The Impact of Low-Income Households, Domestic Debt and The Stock Market on the Economic Growth of South Africa

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ABSTRACT

This study investigates the impact of low-income households, domestic debt and the stock market on the economic growth of South Africa using annual time series data from 1999 to 2023. Formal unit root tests, such as the Augmented Dickey-Fuller test and the Phillips-Perron test, were used to determine whether a series is stationary or non-stationary. This study employed the autoregressive distributed lag (ARDL) technique to determine the long and short-run positive or negative relationship between the economic growth of South Africa and its low-income households, domestic debt, and the stock market. The results show a positive and statistically significant relationship between economic growth and low-income households in both periods. Furthermore, a positive and statistically insignificant relationship was detected between domestic debt and economic growth. The stock market reveals a negative and statistically insignificant influence on economic growth. The findings of this study provide original and important guidance that can be used to determine levels of subsidies for low-income households, healthy levels of domestic debt, and assist in aligning the required investment threshold in the stock market for the sake of South African economic growth. The findings provide an opportunity and direction for the necessary monetary and fiscal policies, which can boost economic growth using 99% which is the highest speed of adjustment. This study contributes to existing literature on economic growth and low-income households, domestic debt, and the stock market in South Africa, as a developing country.

Keywords: Domestic Debt, Economic Growth, Low-income Households, Stock Market, South Africa
JEL Classifications: A10, C1, E21, E21

1. INTRODUCTION

The concept of economic growth plays a crucial role in understanding how developed and developing countries can achieve the Sustainable Development Goals (SDGs) (Bali Swain and Yang-Wallentin, 2020). To measure the direction provided by the SDGs approach to economic growth, conventional measures may be used to quantify the SDG output, the real consumption per capita (RCPC), net domestic product (NDP), and the gross domestic product (GDP). Economic growth is important for raising the standard of living in a country, and little changes over time lead to a significant increase in the standard of living in the long term (Abel et al., 2021). South Africa has made significant progress in reducing poverty and inequality since the end of apartheid in 1994. Furthermore, economic growth is the key factor or source of raising the standard of living over time. However, despite this progress, the country still faces significant challenges in achieving sustainable economic growth.

According to Baloyi (2025), household consumption expenditure is an important economic growth determinant because it is the main fundamental component of every country's gross domestic product. Economic growth is a crucial aspect of any country's development, as it has a direct impact on the standard of living, poverty rates, and overall well-being of its citizens. South Africa has faced numerous challenges in achieving sustainable economic growth, including high levels of poverty and inequality, a large budget deficit, and a volatile stock market.

It has been suggested that the stock market behaves similarly to a random walk in its sense of direction and the size of its changes (Bustos and Pomares-Quimbaya, 2020). Finally, the stock market is also an important factor in promoting economic growth in South Africa. The Johannesburg Stock Exchange's (JSE) share price performed better than headline indices with 30% year-on-year growth during 2024 (Johannesburg Stock Exchange, 2025). This provides a significant source of funding for companies and helps to promote economic growth.

One of the main challenges facing South Africa is high levels of poverty and inequality. According to Statistics South Africa, in 2020, approximately 55% of the population lived below the upper-bound poverty line of R1,268 per month (Statistics South Africa, 2020). This has significant implications for economic growth, as low-income households have limited disposable income to invest in the economy. To maintain or increase economic growth operations, there should be continuous investment directed towards boosting low-income households, domestic debt, and the stock market in general. Economic growth requires intensive capital injection, which will result in long-term returns in the future. Thus, investing in economic growth can be risky; it can have limited improvement and may lessen the anticipated growth (Song and Zhou, 2020).

South Africa's economic growth has been volatile in recent years, and the country faces significant challenges in achieving sustainable economic growth. One of the main challenges is the high levels of poverty and inequality, which can limit the disposable income of low-income households and reduce their ability to invest in the economy. Additionally, South Africa's large budget deficit and high levels of government debt can crowd out private sector investment and reduce economic growth. Finally, the stock market can play a crucial role in promoting economic growth, but its volatility can also have negative impacts (Bunjaku, 2024).

Another challenge facing South Africa is a large budget deficit. According to the National Treasury, in 2020, the budget deficit was approximately 6.3% of GDP (National Treasury, 2020). This has significant implications for economic growth, as high levels of government debt can crowd out private sector investment. Therefore, this study investigates the relationships between the stock market, household consumption, and domestic debt on economic growth using econometric methods.

This study uses the ARDL approach, while other previous studies used panel data series, and also investigates its variables for a different period from 1999 to 2003. The novelty of this study reveals how economic growth is impacted by domestic debt, the stock market, and low-income households, in conjunction. This study's contribution adds to works done on low-income households, domestic debt, and the stock market by suggesting some guidelines for policymaking. This study is made up of 5 sections. Section 1 introduces the study, provides the problem statement, and outlines the research aims. Section 2, literature review, delved into the theoretical literature and the empirical literature. Section 3, research methodology, and econometric techniques used to investigate the impact of low-income households, domestic debt, and the stock market on economic growth. Section 4 outlines the empirical results and discussions. Section 5 is the conclusions and recommendations, which offer policy recommendations.

