable local and international direct investments, capital inflows, and foreign business investments, leading to an increase in the real gross domestic product growth rate.

Lastly, the established negative relationships were obviously due to the economic instability and meltdown brought on by the COVID-19 pandemic when the South African economy was still trying to recover from the 2017/2018 technical recession. This is clear as the estimated coefficients for the COVID-19 effects/aftermath dummy and South African current account balance interacted with COVID-19 effects variables are negative and statistically significant in both the long and short run, indicating a decrease in the South African economic growth rate. For this reason, this study recommends significant acceleration of the tabled COVID-19 recovery initiatives since the improvement of the economy really depends on how South Africa is set to recover from COVID-19 effects/aftermath.

7. Limitations and Suggestions for Further Research

The relationship between current account balance and economic growth was the focus of this study. Both variables are multifaceted and complicated in nature. It implies that several other factors that have an impact on economic growth have not been taken into consideration in this study since attention was mostly given to international trade-related variables.

The estimated results show that the real exchange rate is steadily depreciating, which is one effect of the worsening current account. This study thus recommends more research into the connection between real exchange rate movements and the South African current account's behavior, considering the Marshall Lerner condition.

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