2. LITERATURE REVIEW

This section provides an overview of the impact of low-income households, domestic debt, and the stock market on South Africa's economic growth by grounding its roots in economic theories.

2.1. Theoretical Literature
2.1.1. The modern portfolio theory
The Modern Portfolio Theory (MPT) is employed to understand the stock market and its effects on economic growth (Markowitz, 1952; Fama, 1970; Adeleye, Odhiambo & Owusu, 2023 and Surtee). The MPT is a mathematical framework for efficient and effective investment selections with certain accepyf risk levels. According to Liu (2022), the MPT advises investors on how to allocate their resources, the level of risk they should take on, and the returns they can expect. The higher the risk, the higher the expected rate of return. The MPT is regarded as an efficient method of investing, as it seeks the best returns with the available resources and the pool in which those resources can be invested (El Ghamari, El Ghamari, & Ed-Dahhani, 2024).

2.1.2. The solow growth model
The Solow Growth Model (SGM) is employed to understand the effect on economic growth due to factors such as capital and technology, which are partially funded by domestic debt in South Africa (Solow, 1956; Gemmell, 1995). SGM is a macroeconomic model that explains long-term economic growth based on how capital accumulation, population growth, and technological progress influence a country's output. Despite the unforeseen conclusion that technology has a negative influence on economic growth, it is well-known that technology is the most important factor in increasing the productivity of a country with limited resources (Biyikli, Demir & Yilmaz, 2023). In a country such as South Africa, domestic debt is used for technological advancement purposes, and companies in the stock market offer their stocks to get funds to invest in technology.

2.1.3. The crowding-out effect
The Crowding-Out Effect (COE) is employed to understand the impact that it had on the economic growth particularly within the South African context, when the government increases its spending by borrowing funds, which results in increased interest rates and lowered private sector spending (Carrasco, 1998 and and Kaya, & Sengul, 2020). The increased interest rates and lowered private sector spending because of increased government spending are in accordance with the Neoclassical economics school of thought. According to Mankiw (2023), heightened domestic debt could work against economic growth, resulting in the crowding out of capital, and declining real wages, consumption, and labour productivity.

2.2. Empirical Literature
2.2.1. Determining the effects of low-income households on economic growth
Economic growth reduces the number of low-income households through employment and investment. Therefore, there is an inverse

relationship between low-income households and economic growth (Ngubane et al., 2023). The study by Ngubane et al. (2023) employed the ARDL and NARDL approach. Economic growth has a negative impact on poverty; this was determined using Panel Vector Autoregression (Erlando et al., 2020). According to Amar and Pratama (2020), economic growth reduced poverty levels in developing countries, and this implied that the economic growth allowed for greater economic participation of different level of income levels. This implies a positive relationship between economic growth and low-income households.

2.2.2. Examining the relationship between domestic debt and economic growth

A study by Saungweme and Odhiambo (2020) found that public debt service and economic growth had a statistically insignificant relationship both in the short run and long run. An African study done by Ndoricimpa (2020) found that low levels of debt had a neutral impact on economic growth, while high levels of debt harmed economic growth. According to Yusuf and Mohd (2021), domestic debt and economic growth have a positive relationship in the long run and a negative relationship in the short run. According to Yamin et al. (2023), most studies found a negative relationship between domestic debt and economic growth, while other studies found a negative relationship, and there have been studies that suggested no relationship between the two variables.

2.2.3. Establishing the impact of the stock market on economic growth

Song et al. (2021), using the Vector Error Correction Model, found that there is a causal relationship from economic growth to the stock market in the long run. Moshirian et al. (2021) found that increased participation in the stock market led to an increase in productivity growth and, ultimately, economic growth. Supporting evidence from Ozili et al. (2023) and Van et al. (2021) found through analysis, and they established that there is a positive correlation between the stock market and economic growth. There have been many studies showing mixed results, others showing a positive relationship between the stock market and economic growth, showing a statistically insignificant relationship between the stock market and economic growth.

After the literature review, the current study examines the pre-existing expectations that household consumption and economic growth have a positive relationship, the stock market and economic growth have a positive relationship, and domestic debt and economic growth have a positive relationship (Handriyani et al., 2018; Cave et al., 2019; Ibrahim and Khan, 2019).

3. RESEARCH METHODOLOGY

This section outlines the use of econometric techniques to investigate the impact of low-income households, domestic debt, and the stock market on the economic growth of South Africa. It sheds light on the type of data collected and sources, the model specification of the study, as well as the econometric estimation utilised to achieve the research aim. The data analysis is conducted in the following chronological order: it commences with descriptive statistics, unit root tests, cointegration, followed by the Autoregressive Distributed Lag (ARDL) model, Granger causality, diagnostic testing, and stability testing.

3.1. Data

The study attempted to achieve its aim by using annual time series secondary data spanning a quarter of a century from 1999 to 2023. The data was collected from the World Bank (WB) and the South African Reserve Bank (SARB). All the variables except for the domestic debt variable were in percentage form. The domestic debt variable was transformed into natural logarithmic form to improve the accuracy of the tests. Table 1 shows the summary of the variables, description, sources, and measurements of the data collected.

3.2. Model Specification

The study estimates the effects of low-income households, domestic debt, and the stock market on economic growth. To estimate the effect, the functional form of GDP and regression is as follows:

$$GDP = F \text{ (low-income households, domestic debt, stock market)} \tag{1}$$

That is,

$$GDP = \beta_0 + \beta_1 GNI_t + \beta_2 HNFC_t + \beta_3 TGD_t + \beta_4 STT_t + \varepsilon_t \tag{2}$$

However, the domestic debt variable data was accessed in the form of millions of rands and was standardised through logging. According to Wooldridge (2009) and Kgomo (2019), logging data improves the smoothness and the accuracy of the tests conducted. Therefore, TGD_t was logged to become $LTGD_t$. After standardization of the variables, the new equation was displayed as:

$$GDP = \beta_0 + \beta_1 GNI_t + \beta_2 HNFC_t + \beta_3 LTGD_t + \beta_4 STT_t + \varepsilon_t \tag{3}$$

Where GDP is the GDP (annual %), and it is a proxy of economic growth in the model. GNP per capita growth (% annual) is a proxy for low-income households in the model. HNFCt is households and NPISHs final consumption expenditure (% of GDP), and it is a proxy of low-income households in the model. LTGDt is the log of the total national government debt: non-marketable domestic debt (short-term loans), and it is a proxy of domestic debt in the model. STTt is the stocks traded, total value (% of GDP), and it is a proxy of the stock market in the model. Furthermore, is the intercept, while β_1 to β_4 are the coefficients of the explanatory variables and ε_t is the error term.

3.3. Estimation Techniques

Descriptive statistics were conducted before the unit root to check the central tendency of variables. Formal unit root tests were conducted to check for stationarity in the model. The Bounds test was conducted to check for the existence of relations between the independent variables and the dependent variable, and the ARDL long-run and short-run tests were used to confirm the established relationship. Granger Causality was conducted to check which of the variables in the model have a causal relationship with economic growth in South Africa. Diagnostic tests were used to detect for serial correlation, the normality of distribution, and to

reveal whether there is heteroskedasticity in the model. Lastly, the CUSUM and CUSUM of squares were conducted to check for the stability of the model.

3.3.1. Descriptive statistics test

Descriptive statistics is a statistical analysis that presents the dispersion of the data collected. The mean and median values are interpreted. The skewness of the data, as well as the Kurtosis value, is interpreted. The Kurtosis value shows whether the data is normally distributed or not, and it is verified by the probability value (Nick, 2007).

3.3.2. Stationarity/unit root test

The unit root results focused on both visual inspection (informal unit root testing) and formal unit root tests. The properties of stationarity are a constant mean over time, a constant variance over time (meaning that there is no heteroskedasticity), and a constant autocovariance over time. According to Herranz (2017), a stationarity process is viewed as an important primary property of the majority of time series statistical methods. To cover the formal unit root, the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test were conducted to investigate whether there is stationarity or non-stationarity in the model. These two tests are used to test for the presence of unit roots. The PP test is used to confirm the results of the ADF test in the model (Phillips & Perron, 1988). They both have the same null hypothesis, which is as follows:

H_0: *Series contains a unit root* (*meaning that the series is non-stationary*)

Both tests were run at the level as well as at first difference. The time series models are differenced to make them stationary if they are not stationary. The importance of testing for stationarity using the Augmented Dickey-Fuller test is that it prevents the fabrication of the results of the regression (Mushtaq, 2011). Both the Augmented Dickey–Fuller (ADF) and Phillips–Perron unit root tests were conducted to determine the order of integration of the variables (Ekpo and Udobia, 2025).

3.3.3. ARDL bounds testing

The Auto-Regressive Distributed Lag (ARDL) approach was chosen because the variables are integrated at different orders. The order of integration in the study for the variables was I (0) and I (1) following the suggestion of the ARDL bounds test approved by Pesaran and Shin (1998), and Pesaran et al. (2001). The bounds test has the advantage of accounting for small sample size data as well as mixed order of integration, which is relevant to this study. This test can present both the short-run and long-run relationships at the same time. The null hypothesis of no cointegration is as follows:

$$H_0 = \delta_1 = \delta_2 = \delta_3 = \delta_4 = 0 \tag{4}$$

The null hypothesis of cointegration is as follows:

$$H_1 \neq \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq 0 \tag{5}$$

The ARDL approach was used to estimate the short-run and long-run parameters of the model. An equation showing both the short run and long run can be formed:

$$\Delta GDP = \beta_0 + \beta_1 \Delta GNI_{t-1} + \beta_2 \Delta HNFC_{t-i} + \beta_3 \Delta LTGD_{t-i} + \beta_4 \Delta STT_{t-i}$$
$$+ \delta_1 GNI_{t-1} + \delta_2 HNFC_{t-1} + \delta_3 LTGD_{t-1} + \delta_4 STT_{t-1} + \varepsilon_t \tag{6}$$

Where, Δ and δ show short-run relationships and long-run relationships, respectively. Δ signifies the first difference of the variables. Furthermore, Granger and Weiss (1983); Kripfganz, and Schneider (2018), stated that the main purpose of error-correction models is to capture the time-series properties of variables through the complex lag structures allowed, while at the same time incorporating an economic theory of an equilibrium type. This study developed the error correction model (ECM) to test for the speed of adjustment and how the variables in the data converge to equilibrium, as also allude by Winarno, Usman and Kurniasari (2021).

3.3.4. Granger causality

Granger causality is used to analyse time series data in economics, finance, as well as other domains (Shojaie and Fox, 2022; Bodik & Pasche, 2024; Joshi & Beck, 2024). It is the Granger causality test is used to infer causal relationships between the variables in the model. The utilisation of the Granger causality test was executed to establish what extent to which economic growth (GDP) affects and is affected by low-income households (GNI and HNFC), domestic debt (LTGD), and the stock market (STT). According to Granger (1969), the test establishes in what direction the influence occurs between two related variables, and it clarifies if the exists an influence exists between those two variables.

3.3.5. Diagnostic testing

Diagnostic tests are used to validate the robustness of the estimation. The Breusch-Godfrey Serial Correlation LM test is used to test for serial correlation in the model. The Normality test is used to check if the residuals are normally distributed or not. To test for heteroskedasticity, the study utilised the Breusch-Pagan-Godfrey, ARCH, and White tests; their null hypothesis is that there is heteroskedasticity (Breusch, & Pagan, 1979; Engle, 1982; Linnet, 1988; Godfrey, 1988 & 1989).

3.3.6. Stability testing

The CUSUM test and the CUSUM of squares tests are run to check for the stability in the model. it is used to check whether the coefficients in the model are stable or not, as well as to validate the long-run relationship (Lee, Ha, Na, & Na, 2003; Sharma and Sharma, 2024).

4. EMPIRICAL RESULTS AND DISCUSSIONS

This section shows the empirical results found using the research methodology outlined in the previous section. The empirical results are then discussed in accordance with the respective econometric test conducted using EViews 12.

4.1. Descriptive Statistics Test Results

Table 2 shows the descriptive statistics test results for the period 1999 to 2023. The GDP has a mean value of 2.290371 and a median value of 2.485468, which is lower than other variables.

GDP has a left negative skewed distribution value of −1.501572. This raises concern about how low-income households, domestic debt, and the stock market are structured to support South African economic growth. HNFC has a mean value which is less than its median value, 63.53780 < 63.56510. HNFC is slightly skewed to the right but may be normally distributed, with the kurtosis value equivalent to 3 at 3.087502. GNI, STT, and LTGD all have mean values that are more than their medians. STT is skewed to the right. STT is slightly skewed to the left but may be normally distributed, with the Kurtosis value close to 3 at 2.955800. LTGD is skewed to the left. The GDP skewness is similar to STT and LTGD and also contradicts HNFC and GNI, which reveals a long right tail. Moreover, the skewness was supported by the GDP P-value of 0.000018, which shows abnormal distribution. Whereas HNFC, GNI, STT, and LTGD all have a normal distribution because they have P-values greater than the 0.05 level of significance.

4.2. Stationarity/Unit Root Test Results
Visual inspection/informal unit root test results focused on the economic growth variable.

GDP (economic growth) in Figure 1 appeared to be stationary at a level because it was fluctuating around the mean of zero, and it seemed to have a constant covariance and constant autocovariance. The statistical properties of stationary data in Figure 1 confirm that after 1st difference, economic growth or GDP has a constant zero mean over time, a constant variance over time, and a constant autocovariance over time.

Table 1: Summary of the variables, description, sources, and measurement

Variables	Description and sources	Measurement
GDP	The GDP (annual %). [WB].	Percentage (%)
GNI	The per capita growth (% annual). [WB].	Percentage (%)
HNFC	The households and NPISHs' final consumption expenditure (% of GDP). [WB].	Percentage (%)
LTGD	The log of the total national government debt: non-marketable domestic debt (short-term loans). [SARB].	Millions of rands ®
STT	The stocks traded, total value (% of GDP). [WB].	Percentage (%)

WB stand for World Bank and SARB stand for South African Reserve Bank
Source: Author's compilation

Formal unit root test results present the Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test to check for stationarity. The chosen unit root tests are the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The order of integration is also mentioned for each variable that is being tested. The only orders applied were I (0) and I (1).

Table 3 shows that according to the ADF and PP tests results, GDP, HNFC, and GNI are stationary at level, I (0). STT and LTGD are non-stationary at level I (0). After being differenced, STT and LTGD variables become stationary at order I (1). Table 3 shows that the model is made up of variables that are integrated at different orders, I (0) and I (1), and satisfies the conditions of cointegration and the ARDL test.

4.3. ARDL Bounds Test Results
Table 4 shows the ARDL bounds test results for the period 1999 to 2023. The computed F-statistic of 31.69983 is greater than all the upper and lower bounds results. This means that the results are conclusive. Thus, the null hypothesis is rejected, meaning the results are significant. There is cointegration in the model for all the levels of significance. The variables are co-moved in the long run as the existence of cointegration in the series means that there is a long-run relationship between the variables.

The pre-existing expectations were that household consumption and economic growth would have a positive relationship, domestic debt and economic growth would have a positive relationship, and that the stock market and economic growth would have a positive relationship. The ARDL bounds test results were aligned with the pre-existing expectations for all the variables, as it was concluded that there is cointegration in the model.

4.4. ARDL Short-run and Long-run Results
The long-run equation is demonstrated as:

$$GDP = 0.903346 + 0.625615 - 0.006654 + 0.070662 + \varepsilon_t \qquad (7)$$

Table 5 shows the ARDL long-run and short-run results for the period 1999 to 2023. GNI and GDP have a positive relationship in the long run. GNI is statistically significant at 1%, 5%, and 10% levels of significance with a p-value of 0.0000. HNFC and GDP have a positive relationship in the long run. HNFC is statistically

Table 2: Descriptive statistics test results for the period 1999-2023

Descriptive statistics tests	GDP	HNFC	GNI	STT	LTGD
Mean	2.290371	63.53780	1.408400	60.76311	3.302085
Median	2.485468	63.56510	1.389285	59.40989	3.144574
Maximum	5.603806	66.04705	5.714125	124.3686	4.437037
Minimum	−6.168918	61.85281	−5.172111	24.90050	1.000000
Standard Deviation	2.493162	1.701028	2.535303	22.86529	0.989214
Skewness	−1.501572	0.541095	−0.361280	0.868945	−0.589551
Kurtosis	6.463894	3.087502	2.955800	4.138865	2.575282
Jarque-Bera	21.89317	1.227906	0.545882	4.497163	1.636110
Probability	0.000018	0.541207	0.761138	0.105549	0.441289
Observations	25	25	25	25	25

Source: Author's compilation

Table 3: ADF and PP test results for the period 1999-2023

Variables	Model specification	ADF P-value	PP P-value	Conclusion and integration order
GDP	Intercept	-3.811200 (0.0085***)	-3.811200 (0.0085***)	Reject the null hypothesis. The series is stationary at I (0).
	Trend and intercept	-5.038487 (0.0025***)	-5.317456 (0.0013***)	-
D (GDP)	Intercept	-5.545871 (0.0002***)	-22.05620 (0.0000***)	Reject the null hypothesis. The series is stationary at I (1).
	Trend and intercept	-5.385863 (0.0014***)	-21.33317 (0.0000***)	-
HNFC	Intercept	-4.655715 (0.0013***)	-4.761894 (0.0009***)	Reject the null hypothesis. The series is stationary at I (0).
	Trend and intercept	-4.301278 (0.0127**)	-3.506500 (0.0613*)	-
D (HNFC)	Intercept	-3.196347 (0.0362**)	-3.922920 (0.0068***)	Reject the null hypothesis. The series is stationary at I (1).
	Trend and intercept	-3.325384 (0.0922*)	-4.804837 (0.0044***)	-
GNI	Intercept	-3.577978 (0.0143**)	-3.650795 (0.0122**)	Reject the null hypothesis. The series is stationary at I (0).
	Trend and intercept	-5.460504 (0.0010***)	-5.460504 (0.0010***)	-
D (GNI)	Intercept	-4.372887 (0.0028***)	-20.64191 (0.0000***)	Reject the null hypothesis. The series is stationary at I (1).
	Trend and intercept	-4.332794 (0.0131**)	-25.17250 (0.0000***)	-
STT	Intercept	-2.044642 (0.2672)	-2.016957 (0.2780)	Accept the null hypothesis. Non-stationary. I (0).
	Trend and intercept	-2.445366 (0.3493)	-2.553996 (0.3020)	-
D (STT)	Intercept	-4.983528 (0.0006***)	-5.509753 (0.0002***)	Reject the null hypothesis. The series is stationary at I (1).
	Trend and intercept	-4.489159 (0.0090***)	-5.824083 (0.0005***)	-
LTGD	Intercept	-2.574271 (0.1119)	-2.574271 (0.1119)	Accept the null hypothesis. Non-stationary I (0).
	Trend and intercept	-2.578640 (0.2919)	-2.583522 (0.2899)	-
D (LTGD)	Intercept	-6.981671 (0.0000***)	-6.818703 (0.0000***)	Reject the null hypothesis. The series is stationary at I (1).
	Trend and intercept	-7.332546 (0.0000***)	-7.854499 (0.0000***)	-

I (1) show the unit root is stationary at the first difference. I (0) show that the unit root is stationary at the level. Level of significance indicated by asterisks, 10%*, 5%**, 1%** P-values are shown in brackets.
Source: Author's compilation

**Table 4: ARDL bounds test results for the period 1999-2023**

Test statistic	Value	Significance (%)	lower Bounds I (0)	Upper bounds I (1)	Conclusion
F-statistic	31.69983	10	2.2	3.09	Cointegration.
k	4	5	2.56	3.49	Cointegration.
		2.5	2.88	3.87	Cointegration.
		1	3.29	4.37	Cointegration.

Source: Author's compilation

significant at 5% and 10% levels of significance with a p-value of 0.0205. There is a positive long-run relationship between low-income households and economic growth in South Africa. This positive relationship may be based on the fact that the South African government provides various pensions and grants to the vulnerable group to support the citizens' well-being. The current study findings concur with Amar and Pratama (2020) and the Solow Growth Model, that economic growth reduced poverty levels in developing countries, and augments economic participation at different levels of income levels, and also a macroeconomic model that explains long-term economic growth based on how capital accumulation, population growth, and technological progress influence a country's output. On the other hand, the current study findings contend with those of Erlando et al. (2020) and Ngubane et al. (2023) by outlining the inverse relationship between low-income households and economic growth.

LTGD and GDP have a positive long-run relationship that is statistically insignificant with a P-value of 0.7846. Domestic debt and economic growth in South Africa have a positive long-run relationship. STT and GDP have a negative long-run relationship,

Figure 1: GDP at level and at first difference
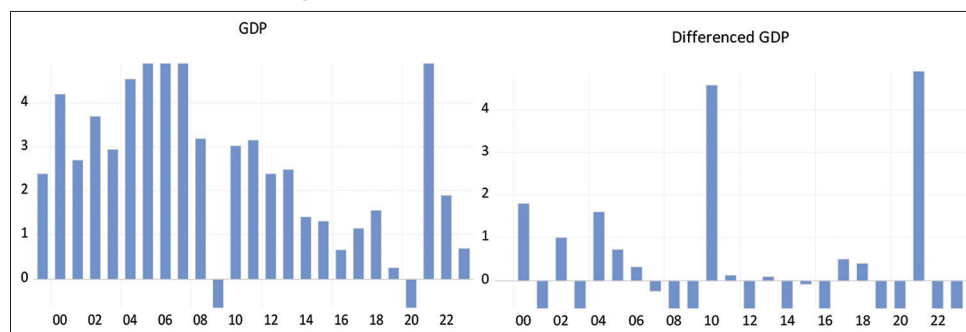
Source: Author's compilation

Table 5: ARDL Long-run and Short run results for the period 1999-2023

Variable	Coefficient	Probability
GNI	0.903346	0.0000***
HNFC	0.625615	0.0205**
STT	-0.006654	0.5792
LTGD	0.070662	0.7846
C	-38.54141	0.0252**
ECT	-0.988970	0.0000***
Short run		
D(GNI)	0.899491	0.0000***
D(HNFC)	3.284340	0.0001***
D(STT)	0.003175	0.6490
D(LTGD)	-1.298556	0.0007***

Source: Author's compilation

which is statistically insignificant at all levels of significance, with a P-value of 0.5792. The stock market and economic growth have a negative long-run relationship in South Africa. This implies that economic growth disregards stock market activities, which raises concerns about economic growth. These findings contradict of Van et al. (2021), Ozili et al. (2023), and Thaddeus et al. (2024), who noted a positive and statistically significant long-run relationship between the stock market and economic growth in the long run. Furthermore, increased participation in the financial market, especially in developing countries, leads to economic growth despite there being studies showing both a positive relationship between the stock market and economic growth relationship.

A study conducted by Yusuf and Mohd (2021) supported the positive long-run relationship between domestic debt and economic growth. In accordance with the Solow Growth Model, the funds invested are used as capital and are spent on labour and technological improvements, amongst others. Didia and Ayokunle (2020) found a statistically significant positive relationship between domestic debt in the long run. The Crowding-Out Effect could be used to explain the negative relationship between the stock market and economic growth in the long run as a result of the positive relationship between domestic debt and economic growth. The Crowding-Out Effect states that an increase in government spending, in this case, of the study, which was an increase in domestic debt, results in increased interest rates and decreased private sector spending, in the case of the study was decreased stock market participation.

Table 6: Granger causality results for the period 1999-2023

Null hypothesis	F-statistic (Probability)	Conclusion
STT does not Granger-cause GDP	2.40536 (0.1186)	Accept the null hypothesis.
GDP does not Granger-cause STT	0.14725 (0.8641)	Accept the null hypothesis.
LTGD does not Granger-cause GDP	0.75194 (0.4857)	Accept the null hypothesis.
GDP does not Granger-cause LTGD	2.37316 (0.1217)	Accept the null hypothesis.
GNI does not Granger-cause GDP	3.06208 (0.0717*)	Reject the null hypothesis.
GDP does not Granger-cause GNI	2.31755 (0.1272)	Accept the null hypothesis.
HNFC does not Granger-cause GDP	0.64907 (0.5343)	Accept the null hypothesis.
GDP does not Granger-cause HNFC	1.57722 (0.2338)	Accept the null hypothesis.
LTGD does not Granger-cause STT	1.72779 (0.2059)	Accept the null hypothesis.
STT does not Granger-cause LTGD	0.00246 (0.9975)	Accept the null hypothesis.
GNI does not Granger-cause STT	0.08081 (0.9227)	Accept the null hypothesis.
STT does not Granger-cause GNI	1.76583 (0.1994)	Accept the null hypothesis.
HNFC does not Granger Cause STT	0.68785 (0.5154)	Accept the null hypothesis.
STT does not Granger Cause HNFC	0.48241 (0.6250)	Accept the null hypothesis.
GNI does not Granger Cause LTGD	1.63963 (0.2217)	Accept the null hypothesis.
LTGD does not Granger Cause GNI	0.58440 (0.5677)	Accept the null hypothesis.
HNFC does not Granger Cause LTGD	1.34646 (0.2851)	Accept the null hypothesis.
LTGD does not Granger Cause HNFC	1.60544 (0.2283)	Accept the null hypothesis.
HNFC does not Granger Cause GNI	1.22578 (0.3169)	Accept the null hypothesis.
GNI does not Granger Cause HNFC	0.67789 (0.5202)	Accept the null hypothesis.

Asterisk (*) indicates that there the value is significant at 10% level of significance
Source: Author's compilation using EViews 12 for the period 1999 to 2023

In the short run, the coefficients of the ARDL elasticities of the economic growth model show that HNFC is statistically significant at 1%, 5%, and 10% significance levels with a P-value of 0.0001.

Figure 2: CUSUM and CUSUM of squares
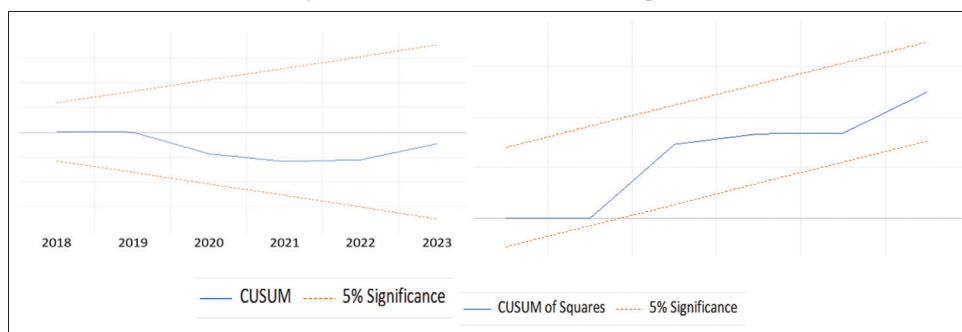
Source: Author's compilation

Table 7: Diagnostic tests results for the period 1999-2023

Diagnostic tests	Null hypothesis	Test statistics	Probability	Conclusion
Breusch-Godfrey Serial Correlation LM Test	There is no serial correlation.	2.300288	0.3166	Accept the null hypothesis. There is no serial correlation in the model.
Normality Test	Residuals are normally distributed.	Kurtosis (2.293725) Jarque-Bera (0.498833)	0.779255	Accept the null hypothesis. The residuals are normally distributed.
Heteroskedasticity Test: ARCH	No heteroskedasticity.	0.012849	0.9098	Accept the null hypothesis. There is Heteroskedasticity.
Heteroskedasticity Test: White	No heteroskedasticity.	23.45650	0.2669	Accept the null hypothesis. There is Heteroskedasticity.

Source: Author's compilation

GNI is statistically significant at 1%, 5%, and 10% significance levels with a P-value of 0.0000. LTGD is statistically significant at 1%, 5%, and 10% significance levels. HNFC and GNI have a positive short-run relationship with GDP. This shows a positive relationship between low-income households and economic growth in the short run. LTGD and GDP have a negative short-run relationship. The domestic debt of South Africa and economic growth have a negative short-run relationship. STT is the only variable that is statistically insignificant at all levels with a P-value of 0.6490.

The pre-existing expectations were that household consumption and economic growth would have a positive relationship, domestic debt and economic growth would have a positive relationship, and that the stock market and economic growth would have a positive relationship. Some of the results were aligned with the a priori expectation, with low-income households and economic growth having a positive relationship, and there being a positive relationship between domestic debt and economic growth. The contradictory result was that the relationship between domestic debt and economic growth was negative. Two of the three expectations were met in the long-run results. The error correction term is statistically significant at 1% level of significance, and the coefficient is −0.988970. The error correction model shows that the short-run will adjust towards the long-run equilibrium at the speed of 98.89, which is equivalent to a 99% rate of convergence.

4.5. Granger Causality Test Results
Table 6 shows the Pairwise Granger causality test results for economic growth, stock trade, household consumption, and domestic debt in South Africa between 1999 to 2023.

There is unidirectional causality between GNI and GDP at 5%

level of significance, from GNI to GDP (from gross national income to gross national product) as demonstrated in Table 6 above. This was in line with a study conducted by Amar and Pratama (2020) which through its empirical analysis found that increased participation of low-income households when there was economic growth and it resulted in reduced poverty levels. Granger causality was not found for the rest of the dataset. A study which was done found contradicting results that there exists a causal relationship between economic growth and financial development (Song et al., 2021). According to Song et al. (2021), implementing policies that stimulate economic growth results in increased participation in the financial markets. Haini (2020) found that there is a statistically insignificant relationship between financial markets and economic growth, which is in line with the results of the study, as the Granger Causality results for the stock market and economic growth are statistically insignificant. With the results establishing a statistically significant causal relationship between GNI and GDP, it was concluded that there was a causal relationship between low-income households and economic growth in South Africa. In accordance with the Crowding-Out Effect, the economic growth was a result of increased private spending and decreased public spending, and decreased domestic debt.

4.6. Diagnostic and Stability Test Results
Diagnostic test results are presented in Table 7, while stability tests are shown through CUSUM and CUSUMSQ figures.

The diagnostic tests were conducted with consideration of the 3 levels of significance: 1%, 5%, and 10% levels of significance. All but the Breusch-Pagan-Godfrey test had their null hypothesis accepted. The Breusch-Pagan-Godfrey was significant at the 10% level of significance, meaning that there is heteroskedasticity at the 10% level of significance. The Breusch-Godfrey Serial

Correlation LM test found that there is serial correlation in the model. The normality test found that the residuals are normally distributed.

The CUSUM and CUSUM of squares stability test results in Figure 2, conducted for the period 1999 to 2023 within the 5% level of significance, reveal that the model is stable.

The CUSUM and CUSUM of squares results are presented below as.

5. CONCLUSION AND RECOMMENDATIONS

The study investigates the impact of low-income households, domestic debt, and the stock market on the economic growth of South Africa. The secondary data utilised in the study were sourced from the South African Reserve Bank and the World Bank. Descriptive statistics checks were conducted and followed by a visual inspection to check for stationarity before formal ADF and PP unit root tests. The stationarity in the model was detected through a mixture of I (0) and I (1). The ARDL results reveal that Low-income household expenditure is the most influential variable on the economic growth of South Africa. This study measures Low-income households by HNFC and GNI, which provides a positive relationship to South African economic growth (GDP) in both the short run and long run. Domestic debt (LTGD) has a negative relationship with economic growth (GDP) in the short run and a contradicting relationship in the long run. The model converged to the equilibrium at a very high rate of 98%. The study reveals that a unidirectional causal relationship exists between gross national income and the gross domestic product of South Africa, meaning that increased spending from low-income households led to increased economic growth in South Africa, and increased economic growth in South Africa led to increased spending by low-income households. There was no serial correlation, and there was found to be heteroskedasticity. The residuals were normally distributed in the model. The model under study was found to be stable. Expansionary policy measures are recommended for increasing participation in the financial markets. With the use of the modern portfolio theory the participation in the financial markets, the stock market, can assist in providing better guidance in decision-making. Chowdhury et al. (2023) suggest that policymakers use funds that are an injection into the economy, such as remittances and domestic debt, to increase the economic growth rate in productive sectors. Targeted education of low-income households on information and communication technology on financial markets is a necessity and needs urgent investment to increase participation of low-income households in the financial markets and to enhance sustainable economic growth, as also proposed by Chatterjee (2020).

This study highlighted the importance of domestic debt in the short run over domestic debt in the long run. The link between low-income households, domestic debt, and the stock market was established. It was established that domestic debt could be used to positively affect low-income households, which could, in turn, lead to increased participation of low-income households in the stock market and ultimately economic growth. The current study findings can be used to add to existing studies to minimize contradicting relationships between domestic debt and economic growth in the long run and the short run.

The time series data collected for 25 years only ends in the year 2023, and there was no most recent data to account for the most recent events during the study investigation. However, the data limitation does not dilute the findings presented. Proxies for low-income households were gross national income and household expenditure, as the data for a variable that accurately captures low-income households in South Africa were not available for a duration of 25 years. Hence, this limitation can be used to conduct further studies globally to improve the economic growth of the regional and national context.

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